VALVE ELECTRONIC CV.6116

MINISTRY OF AVIATION DLRD/RAE.

Specification MOA/CV 6116 Issue No. 2 Dated July, 1963. To be read in conjunction with K1001, K114	SECURITY SPECIFICATION: Unclassified VALVE: Unclassified

→ INDICATES A CHANGE

TYPE OF VALVE:- Power Limiting Gas Cell.

PROTOTYPE:- NF 44.

MARKING

See K1001/4

RATINGS

		NOTES
Max. Operating Frequency Range. (Mc/s)	8,500 -10,000	
Max. Peak Power (W)	100	
Min. Negative Primer Supply Voltage (V)	950	B
→ Primer Current (μ A)	~~80~~ 100	A

CONNECTIONS

See drawing on Page 6.

DIMENSIONS

See drawing on Page 6.

PACKAGING

K1001/14.

Amdt 1

NOTES

→ A. The primer current shall be limited by a suitable series resistance 1M.ohm of which is incorporated in the cell terminal.

B. The primer supply voltage to be negative with respect to the cell body.

C. The Joint Services Catalogue Number is 5960-99-037-3160.

CV.6116

TESTS

To be performed in addition to those applicable in K1001.
The tests (clauses "a" to "e" inclusive) are to be performed after a minimum holding period of 7 days.

TEST CONDITIONS:

For all electrical tests V primer = -950V Note 1.

	Test	Test Condition	Insp. Level	Limits Min.	Limits Max.	Units
a.	Primer Breakdown	Note 5	100%	-	5	secs
→ b.	Primer Operating Voltage		100%	240	340	V
c.	Insertion Loss	The valve shall be mounted between matched impedances (V.S.W.R. better than 1.1:1). The line shall be energised by R.F. power not exceeding 10mW, Primer Current adjusted to 100 μA.	100%	-	1	dB
d.	V.S.W.R.	f = (1) 8500 - 8650 Mc/s (2) 8650 - 9850 Mc/s (3) 9850 - 10000 Mc/s	100%	 - - -	 1.4 1.25 1.3	
e.	Pulse Recovery Time	The frequency of the simulated echo pulse shall be within the range 9,000 Mc/s to 9,500 Mc/s and its power incident on the cell shall not exceed 10 mW. Pulse length = 1 μsec. and p.r.f. = 1,000 p.p.s. The frequency of the transmitter pulse shall be within the same range and the peak power 10W. Notes 2, 3.	100%	-	50	μsecs
→ f.	Leakage Power	Vary peak input power from 10mW to 10W. Pulse length = 1 μsec. and p.r.f. = 1,000 p.p.s. Note 2 f = (1) 9000 Mc/s (2) 9400 Mc/s (3) 9800 Mc/s	100%	 110 110 110	 300 300 300	 mWpk mWpk mWpk
g.	Spike Leakage	f = 9400 Mc/s Peak Power = 10W, Note 2.		-	0.3	e/p

	Test	Test Condition	Insp. Level	Limits Min.	Limits Max.	Units
h.	Life Tests D.C.	Primer voltage to be applied for a minimum period of 300 hrs.	5% or 6 samples.			
	Life Test End Points (300 hours) Repeat test clauses "a" to "g" inclusive.	These tests shall be carried out at intervals of 100 hrs.		The limits as specified in test clauses "a" to "g" inclusive shall apply. Note 4. Except that in clause "g" the maximum value may rise to 0.4 ergs per pulse and in clause "f" min. value may fall to 100 mV peak after 300 hrs.		
j.	Mechanical and Environmental Tests Vibration Endurance	The valves to be vibrated in three mutually perpendicular planes for 8½ hrs. (total 51 hours) at each of the following frequencies and acceleration 1) f = 20 c/s, g = 1.3 2) f = 50 c/s, g = 3.0				
	Post Vibration Endurance Tests 1) Visual Inspection 2) Repeat test clauses "a" to "g" inclusive.			There shall be no visual defects. The limits as specified in test, clauses "a" to "g" inclusive shall apply.		
k.	Resonance Search	K1001 Section 11.2. The valves to be vibrated in three mutually perpendicular planes over the frequency range 5 c/s to 2 Kc/s at a constant acceleration of 2g. Rate of sweep of frequency shall not exceed one octave per minute from 5 c/s to 200 c/s.	Q.A.			
	1) Resonances 2) Modulation of Primer Current.			No resonance shall be detected.	1	uA/g

	Test	Test Condition	Insp. Level	Limits Min.	Limits Max.	Units
1.	Shock Post Shock Tests 1) Visual Inspection 2) Repeat test clauses "a" to "g" incl.	K1001 Section 11.4 Hammer Angle = 30° No voltages.	Q.A.		There shall be no visual defects. The limits as specified in test clauses "a" to "g" inclusive shall apply.	
m.	Linear Acceleration (Centrifuge) Post Acceleration Tests 1) Visual Inspection. 2) Repeat test clauses "a" and "b".	The valves to be subjected to a linear acceleration of 13g in each of three mutually perpendicular planes. Duration of max. g = 1 min.	Q.A.		There shall be no visual defects. The limits as specified in test clauses "a" and "b" shall apply.	
n.	Climatic Post Climatic Tests 1) Visual Inspection 2) Repeat test clauses "a" to "g" incl.	The valves to be subjected to the following environments in the sequence specified. 1) Dry Heat K114/5.9 T = 90°C t = 12 hrs. 2) Low Temp. K114/5.20 T = -65°C t = 12 hrs. 3) Damp Heat K114/5.11 T = 40°C R.H. = 95% t = 12 hrs. 4) Low Temp/Low Pressure K114/5.21 T = -65°C P = 5mm. Hg, t = 12 hrs. 5) Repeat tests 3 and 4 sequentially, three times. 6) Tropical Life K114/5.13 T. vary 20°C -35°C, R.H. = 95% t = 28 days. 7) Fine Mist K114/5.16.	Q.A.		There shall be no visual defects. The limits specified in test clauses "a" to "g" incl. shall apply.	

