GENERAL POST OFFICE: E-IN-C (S)

VALVE ELECTRONIC **CV5403**

Specification: G.P.O./CV 5403/Issue 1

Dated: 20.4.65

To be read in conjunction with K 1001, BS 448 and BS 1409

SECURITY

Specification	Valve
Unclassified	Unclassified

→ indicates a change

TYPE OF VALVE: Power Travelling Wave Amplifier

CATHODE: Indirectly Heated

ENVELOPE: Glass

PROTOTYPE: N 1033

MARKING

See K 1001/4

Ratings and Characteristics
All limiting values are absolute

			Notes
Max. Heater Voltage	(V)	6·6	
Max. Collector Voltage	(V)	2500	
Max. Collector Current	(mA)	30	
Max. Helix Voltage	(V)	2500	
Max. Helix Current	(mA)	1·5	A
Max. Grid 2 Voltage	(V)	2800	
Max. Grid 2 Current	(mA)	1·0	
Max. Grid 2 Dissipation	(W)	1·5	
Max. Grid 1 Voltage (always negative)	(V)	150	
Heater Voltage	(V)	6·3	
Heater Current	(A)	0·71	B
Cathode Heating Time	(Mins)	3	
Frequency Range	(Gc/s)	3·8 to 4·8	
Gain (at 4 watts output)	(db)	37	
Output Power (Saturated)	(W)	7	
Magnetic Field	(Gauss)	550	

Notes. A The current may rise to value of 2 mA for a period not exceeding 1 second.

B Heater starting current, peak instantaneous value must not exceed 4 amps.

Base
Pin spacing and size as B7D

Connections

Pin	Electrode
1	K & H
2	g^2
3	Helix
4	Omitted
5	Omitted
6	g^1
7	H
CAP	Collector

Dimensions

See drawing page 4

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TESTS

To be performed in addition to those applicable in K 1001

Test conditions unless otherwise stated					Note
V_h	V_{g2}	V_{col}	I_{col}	Frequencies	
6·3 ± 5%	2600V ±100V	1400V ±100V	24 mA	3·8, 4·0, 4·2, 4·4, 4·6, 4·8 Gc/s	1

Test Clause	Operating Conditions				Test & Units		Limits		Notes
	Freq	V_{hel}	V_{g1}	$I_{gun\ sol.}$			Min	Max	
a	-	-	-	-	Heater Current	(A)	0·68	0·74	2
b	-	Adj.	Adj.	Adj.	Focusing and Centering				3
					Helix Voltage	(V)	2000	2300	
					Grid 1 Voltage	(V)	0	-80	
					Grid 2 Current	(mA)	0	0·2	
					Gun Sol. Current	(A)	0	2·0	
					Helix Current	(mA)	0	0·5	
c	Adj.	Adj.	Adj.	Adj.	Matching, Power and Noise Factor				
					Frequency	(Gc/s)	3·8	4·8	
					Helix Voltage	(V)	2000	2300	
					Grid 1 Voltage	(V)	0	-80	
					Gun Sol. Current	(A)	0	2·0	
					Power Output	(W)	4	-	5
					Saturated Power Output	(W)	5	-	5
					V.S.W.R.		-	1·25:1	4
					Helix Current	(mA)	0	1·25	6

Notes.

1. The tests shall be performed in a circuit approved by the Type Approval Authorities. A pre-heating time of 5 minutes is required before any test is made.

2. Only the heater voltage to be applied for this test.

3. Grid 1 voltage is set at -80 volts and grid 2 voltages at 2,600 volts. Grid 1 voltage is then adjusted until the collector current attains its operating value, the gun solenoid current being varied to maintain the helix current below its maximum limit. The tube is then rotated until the helix current is a minimum, which should not exceed the limiting value stated. When the helix voltage is adjusted over the range indicated the helix current shall not exceed the limiting value stated.

4. The tube to be initially set up as in Note 3, the electrode voltages being adjusted as in Note 5, and the tube rotated to the position of minimum helix current. The matching adjustments on the mount are then set so that the V.S.W.R. looking into the input or output R.F. connections of the tube is a minimum at the specified frequency. Leaving these adjustments set, the V.S.W.R. should remain below the limits stated over a band of $\pm$10 Mc/s centered on the specified frequency. This limit holds for all degrees of rotation of the tube in the mount.

5. The R.F. power measurement is made with an R.F. input power of 1.0mW and a load of V.S.W.R. not greater than 1.5:1, the helix voltage being adjusted for maximum output. These electrode voltages shall be used in the measurement of output match. It shall be possible to adjust the power output to 4.0 watts by raising the helix voltage within the range of values specified. Under these conditions the match will not be degraded beyond the stated limits, and the saturated power output will not be less than the value indicated. If it is necessary to re-adjust the gun solenoid current to maintain the helix current below the maximum limit the output V.S.W.R. shall remain below the limit specified.

