Limit Ratings

Maximum counting rate : sine wave and rectangular pulses	4,000 p.p.s.
Maximum total anode current	550 μA
Minimum total anode current	250 μA
Minimum anode supply voltage (normal room illumination)	350 V
Maximum potential difference between guides and cathodes	140 V
Maximum output cathode load	150 kΩ
Maximum output pulse available with 150 kΩ cathode load resistor	35 V

Characteristics

Running voltage at 300 μA (GC10B/S)	191 ± 5 V

Recommended Operating Conditions

*Anode current	310 μA ± 20%
**Guide Bias	+18 V
Bias on output cathode resistor	—20 V
Forced resetting pulse	—120 V
Double pulse drive-amplitude	—80 V ± 10 V
Double pulse drive-durations	60 μS
Integrated pulse drive-amplitude	—145 V ± 15 V
Integrated pulse drive-duration	80 μS
Sine wave drive-amplitude	40—70 V r.m.s.

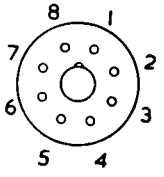
* The required anode current may be obtained from a 475 V supply via an 820 kΩ resistor.

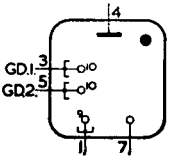
** This does not apply in the case of the sine-wave drive.

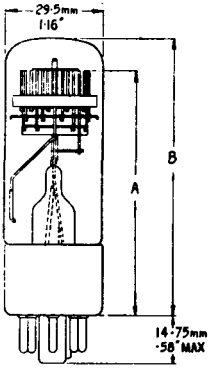
Mechanical Data

Mounting position	Any For visual indication the tube is viewed through the dome of the bulb.
Alignment	Cathode "O" is aligned with pin 6 to an accuracy of ± 12°.
Weight	43 g (nominal)
Escutcheons	N.78211 Bakelite, or N.79368 Brass
Base	I.O.

Base Connections
(underside view)







Pin 1 Common cathodes
2 —
3 1st Guides
4 Anode
5 2nd Guides
6 —
7 Cathode " O "
8 —

Dimension	*Nominal*	GC10B		GC10B/S	
		Min.	*Max.*	*Min.*	*Max.*
A	72·5 mm. (2·85")	68·5 mm.	76·5 mm.	69·5 mm.	75·5 mm.
B	85 mm. (3·35")	81·5 mm.	88·5 mm.	82·5 mm.	87·5 mm.

Scale-of-ten Counter

Specially processed for long life

GC10B/L, GC10/4B/L

(CV.6044) (CV.6100)

Limit Ratings

	Rectangular Pulse Drive	Sine Wave Drive
Max. speed	4,000 p.p.s.	4,000 c.p.s.
Max. striking voltage	350 V	350 V
Max. anode current	550 μA	550 μA
Min. anode current	250 μA	250 μA
Max. input signal peak to peak	140 V	171 V
*Max. guide bias	60 V	
Max. K_o bias	—20 V	
Max. K_o load	100 kΩ	
Max. guide bias resistance	220 kΩ	

Characteristics

Running voltage at 450 μA	190 V	190 V

Recommended Operating Conditions

Supply voltage	400 V	400 V
Anode resistor	470 kΩ	470 kΩ
Signal amplitude	—120 V	55 V r.m.s.
Both Guides		
Pulse duration	80 μS	
Both Guides		
Signal delay, 2nd guide	80 μS	
Signal delay, 2nd guide		45°
*Bias voltage	35 V	9 V
Both Guides		
Bias voltage K_o	—10 V	—10 V
Output cathode load	33 kΩ	33 kΩ

* With rectangular pulse drive with a variable mark/space ratio this guide bias must be maintained, e.g., by D.C. restoration.

GC10 B/L, GC10/4B/L
(CV.6044) (CV.6100)

Scale-of-ten Counter
Specially processed for long life

	Test	Test Conditions	AQL %	Insp. Level	Symbol	Limits Min.	Limits Max.	Units	Notes
	GROUP A Acceptance Tests								
a	Insulation	To be measured between any one electrode and parallel combination of all the others at 170 V.		100%		100		MΩ	1
b	Striking Voltage	A — K_o V_b = 350 V		100%	V_s				1, 3
c	Scaling Accuracy	V_b = 400 V V_1 = +35 V V_2 = −40 V T = 60μS Frequency = 4·0 kc/s		100%					1, 2
d	Running Voltage	V_b = 400 V		100%	V_r	184	194	V	1, 4
	GROUP B Life Test								
		Combined AQL	1·5	IA					
a	Survival running life test	V_b = 500 V V_1 = +35 V V_2 = −40 V T = 60 μS							5, 7
	Tests to be performed at end of survival running test								
b	Scaling Accuracy	V_b = 400 V V_1 = +35 V V_2 = −40 V T = 60 μS Frequency = 4·0 kc/s							2
c	Running Voltage	V_b = 400 V			V_r	176	206	V	4

