

SPECIFICATION C.V.2388. ISSUE 1 dated 1.6.56

AMENDMENT NO. 1

PAGE 5. Note 1

AMEND to read "..... with inside diameter of $2\frac{1}{4}$ "
with"

PAGE 6

AMEND the dimension of $3\frac{5}{32}$ " \pm $\frac{5}{32}$ " to $3\frac{1}{32}$ " \pm $\frac{5}{32}$ "

(This is from the Datum Plane to the dimensioning
line above 'See Note Z')

June, 1957
N.87977R

T.V.C.Office
for Director R.R.E.

Specification MOS/CV2388 Issue 1 Dated June 1956. To be read in conjunction with K1004	<u>SECURITY</u> Specification Valve Unclassified Unclassified
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← Indicates a change

<u>TYPE OF VALVE:-</u> Cathode Ray Tube			<u>MARKING</u> See K1001/4	
<u>TYPE OF DEFLECTION:-</u> Magnetic			<u>BASE</u> B12A with metal shell	
<u>TYPE OF FOCUS:-</u> Magnetic			<u>CONNECTIONS</u>	
<u>SCREEN:-</u> 009 (Aluminium backed)			Pin	Electrode
<u>BULB:-</u> Metal cone			1	h
<u>PROTOTYPE:-</u> VCRK397A			2	g
<u>RATING</u>	Note		3	No pin
Heater Voltage (V)	6.3		4	No pin
Heater Current (A)	0.5		5	No pin
Max. 1st Anode Voltage (V)	600 A		6	No connection
Max. Final Anode Voltage (kV)	15.5 A		7	No connection
Max. Heater-Cathode Voltage (V)	150 A. B.		8	No pin
Max. Beam Current (μ A)	50		9	No pin
<u>CAPACITANCES (pf)</u>			10	a1
Max. C _g to all other electrodes	15		11	k
Max. C _k to all other electrodes	8		12	h
			Cone	a2
			<u>DIMENSIONS</u> See drawings on Pages 6, 7 and 8	
<p>A. Absolute maximum value. B. Heater negative to cathode. C. To prevent damage to the screen material the tube should not be operated with a stationary spot. The tube should be operated at its minimum useful brightness. D. The fluoride screen shall not contain beryllium.</p>				

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To be performed in addition to those applicable in K1001

Clause	Test Conditions	Test	Limits		No. Tested
			Min.	Max.	
a	See K1001/5A.13.	Capacitances (pf) 1. Grid to all other electrodes 2. Cathode to all other electrodes		15 8	5%(20) 5%(20)

FOR ALL TESTS BELOW $V_h = 6.3$ Volts

b		Heater Current (A)	0.44	0.56	100%
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FOR ALL TESTS BELOW EXCEPT CLAUSES n & o $V_{a1} = 400V$. $V_{a2} = 15$ kV

c	Adjust for optimum focus. Adjust V_g for cut-off. See K1001/5A.10.	Grid Base - V_g (V)	40	100	100%
d	V_g adjusted to give a light intensity of 0.45 candela, using a focussed raster of convenient size.	Screen Efficiency Beam Current (μA)		5	100%
e	Defocussed beam, scanned or deflected off usable screen area. Adjust V_g to give $I_b = 50 \mu A$.	Grid Drive Change in V_g from value found in test (c). (V)	10	30	100%
f	Focus adjusted for optimum with focus coil centred as in drawing page 6. Linear line scan of velocity 4.9 mm/ μS . See note 1. (1) Grid, +ve drive from cut-off by a 100 μS pulse	Line Width measured at the centre of the trace. (Microscope method) (1) (mm)		0.6	100%

