

# Dieter's Nixie Tube Data Archive

This file is a part of Dieter's Nixie- and display tubes data archive

If you have more datasheets, articles, books, pictures or other information about Nixie tubes or other display devices please let me know.

Thank you!

|                                  |  |
|----------------------------------|--|
| Document in this file            | ETL datasheet: GC10B/L, GC10/4B/L, CV6044, CV6100 dekatron tubes |
| Display devices in this document | GC10B/L, GC10/4B/L, CV6044, CV6100                               |

**Scale-of-ten Counter**  
Specially processed for long life

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

**Limit Ratings**

|                                | Rectangular<br>Pulse<br>Drive | Sine<br>Wave<br>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 |
|--------------------------------|-------|-------|

**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

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|   | Test  | Test Conditions   | AQL % | Insp. Level | Symbol         | Limits |      | Units | Notes |
|---|---|---|-------|-------------|----------------|--------|------|-------|-------|
|   |   |   |       |             |                | Min.   | Max. |       |       |
|   | <b>GROUP A</b><br><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><br>V <sub>b</sub> = 350 V  |       | 100%        | V <sub>s</sub> |        |      |       | 1, 3  |
| c | Scaling Accuracy                                      | V <sub>b</sub> = 400 V<br>V <sub>1</sub> = +35 V<br>V <sub>2</sub> = -40 V<br>T = 60 μS<br>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><br><b>Life Test</b>                    |   |       |             |                |        |      |       |       |
| a | Survival running life test                            | Combined AQL<br>V <sub>b</sub> = 500 V<br>V <sub>1</sub> = +35 V<br>V <sub>2</sub> = -40 V<br>T = 60 μS         | 1.5   | IA          |                |        |      |       | 5, 7  |
|   | Tests to be performed at end of survival running test |   |       |             |                |        |      |       |       |
| b | Scaling Accuracy                                      | V <sub>b</sub> = 400 V<br>V <sub>1</sub> = +35 V<br>V <sub>2</sub> = -40 V<br>T = 60 μS<br>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**  
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**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><br><b>Electrical Retest</b><br>Not more than 7 days prior to application for Services final approval |  |       |             |        |        |      |       | 6     |
| a | Scaling Accuracy  | $V_b = 400\text{ V}$<br>$V_1 = +35\text{ V}$<br>$V_2 = -40\text{ V}$<br>$T = 60\text{ }\mu\text{S}$<br>Frequency =<br>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

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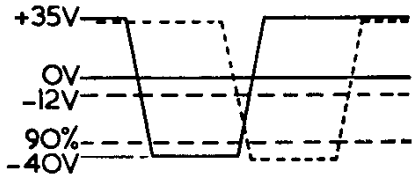


Fig. 1

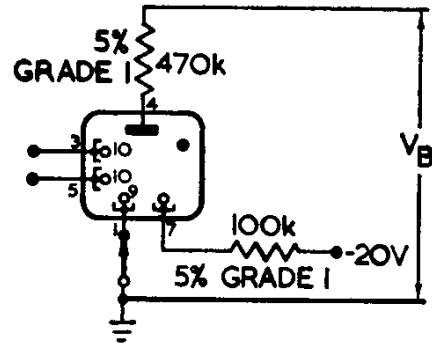


Fig. 2

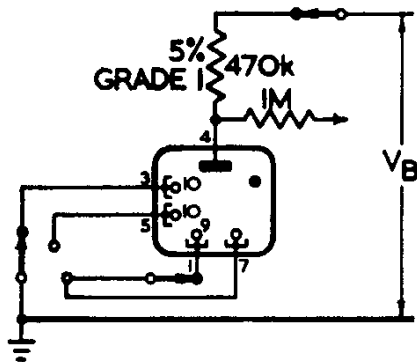


Fig. 3

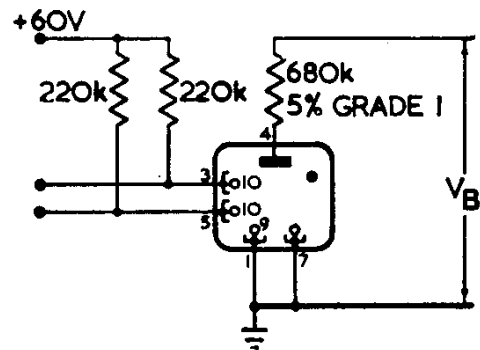


Fig. 4

**Scale-of-ten Counter**  
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**GC10B/L, GC10/4B/L**  
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**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  $\pm 12^\circ$ .

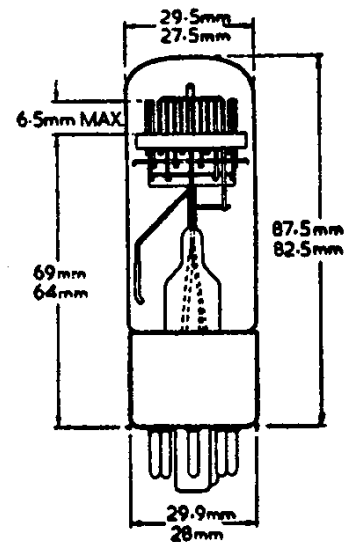
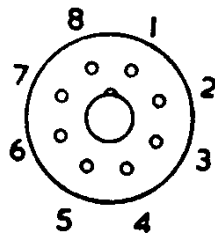
Escutcheons

N78211 Bakelite, or N79368 Brass

Base

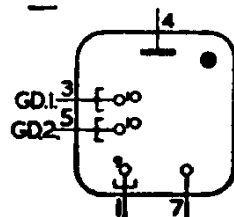
I.O.

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"

