Valve Electronic CV6225

Specification MinTech/CV6225 Issue 1 dated June 1968 To be read in conjunction with K1001	SECURITY Specification: Unclassified Valve: Unclassified

TYPE OF VALVE: Pulse magnetron complete with permanent magnet. Tunable over 5400-5900 MHz

CATHODE: Indirectly Heated

PROTOTYPE: DDS426, YJ1030

MARKING
K1001/4

Additional Marking
Serial No.

ABSOLUTE, NON-SIMULTANEOUS RATINGS
(Not for inspection purposes)

		Min.	Max.	Notes
Peak Anode Voltage	(kV)		1.5	
Pulse Anode Current	(A)	0.6	1.0	
Mean Input Power	(W)		3.0	
Duty Cycle			0.002	
Pulse Duration	(μS)		3.0	
Pulse Repetition Frequency	(pps)		4000	
Rate of Rise of Voltage	(kV/μS)		8.0	
Load Mismatch (VSWR)			1.5	
Temperature of Anode Block	(°C)		100	B
Cathode Heating Time	(s)	30		A

DIMENSIONS
See drawing, page 5

CONNECTIONS

Heater/Cathode	:	Black lead
Heater	:	Red lead
Out put	:	Via 50 ohm TNC plug

MOUNTING POSITION
Any

COOLING
See Note B

TYPICAL OPERATING CONDITIONS

		Min.	Nom.	Max.	Notes
Heater Voltage	(Vrms)	4.5	5.0	5.5	
Heater Current	(A rms)		0.5		
Tuning Range	(MHz)	5400		5900	
RF Pulse Power Output	(W)	70	100		

NOMINAL WEIGHT
8oz.(0.23kg.)

PACKAGING
K1005

JOINT SERVICES CATALOGUE NO.
5960-99-037-5756

NOTES

A. The heater voltage must be applied at least 30 seconds before the application of anode voltage.

B. Sufficient cooling air must be supplied to ensure that the temperature of the anode block does not exceed 100°C.

TESTS

To be performed in addition to those applicable in K1001

Test Conditions (unless otherwise specified)

Heater Voltage	5.0	V
Mean Anode Current	1.6	mA
Pulse Duration	1.0	µS
Duty Cycle	0.002	
Rate of Rise of Voltage	8.0	kV/µS
Load V.S.W.R.	1.1 max	

K1001 Ref.	Test	Test Conditions	AQL %	Insp. Level	Limits Min.	Limits Max.	Unit	Note
16.3.7	(a) Holding Period	No voltages	-	100%	7	-	days	
5.F.2.2.2	(b) Heater Current	Vf only(5V)	-	100%	0.45	0.60	A	1
5.F.1.1.2	(c) Pulse Voltage	f=5400 MHz	-	100%	1025	1350	V	
		f=5650 MHz	-	100%	1025	1350	V	
		f=5900 MHz	-	100%	1025	1350	V	
5.F.1.5	(d) Peak Power Output	f=5400 MHz	-	100%	70	-	W	2
		f=5650 MHz	-	100%	70	-	W	2
		f=5900 MHz	-	100%	70	-	W	2
5.F.1.9	(e) Frequency Pulling	f=5400 MHz	-	100%	-	12	MHz	3
		f=5900 MHz	-	100%	-	12	MHz	3
5.F.1.10	(f) Frequency Pushing	f=5650 MHz	-	100%	-	15	MHz/A	4
5.F.1.12	(g) Stability	f=5400 MHz	-	100%	-	0.25	%	5, 6
		f=5650 MHz	-	100%	-	0.25	%	5, 6
		f=5900 MHz	-	100%	-	0.25	%	5, 6
	(h) Frequency Setting	f=5400 MHz	-	100%	-	±2	MHz	7
		f=5650 MHz	-	100%	-	±2	MHz	7
		f=5900 MHz	-	100%	-	±2	MHz	7
	(j) Frequency Locking	f=5650 MHz	-	100%	-	±4	MHz	8
5.F.1.11	(k) R.F.Bandwidth	f=5400 MHz	-	100%	-	2.5	MHz	9
		f=5650 MHz	-	100%	-	2.5	MHz	9
		f=5900 MHz	-	100%	-	2.5	MHz	9
	(l) Minor Lobes	f=5400 MHz	-	100%	6	-	dB	9, 10
		f=5650 MHz	-	100%	6	-	dB	9, 10
		f=5900 MHz	-	100%	6	-	dB	9, 10

