MINISTRY OF SUPPLY (R.R.E. (L.S.))

VALVE ELECTRONIC **CV 2181**

Specification MOS/CV2181 Issue 2. Dated 29th October 1954 To be read in conjunction with K1001	SECURITY Valve: Unclassified Specification: Unclassified

TYPE OF VALVE:- Broad Band T.R. Cell

PROTOTYPE:- VX4104

MARKING

As K1001/4 and with Serial No. .....

RATING			Note
Operating frequency	(Mc/s)	2750--2860	
Operating peak power	(MW)	1.25	
Operating mean power	(kW)	1.5	
Minimum primer supply voltage	(V)	1000	A
Primer current	(mA)	0.1	A

BASE

None

DIMENSIONS AND CONNECTIONS

See drawing page 4

PACKAGING

To the requirements of R.R.E.

REQUIREMENTS

Finish Flange faces to be silver or tin plated.

TOP CAP

As K1001/A1/D5.2

NOTES

A. The power supply for the primer electrode shall have an open circuit voltage of 1000 volts negative with respect to the body of the cell. The current shall be limited by a series resistance of 5.0MΩ A resistance of at least 1 megohm should be adjacent to the valve.

Z.7585.R.

To be carried out in addition to those applicable in K1001

	Test Conditions	Limits Min.	Limits Max.	No. Tested	Note
a	Voltage Standing Wave Ratio The voltage standing wave ratio to be measured with an applied power of less than 10 mW at frequencies of 2750, 2775, 2800, 2830 and 2860 Mc/s using a load behind the cell of V.S.W.R. not greater than 1.02.		1.20	100%	1
b	Low Level Insertion Loss and Primer Interaction (db) The insertion loss between matched impedances (V.S.W.R. $<$ 1.1) to be measured with an applied power of less than 10 mW at a frequency of 2800 Mc/s $\pm$ 1%. The change of attenuation when the primer current is switched off is to be measured.		1.0 0.1	100% T.A.	1
c	Primer Breakdown (secs) With an open circuit voltage of 1000 volts $\pm$ 20 volts applied to the primer electrode, breakdown time to be measured.		5	100%	1,2
d	Primer Operating Current (μA) The primer current to be measured after breakdown has occurred.	90		100% T.A.	1 1,5
e	High Power Leakage (1) Spike energy (ergs/pulse) (2) Flat power (mW peak)		0.25 75	100% 100%	3
f	Recovery Time The time to be measured from the trailing edge of the applied pulse for an insertion loss greater than that immediately before the applied pulse by:- (1) 6 db. (μ secs) (2) 2 db. (μ secs)		15 30	100% 5%	3
g	Low Power Leakage (mW peak) The total leakage through the cell to be measured as the applied power is varied from 100 mW to 100 watts. Other test conditions as in Note 3		500	T.A.	3

	Test Conditions	Limits Min.	Limits Max.	No. Tested	Note
h	Temperature Cycling The cell is to be stored at 70°C for one hour followed by one hour at room temperature, followed by one hour at -40°C. Tests c and d and e to be applied.			T.A.	

NOTES

1. The primer supply voltage to be 1000 volts ± 20 volts D.C. having a peak-to-peak ripple voltage not exceeding 1% and negative with respect to the body of the cell.
The supply to be connected to the primer electrode through a resistance of 5.0 megohms.

2. Test c to be made after a shelf life of 7 days and followed by tests d, e, f and g.

3. Frequency 2800 Mc/s ± 1%
Peak applied R.F. power 1.25 MW
Pulse length 1.25 μsecs. } or other approved
P.R.F. 1000 } rating
Primer supply voltage 1000 volts (see Note 1)

Where an alternative pulse length is used, a correction factor to the limits on tests e & f will be agreed with the manufacturer.

