

**Limit Ratings**

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

**Characteristics**

Running voltage at 300 $\mu$ A (GC10B/S)	191 $\pm$ 5 V
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**Recommended Operating Conditions**

*Anode current	310 $\mu$ A $\pm$ 20%
**Guide Bias	+18 V
Bias on output cathode resistor	-20 V
Forced resetting pulse	-120 V
Double pulse drive-amplitude	-80 V $\pm$ 10 V
Double pulse drive-durations	60 $\mu$ S
Integrated pulse drive-amplitude	-145 V $\pm$ 15 V
Integrated pulse drive-duration	80 $\mu$ S
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 k $\Omega$  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  $\pm 12^\circ$ .

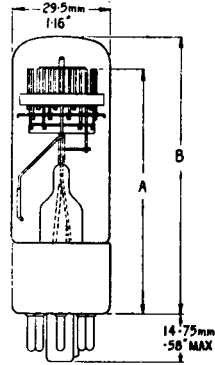
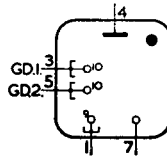
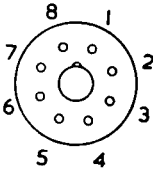
Weight  
Escutcheons

43 g (nominal)  
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 $\mu$ A	550 $\mu$ A
Min. anode current	250 $\mu$ A	250 $\mu$ A
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 k $\Omega$	
Max. guide bias resistance	220 k $\Omega$	

## Characteristics

Running voltage at 450 $\mu$ A	190 V	190 V
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## Recommended Operating Conditions

Supply voltage	400 V	400 V
Anode resistor	470 k $\Omega$	470 k $\Omega$
Signal amplitude	-120 V	55 V r.m.s.
Both Guides		
Pulse duration	80 $\mu$ S	
Both Guides		
Signal delay, 2nd guide	80 $\mu$ S	
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 k $\Omega$	33 k $\Omega$

\* 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		Units	Notes
						Min.	Max.		
	<b>GROUP A</b> <b>Acceptance Tests</b>								
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 <sub>o</sub> V <sub>b</sub> = 350 V		100%	V <sub>s</sub>				1, 3
c	Scaling Accuracy	V <sub>b</sub> = 400 V V <sub>1</sub> = +35 V V <sub>2</sub> = -40 V T = 60μS Frequency = 4.0 kc/s		100%					1, 2
d	Running Voltage	V <sub>b</sub> = 400 V		100%	V <sub>r</sub>	184	194	V	1, 4
	<b>GROUP B</b> <b>Life Test</b>								
a	Survival running life test	Combined AQL V <sub>b</sub> = 500 V V <sub>1</sub> = +35 V V <sub>2</sub> = -40 V T = 60 μS	1.5	IA					5, 7
b	Scaling Accuracy	V <sub>b</sub> = 400 V V <sub>1</sub> = +35 V V <sub>2</sub> = -40 V T = 60 μS Frequency = 4.0 kc/s							2
c	Running Voltage	V <sub>b</sub> = 400 V			V <sub>r</sub>	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		Units	Notes
						Min.	Max.		
	<b>GROUP C</b> <b>Electrical Retest</b> Not more than 7 days prior to application for Services final approval								6
a	Scaling Accuracy	$V_b = 400\text{ V}$ $V_1 = +35\text{ V}$ $V_2 = -40\text{ V}$ $T = 60\ \mu\text{S}$ Frequency = 4.0 kc/s		100%					2
b	Running Voltage	$V_b = 400\text{ V}$		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.  $K_{1.9}$  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  $K_{1.9}$  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  $K_0$  and  $K_{1.9}$  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  $85 \pm 5$  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

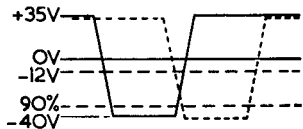


Fig. 1

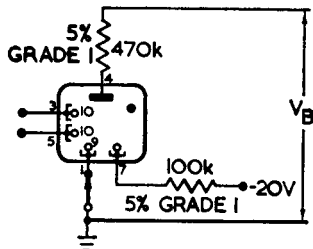


Fig. 2

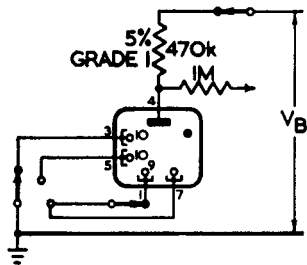


Fig. 3

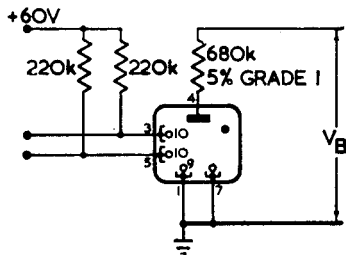


Fig. 4

# 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  $\pm 12^\circ$ .

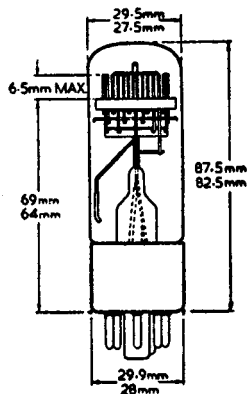
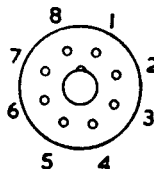
Escutcheons

N78211 Bakelite, or N79368 Brass

Base

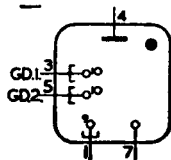
I.O.

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"

