

# Lamp & Ballast Product Catalog

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### Important Notice

The data and suggested applications contained in this catalog, as well as any additional information our representatives may be able to furnish, are for general information only and are not intended and should not be taken as representations or warranties as to the suitability of a lamp for any particular application or use in any particular equipment, nor are our representatives authorized to make any such representations or give any such warranties. Applications and conditions of use are many and varied and beyond our control. We do not have the same degree of knowledge that the purchaser has with respect to the design of his equipment and the conditions of its use. Therefore, it is up to the purchaser to make his own determination as to the suitability of a lamp for his intended application or use and to assume responsibility for that determination.

OSRAM SYLVANIA claims to supply the best possible products at all times. For this reason, OSRAM SYLVANIA reserves the right to make changes in its products when it believes such changes will improve its products.

The specifications and information shown in this catalog are believed to be accurate. Although OSRAM SYLVANIA believes this information to be correct, no warranty is made or implied as to the accuracy of this information and OSRAM SYLVANIA does not accept or assume responsibility of liability for errors, changes, omissions, or for harm resulting therefrom.

In accordance with our established policy to consistently improve our products, the specifications contained herein are subject to change without notice.

The OSRAM SYLVANIA Test and Measurement Laboratory is a participant in the Energy Efficient Lighting (EEL) Program of the National Voluntary Laboratory Accreditation Program (NVLAP-NIST) and is accredited for testing of lighting products according to the guidelines for the EEL Program. OSRAM SYLVANIA lamp and ballast measurements are conducted under laboratory conditions utilizing American National Standards Institute (ANSI), Canadian Standards Association (CSA), Commission Internationale de l'Eclairage (CIE), and Illuminating Engineering Society of North America (IESNA) standards and practices. The OSRAM SYLVANIA Electronic Component and Systems Development Group participate in the Underwriters Laboratories Inc. Client Test Data Program. Ballast designs are tested for conformance to Underwriters Laboratory (UL) safety standards using practices audited, assessed and approved by UL. Actual lamp and ballast performance may vary depending on application and environment (i.e. ambient temperature, input voltage, ballast type, etc.).

OSRAM SYLVANIA designs and manufactures lamps and ballasts to meet American National Standard Institutes (ANSI) and/or IEC (International Electrotechnical Commission) standards of construction and performance through Total Quality Manufacturing (TQM) practices where applicable. In addition, ballasts are designed and manufactured to meet Underwriters Laboratory (UL) and Canadian Standards Association (CSA) safety standards as necessary. Ratings may change as a result of changes made to remain compliant with modified or updated standards. OSRAM SYLVANIA will release new or updated technical bulletins when appropriate. All product data presented in this catalog supersedes all data published before 2/4/04.

Many OSRAM SYLVANIA products listed in this catalog qualify under the North American Free Trade Agreement (NAFTA) as manufactured in Canada, the United States of America or Mexico.



OSRAM SYLVANIA's innovative program of environmental responsibility—**ECOLOGIC®**—was designed as a thorough approach to reducing the environmental impact of our processes, packaging and products. Today, ECOLOGIC is even more comprehensive, having evolved to include other elements of sustainability, such as source reduction and reuse, recycling and recyclability, and environmental management systems in product manufacturing.

## Sustainability in Action

### Energy

For our customers, installing energy-efficient lighting is one of the most effective, sustainable design strategies available today. Reduced energy usage means reduced utility emissions, which means reduced environmental impact.

At OSRAM SYLVANIA we have long been the energy-efficient product innovators. We were first with high performance T8 fluorescent lamps in North America. In 1981 we introduced the SYLVANIA OCTRON® family of fluorescent lamps, ushering in a new era of lighting efficiency. For years we have offered our customers optimal design and energy performance with The SYSTEM SOLUTION™ concept-- our inventive offering of energy-efficient SYLVANIA lamps and ballasts. By bringing lamp and ballast development under one roof, we have been able to design SYLVANIA lighting systems that optimize energy savings without sacrificing other elements of performance.

## Source Reduction and Reuse

OSRAM SYLVANIA pioneered the use of lead-free solders and welded lamp bases, as well as the use of lead-free glass in high intensity discharge (HID) light sources. We have eliminated lead solder in the majority of SYLVANIA general purpose incandescent A-19, B-10, and globe-shaped lamp products; most of our halogen lamp types are lead-free. We also offer the only lead-free, mercury-free high-pressure sodium lamp on the market, and have won acclaim from the lighting community for this research and development breakthrough.

Since 1990, OSRAM SYLVANIA has joined the lamp industry in reducing mercury content in total U.S. lamp shipments by 67%, and in four-foot fluorescent lamps by an average of 80%. Our New Hampshire plants have instituted innovative programs to reclaim unused metal halide and high-pressure sodium arc tubes.

Over the past 15 years, OSRAM SYLVANIA's packaging department has aggressively pursued source reduction strategies, reducing the thickness and combined weight of both primary and secondary packaging for all of our products. Through advanced computer software and scientific methods, we have optimized packaging systems from primary through secondary to unit load, saving packaging materials, pallets, fuel, transportation, and warehouse space, without compromising shipping performance. These benefits extend through the entire supply chain. Our lamp components and highest volume packaging raw materials are typically shipped in re-usable containers, and all packaging is printed using organic soy-based (non-solvent) inks.

## Recycling Philosophy

OSRAM SYLVANIA publicly promotes recycling as the preferred method of lamp disposal. As a matter of policy, our own warehouse and manufacturing locations recycle broken lamps. When our SYLVANIA Lighting Services personnel complete lighting retrofits or maintenance calls, we ship all spent mercury-containing lamps to a bona-fide lamp recycler for processing. Furthermore, we encourage distributors and retailers of our SYLVANIA products to offer lamp-recycling programs to their customers, thereby reducing the burden on the solid waste stream.

## Recycled and Recyclable Materials

We use only recycled mercury in our energy-efficient fluorescent and HID products. 95% of SYLVANIA packaging comes from renewable resources, and 90% of high volume packaging is made from post-consumer or post-industrial recycled materials. Virtually all of our lamp packaging is recyclable.

*OSRAM SYLVANIA recommends that all mercury-containing lamps that are discarded by non-residential users should be recycled, regardless of any exemptions that users may have under their state or local laws. Information about lamp recycling, and individual state rules for lamp disposal, can be found at [www.lamprecycle.org](http://www.lamprecycle.org).*

## SYLVANIA ECO® Products

**ECOLOGIC® is more than just a single product solution to today's environmental issues; SYLVANIA ECO products comprise an entire family of lighting options guided by our unique life-cycle approach to product development. This approach places strict environmental focus on all stages of lamp life, driving our continual search for improvement—and we have more ECO products than any other lamp manufacturer in North America.**

**SYLVANIA ECO products are engineered to pass the Federal TCLP test for hazardous waste determination:**

- Tested in accordance with EPA SW846
- Prepared for testing in accordance with NEMA LL series standards

**ECO products also feature some or all of the following:**

- Reduction or elimination of toxic materials
  - Lamp bases using lead-free solders
  - Welded lamp bases
  - Lead-free glass in HID products
  - Precision dosing systems ensuring consistent low mercury content
- Performance equal to or better than standard, non-ECO products
- ECO-friendly packaging, using recycled materials and soy-based inks
- Permanent ECO identifier printed on lamp or stamped into metal base
- Long life with sustained performance
- High efficacy

# Energy and the Cost of Lighting

Inefficient lighting systems waste energy and money. In a typical commercial application, lighting can represent 30-50 percent of operating costs. An investment in energy efficient lighting systems from OSRAM SYLVANIA can reduce these costs and offer an excellent return on investment.

## Calculating Costs

Lighting represents 30 to 50 percent of operating costs in a typical installation. Electricity alone represents 86 percent of those costs, on average, with 11 percent going to maintenance and only 3 percent actually being spent on lighting hardware. Obviously, selecting the most energy efficient lighting systems is the key to getting the best possible return on your lighting investment.

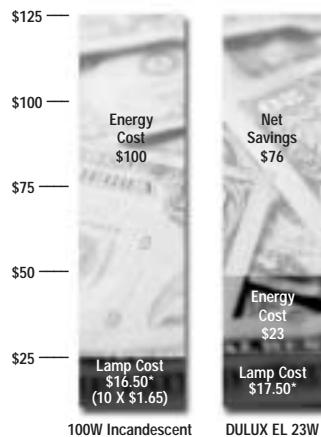
## Minimize Operating Costs

Understanding the basic equations of lighting economics makes it easy to see that long-term operating costs are the most important cost factor, not the initial investment in lamps, ballasts or other hardware. In both retrofits and new installations, it is the overall reductions in energy costs which pay back the initial investment and provide substantial long-term returns.

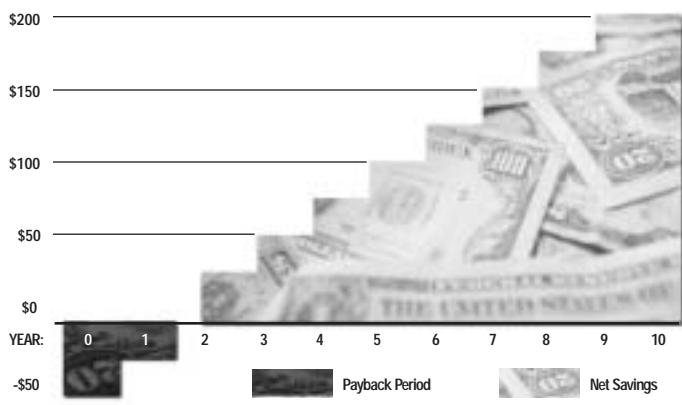
### DULUX® Lamps Offer Significant Savings

Over the long service life of DULUX compact fluorescent lamps, their low energy usage provides a substantial return on investment compared to incandescent lamps with an equivalent light output (savings based on \$0.10 per kWh).

\* approximate retail cost



### SYLVANIA OCTRON® QUICKTRONIC® System Solutions Provide Substantial Savings



Compared with a conventional F40T12 SS 4-lamp magnetic system, a SYLVANIA OCTRON F032T8/QUICKTRONIC 32 LP System Solution can return more than \$200 in energy savings over a 10-year period (savings based on \$0.10 per kWh operated 4000 hours/year).

## Annual Energy Cost Savings Worksheet

Use this 3-part calculation to determine the estimated annual energy cost savings resulting from an upgrade of one lamp or system type throughout a facility. This annual cost savings figure may be compared with the cost of the upgrade to determine simple payback and rate of return (ROR).

NOTE: For fluorescent systems, substitute "lamp" with "system" or "fixture" so that ballast watts are included.

<b>1.</b> Compute the total power (kilowatts, kW) saved by upgrading older lamps to energy saving SYLVANIA replacements	<input type="text"/> _____ Original Lamp Wattage	<input type="text"/> _____ Replacement Lamp Wattage
	<input type="text"/> _____ Watts Saved per Lamp	<input type="text"/> _____ # of Lamps to Replace
	<input type="text"/> _____ Total Watts Saved	<input type="text"/> _____ Total Kilowatts Saved
	$\div 1000$	
<b>2.</b> Compute the total energy (kilowatt hours, kWh) saved annually by performing this upgrade	$= \boxed{\phantom{000}}$	Total Kilowatts Saved
	$\times \boxed{\phantom{000}}$	Hours of Use per Day
	$\times \boxed{\phantom{000}}$	Days of Use per Week
	$\times \boxed{\phantom{000}}$	Weeks of Use per Year
<b>3.</b> Compute the total energy cost savings per year	$= \boxed{\phantom{000}}$	Total kWh Saved per Year
	$\times \boxed{\phantom{000}}$	Your Energy Cost per kWh (typically \$0.10)
	$\boxed{\phantom{000}}$	Total Energy Cost Savings per Year
<b>Simple Payback</b>	$\div \boxed{\phantom{000}}$	Initial Cost of Lighting Upgrade
		Total Energy Cost Savings per Year
	$\boxed{\phantom{000}}$	Years
<b>Rate of Return (ROR)</b>	$\div \boxed{\phantom{000}}$	100
		Simple Payback
	$\boxed{\phantom{000}}$	%



## Visit [www.mySYLVANIA.com/register](http://www.mySYLVANIA.com/register)

We invite you to visit us online at [www.mySYLVANIA.com/register](http://www.mySYLVANIA.com/register) to learn about the many lighting solutions available for today's modern lighting applications. Good lighting is more than just pleasing to the eye. It's a smart, cost-effective way to improve both safety and productivity in the workplace. With SYLVANIA products, you can actually cut your lighting costs and save on lamp replacement and labor costs while improving lighting quality. We understand the needs of the commercial marketplace and have developed a wide variety of lighting solutions specifically designed for you. Your portal features:

- Your Resource Solution Site
- Electronic Catalog
- Industry Links
- Training
- Transaction Details for Partners
- Energy Savings Calculator
- Product Specification
- ECOLOGIC® Certification Program
- Energy Saver Certification Program

# Product Catalog Glossary of Terms

**Ampere** A unit expressing the rate of flow of electric current.

**ANSI (American National Standards Institute)** The organization that develops voluntary guidelines and produces performance standards for the electrical and other industries.

**Audible Noise (Sound)** All fluorescent lamp ballasts produce some noise. Most OSRAM SYLVANIA brand ballasts are sound rated A (up to 75% quieter than magnetic types) and are acceptable for most applications. Care should be taken when mounting the ballast to reduce vibration.