K1001 Ref.	Test	Test Conditions	AQL %	Insp. Level	Limits Min.	Limits Max.	Unit	Note
	(m) Temperature Coefficient	f=5650 MHz Body Temp. 60–100°C	–	Note 11	–	0.1	MHz/°C	11,12
	(n) Vibration	f=5650 MHz	–	Note 11	–	6	MHz	11,13
	(p) Acceleration	f=5650 MHz	–	Q.A.	–	2	MHz	14
	(q) Life	f=5650 MHz t=250 hours	–	Note 15				15
	Life Test End Point Peak Power Output	As for test d f=5650 MHz	–	–	50	–	W	

NOTES

1. The heater current is to be read 45 seconds after the application of the heater voltage.
2. The power output may be measured as mean power output using a limit of 140W min.
3. For this test the V.S.W.R. shall be 1.5:1, varied through all phases.
4. Frequency pushing is defined as the average frequency change per amp. when the peak anode current is changed directly from 0.75A to 0.85A, precautions being taken to avoid thermal effects.
5. For this test the anode voltage is to be applied not more than 30 seconds after the application of heater voltage.
6. The number of missing pulses during a five minute operation period shall not exceed the specified limit. A pulse is considered to be missing if the R.F. energy is less than 70% of its normal energy level within the spectrum envelope. Alternatively, there shall be no double trace on the current pulse or the spectrum shall show no signs of instability when viewed on an R.F. spectrum analyser, when a mismatch of 1.5:1 is varied through all phases.
7. The tuning mechanism shall be such as to allow the frequency to be set to within 2 MHz of the specified value.
8. Locking of the tuning mechanism shall not result in a change of frequency greater than the specified limit.
9. For this test the V.S.W.R. shall be 1.5:1 and the phase of the mismatch shall be set for maximum spectrum degradation.
10. The ratio of the height of the minor lobes to that of the main lobe shall not be less than the specified value.

NOTES
continued

11. Every twentieth valve is to be subjected to this test. If a failure occurs, another valve from the same production batch is to be tested, and if this is satisfactory, delivery shall continue but the defective valve shall be rejected and the Approval Authority shall be informed. If the second valve also fails, the next twenty valves shall be measured. If not more than one defective occurs in this series of twenty, inspection shall revert to every twentieth valve. If more than one defective occurs in the series, 100% inspection shall continue until a series of twenty with not more than one defective is obtained.

12. Temperature coefficient shall be measured in 10°C steps over the specified range. The slope of the plot of frequency against temperature in each of these steps shall not exceed the specified limit.

13. The valves shall be vibrated successively in three mutually perpendicular directions while being operated under the normal test conditions. In each direction there shall be three sweeps through the range of vibrating frequency as specified below.

    (a) Constant amplitude of 0.08 inches (2.0mm) total excursion over the frequency range 10 to 55Hz.

    (b) Constant acceleration of 12g over the frequency range 55 to 2000 Hz.

    The rate of change of frequency of vibration shall be four octaves per minute.

