MINISTRY OF AVIATION/R.A.E. VALVE ELECTRONIC **C.V.6050**

Specification M.O.A./CV6050 Issue No. 1A Dated 1.3.61 To be read in conjunction with K.1001 and BS.448	SECURITY Specification: Unclassified Valve: Unclassified

→ Indicates a change

TYPE OF VALVE	Cathode Ray Tube
TYPE OF DEFLECTION	Magnetic
TYPE OF FOCUS	Magnetic
TYPE OF ELECTRON GUN	Triode with beam limiting aperture
SCREEN	G.G.5 Aluminium backed
PROTOTYPE	VX.9202

RATING			NOTE
Heater Voltage	V	6.3	
Heater Current	A	0.6	
Max. Anode Voltage	kV	25	A
Max. Heater/cathode Voltage	V	200	ABC
Max. Cathode Current	µA	100	A
TYPICAL OPERATING CONDITIONS			
Anode Voltage	kV	20	
Cathode Current	µA	25	
CAPACITANCES			
Max. Cg to all other electrodes	pF	6.5	
Max. Ck to all other electrodes	pF	6.5	

MARKING
See K1001/4

BASE
B9A/D

CONNECTIONS

PIN	ELECTRODES
1	NC
2	GRID
3	NC
4	HEATER
5	HEATER
6	GRID
7	NC
8	CATHODE
9	GRID
Side Contact	ANODE

SIDE CONTACT
B.S.448 CT2 (Modified)

DIMENSIONS ←
See drawings pages 7 and 8.

NOTES

A. Absolute Maximum.

B. Either polarity.

C. Short term overload condition only.

D. The Inter Services Joint Service Catalogue Number is 5960-99-037-2229

TESTS

To be performed in addition to those applicable in K.1001.

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	TEST	CONDITIONS	Unit	LIMIT		No.
				Min.	Max.	Tested
a	INTER-ELECTRODE CAPACITANCE					
	1. Grid to all other electrodes	SEE K.1001/5.A.13.	pF	-	6.5	5%
	2. Cathode to all other electrodes		pF	-	6.5	(20)
	FOR ALL FURTHER TESTS Vh = 6.3 VOLTS					
b	HEATER CURRENT		A	0.55	0.65	100%
c	HEATER CATHODE LEAKAGE					
	1. Heater positive	Vh-k = 200V	µA	-	100	100%
	2. Heater negative	SEE K.1001/5.A.3.3	µA	-	100	100%
	FOR ALL FURTHER TESTS Va = 20 kV EXCEPT CLAUSES h, l, m and n					
d	GRID CUT-OFF VOLTAGE (- Vg)	SEE K.1001/5.A.10.	V	20	40	100%
e	GRID DRIVE	SEE K.1001/5.A.8.				
	1. Change in Vg from that in test (d)	Light intensity = 8.6 candela through a Wratten filter. NOTE 1.	V	-	18	100%
	2. Cathode Current Ik.		µA	-	25	100%
	3. Increase of Ik K.1001/5.A.8.2		-	-	-	100%
f	LINE WIDTH	With a single diametric line scan of writing speed 295 cm. per sec. and the grid pulsed positively with amplitude to cause peak Ik of value recorded in test e2. Pulse duration = 8.6 mSec. P.R.F. = 33⅓ c/s SEE NOTES 2, 3 and 4.				
	1. At centre of trace		mm	-	0.175	100%
	2. At extremity of trace		mm	-	0.2	100%

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	TEST	CONDITIONS	Unit	LIMIT		No. Tested
				Min.	Max.	
g	DEVIATION of spot centre from point at which the projected neck axis intersects the screen.	Vg any convenient value. No deflecting or focussing field.	mm	-	4	100%
h	UNFOCUSSED SPOT DIAMETER	Va = 10 kV. With no deflecting or focussing field adjust Vg for electron beam to fill beam limiting aperture.	mm	-	5	100%
j	USEFUL SCREEN AREA	Vg any convenient value	-	-	-	100%
	(1) Diameter of useful Screen about face centre.	A focussed raster which illuminates the whole screen	mm	46	-	100%
	(2) Ratio of Light Intensity	Compare luminance of areas of 1 c.m. square within useful screen area.	-	0.8	1.25	100%
k	FLASHOVER AND STRAY EMISSION There shall be no flashover in the gun or stray emission reaching the fluorescent screen after the first 5 secs.	Preheat for 10 mins. Va = 25 kV. Vg at visual cut-off. No focus or deflecting field. Tube to be held with screen vertically above gun, viewed in a dark room whilst the neck is tapped with an approved forked rubber covered hammer at a minimum of 2 taps per second, for 15 seconds.				100%

