

QUICK REFERENCE DATA (nominal values)

For use in equipment where mechanical vibration and shocks are unavoidable and where statistically controlled major electrical characteristics are required.

Maintaining voltage	108	V
Cathode current range	5.0 to 30	mA
Regulation voltage	1.5	V
Ignition delay time	1.3	s

This data should be read in conjunction with GENERAL OPERATIONAL RECOMMENDATIONS—VOLTAGE STABILISER AND REFERENCE LEVEL TUBES and the GENERAL NOTES—SPECIAL QUALITY VOLTAGE STABILISER AND REFERENCE TUBES which precede this section of the handbook. The index numbers are used to indicate where reference should be made to a specific note.

CHARACTERISTICS AND RANGE VALUES FOR EQUIPMENT DESIGN measured at an ambient temperature of between 20 and 30°C unless otherwise stated.

The values given state the range over which the tube will operate both initially and during life. No allowance has been made for supply voltage and component variations.

Initial values

Minimum voltage necessary for ignition (Note A)	130	V
Ignition delay time	See page C1	
Maintaining voltage		
Maximum ($I_k = 30\text{mA}$)	112	V
Minimum ($I_k = 5.0\text{mA}$)	105	V
Increase in maintaining voltage as cathode current is increased from 5 to 30mA (regulation voltage)		
Maximum	3.5	V
Average	1.5	V

Life performance (Note B)

Minimum voltage necessary for ignition (Note A)	133	V
Increase in maintaining voltage as cathode current is increased from 5.0 to 30mA		
Maximum	3.5	V
Typical	1.5	V
Typical percentage variation of maintaining voltage at 20mA during 500 hrs life at $T_{\text{bulb}} = 150^\circ\text{C}$	± 2.0	%
Maximum altitude	60,000	ft

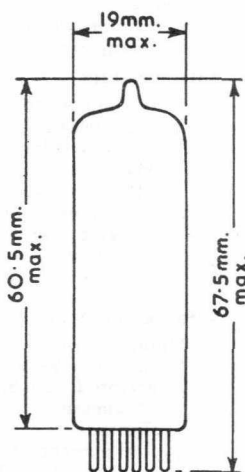
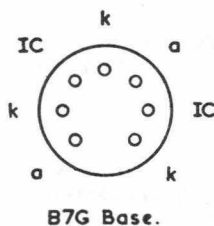
ABSOLUTE MAXIMUM RATINGS¹

Cathode current		
Maximum for continuous operation	30	mA
Maximum surge (note C)	75	mA
Minimum	5.0	mA
Maximum negative anode voltage	75	V
Minimum bulb temperature ($I_k = 0\text{mA}$)	-55	°C
Maximum bulb temperature		
For operation	+150	°C
For storage	+70	°C
Maximum vibrational acceleration (page D5)	2.5	g
Maximum shock (short duration) page D5	450	g

OPERATING NOTES

- This value holds good over life in light or darkness. See graph on page C1.
- These figures apply only when the tube is operated continuously at the currents stated.
- To be restricted for long life to approximately 30 seconds in each 8 hours use.

1616



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

TESTS	A.Q.L. ² (%)	Individuals ³		Lot average ⁴		Lot standard deviation ⁵ Max.
		Bogey ⁶	Min.	Max.	Min.	
GROUP A						
Ignition voltage. Illumination 5 to 50ft.cd.	0.65	—	—	130	—	V
Maintaining voltage						
Cathode current = 30mA	{ 0.65 — }	108.5	—	111	—	V
		—	—	—	109.5	V
Cathode current = 5.0mA	{ 0.65 — }	107.5	105	—	—	V
		—	—	106.5	—	V
Change in maintaining voltage for cathode current change from 5.0 to 30mA	0.65	—	—	3.0	—	V
Group quality level ⁷	1.0	—	—	—	—	—
GROUP B						
Continuity and short	0.4	—	—	—	—	—
*Microphonic noise. Cathode current = 30mA	2.5	—	—	5.0	—	mV
Oscillation. V _{sig} = 100mV, cathode current change from 5.0 to 30mA	2.5	—	—	—	—	—
Ignition voltage in complete darkness, after 24 hours in darkness	6.5	—	—	210	—	V
Leakage current. V _a = 50V. R _a = 3.0kΩ	6.5	—	—	5.0	—	μA

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



GROUP C

Glass strain^{8A}. No applied voltage ..

2.5

Fatigue¹¹

No applied voltage, 2.5g peak acceleration
f = 25 ± 2c/s for 32 hours in each of 3
mutually perpendicular planes.

Post fatigue tests

Ignition voltage as in group A ..

133

Maintaining voltage

Cathode current = 30mA ..

113

Cathode current = 5.0mA ..

103

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

4.0

Sub-group quality level⁷ ..

6.5

Shock¹²

No applied voltage, 500g

Post shock tests

Ignition voltage as in group A ..

133

Maintaining voltage

Cathode current = 30mA ..

113

Cathode current = 5.0mA ..

103

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

4.0

Sub-group quality level⁷ ..

