

SERVICES VALVE TEST LABORATORY

CV 5135

Specification AD/CV.5135 incorporating MIL-E-1/495A. Issue No. 2 dated 4.8.61. To be read in conjunction with K.1006.	<u>SECURITY</u>	
	<u>SPECN.</u> Unclassified	<u>VALVE</u> Unclassified

<u>TYPE OF VALVE</u>	Magnetron, pulsed, fixed frequency with integral magnet.	<u>MARKING</u>		
<u>CATHODE</u>	Indirectly heated	See K.1001/4.		
<u>ENVELOPE</u>	Metal-glass	Additional marking 6027		
<u>PROTOTYPE</u>	6027			
<u>RATINGS</u>		<u>CONNECTIONS</u>		
		<u>NOTE</u>		
Heater voltage nominal	(V)	6.3	A	See drawing on page 3.
Heater current nominal	(A)	0.5		
Operating frequency nominal	(Mc/s)	9345 to 9405		
Max. pulse voltage	(kV)	8		<u>DIMENSIONS</u>
Max. pulse current	(A)	8		See drawing on page 3.
Max. mean input power	(W)	80	B	
Max. pulse length	(μ S)	2.5		<u>MOUNTING POSITION</u>
Max. duty cycle		.0025		Any
Max. frequency pulling	(Mc/s)	15		

NOTES

- A. For warm-up time and heater voltage during operation see Note 1 on Page 2.
- B. The valve is intended for convection air cooling; the anode temperature should not be allowed to exceed 120°C.

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 SUPERSEDING
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INDIVIDUAL MILITARY SPECIFICATION SHEET

ELECTRON TUBE, MAGNETRON, FIXED FREQUENCY, PULSED WITH INTEGRAL MAGNET

JAN-6027

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:	6.3 \pm 10%	8.0	8.0	64	80	—	.0025	2.5	120	10,000
Minimum:	—	6.0	3.5	21.0	—	120	—	—	—	—

Note 1

Mounting Position: Any

Cooling: Convection air cooled

**Cathode: Unipotential oxide coated

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 (min.)		
4.9.13	Pressurizing:	45 psi absolute (min.)		
4.9.2	Dimensions:	Per outline		
4.9.18.1.8	Carton Drop:	(1) Package Group 9; Carton Size A		
4.9.19.1	*Vibration:	No Voltage		
4.9.19.2	**Vibration:	No Voltage		
4.10.8	Heater Current:	Ef = 6.3V; tk = 120 (min.)	If: .43	.60 A ←
4.16.1	**Cooling	Per outline		
4.16.3	<u>Oscillation (1):</u>			
—	Coupling:	UG-40A/U		
—	Standing Wave Ratio:	$\rho = 1.15/1$ (max.)		
4.16.3.2	Heater:	Ef = 6.3V; Note 1; tk = 120 (min.)		
4.16.3.3	Pulse Characteristics:	tp = 1.0 μ s; Du = .001; rrv = 60kv/us (min.); Note 3		
4.16.3.4	Average Anode Current:	Ib = 7.5 mA dc		
4.16.3.5	Pulse Voltage:		epy: 6.4	7.4 kv
4.16.3.6.1	Power Output:	t = 300 (max.)	Po: 18	— W
4.10.7.3.1	Frequency:	Temp. of Anode Block 40° \pm 5°C; Note 5	F: 9345	9405 Mc
4.16.3.7	RF Bandwidth:	Ib = 5-7.5 mA dc	B.W.: —	$\frac{2.5}{tp}$ Mc
—	*Dynamic Impedance:	Ib = 5.5-7.5 mA dc	Δ epy: .20	— kv
—	Stability:	Note 4	M.P.: —	.25 %

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<u>Ref.</u>	<u>Test</u>	<u>Conditions</u>	<u>Min.</u>	<u>Max.</u>
4.16.3	<u>Oscillation (2):</u>			
—	Coupling:	UG-40A/U		
—	Standing Wave Ratio:	$\sigma \leq 1.15/1$ (max.)		
4.16.3.2	Heater:	Ef=6.3V; Note 1, 2		
4.16.3.3	Pulse Characteristics:	tp=1.0±.1 us; Du=0.002; rrv=60 kv/us (min); Note 3		
4.16.3.4	Average Anode Current:	Ib=7.0 mAdc		
4.16.3.5	Pulse Voltage:		epy: 6.0	7.0 kv
4.16.3.7	RF Bandwidth:	Ib=7.0mAdc	B.W.: —	$\frac{2.5}{tp}$ Mc
4.16.5	Pulling Factor:	Ib=7.5mAdc; Osc.(1)	ΔF: —	15 Mc
4.19.14	**Thermal Factor:	Note 5	ΔF/ΔT: —	-.25 Mc/°C
4.9.15	**Low Temperature Operation:	tk=180(max.); Note 5		
4.11	Life Test:	Ef=3.0V; Group D; Osc. (2)	t: 250	— hrs
4.11.4	Life Test End Point:	Osc. (1)	Po: 13.5	— W
			B.W.: —	3.0 Mc
			F: 9345	9405 Mc
			M.P.: —	1.0 %

Note 1: The cathode heating time shall be a minimum of 120 seconds at temperatures greater than 0°C and a minimum of 180 seconds at temperatures between 0°C and -55°C. For duty cycle greater than .001, reduce heater voltage according to manufacturer's recommendations.