	TEST	CONDITIONS	Unit	LIMIT		No. Tested
				Min.	Max.	
l	GRID INSULATION	Va = 25 kV				
	1. Leakage Current	1. Vg = -75V.	µA	-	3	100%
	or					
	2. Increase in voltmeter reading	2. See K.1001/5.a.3.2 RESISTOR = 25 Mohms	%	-	100	
m	CATHODE EMISSION	Preset Va to value for visual cut-off with Vg = -10 volts. With an unfocussed raster and Va at the above value Vg to be reduced to 0 VOLTS.				
	Cathode current at Vg = 0 volts		µA	50	-	100%
n	BLEMISHES SCREEN DEFECTS	An unfocussed raster covering the useful screen area.				100%
	1. Limit diameter Note 5 and 6.		mm	-	0.25	
	2. Separation of blemishes greater than 0.15 mm dia. Note 6.		mm	10	-	
	3. Separation of blemishes greater than 0.1 mm dia.		mm	5	-	
	4. Concentration of blemishes smaller than 0.1 mm dia. Note 7.		-	-	-	
o	BLEMISHES GLASS FACE DEFECTS	An unfocussed raster covering the useful screen area.				100%
	1. Limit diameter.		mm	-	0.125	
	2. In a central zone of 25 mm diameter no bubble or blemish to be greater than 0.125 mm diam. with a maximum of 10 above 0.075 mm dia.					
	3. In a zone between diameters of 25 mm and 46 mm, no bubble or blemish to be greater than 0.2 mm dia. with a maximum of 10 above 0.15 mm dia. and 30 above 0.075 mm dia.					
	4. Minimum separation of bubbles or bubble/blemish groups is 6 mm.					
	5. Bubbles less than 0.075 mm dia. may be ignored unless in sufficient numbers to cause a perceptible cloudiness.					
	SEE NOTE 7.					

NOTES

1. The Wratten 61 Filter is to be used with an eye corrected photocell and the combination calibrated against a standard lamp of colour temperature 2600°K.

2. With Ik = 10 μA peak approx. the line shall be adjusted to optimum focus and then deflected off the useful screen area. The peak Ik shall then be increased to the value obtained in test e2. The line shall then be presented within the useful screen area for a period not exceeding 10 seconds during which the line width shall be measured.

3. The tube is to be located in an approved C.R.T. housing complete with Deflector Coils Type C93/25166 and Focus Permanent Magnet Type A93/25179. The Datum Surface is to protrude 8.56 ± 0.125 mm from the front face of the housing.

4. Line Width to be estimated to extinction level by means of a microscope capable of resolving 0.05 mm.

5. If two or more blemishes are separated by a distance not greater than twice the maximum dimension of the largest blemish of the group, the group of blemishes shall be considered as one blemish of dimension equal to the overall dimension of the group.

6. In an area of 10 mm dia. concentric with the geometric centre there shall be no DARK SPOTS above 0.15 mm dia.

7. Screen to be viewed with the unaided eye from a distance of 1 foot. Tube to be rejected if darkening of screen is perceptible.

DRAWING NOTES

1. Angle between Datum Surface and neck axis. The neck axis is defined as the axis of rotation when the neck is supported at points C and D.

2. Maximum neck O.D. applies from the pinch to this dimension from the Datum Surface.

3. A - A is reference line defined by RING GAUGE of 24.5 mm dia.

4. B - B is reference line defined by RING GAUGE of 46.0 mm dia. Bulb cone tolerance applies between A - A and B - B.

5. Measured before tube is assembled. Tolerance includes wedging. Dimension in inches is 0.100" ± 0.002".

6. Maximum height of barrel above neck axis at all points around the periphery within 330° arc.

7. A gauge of length 100 mm and internal dia. of 23.10 mm to slide freely over the neck from the pinch to reference line E - E.

8. Checked by means of an approved gauge, drawings of which are held by T.A. Authority. Maximum permitted rotation of tube in gauge due to variation in side arm shape is 8°.

