VALVE ELECTRONIC **CV6178**

Specification MOA/CV 6178 Issue No. 1 Dated 6th January 1966 To be read in conjunction with K1001 and BS1409	SECURITY	
	Specification	Valve
	Unclassified	Unclassified

TYPE OF VALVE: Broad-band T.R./Solid State Limiter (Note D)

PROTOTYPE: RVTS 0055 BS808

MARKING

See K1001/4

RATINGS AND CHARACTERISTICS

(Absolute, non-simultaneous and not for Inspectorate)

		850V	Note
Operating Frequency:-	(Mc/s)	~~8800~~ to 9100	
Max. Peak Power	(kW)	200	A.B.
Min. Peak Power	(kW)	1	
Primer Supply Voltage	(V)	-1000	
Max. Primer Current	(μA)	150	C
Spike Energy	ergs/pulse	~~.05~~ .002	

Amdt 1

Amdt 1

DIMENSIONS AND CONNECTIONS

See Drawing on Page 5

Superseded by Issue 1A

NOTES

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: 5960-99-037-4603

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TESTS

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	Symbol	LIMITS Min.	LIMITS Max.	Units
3.1.1	(a)	**Primer Breakdown** 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)	**Primer Operating Current** The primer current to be measured after breakdown has occurred.	As for test "a"		100%	I_d	75	150	µA
4.1.3.1	(c)	**VSWR** VSWR to be measured over frequency band: ~~8800~~ 8500, to 9100 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)	**Low Level Insertion Loss** Measured at frequencies: ~~8800~~ 8500, ~~8950~~ 8750 and 9100 Mc/s.	Line to be energised with not more than 10 mW r.f. power. Valve mounted between impedances matched better than 1.1 v.s.w.r.		100%	ap	-	0.8	dB
4.2.4	(e)	**High Power Leakage**	Line to be energised using 50kW ± 10% peak RF power with PRF = 1000 c/s ± 10% terminated in a matched lead. Test frequency 8800 Mc/s ± 100 Mc/s						
4.2.4.2.2		1. Spike energy	tp2 = .15 µS ± ± 10%		100%	Was	-	~~0.05~~ 0.02	ergs/ pulse
4.2.4.1		2. Total Leakage power	tp = 1.0 µS ± ± 10%		100%	Pa	-	30	mW

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TESTS (Cont'd)

K1001 Ref. 5H.		Test	Test Conditions	AQL %	Insp. Level	Sym-bol	LIMITS Min.	LIMITS Max.	Units
4.2.5	(f)	Recovery time 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 µS ± 10% Other conditions as in test "e"		100%	tda	-	2	µS
4.2.4.4	(g)	Low Power Leakage 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 µS ± 10% Other conditions as in test "e"	6.5	I	PaL	- Record		mW
4.2.7	(h)	Position of Short The distance of the effective RF short circuit behind the front flange of the valve is to be measured	tp = 1 µS ± 10% Other conditions as in test "e"	6.5	I	1	0.014	0.028	in
4.2.2	(j)	Arc Loss	Line to be energised with 4 kW peak RF power measured immediately after the valve. tp = 1 µS ± 10% Other conditions as in test "e".		1%	(A)a arc	-	0.8	dB
5.2.3	(k)	Temp. Cycling Post Temperature Cycling Tests	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 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	Symbol	LIMITS Min.	LIMITS Max.	Units
5.3	(1)	Life Test End of life test point 500 hours	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 r.f. power level of not less than 20 kW 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 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 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 0.05 ergs/pulse max
   (f) Recovery time 10 dB at 4 μS

3. The criterion for acceptance of the production at 500 hours shall be at least 90% where life expectancy: = $\frac{\text{Total hours (or cycles) of operation} \times 100\%}{\text{number of samples} \times \text{500 hours (or 2500 cycles)}}$ [sic]

Amdt 2

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.

