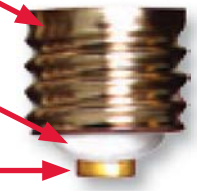



HID LAMP INFORMATION

Rugged, High Quality Base

<p>EYE lamps use a nickel-plated brass base that is easily removed from the socket after many years of operation.</p> <p>The ceramic insulator insures against cracking.</p> <p>The tall brass eyelet guarantees solid contact.</p>	<p>EYE SUPERIOR LAMP BASE</p> 	<p>COMMON LAMP BASE</p> 	<p>Typical HID lamps with brass base often stick in the fixture socket.</p> <p>Glass insulator is prone to cracking which leads to electrical arcing and socket damage.</p> <p>The Center Contact is shallow which increases the chance of poor contact, arcing and socket damage.</p>
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Base Marking, Environmentally Safe EN/TCLP Patented Base Locking to Bulb

Base Date Code is printed on the ceramic insulator for easy lamp traceability



Benefits:

- Traceability - Field and Factory
- Can determine installation date for warranty and lamp mortality purposes
- If lamp is returned broken, date of manufacture can still be determined

Environmentally Friendly



EN lamps are Environmental Protection Agency/TCLP compliant as non-hazardous waste in that they are completely lead free and contain reduced mercury.

Plasma-Welded Eyelet is Lead-Free



Month: J, F, M, A, M, J, J, A, S, O, N, D

Year: 0-9

When installing lamp, mark the month and year of installation by scratching through the letter and number



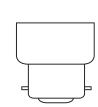
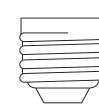

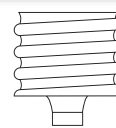
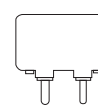
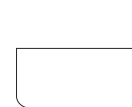
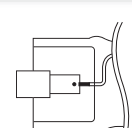
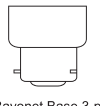
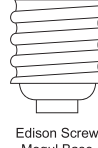
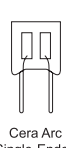
OLD SOLDER LOCK



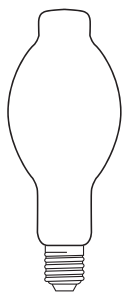
IMPROVED WELD LOCK

- Environmentally Friendly (EN)/TCLP **Lead-Free Design**; Removes hazardous lead as weld replaces solder, glass is lead-free, weld is lead-free, product is lead-free
- Ensures meeting ANSI/IEC base torque standards
- Standardized EYE design ensures quality
- EYE/Iwasaki US Patented design

Base Types

 Bayonet Base 2-pin	 Edison Screw Medium Base E26	 Edison Screw Mogul Base E39	 EX39	 Cera Arc Single-Ended G12	 Edison Screw Mogul Skirted Base E39	 R7s Base
 Bayonet Base 3-pin	 Edison Screw Mogul Base E39	 Cera Arc Single-Ended G8.5				

Bulb Shapes



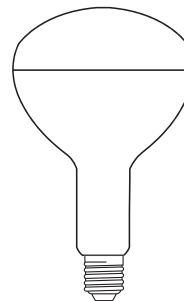
Blown Tubular (BT)



Elliptical (E), (ED)



Elliptical Tubular (ET)



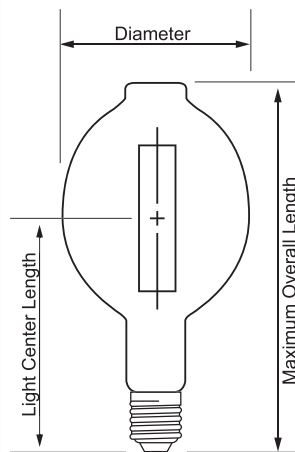
Reflector (R)



Tubular (T)

Note: Bulb size or diameter (maximum) is expressed in an eighth of an inch (1/8") for one unit. For instance, a BT56 bulb is 56 eighths of an inch in diameter, or 7 inches in diameter. See ANSI C79.1 for a complete details on bulb shapes.

Lamp Dimension Key

**Maximum Overall Length****(M.O.L.):**

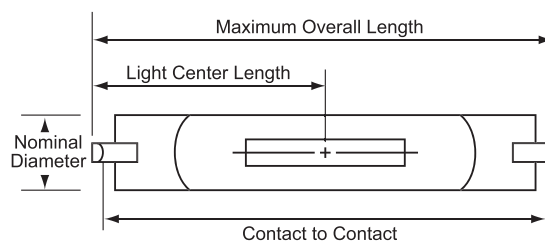
MOL is measured from the end of the lamp base to the top of the outer jacket.