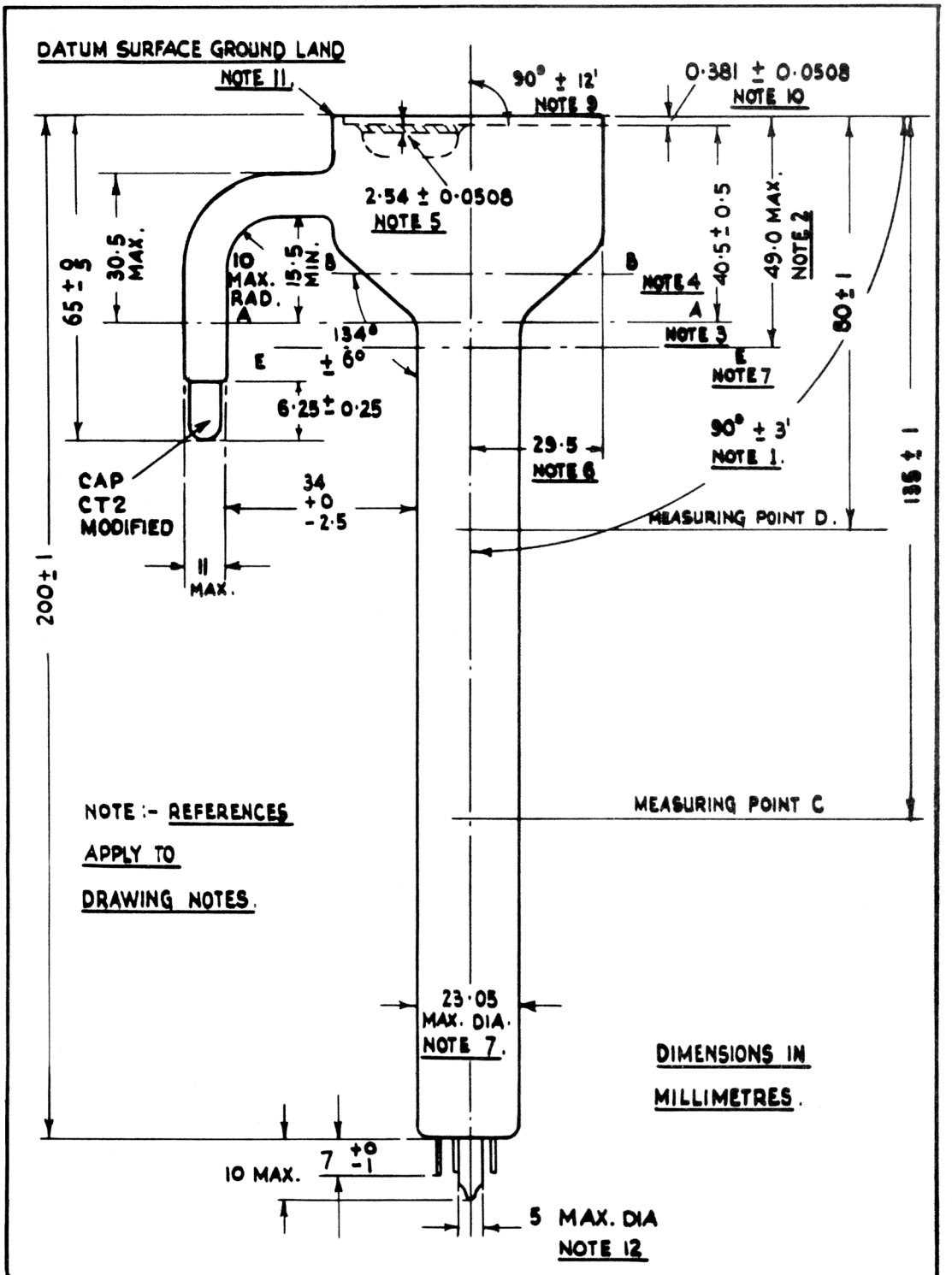
9. Maximum outer face tilt to neck axis.

