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Specification <del>MOA</del> <sup>Mintel</sup> CV 6192 Issue 1 Dated 1st February 1967 To be read in conjunction with K1001 and BS1409	<table border="1"> <tr> <th colspan="2">SECURITY</th></tr> <tr> <th>Specification</th><th>Valve</th></tr> <tr> <td>Unclassified</td><td>Unclassified</td></tr> </table>	SECURITY		Specification	Valve	Unclassified	Unclassified
SECURITY							
Specification	Valve						
Unclassified	Unclassified						

<u>TYPE OF VALVE:</u> Broad-band T.R./Solid State Limiter (Note D)		<u>MARKING</u>	
<u>PROTOTYPE:</u> BS814 RVT3 0061		See K1001/4.	
<u>RATINGS AND CHARACTERISTICS</u> (Absolute, non-simultaneous and not for Inspectorate)		<u>DIMENSIONS AND CONNECTIONS</u> See Drawing on Page 5	
NOTE			
Operating Frequency:-	(Mc/s)	9000 to 9700	AB
Max. Peak Power	(kW)	200	
Min. Peak Power	(kW)	1	C
Primer Supply Voltage	(V)	1000	
Max. Primer Current	(μA)	150	
Spike Energy	ergs/pulse	.02	
<u>NOTES</u>			
A. The life expectancy of the tube exceeds 500 hours at r.f. power levels less than that quoted, and falls progressively as the power level is increased above the quoted value. Consequently it is recommended that to ensure long life and for satisfactory operation at power levels above 50 kW, that the value be preceded by a Pre-T.R. cell.			
B. With duty ratio not exceeding 0.001.			
C. Primer current to be limited by a series resistance of 5.5 Megohms of which at least 0.5 megohms must be placed adjacent to the valve.			
D. The varactor used as the limiter is R.V.T.S. 0057.			
E. NATO Stock number: 5960-99-037-4952			

To be performed in addition to those tests applicable in K1001

TEST CONDITIONS: Unless otherwise specified primer supply voltage = -1000V									
K1001 Ref. 5H		Test	Test Conditions	AQL %	Insp Level	Sym- bol	Limits		Units
							Min.	Max	
3.1.1	(a)	<u>Primer Breakdown</u> The delay between application of primer voltage and initial breakdown to be measured	Primer supply voltage to be -900V. Test to be performed at least 7 days after any previous discharge		100%	$t_i$	-	5	s
3.1.2	(b)	<u>Primer Operating Current</u> The primer current to be measured after breakdown has occurred.	As for test "a"		100%	$I_d$	75	150	<del>mA</del> mA
4.1.3.1	(c)	<u>V.S.W.R.</u> VSWR to be measured over frequency band: 9000-9700 Mc/s	Line to be energised with not more than 10 mW RF power and terminated in a load matched better than 1.02 VSWR		100%	-	-	1.3	-
4.1.1.1	(d)	<u>Low Level Insertion Loss</u> Measured at frequencies: 9000, 9350 and 9700 Mc/s	Line to be energised with not more than 10 mW RF power. Valve mounted between impedance matched better than 1.1 v.s.w.r.		100%	ap	-	0.8	dB
4.2.4	(e)	<u>High Power Leakage</u>	Line to be energised using 50kW $\pm 10\%$ peak RF power with PRF = 1000 c/s $\pm 10\%$ terminated in a matched load. Test frequency 9350 Mc/s $\pm 100$ Mc/s			See page 3.			
4.2.4.2.2		1. Spike energy (Cont'd on Page 3)	$tp2 = .15\mu s \pm 10\%$		100%	Was	-	0.02	ergs/pulse

TESTS (Cont'd)									
K1001 Ref. 5H		Test	Test Conditions	AQL %	Insp. Level	Sym- bol	Limits		Units
							Min	Max	
4.2.4.1	(e) Cont'd	2. Total Leakage power	$tp = 1.0 \mu s \pm 10\%$		100%	Pa	-	30	mW
4.2.5	(f)	<u>Recovery Time</u> The time to be measured from the trailing edge of the applied pulse until the insertion loss has fallen to a value 6 dB above its value immediately before the pulse is applied.	$tp = 1 \mu s \pm 10\%$  Other conditions as in test 'e'		100%	t <sub>da</sub>	-	2	$\mu s$
4.2.4.4	(g)	<u>Low Power Leakage</u> The peak total leakage through the valve is to be measured as the applied power is varied	Applied peak RF power varied from 100 mW to 100 Watts $tp + 1 \mu s \pm 10\%$ Other conditions as in test 'e'	6.5	I	PaL	-	Record	mW
4.2.7	(h)	<u>Position of Short</u> The distance of the effective RF short circuit behind the front flange of the valve is to be measured	$tp = 1 \mu s \pm 10\%$  Other conditions as in test 'e'	6.5	I	1	0.014	0.028 in	
4.2.2	(j)	<u>Arc Loss</u>	Line to be energised with 4kW peak RF power measured immediately after the valve $tp = 1 \mu s \pm 10\%$ Other conditions as in test 'e'		1%	(A) a arc	-	0.8	dB
5.2.3	(k)	<u>Temp.Cycling</u>  <u>Post Temperature Cycling Tests</u>	The valve shall be stored at 70°C for one hour and followed by one hour at room temperature and one hour at -40°C this cycle is to be repeated six times.  Tests and limits as contained in (a), (b) (d) and (e). Note 1.		1%				

K1001 Ref. 5H		Test	Test Conditions	AQL %	Insp. Level	Sym- bol	Limits		Units
							Min	Max	
5.3	(1)	<u>Life Test</u> <u>End of life test</u> <u>point 500 hours</u>	The valves to be mounted in series E-Plane T junctions followed by a matched load. The input power into the life test assembly shall be that which provides an RF power level of not less than 20kW into the matched termination. Other conditions as in test (e) 2. Note 1.		4.0%			See Note 2	

NOTES

1. The tests shall be performed on a sampling basis consisting of the specified percentage of the contract requirement (taken to the nearest whole number in excess of the percentage value) and spread evenly over the production period. The valves used shall be taken from those in current production at the time of the commencement of the test.