**Average Rated Life** An average rating, in hours, indicating when 50% of a large group of lamps have failed, when operated at nominal lamp voltage and current; manufacturers use 3 hours per start for fluorescent lamps and 10 hours per start for HID lamps when performing lamp life testing procedures; every lamp type has a unique mortality curve that depicts its average rated life. For Photo-Optic specialty lamps, average rated life refers to the operating period after which on statistical average, 50% of the lamps will perform within their specified values.

**Ballast** A device used with an electric discharge lamp to obtain the necessary circuit conditions (voltage, current and waveform) for starting and operating; all fluorescent and HID light sources require a ballast for proper operation. Dimming ballasts are special ballasts which, when used together with a dimmer, will vary the light output of a lamp. OSRAM Photo-Optic discharge lamps are either designed for AC operation (sine wave and/or square wave with recommended operational frequencies below 1KHz) or DC operation (current regulated or power regulated). Please see OSRAM lamp specifications for correct ballast or electronic control gear selection.

**Ballast Basics** Ballasts have two primary functions: 1) start the lamp and 2) control operation of the lamp once it has started. High frequency electronic ballasts operate lamps more efficiently and eliminate the hum and visible flicker normally associated with standard magnetic ballasts. Electronic ballasts also typically have better power quality than magnetic ballasts.

**Ballast Efficacy Factor (BEF)** Ballast factor (as a whole number) divided by input power (watts). Used to measure the level of efficiency of similar ballast models. For example, the OSRAM SYLVANIA QT2X32IS which has a ballast factor of 0.90 and input watts of 59 (BEF= 90/59 = 1.53), is more efficient than electronic ballasts with ballast factor of 0.875 and input watts of 62 (BEF=1.41).

**Ballast Factor (BF)** The measured ability of a particular ballast to produce light from the lamp(s) it powers; ballast factor is derived by dividing the lumen output of a particular lamp/ballast combination by the lumen output of the same lamp(s) on a reference ballast.

**Ballast Fusing** (See Fusing.)

**Ballast Life** OSRAM SYLVANIA ballasts are designed to have an average life expectancy of 60,000 hours. To maximize life, ambient temperature should be kept as low as possible. It is also important to maintain effective dissipation of heat using the lighting fixture as a heatsink for the ballast enclosure.

**Ballast Losses** Power consumed by a ballast that dissipates as heat instead of being converted into light. Electronic ballasts operate more efficiently than magnetic or hybrid ballasts. A typical ballast loss for a standard two lamp energy saving magnetic ballast is 12 watts, where an electronic equivalent would only be 7 watts.

**Ballast Types** There are three types of lighting ballasts: 1) Magnetic: an inefficient device that uses a core and coil assembly transformer to perform the minimum functions required to start and operate the lamp; 2) Hybrid or "low frequency electronic": essentially a magnetic ballast with a few electronic components that switch off voltage to the lamp coil once the lamp has started. A minimal increase in efficiency is obtained via more expensive magnetic core material and the absence of power to the lamp coils during operation; 3) High frequency electronic: a ballast that operates lamps at frequencies above 20,000 Hz. Maximum efficiency is obtained through the use of electronic circuitry and optimum lamp operating characteristics.

**Base** The lamp base mechanically holds the lamp in place in the application. The lamp base directly or indirectly (via a cable or lead-in wires) conducts electricity from the circuit to the lamp and can be designed to dissipate heat. Lamp bases should be operated within specified temperature ranges.

**Beam Angle** The angle between the two directions for which the intensity (candlepower) is 50% of the maximum intensity as measured in a plane through the nominal beam centerline (center beam candlepower).

**Beam Spread** In any plane, the angle between the two directions in the plane in which the candlepower is equal to a stated percent of the maximum candlepower in the beam.

**Black Body (Planckian radiator)** An ideal thermal radiator whose SPD curve is defined by its temperature in Kelvin and whose color coordinates lie exactly on the Planckian curve.

**Brightness** (See Luminance.)

**Bulb** Hard, soft or quartz glass enclosure, which can contain a vacuum, elemental inert gas or metal and a means of light generation (filament or electrodes).

**Candela (cd)** The unit of measure indicating the luminous intensity (candlepower) of a light source in a specific direction; any given light source will have many different intensities, depending upon the direction considered.

**Candlepower Distribution** A curve that represents the variation in luminous intensity (expressed in candelas) in a plane through the light center of a lamp or luminaire; each lamp or lamp/luminaire combination has a unique set of candlepower distributions that indicate how light will be spread.

**Center Beam Candlepower (CBCP)** The intensity of light produced at the center of a reflector lamp beam, expressed in candelas.

**Chromaticity** The aspect of color that includes consideration of its dominant wavelength and purity.

**Color Rendering Index (CRI)** The Color Rendering Index (CRI) measures the effect a light source has on the perceived color of objects and surfaces. High CRI light makes virtually all colors look natural and vibrant. Low CRI causes some colors to appear washed out or even to take on a completely different hue.

**Color Temperature (CT)** Color temperature, which is measured in Kelvin, indicates whether a lamp has a warm, midrange or cool color appearance. "Warm" light sources have a low color temperature (2000-3000K) and feature more light in the red/orange/yellow range. Light with a higher color temperature (>5000K) features more blue light and is referred to as "cool."

**Compact Fluorescent Lamps** Compact fluorescent lamps employ small diameter tubes that are bent so they begin and end in a single base. This allows them to be produced in a wide variety of configurations, greatly extending the applications for fluorescent lighting.

**Correlated Color Temperature (CCT)**

A specification of the color appearance of a lamp, relating its color to that of a reference source, black body radiator, heated to a particular temperature, measured in degrees Kelvin (K); CCT generally measures the "warmth" or "coolness" of light source appearance.

**Current** A measure of the rate of flow of electricity, expressed in amperes (A).

**Description** (See Ordering Abbreviation.)

**Design Amperes** The approximate current which the lamp will draw at design volts.

**Directional Lighting** Illumination on the work-plane or on an object predominantly from a single direction.

**Double-Ended** Lamps that have two bases opposite one another for series electrical connection, mechanical mounting and heat dissipation.

**Efficacy** The rate at which a lamp is able to convert power (watts) into light (lumens), expressed in lumens per watt (LPW or lm/W). See also LPW Performance.

**Electronic Control Systems** (See Ballast.)

**EMI/RFI** Electronic Ballasts contain circuits that limit electrical noise conducted onto the power line or radiated through the air, otherwise referred to as EMI/RFI. OSRAM SYLVANIA ballasts comply with FCC 47 CFR Part 18, non-consumer limits for commercial applications. Ballasts for residential application must meet consumer limits. OSRAM SYLVANIA has a complete line of magnetic ballasts for residential use.

**Energy** A measure of work done by an electrical system over a given period of time, often expressed in kilowatt-hours (kWh).

**Filament** A tungsten wire purposely positioned inside a lamp bulb, that when heated electrically generates radiation in the visible, infrared and ultraviolet ranges. Tungsten material is most often used, as it has great tensile strength, is very durable, and can be heated very near its melting point without evaporating rapidly. Lamp filaments are offered in a variety of designs optimized for specific applications.

**Fixture** (See Luminaire.)

**Floodlight** A reflector lamp with a relatively wide beam pattern. Also a luminaire consisting of lamp and reflector at fixed distance providing a wide field of illumination.

**Fluorescent Lamp** A low pressure mercury vapor discharge light source. The electric discharge generates ultra-violet (UV) energy, which is absorbed by a phosphor and converted to visible light.

**Focal Distance** The distance between a lamp (light producing element) and the focal point of the reflector surrounding it. Lamp alignment can be adjusted to influence both illumination and color quality. Sometimes referred to as "working distance".

**Footcandle (fc)** A unit of illuminance equal to 1 lumen per square foot.

**Frequency** The number of times per second that an alternating current system reverses from positive to negative and back to positive, expressed in cycles per second or hertz (Hz).

**Fusing** All QUICKTRONIC® ballasts contain inherent electrical protection. Although there is no need to externally fuse the ballast, should code or regulation require one, 3 amp slow blow fuses are recommended.

**Glow to Arc Transition** In order to achieve full rated lamp life, a ballast should start a lamp so that the time from when the lamp begins to glow to the time the lamp arc strikes should be as short as possible. OSRAM SYLVANIA instant start ballasts typically accomplish this task within 50 msec.

**Grounding** The ballast case and fixture must always be grounded. The grounding helps assure safety, proper lamp starting, and acceptable EMI/RFI performance. Install ballast in accordance with national and local electric codes.

**Halogen Lamps** High pressure tungsten filament lamps containing halogen gases. The halogen gases allow the filaments to operate at higher efficacies than incandescent lamps. Halogen lamps also provide brighter, whiter light with better color characteristics, longer service life and improved energy efficiency.

**Harmonic** An electrical frequency that is an integer multiple of the fundamental frequency; for example, if 60 Hz is the fundamental frequency, then 120 Hz is the second harmonic and 180 Hz is the third harmonic. Some electronic devices, such as ballasts or power supplies, can cause harmonic distortion, directly affecting power quality.

**Hertz (Hz)** A unit of frequency equal to one cycle per second; see frequency.

**High-Intensity Discharge (HID) Lamps**

Lamps in which an arc passing between two electrodes in a pressurized tube causes various metallic additives to vaporize and release large amounts of light. All HID lamps offer outstanding energy efficiency and service life. Metal halide lamps also offer good to excellent color rendering index (CRI).

**Hot Ignition** The restarting of a previously operating lamp shortly after turn-off. Hot ignition is a high performance feature in many OSRAM SYLVANIA discharge lamp types.

**Illuminance** Light arriving at a surface, expressed in lumens per unit area; 1 lumen per square foot equals 1 footcandle, while 1 lumen per square meter equals 1 lux.

**Incandescent Lamp** A light source using the principle of incandescence. When an electric current passes through a filament wire (usually tungsten), the heated wire glows. Filaments of standard incandescent lamps are enclosed in a vacuum or gas-filled bulb. They provide low initial cost, good color rendition and excellent optical control.

**Instant Start (IS)** Instant start ballasts apply high voltage across the lamp with no preheating of the cathode. This is the most energy efficient starting method for fluorescent lamp ballasting. IS ballasts use 1.5 to 2 watts less per lamp than rapid start ballast. Other IS ballast benefits typically include parallel lamp circuitry, longer remote wiring distance, easier installation due to less complicated wiring, and capability to start lamps at 0 degrees (versus 50 degrees F for rapid start).

**K-Factor** A measurement that quantifies the effect of non-linear equipment, such as lighting ballasts, on an electrical system. Lighting systems should be designed so that the transformer rating is sufficient for the ballast used (typically K-factor <4). All OSRAM SYLVANIA ballasts meet this specification.

**Lamp** Manufactured light source, synonymous with light bulb; the three broad categories of electric lamps are incandescent, fluorescent and high-intensity discharge.

**Lamp Current Crest Factor (LCCF)** The ratio of peak lamp current to the RMS (average) lamp current. Lamp manufacturers require a LCCF of less than 1.70 in order to achieve full lamp life.

**Lamp Disposal** When disposing of spent lamps, always consult federal, state, local and/or provincial hazardous waste disposal rules and regulations to ensure proper disposal.

**Lamp Flicker** Cyclic variation in output of a light source. High frequency electronic ballasts provide a minimal level of lamp flicker. Lamp flicker from magnetic ballasts may cause eye fatigue for some people.

**Lamp Fuse** Wire or device designed to protect a lamp from over-voltage or over-current conditions. OSRAM requires that all Photo-Optic lamps be fused in their applications to prevent lamp overpowering. Certain lamps contain their own internal fuse. Please ensure lamps in your specific application are fused with respect to their power source.

**Lamp Lumen Depreciation Factor (LLDF)**

The multiplier to be used in illumination calculations to relate the initial rated output of light sources to the anticipated minimum rated output based on the relamping program to be used. (See Lumen Depreciation and Mean Lumens.)

**Lens** A glass or plastic element used in luminaires to change the direction and control the distribution of light rays.

**Light** Radiant energy that is capable of producing a visual sensation.

**Light Center Length (LCL)** The distance from a specified reference point on a lamp base to its light center.

**Light Loss Factor (LLF)** A factor used in calculating illuminance after a given period of time and under given conditions. It takes into account temperature and voltage variations, dirt accumulation on luminaire and room surfaces, lamp depreciation, maintenance procedures and atmosphere conditions. Formerly called maintenance factor.

**Low Temperature Starting** QUICKTRONIC® instant start and programmed rapid start electronic ballasts have the capability to start fluorescent lamps at temperatures down to 0°F providing the following conditions are met: 1. The ballast is operated at rated nominal line voltage; 2. Ballast cannot be tandem/remote wired for low temperature starting applications. Please note, starting time may increase at 0°F ambient temperatures. Enclosed fixtures are recommended as fluorescent lamps have reduced light output at cooler ambient temperatures. (See specifications for each model's starting temperature rating.)

**LPW Performance** Lumens Per Watt. The number of lumens produced by a light source for each watt of electrical power supplied to the light source. Also see Efficacy.

**Lumen Depreciation** The decrease in lumen output of a light source over time; every lamp type has a unique lumen depreciation curve (sometimes called a lumen maintenance curve) depicting the pattern of decreasing light output. See Lamp Lumen Depreciation Factor, LLDF and Mean Lumens.