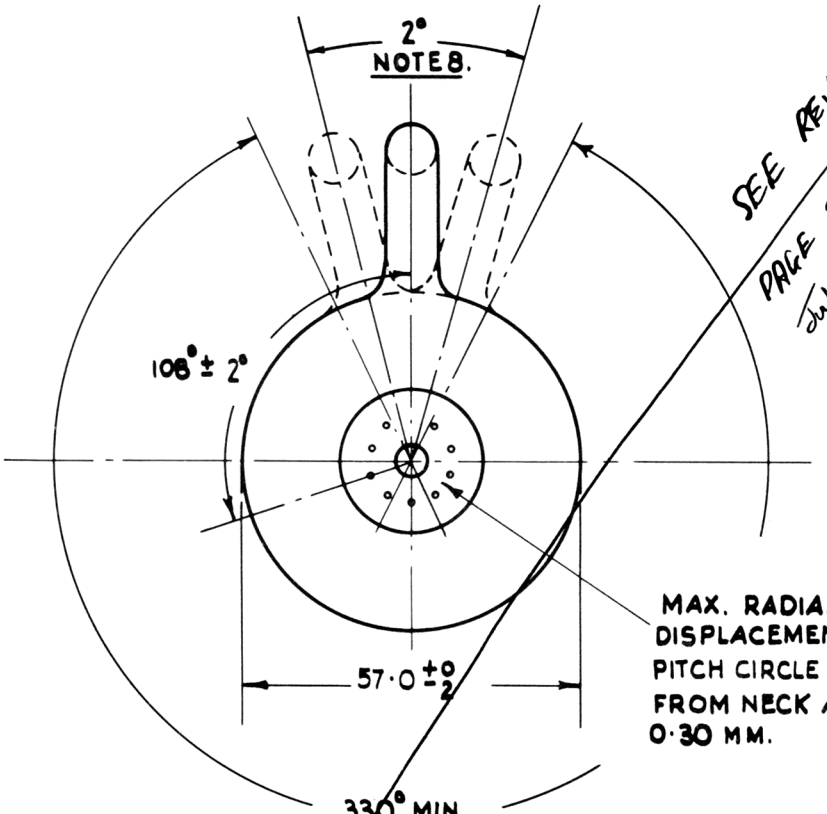
10. To be measured from centre of outer surface of face. Dimension in inches is 0.015" ± 0.002".

11. Ground surface not less than 0.5 mm wide at any point.

12. Tube to enter a B9A valve holder with central hole 6.5 mm dia. to admit exhaust stem.

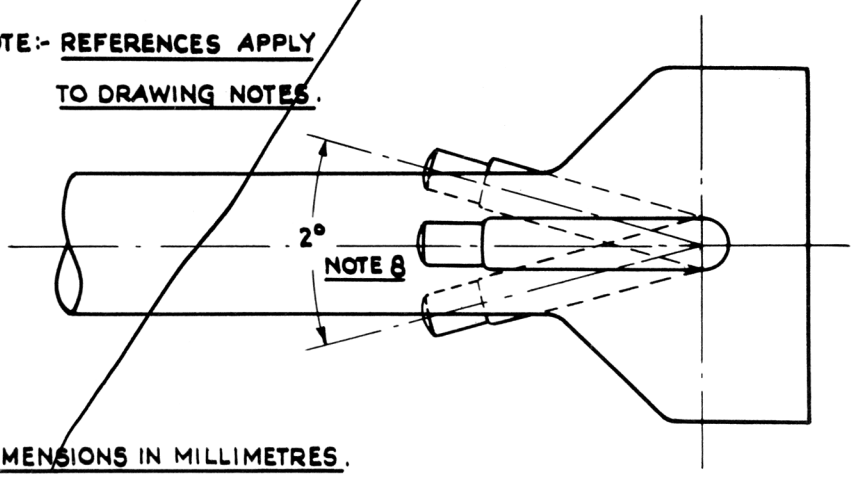
CV6050


DATUM SURFACE GROUND LAND
NOTE 11.
90° ± 12'
NOTE 9
0·381 ± 0·0508
NOTE 10
2·54 ± 0·0508
NOTE 5
65 ± 9
30·5 MAX.
10 MAX. RAD. A
15·5 MIN.
B
NOTE 4
40·5 ± 0·5
49·0 MAX.
NOTE 2
80 ± 1
A
NOTE 3
134°
± 6°
E
NOTE 7
6·25 ± 0·25
90° ± 3'
NOTE 1.
29·5
NOTE 6
CAP
CT2
MODIFIED
34
+0
-2·5
MEASURING POINT D.
135 ± 1
11
MAX.
200 ± 1
NOTE :- REFERENCES
APPLY TO
DRAWING NOTES.
MEASURING POINT C
23·05
MAX. DIA.
NOTE 7.
DIMENSIONS IN
MILLIMETRES.
10 MAX.
7 +0 -1
5 MAX. DIA
NOTE 12

