VALVE ELECTRONIC

CV 6184

ADMIRALTY SURFACE WEAPONS ESTABLISHMENT

Specification AD/CV 6184 Issue 1 Dated 4.5.67 To be read in conjunction with K1006	SECURITY Specification: Unclassified Valve: Unclassified

PROTOTYPE: 4CX10,000D

DESCRIPTION: Ceramic and metal, forced air cooled tetrode

CATHODE: Directly heated thoriated Tungsten

MOUNTING: Vertical, base down or up, with protection from severe shock and vibration

CONNECTIONS AND DIMENSIONS: See figure 1.

N.A.T.O. STOCK NUMBER: 5960-99-037-4627

ABSOLUTE MAXIMUM RATINGS:

Parameter	Ef	Eb	Ec2	Ec1	Ib	Pg1	Pg2	Pp	Anode & Seal T	Core Cooling Note 1	Altitude
Units	Vac	kVdc	kVdc	Vdc	Adc	W	W	kW	°C		ft.
C Telegraphy (up to 100 Mc)	7.5 ±5%	7.5	1.5		3.0	75	250	10.0	250		10,000
C Telephony	7.5 ±5%	5.0	1.0		2.5	75	250	6.65 Note 2	250		10,000
Class AB	7.5 ±5%	7.5	1.5		4.0	75	250	12.0	250		10,000
Test Condition	7.5	2.0	0.75	adj	1.0					Note 3	

PARA. NO.	TEST	CONDITIONS	AQL (PERCENT DEFECTIVE)	INSP. LEVEL	SYMBOL	LIMITS Min.	LIMITS Max.	UNITS
	General							
3.1	Qualification	Required	-	-	-	-	-	-
3.6	Performance	Note 4	-	-	-	-	-	-
4.5	Holding Period		-	-	t	150	-	hr.
4.9.2	Dimensions	See figure 1 Note 5	-	-	-	-	-	-

PARA. NO.	TEST	CONDITIONS	AQL (PERCENT DEFECTIVE)	INSP. LEVEL	SYMBOL	LIMITS Min.	LIMITS Max.	UNITS
	Acceptance Inspection Part 1 (Production) See Note 6							
4.9.1	Mech. Prod. Tests		-	-	-	-	-	-
4.10.8	Filament Current		0.65	II	If:	72	78	Aac
4.10.5.2	Grid Voltage		0.65	II	-Ec1:	-95	127	Vdc
4.10.4.1	Anode Current	Eb = 5 kV, Ec2 = 500V, Ec1 = -150V	0.65	II	Ib	-	100	mA
4.10.6.1	†Total Grid Current (1) Note 10	Eb = 10 kV, Ec2 = 1500V Ib = 1A Note 3 After 10 mins.	0.65	II	-Ic1:	-	45	μAdc
					-Ic1	-	40	μAdc
4.10.4.3	Screen Grid Current		0.65	II	Ic2:	-	15.0	mAdc
4.10.6.6	Primary Control - Grid Emission	Ic1 = 600 mAdc, t = 15; anode & screen grid floating	0.65	II	-Isg1	-	20	μAdc
4.10.6.6	Primary Screen - Grid Emission	Ec1 = 0 Vdc, t = 15; Ic2 = 550 mAdc; anode floating	0.65	II	-Isg2	-	60	μAdc
4.10.1.3	†Peak Emission (1) Note 10	eb = ec1 = ec2 = 2.5 kV	0.65	II	is:	53	-	a
	Acceptance Inspection Part 2 (Design) See Note 7							
4.10.14	Direct Inter-electrode Capacitance (grounded cathode)	Note 8	6.5	S3	Cin	108.0	122.0	μμF
					Cout	18.0	23.0	μμF
					Cgp		1.0	μμF
4.10.14	Direct Inter-electrode Capacitance (grounded grid)		6.5	S3	Cin	48.0	58.0	μμF
					Cout	18.0	23.0	μμF
					Cpk		0.16	μμF
	Current division	Eb = Ec2 = 1500 Vdc; ec1/ib = 11 a; Ec1 = -600 Vdc, tp = 2 μs min; prr = 50 pps min; Note 9	6.5	S3	ec1	-	0	V
					ic2		1.25	a