**Lumen Maintenance** (See Lumen Depreciation.)

**Lumens (lm)** A unit of luminous flux; overall light output; quantity of light, expressed in lumens. For example, a dinner candle provides about 12 lumens and a 60-watt soft white incandescent lamp provides about 840 lumens.

**Luminaire** A light fixture; the complete lighting unit, including lamp, reflector, ballast, socket, wiring, diffuser and housing.

**Luminaire Efficiency** The ratio of luminous flux (lumens) emitted by a luminaire to that emitted by the lamp or lamps used therein.

**Luminance (L)** Light reflected in a particular direction; the photometric quantity most closely associated with brightness perception, measured in units of luminous intensity (candelas) per unit area (square feet or square meters).

**Luminance Contrast** The relationship between the luminances of an object and its immediate background.

**Luminance Ratio** The ratio between the luminances of any two areas in the visual field.

**Lux (lx)** A unit of illuminance equal to 1 lumen per square meter.

**Maximum Case Temperature** All OSRAM SYLVANIA electronic ballasts have a maximum allowable case temperature of 70°C and 90°C for magnetic fluorescent ballasts. Applications in which the case temperature exceeds this maximum void all warranties.

**Maximum Overall Length (MOL)** The total length of a lamp, from top of bulb to bottom of base.

**Mean Lumens** Lumen output of a light source after the source has been used. Mean lumen values for fluorescent and HID lamps are typically measured at 40% of their rated lives. Most high pressure sodium and mercury lamps are measured at 50% of their rated lives. All measurements are made on ANSI reference ballasts. Mean lumens are not typically measured for incandescent and tungsten halogen lamps.

**Mean Spherical Candela (MSCD)** The average value of the luminous intensity of a light source in all directions. To convert MSCD to Lumens, multiply by  $4\pi$  (12.57).

#### **Mean Time Between Failures (MTBF)**

A calculation of ballast life based on thermal conditions, component values, and circuit characteristics used to develop relative predictions of ballast life. OSRAM SYLVANIA uses methodology that typically provides a 1:10 actual life prediction based on MTBF calculations.

**NAED** A five-digit number used to identify a specific OSRAM SYLVANIA lamp. This NAED number in this catalog is labeled Product Number and should be used when ordering OSRAM SYLVANIA products. NAED is the abbreviation for National Association of Electrical Distributors.

**Nanometer (nm)** A unit of length equal to  $10^{-9}$  meters; commonly used as a unit of wavelength.

**Nominal Watts** Wattage used to describe a lamp. Also see Power and Watt.

**OFR** Abbreviation for "ozone free" technology. Lamps with the designation OFR do not generate ozone during operation.

**Operating Position** Some lamps are specified/ designed to be operated in certain positions, i.e., horizontal or base up.

**Ordering Abbreviation** Provides a shorthand description of the lamp, using a unique code which can be used when ordering a lamp if the Product Number is not known. An example would be: CF15EL/R30/830/MED, which translates to a 15-watt Soft White DULUX® EL reflector electronic self-ballasted compact fluorescent lamp with an R30 reflector, 82CRI, 3000K color temperature and a medium screw base.

**PAR Lamps** Pressed aluminized reflector lamp, with the outer bulb formed from two pressed glass parts that are fused or sealed together. PAR lamps may be incandescent, halogen, or HID types.

**Parallel vs. Series** Wiring configurations for ballasts. Ballasts with parallel lamp circuitry have the benefit of companion lamps remaining lit, even if one of the lamps operated by the ballast should fail. Systems with series lamp wiring (magnetic ballasts and many rapid start electronic types) result in all lamps operated on the ballast going out if one should fail.

**Photo-Optic Specialty Lamps** Photo-Optic specialty lamps employ a variety of technologies to meet the very precise levels of performance required by the entertainment industry, science, medical and other high-tech fields.

**Power** The rate at which energy is taken from an electrical system or dissipated by a load, expressed in watts (W); power that is generated by a utility is typically expressed in volt-amperes (VA).

**Power Factor** A measure of the effectiveness with which an electrical device converts volt-amperes to watts; devices with power factors (>0.90) are "high power factor" devices.

**Preheat** A class of fluorescents requiring a starter, which allows the lamp and filaments to be properly heated before allowing the ballast to supply the correct current flow.

**Product Number** (See NAED.)

**Programmed Rapid Start (PS)** A method of starting fluorescent lamps where cathode heat is applied prior to lamp ignition, then removed or reduced once the lamp has ignited. PROStart® ballasts maximize the number of lamp starting cycles while maintaining energy efficiency. This is the preferred mode of lamp starting for applications with occupancy sensors and several on/off cycles per day. Additionally, the lamps will strike reliably in cold conditions down to 0°F.

**Rapid Start (RS)** Rapid start ballasts apply a low filament voltage to preheat the cathodes. Simultaneously, a starting voltage (lower than that used in instant start) is also applied to strike the arc. When the cathodes are hot enough, the lamp will strike. The filament voltage continues to be applied throughout the operation of the lamp. Rapid start ballasts appear to have a slight turn on delay compared to instant start. They will typically not be able to start lamps reliably under 50°F.

**Reference Ballast** A ballast specially constructed to have certain prescribed characteristics for use in testing electric-discharge lamps and other ballasts. Reference ballasts are typically defined by ANSI.

**Reflector** A device used to redirect the light by the process of reflection. Photo-Optic reflector lamps utilize ellipsoidal (converging light rays) or parabolic (collimating light rays) reflectors. Dichroic coated reflectors are designed to reflect visible light and pass through unwanted infrared wavelengths.

**Resistance (R)** A measure of resistance to flow of current, expressed in ohms ( $\Omega$ ).

**Safety** Ballasts should be installed and operated in compliance with the National Electric Code (NEC), Underwriters Laboratories Inc. (UL) requirements, and all applicable codes and regulations. Since it is possible to come in contact with potentially hazardous voltages, only qualified personnel should perform ballast installation. All installation, inspection, and maintenance of lighting fixtures should be done with the power to the fixture turned off.

**Shielding** A general term to include all devices used to block, diffuse or redirect light rays, including baffles, louvers, shades, diffusers and lenses.

**Single-Ended** Lamps having a single lamp base or point of electrical connection.

#### **Spectral Power Distribution (SPD)**

A curve illustrating the distribution of radiant power produced by the lamp, at each wavelength across the spectrum.

**Spotlight** A luminaire using halogen/incandescent or a high intensity discharge (HID) lamp that produces a narrow beam angle designed to illuminate a specifically defined area. It can also be called a reflector lamp.

**TCLP Test (Toxicity Characteristic Leaching Procedure)** Federal EPA regulations (RCRA of 1990) have defined a TCLP test to determine whether wastes are to be treated as hazardous or non-hazardous.

**Total Harmonic Distortion (THD)** A measure of the distortion of an electrical wave form. Excessive THD (defined by ANSI as greater than 32%) may cause adverse effects to the electrical system. <20% THD ballasts are fine for most applications. However, in buildings with neutral problems caused by high THD loads such as computers, printers, DC supplies, etc., the <10% THD products can help reduce the overall % of Total Harmonic Distortion.

**Transient Protection** OSRAM SYLVANIA ballasts meet ANSI 62.41 Category A. This helps ensure immunity to electrical disturbances such as power line transients, and temporary line voltage dropouts, surges and sags.

**Trigger Start** A circuit used to eliminate the starter and start the preheat lamp almost instantly. In this circuit each electrode is connected to a separate winding in the ballast so that the electrode is continuously heated.

**Tungsten Halogen Cycle** A regenerative cycle of tungsten and halogen atoms, which, when incorporated into the design of halogen light sources, prevents blackening of the lamp envelope during life.

**Voltage (V)** A measure of electrical potential, expressed in volts (V). Voltage is the "force" that pushes electrical current through a conductor.

**Watt (W)** A unit of electrical power equal to 1 joule per second. Lamps are rated in watts to indicate power consumption. Also see Nominal watts.

**Wavelength ( $\lambda$ )** Distance between two successive points of a periodic wave; the wavelengths of light are typically expressed in nanometers (nm), or billionths of a meter.

**Working Distance** (See Focal Distance.)

## INCANDESCENT LIGHTING

The incandescent lamp consists of a wire filament on a suitable mount enclosed in a glass bulb containing a gas or a vacuum.

When the lamp is connected to an electrical circuit, the current passing through the wire must overcome the filament's resistance, and the power consumed heats the filament to incandescence (causes it to glow).

### QUALITY LIGHT

Incandescent bulbs are still the standard choice when the quality of light really counts. The different shapes, coatings and features provide a variety of options for many lighting applications. With warm color temperatures and superior color rendering, nothing sets the mood like incandescent lighting.

#### THE BEST QUALITY OF LIGHT FOR:

*Atmosphere*

*Romance*

*Warmth*

*Beauty*

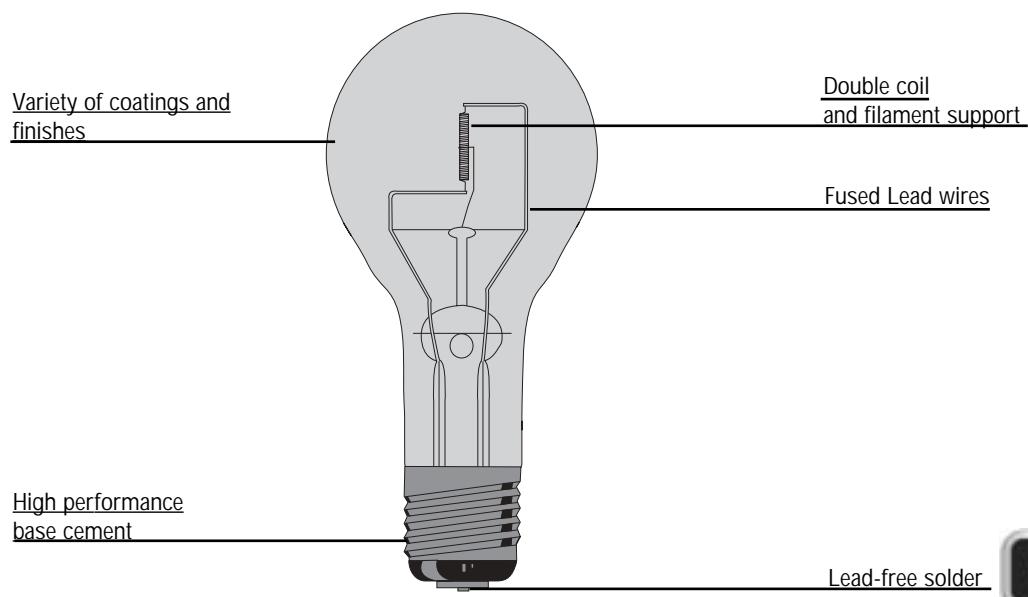
*Comfort*

*Elegance*



### QUALITY CONSTRUCTION

Sylvania uses the highest quality components designed to offer superior performance on every lamp.



## LAMP CATEGORIES

Sylvania offers a wide assortment of premium lighting products that add value through superior performance, long life, beautiful light and rugged durability.

### Double Life

*Our long-life line of premium light bulbs*

Long Life without compromising brightness and light quality

- Lasts up to twice the life of a regular light bulb with almost the same light output
- Available in many different shapes and sizes



Perfect for hard to reach applications

### Daylight™

*Our most pleasing light*

Unique coating that simulates natural light

- Delivers whiter, more Natural light
- Enhances color performance



The best choice to bring more natural light indoors

### Rough Service

*Our toughest line of light bulbs*

Able to withstand knocks and bumps

- Extra support
- Most durable construction



Ideal for applications where lamp may be subject to vibration

### Safeline®

*Our Safest light bulbs*

Shatter resistant, weather resistant

- Safely Contains Glass in case of breakage
- Provides Weather Protection



Appropriate when safety comes first

### Specialty

*Our complete assortment of specialized light bulbs*

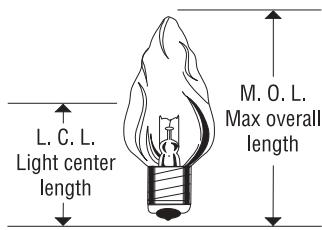
Diverse line of light bulbs for specific uses

- Gro-Lux®
- Night Lights
- Appliance Lamps
- Heat Lamps
- Colored Lamps
- Street lighting



## BULB IDENTIFICATION

**Light Center Length (L.C.L.)** is the distance from the center of the light source to the following point for the base used: Screw bases...bottom base contact; Bayonet candelabra and medium bayonet...top of base pins; Medium and Mogul Prefocus...top of base pin; S.C. or D.C.Prefocus - Plane of locating bosses of prefocusing collar.



Bulb size - Max. Diameter (Divide by 8)

A-21 -  $2\frac{1}{8}$  = 2 5/8" Dia.

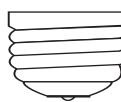
G-40 -  $40/8$  = 5" Dia.

T-12 -  $12/8$  = 1 1/2" Dia.

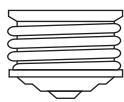
PS-30 -  $30/8$  = 3 3/4" Dia.

## BASE IDENTIFICATION

Typical bases are shown. One lead-in wire is soldered to the center contact and the other soldered or welded to the upper rim of the base shell. Base shells are typically made of brass or aluminum. ANSI designations are in parentheses.



