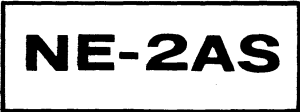

GLOW LAMP SPECIFICATIONS

From the first glow lamp, (NE-2), have evolved the scores of lamps in today's glow lamp line, each with specific characteristics depending upon the job to be done. Thus size, light output, life, efficiency, breakdown voltage, maintaining voltage, extinguishing potential and many other factors are considered in designing just the right lamp for the specific application.

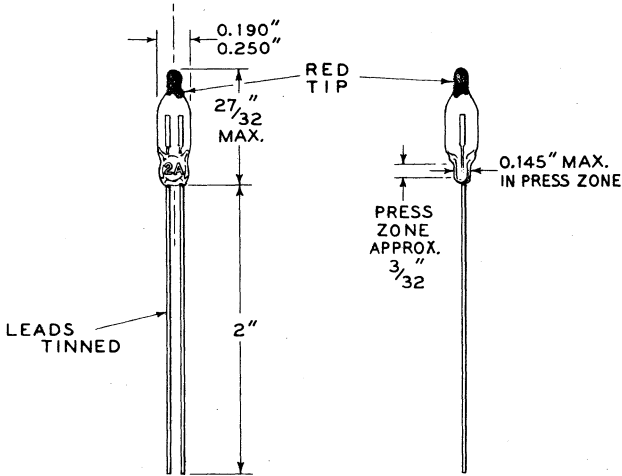
As an aid in selecting the right lamp — before the design of the product is frozen — choice can be narrowed down to lamps typical of the application. These become the clues which may permit you to make easier selection from the glow lamp specifications that follow.

| CIRCUIT | SUGGESTED LAMP TYPES |
|---------------------------|------------------------------------|
| Logic AND-OR Gates | NE-2S, NE-23 |
| Memory Circuits | NE-83, NE-96, NE-97 |
| Multivibrators | NE-23, NE-76 |
| Photoconductor Activators | NE-2U, NE-23, NE-83, NE-86 |
| Sawtooth Oscillators | NE-23, NE-76 |
| Trigger Circuits | NE-77, NE-96 |
| Voltage Indicators | NE-81, NE-23 |
| Voltage Regulators | NE-68, NE-68A, NE-80, NE-83, NE-86 |

The NE-2AS is a modification of an indicator lamp, (NE-2A), with specific voltage specifications, tinned leads, an extinguishing voltage test, and a shorter length than the NE-2.



OUTLINE DRAWING



SPECIFICATIONS

| | Min. | Avg. | Max. |
|--|------|-------|------|
| Initial DC Breakdown Voltage (In 5-50 footcandles) | 60 | 76 | 90 |
| Initial DC Maintaining Voltage @ 0.3 ma | | 58 | |
| Hours operating @ 0.3 ma for 5 volt change in breakdown or maintaining voltage | | 2,500 | |
| Design current in millamperes | | 0.3 | |
| Extinguishing voltage (.25 MegΩ or more series resistance) | 50 | | |

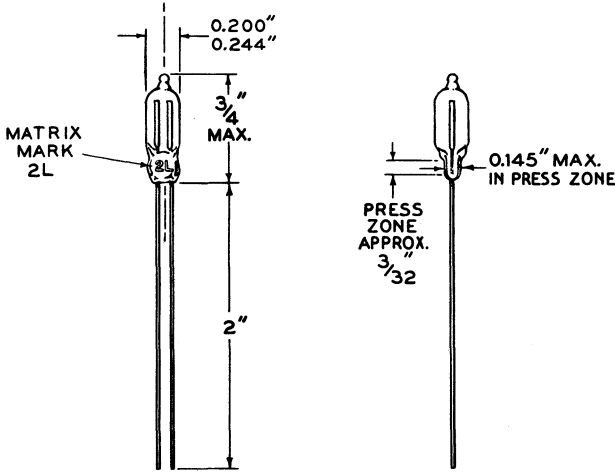
Aging Procedure - 100 hours at design current or 24 hours at 0.6 ma.; followed by 24 hours under typical circuit operating conditions.

NE-2L

The NE-2L is a modification of an indicator lamp, (NE-2E), with tighter voltage tolerances, mild radioactive additive for the reduction of dark effect, and Dri-Film coating for high leakage resistance. This lamp has a formed tip which

provides better end-on viewing than the random tipped lamps.

OUTLINE DRAWING



SPECIFICATIONS

| | Min. | Avg. | Max. |
|--|--------|-------|------|
| Initial DC Breakdown Voltage (In 5-50 footcandles) | 65 | 73* | 85 |
| Initial DC Maintaining Voltage @ 0.3 ma | | >50* | |
| Hours operation @ 0.3 ma for 5 volt change in breakdown or main- taining voltage | | 6,000 | |
| Design current in millamperes | | 0.3 | |
| Leakage resistance at 80°F and 75% Relative Humidity | 100 MΩ | | |

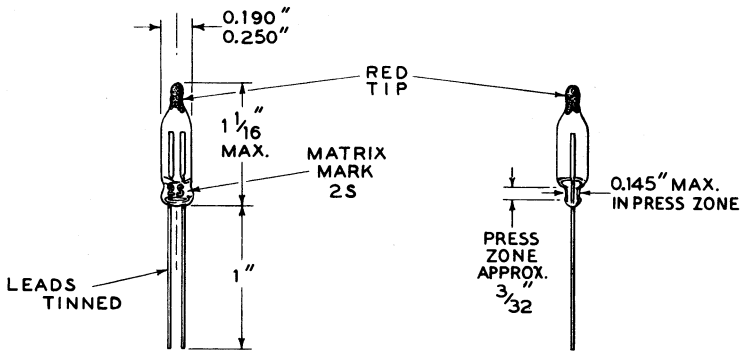
* After 100 hours operation at design current. Individual lots may vary from average.

Aging Procedure - 100 hours at design current or 24 hours at 0.6 ma.; followed by 24 hours under typical circuit operating conditions.

The NE-2S is a modification of the NE-2 indicator lamp with reduced bulb diameter, specified voltage ranges, tinned leads, an extinguishing voltage test, mild radioactive additive for the reduction of dark effect, and Dri-Film coating for high leakage resistance.