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PARA. NO.	TEST	CONDITIONS	AQL (PER-CENT DEFECT-IVE)	INSP. LEVEL	SYMBOL	LIMITS Min.	LIMITS Max.	UNITS
	Power Output	R.F. Amplifier F = 27 to 29 Mc Eb = 7.5 kV Ec2 = 1500V Zero-signal Anode Current = 0.5A Adjust drive and Load for Ib = 2.8A Ic2 = 160 mA Time 30 mins. Note 3	6.5	S3	Po	10		kW
					Ic1	-1	1	mA
4.10.6.1	Total Grid Current (2) Note 11	As for Total Grid Current (1) After 10 mins.	6.5	S3	-Ic1	-	45	μAdc
							40	μAdc
4.10.1.3	Peak Emission (2) Notes 11 and 12	As for Peak Emission (1)	6.5	S3	is	53	-	a

NOTES

1. During operation forced air cooling of the base and anode must be provided to ensure that the maximum seal temperature ratings are not exceeded. The air flow must be applied before or simultaneously with the electrode voltages and should be maintained for two minutes after the voltages are removed.

2. Applies to carrier only conditions.

3. In the Total Grid Current and Power Output tests forced air cooling as stated in Note 1 shall be applied. In all other electrical tests forced air cooling in a base to anode direction is permitted at a rate of 50 cfm. maximum, with air at not less than 20°C for the base and anode. Separate sources may be used for the base and anode but neither shall provide more than 50 cfm.

4. The following paragraphs listed in para. 3.6 of K1006 shall apply:-
   3.7, 3.8, 4.1, 4.3, 4.4, 4.5, 4.6, 4.9.21.

NOTES (Contd.)

5. The following dimensions shall be measured on a Design basis, AQL 6.5, Inspection Level S3:- C, D, E, F, G, H, J, K, L, P, R and T. The following dimensions shall be measured on a sample of four tubes from the first production lot of each year, with no failures allowed:- A, B, M, N and S; in case of a failure, that dimension shall become a Design test for three successful consecutive lots, and may then revert to the once-a-year periodic basis. The indicated T.I.R. measurements shall also be on a Design basis.

6. These tests shall be carried out as standard production tests. Sampling as in DEF.131A may be used. The AQL for the combined defectives for attributes, excluding mechanical, shall be one percent. A tube having one or more defects shall be counted as one defective.

7. Sampling shall be in accordance with DEF.131A.

8. It shall be allowable to measure Cg1g2 and Cg1k separately, with all unused elements grounded in each case, and consider the sum to be equal to Cin.

9. Under the specified voltage conditions, the control grid is pulsed to produce an anode current of ib = ~~10.5~~ 11 amperes. At this operating level, the pulse screen current shall not exceed the specified limit, and the instantaneous grid-cathode voltage may not exceed zero (that is, the grid may not be driven positive with respect to the cathode in order to produce the required anode current).

