VALVE ELECTRONIC

C V 3958.

ADMIRALTY SURFACE WEAPONS ESTABLISHMENT

Specification AD/CV3958 incorporating MIL-E-1/770	SECURITY	
	Specification	Valve
Issue 1 Dated 3-3-59	Unclassified	Unclassified
To be read in conjunction with K1006		

TYPE OF VALVE: Tunable Magnetron, Pulse type.

CATHODE: Indirectly Heated.

ENVELOPE: Metal-Glass.

PROTOTYPE: 5657

MARKING

See K1001/4.

Additional marking 5657.

RATING

(All limiting values are absolute)

			Note
Heater voltage	(V)	16.0	
Heater current	(A)	3.1	
Frequency range	(Mc/s)	2900 to 3100	
Frequency pulling (Max.)	(Mc/s)	15	
R.F. Bandwidth (Max.)	(Mc/s)	2.5	
Magnetic Field Strength		2700	A
Output power (Min.)	(W)	400	

CONNECTIONS

See Note A below.

DIMENSIONS

See Note A below.

NOTES

A. The drawing 242-JAN shows connections and dimensions and also details regarding the magnetic field. Copies of this drawing can be obtained on application to the Specifying Authority.

NOTE

This specification refers to the American 5657 and only data and tests for this valve shall apply.

CV3958

MIL-E-1/770
16 July 1954

INDIVIDUAL MILITARY SPECIFICATION SHEET

ELECTRON TUBE, MAGNETRON, TUNABLE FREQUENCY, PULSE TYPE

JAN-5586, 5657

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

Ratings:	Ef	epy	ib	pi	Pi	tk	Du	tp	Anode T	Alt.
Absolute	V	kv	a	kw	W	sec	---	us	°C	ft.
Maximum:	16.0±10%	Note 1	70	Note 2	Note 3	---	.001	2.5	100	10,000
Minimum:	---	---	---	---	---	120	---	---	---	

Pulsing Service Note 8 **Cathode: Oxide Coated Unipotential

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

Ref.	Test	Conditions	Min.	Max.
3.1	Qualification Approval:	Required for JAN Marking		
4.5	Holding Period:	t=168 hours		
4.8	Insulation of Electrodes:	Omit		
4.9.18.1.8	Carton Drop:	(1)Package Group 9; Carton Size E		
4.9.8	**Salt Spray Corrosion:	Omit		
4.9.19.1	*Vibration:	No voltage		
4.9.19.2	**Vibration:	No voltage		
4.9.2	Dimensions:	Per drawing 242-JAN		
3.7.1.3	Marking:			
4.16.1	**Cooling:			
4.9.13	Pressurizing:	40 to 45 lbs/sq. in. (absolute)		
4.10.8	Heater Current:	Ef=16.0V	If: 2.8	3.4 A
4.16.3	Oscillation(1):			
---	Coupling:	Per drawing 242-JAN		
4.16.3.1	Magnetic Field:	H=2700 gauss;Coil No. 400; Pole Tip 1.8 in. +.005 -.000;Note 4		
4.16.3.2	Heater:	tk=120(max) at Ef=16.0V; Ef=10.0V for test		
4.16.3.3	Pulse Characteristics:	tp=0.9 to 1.1 us;Du=.0005; trv=0.1 to 0.2 us		
4.16.3.4	Average Anode Current:	Ib=35mAdc		
	Standing Wave Ratio:	≤1.15/1 (max)		
4.16.3.5	Pulse Voltage:	F1,F2,F3; Note 5	5586 epy: 27	32 kv
			5657 epy: 27.5	32.5 kv

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Ref.	Test	Conditions		Min.	Max.
4.16.3.6.2	Power Output:	t=300(max); F1,F2,F3; Note 5	Po:	400	— W
4.10.7.3	Frequency:	Note 6	5586 F:	2700	2900Mc
			5657 F:	2900	3100Mc
4.16.3.7	$\frac{1}{f}$R.F. Bandwidth:		Bandwidth:	—	2.5 Mc
4.16.5	*Pulling Factor:	Ib=20 to 35mAdc	ΔF:	—	15 Mc
4.16.7	Stability:	Note 7			
4.16.3	Oscillation(2):				
—	Coupling:	Per drawing 242-JAN			
4.16.3.1	Magnetic Field:	H=2700 gauss; Coil No. 400; Pole Tip 1.8 in. $^{+.005}_{-.000}$; Note 4			
4.16.3.2	Heater:	tk=120(max)at Ef=16.0V; Ef=10.0V for test			
4.16.3.3	Pulse Characteristics:	tp=1.8 to 2.2us; Du=.0006; trv=0.1 to 0.2 us			
4.16.3.4	Average Anode Current:	Ib=35mAdc			
	Standing Wave Ratio:	$\leq$1.15/1(max)			
4.16.3.6.2	Power Output:	t=300(max); F1; Note 5	Po:	400	— W
4.9.14	**Temperature Coefficient:	F1,F2,F3;T=60°C-90°C; Note 5	ΔF:	—	.07Mc/°C
4.9.15	**Low Temperature:	tk=180(max);F2;Note 5			
4.16.7	Stability:	Note 7			
4.11	Life Test:	Group D; Osc.(1)	t:	500	— hrs
4.11.4	Life Test End Point:	Osc.(1)	Po:	320	— W
			Bandwidth:	—	2.5 Mc

Note 1: epy=30kv for 5586; 32.5 kv for 5657.

Note 2: pi=2000 kw for 5586; 2200kw for 5657.

Note 3: Pi=1200W for 5586; 1300W for 5657.

Note 4: The magnetic field should be calibrated in accordance with the following procedure:

a. With a conventional 1/8 inch pole piece attached to the pole face of the magnet opposite the magnetron tuner as per drawing 242-JAN, figure (a), the magnetic gap should be 1.800 inches.

b. The magnetic field should then be adjusted for 2700 gauss at the center of the gap.

c. Remove the conventional 1/8 inch pole piece and replace it with the distortion pole piece shown in figure (b) on drawing 242-JAN.

Note 5: F1=2700Mc for 5586; 2900Mc for 5657.
F2=2800Mc for 5586; 3000Mc for 5657.
F3=2900Mc for 5586; 3100Mc for 5657.

Note 6: Mechanical tuning. The tube must cover the indicated frequency band.

Note 7: The tube is considered to be operating stably when the average current is constant, showing no appreciable kicks which are accompanied by flicker in a neon lamp used as an indicator of rf output, or by wide variations in the oscilloscope trace of input current or voltage. Stable operation shall be demonstrated over the last 30 seconds of a test interval not to exceed 5 minutes.

Note 8: During high voltage operation, it is essential to operate the heater according to the following schedule:

Pi (watts)	Ef(Volts)
1000 - 1200	8
800 - 1000	10.5
600 - 800	13
400 - 600	15
Less than 400	16

The above schedule is valid only for repetition rates of 300 pps or greater.

Note 9: Reference specification shall be of the issue in effect on the date of invitation for bid.