

<p><b>Specification</b> Mintech./CV6213</p> <p><b>Issue No.</b> 1 dated February 1968.</p> <p>To be read in conjunction with K1001 excluding clauses 5.2 and 5.8</p>	<p style="text-align: center;"><u>SECURITY</u></p> <table border="1"> <tr> <td>Specification</td> <td>Valve</td> </tr> <tr> <td>Unclassified</td> <td>Unclassified</td> </tr> </table>	Specification	Valve	Unclassified	Unclassified						
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Unclassified	Unclassified										
<p style="text-align: center;">→ indicates a change</p>											
<p><b>TYPE OF VALVE:</b> Broad band T.B. cell</p> <p><b>PROTOTYPE:</b> VX 1072</p>	<p style="text-align: center;"><u>MARKING</u></p> <p>See K1001/4</p>										
<p style="text-align: center;"><u>RATINGS</u></p> <p>(Absolute non-simultaneous and not for inspection purposes)</p> <table border="1"> <tr> <td><b>Min. Transmitter Peak Power</b></td> <td>(kW)</td> <td>4</td> <td rowspan="3" style="vertical-align: middle;">Note A</td> </tr> <tr> <td><b>Max. Transmitter Peak Power</b></td> <td>(kW)</td> <td>50</td> </tr> <tr> <td><b>Resonant frequency</b></td> <td>(GHz)</td> <td>34.86</td> </tr> </table>	<b>Min. Transmitter Peak Power</b>	(kW)	4	Note A	<b>Max. Transmitter Peak Power</b>	(kW)	50	<b>Resonant frequency</b>	(GHz)	34.86	<p style="text-align: center;"><u>DIMENSIONS</u></p> <p>See drawing on page 5</p>
<b>Min. Transmitter Peak Power</b>	(kW)	4	Note A								
<b>Max. Transmitter Peak Power</b>	(kW)	50									
<b>Resonant frequency</b>	(GHz)	34.86									
<p style="text-align: center;"><u>NOTES</u></p> <p><b>A</b> This valve may be used over frequency range 34.06 to 35.69 GHz</p> <p><b>B</b> NATO Stock No. 5960-99-037-5622</p>											

To be performed in addition to those applicable in K1001

K1001	Test	Test Condition	AQL %	Insp. Level	Sym- bol	Limits		Units
						Min.	Max.	
5H.4. 1.7.2 (a)	<u>GROUP A</u> Timing Susceptance	Test Frequency (Fo) 34.86 $\pm$ .05% GHz <u>Notes:</u> 1, 2 and 3		100%	B	-.07	+.07	
5H.4.1 7.1 (b)	Equivalent Conductance	As for tuning susceptance <u>Notes:</u> 1 and 3		100%	G	-	0.15	
5H.4. 2.1 (c)	Firing Time (secs) i.e. Time interval between appli- cation of power and tube firing	Line to be ener- gised with 4 kW peak R.F. Frequency = 34.86GHz $\pm$ 1.5% $t_p$ = 0.3 $\mu$ sec. $\pm$ 10% P.R.F. = 2000 pps $\pm$ 10% Test to be performed at least 7 days after pumping and not less than 24 hours after any previous dis- charge. <u>Notes:</u> 1		100%		-	10	secs.
5H.4. 2.2. (d)	Arc Loss	As for firing Test Time		100%	La	-	680	W (pk)
5H.4.2 5.1 (e)	Recovery Time to -1db ( $\mu$ sec) Measured by a signal gener- ator pulse injected after trailing edge of the transmitter pulse	As for Firing Time test except that the line shall be energised with 50kW peak RF Frequency = 34.86GHz $\pm$ 1.5% $t_p$ = 0.3 $\mu$ sec $\pm$ 10% Simulated signal generator frequency 34.86GHz $\pm$ 0.05%		100%		-	4.0	$\mu$ sec.
	<u>GROUP B</u>	Omitted						

TESTS CONTINUED

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K1001	TESTS	TEST CONDITIONS	AQL %	INSP LEVEL	SYM- BOL	LIMITS		UNITS
						MIN	MAX	
	<u>GROUP C</u>							
5H.4.1. 8.1.2	Loaded Q	Frequency = 34.86 GHz ±0.05%. Notes 1 and 4	2.5	1%	QL	-	6.5	
5H.4.2. 3	High Level Standing Wave Ratio	As for Recovery Test. Load v.s.w.r. to be less than 1.03 : 1.	2.5	1%		-	1.1	
	<u>GROUPS D and E Omitted.</u>							
	<u>GROUP F</u>							
5H.5.3	Life End Point 1000hrs.	Frequency = 34.86 GHz ±1.5% tp = 0.3 $\mu$ S. prf = 2000 pps ±10% Line Power = 50kW pk.  Note 5.  Post life tests and limits to be as given in Group A.	-	3%				
	<u>GROUP G</u>							
	Electrical Retest After 21 Days Holding Period  Recovery Time	Test and Limits as in Group A.	1.0	100%				