Note 2: Reduce heater voltage to 4.5 volts three seconds after applying high voltage.

Note 3: The rate of rise of the voltage pulse shall be measured according to the Radiation Laboratory standard practice using a pulse differentiator. (MIT Report No. 523)

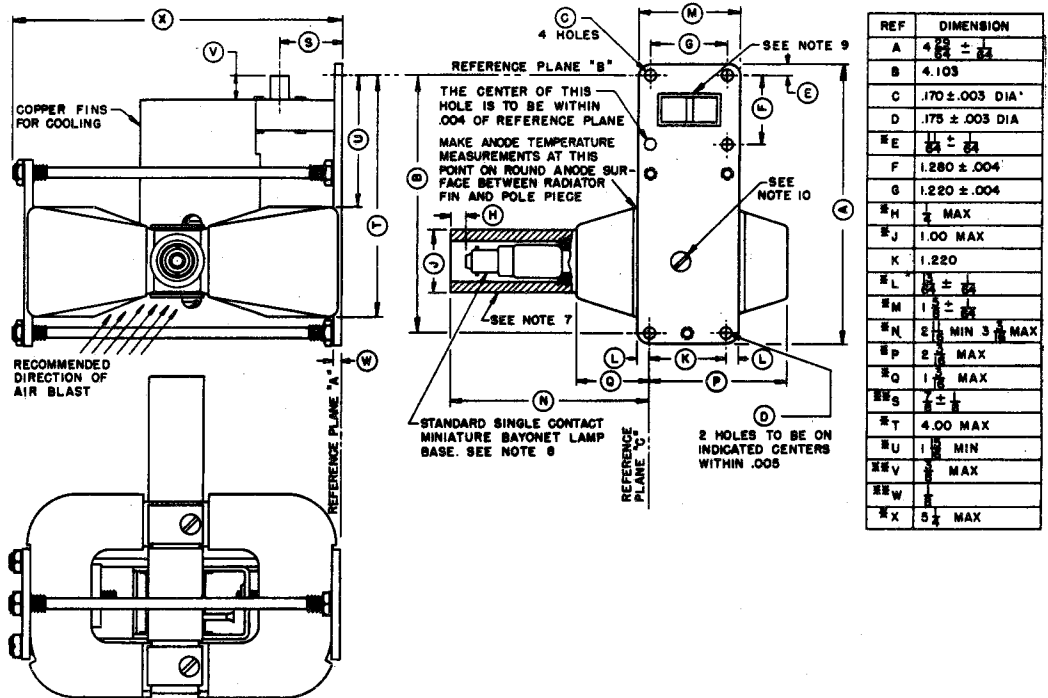
Note 4: Stability shall be measured in terms of the average number of output pulses missing, expressed as a percent of the number of input pulses applied during the period of observation. Pulses, due to any causes, are considered to be "missing" if the r.f. energy is less than 70 percent of the energy level in the frequency range of 9345 to 9405 megacycles. The number of missing pulses shall not exceed 1/4 percent of the applied pulses during any consecutive 5 minute interval of a 15 minute test period.

Note 5: The anode temperature shall be measured at the point indicated on the outline drawing.

Note 6: Reference specification shall be of the issue in effect on the date of invitation for bids.

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- NOTE 1:
REFERENCE PLANE "B" PASSES THROUGH THE CENTERS OF THE TWO TOP HOLES OF THE MOUNTING PLATE AS SHOWN AND IS PERPENDICULAR TO PLANE "A".
- NOTE 2:
REFERENCE PLANE "C" PASSES THROUGH THE UPPER LEFT HOLE ON MOUNTING PLATE AS SHOWN AND IS MUTUALLY PERPENDICULAR TO PLANES "A" AND "B".
- NOTE 3:
SURFACE "A" WITH TUBE RESTING ON A FLAT SURFACE, A FEELER GAUGE .020 THICK AND 1/8 WIDE SHALL NOT ENTER MORE THAN 1/8 AT ANY POINT.
- NOTE 4:
THE POSITION OF WAVE GUIDE HOLE IS NOT SPECIFIED ON THIS DRAWING SINCE TUBES ARE TESTED AND USED INTO COUPLER UG-40A/U.
- NOTE 5:
SURFACE "A" AND INTERIOR SURFACES OF WAVE GUIDE SHALL BE PLATED 10 MBI OF GOLD OR 30 MBI OF SILVER.
- NOTE 6:
ALL METAL SURFACES EXCEPT SURFACE "A" AND THE BAYONET BASE SHALL BE PAINTED BLACK.
- NOTE 7:
THE AXIS OF THE FILAMENT LEAD PROTECTOR MUST BE WITHIN 5° OF A NORMAL TO REFERENCE PLANE "C".
- NOTE 8:
THE CLEARANCE BETWEEN THE INSIDE SURFACE OF THE PROTECTOR AND THE 3/8 DIAMETER CYLINDRICAL SURFACE OF THE BAYONET BASE SHALL NOT BE LESS THAN 1/8.
- NOTE 9:
THIS AREA IS GASKETED FOR PRESSURIZING WAVE GUIDE OUTPUT AS WITH COUPLER UG-40A/U.
- NOTE 10:
SOFT SOLDER TO BE USED. AS AN ALTERNATE, TIP OF SCREW MAY BE SOLDERED.