Where the rate of production is less than 25 valves per month a batch size may be considered as being that obtained over a period of one month. The manufacturer may at his discretion test additional valves.

During continuous production (which for the purpose of this specification shall be considered as being production which has not been interrupted for a period in excess of six calendar months) the criterion of acceptance shall be based on not more than one failure in any ten consecutive valves tested and shipment of valves may be permitted from the commencement of a contract provided that rejection of earlier production lots has not occurred.

Following a six months non-production period shipment may be permitted after the first sample satisfies the specified tests. In the event of a failure before the criterion of acceptance can be applied, the manufacturer shall test at least two further devices made at the time of failure.

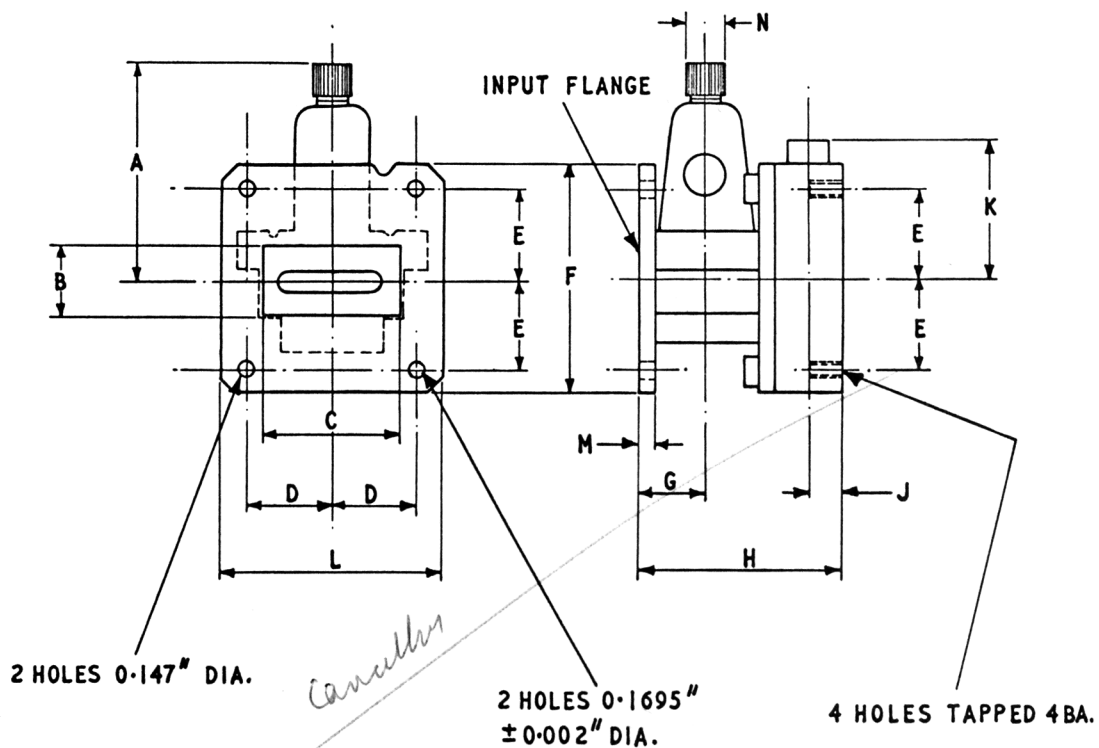
If neither valve fails acceptance then shipment is permitted, but in the event of an additional failure the Approval Authority shall be informed.

2. End of life test point shall be 500 hours or when the valve is tested for the tests given in b,c,d, e and f and fail to meet the following relaxation of limits:-
- (c) V.S.W.R. Max 1.4
  - (d) Insertion loss Max 1.0
  - (e) Spike energy 0.02 ergs/pulse max
  - (f) Recovery time 10 dB at 4  $\mu$ s.
3. The criterion for acceptance of the production at 500 hours shall be at least 90% where life expectancy:-

$$= \frac{\text{Total Hours (or cycles) of operation}}{\text{Number of samples} \times 500 \text{ hours (or 2500 cycles)}}$$

The number of samples shall not be less than one per month and may be increased above 4% of production at the manufacturer's discretion.

OUTLINE DRAWING  
(THIRD ANGLE PROJECTION)



FINISH:- ELECTRO.-TINNED

A	1.5/8" MAX.	G	0.5
B	0.5"	H	1.555" $\pm 0.005$ "
C	1.0"	J	0.250"
D	0.610" $\pm 0.002$ "	K	1.0" MAX.
E	0.640" $\pm 0.002$ "	L	1.5/8"
F	1.5/8"	M	3/32" MIN.
		N	5/16" DIA.

ELECTRONIC VALVE SPECIFICATIONS

SPECIFICATION MOA/CV6192, ISSUE 1, DATED 1st February 1967

AMENDMENT No. 1

1. Page 1

(i) Specification Authority:

Delete "MINISTRY OF AVIATION - DLRD/RRE" and  
substitute "MINISTRY OF TECHNOLOGY - DLRD/RRE"

(ii) Specification Title:

Delete "Specification MOA/CV6192" and substitute  
"Specification Mintech/CV6192".

2. Page 2

Test Clause 'b'

In column headed "Units", delete " $\mu$  S" and  
substitute " $\mu$  A".

August 1967

T.V.C. for R.R.E.

✓ R.R.E. 6/68