VALVE ELECTRONIC **CV2188**

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

Specifications: GPO/CV2188/Issue 1. Reprint A	SECURITY	
Dated: April, 1959	Specification	Valve
To be read in conjunction with K 1001, BS 1409 and BS 448	Unclassified	Unclassified

→ indicates a change

TYPE OF VALVE: Travelling wave amplifier	MARKING: See K1001/4
CATHODE: Indirectly heated	
ENVELOPE: Glass	BASE: BS448/B8-0
PROTOTYPE: W7/2D	

RATING			Note
Heater voltage	(V)	6.3	
Heater current (nom)	(A)	0.95	
First anode Voltage Va1 (nom)	(KV)	1.3	A
2nd Anode and Helix voltage (max.) Va2	(KV)	3.2	B
Collector voltage Va3 (nom)	(KV)	Va2 + 0.05	
Cathode current (max.)	(mA)	18	
Collector current	(mA)	14	
→ First anode current (max.)	(μA)	500	
Second anode and helix current (max.)	(mA)	4	
→ Pre-heating time (min.)	(Sec)	120	
Output (max.)	(W)	2	
Bandwidth (min)	(Mc/s)	1000	C
Wavelength	(cms)	6.5 to 8.5	
Focusing field	(oersteds)	300	
Amplification	(db)	20	D.E.
Cold Transmission loss (min)	(db)	32	
Air Cooling	(cu. ft/min)	4	

CONNECTIONS	
Pin	Electrode
1	No Connection
2	Heater
3	No Pin
4	1st Anode
5	No Pin
6	No Pin
7	No Pin
8	Heater and Cathode
S.C.	2nd Anode & Helix
T.C.	Collector

SIDE CAP: See K1001/A1/D5.2

DIMENSIONS: See Drawing on Page 3 ←

NOTES. A. The first anode draws negligible current and may be supplied by a potentiometer connected between the helix supply and cathode.

B. The optimum helix voltage for individual valves lies between 2.8 and 3.2KV.

C. Between 3db power points.

D. With collector current of 14 ma and helix voltage within ± 20v of the optimum value.

E. For small signal levels. At maximum output it is approximately 4 db lower.

TESTS

CV2188

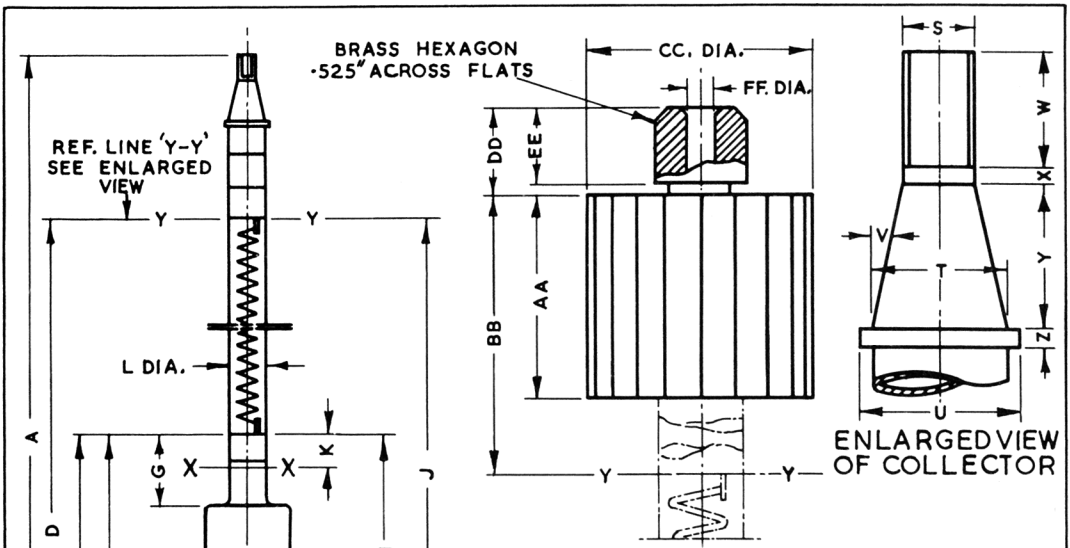
To be performed in addition to those applicable in K 1001

	Test Conditions						Test	Limits		No. Tested	Notes
	Vh (V)	Va1 (V)	Va2 (V)	Va3 (V)	Ic (mA)	Ia3 (mA)		Min.	Max.		
→ a	6.3						Heater current (A)	0.75	1.05	100%	1,2
→ b	6.3		3000	3050		14	Cathode current (focusing) (mA)	-	17	100%	1,3
c	6.3		3000	3050		14	1st anode current (μA)	-	250	100%	1,6
d	6.3		3000	3050	18		1st anode voltage (V)	950	1650	100%	1,6
→ e	5.5	As in test d.	3000	3050			Cathode current (emission) (mA)	10	-	100%	1,4
f	6.3		3000	3050		16	No oscillation should be detected	-	-	100%	1,5
g	6.3			Va2 (opt) +50		14	Optimum 2nd anode voltage (V) (Va2 opt.)	2800	3200	100%	1,6 7
h	6.3		Opt.	Va2 (opt) +50		14	Output at 25 mW input (mW)	750	-	100%	1,6
i	6.3		Opt.	Va2 (opt) +50		14	Max. power output (mW)	1400	-	100%	1,6
j	0	0	0	0	0	0	Cold attenuation (db)	32	-	100%	1