Mogul Screw



3 Contact Mogul



Double Contact Bayonet D.C.  
Bay (BA15D)



Candelabra  
cand. (E12)



Intermediate  
Inter. (E17)



Medium (E26) &  
Medium Brass  
(E26)



3 Contact  
Medium  
3 C Med (E26D)



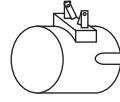
Medium Skirted  
Med. Skirt  
(E26/50x39)



S14s



Ext. Mogul  
End Prong GX16d



Mogul End Prong



Med Side Pr.



Screw Terminal  
653

## FILAMENT IDENTIFICATION

A FILAMENT designation consists of a prefix letter to indicate whether the wire is straight or coiled, and a number to indicate the arrangement of the filament on the supports. Prefix letters include: C (coiled) --wire is wound into a helical coil or it may be deeply fluted; CC (coiled coil)--wire is wound into a helical coil and this coiled wire again wound into a helical coil.



C-8  
CC-8



C-9  
CC-9



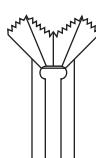
C-6  
CC-6



C-2V  
CC-2V



C-7A  
CC-7A



C-11V



C-11  
CC-11



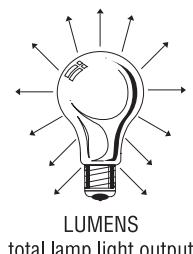
C-5



C-2R

## ADDITIONAL INFORMATION

Lamps Listed 115-125 volts (design voltage 120), 120-130 volts (design voltage 125), 125-130 volts (design voltage 130) and 230-250 volts (design voltage 240) are intended for use on circuits normally varying within these voltage limits.

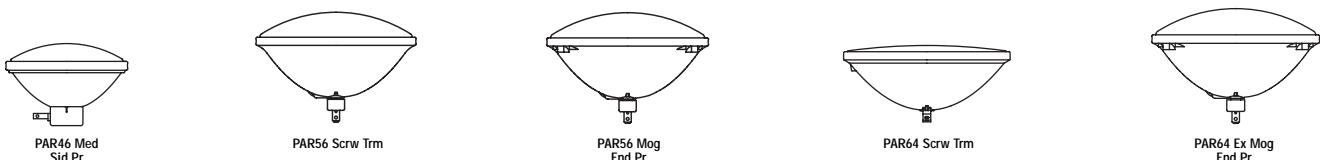
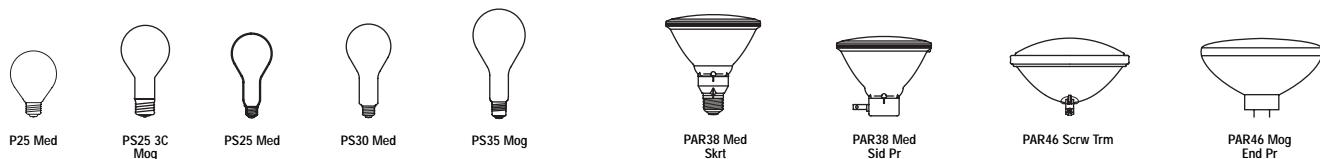
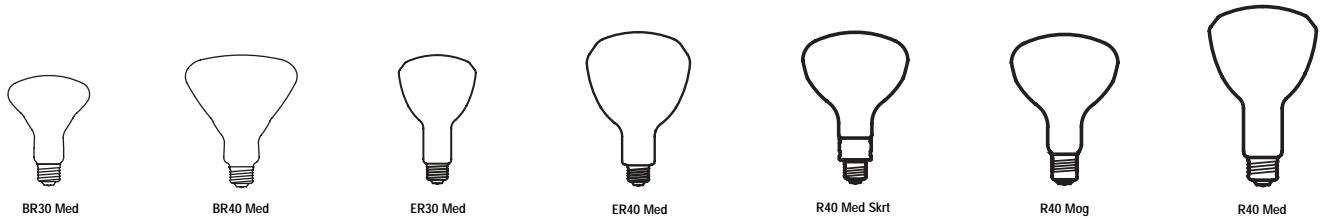
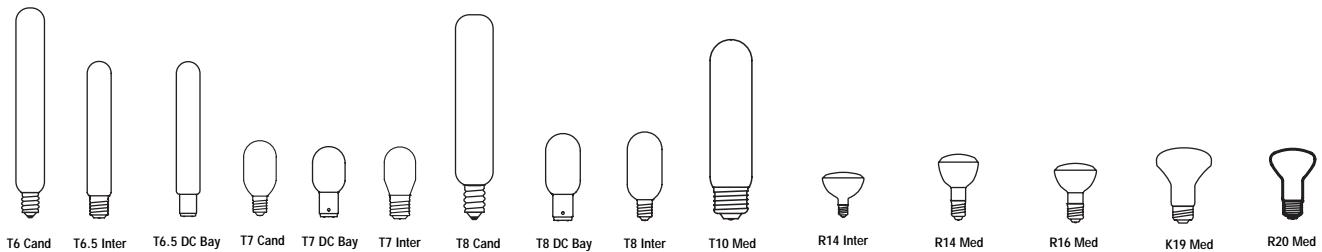
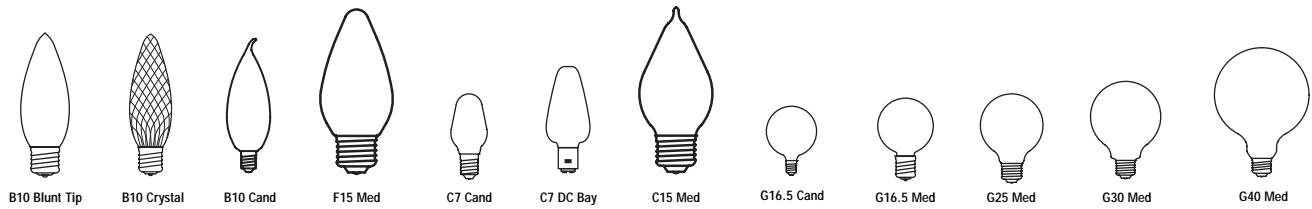


Candle Power  
 $C_p$  = Ray of Light  
in one direction  
 $F_c$  = Max Beam  $C_p$   
 $D^2$

Finishes  
W - Soft White  
DAY - Daylight™  
Y - Yellow  
B - Blue  
R - Red  
G - Green  
A - Amber  
IC - Iridescent clear  
FL - Flood  
SP - Spot  
IF - Inside frost  
BL - Blister  
AIC - Amber iridescent

## INCANDESCENT LAMP SHAPES

A bulb designation consists of a letter(s) to indicate the shape and a figure(s) to indicate the approximate major diameter in eighths of an inch. For example, an F-15 bulb is a flame-shape, 15/8 of an inch or 1-7/8 inches in diameter.



## HOW TO READ PRODUCT INFORMATION - INCANDESCENT

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Pkg Volts	Pkg Qty	Description	Class & Filament	Avg Rated Life(hrs)	Lumens CBCP	Beam Angle (in)	LCL (in)	MOL (in)
<b>Bulb</b>	Describes the shape of the envelope followed by the lamp's major diameter given in eighths of an inch. See page 3: Incandescent Lamps.													
<b>Base</b>	See page 3: Base Identification.													
<b>Symbols &amp; Footnotes</b>	All symbols and footnotes that apply to a specific product will appear in this space. The explanations of the symbols and footnotes are at the end of the incandescent section.													
<b>Ordering Abbreviation</b>	A text description of the lamp. See below for several examples and explanations of some of the codes.													
<b>Class &amp; Filament</b>	The class is either B (vacuum) or C (gas filled). The filament designation describes the shape and mount structure of the filament. See page 3: Filament Identification.													
<b>Lumens, Beam Angle, CBCP</b>	This column may contain data for any of these values. Lumen values are followed by the designation 'lm'. Beam angles are indicated by either a '°' or the designation 'V x H' for non-symmetric beams. CBCP values are followed by the designation 'cd'.													

## HOW TO READ ORDERING ABBREVIATIONS

40B10C/CRYSTAL/DL/BL/2PK	60A/DLSW/2PK/RP	65BR30/DL/FL/RP
40 Nominal lamp wattage	60 Nominal lamp wattage	65 Nominal lamp wattage
B Bulb shape	A Bulb shape	BR Bulb shape
10 Bulb size in 8th's of an inch	DL Double life lamp	30 Bulb size in 8th's of an inch
C Candelabra base	SW Soft white	DL Double life lamp
CRYSTAL Crystal texture on bulb glass	2PK 2 lamps per package	FL Flood beam pattern
DL Double Life Lamp	RP Retail pack	RP Retail pack
BL Blister pack		
2PK 2 lamps per package		

## INCANDESCENT BRAND NAME GUIDE

NOTE: These tables are intended only as a guide and may represent another lamp company's closest competitive type rather than an identical match. Individual manufacturers' performance values should be consulted. Environmental conditions, ballast type, and other auxillary equipment may affect lamp performance.

## INCANDESCENT

SYLVANIA	GE*	PHILIPS**
Bug-Light	House Garden - Bug-Lite	Bug-A-Way
Double Life	Long Life	Longer Life
Double Life Soft White	Long Life Soft White	Longer Life Soft White
Daylight™	Reveal	Natural
Energy Saver Soft White	Soft White Miser	Energy Saving
EXCEL-LINE®	Extended Service	Extended Service
Linestra®	Lumiline	Philinea
RHINO COAT® SAFELINE®	COV-R-GUARD	Silicone Coated
Rough Service	Ruff-n-Tuff	Rough Service
Rough Service XL	Survivor	
Soft Pink	Soft Pink	Pink Softone Pastels
Spot-GRO®	House Garden - Plant Light	Agro-Lite
SUPERSAVER®	Watt-Miser	Econo-o-Watt
SUPERSAVER EXCEL-LINE	Watt-Miser Plus	Extended Service
SUPERSAVER PAR	Watt-Miser PAR	Econo-o-PAR

\*Trademark and or registered trademark of General Electric Company. \*\*Trademark and or registered trademark of Philips.



A15



A19



G25



R20



A21



BR30



C7 Candelabra



B10

I  
N  
C  
A  
N  
D  
E  
S  
C  
E  
N  
T

## DAYLIGHT™ LAMPS

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Description	Class & Filament	Avg Rated Life(hrs)	Lumens CBCP	Beam Angle (in)	LCL (in)	MOL (in)	
40	A15	Med	10181*	●	40A15/DAY/FAN/BL/2/24	120	24	Daylight Fan	C, C-9	1000	340 lm	2 3/8	3 1/2		
	A19	Med	11100*	●▼	40A/DAY/RP/2/24	120	24	Daylight	C, CC-8	1500	350 lm	3 1/8	4 7/16		
			10864*	●▼	40A/DAY/RP/4/48	120	48	Daylight	C, CC-8	1500	350 lm	3 1/8	4 7/16		
			10897	●▼	40A/DAY/4/160/RP	120	160	Daylight	C, CC-8	1500	350 lm	3 1/8	4 7/16		
	G25	Med	13966	●▼	40G25/DAY/1/6	120	6	Daylight Globe	C, C-9	1500			4 7/16		
			14002	●▼	40G25/DAY/1/48	120	48	Daylight Globe	C, C-9	1500			4 7/16		
50	R20	Med	15231*	●1,2,3,4	50R20/DAY/1/6/RP	120	6	Daylight Reflector	C, C-9	2000	240 lm 45° 400 cd		3 15/16		
50	A21	3CONTACT Med	18110	●▼	50/150/DAY/1/12	120	12	Daylight 3-way	C, CC-8	1200	490 lm 1250 lm 1740 lm	3 3/8	5 5/16		
100			18119	●▼	50/150/DAY/1/96	120	96	Daylight 3-way	C, CC-8	1200	490 lm 1250 lm 1740 lm	3 3/8	5 5/16		
60	A19	Med	11101*	●▼	60A/DAY/RP/2/24	120	24	Daylight	C, CC-8	1000	640 lm	3 1/8	4 7/16		
			11463*	●▼	60A/DAY/RP/4/48	120	48	Daylight	C, CC-8	1000	640 lm	3 1/8	4 7/16		
			11509	●▼	60A/DAY/4/160/RP	120	160	Daylight	C, CC-8	1000	640 lm	3 1/8	4 7/16		
	G25	Med	13967	●▼	60G25/DAY/1/6	120	6	Daylight Globe	C, C-9	1500			4 7/16		
			14003	●▼	60G25/DAY/1/48	120	48	Daylight Globe	C, C-9	1500			4 7/16		
65	BR30	Med	15223*	●1,2,4,5	65BR30/DAY/1/6/RP	120	6	Daylight Reflector	C, CC-6	2000	420 lm 60° 250 cd		5 3/8		
75	A19	Med	11102*	●▼	75A/DAY/RP/2/24	120	24	Daylight	C, CC-8	750	850 lm	3 1/8	4 7/16		
			10865*	●▼	75A/DAY/RP/4/48	120	48	Daylight	C, CC-8	750	850 lm	3 1/8	4 7/16		
			10863	●▼	75A/DAY/4/160/RP	120	160	Daylight	C, CC-8	750	850 lm	3 1/8	4 7/16		
100	A19	Med	12952*	●▼	100A/DAY/RP/2/24	120	24	Daylight	C, CC-8	750	1270 lm	3 1/8	4 7/16		
			12587*	●▼	100A/DAY/RP/4/48	120	48	Daylight	C, CC-8	750	1270 lm	3 1/8	4 7/16		
			12948	●▼	100A/DAY/4/160/RP	120	160	Daylight	C, CC-8	750	1270 lm	3 1/8	4 7/16		