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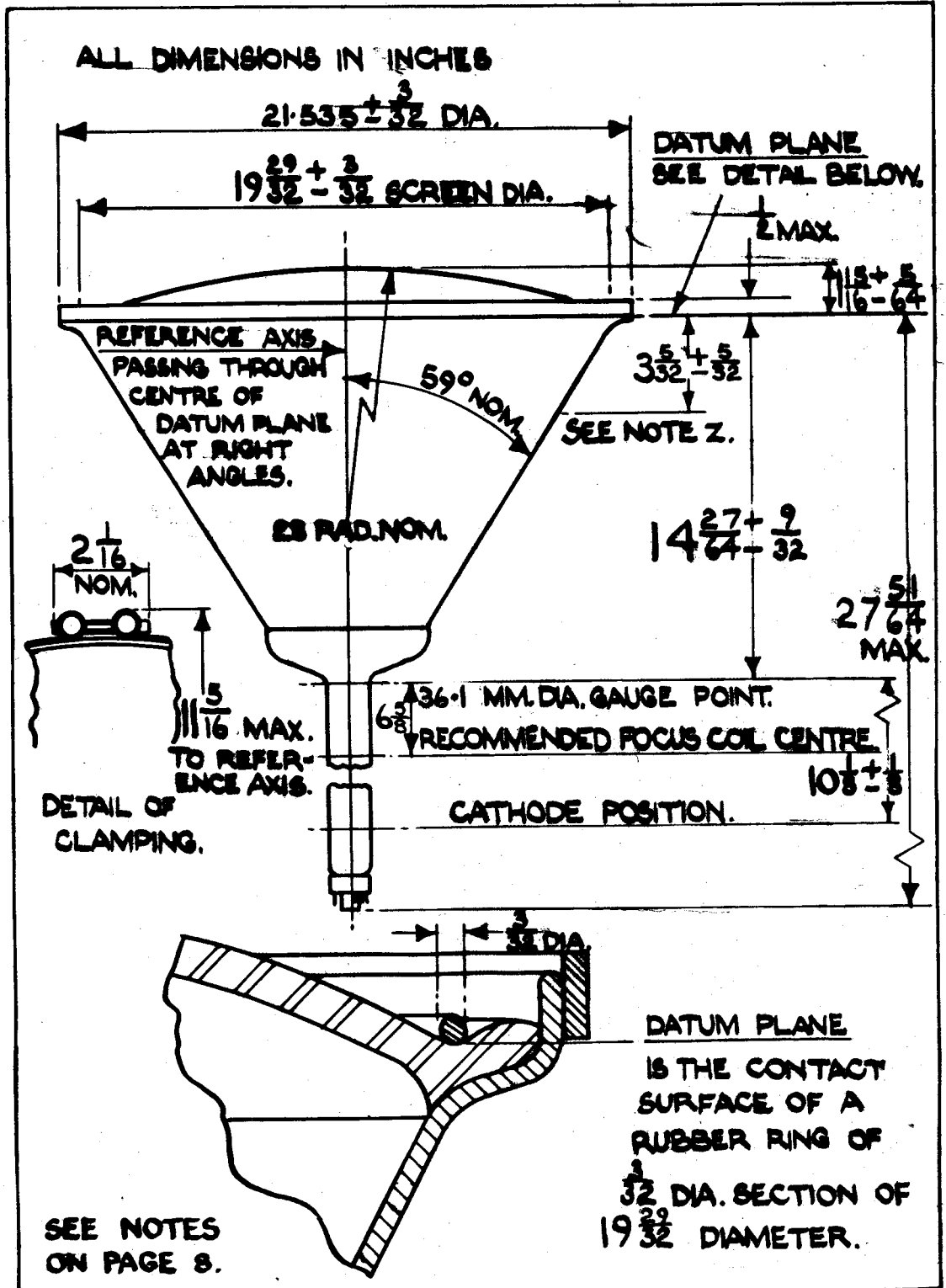
Change	Test Conditions	Test	Limits		No. Tested
			Min.	Max.	
r	(Continued) of amplitude as found in test "e" at 100 P.P.S. <u>OR</u> (ii) Using an interlaced 405 line T.V. raster with the frame scan expanded to facilitate line width measurement, D.C. + ve grid drive from cut-off as found in test "e"	<u>OR</u> (ii) (mm)		0.5	100%
g	(i) Vg - 90V <u>OR</u> (ii) See K1001/5A.3.2. Resistor 10 megohm	<u>Grid Insulation</u> (i) Leakage current (uA) <u>OR</u> (ii) Increase in voltmeter reading		9 100%	100%
h	A voltage of 150V shall be applied between heater and cathode. See K1001/5A.3.3.	<u>Heater-Cathode Leakage</u> Leakage Current (uA)		150	100%
j	Adjust for optimum focus and any convenient light intensity, deflection to cover the useful screen area.	<u>Useful Screen Area</u> Diameter on the geometric centre of the screen (mm)	480		100%
k	No focus or deflecting fields. (1) Vg any convenient value.	(1) Deviation of the spot from the geometric centre of the screen (mm)		20	100%