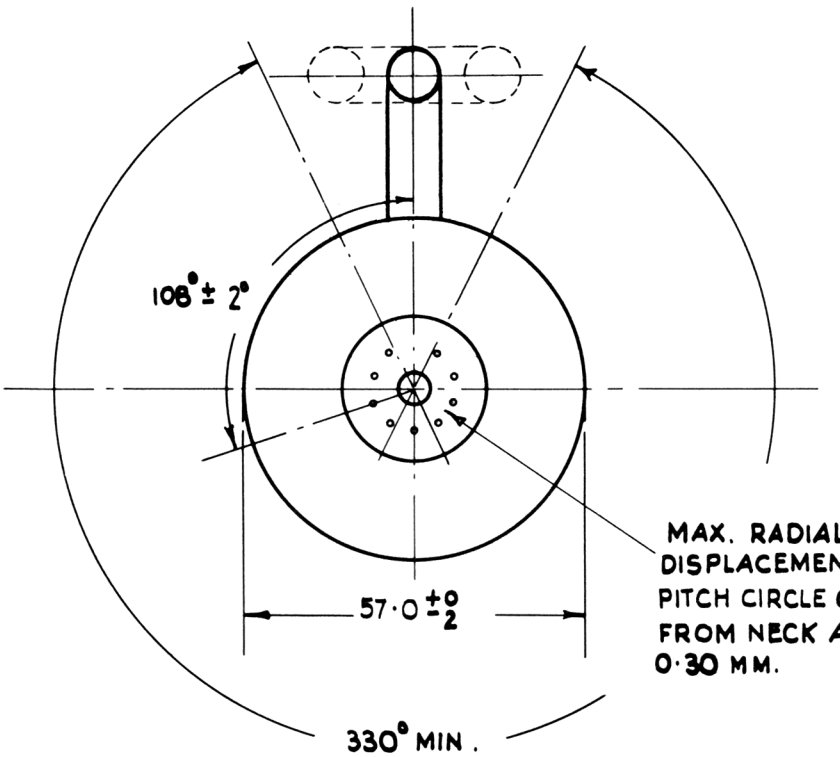


SEE REVISED PAGE 8 July 1963

NOTE:- REFERENCES APPLY TO DRAWING NOTES.



DIMENSIONS IN MILLIMETRES.



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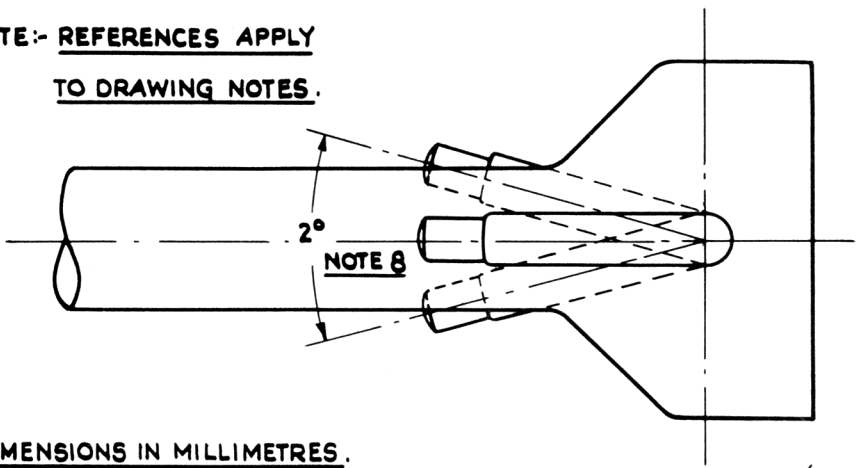

DIMENSIONS IN MILLIMETRES.

(190355)

ELECTRONIC VALVE SPECIFICATIONS

SPECIFICATION MOA/CV6050 ISSUE No.1A DATED 1.3.61

AMENDMENT No. 1

Page 8 Drawing

Cancel, but do not remove existing Page 8 and substitute new Page 8 dated July, 1963 attached hereto.

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

July, 1963

NJ.190355

AAJ
12/7/63