MINISTRY OF SUPPLY - DLRD(A)/RRE (South) VALVE ELECTRONIC **CV2330**

Specification MOS(A)/CV2330 Issue 5 dated 22.5.58. To be read in conjunction with K1001 and BS.448	SECURITY	
	Specification	Valve
	UNCLASSIFIED	UNCLASSIFIED

→ Indicates a change

TYPE OF VALVE - Tunable Gas-filled TR Cell

PROTOTYPE - VX9106

MARKING

See K1001/4

RATING

			Note
Max. Primer Current	μA	75	A,B
Min. Primer Current	μA	50	
Operating Wavelength Range	mm	8.4 to 8.8	
TYPICAL OPERATING CONDITIONS (Note C)			
Nom. Peak Power	kW	20	
Nom. Mean Power	W	8	

CONNECTIONS & DIMENSIONS

See Drawing on Page 4.

TOP CAP

CT1
See BS.448: 6/1.1

NOTES

A. To each primer. Each primer shall be supplied from a source of negative potential

→ B. The primers may be operated from the same supply voltage using separate series resistors. Resistance should be adjusted so that primer current lies between 50 and 75 microamps. At least 2 megohms of this resistance shall be mounted adjacent to each primer.

Primer Operating Volts. 200 V min. 300 V max.
Minimum Primer Supply voltage. 1000 volts.

C. For operation with Magnetron, Type CV2350, VX5027 or VX9141 rated at a minimum peak power of 15 kW at a duty cycle of 0.004.

D. The gas-filling shall consist of water vapour at a pressure equivalent to 4-5 mm Hg, with additional argon to a total pressure equivalent to 27-30 mm Hg.

TESTS

To be performed in addition to those applicable in K1001

	Test Conditions	Test	Limits Min.	Limits Max.	No. Tested	Note
a	Cell shall be tuned for maximum power transmission. Measure the difference with and without the cell. Test wavelength = 8.8 mm.	Insertion Loss (db)	-	2.0	100%	1
b	Test wavelength = 8.8 mm.	VSWR	-	2.0	100%	1
c	Initially, test wavelength = 8.6 mm. For other test conditions see Note 2.	Loaded Q	-	150	10%	
d	Test wavelength = 8.4 mm. For other test conditions see Note 3.	High Power Leakage (i) Spike energy (erg/Pulse) (ii) Flat power (mW)	- -	0.045 25	100%	1 & 4
e	Line shall be energised with not less than 15-20kW peak RF. Test wavelength = 8.4 mm Tp = 0.2 µS ± 10% PRF = 2000 c/s ± 10% For other test conditions see Note 5.	Recovery Time (µsecs) (i) to 1 db (ii) to 3 db	 - -	 4 2	10%	
f	See Note 6	Life (hrs)	1500	-	1%	4 & 7

NOTES

1. The cell shall be operated in an approved test circuit. A suitable circuit is described in SERL (Harlow) Pre-production Report No. 1.

2. Test (b) shall be repeated at measured wavelengths within the range of λ = 8.4 mm to λ = 8.6 mm.

   A graph of VSWR shall be plotted against λ, and the loaded Q, Q_L is obtained from

$$Q_L = \frac{\lambda_o}{\lambda_1 - \lambda_2}$$

   where λ_o is the resonant wavelength of the cell.

   and λ_1 and λ_2 are the wavelengths at which VSWR = 5.8 (i.e. equivalent to half power through the cell).

3. Using a thermistor for which the correction factor is known, power leakage shall be measured with an instant R.F. pulse of 0.1 µsecond duration. The leakage power measured shall be expressed in ergs/pulse. ←

4. The required power necessary to perform this high power test shall be obtained using Magnetron, Type CV 2350, VX 5027 or VX 9141 (15-20 kW peak).

5. The conditions of test shall be as for Test (d) but using a pulsed klystron in addition. The amplitude of the pulse through the cell is measured as a function of time after the magnetron pulse.

   The sample shall be increased, if necessary, to include all cells which have a flat leakage of less than 2 mW.

