VALVE ELECTRONIC **CV228**

MINISTRY OF SUPPLY (S.R.D.E.)

Specification No. MOS/CV 228 Issue 4. Dated : 14.9.56 To be read in conjunction with K1001	SECURITY Specification: Unclassified Valve: Unclassified

——→ indicates a change

TYPE OF VALVE : Velocity-modulated coaxial line oscillator
ENVELOPE : Glass
CATHODE : Indirectly Heated
COMMERCIAL PROTOTYPE : DV40B

MARKING

See K1001/4

RATING		Note
Heater voltage (V)	6.3 ±5%	A
Nominal heater current (A)	0.3	A
Grid voltage VG1 (V)	0 to -200	
Resonator voltage VR (V)	220 ±5%	B, C
Screen voltage VG2 (V)	0 to VR	D
Anode voltage VA (V)	VR + 10 to + 20	E
Min. output (W)	0.45	F
Mean power input (max) (W)	15	
Peak current (max) (A)	0.5	
Tuning range (min) (cms.)	6.2 to 6.8	
Magnetic field (min) (Oersted)	1,000	

BASE

B7G

Pin	Electrode
1	Grid
2	Cathode
3	Heater
4	Heater
5	Anode
6	Resonator (Note G)
7	Screen Grid

DIMENSIONS

See attached drawing ←

NOTES

A. AC frequencies above 60 c/s must not be used.
B. At 6.45 cms. for CW operation. For other wavelengths, VR f^2
C. For pulse operation with a duty cycle of 5% or less, a higher voltage mode for which VR = 800V. approx. may be used to obtain a larger output, provided that mean power input and peak current ratings are not exceeded.
D. VG2 should not be allowed to rise above VR.
E. This is suitable for use as a noise-free beating oscillator, but may give a delay time up to 1 μS for pulses. For very short pulses quicker build-up time is given, but operation may be noisy, with anode volts zero or negative with respect to the cathode.
F. CW power output in the middle of the range with 220 V.H.T. and input 15W.
G. The copper disc to connect internally to pin 6.

TESTS

To be performed in addition to those applicable in K1001

	Test Conditions						Test	Limits		No. Tested
								Min.	Max.	
	The following tests are all to be performed with the valve in the approved circuit.									
	Ic	Vh	VA	VG2	VG1	VR				
a	-	6.3	-	-	-	-	Ih (A)	0.25	0.35	100%
b	63	6.0	Set at VR +10 to +20V	Set at VR	Adjust	215 to 230	Oscillation at 6.45 cm. Power output (mW) VG1	450 -25	- -115	100%
c	-	6.6	235 to 245	225	200 -ve	225	IG1 (µA)	-	30	100%
d	50	6.3	240	Adjust for Ic	0	225	IG2 (mA)	-	5	100%
e	-	6.3	240	Value in clause d	200 -ve	225	Cut-off test IA + IR (mA)	-	7	100%
f	59	6.0	Set at VR +10 to +20V	Set at VR	Adjust for Ic	235 to 255	Oscillation at (cms) VG1	6.0 0	6.2 -	10%
g	71	6.0	Set at VR +10 to +20V	Set at VR	Adjust for Ic	195 to 210	Oscillation at (cms) VG1	6.8 0	7.0 -	10%