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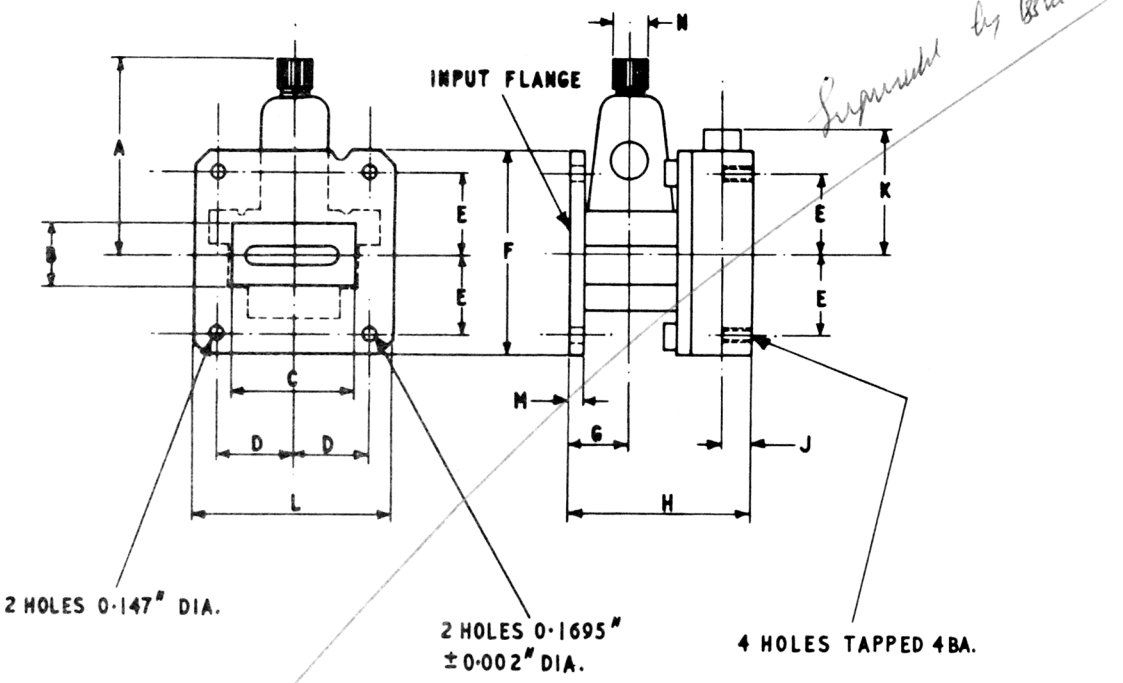
OUTLINE DRAWING
(THIRD ANGLE PROJECTION)



FINISH:- ELECTRO.-TINNED

A	1·5/8" MAX.	G	0·5
B	0·5"	H	1·555" ±0·005"
C	1·0"	J	0·250"
D	0·610" ±0·002"	K	1·0" MAX.
E	0·640" ±0·002"	L	1·5/8"
F	1·5/8"	M	3/32" MIN.
		N	5/16" DIA.

Supersedes by Issue 1A

ELECTRONIC VALVES SPECIFICATIONS

SPECIFICATION MOA/CV6178, ISSUE NO.1 DATED 6th JANUARY 1966

AMENDMENT NO.1.

1. Page 1. Ratings and Characteristics

   (i) Operating Frequency:- Delete "8800 Mc/s" and substitute "8500 Mc/s".

   (ii) Spike Energy:- Delete ".05 ergs/pulse" and substitute "0.02 ergs/pulse".

/2.

2. Page 2. Tests.

   (i) Test Clause (c) VSWR.

   In the column headed "Test" delete "8800 Mc/s" and substitute "8500 Mc/s".

   (ii) Test Clause (d) Low Level Insertion Loss.

   In the column headed "Test" delete "8800" and "8950" Mc/s and substitute "8500" and "8750" Mc/s respectively

   (iii) Test Clause (e), 4.2.4.2.2. 1 Spike Energy.

   In the column headed "Limits, Max" delete "0.05" and substitute "0.02".

January, 1967. T.V.C. for R.R.E.

(.445740)

AAB 26/1

ELECTRONIC VALVE SPECIFICATIONS

SPECIFICATION MOA/CV6178

ISSUE 1 DATED 6th JANUARY 1966

AMENDMENT NO.2.

Superseded by Issue 1A

Page 4. Insert new Note 3 as follows:-

3. The criterion for acceptance of the production at 500 hours shall be at least 90% where life expectancy:

$$= \frac{\text{total hours (or cycles) of operation} \times 100\%}{\text{number of smaples} \times 500 \text{ hours (or } 2500 \text{ cycles)}}$$

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.

April, 1967.
(230116)

TVC for RRE.

VAAS 2/68