Light Center Length (L.C.L.):

The distance from the light center to a specified reference point on the lamp.

Diameter:

The diameter is the maximum diameter of the glass bulb.

**Maximum Overall Length (M.O.L.):**

The distance between the ends of the bases.

Contact to Contact:

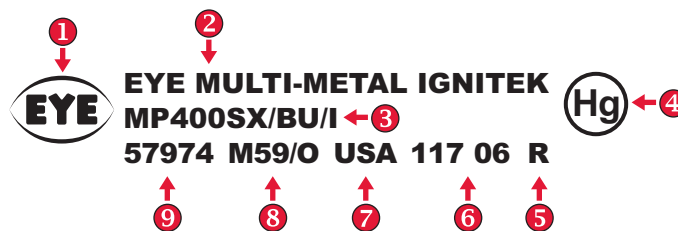
The length between contacts is the distance between the metal contacts which are recessed inside the ends of the bases.

Nominal Diameter:

The approximate diameter of the tube.

Easier to Read Lamp Monograms

- 1 EYE logo
- 2 Lamp family
- 3 Easy-to-Read lamp description
- 4 NEMA supported, Vermont legislated Mercury warning insignia for disposal purposes



- 5 Code of Federal Regulation UV Safety Code
- 6 Julian Date Code: Day of the Year (Manufacture)
- 7 Country of origin
- 8 ANSI Rating, lamp code
- 9 Product code

Types and Characteristics

TYPES OF HID LAMPS

HID stands for "High Intensity Discharge", a general term for:

- High Pressure Sodium (HPS)
- Metal Halide (MH), (CMH)
- Mercury (H), (SBMVL)

Recent developments have produced new lamp designs which have brought about improvements in life, color rendering, and lumen maintenance.

LAMP CHARACTERISTICS

HID lamps provide extremely efficient illumination in a large area. Lamp characteristics, however, vary according to use. Figure 1 shows the characteristics of the three basic HID lamp types according to the following variables:

- Lamp Efficacy (Lumens Per Watt)
- Color Rendering Index (CRI)
- Correlated Color Temperature (CCT) Kelvin

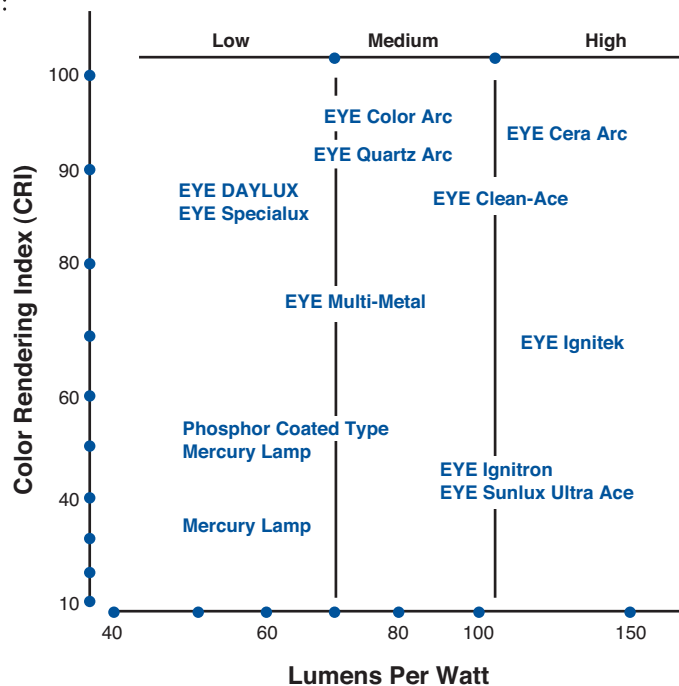
MAIN FEATURES

High Lamp Efficacy - low power expense

High Lamp Lumens - minimal investment

Long Life - inexpensive maintenance

FIGURE 1



Lamp Operating Positions

Lamps must be operated in their specified operating positions in order to maximize lamp performance and life. Incorrect operating positions may also create the possibility of a lamp rupture. Because of these factors it is imperative that users adhere to the specified operating positions and fixture requirements. The following chart shows the correct lamp operating positions based on the Position Code Letters which are contained in the lamp description.