NOTES

1. The tests are to be performed with the valve in a circuit approved by the Type Approval Authority.
2. Heater current should be read at least 1 minute after switching on heater.
3. Ia3 shall be gradually increased to 14 mA by increasing Va1. The current in the deflector coils shall be adjusted to keep Ia2 to a minimum throughout the test.
4. The reading of Ic should not be taken until 1 minute after reducing Vh to 5.5 volts.
5. In this test Va2 and Va3 shall be swept at 50 cps by 200 volts rms and the output from a crystal as the vertical deflection shall be viewed on a cathode ray oscilloscope with a voltage of the same phase and frequency providing the horizontal deflection. The matching flags shall be mistuned and the valve tapped during this test.
6. Ia2 shall not exceed 4 mA during the test.
7. The optimum 2nd Anode Voltage is that giving maximum small signal gain. The test shall be performed with an input of less than 5 mW and with the matching adjusted for maximum gain.

CV 2188



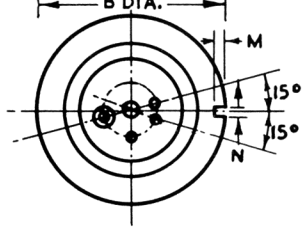
COLLECTOR ELECTRODE WITH COOLER IN POSITION

NOTES:-

(1) DIM. 'L' APPLIES ONLY DOWN TO LINE 'X-X'

(2) ALIGNMENT RING DIM. 'B' SHALL NOT FOUL A CYLINDER OF 2·651" INT. DIA. WHICH IS CONCENTRIC WITH AXIS OF TUBULAR PORTION 'J'

(3) PERIPHERY OF ALIGNMENT RING SHALL NOT DEVIATE FROM 'Z-Z' BY MORE THAN ·015"



CHOKE SPIGOTS, SIDE CAP, ALIGNMENT RING KEYWAY & BASE KEY SHALL NOT DEVIATE FROM COMMON ℄ BY NOT MORE THAN 15° IN EITHER DIRECTION

DIMENSIONS					
REF.	INCHES	MILLIMETRES	REF.	INCHES	MILLIMETRES
A	$17\frac{1}{2}$ MAX.	444·5 MAX.	S	$\frac{1}{4}$ B.S.F. FREE	
B	$2{\cdot}619 \pm {\cdot}002$	$66{\cdot}52 \pm {\cdot}05$	T	$\cdot 457 \pm \frac{{\cdot}003}{{\cdot}001}$	$11{\cdot}60 \pm \frac{{\cdot}076}{{\cdot}025}$
C	$1\frac{13}{16} \pm \frac{1}{32}$	$46{\cdot}0 \pm 0{\cdot}8$	U	$\cdot 520 \pm {\cdot}006$	$13{\cdot}21 \pm {\cdot}15$
D	$15\frac{1}{4}$ MAX.	387·3 MAX.	V	12°	
E	$4\frac{3}{4} \pm \frac{1}{4}$	$120{\cdot}65 \pm 6{\cdot}35$	W	·390 MAX. ·265 MIN.	9·90 MAX. 6·73 MIN.
F	$4{\cdot}047 \pm {\cdot}015$	$102{\cdot}79 \pm {\cdot}38$	X	$\cdot 062 \pm {\cdot}020$	$1{\cdot}57 \pm {\cdot}51$
G	$1 \pm \frac{5}{32}$	$25{\cdot}4 \pm 4{\cdot}0$	Y	$\cdot 486 \pm {\cdot}006$	$12{\cdot}34 \pm {\cdot}15$
H	$3\frac{3}{8} \pm \frac{1}{8}$	$85{\cdot}7 \pm 3{\cdot}2$	Z	$\cdot 062 \pm {\cdot}010$	$1{\cdot}57 \pm 0{\cdot}25$
J	$13{\cdot}672 \pm {\cdot}035$	$347{\cdot}26 \pm {\cdot}89$	AA	$1\frac{3}{8} \pm \frac{1}{16}$	$35{\cdot}0 \pm 1{\cdot}6$
K	$\frac{7}{16}$ MIN.	11·1 MIN.	BB	$2\frac{1}{4} \pm \frac{5}{32}$	$57{\cdot}2 \pm 4{\cdot}0$
L	·515 MAX.	13·08 MAX.	CC	$1{\cdot}500 \pm {\cdot}040$	$38{\cdot}0 \pm 1{\cdot}0$
M	$\cdot 125 \pm {\cdot}010$	$3{\cdot}18 \pm {\cdot}25$	DD	$\frac{19}{32} \pm \frac{3}{64}$	$15{\cdot}1 \pm 1{\cdot}2$
N	$\cdot 065 \pm \frac{{\cdot}010}{{\cdot}000}$	$1{\cdot}65 \pm \frac{{\cdot}25}{{\cdot}000}$	EE	$\frac{1}{2} \pm \frac{3}{64}$	$12{\cdot}7 \pm 1{\cdot}2$
P	$\cdot 187 \pm {\cdot}005$	$4{\cdot}75 \pm {\cdot}12$	FF	$\cdot 187 \pm {\cdot}002$	$4{\cdot}75 \pm {\cdot}05$
R	$\cdot 312 \pm {\cdot}010$	$7{\cdot}92 \pm {\cdot}25$			