Admiralty Surface Weapons Establishment — Valve Electronic CV2488.

Specification AD/CV2488 Issue 2 dated 15th February 1961 To be read in conjunction with K.1001	Security Specification: Unclassified — Valve: Unclassified

Type of Valve	Wide band, passive protection cell, Cells S-band plug-in type, set of 3.	Marking	See K.1001/4 See Note 2
Envelope	Metal and glass	Dimensions	See drawing on page 5.
Prototype	VX3261		

Ratings In specified combinations of three cells			Notes
Operating frequency range	(Mc/s)	2,500 - 4100	A & B
Primer running voltage	(V)	240	C
→ Max. primer current to each cell	(/uA)	65	D
→ Min. primer current to each cell	(/uA)	45	D
Min. negative d.c. primer supply voltage	(V)	950	
Max. incident peak power	(W)	15	E
Total insertion loss v. frequency		See page 7	C
Leakage v. frequency		See page 7	C
Recovery time v. incident power		See page 8	C, F
Leakage v. incident power		See page 8	C

NOTES

A. The cells are designed for use with waveguide of internal dimension 2.84" x 0.500".

B. The combination should be operated in the mount shown on page 6 with the single position (3) remote from the generator. The individual cells of the combination will be marked with the figure 1 on a green background, the figure 2 on a red background or the figure 3 on a white background and must be inserted in the similarly marked sockets of the mount.

C. With primer current to each cell.

D. The primer current shall be limited by series resistors of which at least 2 megohms shall be adjacent to each primer terminal.

E. Used in tests at a duty cycle of 0.001.

F. The recovery time shall be measured from the trailing edge of the transmitter pulse to the instant when the insertion loss is 6 dB greater than it was immediately before the transmitter pulse occurred.

Z.21937.

Tests to be performed in addition to those applicable in K1001

Test		Test Conditions	AQL %	Insp. level	Limits Min	Limits Max	Units
		Test conditions - unless otherwise specified:- Primer supply voltage - 1000 V d.c.					
a	Primer Breakdown The time shall be measured from the application of primer voltage to breakdown.	The test shall be performed on each cell of the combination at least 7 days after any previous discharge. Primer supply voltage = -950 V d.c.. Note 1		100%	-	5	secs
b	High Power Leakage	The mount containing the combination shall be located between impedances matched better than 0.7 v.s.w.r. The line shall be energised through a resistive attenuator with 10 ± 2W peak incident r.f. power. Pulse length - 0.9 - 1.1 /usec. Max. duty cycle - 0.001 Test frequency - 3600 ± 20 Mc/s. Notes 1, 2, 3 and 4		100%	-	300	mW
→ c	Recovery Time The time shall be measured from the trailing edge of the transmitter pulse to the instant when the insertion loss is 6 dB greater than it was immediately before the transmitter pulse occurred.	As test b. The power of the simulated received signal incident on the combination shall be not more than 5 mW. Test frequency of the simulated received signal - 2800 ± 50 Mc/s Notes 1, 2.		100%	-	70	/usec
d	Total Insertion Loss Test frequencies:-	The mount containing the combination shall be placed between resistive		100%			
→	2500 ± 5 Mc/s	attenuators matched			-	4.30	dB
→	2600 ± 5 Mc/s	better than 0.9 v.s.w.r.			-	2.65	
→	2800 ± 5 Mc/s	The line shall be			-	1.25	
→	3000 ± 5 Mc/s	energised with not			-	0.70	
→	3300 ± 5 Mc/s	more than 100 /uW peak			-	0.60	
→	3600 ± 5 Mc/s	r.f. power incident on			-	0.60	
→	3800 ± 5 Mc/s	the combination			-	1.30	
→	4000 ± 5 Mc/s				-	2.90	
→	4100 ± 5 Mc/s	Notes 1, 2.			-	4.00	

CV2488.

TESTS (Cont.)

	Test	Test Conditions	AQL %	Insp. Level	Limits Min.	Limits Max.	Units
e	Life	The combination shall have the primer voltage applied to each cell for a period of 1000 hours Notes 1, 5 and 8	See Note 8	~~I~~	See note 5 below		

NOTES

1. The primer supply shall be within ± 3% V d.c. having a peak to peak ripple voltage not exceeding 1% and shall be negative with respect to the body of the cell. The supply to each cell shall be connected to the primer through a total resistance of 13.6 MΩ ± 5% of which at least 2 MΩ shall be adjacent to the primer terminal.

2. The combination shall be tested in the mount shown on page 6 with the single position (3) remote from the generator. Each individual cell will be marked with the figure 1 on a green background, the figure 2 on a red background or the figure 3 on a white background and must be inserted in the similarly marked socket of the mount. The serial number applicable to the combination of 3 cells shall be marked on each individual cell.