## DOUBLE LIFE LAMPS

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Description	Class & Filament	Avg Rated Life(hrs)	Lumens CBCP	Beam Angle (in)	LCL (in)	MOL (in)
4	C7	Candelabra	13523	●▼	4C7/DL/BL/4PK	120	48	Double Life Night Light	B, C-9	6000	14 lm		2 1/8	
15	B10	Candelabra	13315	●▼	15B10C/DL/BL	120	12	Clear Double Life Décor Bent Tip	C, C-7A	3000			3 7/8	
25	B10	Candelabra	13306	●▼▼	25B10C/DL/BL/4PK	120	24	Clear Double Life Décor Bent Tip	C, C-7A	3000			3 7/8	
			13316	●▼▼	25B10C/DL/BL	120	12	Clear Double Life Décor Bent Tip	C, C-7A	3000			3 7/8	
			13743	●▼▼	25B10C/CRYSTAL/DL/BL/2PK	120	12	Double Life Crystal Bent Tip	C, C-7A	3000			3 7/8	
			13317	●▼▼	25B10C/DLF/BL	120	12	Frosted Double Life Décor Bent Tip	C, C-7A	3000			3 7/8	
			13308*	●▼▼	25B10C/DLF/BL/4PK	120	24	Frosted Double Life Décor Bent Tip	C, C-7A	3000			3 7/8	
	Med		13318	●▼▼6	25B10/DL/BL	120	12	Clear Double Life Décor Bent Tip	C, C-7A	3000			3 13/16	



B10



G25



A21



A15



A19



R20

INCANDESCENT

## DOUBLE LIFE LAMPS

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Description	Class & Filament	Avg Rated Life(hrs)	Lumens CBCP	Beam Angle	LCL (in)	MOL (in)	
25	B10	Med	13331*	●▼■6	25B10/DL/BL/4PK	120	24	Clear Double Life Décor Bent Tip	C, C-7A	3000				3 <sup>13</sup> / <sub>16</sub>	
70 100	G25	Med	14145	●■	25G25/DL/RP	120	6	Clear Double Life Globe	C, C-9	3000				4 <sup>7</sup> / <sub>16</sub>	
			14105	●■	25G25/DL/RP/48	120	48	Clear Double Life Globe	C, C-9	3000				4 <sup>7</sup> / <sub>16</sub>	
			14146	●■	25G25/DLSW/RP	120	6	Soft White Double Life Globe	C, C-9	3000				4 <sup>7</sup> / <sub>16</sub>	
			14103	●■	25G25/DLSW/RP/48	120	48	Soft White Double Life Globe	C, C-9	3000				4 <sup>7</sup> / <sub>16</sub>	
30	A21	3CONTACT Med	19380	●▼	30/100A21/DLSW/RP	120	12	Soft White Double Life 3-way	C, CC-8	2400	270 lm 860 lm 1130 lm	3 <sup>3</sup> / <sub>8</sub>	5 <sup>5</sup> / <sub>16</sub>		
32	B10	Candelabra	13737	●▼■	32B10C/CRYSTAL/DL/BL/2PK	120	12	Double Life Crystal Bent Tip	C, C-7A	4000				3 <sup>7</sup> / <sub>8</sub>	
40	A15	Med	10133	●	40A15/CL/DL/BL	120	12	Clear Double Life Appliance	C, C-9	2000	350 lm	2 <sup>3</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>2</sub>		
			10168*	●	40A15/CL/DL/BL/2/24	120	24	Clear Double Life Appliance	C, C-9	2000	350 lm	2 <sup>3</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>2</sub>		
			10023*	●	40A15/CL/DL/FAN/BL/2/24	120	24	Clear Double Life Ceiling Fan Light	C, C-9	2000	350 lm	2 <sup>3</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>2</sub>		
			10046	●	40A15/CL/DL/FAN	120	24	Clear Double Life Fan Light	C, C-9	2000	350 lm	2 <sup>3</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>2</sub>		
A19	Med		10939	●■	40A/DLSW/4PK/RP	120	48	Soft White Double Life	C, CC-8	3000	390 lm	3 <sup>1</sup> / <sub>8</sub>	4 <sup>7</sup> / <sub>16</sub>		
B10	Candelabra	Candelabra	13319	●▼■	40B10C/DL/BL/2PK	120	12	Clear Double Life Décor Bent Tip	C, C-7A	3000				3 <sup>7</sup> / <sub>8</sub>	
			13328	●▼■	40B10C/DL/BL/4PK	120	24	Clear Double Life Décor Bent Tip Four Pack	C, C-7A	3000				3 <sup>7</sup> / <sub>8</sub>	
			13741	●▼■	40B10C/CRYSTAL/DL/BL/2PK	120	12	Double Life Crystal Bent Tip	C, C-7A	3000				3 <sup>7</sup> / <sub>8</sub>	
			13714*	●▼■	40B10C/CRYSTAL/DL/BL/4/24	120	24	Double Life Crystal Bent Tip	C, C-7A	3000				3 <sup>7</sup> / <sub>8</sub>	
			13320	●▼■	40B10C/DLF/BL/2PK	120	12	Frosted Double Life Décor Bent Tip	C, C-7A	3000				3 <sup>7</sup> / <sub>8</sub>	
			13309*	●▼■	40B10C/DLF/BL/4PK	120	24	Frosted Double Life Décor Bent Tip	C, C-7A	3000				3 <sup>7</sup> / <sub>8</sub>	
			13321	●▼■6	40B10/DL/BL/2PK	120	12	Clear Double Life Décor Bent Tip	C, C-7A	3000				3 <sup>13</sup> / <sub>16</sub>	
			13740	●▼■6	40B10/CRYSTAL/DL/BL/2PK	120	12	Double Life Crystal Bent Tip	C, C-7A	3000				3 <sup>13</sup> / <sub>16</sub>	
G25	Med	Med	13723*	●▼■6	40B10/CRYSTAL/DL/BL/4PK	120	24	Double Life Crystal Bent Tip	C, C-7A	3000				3 <sup>13</sup> / <sub>16</sub>	
			13322	●▼■6	40B10/DLF/BL/2PK	120	12	Frosted Double Life Décor Bent Tip	C, C-7A	3000				3 <sup>13</sup> / <sub>16</sub>	
			14147	●■	40G25/DL/RP	120	6	Clear Double Life Globe	C, C-9	3000				4 <sup>7</sup> / <sub>16</sub>	
			14174	●■	40G25/DL/1/48	120	48	Clear Double Life Globe	C, C-9	3000				4 <sup>7</sup> / <sub>16</sub>	
50	R20	Med Brass	14148	●■	40G25/DLSW/RP	120	6	Soft White Double Life Globe	C, C-9	3000				4 <sup>7</sup> / <sub>16</sub>	
			14175	●■	40G25/DLSW/1/48	120	48	Soft White Double Life Globe	C, C-9	3000				4 <sup>7</sup> / <sub>16</sub>	
			14943	1,2,3,4	50R20/DL/RP	120	6	Double Life Reflector Flood	C, C-9	4000	290 lm 45° 480 cd			3 <sup>15</sup> / <sub>16</sub>	



A21



A15



A19



B10



G25



BR30



BR40

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## DOUBLE LIFE LAMPS

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Description	Class & Filament	Avg Rated Life(hrs)	Lumens CBCP	Beam Angle (in)	LCL (in)	MOL (in)
50	A21	3CONTACT Med	18044	●▼	50/150A21/DLSW/RP	120	12	Soft White Double Life 3-way	C, CC-8	2400	540 lm 1400 lm 1940 lm	3 3/8	5 5/16	
100														
150														
60	A15	Med	10024	●	60A15/CL/DL/FAN/BL/2/24	120	24	Clear Double Life Fan Light	C, C-9	2000	530 lm	2 3/8	3 1/2	
			10048	●	60A15/CL/DL/FAN/RP	120	24	Clear Double Life Fan Light	C, C-9	2000	530 lm	2 3/8	3 1/2	
	A19	Med	11260	●▲	60A/CL/DL/RP	120	24	Clear Double Life	C, CC-8	2000	790 lm	3 1/8	4 7/16	
			11227	●▲	60A/DLSW/2PK/RP	120	24	Soft White Double Life	C, CC-8	2000	770 lm	3 1/8	4 7/16	
			11204	●▲	60A/DLSW/4PK/RP	120	48	Soft White Double Life	C, CC-8	2000	770 lm	3 1/8	4 7/16	
	B10	Candelabra	13777	●▼▲	60B10C/DL/BL/2PK	120	12	Clear Double Life Décor Bent Tip	C, C-7A	3000		3 7/8		
			13705	●▼▲	60B10C/DL/BL/4PK	120	24	Clear Double Life Décor Bent Tip Four Pack	C, C-7A	3000		3 7/8		
			13744	●▼▲	60B10C/CRYSTAL/DL/BL/2PK	120	12	Double Life Crystal Bent Tip	C, C-7A	3000		3 7/8		
			13749	●▼▲	60B10C/CRYSTAL/DL/BL/4/24	120	24	Double Life Crystal Bent Tip	C, C-7A	3000		3 7/8		
			13778	●▼▲	60B10C/DLF/BL/2PK	120	12	Frosted Double Life Décor Bent Tip	C, C-7A	3000		3 7/8		
			13754	●▼▲	60B10C/DLF/BL/4PK	120	24	Frosted Double Life Décor Bent Tip	C, C-7A	3000		3 7/8		
		Med	13323	●▼▲6	60B10/DL/BL/2PK	120	12	Clear Double Life Décor Bent Tip	C, C-7A	3000		3 13/16		
			13333	●▼▲6	60B10/DL/BL/4PK	120	24	Clear Double Life Décor Bent Tip	C, C-7A	3000		3 13/16		
			13324	●▼▲6	60B10/DLF/BL/2PK	120	12	Frosted Double Life Décor Bent Tip	C, C-7A	3000		3 13/16		
	G25	Med	14149	●▲	60G25/DL/RP	120	6	Clear Double Life Globe	C, C-9	3000		4 7/16		
			14106	●▲	60G25/DL/RP/48	120	48	Clear Double Life Globe	C, C-9	3000		4 7/16		
			14150	●▲	60G25/DLSW/RP	120	6	Soft White Double Life Globe	C, C-9	3000		4 7/16		
			14104	●▲	60G25/DLSW/RP/48	120	48	Soft White Double Life Globe	C, C-9	3000		4 7/16		
65	BR30	Med Brass	15177	1,2,4,5	65BR30/DL/FL/RP	120	6	Double Life Reflector Flood	C, CC-6	4000	510 lm 60° 300 cd		5 3/8	
75	A19	Med	11175	●▲	75ACL/DL/RP	120	24	Clear Double Life	C, CC-8	1500	1055 lm	3 1/8	4 7/16	
			11337	●▲	75A/DLSW/2PK/RP	120	24	Soft White Double Life	C, CC-8	1500	1035 lm	3 1/8	4 7/16	
			11331	●▲	75AW/DLSW/4PK/RP	120	48	Soft White Double Life	C, CC-8	1500	1035 lm	3 1/8	4 7/16	
	BR40	Med Brass	15144	2,4,5	75BR/DL/FL/RP	120	6	Double Life Reflector Flood	C, CC-6	4000	610 lm 60° 400 cd		6 1/2	
			15213	2,4,5	75BR40/DL/FL/1/24	120	24	Double Life Reflector Flood	C, CC-6	4000	610 lm 60° 400 cd		6 1/2	
100	A19	Med	11176	●▲	100A/CL/DL/RP	120	24	Clear Double Life	C, CC-8	1500	1550 lm	3 1/8	4 7/16	
			12805	●▲	100A/DLSW/2PK/RP	120	24	Soft White Double Life	C, CC-8	1500	1530 lm	3 1/8	4 7/16	
			11332	●▲	100A/DLSW/4PK/RP	120	48	Soft White Double Life	C, CC-8	1500	1530 lm	3 1/8	4 7/16	
120	BR40	Med	14915	1,2,4,5	120BR/DL/FL/RP	120	6	Double Life Reflector Flood	C, CC-6	4000	960 lm 60° 835 cd		6 1/2	



S6



C7 Candelabra



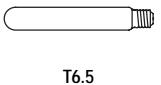
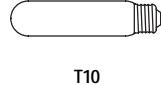
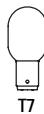
S14