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NOTES

1. The Valve shall be fitted in a mount as shown on page 6 and terminated in a matched load.
2. The susceptance may be measured by comparing the phase of the reflection with that of a Valve which is resonant at the test frequency. The susceptance is given by:-

$$\frac{B}{Y_0} = \frac{(1 + \frac{2G}{Y_0})}{2} \cdot \tan \frac{4\pi \Delta l}{\lambda g} = 1.1 \frac{2\pi \Delta l}{\lambda g}$$

for small  $\Delta l$  and where  $\frac{G}{Y_0}$  is assumed to be 0.07.

Where  $\lambda g$  is the guide wavelength and  $\Delta l$  is the phase shift measured in the same units as  $\lambda g$ .

3. A curve of V.S.W.R./frequency is plotted around a centre value of Test Frequency ( $f_0$ ). See Group A Test Clause (a). The Valve is resonant ( $B=0$ ) at the frequency corresponding to the maximum V.S.W.R. value. Whence:-

$$r_0 = \frac{1}{G/Y_0} + 1 \quad \text{therefore } G/Y_0 = \frac{1}{r_0 - 1}$$

If the Valve has passed the susceptance test ( $B < 0.06 Y_0$ ), the V.S.W.R. measured at test frequency ( $f_0$ ) is very nearly equal to  $\frac{1}{G/Y_0} + 1$  and may be used to measure  $G$ .

4. Loaded Q is defined as :-

$$QL = f_0 \frac{d(B/Y_0)}{dF} \quad \text{where } f_0 = \text{Test Frequency}$$

$$2(1+G/Y_0)$$

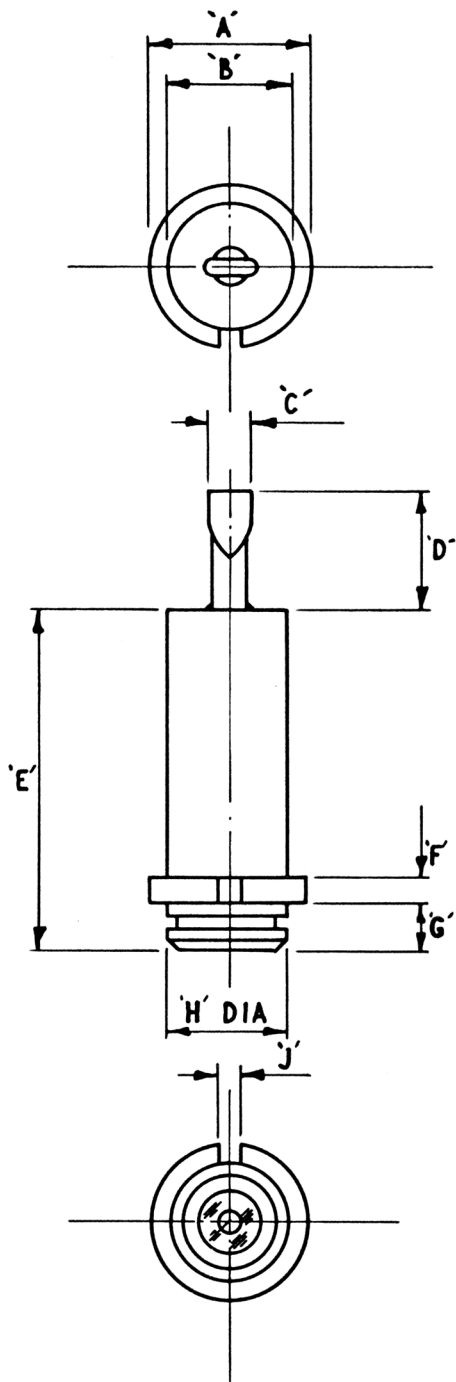
See Group A Test Clause (a)

5. The manufacturer at his discretion may put twice the normal sample size on life test for a period of 500 hours. The criterion for acceptance shall be that the average life expectancy shall be at least 90% where

$$\text{Life Expectancy} = \frac{\text{Total hours of Life operation} \times 100}{\text{Total possible hours}}$$

