



GLOW TUBE

DESCRIPTION

The GL-OA2 is a miniature two-electrode inert-gas-filled cold-cathode tube for use as a voltage regulator.

TECHNICAL INFORMATION

These data are for reference only. For design information refer to specifications.

GENERAL

Electrical Data

	Minimum	Bogey	Maximum	
D-c Anode-supply Voltage*	185			volts
Anode voltage drop	140	151	168	volts
Anode breakdown voltage		156	185	volts
Shunt capacitor			0.1	microfarad
Regulation		2	6	volts

Mechanical Data

Mounting position—any

Net weight, maximum.....0.3 Ounce

*To assure starting throughout tube life not less than the specified supply voltage should be provided.


Electronic
TUBE

GENERAL  ELECTRIC

TECHNICAL INFORMATION (CONT'D)**MAXIMUM RATINGS, Absolute Values**

Maximum average starting current.....	75 milliamperes
Maximum averaging time.....	10 seconds
D-c cathode current	
Maximum.....	30 milliamperes
Minimum.....	5 milliamperes
Maximum frequency.....	0 cycles per second
Ambient temperature limits.....	-55 to +90 C

APPLICATION NOTES

The base of the GL-OA2 fits the miniature 7-pin socket which may be mounted to hold the tube in any position. No connection should be made to pins 3 and 6 which extend into the interior of the tube since any potentials applied to these pins may cause erratic tube performance. The three pin terminals for the cathode and the two for the anode offer the designer several different possibilities for connection so as to provide protection for the associated components in case the regulator tube is removed from its socket.

Sufficient resistance must always be used in series with the GL-OA2 to limit the current through the tube. The value for the series resistor is dependent on the maximum anode-supply voltage and the ratio of the current through the load to the operating current of the GL-OA2, and should be chosen to limit the operating current through the tube to 30 milliamperes at all times after the starting period.

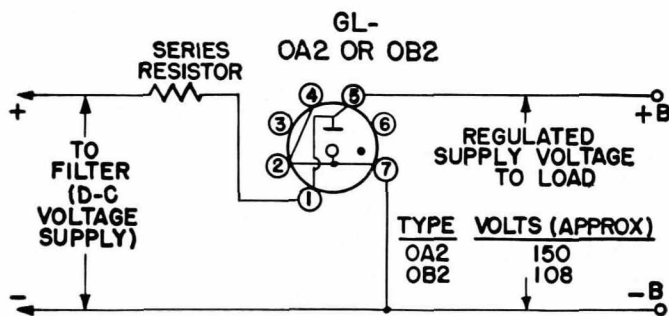
The maximum load current that can be regulated is determined by the minimum and maximum values of the supply voltage. The value of series resistor for the maximum supply voltage should be calculated as indicated above. The user should then determine whether this value will permit adequate starting voltage when the supply voltage falls to its minimum value. If adequate starting voltage is not obtained, a new load current of lower value must be used and the calculations repeated. It will be apparent from such calculations that the higher the minimum supply voltage and the smaller the difference between its minimum and maximum values, the higher will be the load current that can be regulated.

In order to handle more load current, two or more GL-OA2's may be operated in parallel, but such parallel operation requires that a resistor be used in series with each regulator tube in order to equalize division of the current between the paralleled tubes. Approximately a 100-ohm resistor for each tube should be used. The disadvantage of this method is that the use of resistors impairs the regulation which can be obtained.

When equipment utilizing the GL-OA2 is turned on, a starting current in excess of the average operating current is permissible as indicated under Maximum Ratings. When the tube is subjected to such high starting currents, the regulated voltage may require up to 20 minutes to drop to its normal operating value. This performance is characteristic of voltage-regulator tubes of the glow-discharge type. Similarly, the regulation voltage is affected by changes in current within the operating current range. For example, the regulation value of a tube operated for a protracted period at 5 milliamperes and then changed to 25 milliamperes, may be somewhat different from the value that will be obtained after a long period of operation at 25 milliamperes. Likewise, the regulation value may change somewhat after a long idle period.

If the associated circuit has a capacitor in shunt with the GL-OA2, the capacitor should be limited in value to 0.1 microfarad. A larger value may cause the regulator tube to oscillate and thus give unstable regulation performance.

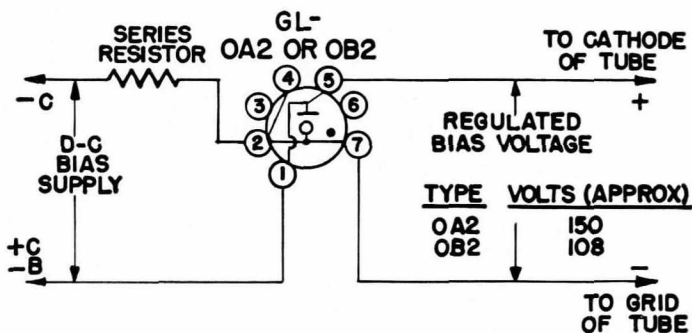
TYPICAL CIRCUITS
FOR
GLOW TUBE GL-OA2



CIRCUIT TO PROVIDE REGULATED SUPPLY VOLTAGE OF APPROXIMATELY 150 OR 108 VOLTS TO LOAD. REMOVAL OF TUBE FROM SOCKET REMOVES VOLTAGE FROM LOAD.