S11

## GENERAL PURPOSE LAMPS

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Description	Class & Filament	Avg Rated Life(hrs)	Lumens CBCP	Beam Angle	LCL (in)	MOL (in)
3	S6	Candelabra	16759	●7	3S6/5	130	240	Clear Indicator	B, C-7A	3000	12 lm	1 1/16	1 1/8	
			16757	●	3S6/5	120	240	Clear Indicator	B, C-7A	3000	10 lm	1 1/16	1 1/8	
4	C7	Candelabra	13542	●	4C7/BL/2PK	120	24	Clear Night Light	B, C-9	3000	16 lm	2 1/8		
			13549	●	4C7/BL/4PK	120	48	Clear Night Light	B, C-9	3000	16 lm	2 1/8		
			13546	●	4C7/BULK	120	250	Clear Night Light	B, C-9	3000	16 lm	2 1/8		
			13523	●	4C7/DL/BL/4PK	120	48	Double Life Night Light	B, C-9	6000	14 lm	2 1/8		
			13538	●	4C7/W/BL/2PK	120	24	White Night Light	B, C-9	3000	16 lm	2 1/8		
			13553	●	4C7/W/BL/4PK	120	48	White Night Light	B, C-7	3000	16 lm	2 1/8		
			13556	●	4C7/BLUE/2PK	120	24	Blue Nightlight	B, C-7A	3000		2 1/8		
			13557	●	4C7/PINK/2PK	120	24	Pink Nightlight	B, C-7A	3000		2 1/8		
6	S6	Candelabra	16929	●	6S6/CL24V	24	120	Clear Indicator	B, C-7A	1500	48 lm	1 1/16	1 1/8	
			16927	●	6S6/CL12V	12	120	Clear Indicator	B, C-2R	1500	47 lm	1 1/16	1 1/8	
			16930	●	6S6/CL30V	30	120	Clear Casino	B, C-7A	1500	46 lm	1 1/16	1 1/8	
			16962	●	6S6/CL/BL	120	24	Clear Indicator	B, C-7A	1500	41 lm	1 1/16	1 1/8	
			16960	●	6S6/CL	120	120	Clear Indicator	B, C-7A	1500	41 lm	1 1/16	1 1/8	
			16938	●	6S6/CL	130	120	Clear Indicator	B, C-7A	1500	37 lm	1 1/16	1 1/8	
			16943	●	6S6/CL155V	155	120	Clear Indicator	B, C-7A	1500	36 lm	1 1/16	1 1/8	
			16942	●	6S6/CL145V	145	120	Clear Indicator	B, C-7A	1500	33 lm	1 1/16	1 1/8	
			DC Bayonet		16782	6S6DC	120	120	Clear Indicator	B, C-9	1500	41 lm	1 1/16	1 13/16
					16784	6S6DC	130	120	Clear Indicator	B, C-9	1500	37 lm	1 1/16	1 13/16
					16790	6S6DC145V	145	120	Clear Indicator	B, C-9	1500	37 lm	1 1/16	1 13/16
S14	Med Brass		17314		6S14	120	120	Clear	B, C-9	1500	40 lm	2 1/2	3 1/2	
7	C7	Candelabra	13543	●	7C7/BL/2PK	120	24	Clear Night Light	B, C-9	3000	43 lm	2 1/8		
			13545	●	7C7/BL/4PK	120	48	Clear Night Light	B, C-9	3000	43 lm	2 1/8		
			13608	●	7C7	120	120	Clear Night Light	B, C-9	3000	43 lm	2 1/8		
			13609	●	7C7	130	120	Clear Night Light	B, C-9	3000	42 lm	2 1/8		
			13540	●	7C7/W/BL/2PK	120	24	White Night Light	B, C-9	3000	33 lm	2 1/8		
			13544	●	7C7/W/BL/4PK	120	48	White Night Light	B, C-9	3000	33 lm	2 1/8		
			13623	●	7C7/CW	120	120	White Night Light	B, C-9	3000	33 lm	2 1/8		
			13629	●	7C7/O	120	120	Orange Nightlight	B, C-9	3000		2 1/8		
			13626	●	7C7/R	120	120	Red Night Light	B, C-9	3000		2 1/8		
8	S11	Med	19353	●	7.5S	120	120	Clear	B, C-9	1400	47 lm	1 1/16	2 1/4	
			19355	●	7.5S	130	120	Clear	B, C-9	1400	45 lm	1 1/16	2 1/4	
			19433	●	7.5S/CW/BL	120	12	Ceramic White Utility Light	B, C-9	1400	32 lm	2 1/4		
			19420	●	7.5S/CW	120	120	Ceramic White	B, C-9	1400	32 lm	2 1/4		
			19424	●	7.5S/CR/BL	120	12	Ceramic Red	B, C-9	1400		2 1/4		
			19423	●	7.5S/CR	120	120	Ceramic Red	B, C-9	1400		2 1/4		
10	C7	Candelabra	13636	●8	10C7/CL	120	240	Clear Pilot Light Ruggedized	B, C-7A		38 lm		2 1/8	
			13527	8	10C7/DC	120	120	Clear Pilot Light Ruggedized	B, C-7A		38 lm		2 1/8	
S6	Candelabra		16726	●	10S6	120	240	Clear Indicator	B, C-7A	1500	71 lm	1 1/16	1 1/8	



INCANDESCENT

## GENERAL PURPOSE LAMPS

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Description	Class & Filament	Avg Rated Life(hrs)	Lumens	Beam Angle	LCL (in)	MOL (in)
10	S6	Candelabra	16717	●7	10S6230V	230	240	Clear Indicator	B, CC-7A	1500	65 lm	1 7/16	1 7/8	
	S11	Candelabra	17025	●	10S11/79	120	120	Clear	B, C-7A	1500	78 lm	1 1/16	2 1/4	
		Intermediate	16917		10S11N/CL	120	120	Clear Ruggedized	B, C-7A	1500	74 lm	1 5/8	2 5/16	
			16919		10S11N/CL	130	120	Clear Ruggedized	B, C-7A	1500	74 lm	1 5/8	2 5/16	
	S14	Med Brass	17406		10S14	120	120	Clear Ruggedized	B, C-9	1500	76 lm	2 1/2	3 1/2	
			17424		10S14/IF	120	120	Inside Frost Ruggedized	B, C-9	1500	76 lm	2 1/2	3 1/2	
11	S14	Med Brass	17448		11S14	120	120	Clear Ruggedized	B, C-9	3000	74 lm	2 1/2	3 1/2	
			17450		11S14	130	120	Clear Ruggedized	B, C-9	3000	72 lm	2 1/2	3 1/2	
			17453		11S14/IF	130	120	Inside Frost Ruggedized	B, C-9	3000	68 lm	2 1/2	3 1/2	
			17489		11S14/TB	130	120	Transparent Blue	B, C-9	3000		2 1/2	3 1/2	
			17490		11S14/TG	130	120	Transparent Green	B, C-9	3000		2 1/2	3 1/2	
			17487		11S14/TR	130	120	Transparent Red	B, C-9	3000		2 1/2	3 1/2	
			17488		11S14/TY	130	120	Transparent Yellow	B, C-9	3000		2 1/2	3 1/2	
12	S6	Candelabra	16718	●	12S6250V	250	240	Clear Indicator	B, CC-7A	1500	61 lm	1 7/16	1 7/8	
15	A15	Med	10028	●	15A15/CL/RP	120	24	Clear Utility Light	B, C-9	2500	105 lm	2 3/8	3 1/2	
			10018	●	15A15/CL	120	120	Clear Utility Light	B, C-9	2500	105 lm	2 3/8	3 1/2	
			10019	●	15A15/CL	130	120	Clear Utility Light	B, C-9	2500	105 lm	2 3/8	3 1/2	
			10031	●	15A15/RP	120	24	Inside Frost	B, C-9	2500	100 lm	2 3/8	3 1/2	
			10037	●	15A15	120	120	Inside Frost	B, C-9	2500	100 lm	2 3/8	3 1/2	
			10038	●	15A15	130	120	Inside Frost	B, C-9	2500	100 lm	2 3/8	3 1/2	
			10015	●	15A15/W/RP	120	24	White Utility Light	C, C-9	2500	65 lm	2 3/8	3 1/2	
		Med Brass	10083	∅	15A15/CL	30	120	Clear	B, C-9	1000	156 lm	2 3/8	3 1/2	
			10101		15A15/BB/IF/PLT	130	12960	Inside Frost	B, C-9	2500	100 lm	2 3/8	3 1/2	
			11502		15A15/R	120	120	Red Utility Light	B, C-9	2500		2 3/8	3 1/2	
	S11	Med	17080	●	15S11/102/CL	120	120	Clear Refrigerator	B, C-7A	400	138 lm	1 7/16	2 1/4	
			17079	●	15S11/102/IF	120	120	Inside Frost Refrigerator	B, C-7A	400	138 lm	1 7/16	2 1/4	
	S14	Med Brass	17240		15S14/CL	130	120	Clear Ruggedized Sign	B, C-9	3000	106 lm	2 1/2	3 1/2	
	T6	Candelabra	18036	●	15T6/BL	145	12	Clear Tubular	B, C-7A	2000	112 lm		3 1/16	
			18078	●	15T6145V	145	60	Clear Tubular	B, C-7A	2000	112 lm		3 1/16	
			18037	●	15T6	120	60	Clear Tubular	B, C-7A	2000	111 lm		3 1/16	
			18038	●	15T6	130	60	Clear Tubular	B, C-7A	2000	105 lm		3 1/16	
	T7	Candelabra	18185	●	15T7C	120	60	Clear	B, C-7A	1000	111 lm	1 1/2	2 1/4	
		DC Bayonet	18200	9	15T7DC/BL	120	12	Clear Carded	B, C-7A	1000	111 lm	1 5/16	2 1/4	
			18208	9	15T7DC	120	60	Clear	B, C-7A	1000	111 lm	1 5/16	2 1/4	
		Intermediate	18174	9	15T7N/BL	120	12	Clear	B, C-7A	1000	115 lm	1 7/16	2 1/4	
			18173	9	15T7N	120	60	Clear	B, C-7A	1000	115 lm	1 7/16	2 1/4	
	T10	Med	18501	●7	15T10/CL	120	60	Clear Tubular	B, C-8	2500	112 lm		5 5/8	
15 135 150	A21	3CONTACT Med	18009	●▼	15/150A/SECURITYLIGHT	120	12	Soft White Security 3-way	C, CC-8	1200	80 lm 2070 lm 2150 lm	3 3/8	5 5/16	
20	T6.5	DC Bayonet	18144	8	20T6.5DC/IF	120	60	Inside Frost Exit Lamp	B, C-8	10000	92 lm		5 1/16	
		Intermediate	18143	8	20T6.5/IF	120	60	Inside Frost Exit Lamp	B, C-8	10000	92 lm		5 1/2	



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## GENERAL PURPOSE LAMPS

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Pkg Volts	Pkg Qty	Description	Class & Filament	Avg Rated Life(hrs)	Lumens CBCP	Beam Angle	LCL (in)	MOL (in)
25	A15	Med Brass	10120		25A15/BR	120	120	Inside Frost	B, C-9	1100	210 lm	2 3/8	3 1/2	
			10139		25A15/RFL	130	120	Reflector Sign	B, C-9	2500	168 lm	2 1/8	3 1/2	
	A19	Med	11090	●	25A/RS	120	120	Inside Frost Rough Service	B, C-17	1000	210 lm	2 1/2	3 15/16	
			11092	●	25A/RS	130	120	Inside Frost Rough Service	B, C-17	1000	210 lm	2 1/2	3 15/16	
			11285	●	25A	230	120	Standard Frost	B, C-17	1000	205 lm	2 1/2	3 15/16	
			10634	●	25A/RP	120	24	Standard Frost	B, C-9	2500	190 lm	2 1/2	3 15/16	
			10644	●	25A	120	120	Standard Frost	B, C-9	2500	190 lm	2 1/2	3 15/16	
			11289	●	25A	277	120	Standard Frost	B, C-17	1000	187 lm	2 1/2	3 15/16	
			10645	●11	25A @120 volts, approximate 22 watts, 130 lumens, 6250 hours	130	120	Standard Frost	B, C-9	2500	180 lm	2 1/2	3 15/16	
			10562	●	25A/W/RP	120	24	Soft White	C, C-9	2500	160 lm	2 1/2	3 15/16	
		Med Brass	10683		25A/CL/RP	120	24	Clear	B, C-9	2500	190 lm	2 1/2	3 15/16	
			10693		25A/CL	120	120	Clear	B, C-9	2500	190 lm	2 1/2	3 15/16	
			10738		25A19/CL/GR	130	120	Clear Sign Group Replacement	B, C-9	3000	185 lm	2 1/2	3 15/16	
			10694	11	25A/CL @120 volts, approximate 22 watts, 130 lumens, 6250 hours	130	120	Clear	B, C-9	2500	180 lm	2 1/2	3 15/16	
			10449	⊗	25A	12	120	Standard Frost	B, C-6	1000	385 lm	2 1/2	3 15/16	
			10734		25A19/IF/GR	130	120	Inside Frost Group Replacement	B, C-9	3000	185 lm	2 1/2	3 15/16	
			11710		25A19/TB/RP	125	6	Transparent Blue	B, C-9	3000		2 1/2	3 15/16	
			11430		25A/B/RP	120	6	Blue	B, C-9	2500		2 1/2	3 15/16	
			11356		25A/B	120	120	Blue	B, C-9	2500		2 1/2	3 15/16	
			11714		25A19/TG/RP	125	6	Transparent Green	B, C-9	3000		2 1/2	3 15/16	
			11431		25A/G/RP	120	6	Green	B, C-9	2500		2 1/2	3 15/16	
			11359		25A/G	120	120	Green	B, C-9	2500		2 1/2	3 15/16	
			11711		25A19/TO/RP	125	6	Transparent Orange	B, C-9	3000		2 1/2	3 15/16	
			11432		25A/O/RP	120	6	Orange	B, C-9	2500		2 1/2	3 15/16	
			11362		25A/O	120	120	Orange	B, C-9	2500		2 1/2	3 15/16	
			11712		25A19/TR/RP	125	6	Transparent Red	B, C-9	3000		2 1/2	3 15/16	
			11429		25A/R/RP	120	6	Red	B, C-9	2500		2 1/2	3 15/16	
			11350		25A/R	120	120	Red	B, C-9	2500		2 1/2	3 15/16	
			11713		25A19/TY/RP	125	6	Transparent Yellow	B, C-9	3000		2 1/2	3 15/16	
			11427		25A/Y/RP	120	6	Yellow	B, C-9	2500		2 1/2	3 15/16	
			11348		25A/Y	120	120	Yellow	B, C-9	2500		2 1/2	3 15/16	
	R14	Intermediate	14784	●	25R14N/RP	120	6	Reflector Mini Flood	B, CC-2V	1500			2 15/16	
			14793	●	25R14N	120	60	Reflector Mini Flood	B, CC-2V	1500			2 15/16	
		Med	14818	●	25R14/RP	120	6	Reflector Mini Flood	C, CC-2V	1500			2 1/4	
	T6.5	DC Bayonet	18129		25T6.5/DC	120	60	Clear Scale Illuminator	B, C-8	1000	242 lm		5 9/16	
			18106		25T6.5/DC	130	60	Clear Scale Illuminator	B, C-8	1000	242 lm		5 9/16	
			18117		25T6.5/DC/IF	120	60	Inside Frost Scale Illuminator	B, C-8	1000	225 lm		5 9/16	
		Intermediate	18495		25T6.5/BL/6PK	120	6	Clear	B, C-8	1000	242 lm		5 1/2	

