

# SPECIAL QUALITY STABILISING TUBE

# M8223

*Special quality 150V gas-filled voltage stabiliser for use in equipment where mechanical vibration and shocks are unavoidable and where statistically controlled major electrical characteristics are required.*

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## PRELIMINARY DATA

This data should be read in conjunction with the GENERAL NOTES—SPECIAL QUALITY VOLTAGE STABILISER & REFERENCE TUBES preceding this section of the handbook, and the index numbers are used to indicate where reference should be made to a specific note.

## LIMITING VALUES<sup>†</sup> (absolute ratings)

†Minimum voltage necessary for immediate ignition		
In some ambient light (50ft.cd.)	165	V
In complete darkness	225	V
Burning current		
Maximum	30	mA
Minimum	5.0	mA
Maximum starting current	75	mA
Maximum negative anode voltage	125	V
Minimum ambient temperature	-55	°C
Maximum bulb temperature	150	°C

†These values cover life.

## CHARACTERISTICS

Maximum maintaining voltage at 30mA (all tubes over life)	158	V
Minimum maintaining voltage at 5.0mA (all tubes over life)	142	V
Difference between maintaining voltages at 30mA and 5.0mA (individual tube)		
Maximum	5.0	V
Typical	3.0	V
Typical variation of maintaining voltage at 20mA during 500 hours life at $T_{bulb} = 150^{\circ}\text{C}$	± 2.0	%

TESTS	A.Q.L. <sup>2</sup> (%)	Individuals <sup>3</sup>		Lot average <sup>4</sup>		Lot standard deviations <sup>5</sup> Max.
		Bogey <sup>6</sup>	Min.	Max.	Min.	
<b>GROUP A</b>						
Ignition voltage. Illumination 5 to 50ft.cd.	0.65	—	—	165	—	V
Maintaining voltage						
Burning current = 30mA .. .. .	0.65	150	—	156	—	V
Burning current = 5.0mA .. .. .	0.65	149	143	—	152	V
		—	—	—	147	V
Change in maintaining voltage for burning current change from 5.0 to 30mA .. .. .	0.65	—	—	5.0	—	V
Group quality level <sup>7</sup> .. .. .	1.0	—	—	—	—	—
<b>GROUP B</b>						
Continuity and short .. .. .	0.4	—	—	—	—	—
*Microphonic noise. Burning current = 30mA	2.5	—	—	5.0	—	mV
Oscillation. $V_{sig} = 100mV$ , burning current change from 5.0 to 30mA .. .. .	2.5	—	—	—	—	—
Ignition voltage in complete darkness, after 24 hours in darkness .. .. .	6.5	—	—	225	—	V
Leakage current. $V_a = 50V$ , $R_a = 3.0k\Omega$ .. .. .	6.5	—	—	5.0	—	$\mu A$

\*The tube is tapped with a specified hammer and the output observed on a meter of specified dynamic response.



**GROUP C**Glass strain<sup>6A</sup>, No applied voltage ... 2.5**Fatigue<sup>11</sup>**No applied voltage, 2.5g min. peak acceleration  $f = 25 \pm 2c/s$  for 32 hours in each of 3 mutually perpendicular planes.**Post fatigue tests**

Ignition voltage as in Group A ... .. 165 ✓

**Maintaining voltage**

Burning current = 30mA .. .. 158 ✓

Burning current = 5.0mA .. .. 142 ✓

Change in maintaining voltage for burning current change from 5.0 to 30mA .. .. 5.0 ✓

Sub-group quality level<sup>7</sup> .. .. 6.5**Shock<sup>12</sup>**

No applied voltage, 500g

**Post shock tests**

Ignition voltage as in Group A ... .. 165 ✓

**Maintaining voltage**

Burning current = 30mA .. .. 158 ✓

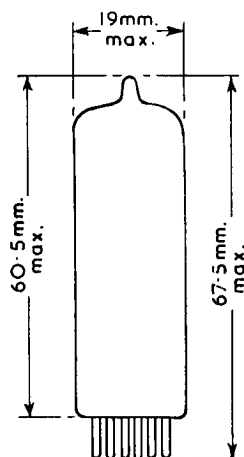
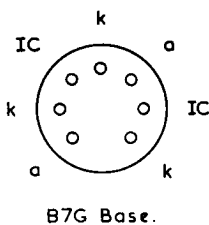
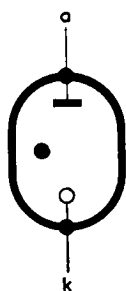
Burning current = 5.0mA .. .. 142 ✓