OUTLINE DRAWING



SPECIFICATIONS

| | Min. | Avg. | Max. |
|--|--------|-------|------|
| Initial DC Breakdown Voltage (In 5-50 footcandles) | 60 | 74 | 90 |
| Initial DC Maintaining Voltage @ 0.3 ma | 44 | 59 | 74 |
| Hours operation @ 0.3 ma for 5 volt change in breakdown or maintaining voltage | | 6,000 | |
| Design current in millamperes | | 0.3 | |
| Extinguishing voltage (.25 MegΩ or more series resistance) | 50 | | |
| Leakage resistance @ 80°F and 75% Relative Humidity | 100 MΩ | | |

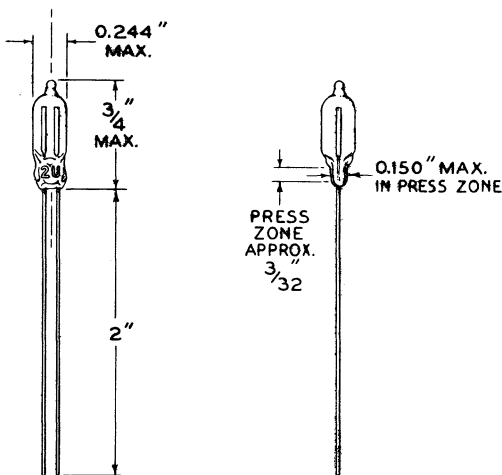
Aging Procedure - 100 hours at design current or 24 hours at 0.6 ma; followed by 24 hours under typical circuit operating conditions.

NE-2U

The NE-2U is a high brightness indicator lamp often used to excite photoconductors. The greater effectiveness of the radioactive additive used in this lamp make it a logical choice over its NE-2H brother for electronic usage. It is recommended

for applications where stability of lamp voltage characteristics is not a design criteria. The formed tip provides an overall length which is shorter than many glow lamps, as well as better end-on viewing, where desired.

OUTLINE DRAWING



SPECIFICATIONS

| | Min. | Avg. | Max. |
|---|------|------|------|
| Initial DC Breakdown Voltage (In 5-50 footcandles) | 75 | | 135 |
| Initial DC Maintaining Voltage @ 2.0 ma | 60 | | 105 |
| Design current in millamperes | | 1.9 | |

Dark effect reduced. After 16 hours inoperative in darkness, and with 95 volts AC applied, 90% of the lamps will breakdown in one second or less, 99% in three seconds or less. Higher applied voltages will markedly reduce breakdown times.

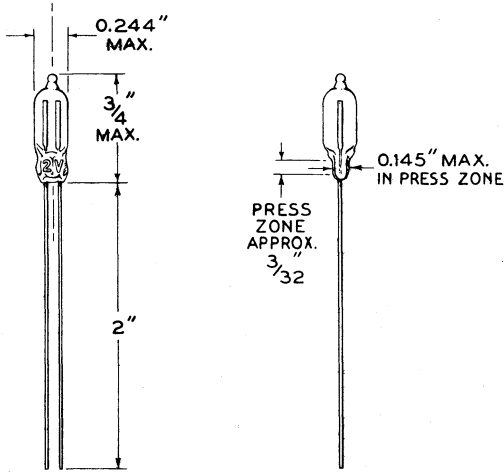
Average life of 25,000 hours can be expected when operated on alternating current at 1.9 milliamps. This can be achieved with a 30K resistor in series with the lamp across 105-125 volts AC. On direct current, at the same 1.9 ma., life will be shortened to approximately 10,000 hours. A minimum DC voltage of 150 volts is recommended for satisfactory operation.

Aging Procedure - 100 hours at design current or 15 minutes at 15-17 ma.; followed by 24 hours at circuit current.

The NE-2V is a standard brightness indicator lamp sometimes used in circuit component applications. It incorporates a shorter overall length than most glow lamps, a formed tip for easier end-on viewing, and a mild radioactive additive for the reduction of dark effect. It is one of the lower price neons.

NE-2V
A2B

OUTLINE DRAWING



SPECIFICATIONS

| | Min. | Avg. | Max. |
|---|------|------|------|
| Initial DC Breakdown Voltage (In 5-50 footcandles) | 60 | 76 | 90 |
| Initial DC Maintaining Voltage @ 0.6 ma | 46 | 58 | 78 |
| Design current in millamperes | | 0.6 | |

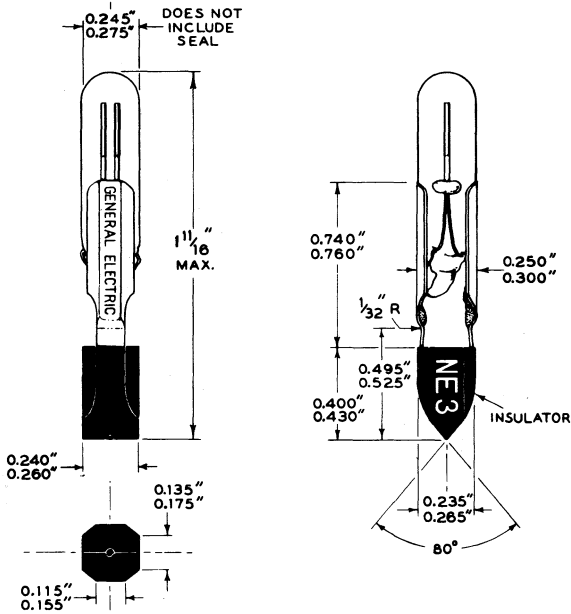
Average life of 25,000 hours (to 50% of initial light output) operated on alternating current at 0.6 ma. This can be achieved with a 100K resistor in series with the lamp across 105-125 volts AC. On direct current, at the same 0.6 ma., life will be shortened to approximately 15,000 hours.

Aging Procedure - 100 hours at design current or 24 hours at 1.2 ma.; followed by 24 hours under typical circuit operating conditions.

NE-3

A neon lamp utilizing a clear round-end bulb mounted in a telephone slide base. The round-end bulb provides undistorted end-on viewing. The telephone slide base is one solution to front-end replacement of panel mounted lighting units.

OUTLINE DRAWING



SPECIFICATIONS

| | Min. | Avg. | Max. |
|---|------|-------|------|
| Initial DC Breakdown Voltage (In 5-50 footcandles) | 55 | | 90 |
| DC Maintaining Voltage @ 0.3 ma | | > 55* | |
| Life - Breakdown voltage to stay within initial limits and maintaining voltage to stay above 100 hours limit for 15,000 hours at 0.3 ma | | | |
| Design current in millamperes | | 0.3 | |
| Extinguishing Voltage (.25 MegΩ or more series resistance) | 50 | | |

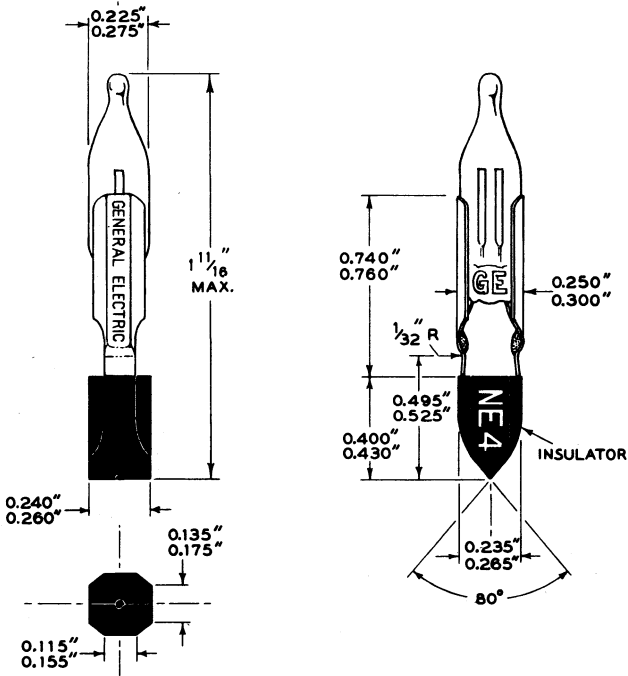
*After 100 hours operation at design current. Individual lots may vary from average.