10. These tests are to be performed before the Power Output test.

11. These tests are to be performed after the Power Output test.

12. The values of peak emission shall not be less than 90% of that obtained in the Peak Emission (1) test.

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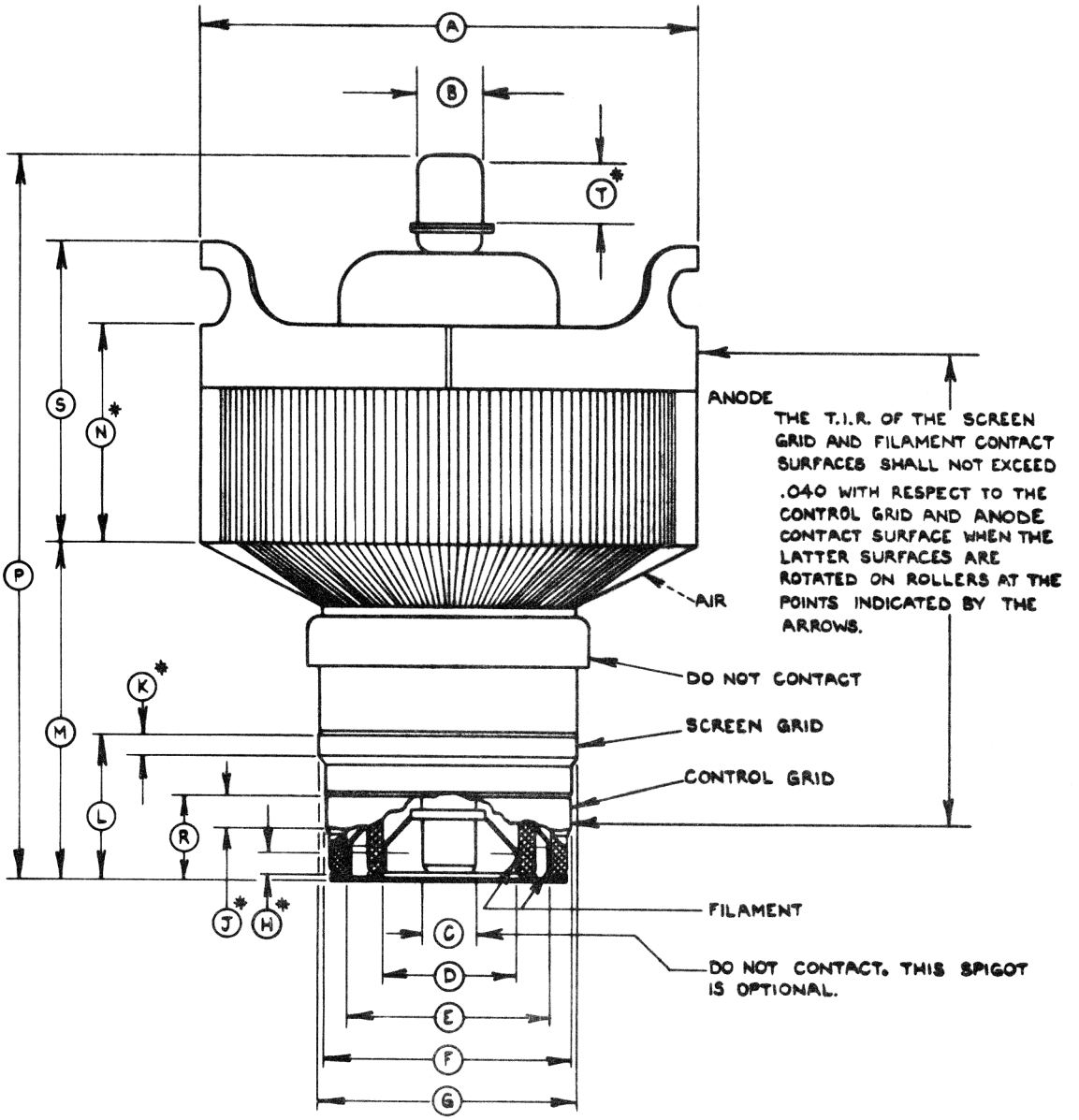

* CONTACT SURFACE.
ALL DIMENSIONS IN INCHES

DIMENSION DATA							
REF.	NOM.	MIN.	MAX.	REF.	NOM.	MIN.	MAX.
A		6.928	7.050	K		.188	
B		.855	.895	L		1.764	1.826
C		.720	.760	M		4.186	4.568
D		1.896	1.936	N		2.412	2.788
E		3.133	3.173	P		8.625	9.125
F		3.792	3.832	R		.986	1.050
G		3.980	4.020	S		3.412	3.788
H		.188		T		.375	
J		.188					

ELECTRONIC VALVE SPECIFICATIONS
SPECIFICATION AD/CV6184 ISSUE 1 DATED 4.5.67

AMENDMENT NO. 1

Page 4 NOTES In Note 9 amend "ib = 10.5 amperes" to read "ib = 11 amperes"

August, 1967.

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

RAM 6/68