4. When life tests are carried out as laid down in Section 13 of K1001, end of life will be indicated by failure to meet tests a, b, d, e, f with the following relaxation of limits:-

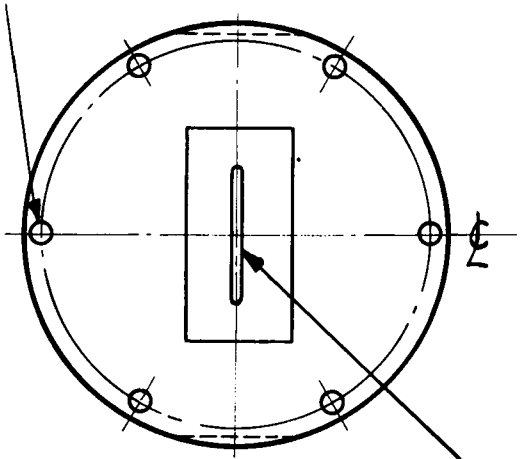
(a) V.S.W.R. max. 1.4
(b) Insertion loss max. 1.5 dbs.
(d) Primer operating current min. 75 μA.
(e) Separate spike and flat measurements using a flat cancellation method are not reliable. End of life will in this case be indicated by the total leakage (spike and flat) exceeding that allowable for a new valve e.g. 95 mW for a 1.25 μS pulse length.
(f) Recovery time 6 db. max. 22 μsec.
2 db. max. 45 μsec.

5. It shall be a condition of Type Approval that at the operating current
(1) there are no primer oscillations.
(2) the noise produced by the primer will not impair the performance of a receiver of 10 db noise factor by more than 0.2 db.

CV. 2181.

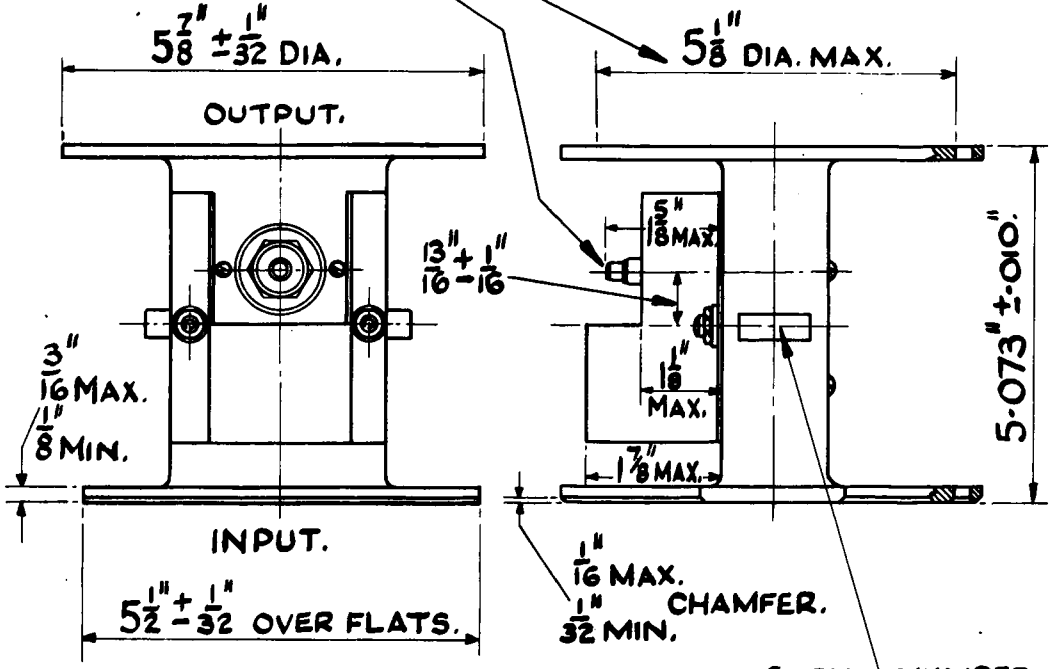
HOLES $\frac{.263"}{.257"}$ DIA. IN EACH FLANGE. HOLES MUST FIT OVER 6 PARALLEL PEGS EACH ·250" DIA. EQUALLY SPACED IN A GAUGE ON 5·375" P.C. DIA. CORRESPONDING PEGS OF SUCH A GAUGE WHERE APPLIED TO EITHER FLANGE, SHALL BE IN ALIGNMENT WITHIN ·020".

2 FACES FLAT AND PARALLEL WITHIN ·005" OVER THIS AREA. NO PORTION OF THE REMAINDER OF THE FLANGE SHALL PROJECT ABOVE THIS SURFACE.



EDGES OF INPUT AND OUTPUT WINDOWS TO BE FREE FROM BURRS.

TOP CAP. SEE K1001/A1/D5. 2.



SERIAL NUMBER STAMPED HERE.

THIRD ANGLE PROJECTION.