Aging Procedure - 100 hours at design current or 24 hours at 0.6 milliamperes; followed by 24 hours under typical circuit operating conditions.

The NE-4 is a combination of the random-tipped NE-2 lamp and the telephone slide base. It offers the same front-end accessibility as the NE-3 and is lower in price.



OUTLINE DRAWING



SPECIFICATIONS

| | Min. | Avg. | Max. |
|--|------|-------|------|
| Initial DC Breakdown Voltage (In 5-50 footcandles) | 60 | 70* | 90 |
| Initial DC Maintaining Voltage @ 0.3 ma | 44 | 59* | 74 |
| Hours operation @ 0.3 ma for 5 volt change in breakdown or maintaining voltage | | 6,000 | |
| Design current in millamperes | | 0.3 | |

*After 100 hours operation at design current. Individual lots may vary from average.

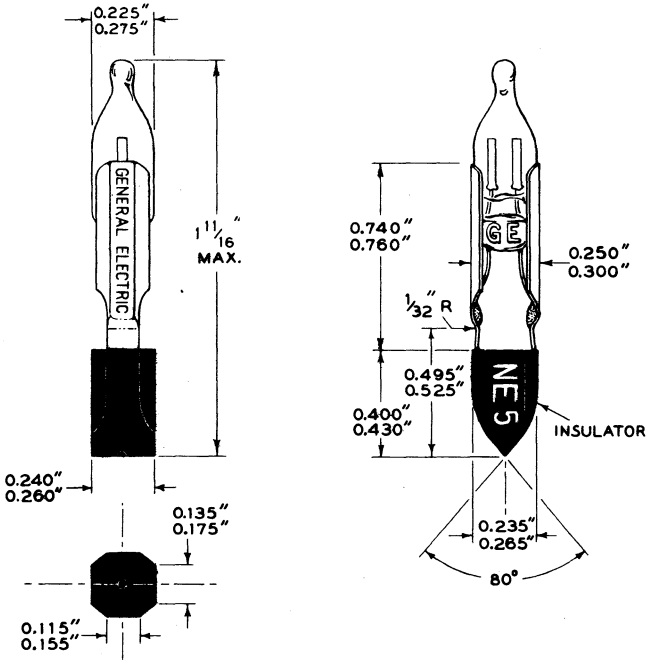
Aging Procedure - 100 hours at design current or 24 hours at 0.6 milliamperes; followed by 24 hours under typical circuit operating conditions.

NE-5

The NE-5 lamp is the NE-96 with telephone slide base. It is designed for those applications where a replaceable lamp is a necessity. The wide differential between breakdown and maintaining voltage suggests this lamp for those applications

where maximum output signal is desired. A mild radioactive additive is included in the lamp.

OUTLINE DRAWING



SPECIFICATIONS

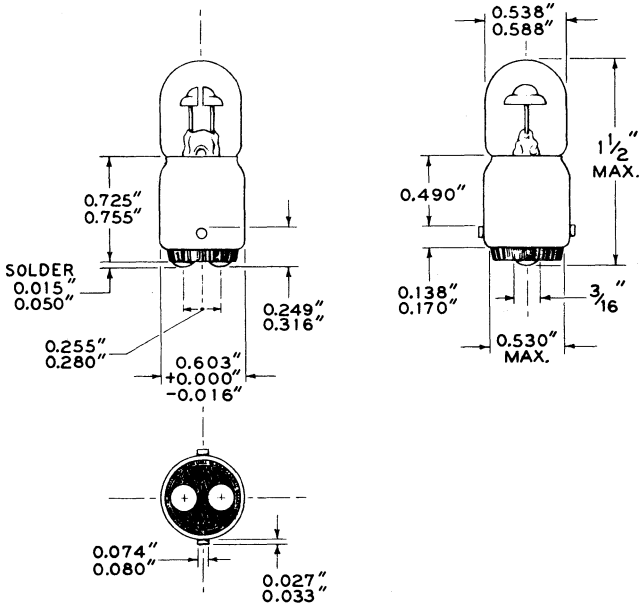
| | Min. | Avg. | Max. |
|---|------|-------|------|
| Initial DC Breakdown Voltage (In 5-50 footcandles) | 120 | | 150 |
| Initial DC Maintaining Voltage @ 0.5 ma | 60 | | 80 |
| Hours operation @ 0.5 ma for 10 volt change in breakdown or maintaining voltage | | 3,000 | |
| Design current in millamperes | | 0.5 | |

Aging Procedure - 100 hours at design current or 7 hours at 1.25 milliamps; followed by 24 hours under typical circuit operating conditions.

The NE-16 is intended primarily for voltage regulation applications. It meets the requirements of MIL-E-1/283 for the JAN 991 regulator tube. A mild radioactive additive for the reduction of dark effect is included in the lamp.



OUTLINE DRAWING



SPECIFICATIONS

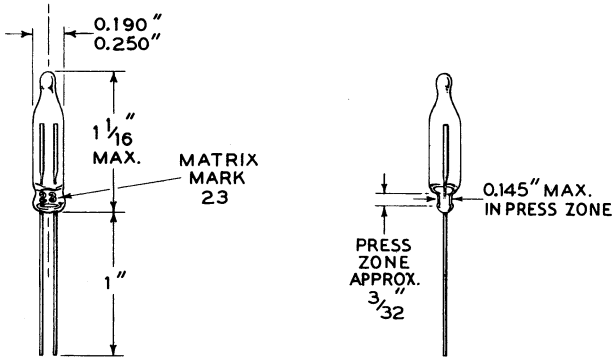
| | Min. | Avg. | Max. |
|---|------|-------|------|
| Initial DC Breakdown Voltage (In 5-50 footcandles) | 67 | | 87 |
| Initial DC Maintaining Voltage @ 1.5 ma | 53 | | 65 |
| Hours operation @ 1.5 ma for break- down voltage to remain below 95V DC and maintaining voltage to re- main below 70V DC | | 1,000 | |
| Design current in millamperes | | 1.5 | |

Aging Procedure - 100 hours at design current or 24 hours at 2 ma.; followed by 24 hours under typical circuit operating conditions.