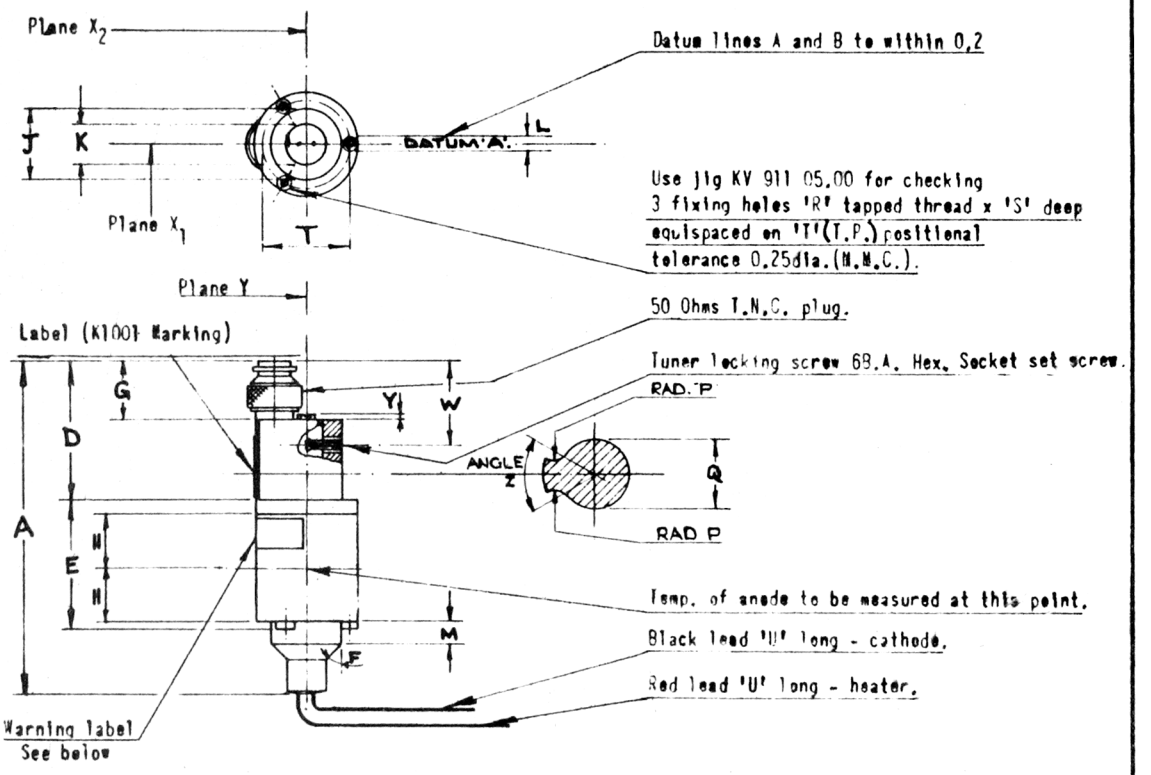
    The frequency deviation during the vibration shall not exceed the specified limit.

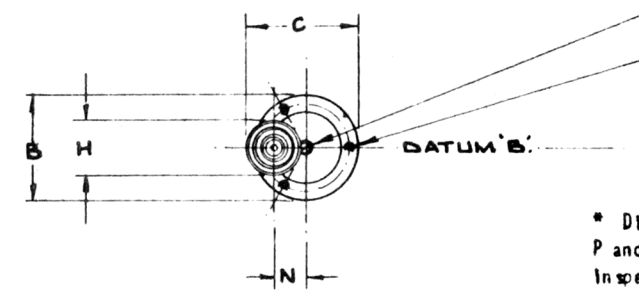
14. The valve is to be subjected to a sustained acceleration of 50g for at least 30 seconds in each of three mutually perpendicular directions, one of which shall be parallel to the longest dimension of the emitting surface of the cathode. During acceleration only the heater voltage is to be applied.

    The valve frequency shall be measured under normal operating conditions at the end of the test. Any permanent frequency drift shall not exceed the specified limit.

15. Every fiftieth valve shall be life tested. If the valve satisfies the requirements deliveries shall continue. If the valve fails to meet the requirements the action to be taken shall be discussed with the Approval Authority.

CV 6225





WARNING LABEL

CAUTION-MAGNETS
KEEP 4" AWAY FROM STEEL IRON OR MAGNETS

COLOURS: CHARACTERS BLACK
ON CANARY YELLOW BACKGROUND
(BS.381C, Colour No.309)

* Dimensions P and W to be inspected 100% on component parts, not on completed tube.

INSP.	DIM.	MIN.	MAX.
100%	A	100.0	103.5
100%	B	32.0	32.5
Q.A.	C	34.0	34.5
100%	D	43.0	44.5
100%	E	39.5	40.0
Q.A.	F	43°	50°
100%	G	17.8	18.2
100%	H		16.25
100%	J	21.8	22.5
Q.A.	K	12.5	13.0
Q.A.	L	4.4	4.6
Q.A.	M	7.0	8.0
Q.A.	N	9.75	10.25
100% *	P	4.7	4.9
100%	Q	21.1	21.4
Q.A.	R	No.6 — 32UNC	
Q.A.	S	4.0	4.5
Q.A.	T	27.0 T.P.	
100%	U	203	
100%	V	4.85	4.90
100% *	W	24.1	24.9
100%	Y	1.4	2.5
Q.A.	Z	74°	75°

1st ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH B.S. 308 1953.