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## GENERAL PURPOSE LAMPS

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Description	Class & Filament	Avg Rated Life(hrs)	Lumens CBCP	Beam Angle (in)	LCL (in)	MOL (in)
25	T6.5	Intermediate	18125		25T6.5	120	60	Clear	B, C-8	1000	242 lm	5 1/2		
			18128		25T6.5	130	60	Clear	B, C-8	1000	242 lm	5 1/2		
			18113		25T6.5/IF	120	60	Inside Frost	B, C-8	1000	225 lm	5 1/2		
			18111		25T6.5/IF	130	60	Inside Frost	B, C-8	1000	225 lm	5 1/2		
T8	Candelabra	18290	●9		25T8C/BL/1/12	120	12	Clear Home Appliance	B, C-7A	1000	230 lm	1 1/2	2 5/8	
		18289	●9		25T8C	120	60	Clear Home Appliance	B, C-7A	1000	230 lm	1 1/2	2 5/8	
	DC Bayonet	18321	9		25T8DC/BL	120	12	Clear Home Appliance	B, C-7A	1000	230 lm	1 5/16	2 5/8	
		18310	9		25T8DC	120	60	Clear Home Appliance	B, C-7A	1000	230 lm	1 5/16	2 5/8	
		18316	9		25T8DC	130	60	Clear Home Appliance	B, C-7A	1000	215 lm	1 5/16	2 5/8	
T10	Intermediate	18365	9		25T8N/BL	120	12	Clear Home Appliance	B, C-7A	1000	230 lm	1 5/16	2 5/8	
		18359	9		25T8N	120	60	Clear Home Appliance	B, C-7A	1000	230 lm	1 5/16	2 5/8	
		18491	●		25T10/CL/BL/6PK	120	6	Clear	B, C-8	1000	232 lm	5 5/8		
		18510	●		25T10	120	60	Clear	B, C-8	1000	232 lm	5 5/8		
		18512	●		25T10	130	60	Clear	B, C-8	1000	232 lm	5 5/8		
		18492	●		25T10/IF/BL/6PK	120	6	Inside Frost	B, C-8	1000	230 lm	5 5/8		
30	A15	Med Brass	18503	●	25T10/IF	120	60	Inside Frost	B, C-8	1000	230 lm	5 5/8		
			18505	●	25T10/IF	130	60	Inside Frost	B, C-8	1000	230 lm	5 5/8		
			18507		25T10/BB/277V	277	60	Clear Exit Light	B, C-17	5000	150 lm	5 5/8		
			10122		30A15 @ 120 volts, approximate 26 watts, 150 lumens, 5000 hours.	130	120	Inside Frost	C, C-9	2000	200 lm	2 3/8	3 1/2	
30	R20	Med Brass	14836	3,12	30R20/RP	120	6	Reflector Flood	C, C-9	2000	140 lm 40°		3 15/16	
			14794	3,12	30R20	120	60	Reflector Flood	C, C-9	2000	140 lm 40°		3 15/16	
			14802	11	30R20	130	60	Reflector Flood	C, C-9	2000	140 lm 40°		3 15/16	
					@ 120 volts, approximate 26 watts, 100 lumens, 5000 hours									
30 70 100	S11	DC Bayonet	10765	▼	30S11DC75V	75	120	Clear Train Marker	C, C-7A	500	284 lm	1 1/2	2 3/8	
			19380	●▼	30/100A21/DLSW/RP	120	12	Soft White Double Life 3-way	C, CC-8	2400	270 lm 860 lm 1130 lm		3 3/8	5 5/16
			19385	●▼12	30/100A21/W/RP	120	12	Soft White 3-way	C, CC-8	1200	300 lm 945 lm 1245 lm		3 3/8	5 5/16
			18029	●▼12	30/100A/W/DIYPACK	120	48	Soft White 3-way	C, CC-8	1200	300 lm 945 lm 1245 lm		3 3/8	5 5/16
32	A19	Med Brass	10983		32A19/49	130	120	Clear Street Lighting Group Replacement	C, C-9	3000	258 lm	2 7/8	4 1/4	
					@ 120 volts, approximate 28 watts, 200 lumens, 7500 hours.									
34	A19	Med	11379	●11	40A/34/SS	130	48	Standard Frost SuperSaver	C, CC-8	1500	380 lm	3 1/8	4 7/16	
					@ 120 volts, approximate 30 watts, 290 lumens, 3750 hours									
			11058	●	40A/34/SS	120	48	Standard Frost SuperSaver	C, CC-8	1500	375 lm	3 1/8	4 7/16	
			11391	●	40A/34/W/ES/4PK	120	48	Soft White Energy Saver	C, CC-8	1500	375 lm	3 1/8	4 7/16	
	Med Brass		11383	●	40A/34/SS/XL	120	48	Standard Frost SuperSaver XL	C, CC-8	2500	310 lm	3 1/8	4 7/16	



A19



A15

INCANDESCENT

## GENERAL PURPOSE LAMPS

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Description	Class & Filament	Avg Rated Life(hrs)	Lumens CBCP	Beam Angle	LCL (in)	MOL (in)
34	A19	Med Brass	11387	● 11	40A/34/SS/XL @ 120 volts, approximate 30 watts, 240 lumens, 6250 hours	130	48	Standard Frost SuperSaver XL	C, CC-8	2500	310 lm	3 1/8	4 1/16	
40	A15	Med	10181	●	40A15/DAY/FAN/BL/2/24	120	24	Daylight Fan	C, C-9	1000	340 lm	2 3/8	3 1/2	
			10133	●	40A15/CL/DL/BL	120	12	Clear Double Life Appliance	C, C-9	2000	350 lm	2 3/8	3 1/2	
			10168	●	40A15/CL/DL/BL/2/24	120	24	Clear Double Life Appliance	C, C-9	2000	350 lm	2 3/8	3 1/2	
			10046	●	40A15/CL/DL/FAN	120	24	Clear Double Life Fan Light	C, C-9	2000	350 lm	2 3/8	3 1/2	
			10023	●	40A15/CL/DL/FAN/BL/2/24	120	24	Clear Double Life Ceiling Fan Light	C, C-9	2000	350 lm	2 3/8	3 1/2	
			10082	●	40A15/SL	120	120	Safeline Appliance	C, C-9	1000	420 lm	2 3/8	3 1/2	
			10129	●	40A15/CL/BL	120	12	Clear Appliance	C, C-9	1000	430 lm	2 3/8	3 1/2	
			10141	●	40A15/2PK/RP	120	24	Clear Appliance	C, C-9	1000	430 lm	2 3/8	3 1/2	
			10169	●	40A15/CL/BL/2/24	120	24	Clear Appliance	C, C-9	1000	430 lm	2 3/8	3 1/2	
			10042	●	40A15/CL/FAN	120	24	Clear Ceiling Fan Light	C, C-9	1000	430 lm	2 3/8	3 1/2	
			10022	●	40A15/CL/FAN/BL/2/24	120	24	Clear Ceiling Fan Light	C, C-9	1000	430 lm	2 3/8	3 1/2	
			10117	●	40A15/IF/BL	120	12	Inside Frost Appliance	C, C-9	1000	420 lm	2 3/8	3 1/2	
			10119	●	40A15	120	120	Inside Frost Appliance	C, C-9	1000	420 lm	2 3/8	3 1/2	
			10127	●	40A15/PLT	120	12960	Inside Frost Appliance	C, C-9	1000	420 lm	2 3/8	3 1/2	
			11111	●	40A15/SW/FAN/BL/2/24	120	24	Soft White Ceiling Fan Light	C, C-9	1000	405 lm	2 3/8	3 1/2	
		Med Brass	10112		40A15/22	120	120	Clear Range Oven	C, C-9	1000	430 lm	2 3/8	4	
			10115		40A15/PLT12960	120	12960	Inside Frost Appliance	C, C-9	1000	420 lm	2 3/8	3 1/2	
			10114		40A15/PLT12960	130	12960	Inside Frost Appliance	C, C-9	1000	405 lm	2 3/8	3 1/2	
			10365		40A15/1	250	120	Inside Frost Appliance	B, C	1000	330 lm	2 1/2	3 1/2	
A19	Med		11100	● 11	40A/DAY/RP/2/24	120	24	Daylight	C, CC-8	1500	350 lm	3 1/8	4 1/16	
			10864	● 11	40A/DAY/RP/4/48	120	48	Daylight	C, CC-8	1500	350 lm	3 1/8	4 1/16	
			10897	● 11	40A/DAY/4/160/RP	120	160	Daylight	C, CC-8	1500	350 lm	3 1/8	4 1/16	
			10939	● 11	40A/DLSW/4PK/RP	120	48	Soft White Double Life	C, CC-8	3000	390 lm	3 1/8	4 1/16	
			10938	● 11	40A/DLSW/4/144/RP	120	144	Soft White Double Life	C, CC-8	3000	390 lm	3 1/8	4 1/16	
			11223	● 11	40A/CL/RP	120	24	Clear	C, CC-8	1500	480 lm	3 1/8	4 1/16	
			11036	● 11	40A/CL @ 120 volts, approximate 35 watts, 350 lumens, 3750 hours	130	120	Clear	C, CC-8	1500	460 lm	3 1/8	4 1/16	
			10977	● 11	40A/W/RP	120	24	Soft White	C, CC-8	1500	465 lm	3 1/8	4 1/16	
			10996	● 11	40A/W/4/RP	120	48	Soft White	C, CC-8	1500	465 lm	3 1/8	4 1/16	
			10944	● 11	40A/W/4/144/RP	120	144	Soft White	C, CC-8	1500	465 lm	3 1/8	4 1/16	
			11010	● 11	40A/RP	120	24	Standard Frost	C, CC-8	1500	470 lm	3 1/8	4 1/16	
			11060	● 11	40A/4/RP	120	48	Standard Frost	C, CC-8	1500	470 lm	3 1/8	4 1/16	
			11011	● 11	40A/CVP @ 120 volts, approximate 35 watts, 350 lumens, 3750 hours	130	24	Standard Frost	C, CC-8	1500	460 lm	3 1/8	4 1/16	
			11059	● 11	40A @ 120 volts, approximate 35 watts, 350 lumens, 3750 hours	130	48	Standard Frost	C, CC-8	1500	460 lm	3 1/8	4 1/16	
		Med Brass	11053	● 11	40A/CL/99/XL @ 120 volts, approximate 35 watts, 320 lumens, 6250 hours	130	120	Clear Excel-Line SS	C, CC-8	2500	420 lm	3 1/8	4 1/16	



