

ADMIRALTY SURFACE WEAPONS ESTABLISHMENT

CV6114

Specification AD/CV6114 Issue No. 1 dated 1st October 1964. To be read in conjunction with K.1006	<u>SECURITY</u>	
	<u>Specification</u> Unclassified	<u>Valve</u> Unclassified

<u>TYPE OF VALVE:</u> Tunable Packaged Magnetron for pulsed operation. <u>CATHODE:</u> Indirectly heated. <u>PROTOTYPE:</u> CV2421 (VX8222C)		<u>MARKING</u> See K.1001/4	
<u>RATINGS</u> (All limiting values are absolute)		<u>DIMENSIONS</u> See Drawing on Page 4.	
		<u>NOTE</u>	
Heater Voltage}	(V)	6.3 ± 0.6	A
Nom. Heater Current	(A)	1.2	
Max. Peak Anode Voltage	(V)	1150	
Min. Peak Anode Voltage	(V)	950	
Max. Peak Anode Current	(mA)	150	
Min. Peak Anode Current	(mA)	100	
Max. Duty Cycle		0.05	
Max. Pulse Length	(μSec.)	5	
Max. Mean ^{Anode} Input Power	(W)	6	B
Nom. Peak Output Power	(W)	20	
Tuning Range}	(Mc/s)	9150- 9550	
Rate of Rise of Pulse Voltage}	(kV/μSec.)	6	C
<u>NOTES</u> A. The heater voltage shall be applied at least 2 minutes before the application of Anode voltage. B. Anode block temperature shall not exceed 140°C. C. Manufacturing tests guarantee operation with rates of rise of voltage (r.r.v.) up to 6 kV/μSec. Operation with r.r.v. up to 14 kV/μSec. is permissible under certain circumstances. (Reference should be made to the Approval Authority.) The r.r.v. shall be determined using an oil filled differentiator of approved design. (See K.1001 App. XIV.) D. The Joint Services Catalogue Number is:- 5960-99-037-3145			

Amr. 1

TUNABLE PACKAGED MAGNETRON FOR PULSED OPERATION

Ratings:	Ef	epy	ib	Du	Pi	tk	tp	p.r.r.	r.r.v.	Anode T	v.s.w.r.
Absolute:	V	V	mA		W	secs.	uSecs.	pp.s.	kV/uSec.	°C	
Maximum:	6.3 ±0.6	1150	150	0.05	6	-	-	-	NOTE C	140	-
Minimum:		950	100	-	-	120	-	-	-	-	-
Test Conditions:	6.3	-	140	-	-	-	0.5	2000	6	-	1.1

REF.	TEST	TEST CONDITIONS	INSP. LEVEL	SYMBOL	LIMITS		UNITS
					MIN.	MAX.	
4.5.	Holding period Vibration	t = 28 days 2.5g at 170 c/s for 60 secs. no voltages. Note 9.	100% Q.A.				
4.9.14.	Temperature Co-efficient	F1 and F3. Notes 1 and 12	Q.A.	$\Delta F/\Delta T$	-	3	Mc/°C
4.10.8.	Heater Current	Ef = 6.3V ib = 0 tk = 120 secs. min.	100%	If	1.1	1.3	A
4.16.3.5.	Pulse Voltage	F1, F3. Note 1	100%	epy	960	1140	V
4.16.3.6.	Mean Power Output	F1, F2 , F3 Note 1	100%	Po	17	-	mW
4.16.3.7.	R.F. Bandwidth Minor lobes	F1, F2 , F3 Notes 1 and 2	100%	BW Ratio	- 6	5	Mc/s dB
4.16.5.	Pulling Factor	F1, F3. Notes 1 and 3.	100%	ΔF	-	25	Mc/s
4.16.6.	Pushing Factor	ib = 100/150 mA F2. Note 1.	100%	ΔF	-	1	Mc/s/mA
4.16.7.	Stability	ib = 100, 125 & 150 mA F1, F2, F3 Notes 1 and 4	100%		-	-	
	R.F. Leakage	F2. Notes 1 and 5	100%		60	-	dB
	Tuner Drive Torque	F1-F3. Notes 1 and 6.	100%	Torque	-	2	lb ins.
	Tuner Travel	F1-F3. Notes 1 and 7.	100%		-	7.5	mm
	Tuning Rate	F1-F3. Notes 1 and 8	100%		4.25	7.05	Turns
	Tuner Over- Run	Notes 1 and 13	100%		-	-	
4.11	Tuner Life Test	Note 14	Q.A.	t	24	-	hours
4.11.4.	Life Test (Long)	F2. Notes 1 and 10		t	500	-	hours
	Life Test End Point, Power Output			Po	15		mW
	Stability	F1, F2, F3 Notes 1 and 4			-	-	
4.11.	Life Test (Short)	F2. Notes 1 and 11		t	20	-	hours

NOTES

1. $F1 = 9150 \text{ Mc/s.}$ $F2 = 9375 \text{ Mc/s.}$ $F3 = 9550 \text{ Mc/s.}$
2. The r.f. bandwidth measured at $\frac{1}{2}$ power points and all minor lobes shall be within the limits specified, when measured on an r.f. spectrum analyser.
3. The pulling figure shall be measured using a mismatch which gives a v.s.w.r. of 1.5:1 varied through all phases.
4. During the Stability Test the valve output shall be viewed on a spectrum analyser while a mismatched load of v.s.w.r. 1.5:1 is varied through all phases.