6. The helix current is measured with the tube operating under the conditions of Note 5.

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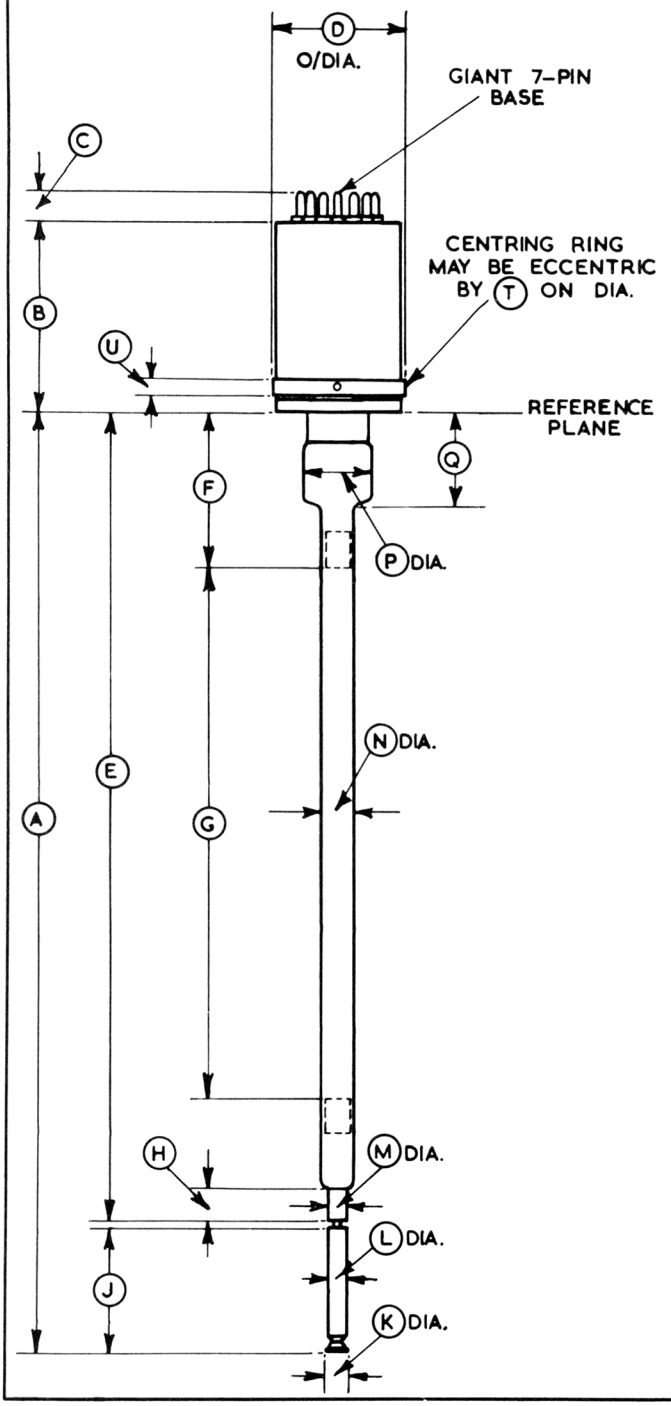
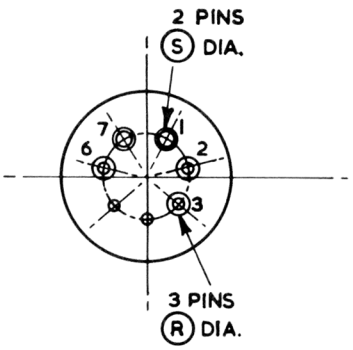


REF.	INCHES	MILLIMETRES
A	14·516 ± 0·062	368·71 ± 1·58
B	2·875 ± 0·020	73·03 ± 0·51
C	0·625 MAX.	15·88 MAX.
D	2·063 $^{+0·000}_{-0·003}$	52·40 $^{+0·000}_{-0·076}$
E	12·336 ± 0·025	313·33 ± 0·64
F	2·426 ± 0·010	61·62 ± 0·25
G	7·871 ± 0·010	119·92 ± 0·25
H	0·451	11·46
J	2·000 ± 0·032	50·80 ± 0·81
K	0·360 MAX.	9·14 MAX.
L	0·375	9·53
M	0·392 ± 0·002	9·96 ± 0·05
N	0·440	11·18
P	1·200	30·48
Q	1·312 MAX.	33·33 MAX.
R	0·125	3·18
S	0·156	3·96
T	0·062	1·58



TOP VIEW ON BASE

PIN	ELEMENT
1	CATHODE & HEATER
2	GRID 2
3	HELIX
4	OMITTED
5	OMITTED
6	GRID 1
7	HEATER
CAP	COLLECTOR