Scale-of-ten Counter

Specially processed for long life

GC10B/L, GC10/4B/L

(CV.6044) (CV.6100)

	Test	Test Conditions	AQL %	Insp. Level	Symbol	Limits Min.	Limits Max.	Units	Notes
	GROUP C								
	Electrical Retest								6
	Not more than 7 days prior to application for Services final approval								
a	Scaling Accuracy	V_b = 400 V V_1 = +35 V V_2 = −40 V T = 60 µS Frequency = 4·0 kc/s		100%					2
b	Running Voltage	V_b = 400 V		100%	V_r	184	194		4

NOTES

1. Tests of Group A are to be applied directly after completion of manufacture.
2. The tube shall scale without error the first applications of test signals (illustrated in Fig. 1). Test signals are to be applied for at least 1/10th second. The test circuit of Fig. 2 is applicable.
3. $K_{1\text{-}9}$ 1st guide and 2nd guide electrodes to be disconnected. Illuminations of tube to be 5—50 ft. candles. Tube to conduct in less than 10 seconds.
4. The $K_{1\text{-}9}$ 1st guide and 2nd guide electrodes will be successively earthed through a suitable make before break type switch to cause 30 gaps to conduct in turn. The running voltage across each gap shall be within the specified limits. For this test the K_o and $K_{1\text{-}9}$ electrode will be commoned. The test circuit to Fig. 3 is applicable. The measurement of the running volts is to be made between 0·1 and 2·0 seconds after the contacts of the make before break type switch have broken.
5. The tubes selected for this test are to be run in the circuit shown in Fig. 4. One application of the pulses shown in Fig. 1 is to be made every 85 ± 5 hours. The tube is to receive 20 such pulses and then be removed. A tube which fails to step on the application of the test pulses shall be rejected. The normal guide bias is to be +60 V which will be reduced to +35 V immediately prior to the application of pulses.
6. During the period between the completion of Group A tests and the commencement of Group C tests no further processing shall be applied.
7. A lot shall consist of not more than one calendar month's production or 1301 whichever is the greater. For lots of 800 and less sampling codes shall be as for lots 801—1300.

GC10B/L, GC10/4B/L
(CV.6044) (CV.6100)

Scale-of-ten Counter
Specially processed for long life

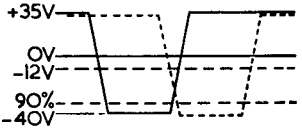


Fig. 1

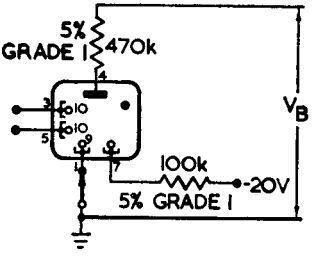


Fig. 2

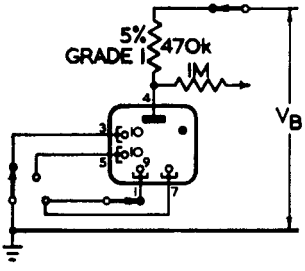


Fig. 3

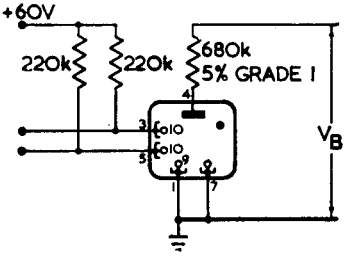


Fig. 4

Scale-of-ten Counter

Specially processed for long life

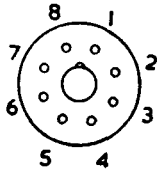
GC10B/L, GC10/4B/L

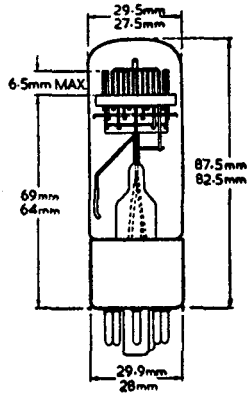
(CV.6044) (CV. 6100)

Mechanical Data

Mounting position	Any For visual indication the tube is viewed through the dome of the bulb.
Alignment	Cathode "O" is aligned with pin 6 to an accuracy of ± 12°.
Escutcheons	N78211 Bakelite, or N79368 Brass
Base	I.O.

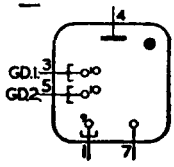
Base Connections (underside view)

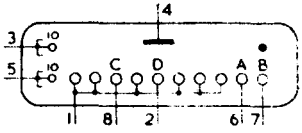




GC 10 B/L

Pin 1 Common cathodes
2 —
3 1st Guides
4 Anode
5 2nd Guides
6 —
7 Cathode " O "
8 —



GC 10/4 B/L

Pin 1 Common cathodes
2 Cathode " 5 "
3 1st Guides
4 Anode
5 2nd Guides
6 Cathode "9"
7 Cathode " 0 "
8 Cathode " 3 "