NE-23

The NE-23 is a modification of the NE-2 indicator lamp with mild radioactive additive for the reduction of dark effect. Both its low cost and stable characteristics following aging account for its popularity.

OUTLINE DRAWING



SPECIFICATIONS

| | Min. | Avg. | Max. |
|--|------|-------|------|
| Initial DC Breakdown Voltage (In 5-50 footcandles) | 60 | 74 | 90 |
| DC Maintaining Voltage @ 0.3 ma | | 59* | |
| Hours operation @ 0.3 ma for 5 volt change in breakdown or maintaining voltage | | 6,000 | |
| Design current in millamperes | | 0.3 | |

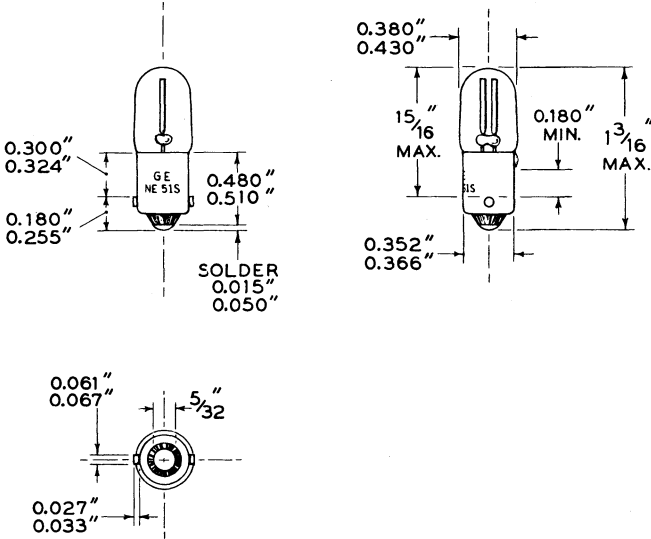
* After 100 hours operation at design current. Individual lots may vary from average.

Aging Procedure - 100 hours at design current or 24 hours at 0.6 ma.; followed by 24 hours under typical operating conditions.

The NE-51S is a modification of the NE-51 indicator lamp with specified voltage ranges and an extinguishing voltage test.



OUTLINE DRAWING



SPECIFICATIONS

| | Min. | Avg. | Max. |
|--|------|-------|------|
| Initial DC Breakdown Voltage (In 5-50 footcandles) | 55 | 64* | 90 |
| Initial DC Maintaining Voltage @ 0.2 ma | | 56* | |
| Hours operation @ 0.2 ma for 5 volt change in breakdown or maintaining voltage | | 1,000 | |
| Design current in millamperes | | 0.2 | |
| Extinguishing voltage (.25 MegΩ or more series resistance) | 50 | | |

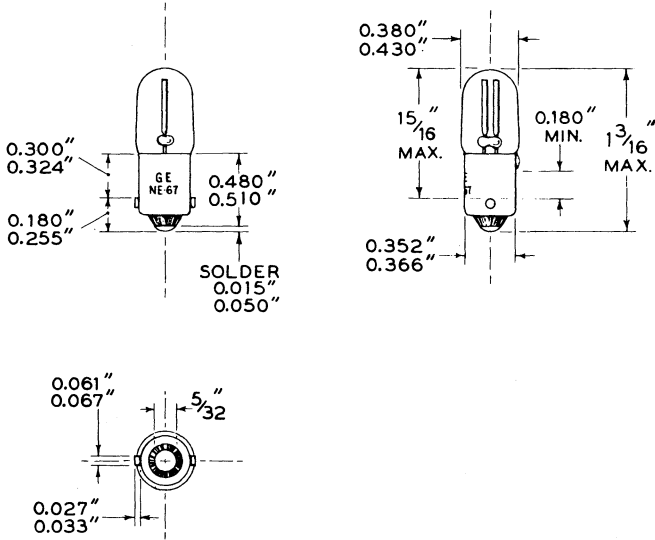
* Average after 100 hours operation at design current. Individual lots may vary from average.

Aging Procedure - 100 hours at design current followed by 24 hours under typical circuit operating conditions.

NE-67

The NE-67 is a modification of the NE-51 indicator lamp with Dri-Film coating incorporated within the base. This Dri-Film counteracts the leakage resistance problem inherent in many based lamps because of conduction across the basing cements.

OUTLINE DRAWING



SPECIFICATIONS

| | Min. | Avg. | Max. |
|--|--------|-------|------|
| Initial DC Breakdown Voltage (In 5-50 footcandles) | 55 | 64* | 90 |
| DC Maintaining Voltage @ 0.2 ma | | 56* | |
| Hours operation @ 0.2 ma for 5 volt change in breakdown or maintaining voltage | | 1,000 | |
| Design current in millamperes | | 0.2 | |
| Leakage resistance at 80°F and 75% Relative Humidity | 100 MΩ | | |

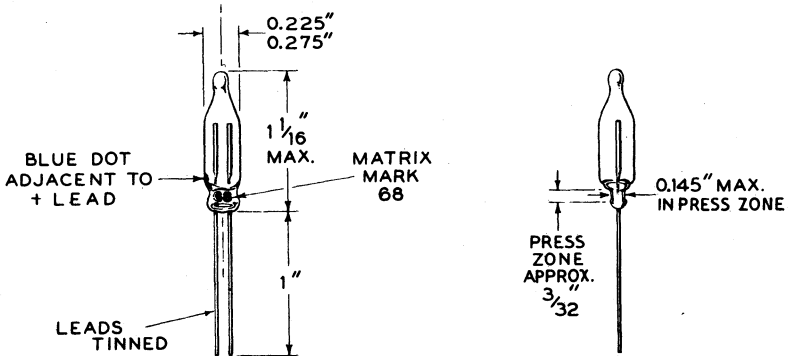
* Average after 100 hours operation at design current. Individual lots may vary from average.

Aging Procedure - 100 hours at design current followed by 24 hours under typical circuit operating conditions.

The NE-68 is designed primarily for voltage regulation purposes. This lamp, and its tighter tolerance brother the NE-68A, are recommended for those applications where a partially stabilized lamp is required. The lamp contains a mild radioactive additive.