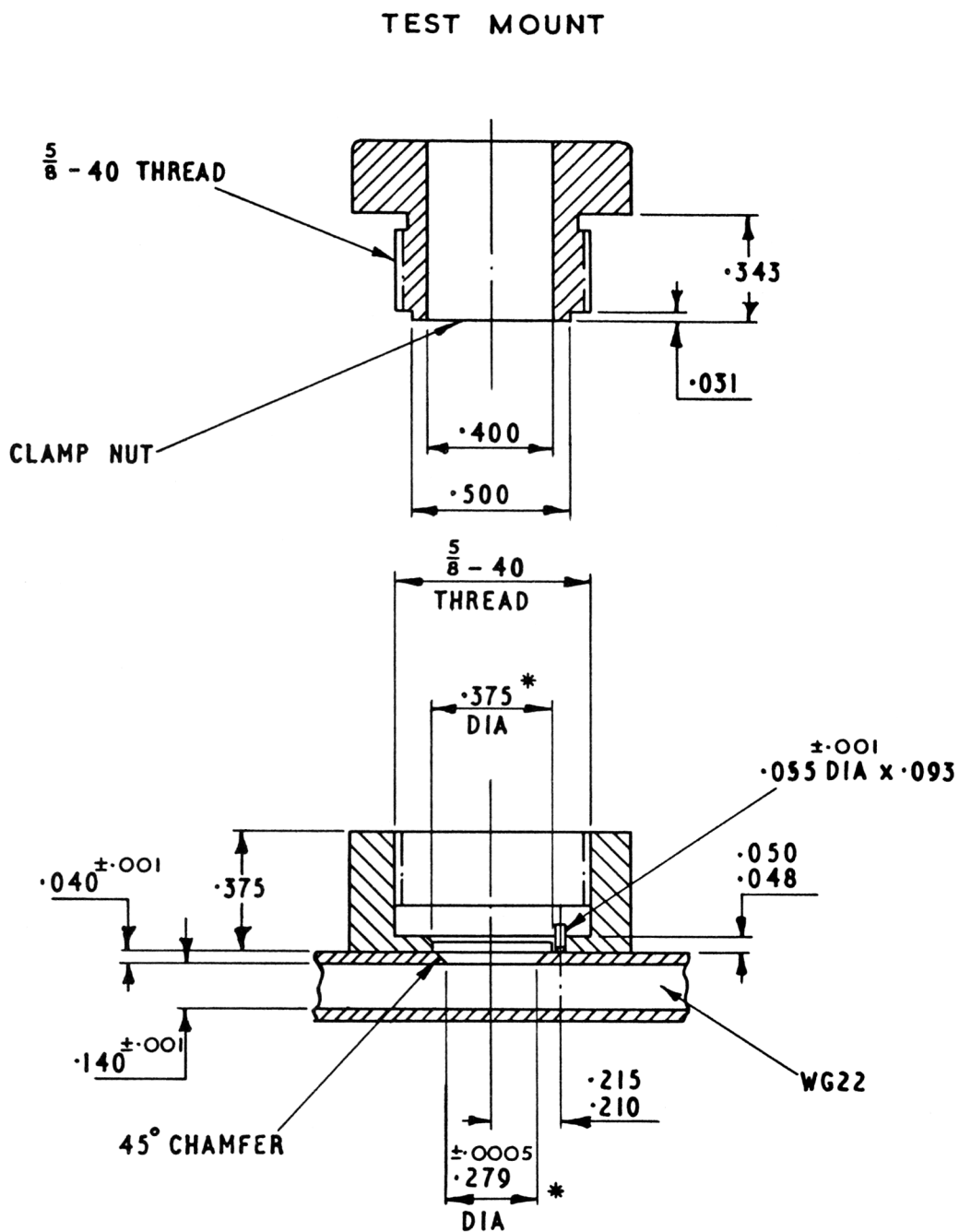
Provided that earlier life tests results were acceptable, shipment of Valves may be permitted from the commencement of a supply contract.

OUTLINE DRAWING



DIMENSIONS				
	INCHES		METRIC	
	MIN.	MAX.	MIN.	MAX.
A	0.473	0.480	12.0	12.2
B	0.344	0.354	8.74	8.99
C	-	0.188		4.8
D	-	0.375		9.5
E	-	1.031		26.2
F	0.057	0.067	1.45	1.70
G	0.120	0.125	3.05	3.17
H	0.346	0.352	8.79	8.94
J	0.060	0.063	1.52	1.53

ORIGINAL DIMENSIONS IN INCHES



\* DIAMETERS TO BE CONCENTRIC  
WITHIN .003 T.I.R.

ALL DIMENSIONS IN INCHES