NOTES

1. The primer supply shall be D.C. having a ripple voltage less than 1% and shall be negative with respect to the body of the cell. The regulation of the supply shall be negligible at load currents up to 300 μA. The supply shall be connected to the primer through resistances totalling 8M.ohms ± 5%, 1M.ohm of which is incorporated in the cell terminal.

2. An approved tunable magnetron of suitable frequency shall be used (CV2421 or suitable frequency variant).

3. The time shall be measured from the trailing edge of the transmitter pulse to a point where the insertion loss exceeds that immediately before the transmitter pulse by 6 dB.

4. At the conclusion of the Post Life Tests, the batch shall be acceptable if not more than one valve fails to meet the limits specified in test clauses "a" to "g" inclusive. If more than one failure occurs the batch shall be rejected.

5. To be performed at least seven days after any previous discharge.

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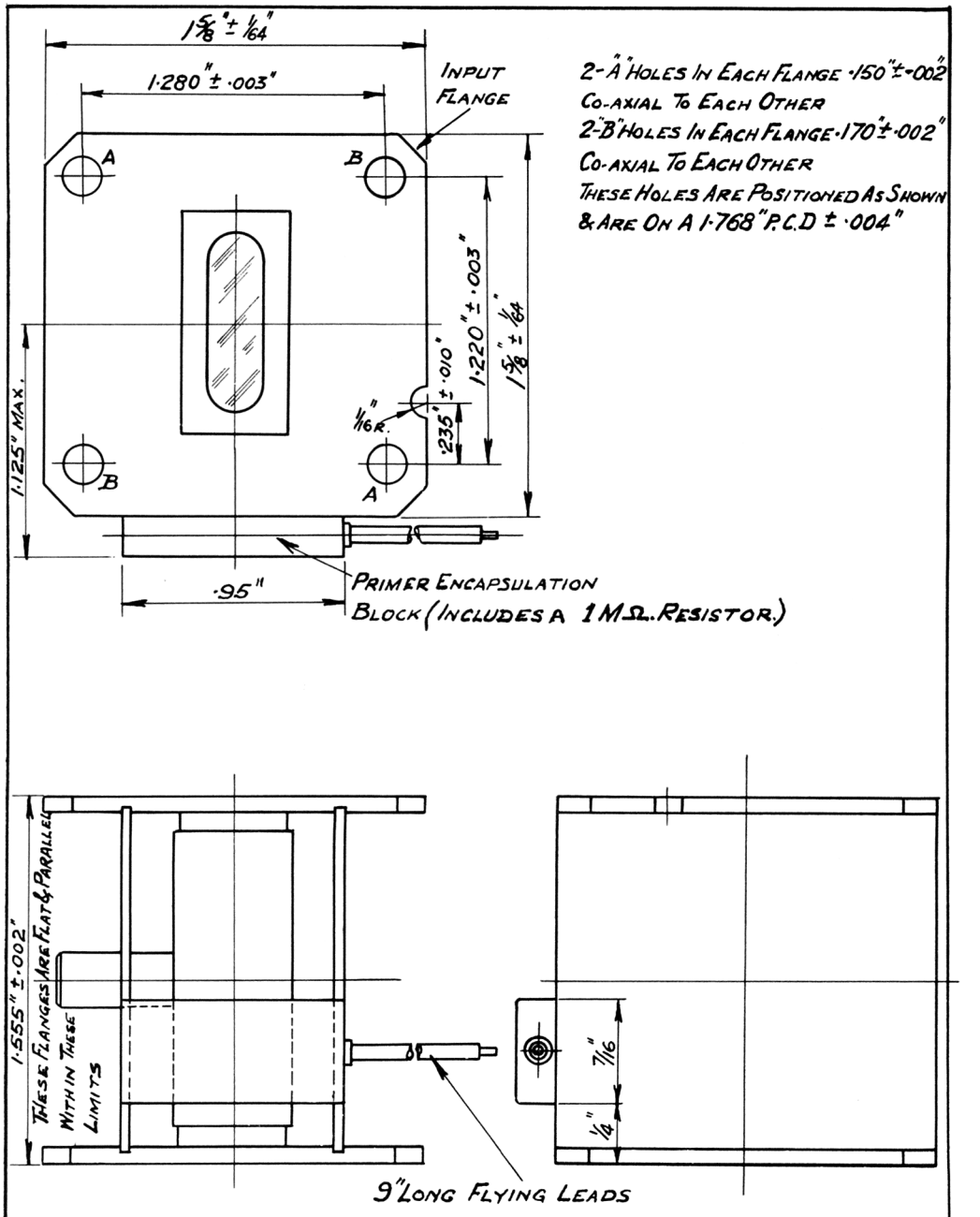

OUTLINE DRAWING.

ELECTRONIC VALVE SPECIFICATIONS

SPECIFICATION MOA/CV.6116, ISSUE No. 2, DATED JULY, 1963

AMENDMENT No. 1

PAGE 1

RATINGS. PRIMER CURRENT (μA)

DELETE: 80

INSERT: 100

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

28/5/64