

VALVE ELECTRONIC

ADMIRALTY SURFACE WEAPONS ESTABLISHMENT

**CV 2792**

Specification AD/CV2792 incorporating MIL-E-1/982 Issue No. 1A dated 1st December 1964 To be read in conjunction with K1006	<u>SECURITY</u>	
	<u>Specification</u> Unclassified	<u>Valve</u> Unclassified

<u>TYPE OF VALVE:</u> Velocity Modulated Oscillator	<u>MARKING</u> K1001/4 Add:- 2K25 Serial No. ....
<u>CATHODE:</u> Indirectly Heated	
<u>PROTOTYPE:</u> 2K25	

<u>RATINGS</u> (All limiting values are absolute)	<u>Note</u>	<u>BASE</u> B.S.448/B8-0 Modified to take output lead as shown on Page 4.
Heater Voltage (V)	6.3	<u>CONNECTIONS</u>  Pin    Electrode
Heater Current (A)	0.44	
Mechanical Tuning Range (Mc/s)	8500 to 9700	1    Resonator and Shell
Max. Resonator Voltage (V)	330	2    Heater
Max. Cathode Current (mA)	37	3    -
Min. Power Output (mW)	20	4    Output Lead
Max. Negative Reflector Voltage (V)	400	5    -
Nominal Reflector Voltage Range (V)	-55 to -220	6    -
Min. Electronic Tuning Range (Mc/s)	28	7    Heater
Max. Heater to Cathode Voltage (V)	50	8    Cathode
		T.C. Reflector
		<u>TOP CAP</u> B.S.448/CT1
		<u>DIMENSIONS</u> See Page 4

NOTES

- A. Over the frequency range 8500 to 9660 Mc/s the Output Power exceeds 20 mW.  
Over the range 9660 to 9700 the Output Power exceeds 10 mW.

TESTS

Additional to those specified in the attached MIL Specification.

Ref.	Test	Conditions	Sym.	Min.	Max.	Units
4.15.1	Power Output (4):	As for Power Output (1) but F=9700 Mc	Po:	10	-	mW

# CV 2792

MIL-E-1/982  
18 June 1957  
SUPERSEDING  
JAN-2K25  
15 November 1948

## INDIVIDUAL MILITARY SPECIFICATION SHEET

### ELECTRON TUBE, KLYSTRON

JAN-2K25

This specification sheet forms a part of the latest issue of Military Specification MIL-E-1.

Description: Klystron, Integral Cavity, Mechanically Tuned.

Ratings:	Ef	Ers	Er	Ik	Ehk	F	Alt.
Absolute	V	Vdc	Vdc	mAdc	Vdc	Mc	ft.
Maximum:	6.3±8%	330	-400	37	50	---	10,000

Test Cond: 6.3 300 -55 to -220 --- --- 9660±0.3% --- Notes 1 & 2

The following tests shall be performed:

For miscellaneous requirements, see Paragraph 3.3, Inspection Instructions for Electron Tubes.

