

**BUILT STRONGER TO LAST LONGER.**

## **TECHNICAL BULLETIN**



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**COMMERCIAL ENGINEERING DEPARTMENT \* STAR LIGHTING \*  
CLEVELAND, OH 44130**

### **STAR LIGHTING TRAFFIC SIGNAL LAMPS**

- \* Long Life \* Labor and Energy Savings
- \* Reliability \* Low Maintenance

Star Lighting Traffic Krypton signal lamps are constructed for 12,000-20,000+ hours rated life in order to operate reliably with a minimal number of failures through at least 14-26 months. They are built to last that long to comply with the usual maintenance intervals for adjusting and cleaning signal apparatus and for 100% group replacement lamps.

Overall labor costs are the lowest when lamps are group-replaced at scheduled maintenance intervals. The number of individual lamp replacement trips is reduced when Star Lighting's high reliability long life traffic lamps are used.

Traffic safety requirements make it mandatory to keep signal lamp outages as rare as technically possible, and to replace failed lamps immediately! Star Lighting's traffic signal lamps meet these safety requirements because they are designed specifically for long life, durable construction and high beam brightness. Lamps are manufactured under strict quality standards to eliminate defects, which lead to early burnouts. It is generally recognized by Traffic Department administrators and engineers that the most economic method of signal system operation consists of using specially constructed signal lamps of superior quality, thus

reducing failures between scheduled maintenance periods.

Group replacing all lamps routinely is most economical when a comparison is made between the direct cost of the new lamp and the cost of sending a crew with truck and ladder between scheduled maintenance dates to replace a single burned out lamp.

The cost of maintaining traffic signal systems in good working order depends upon the allowable length of scheduled maintenance intervals. The reliability of reasonably up-to-date signal equipment is such that the group replacement intervals can be spaced 12-24 months. Under more favorable systems conditions, maintenance intervals may be even longer. Therefore, it is important that the traffic lamps be of such uniform quality and long-life rating that practically all lamps burn through the full group replacement interval and only a small percentage fail between these intervals.

#### LONG LIFE RATING FOR KRYPTON LAMPS

Why is it necessary that lamps for economic signal operation have long life ratings like 12,000-20,000+ hours, when, during a group replacement interval of 12-24 months, the lamps operate only 3300 hours per year on the average? The answers related to the average percent of lamp failures in the life of incandescent lamps. In order to keep lamp failures at 2-5% of all lamps installed during the 12-24 month interval, the average user-hour rating must be 10,000-15,000 hours. However, the actual percent of lamp failures may vary depending upon the conditions existing at the signal. Vibration from surface traffic, buses, cars, trucks, trains, severe weather conditions, etc. will increase the number of early failures within the group replacement interval.

These figures present the statistical life performance of high quality incandescent lamps and refer to a sizable number of 10,000 and 15,000 hour life-rated traffic signal lamps. The figures show the percentage of lamps still intact dependent upon operating hours. During the first 2000 operating hours, the number of lamp failures is very small. At 5,500 hours the burnout rate is approximately 3% for 12,000- hour lamps and 4-5% for 15,000-hour lamps. Beyond the 5,5000 hours, the number of burnouts increases faster until half the lamps have burned out and the remaining half are still operable.

The contour of the curve indicating the increasing number of lamp failures over life is the same as for the 12,000-hour rated lamps and for the 12,000-hour rated lamps. However, the time when the failure rate reaches 3% is as early as 2200 hours, equivalent to only about 6-8 months of traffic signal operating time. Therefore, using lamps with such short average life rating requires group replacement of all lamps at 3-4 month intervals. This is definitely uneconomical. It would be equally uneconomical to operate a signal installation beyond the time when lamp failure rate has surpassed 3-5%.

The curves are clear illustrations that lamp design is a definite requirement for achieving economy in traffic signal installations. It is important, however, to stress that the lamp life statistics as shown are only realistic for high quality lamps manufactured uniformly with the greatest care. Otherwise, early failure rates may be much higher than indicated by the curves. A long life rating alone is not sufficient for obtaining a low rate of early burnouts; numerous

other quality features built into the lamp during manufacture must accompany it.

## QUALITY FEATURES OF STAR LIGHTING TRAFFIC SIGNAL LAMPS

- 1) Long Life: 12,000-20,000+ user hours means lower maintenance cost.
- 2) Fuse Wire: Protects signal housing socket, control circuits and wiring when lamps fail.
- 3) Aluminum Disc: Protects socket and wiring from heat. Also recovers light, which ordinarily would be lost in base of lamp, adding to lamp candlepower and less shadow affect on lenses.
- 4) Special Tungsten Filament Wire: Treated to be able to withstand vibration and shock better than ordinary filament wire.
- 5) Brass Base: Lamp will not freeze in socket, which allows easy replacement when lamp must be changed.
- 6) A Shaped Bulb: Increased lamp volume helps lamp to run cooler, which contributes to longer lamp life.
- 7) (95%+) Krypton Fill-Gas: Used in traffic lamps to achieve the same lumens and candlepower as standard wattage traffic lamps.

ITE (Institute of Transportation Engineers)

Star Lighting lamps meet the ITE Traffic Signal Specifications for lumen output.

## INDEPENDENT LABORATORY REPORTS

Star Lighting lamps have been submitted to an independent testing laboratory for tests.

## STAR LIGHTING KRYPTON LAMPS

Star Lighting offers a line of traffic lamps that are Krypton filled, which provides a higher light output and life than regular traffic lamps.

### **Star Lighting Traffic Lumens**

90W	1040
116W	1260
135W	1750

These lamps have all of the built-in quality features of Star Lighting traffic lamps, except that the lamps are filled with Krypton gas, which conducts less heat away from the filament, and produces more usable light. This design provides more light output and life than standard traffic lamps. To realize the higher lumens and life, over 95% Krypton gas must be used in these lamps.

For information on our  
Traffic Lamps call **TOLL FREE**  
1-800-392-3552

**Product Watts:**

**Product Bases:**

**Product Notes:** 1-800-392-3552