NE-68

OUTLINE DRAWING



SPECIFICATIONS

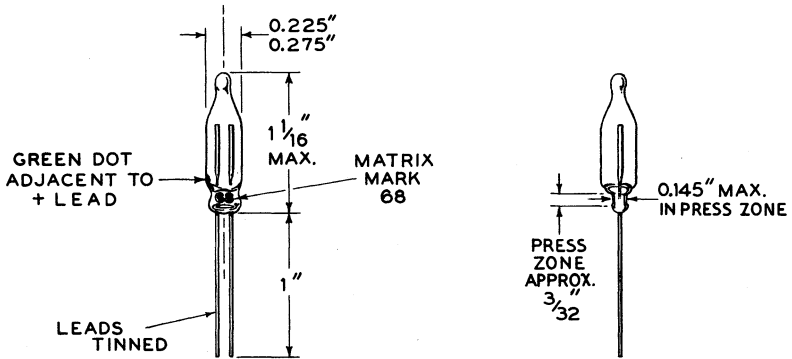
| | Min. | Avg. | Max. |
|--|--------|-------|------|
| Initial DC Breakdown Voltage (In 5-50 footcandles) | 60 | | 90 |
| Initial DC Maintaining Voltage @ 0.3 ma | 52 | | 65 |
| Hours operation @ 0.3 ma for 5 volt change in breakdown or maintaining voltage | | 2,000 | |
| Design current in millamperes | | 0.3 | |
| Extinguishing voltage (.25 MΩ or more series resistance) | 50 | | |
| Leakage resistance @ 80°F and 75% Relative Humidity | 100 MΩ | | |

Aging Procedure - Not required as lamp is partially pre-aged.

NE-68A

This tighter tolerance brother of the NE-68 is also recommended for voltage regulation usage. The lamp contains a mild radioactive additive and a dark starting test rounds out the specifications on this partially stabilized lamp.

OUTLINE DRAWING



SPECIFICATIONS

| | Min. | Avg. | Max. |
|---|--------|------------|------|
| Initial DC Breakdown Voltage (In 5-50 footcandles) | 60 | | 90 |
| Initial DC Breakdown Voltage (Dark) | | | 100 |
| Initial DC Maintaining Voltage @ 0.1 or 0.3 ma* | 52 | | 65 |
| Hours operation @ 0.1 or 0.3 ma for 5 volt change in breakdown or maintaining voltage | | 2,000 | |
| Design current in millamperes | | 0.1 or 0.3 | |
| Extinguishing voltage (.25 MΩ or more series resistance) | 50 | | |
| Leakage resistance @ 80°F and 75% Relative Humidity | 100 MΩ | | |

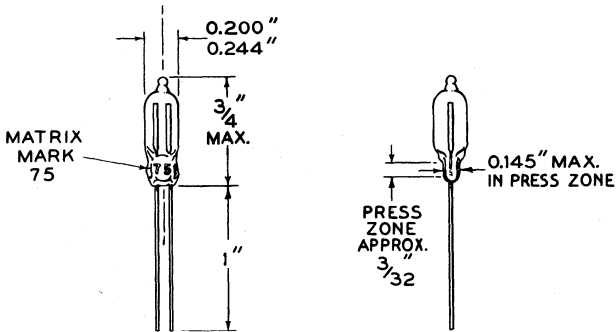
* All NE-68A's will be above 52 volts at 0.1 ma and below 65 volts at 0.3 ma. Individual lamps will not vary more than 3 volts as current changes through this range.

Aging Procedure - Not required as lamp is preaged on AC.

The NE-75 is a modification of the NE-2E indicator lamp with an extinguishing voltage test.



OUTLINE DRAWING



SPECIFICATIONS

| | Min. | Avg. | Max. |
|--|------|------|------|
| Initial DC Breakdown Voltage (In 5-50 footcandles) | 60 | 73* | 90 |
| DC Maintaining Voltage @ 0.4 ma | | >55* | |
| Life - Breakdown voltage to stay within initial limits and maintaining voltage to stay above 100 hour limit for 10,000 hours at 0.4 ma | | | |
| Design current in millamperes | | 0.4 | |
| Extinguishing Voltage (.25 MΩ or more series resistance) | 50 | | |

* Average after 100 hours operation at design current. Individual lots may vary from average.

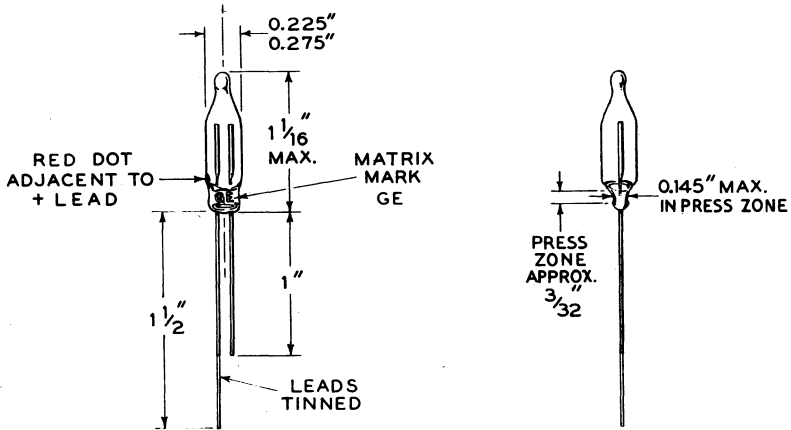
Aging Procedure - 100 hours at design current or 24 hours at 0.8 ma.; followed by 24 hours under typical circuit operating conditions.

NE-76

This neon lamp has the tightest breakdown voltage tolerance — ± 4 volts — of all GE glow lamps. Maintaining voltage is also held within ± 5 volts. The lamps are all preaged, polarity marked, and contain a mild radioactive additive for the

reduction of dark effect. The tight voltage characteristics and pre-aging treatment ideally suit this lamp for use in multivibrators, relaxation oscillators and other close tolerance applications.

OUTLINE DRAWING



SPECIFICATIONS

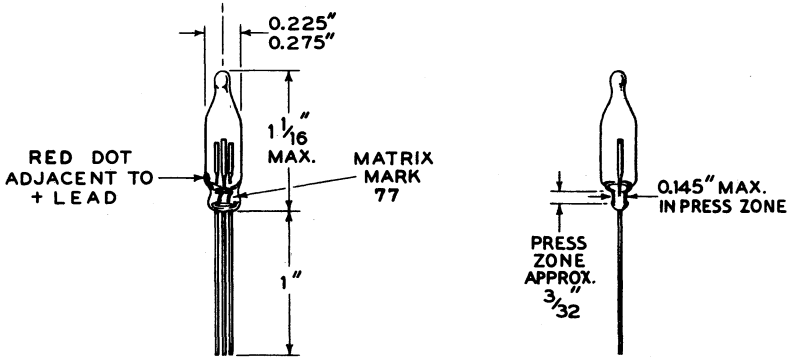
| | Min. | Avg. | Max. |
|---|--------|------------|------|
| Initial DC Breakdown Voltage (In 5-50 footcandles) | 68 | | 76 |
| Initial DC Maintaining Voltage @ 0.4 ma | 50 | | 60 |
| Breakdown voltage to stay within initial specs when operated at 0.4 ma | | 1,000 hrs. | |
| Hours operation @ 0.4 ma for 5 volt change in maintaining voltage | | 2000 | |
| Design current in millamperes | | 0.4 | |
| Extinguishing voltage (.25 MΩ or more series resistance) | 50 | | |
| Leakage resistance @ 80°F and 75% Relative Humidity | 100 MΩ | | |

Aging Procedure - Not required as lamp is pre-aged.