3. The v.s.w.r. of the thermistor shall be better than 0.6 over the frequency band 2500 to 4100 Mc/s. The thermistor mount shall be separated from the mount containing the combination by not less than 24 ft. of waveguide.

4. The test mount shall be isolated from the generator by at least 6 dB attenuation to prevent appreciable frequency pulling of the generator.

5. (a) Life test samples are to be taken at random from the production batch.

Amdt 2

(b) The sample size shall be in terms of individual cells, the figure quoted in K1001 being read to the nearest multiple of three.

(c) The combination shall be deemed to have reached the end of life when -

(i) Under conditions of test b the high power leakage exceeds 500 mW

or (ii) Under conditions of test d the total insertion loss lies outside the following limits.

At test frequencies:-	dB Min.	dB Max.
2500 ± 5 Mc/s	2.8	4.8
2600 ± 5 Mc/s	1.3	3.1
2800 ± 5 Mc/s	0.35	1.55
3000 ± 5 Mc/s	-	1.0
3300 ± 5 Mc/s	-	1.0
3600 ± 5 Mc/s	0.1	1.1
3800 ± 5 Mc/s	0.4	1.6
4000 ± 5 Mc/s	1.6	3.4
4100 ± 5 Mc/s	2.5	4.5

Amdt

(d) For the initial contract the life test results are to be used for record purposes only.

Revise NOTES continued on page 4

6. Each cell shall be checked in the gauge shown on the drawing on Page 5.

7. The cells shall be packed in combinations of 3 cells per carton, marked "CV2488 ~~matched~~ set of 3 in No.". Amended "CV2488 CONSISTING OF 3 MATCHED CELLS"

8. The life test shall be carried out during Type Approval on two groups of cells (i.e. 6 cells). Both groups must be satisfactory at the end of the test. During production, life test records shall be submitted by the manufacturer to the production authority. When sufficient data has been accumulated a new specification issue including a batch sentencing life test will be produced.

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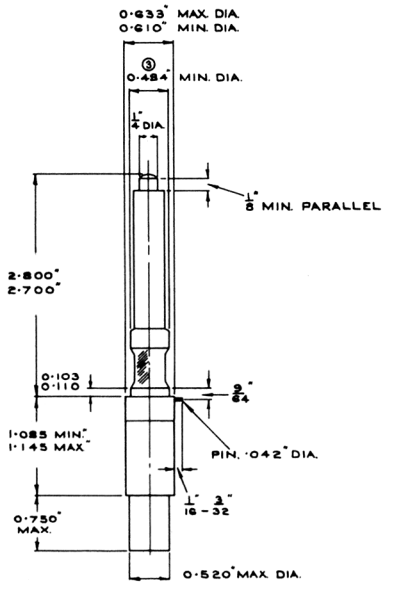
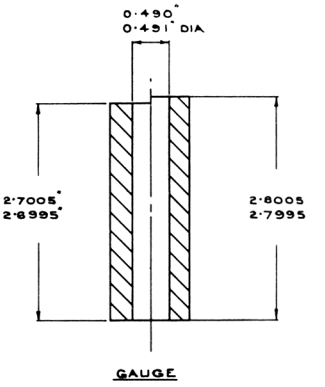
Scrawled. The life Test shall be carried out during Type Approval on two valves (no. 6 cells). Both valves must be satisfactory at the end of the test

The sample size used for the life test shall comprise 4% , or the next whole number above 4% of the contract requirements. The test shall be performed at regular intervals during the contract production period. Cells placed on test shall be taken at random from the production batch. The criterion of acceptance shall be that not more than one failure occurs in any two consecutive valves tested. During the initial period of any contract following a non-production period exceeding six months, valves may be despatched without awaiting the accumulation of the two samples, providing that there are no failures in the first five samples and not more than one in the first ten. If a failure occurs in the first five samples delivery of valves must await the results of the first 10 samples. Where rejection is incurred, delivery shall cease and the Approval Authority informed. The manufacturer may, at his discretion, test individual valves



OUTLINE.

