

MINISTRY OF SUPPLY - DLRD/RRE

VALVE ELECTRONIC CV2481

Specification MOS/CV2481 Issue 1 dated 17th June, 1958. To be read in conjunction with K1001	<u>SECURITY</u>	
	<u>Specification</u> Unclassified	<u>Valve</u> Unclassified

TYPE OF VALVE - Twin Primer, broad band TR Cell ENVELOPE - Metal and Glass PROTOTYPE - VX 3134	<u>MARKING</u> See K1001/4
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<u>RATING</u>	<u>Note</u>		<u>DIMENSIONS AND CONNECTIONS</u> See drawing on page 5
Operating Frequency Range (mc/s)	3490-3770		
Max Peak Power (kw)	30	A, B, E	
Min. Primer Supply voltage (v)	-950		
Max. Primer Current (μ A)	200	C	
Min. Primer Current (μ A)	100	C	
<u>TYPICAL OPERATING PERFORMANCE</u>			
Primer Voltage (v)	280	F	
Total Insertion Loss (dB)	0.6		
Spike leakage (ergs/pulse)	0.1B		
Recovery Time (μ sec)	5.0	D	
Primer Current (μ A)	150		

NOTES

- A. With duty cycle not greater than .0015
- B. High power operation can be achieved if the valve is preceded by a pre-T.R. Cell
- C. These figures apply to each primer individually. The primer current must be limited by series resistors of which 2.2 megohms is connected in the cap of the cell - see fig. 1.
- D. Time to recovery to 6dB of full signal.
- E. This is the power in the main run of a side arm T-junction.
- F. The quoted voltage is measured directly across each primer gap.

TESTS

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To be performed in addition to those applicable in K1001

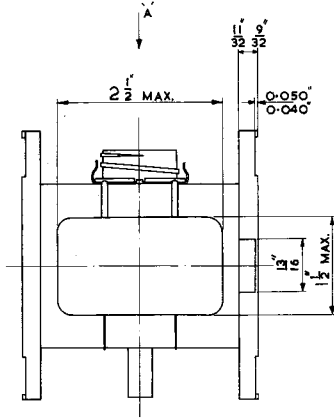
	Test Conditions	Test	Limits		No. Tested	Notes
			Min.	Max.		
(a)	Primer Supply Voltage = $-910V \pm 1\%$ connected through a total of 4.8 megohms nominal to each primer. Test shall be performed at least 7 days after any previous discharge.	<u>Primer Breakdown</u> (secs) Delay shall be measured between application of primer voltage simultaneously to each primer and the resulting breakdown.	-	15	100%	1
(b)	Primer currents to be 150 ± 10 uamps.	<u>Primer Operating Voltage (V)</u> The voltages of both primers with respect to the body to be measured.	200	400	100%	1,2.
(c)	The line shall be energised with $15 \pm 5mW$ R.F. power and terminated in a load of V.S.W.R. of not less than 0.98. Test to be conducted with zero primer currents and with primer currents of 150 ± 10 uamps.	V.S.W.R. Measured at 3490 ± 2 Mc/s 3560 ± 2 Mc/s 3630 ± 2 Mc/s 3700 ± 2 Mc/s 3770 ± 2 Mc/s	.83	-	100%	1,2.
(d)	The valve to be mounted between impedances of not less than 0.9V.S.W.R., the line shall be energised with $15 \pm 5mW$ R.F. power. Test frequency = 3630 ± 10 Mc/s. Primer currents to be 150 ± 10 uamps.	Insertion loss (db) -		0.8	100%	1,2.
(e)	Test frequency 3630 ± 140 Mc/s Power incident on T-junction 100 kW $\pm 10\%$ peak Pulse length 0.1 usec min. p.r.f. 500 pps. $\pm 10\%$ Primer Currents to be 150 ± 10 uamps.	<u>Spike energy</u> (ergs/pulse) -		.25	100%	1,2. 3,4. 5.