The NE-77, externally, is physically the same as an NE-2 glow lamp, but has a third, trigger electrode. A low current signal applied between cathode and trigger will ionize the lamp permitting current to flow between anode and cathode. Current will continue to flow until the work circuit is interrupted.



OUTLINE DRAWING



DIRECT CURRENT CHARACTERISTICS

CIRCUIT

- Recommended Circuit Volts (across outer electrodes) 140-180 Volts
- Recommended Trigger Starting Volts (trigger to cathode) 140 Volts Min.
- Suggested Trigger Current 120 Microamps Min.

LAMP

- Design Current for Continuous Operation 0.5 Milliamp
- Average Life Under Continuous Operation at Design Current 3000 Hrs.
- Operating Voltage (cathode to anode) 85 Volts Avg.
- Range in Trigger Starting Voltage 90-140 Volts
- Holdoff Voltage Across Outer Electrodes (with trigger tied to outer electrodes by two approximately equal impedances) 190 Volts

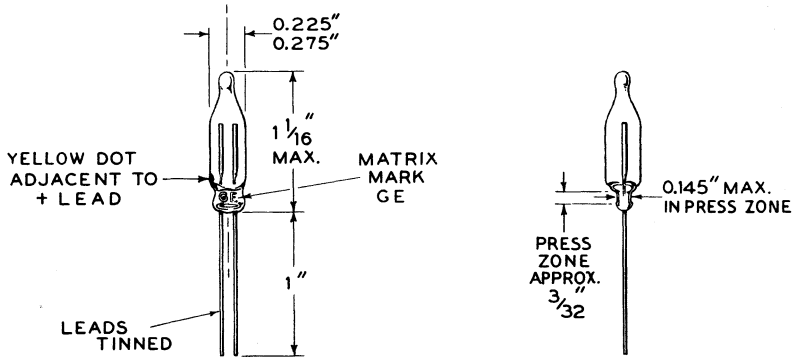
LIFE-CURRENT RELATIONSHIP

End of life under continuous current operating conditions outlined above occurs when lamp fails to trigger and transfer with 140 volts D-C on trigger and also across outer electrodes. When current pulses are of short duration, as from a typical capacitor discharge, peak currents of 100-milliamps or more may be passed by the lamp. Life performance under such pulse conditions is a function of peak currents, pulse waveshape, pulse time duration, and duty cycle. At low current loadings, life varies as the inverse ratio of the integrated values of the cubed current waves.

NE-80

The NE-80 with a 50-58 volt maintaining voltage at 0.1 ma., is the closest tolerance, low current voltage regulator. It is preaged and contains a mild radioactive additive for the reduction of dark effect.

OUTLINE DRAWING



SPECIFICATIONS

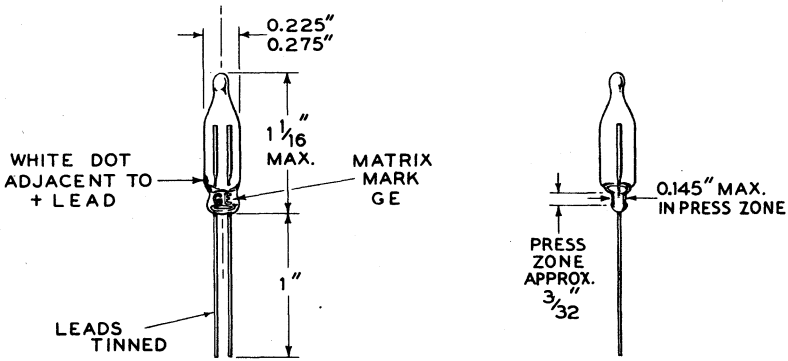
| | Min. | Avg. | Max. |
|--|------------|-------|------|
| Initial DC Breakdown Voltage (In 5-50 footcandles) | 60 | | 80 |
| Initial DC Maintaining Voltage @ 0.1 ma | 50 | | 58 |
| Hours operation @ 0.1 ma for 5 volt change in breakdown voltage | | 2,000 | |
| Lamp will stay within initial maintaining voltage limits when operated at 0.1 milliamperes | 2,000 hrs. | | |
| Design current in millamperes | | 0.1 | |
| Extinguishing voltage (.25 MΩ or more series resistance) | 50 | | |
| Leakage resistance @ 80° F and 75% Relative Humidity | 100 MΩ | | |

Aging Procedure - Not required as lamp is pre-aged.

The NE-81 is closely related to the NE-76, but has somewhat wider tolerance on breakdown voltage. It too, is preaged and contains a mild radioactive additive, has Dri-Film coating, and an extinguishing voltage test.

NE-81

OUTLINE DRAWING



SPECIFICATIONS

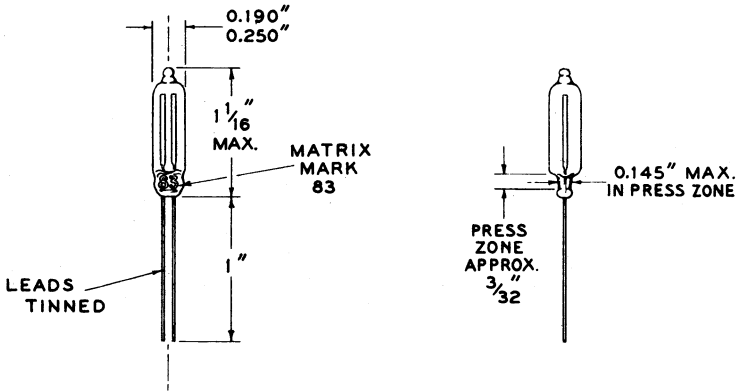
| | Min. | Avg. | Max. |
|--|--------|-------|------|
| Initial DC Breakdown Voltage (In 5-50 footcandles) | 64 | | 80 |
| Initial DC Maintaining Voltage @ 0.3 ma | 50 | | 60 |
| Hours operation @ 0.3 ma for 5 volt change in breakdown voltage | | 6,000 | |
| Hours operation @ 0.3 ma for 5 volt change in maintaining voltage | | 2,000 | |
| Design current in millamperes | | 0.3 | |
| Extinguishing voltage (.25 MΩ or more series resistance) | 50 | | |
| Leakage resistance @ 80°F and 75% Relative Humidity | 100 MΩ | | |

Aging Procedure - Not required as lamp is pre-aged.