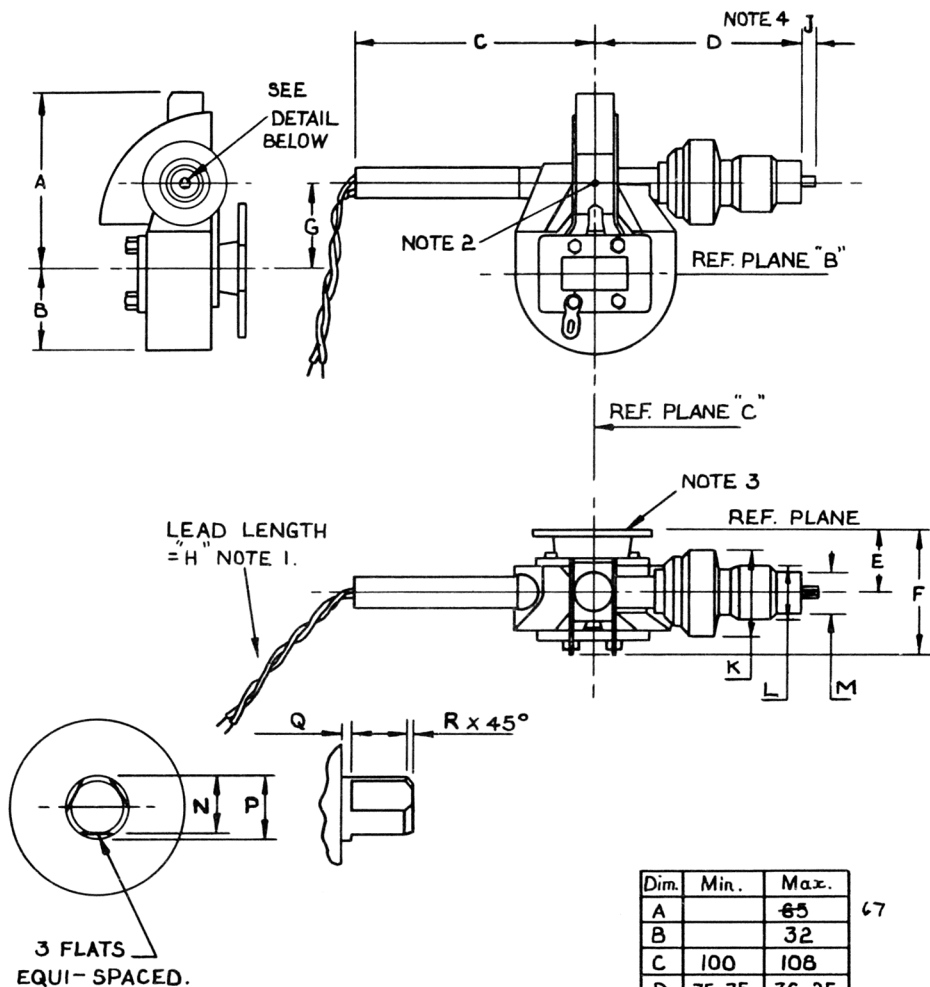
There shall be no evidence of missing lines or any other evidence of instability on the spectrum.
5. The r.f. leakage from any part of a valve or its coupling, shall be at least 60 dB below the power output of the valve. Measurement to be made using a waveguide pick-up of nominal inside dimensions 0.4" x 0.9".
6. The torque required to tune the valve smoothly over the frequency range $F1$ to $F3$, shall not exceed that specified.
7. The total axial travel of the tuning thimble required to tune the valve over the frequency range $F1$ to $F3$, shall not exceed that specified.
8. The number of turns of the tuning thimble required to tune the valve over the frequency range $F1$ to $F3$, shall be within the specified limits.
9. The directions of vibration to be:

(i) Perpendicular to the plane of the flange.

(ii) Parallel to the plane of the flange and to its narrower edges.

Valve shall operate within specification limits after this test.

10. One valve to be tested per year.
11. One valve to be tested per month, valve to be within specification after test.
12. Temperature range for this test shall be 25°C to 55°C .
13. The tuning thimble shall rotate at least one half turn beyond the lower and upper frequencies $F1$ and $F3$.
14. The valve shall be continuously tuned over its full frequency range at a nominal tuning rate of 37 revs. per min. Valve to be within specification after test.



Dim.	Min.	Max.	
A		65	67
B		32	
C	100	108	
D	75.75	76.25	
23 E	23.5	25.5	26
F		57	
31 G	29	33	35
H	125	135	
J	6	7	
K		32	
L		22.6	
M		15.8	
N	4.95	5.2	
P	5.53	5.58	
Q		1	
R	.25	.50	

NOTES:

1. HEATER LEAD RED, CATHODE LEAD BLUE.
2. ANODE TEMP. MEASURING POINT.
3. FLANGE REF. Z830004 TO BE FITTED WITH FEMALE RING.
4. DIMENSION D MEASURED WITH FREQUENCY SET TO 9550 Mc/s.
5. THE AXIS OF THE TUNING THIMBLE MAY DESCRIBE A CIRCLE NOT GREATER THAN 0.37mm DIA. AS THE THIMBLE IS ROTATED.

ALL DIMENSIONS IN MM.

ELECTRONIC VALVE SPECIFICATIONS
SPECIFICATION AD/CV 6114, ISSUE No. 1,
DATED 1st October, 1964
AMENDMENT No. 1

1. Page 1. Ratings

Amend "Max. Mean Input Power" to read "Max. Mean Anode Input Power." ✓

2. Page 2. REF.'s 4.16.3.6 and 4.16.3.7.

In the column headed 'Test Conditions' delete "F2" in both instances. ✓

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/3.

3. Page 4. Table of Drawing Dimensions

Dimension A. Delete Max '65' and substitute '67'.

Dimension E. Amend Min. '23.5' and Max. '25.5' to read '23' and '26' respectively.

Dimension G. Amend Min. '29' and Max. '33' to read '31' and '35' respectively.

January 1965

T.V.C. for A.S.W.E.

✓ AM