Clause	Test Conditions	Test	Limits		No. Tested
			Min.	Max.	
k	(Continued) (2) Grid pulsed as in test f.1.	(2) Diameter of unfocussed spot (mm)		25	100%
l	Vg any convenient value. The unfocussed beam shall be scanned by deflection coils near the cathode plane to produce a raster on the tube face whose area is limited by the tube neck.	<u>Neck Alignment</u> Deviation of the centre of "shadow" area from the centre of the unfocussed spot as found in test k(1). (mm)		10	100%
m	Screen to be scanned with an interlaced 405 line T.V. raster of convenient size. No focussing field, Vg adjusted for a screen brightness of 2 foot lamberts. Excitation time 120 secs \pm 15 sec.	<u>Afterglow.</u> Decay time to 0.014 foot lamberts at 20°C (Secs) Assume temperature coefficient of screen to be -6 secs. per °C within the limits 18 to 22°C	170		10% (10)
n	Va2 18 kV Va1 600V Vg -160V Preheat cathode at Vh 6.3V for 10 mins The tube to be held with the screen horizontal and uppermost. Viewed in a dark room or box.	<u>Flash Over and Stray Emission</u> Any flashover or stray emission can be ignored during the first 5 seconds when any emission should be deflected off the screen. During the remaining 5 seconds, when there shall be no deflecting field the tube shall be rejected if flashover or stray emission appears.			100%

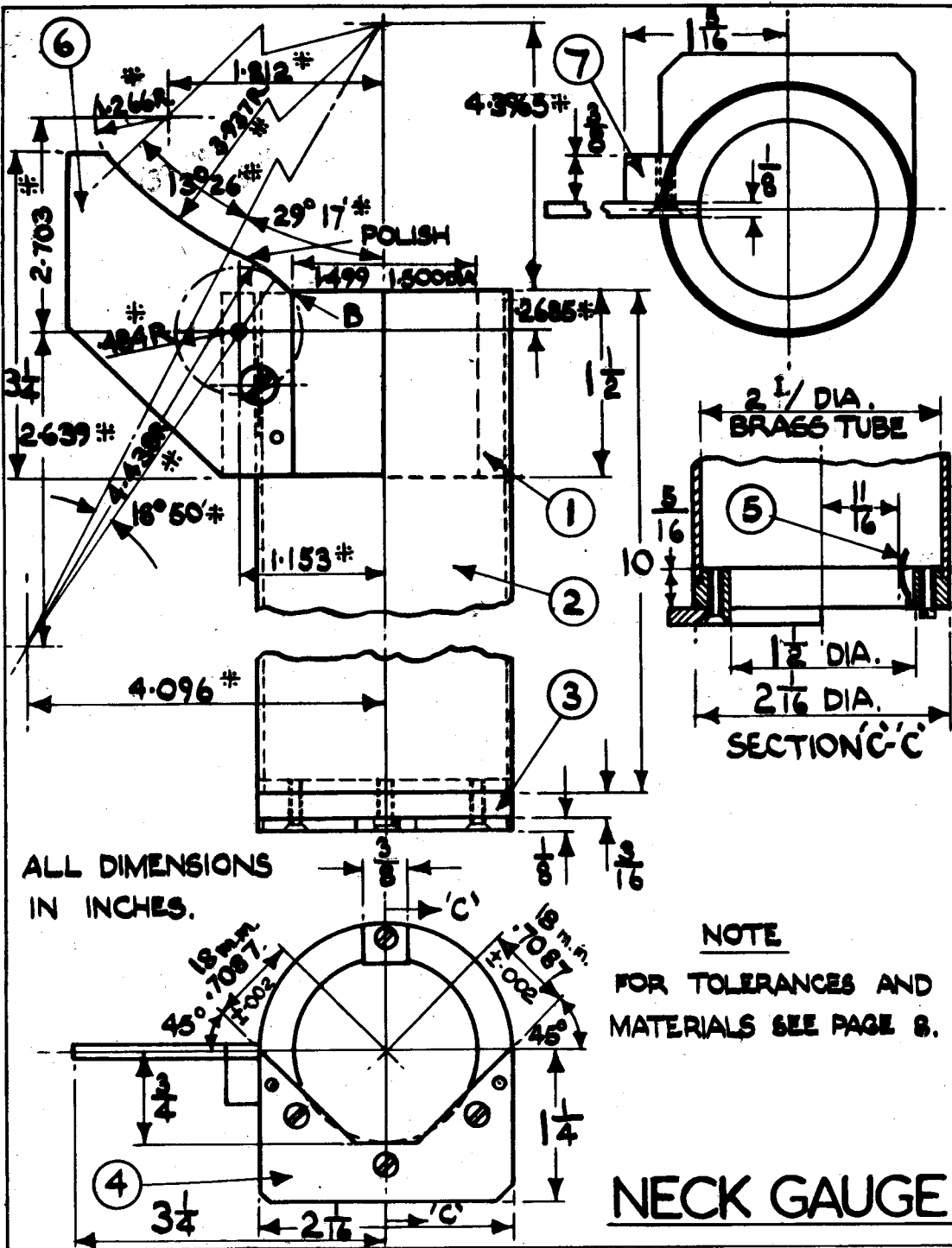
CLASS	Test Conditions	Test	Limits		No. Tested
			Min.	Max.	
o	V_{a1} V_{a2} V_g 200V -70V 0 Starting with cathode cold, measure I_{a2} when I_k reaches 300 to 1000 μA .	<u>Gas Ratio</u> The ratio $\frac{I_{a2} \mu A}{I_k \mu A}$		-4 2x10	100%
p	With a defocussed raster covering the useful screen area. Blemishes less than 0.25 mm to be ignored. See note 2.	<u>Stones Bubbles and Blemishes</u> 0.75 mm dia. max. 1.0 mm. dia. max. Spacing between bubbles(mm)	20	24 5	100%