NE-83

This "high-current" lamp shows promise wherever greater current carrying capacity is required. The lamp's differential between breakdown and maintaining volts is somewhat greater than the NE-23 family, but not as large as is the case for the NE-96 and NE-97. It's voltage regulation properties also merit attention. The lamp contains radioactive additive.

OUTLINE DRAWING



SPECIFICATIONS

| | Min. | Avg. | Max. |
|---|------|------|------|
| Initial DC Breakdown Voltage (In 5-50 footcandles) | 60 | | 100 |
| DC Maintaining Voltage @ 10.0 ma | | 65* | |
| Hours operation @ 10.0 ma for 5 volt change in breakdown or main- taining voltage | | 500 | |
| Design current in millamperes | | 10.0 | |

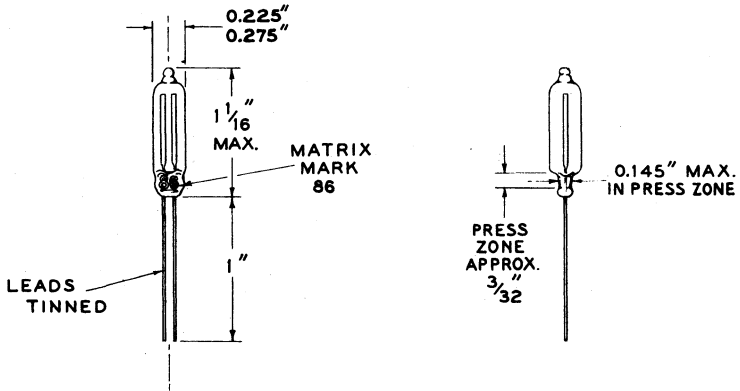
* Average after 100 hours operation at design current. Individual lots may vary from average.

Aging Procedure - 100 hours at design current or 24 hours at 15 milliamperes; followed by 24 hours under typical circuit operating conditions.

NE-86

The NE-86, rated at 1.5 ma., ranks between the NE-23 family of lamps and the NE-83 in current handling capacity. Its voltage characteristics and the appearance of its glow discharge, are closer to the NE-23 than the NE-83. The lamp contains a radioactive additive for the reduction of dark effect.

OUTLINE DRAWING



SPECIFICATIONS

| | Min. | Avg. | Max. |
|--|------|-------|------|
| Initial DC Breakdown Voltage (In 5-50 footcandles) | 55 | | 90 |
| DC Maintaining Voltage @ 1.5 ma | | 55* | |
| Hours operation @ 1.5 ma for 5 volt change in breakdown or maintain- ing voltage | | 2,000 | |
| Design current in millamperes | | 1.5 | |

* Average after 100 hours operation at design current. Individual lots may vary from average.

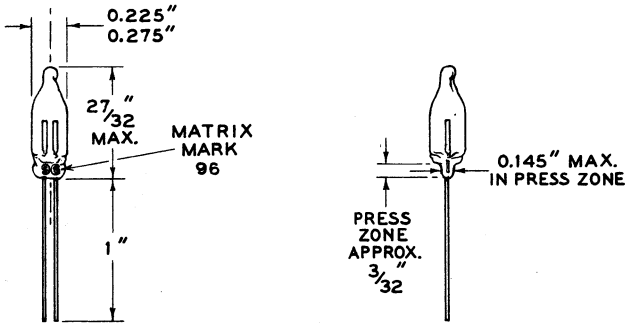
Aging Procedure - 100 hours at design current followed by 24 hours under typical circuit operating conditions.

NE-96

The NE-96 has the largest differential between breakdown and maintaining voltage of any GE glow lamp. Although ideal for triggered pulse applications where a single, higher voltage output is desired, the instabilities inherent in this lamp

type could rule against its use in some circuits. The lamp contains radioactive additive for the reduction of dark effect. The light output is not high but with end-on viewing it is adequate for normal observations.

OUTLINE DRAWING



SPECIFICATIONS

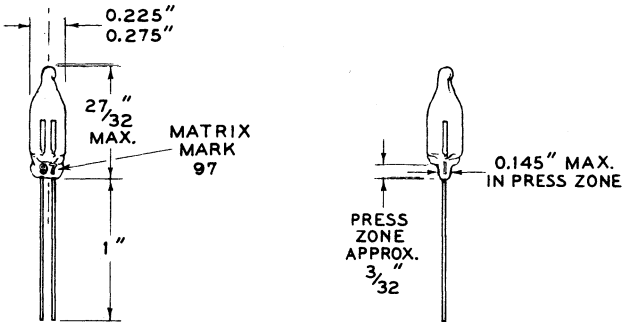
| | Min. | Avg. | Max. |
|---|------|-------|------|
| Initial DC Breakdown Voltage (In 5-50 footcandles) | 120 | | 150 |
| Initial DC Maintaining Voltage @ 0.5 ma | 60 | | 80 |
| Hours operation @ 0.5 ma for 10 volt change in breakdown or maintain- ing voltage | | 3,000 | |
| Design current in millamperes | | 0.5 | |

Aging Procedure - 100 hours at design current or 7 hours at 1.25 ma.; followed by 24 hours under typical circuit operating conditions.

The NE-97 has a somewhat smaller differential between breakdown and maintaining voltage than does the NE-96, but operating stability has been improved in this lamp type and response time is somewhat faster. A radioactive additive is included.

NE-97

OUTLINE DRAWING



SPECIFICATIONS

| | Min. | Avg. | Max. |
|---|------|-------|------|
| Initial DC Breakdown Voltage (In 5-50 footcandles) | 110 | | 140 |
| DC Maintaining Voltage @ 0.5 ma | 60 | | 80 |
| Hours operation @ 0.5 ma for 10 volt change in breakdown or maintain- ing voltage | | 3,000 | |
| Design current in millamperes | | 0.5 | |

Aging Procedure - 100 hours at design current or 2 hours at 1.25 ma.; followed by 24 hours under typical circuit operating conditions.