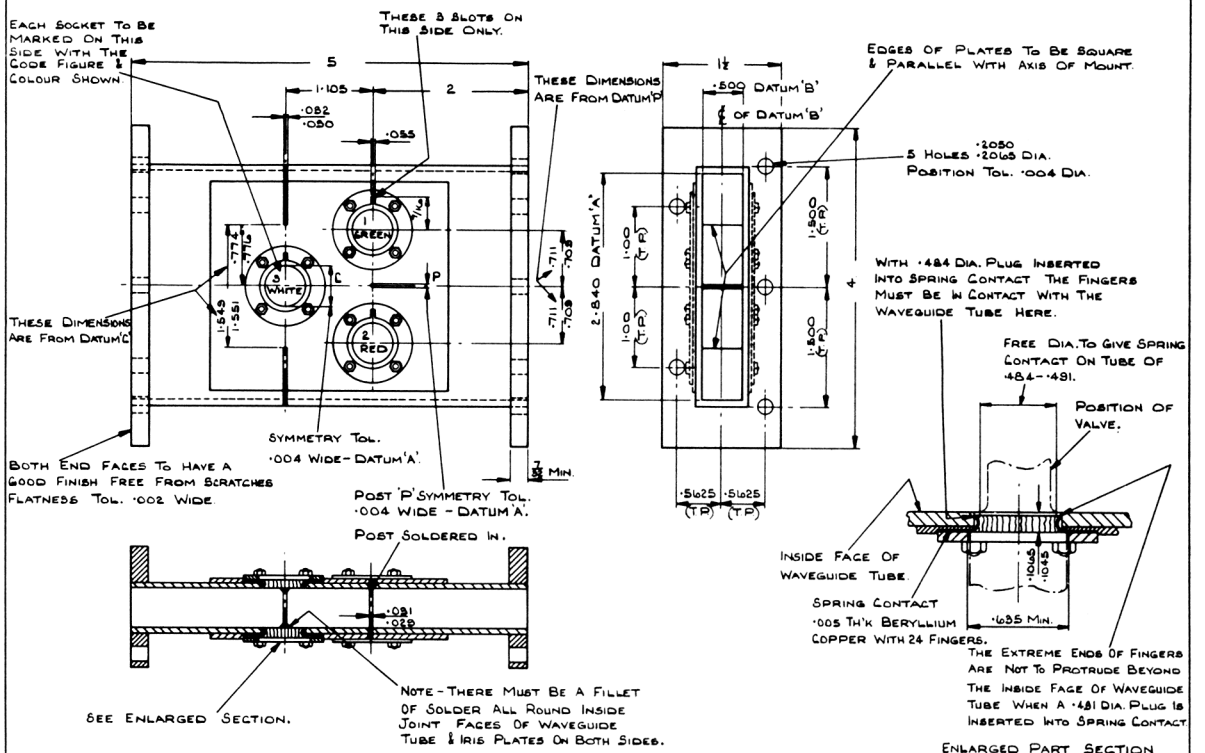


GAUGE

OUTLINE DRAWING & GAUGE.

CV2488

FIRST ANGLE PROJECTION.



ENLARGED PART SECTION SHOWING SPRING CONTACT.
SCALE 2/1

NOTE :-
MATERIAL BRASS (EXCEPT FOR SPRING CONTACT)

DIMENSIONS IN INCHES

FOR EXPLANATION OF DIMENSIONS, NOTES, SYMBOLS ETC. SEE B.S. 308 : 1953.

TEST MOUNT FOR CV. 2488

1. TOTAL INSERTION LOSS - FREQUENCY (INCIDENT POWER < 100 μW PEAK)
2. PEAK LEAKAGE POWER - FREQUENCY (INCIDENT POWER 10 W PEAK)
FREQUENCY MC/S
LOSS - dB
PEAK LEAKAGE POWER - mW
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CV2488

CV2488/2/8

ELECTRONIC VALVE SPECIFICATIONS

Specification AD/CV2488

Issue 2 dated 15th February, 1961

Amendment No. 1

Page 4. Note 7

Delete "CV2488 matched set of 3 in No."

Insert "CV2488 (1 only) consisting of 3 matched cells".

September, 1961 Admiralty Surface Weapons Establishment.

8.2.1962

N.2614

ELECTRONIC VALVE SPECIFICATIONS
SPECIFICATION AD/CV2488 ISSUE NO. 2 DATED 15.2.61.
AMENDMENT NO. 2.

Page 3

(a) Test Clause "e". Delete "I" in column headed Insp. Level.

(b) Note 5. Delete all reference to this note and substitute the following:

"The combination shall be deemed to have reached the end of life when -

(i) Under conditions of test 'b' the high power leakage exceeds 500 mW.

or (ii) Under conditions of test 'd' the total insertion loss lies outside the following limits.

At test frequencies:-

	dB	
	Min.	Max.
2500 ± 5 Mc/s	2.8	4.8
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The Life Test shall be carried out during Type Approval on two valves (i.e. 6 cells). Both valves must be satisfactory at the end of the test.

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T.V.C. Office for
A.S.W.E.

January 1963.

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