FIXTURE REQUIREMENT CODES

- O = Open fixture permissible. Lamps can be operated in an open fixture within the lamp's specified operating position limits.
- S = Open fixture permissible with operating position restrictions.
- E = Enclosed fixture required. Lamps must be operated in an enclosed fixture.

LAMP OPERATING POSITION CODES AND SYMBOLS

U or no code	BU	BUD	BUD ±60	BUH	HOR	HOR ±30	HOR ±45	HOR ±60
Universal (no limit)	Base Up ±15°	Vertical ±15° Base Up or Base Down	Base Up or Base Down ±60	Base Up to Horizontal	Horizontal ±15°	Horizontal ±30°	Horizontal ±45°	Horizontal ±60°

THE 2005 NATIONAL ELECTRIC CODE

As stated in the 2005 NEC directive, TYPE-S lamps will continue to be available for use in existing installations that use open luminaires. Open luminaires using TYPE-S lamps remain safe and effective lighting alternative for many applications when operated in accordance with manufacturer's warnings and instructions. TYPE-S lamps will not be an option for open luminaires in future new construction or in major lighting renovations to existing buildings.

EYE Lighting offers O-Rated, Protected Metal Halide (MP) lamps with shrouded arc tubes and the required EX39 Mogul base that meet the 2005 NEC directive for use in Open Fixtures. EYE Lighting also offers TYPE-S lamps for operation in existing Open Fixtures when operated according to listed warnings and operating instructions.

Introduction to HID Lamps

High Intensity Discharge Lamp Life Versus Operating Cycle

Average Rated Life is the life value assigned to a particular lamp type. Statistically, Average Rated Life is a numeric value in hours of the median, (50% point), of a population of lamps that remain operating. For Example, if a lamp had an Average Rated Life of 10,000 hours and 100 new lamps were installed in the same location, approximately 50 lamps would still be operating after 10,000 hours.

The starting process of HID lamps place the highest level of stress on the lamp electrodes. Shortly after the arc tube fill gasses breakdown, the tungsten electrodes undergo a condition called sputtering. The sputtering condition vaporizes a small amount of the electrode, which is deposited on the arc tube inner wall. Tungsten deposited from the electrode on the arc tube wall builds up as a black deposit resulting in reduced lamp lumens, higher arc tube wall temperatures and possible premature rupture of the arc tube.

Electrodes of a HID lamp are designed to withstand operating cycles of 1 start every 10 hours to achieve

the life rating of the lamp. Operating cycles less than 10 hours will result in shorter lamp life.

There are **other factors that can impact HID lamp life**, such as:

- type of ballast used,
- age and condition of the capacitor,
- lamp luminaire temperatures,
- operating position of the lamp.

HID lamps should only be operated in the position specified in the lamp literature or catalog. The following guidelines apply to the expected Average Rated Life when the lamp is operated with the recommended ballasts.

- Published Average Rated Life is achieved using a 10-hour (on) operating cycle.
- A five-hour operating cycle may result in achieving only 75% of the published Average Rated Life.
- A two and one-half hour operating cycle may result in achieving only 50% of the published Average Rated Life.

Warning

In applications where Metal Halide lamps are on a 24 hour operating cycle, 7 days a week, they are to be turned off once per week, for at least 1 hour. This is to prevent the remote possibility of a lamp rupturing and the heated components separating from the lamp, causing personal injury and, or property damage.

Metal Halide Lamps Operated on Dimming Ballasts

All EYE Metal Halide lamps, except, Multi-Metal Ace™ family, can be dimmed up to 65% of the lamp nominal wattage on EYE Lighting approved dimming ballast systems. Lamps must be operated at least 5 minutes at full power prior to dimming. **Dimming systems that reduce the input line voltage to the ballast are NOT RECOMMENDED.** Lamps operated on dimming systems may exhibit extreme color shift and low lumen output. Contact your local EYE Lighting representative for a list of approved dimming systems.

What is the EPA TCLP

The EPA Toxic Leachate Characteristic Procedure is a method prescribed by the US EPA as a way of determining the toxicity of a waste product. Solid waste falls under US EPA method #1311, which establishes a standard lab method for characterizing the toxicity of a solid waste. Based on the results of the TCLP test the waste is either determined to be acceptable for disposal in a standard landfill (with local approval), or, it's determined to require special toxic waste handling or recycling. EYE **EN** signifies TCLP compliance.