GLOW LAMPS FOR INDICATOR USE

| Lamp Number (1) | Package Characteristics | | Average Useful Life, Hours (d) | External Resistance Required (ohms) | M.O.L. Inches | Base | Bulb† (Clear) | Nominal Current, Ma. | Circuit Volts AC or DC | (e) Watts, Nominal |
|------------------------------|-------------------------|----------|--------------------------------|-------------------------------------|---------------|------------------|---------------|----------------------|------------------------|--------------------|
| | Unit | Standard | | | | | | | | |
| HIGH BRIGHTNESS LAMPS | | | | | | | | | | |
| A1C | 100 | 1000 | 25,000 (h) | 68K | 1/2 (a) | 1" wire term. | T-2 (g) | 0.8 | 105-125 (f) | 1/10 |
| C2A (NE-2H) | 100 | 1000 | 25,000 (h) | 30K (j) | 3/4 (a) | 2" wire term. | T-2 (g) | 1.9 | 105-125 (f) | 1/4 |
| C9A (NE-2) | 10 | 100 | 25,000 (h) | 30K (j) | 1 1/4 | S.C. Mid. Flange | T-2 (g) | 1.9 | 105-125 (f) | 1/4 |
| K2A (NE-2P) | 10 | 100 | 25,000 | 30K (j) | 3/4 (a) | 1" wire term. | T-2 (c) | 1.9 | 105-125 (f) | 1/4 |
| B2A (NE-51H) | 10 | 100 | over 25,000 (h) | 47K | 1 1/4 | Min. Bay. | T-3 1/4 | 1.2 | 105-125 (f) | 1/7 |

STANDARD BRIGHTNESS LAMPS

| | | | | | | | | | | |
|-------------|-----|------|-------------|---------|-----------|-------------------|---------|------|---------|------|
| A1B | 100 | 1000 | 25,000 | 220K | 1/2 (a) | 1" wire term. | T-2 (g) | 0.3 | 105-125 | 1/25 |
| A1A (NE-2) | 100 | 1000 | 25,000 | 150K | 1 1/2 (e) | 1" wire term. | T-2 | 0.5 | 105-125 | 1/17 |
| C7A (NE-2D) | 10 | 100 | 25,000 | 100K | 1 1/4 | S. C. Mid. Flange | T-2 (g) | 0.7 | 105-125 | 1/15 |
| A9A (NE-2E) | 100 | 1000 | 25,000 | 100K | 3/4 (a) | 2" wire term. | T-2 (g) | 0.7 | 105-125 | 1/15 |
| K2A (NE-2M) | 10 | 100 | 25,000 | 150K | 3/4 (a) | 1" wire term. | T-2 (c) | 0.5 | 105-125 | 1/17 |
| A2B (NE-2V) | 100 | 1000 | 25,000 (h) | 100K | 3/4 (a) | 2" wire term. | T-2 (g) | 0.7 | 105-125 | 1/15 |
| B5A (NE-17) | 10 | 100 | 7,500 | 30K (j) | 1 1/2 | D. C. Bay. | T-4 1/2 | 2.0 | 105-125 | 1/4 |
| J5A (NE-30) | 10 | 100 | 10,000 | None‡ | 2 1/4 | Med. Screw (b) | S-11 | 12.0 | 105-125 | 1 |
| R2A (NE-34) | 10 | 100 | 10,000 | None‡ | 3 1/2 | Med. Screw | S-14 | 18.0 | 105-125 | 2 |
| B7A (NE-45) | 10 | 100 | 7,500 | None‡ | 1 1/2 | Cand. Screw | T-4 1/2 | 2.0 | 105-125 | 1/4 |
| B9A (NE-48) | 10 | 100 | 7,500 | 30K (j) | 1 1/2 | D. C. Bay. | T-4 1/2 | 2.0 | 105-125 | 1/4 |
| B1A (NE-81) | 10 | 100 | over 15,000 | 220K | 1 1/4 | Min. Bay. | T-3 1/4 | 0.3 | 105-125 | 1/25 |
| J5A (NE-56) | 10 | 100 | 10,000 | None‡ | 2 1/4 | Med. Screw (b) | S-11 | 5.0 | 210-250 | 1 |
| F3A (NE-57) | 10 | 100 | 7,500 | None‡ | 1 1/2 | Cand. Screw (b) | T-4 1/2 | 2.0 | 105-125 | 1/4 |
| F4A (NE-58) | 10 | 100 | 7,500 | None‡ | 1 1/2 | Cand. Screw | T-4 1/2 | 2.0 | 210-250 | 1/2 |
| R1A (NE-79) | 10 | 100 | 10,000 | 7.5K | 2 | D. C. Bay. | S-7 | 12.0 | 105-125 | 1 |

DARK EFFECT

When glow lamps are placed in a darkened environment, their starting voltage sometimes rises. Several types utilizing a radio-

active additive to reduce this effect are currently available. See footnote (h) in Average Useful Life column in above table.

ADDITIONAL SPECIFICATIONS

† Bulbs are designated by a letter to indicate shape and a figure to indicate the approximate diameter in eighths of an inch.

- (a) This dimension is for glass parts only.
- (b) Center electrode connected to base shell.
- (c) Round end bulb.

(d) Life shown is for AC operation. For standard brightness lamps, life on DC will be approx. 60% of these values when DC current is equal to the R.M.S. AC value. However, when equal DC and R.M.S. AC voltages and equal resistances are utilized life will be approximately the same.

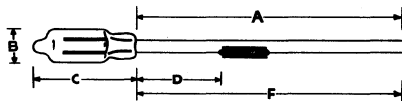
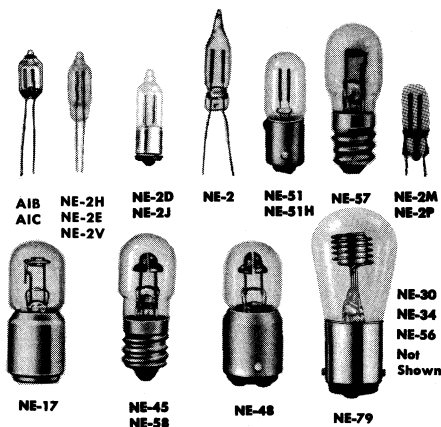
For high brightness lamps, where a minimum of 150 volts is recommended for DC operation, life with equal DC and R.M.S. AC currents will be somewhat lower than the 60% figure quoted above, and current and wattage will increase over the AC values shown in the table.

- (e) On 110-125 Volt Circuits.
- (f) Use 150 volts minimum for satisfactory direct current operation.
- (g) Formed tip bulb.
- (h) Dark effect reduced.
- (i) Three character symbol is the new trade number for this lamp recorded with the American Standards Association. The old NE number is in parentheses.
- (j) Closest standard EIA resistor value is 33K, which will provide greater than average life, at a slight decrease in current and light output.

‡ In order to properly control the lamp current, a ballast resistor must be used. Lamps having screw bases have the necessary resistor built-in. Those having bayonet bases and those listed with wire terminals do not have a built-in resistor. The tables show the value of the external resistor to be used for normal operation at indicated circuit volts.

AMBIENT TEMPERATURE

Use of indicator lamps in ambients exceeding 300°F. and of circuit component types in ambients exceeding -60°F to +165°F is not recommended. Resistor-attached indicator lamps are not recommended for use in ambients above 200°F because of possible resistor deterioration.



For those indicator applications where resistor attached lamps are desirable.

NE-2E, NE-2H, NE-2M or NE-2P lamps are already available with a variety of lead lengths and resistor values, or custom types can be designed to fit your particular application. The letters on the dimensions in the above sketch are part of the standard nomenclature for attached resistor types. Thus dimension "A" is the overall length of the unresistored lead, dimension "D" is the distance between lamp seal and resistor, etc.