Change in maintaining voltage for burning current change from 5.0 to 30mA .. .. 5.0 ✓

Sub-group quality level<sup>7</sup> .. .. 20

	A.Q.L. <sup>2</sup> (%)	Individuals <sup>3</sup>		Lot average <sup>4</sup>		Lot standard deviation <sup>5</sup> Max.
		Bogey <sup>6</sup>	Min.	Max.	Min.	
<b>GROUP D</b>						
<i>Intermittent life test</i>						
Burning current = 20mA						
T <sub>bulb</sub> min = 150°C						
<i>Intermittent life test end point 500 hours</i>						
Change in maintaining voltage for current change from 5.0 to 30mA	..	—	—	8.0	—	V
Maintaining voltage						
Burning current = 30mA	..	—	—	158	—	V
Burning current = 5.0mA	..	—	142	—	—	V
Ignition voltage as in Group A	..	—	—	165	—	V
Change in maintaining voltage						
Burning current = 30mA	..	—	—	—	2.0	%
Burning current = 5.0mA	..	—	—	—	2.0	%
<b>GROUP E</b>						
Valves are held for 28 days and tested for						
Inoperatives	..	..	..	..	..	0.5

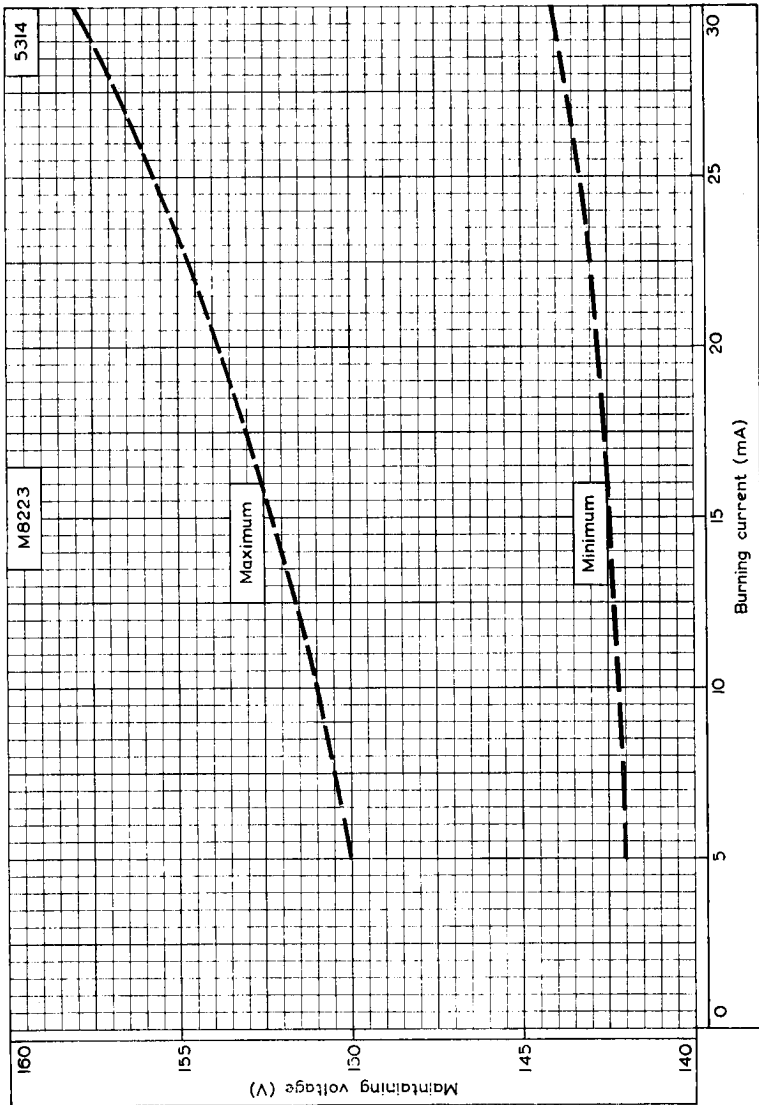
1616



The bulb and base dimensions of this tube are in accordance with BS448 Section B7G

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## SPECIAL QUALITY STABILISING TUBE



MAXIMUM DEVIATION OF CHARACTERISTIC (ALL TUBES OVER LIFE)