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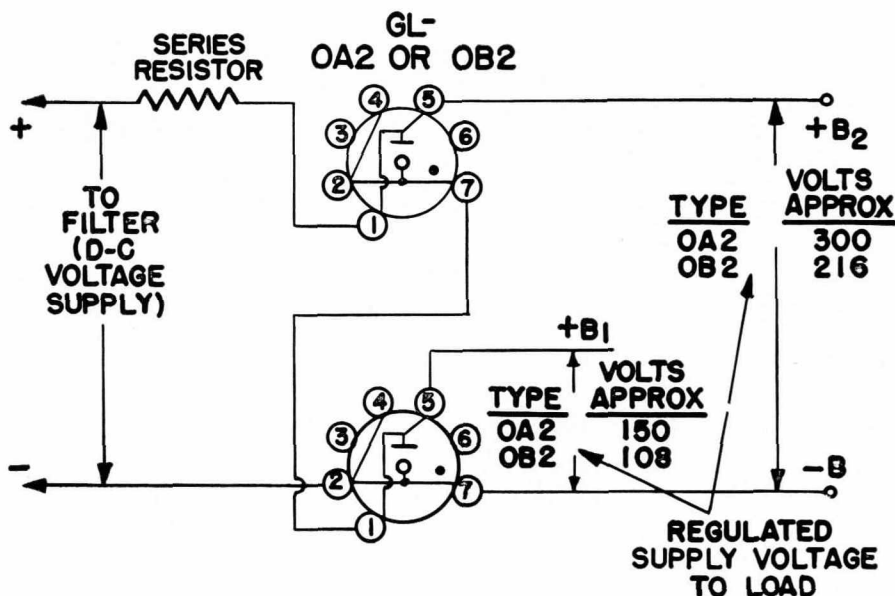
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CIRCUIT FOR BIAS-SUPPLY REGULATION. REMOVAL OF TUBE FROM SOCKET OPENS B-SUPPLY CIRCUIT OF REGULATED TUBES.

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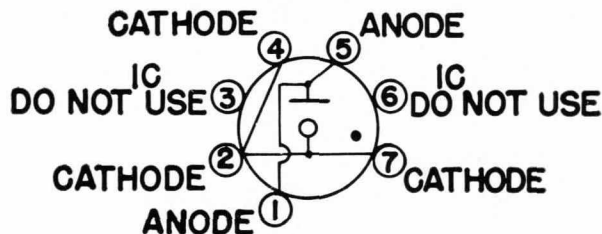
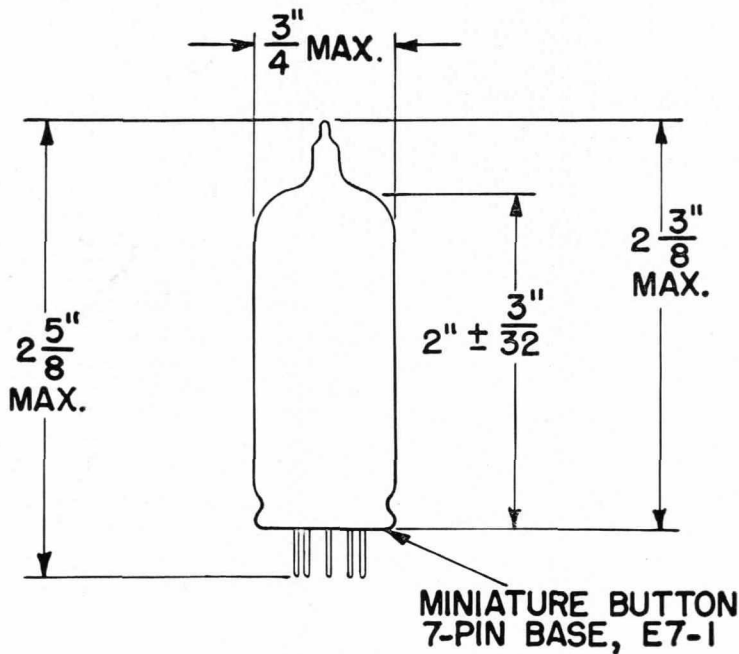


CIRCUIT USING TWO OA2'S OR TWO OB2'S TO PROVIDE REGULATED SUPPLY VOLTAGES OF APPROXIMATELY 300 OR 216 VOLTS AND 150 OR 108 VOLTS TO LOAD. SOCKET CONNECTIONS ARE SO MADE THAT VOLTAGE ON LOAD IS REMOVED WHEN EITHER TUBE IS TAKEN FROM ITS SOCKET.

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OUTLINE
GLOW TUBE GL-OA2



BASING DIAGRAM

N15146AZ

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Tube Divisions, Electronics Department

GENERAL ELECTRIC

Schenectady, N. Y.