Ref.	Test	Conditions	AQL(%)	Insp. Level or Code	Sym.	LIMITS						Units
						Min.	LAL	Boqte	UAL	Max.	ALD	
<u>Qualification Approval Tests</u>												
3.1	Qualification Approval:	Required for JAN Marking										
4.9.4	Base Material:	Phenolic Wafer, as per Outline										
---	Cathode:	Coated Unipotential										
4.9.7	Moisture-Vapor Proof Pack:											
4.9.19.2	Vibration:	F=50;G=10;t=120sec; No Voltages			---	---	---	---	---	---	---	←
4.10.5.4	Reflector Voltage (2):	Mode A;F=8500 Mc±0.3%	---	---	Er:	-85	---	---	---	-135	---	Vdc
4.15.1	Power Output (3):	Er=-40 to -75Vdc; Ef=5.8V; F=9370±0.3%Mc	---	---	Po:	3.0	---	---	---	---	---	mW
4.15.3	Electronic Tuning (3):	Mode A;50% max Po; F=8500 to 9660 Mc	---	---	ΔF:	28	---	---	---	---	---	Mc
4.15.5	Temperature Coeff:	Mode A;F=9370 Mc±0.3%	---	---	Coeff:	0.00	---	---	---	-0.20	---	Mc/C
<u>Measurements Acceptance Tests, Part 1; Note 3</u>												
4.5	Holding Period:	t=168 hrs										←
4.10.4.6	Cathode Current:	Er(Mode A)/Max Po	0.65	II	Ik:	---	---	---	---	32	---	mAdc
4.10.4.6	Change in Cathode Current:	Ef=5.8V;Er(Mode A)/Max Po; t=2 min.	.65	II	ΔIk/Ef/t:	---	---	---	---	15	---	%←
4.15.1	Power Output (1):	Ef=5.8V;Er(Mode A)/Max Po;F=8500 to 9660Mc; Note 4	.65	II	Po:	20	---	---	---	---	---	mW
4.10.5.4	Reflector Voltage (1):	Mode A;F=9660±0.3% Mc	.65	II	Er:	-143	---	---	---	-200	---	Vdc
---	Mode Continuity:	Er(Mode A)/Max Po; ← 8db (min);Ef=5.8V; Note 5	.65	II		---	---	---	---	---	---	---
4.10.6.7.1	† Total Reflector Current:	Er=-143 to -200	.65	II	Ir:	---	---	---	---	7.0	---	uAdc
4.10.6.7.2	† Reflector Lkg. Current:	Er=-143 to -200	.65	II	Ir:	---	---	---	---	5.0	---	uAdc
4.10.6.7.3	† Reflector Gas Current:	Er=-143 to -200	.65	II	Ir:	---	---	---	---	2.0	---	uAdc
4.9.2	Dimensions:	Per outline drawing										

Ref.	Test	Conditions	AQL(%)	Insp. Level or Code	Sym.	LIMITS						Units
						Min.	LAL	Bogie	UAL	Max.	ALD	
<u>Measurements Acceptance Tests, Part 2; Note 6</u>												
4.10.15	Heater Cathode Lkg:	Ehk=±45Vdc	6.5	IA	Ihk:	0	---	---	---	100	---	uAdc
4.10.8	Heater Current:	Ef=6.3V	6.5	IA	If:	410	---	---	---	470	---	mA
4.8	Insulation of Electrodes:	300Vdc; Tube Cold	6.5	IA	Rkrs: Rhrrs:	2.0 2.0	---	---	---	---	---	Megs Megs
4.15.1	Power Output (2):	Er(Mode B); F=9370 Mc ± 0.3%; Ef=5.8V	4.0	IA	Po:	15	---	---	---	---	---	mW
4.9.19.5	Bump:	Ef=5.8V; Er(Mode A)/Max Po	6.5	IA	ΔPo/Po:	---	---	---	---	±10	---	% ←
4.10.5.4	Reflector Voltage (3):	Mode B; F=9370 Mc ± 0.3%	4.0	IA	Er:	-75	---	---	---	-120	---	Vdc
4.15.3	Electronic Tuning (1):	Mode A; 50% max Po; F=9370 Mc ± 0.3%	4.0	IA	ΔF:	35	---	---	---	---	---	Mc
4.15.3	Electronic Tuning (2):	Mode A; 2.5% of max Po; F=9370 Mc ± 0.3%	4.0	IA	ΔF:	---	---	---	---	145	---	Mc
4.15.7.1	Hysteresis (1):	Er/Max Po	6.5	IA	Ratio:	---	---	---	---	.25	---	←
<u>Acceptance Life Tests</u>												
4.11	Life Test:	Group B; Power Output (1)	---	---	t:	500	---	---	---	---	---	hours
4.11.4	Life Test End Point:	Power Output (1)	---	---	Po:	10	---	---	---	---	---	mW
<u>Packaging Information</u>												
4.9.18.1.5	Carton Drop:	(d) Package Group 1; Carton Size L										

Note 1: Paragraph 3.3.1, of Specification MIL-E-1 does not apply to this tube.