NOTES

- Focus coil dimensions $3\frac{1}{2}$ " long with inside diameter of $2\frac{1}{2}$ " with a full length gap.
- If two or more blemishes are separated by a distance not greater than the maximum dimension of the largest blemish in the group, then the group of blemishes shall be considered as one blemish of dimension equal to the maximum overall dimension of the group.



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ALL DIMENSIONS
IN INCHES.

NOTE
FOR TOLERANCES AND
MATERIALS SEE PAGE 8.

NECK GAUGE

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BULB OUTLINE NOTES

- V. The flared neck contour must be checked with the gauge shown on Page 7. The blade of this gauge must only make contact with the flared neck at the point "B" when the gauge is rotated through 360° fully home on the neck of the tube.
- W. A gauge 100 mm. long x 36.1 mm. dia. shall pass over base and neck and at the gauge point its centre axis shall lie within $\frac{1}{2}^{\circ}$ of the reference axis.
- X. Between the 36.1 mm. gauge point and the cathode position the neck axis shall not depart from the reference axis by more than $\frac{1}{2}^{\circ}$.
- Y. 21.535" dia. does not include clamping point, this will be orientated to line up with the base spigot key $\pm 15^{\circ}$.
- Z. At this point the cone shall not depart from a true circle of dia. $16 \frac{21}{32}$ " by more than 0.157" (4 mm) and the centre of this circle shall lie within $7/32$ " of the reference axis.

NECK GAUGE TOLERANCES

- i. Fractional dimensions $\pm 1/64$ "
- ii. Constructional dimensions marked \pm have no tolerance.
- iii. Tolerance of +.003 -.000 on surface of and at right angles to profile.
- iv. All other dimensions as stated.

NECK GAUGE MATERIALS

ITEM NO.	MATERIAL	SIZE	NO. REQUIRED
1	Brass	2" DIA. x $1 \frac{5}{8}$ " long	1
2	Brass tube	2" DIA. x $10 \frac{1}{4}$ " "	1
3	Brass	$2 \frac{1}{4}$ " DIA. x $\frac{1}{2}$ " "	1
4	Gauge plate	$\frac{1}{8}$ " x 3" x $1 \frac{5}{8}$ " "	1
5	Spring steel	26G (.018") x $\frac{3}{8}$ " x $1 \frac{1}{8}$ " long	1
6	Gauge plate	$\frac{1}{8}$ " x 3" x $3 \frac{3}{8}$ " long	1
7	Brass	$\frac{3}{8}$ " x $\frac{3}{8}$ " x $1 \frac{1}{8}$ " long	1

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