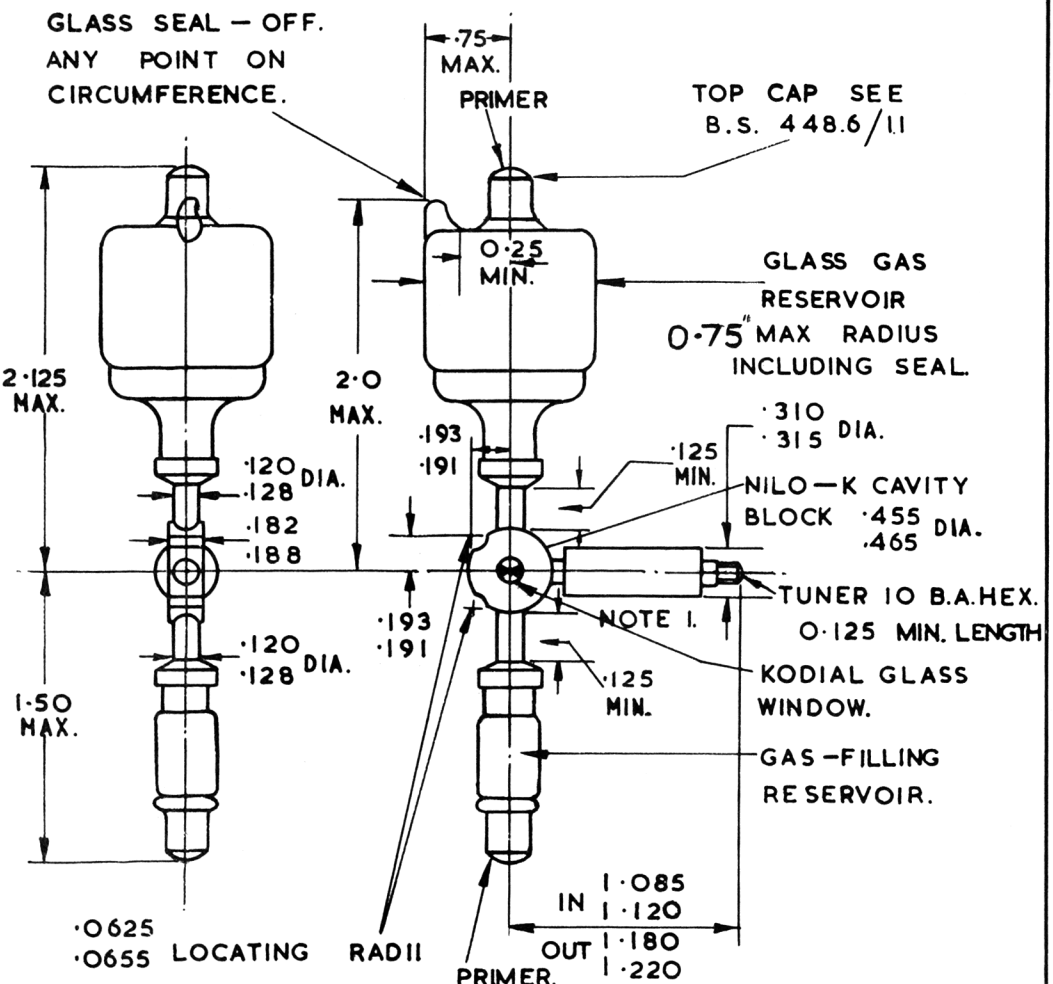
6. The cell shall be operated in an approved test circuit in a manner to simulate operational conditions. A suitable test circuit is described in SERL (Harlow) Pre-production Report No. 1.

7. End-of-life is defined as:

   (i) when a cell fails to satisfy the requirements of Test Clauses (a) and (d), performed at weekly intervals, or Test Clause (e), performed at monthly intervals:

   or (ii) when two successive Crystals, Type VX 3136 or VX 4107 placed behind the cell are burned-out within 100 hours of each other.

   A crystal shall be declared to have burned-out when the overall noise factor has increased by 2 db.



NOTE 1.

THE MAXIMUM DISPLACEMENT OF THE TUNING MECHANISM, WITH THE CELL HELD AGAINST EITHER FACE AND HELD ON THE LOCATING RADII SHALL BE 2°.

ALL DIMENSIONS IN INCHES EXCEPT WHERE SPECIFIED.