CV228

NOTES

1. Anode voltage

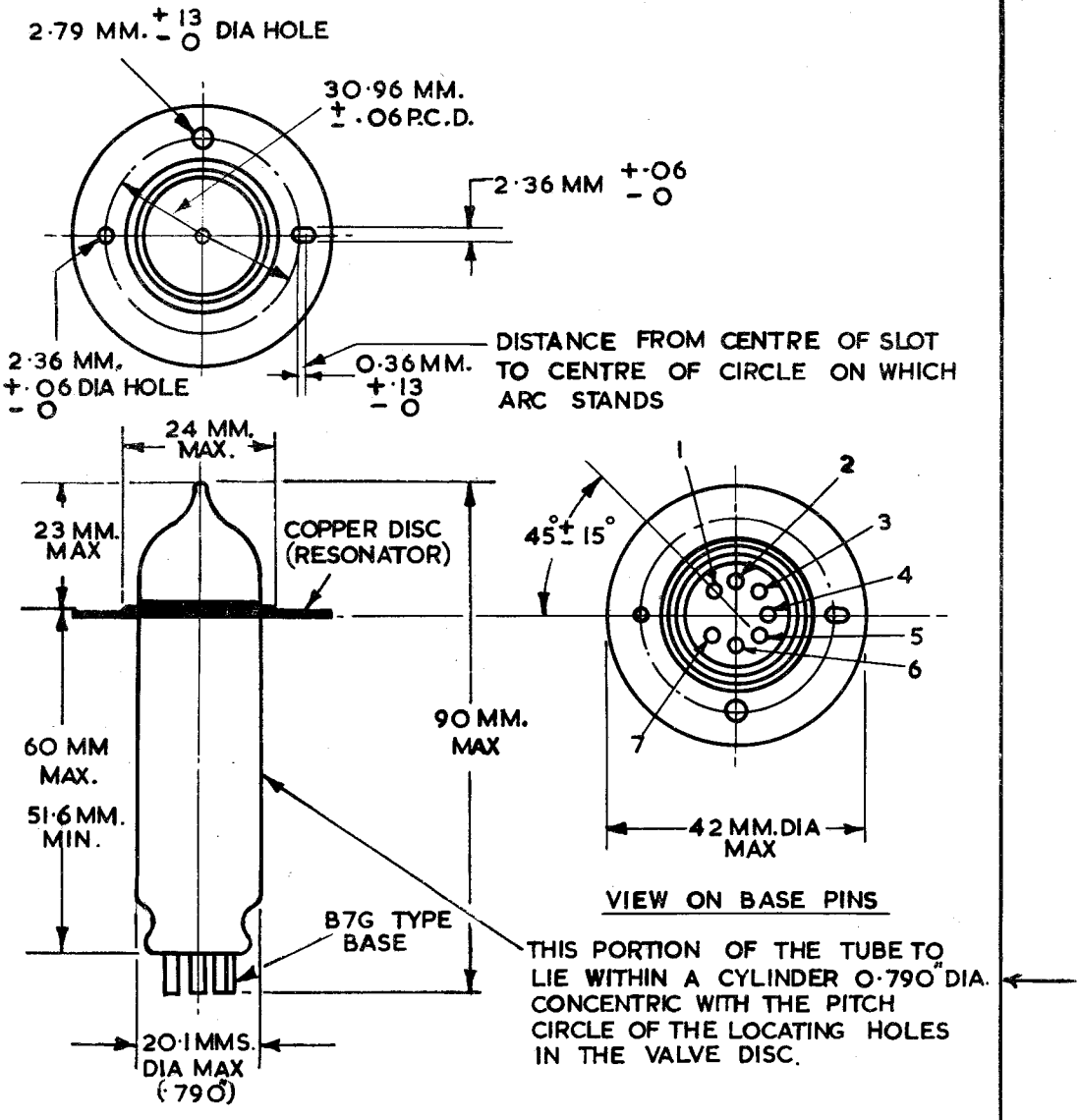
Although test conditions give VA=VR+10 to +20V, circuit complications may make it easier to operate at VA=VR. The difference is only 1 or 2% in power output, but there may be a slight increase in noise.

2. Input Control

Under working conditions, the input may be controlled by either G1 or G2. As G2 normally takes under 1 mA, it is convenient to set VG1 to about -15v, and adjust VG2 by a potentiometer across the resonator supply.

3. Low voltage operation is made possible by the use of a magnet to focus the electron beam through the resonator on to the anode. The magnet recommended is Jessops Type 10512, but any magnet giving a field of about 1100 oersteds with reasonable uniformity over a 22 mm. gap is suitable. The magnet must be adjusted to give maximum anode current; the input during the initial adjustment should be less than 5 watts, but a final very careful adjustment with full power input is desirable. If the magnet is then finally fixed in relation to pins engaging the locating holes in the tube disc, tubes may be changed without further adjustment.

ALL DIMENSIONS ARE IN MILLIMETRES



SCALE:- 1:1 3+