20

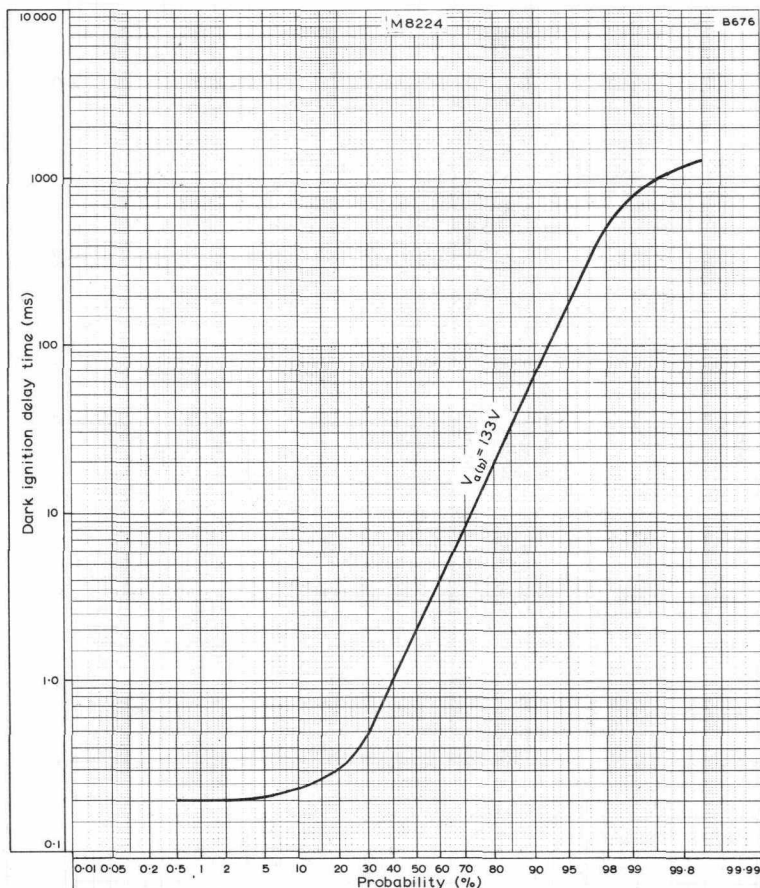




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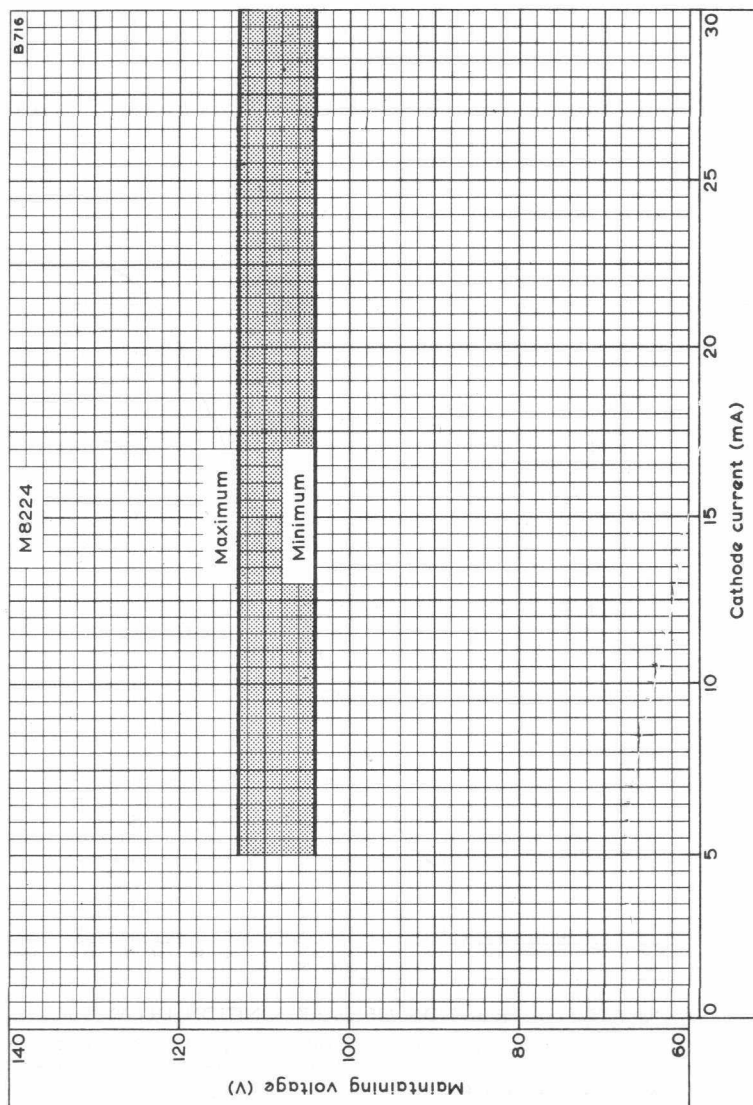
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CUMULATIVE DISTRIBUTION OF DARK IGNITION DELAY TIME

This curve shows the probability that a tube will ignite in less than the time shown. This will be to some extent dependent on the supply voltage. In general an increase in the supply voltage will reduce the ignition delay time.



MAXIMUM VARIATION OF MAINTAINING VOLTAGE WITH CATHODE CURRENT (All tubes over life)