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	Test Conditions	Test	Limits		No. Tested	Notes
			Min.	Max.		
(f)	Test frequency 3630 ± 140 Mc/s Pulse length 0.9 usecs $\pm 10\%$. P.R.F. 500 pps. $\pm 10\%$. Primer Currents to be 150 ± 10 uamps.	<u>Low Power Leakage</u> (mW peak) The total leakage through the cell shall be measured as the incident power from a matched source is raised from 100 mW to 100 W peak.	1	150	100%	1,2,4.
(g)	Test frequency 3630 ± 140 Mc/s Power incident on T junction $100kW \pm 10\%$ peak. Pulse length 0.9 usec $\pm 10\%$ P.R.F. 500 pps. $\pm 10\%$. Primer currents to be 150 ± 10 uamps. The test frequency of the simulated echo pulse shall be 3630 ± 140 Mc/s and its power incident on the valve shall be insufficient to cause breakdown.	<u>Recovery time</u> (usec) The time shall be measured from the trailing edge of the transmitter pulse for an insertion loss exceeding that immediately before the transmitter pulse by 6db.	-	10	100%	1,2,3.
(h)	Test frequency 3630 ± 140 Mc/s. Power incident on T-junction $30 \pm 10kW$ peak. Duty cycle .0008 to .0012. <u>Life Test End Points</u> 1. V.S.W.R. 2. Insertion loss (db) 3. Spike Energy (ergs/pulse) 4. Recovery time (usec)	<u>Life</u> (hrs.)	500	-	T.A.	3,6,7.
<u>NOTES</u>						
<ol style="list-style-type: none"> The primer supply voltage shall be D.C. having a superimposed peak to peak ripple voltage of not more than 1% and be negative with respect to the body of the valve. The minimum open circuit voltage shall be 900 volts and the regulation shall be negligible at load currents up to 0.5 milliamps. The currents to the primers must be limited to the stated values by series resistors. To be measured on the side arm of a T-junction, the main arm of which must be terminated in an impedance of V.S.W.R. better than 0.9. The valve to be situated on the side arm such that the high power V.S.W.R. measured past the T-junction into the main termination is better than 0.8. 						

4. Measured with a thermistor head having a band width greater than 350 Mc/s at a V.S.W.R. of 0.67, centred on the magnetron frequency.
5. If the measured mean leakage power is p microwatts then,
$$\text{Spike Energy} = \frac{10p}{\text{P.R.F.}} \text{ ergs/pulse.}$$
6. The primer supply voltage for this test shall be 1000 volts \pm 3% and in all other ways shall conform to Note 1. The current to both primers to be limited by a total of 4.8 megohms \pm 5% resistance.
7. V.S.W.R. Insertion Loss, Spike Energy and Recovery Time shall be measured in accordance with the requirements of test clauses (c), (d), (e) and (g).

THIRD ANGLE PROJECTION.



SYM. TOL. $\pm \frac{1}{16}$ WIDE - DATUM ϵ .

NB. THE LOCATING KEYWAY IS ON THE OUTPUT FLANGE.

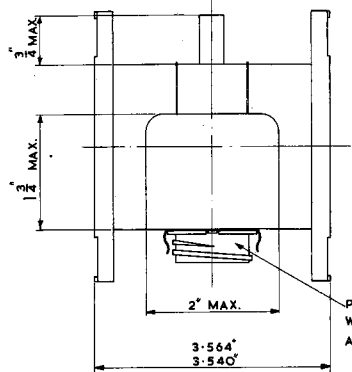
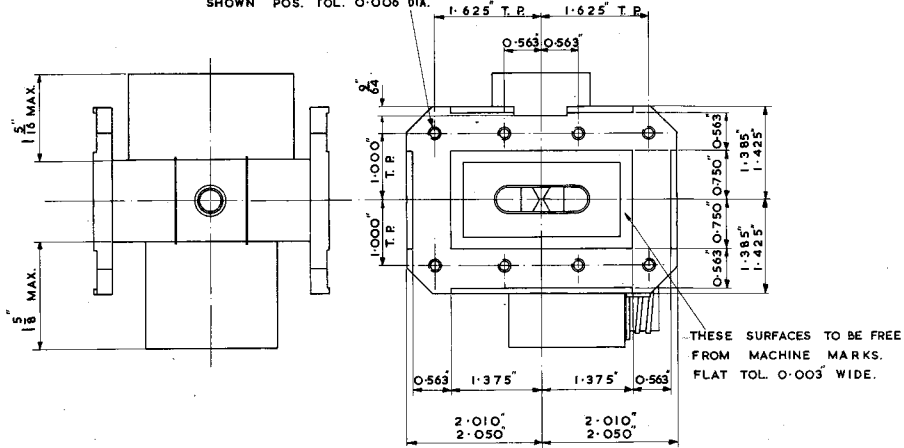
FINISH - COPPER FLASH 0.000" APPROX
NICKEL PLATE 0.001" THICK.

TOLERANCES - FRACTIONAL $\frac{1}{64}$ DECIMAL 0.005" UNLESS OTHERWISE STATED.

FOR EXPLANATION OF DIMENSIONS, SIGNS & SYMBOLS SEE B.S. 308. 195.

REF. RL. DRG. No. A 56-1634R.

8 HOLES TAP 2 B.A. SPACED AS SHOWN POS. TOL. 0.006" DIA.



VIEW ON 'A' SHOWING PLUG CONNECTORS.



PIN CONNECTIONS	
A	KEEP ALIVE - DIRECT
B	KEEP ALIVE 2.2 MΩ IN SERIES
C	KEEP ALIVE - DIRECT
D	KEEP ALIVE 2.2 MΩ IN SERIES
E	CASE
F	

OUTLINE DRAWING

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2.17968.R.