Note 2: The tube shall be fixed firmly in a suitable socket by clamps in accordance with drawing 227-JAN or equivalent. The measurements on the tube in an oscillating state shall be made with the output line coupled into measuring circuits as per drawing 227-JAN or equivalent.

Note 3: The AQL for the combined defectives for attributes in Measurements Acceptance Tests, Part 1, excluding Mechanical, shall be one percent. A tube having one or more defects shall be counted as one defective. MIL-STD-105, Inspection Level II, shall apply.

Note 4: The power output shall be above the limit specified throughout the specified frequency range.

Note 5: The mechanical tuning shall be set for F=9370±0.3% Mc and sufficient 60 cycle ac voltage superimposed on the direct reflector voltage to suppress oscillation on the ends of the sweep. The crystal current as a function of reflector voltage shall be observed with an amplifier and an oscilloscope having a minimum pass band of 0.1 megacycles. With the standing wave introducer per drawing 227-JAN or equivalent, inserted in the guide, there shall be no discontinuity at the maximum power points for any phase of standing wave, when the magnitude of the standing wave is as specified.

Note 6: The sampling plans for the tests in Measurements Acceptance Tests, Part 2, shall be in accordance with paragraph 5.9 of the Inspection Instructions for Electron Tubes. For tests which have an AQL of 6.5% specified, table 5.9.2-1 shall be used. For tests which have a 4.0% AQL specified, table 5.9.2-2 shall be used.

Note 7: Reference specification shall be of the issue in effect on the date of invitation for bid.

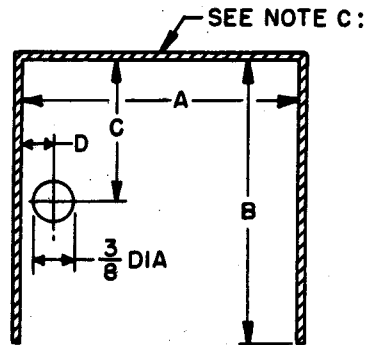
# CV 2792

## METAL COVER FOR TEMPERATURE COMPENSATION TEST

NOTE a:  
THE TUBE SHALL BE MOUNTED WITH AN APPROXIMATE CLEARANCE BETWEEN IT AND THE COVER OF 1/2 INCH. THE PLANE PASSING THROUGH THE TUNING MECHANISM AND THE LONGITUDINAL AXIS OF THE TUBE SHALL BE PARALLEL TO PLANE (A)-(A).

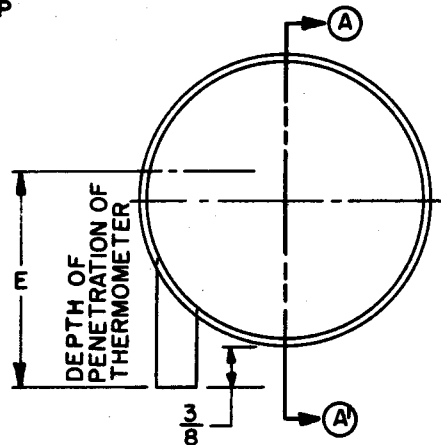
NOTE b:  
ENCLOSE METAL COVER IN CYLINDER TO SHIELD IT FROM EXTERNAL AIR CURRENTS.

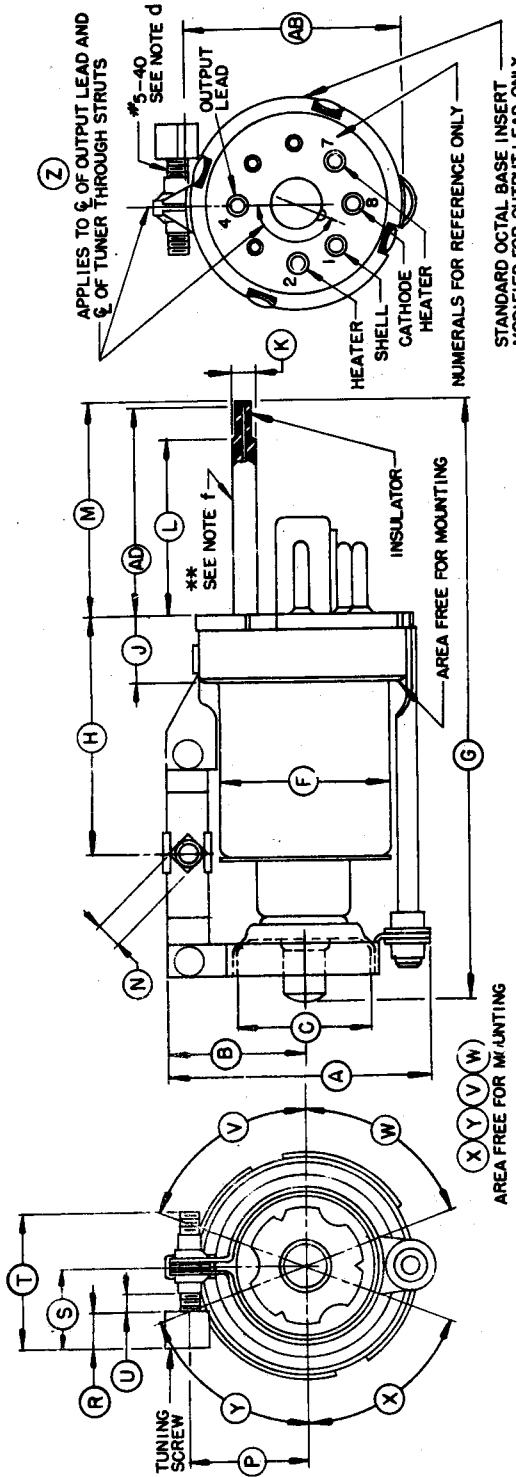
NOTE c:  
HEATING AND COOLING ELEMENTS SHALL BE APPLIED TO THE TOP OF COVER.



DIM.	
A	$2 \frac{5}{8}$
B	$2 \frac{3}{4}$
C	$1 \frac{3}{8}$
D	$\frac{5}{16}$
E	$2 \frac{1}{16}$

TOLERANCE SHALL BE  $\pm \frac{1}{64}$





Dim	AQL(%)	Insp. Level or Code	LIMITS		
			Nom.	Min.	Max.
Qualification Approval Tests					
C	---	---	---	0.787	0.787
T	---	---	---	51/64	51/64
V	---	---	---	70°	70°
W	---	---	---	70°	70°
X	---	---	---	---	70°
Y	---	---	---	---	70°
AB	---	---	---	1.271	1.312
Measurement Acceptance Tests, Part 1					
H	0.65	II	---	1-5/16	1-7/16
J	.85	II	---	.360	.400
K	.65	II	---	.185	.145
L	.65	II	---	.910	.930
M	.65	II	---	1-13/64	1-15/64
P	.65	II	---	21/32	23/32
Z	.65	II	---	154-1/2°	160-1/2°
AD	.65	II	---	1.168	1.188
Measurement Acceptance Tests, Part 2					
A	6.5	IA	---	---	1-39/64
B	6.5	IA	---	---	55/64
F	6.5	IA	---	1.0	1-1/64
G	6.5	IA	---	---	3-9/16
N	6.5	IA	---	.182 Square	.192 Square
R	6.5	IA	---	13/64	15/64
S	6.5	IA	---	31/64	33/64
U	6.5	IA	---	---	.116

NOTE d: The tuning screw shall be lubricated with oilrag or equivalent non-corrosive lubricant. It shall be capable of being operated smoothly through its entire range without perceptible binding.

NOTE e: The base shall be capable of being inserted in a gage 1-7/32 thick having 4 holes 1/4 deep from the top of the gage whose diameters are .103 for the contact pins. Remaining portion of hole to be clearance, approximately 1/64 larger in diameter and a fifth hole whose diameter .160 - 1-7/32 deep for the output lead. All holes located on the true center. Also a center hole having the contour of the pilot but with a clearance of .002 over the maximum diameter.

\*\*NOTE f: Nickel (30 MSI silver plate permissible).

NOTE g: All dimensions are in inches, unless otherwise specified.