K19, R14



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## GENERAL PURPOSE LAMPS

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Description	Class & Filament	Avg Rated Life(hrs)	Lumens	Beam Angle	LCL (in)	MOL (in)
40	K19	Med	10471	●	40K19/DR	120	24	Inside Frost Directional Reflector	C, CC-6	1150	385 lm		4 1/8	
	R14	Intermediate	14820	●	40R14N/RP	120	6	Reflector Mini Flood	C, CC-2V	1500			2 9/16	
		Med	14819	●	40R14/RP	120	6	Reflector Mini Flood	C, C-9	1500			2 1/4	
	R16	Med	14821	●	40R16/FL/RP	120	6	Reflector Mini Flood	C, C-9	1500			3 7/8	
	S11	Intermediate	13607	●	40S11N/BL	120	12	Clear Hi Intensity	C, C-7A	500	440 lm	1 5/8	2 5/16	
			13644	●	40S11N/BL/2/12	120	12	Clear Hi Intensity	C, C-7A	500	440 lm	1 5/8	2 5/16	
			13595	●	40S11N	120	120	Clear Hi Intensity	C, C-7A	500	440 lm	1 5/8	2 5/16	
			13600	●	40S11N/CL/BULK	120	500	Clear Hi Intensity	C, C-7A	500	440 lm	1 5/8	2 5/16	
	T6.5	Intermediate	18152		40T6.5/CL/BL/6PK	120	6	Clear Appliance	C, C-8	1000	365 lm		5 1/2	
			18096	13	40T6.5/2	120	60	Clear Appliance	C, C-8	1000	365 lm		5 1/2	
	T10	Med	18493	●	40T10/CL/BL/6PK	120	6	Clear	B, C-8	1000	420 lm		5 5/8	
			18650	●	40T10	120	60	Clear	B, C-8	1000	420 lm		5 5/8	
			18652	●	40T10	130	60	Clear	B, C-8	1000	420 lm		5 5/8	
			18494	●	40T10/IF/BL/6PK	120	6	Inside Frost	B, C-8	1000	415 lm		5 5/8	
			18664	●	40T10/IF	120	60	Inside Frost	B, C-8	1000	415 lm		5 5/8	
			18669	●	40T10/IF	130	60	Inside Frost	B, C-8	1000	415 lm		5 5/8	
			18656	●	40T10/AQUARIUM/RP	120	6	Aquarium	B, C-8	1000			5 5/8	
45	BR30	Med	15103	●, 1, 2, 4, 5	45BR30/FL/RP	120	6	Reflector Flood	C, CC-6	2000	350 lm 60° 170 cd		5 3/8	
45	A21	3CONTACT Med	18048	●▼	45/140A21N/ES/RP	120	12	Soft White 3-way Energy Saver	C, CC-8	1200	540 lm 1300 lm 1840 lm	3 3/8	5 5/16	
95														
140														
50	A19	Med	14072	●	50A/RS	130	24	Inside Frost Rough Service	C, C-9	1000	510 lm	2 1/2	3 15/16	
			14070		50A/RS/2/RP	120	24			1000	510 lm			
			11096		50A/RS/4/144/RP	120	144			1000	510 lm			
			11393	●	50A/RS	250	120	Inside Frost Rough Service	C, C-22	1000	450 lm	2 1/2	4 7/16	
			11397	●	50A	250	120	Inside Frost	B, CC-7A	1000	490 lm	2 1/2	4 7/16	
			11428	●	50A	277	120	Inside Frost	B, CC-7A	1000	475 lm	2 1/2	4 7/16	
		Med Brass	11067	∅14	50A19/RS/CL	75	120	Clear Rough Service Train	C, C-9	1000	505 lm	2 1/2	3 15/16	
			11068	∅14	50A19/RS	75	120	Inside Frost Rough Service Train	C, C-9	1000	505 lm	2 1/2	3 15/16	
			11118	15	50A/RS/SL	120	120	Safeline Rough Service	C, C-9	1000	490 lm	2 1/2	3 15/16	
	A21	Med Brass	11567	∅	50A21/RP	12	12	Inside Frost RV-Marine	C, C-6	1000	865 lm	3 7/8	4 15/16	
			11572	∅	50A21	12	24	Inside Frost RV-Marine	C, C-6	1000	865 lm	3 7/8	4 15/16	
			11603	∅	50A21	34	12	Inside Frost Train	C, C-9	1000	800 lm	3 7/16	4 15/16	
	ER30	Med	15110	●, 1, 4	50ER30/RP	120	6	Elliptical Reflector Flood	C, CC-6	2000	350 lm 30° 800 cd		6 3/8	
			15102	●, 1, 4	50ER30	120	24	Elliptical Reflector Flood	C, CC-6	2000	350 lm 30° 800 cd		6 3/8	
			15107	●, 1, 4, 11	50ER30	130	24	Elliptical Reflector Flood	C, CC-6	2000	320 lm 30° 730 cd		6 3/8	

@ 120 volts, approximate 44 watts, 240 lumens, 5000 hours



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INCANDESCENT

## GENERAL PURPOSE LAMPS

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Description	Class & Filament	Avg Rated Life(hrs)	Lumens CBCP	Beam Angle	LCL (in)	MOL (in)
50	R20	Med	15231*	●1,2,3,4	50R20/DAY/1/6/RP	120	6	Daylight Reflector	C, C-9	2000	240 lm 45° 400 cd		3 <sup>15</sup> / <sub>16</sub>	
			14844	●1,2,3,4,11	50R20/CVP	130	6	Reflector Flood	C, C-9	2000	330 lm 45° 550 cd		3 <sup>15</sup> / <sub>16</sub>	
			@ 120 volts, approximate 44 watts, 250 lumens, 5000 hours											
			14833	●1,2,3,4	50R20/RP	120	6	Reflector Flood	C, C-9	2000	330 lm 45° 550 cd		3 <sup>15</sup> / <sub>16</sub>	
			14914	●1,2,3,4	50R20/2PK	120	48	Reflector Flood	C, C-9	2000	330 lm 45° 550 cd		3 <sup>15</sup> / <sub>16</sub>	
			14831	●1,2,3,4	50R20	120	60	Reflector Flood	C, C-9	2000	330 lm 45° 550 cd		3 <sup>15</sup> / <sub>16</sub>	
			14832	●1,2,3,4,11	50R20	130	60	Reflector Flood	C, C-9	2000	330 lm 45° 550 cd		3 <sup>15</sup> / <sub>16</sub>	
			@ 120 volts, approximate 44 watts, 250 lumens, 5000 hours											
			14846	●1,2,3,4,11	50R20/PINK	130	60	Pink Reflector	C, C-9	2000			3 <sup>15</sup> / <sub>16</sub>	
		Med Brass	14943	1,2,3,4	50R20/DL/RP	120	6	Double Life Reflector Flood	C, C-9	4000	290 lm 45° 480 cd		3 <sup>15</sup> / <sub>16</sub>	
			14834	1,2,3,4	50R20/PINK	120	60	Pink Reflector	C, C-9	2000			3 <sup>15</sup> / <sub>16</sub>	
			14842	1,2,3,4	50R20/GRO	120	6	Spot-GRO Reflector	C, C-9	2000			3 <sup>15</sup> / <sub>16</sub>	
50	A21	3CONTACT Med	18110	●▼	50/150/DAY/1/12	120	12	Daylight 3-way	C, CC-8	1200	490 lm 1250 lm 1740 lm	3 <sup>3</sup> / <sub>8</sub>	5 <sup>5</sup> / <sub>16</sub>	
100			18119	●▼	50/150/DAY/1/96	120	96	Daylight 3-way	C, CC-8	1200	490 lm 1250 lm 1740 lm	3 <sup>3</sup> / <sub>8</sub>	5 <sup>5</sup> / <sub>16</sub>	
150			18044	●▼	50/150A21/DLSW/RP	120	12	Soft White Double Life 3-way	C, CC-8	2400	540 lm 1400 lm 1940 lm	3 <sup>3</sup> / <sub>8</sub>	5 <sup>5</sup> / <sub>16</sub>	
			18060	●▼	50/150A21/W/RP	120	12	Soft White 3-way	C, CC-8	1200	640 lm 1570 lm 2210 lm	3 <sup>3</sup> / <sub>8</sub>	5 <sup>5</sup> / <sub>16</sub>	
			18028	●▼	50/150A/W/DIYPACK	120	48	Soft White 3-way	C, CC-8	1200	640 lm 1570 lm 2210 lm	3 <sup>3</sup> / <sub>8</sub>	5 <sup>5</sup> / <sub>16</sub>	
			18726	●▼	50/150A21/SPK/RP	120	12	Soft Pink 3-way	C, CC-8	1200		3 <sup>3</sup> / <sub>8</sub>	5 <sup>5</sup> / <sub>16</sub>	
50	A21	3CONTACT Med	19404	●▼	50/250A21/W/RP	120	12	Soft White Reading Light 3-way	C, CC-8	1200	640 lm 3300 lm 3940 lm	3 <sup>3</sup> / <sub>8</sub>	5 <sup>5</sup> / <sub>16</sub>	
200			19403	●▼	50/250A21/2PK	120	96	Soft White Reading Light 3-way	C, CC-8	1200	640 lm 3300 lm 3940 lm	3 <sup>3</sup> / <sub>8</sub>	5 <sup>5</sup> / <sub>16</sub>	
250														
52	A19	Med	11376	●■	60A/52/SS	120	48	Standard Frost SuperSaver	C, CC-8	1000	750 lm	3 <sup>1</sup> / <sub>8</sub>	4 <sup>7</sup> / <sub>16</sub>	
			11380	●■11	60A/52/SS	130	48	Standard Frost SuperSaver	C, CC-8	1000	710 lm	3 <sup>1</sup> / <sub>8</sub>	4 <sup>7</sup> / <sub>16</sub>	
			@ 120 volts, approximate 46 watts, 540 lumens, 2500 hours											
			11392	●■	60A/52W/ES/4PK	120	48	Soft White Energy Saver	C, CC-8	1000	715 lm	3 <sup>1</sup> / <sub>8</sub>	4 <sup>7</sup> / <sub>16</sub>	



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## GENERAL PURPOSE LAMPS

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Description	Class & Filament	Avg Rated Life(hrs)	Lumens CBCP	Beam Angle LCL (in)	MOL (in)
52	A19	Med Brass	11384		60A/52/SS/XL	120	48	Standard SuperSaver XL	C, CC-8	2500	620 lm	3 1/8	4 7/16
			11388	11	60A/52/SS/XL @ 120 volts, approximate 46 watts, 460 lumens, 2500 hours	130	48	Standard SuperSaver XL	C, CC-8	2500	610 lm	3 1/8	4 7/16
58	A19	Med Brass	11150		58A19/62	125	120	Clear Street Lighting Group Replacement	C, C-9	3000	650 lm	2 7/8	4 1/4
			11149		58A19/62	120	120	Clear Street Lighting Group Replacement	C, C-9	3000	630 lm	2 7/8	4 1/4
60	A15	Med	10024		60A15/CL/DL/FAN/BL/2/24	120	24	Clear Double Life Fan Light	C, C-9	2000	530 lm	2 3/8	3 1/2
			10048		60A15/CL/DL/FAN/RP	120	24	Clear Double Life Fan Light	C, C-9	2000	530 lm	2 3/8	3 1/2
			10841		60A15/CL/FAN/BL/2/24	120	24	Clear Ceiling Fan Light	C, C-9	1000	700 lm	2 3/8	3 1/2
			11007		60A15/CL/FAN/RP	120	24	Clear Ceiling Fan Light	C, C-9	1000	700 lm	2 3/8	3 1/2
			11005		60A15/SW/FAN/2PK	120	24	Soft White Ceiling Fan	C, C-9	1000	680 lm	2 3/8	3 1/2
			10842		60A15/SW/FAN/BL/2/24	120	24	Soft White Ceiling Fan	C, C-9	1000	680 lm	2 3/8	3 1/2
			10843		60A15/GARAGE/BL/2/24	120	24	Inside Frost Garage Door Lamp	C, C-9	1000	690 lm	2 3/8	3 1/2
			11008		60A15/GARAGE/RP	120	24	Inside Frost Garage Door	C, C-9	1000	690 lm	2 3/8	3 1/2
			10152		60A15/FR/PLT12960	120	12960	Inside Frost	C, C-9	1000	690 lm	2 3/8	3 1/2
			11101		60A/DAY/RP/2/24	120	24	Daylight	C, CC-8	1000	640 lm	3 1/8	4 7/16
A19	Med		11463		60A/DAY/RP/4/48	120	48	Daylight	C, CC-8	1000	640 lm	3 1/8	4 7/16
			11509		60A/DAY/4/160/RP	120	160	Daylight	C, CC-8	1000	640 lm	3 1/8	4 7/16
			11260		60A/CL/DL/RP	120	24	Clear Double Life	C, CC-8	2000	790 lm	3 1/8	4 7/16
			11227		60A/DLSW/2PK/RP	120	24	Soft White Double Life	C, CC-8	2000	770 lm	3 1/8	4 7/16
			11204		60A/DLSW/4PK/RP	120	48	Soft White Double Life	C, CC-8	2000	770 lm	3 1/8	4 7/16
			11201		60A/W/DLSW/4/144/RP	120	144	Soft White Double Life	C, CC-8	2000	770 lm	3 1/8	4 7/16
			12423		60A/CL/RS/2/RP	120	24	Clear Rough Service	C, C-9	1000	555 lm	2 7/8	4 7/16
			12977		60A/RS/RP/1	120	12	Inside Frost Rough Service	C, C-9	1000	555 lm	2 7/8	4 7/16
			13000		60A/RS/2/RP	120	24	Inside Frost Rough Service	C, C-9	1000	555 lm	2 7/8	4 7/16
			12420	11	60A/RS/2/RP @ 120 volts, approximate 53 watts, 420 lumens, 2500 hours	130	24	Inside Frost Rough Service	C, C-9	1000	555 lm	2 7/8	4 7/16
			10503		60A/RS/SL/RP	120	12	Safeline Rough Service Inside Frost	C, C-9	1000	555 lm	3 1/8	4 7/16
			11224		60A/CL/RP	120	24	Clear	C, CC-8	1000	880 lm	3 1/8	4 7/16
			10553		60A/CL	120	120	Clear	C, CC-8	1000	880 lm	3 1/8	4 7/16
			10558		60A/CL/CVP @ 120 volts, approximate 53 watts, 650 lumens, 2500 hours	130	24	Clear	C, CC-8	1000	855 lm	3 1/8	4 7/16
			10555	11	60A/CL @ 120 volts, approximate 53 watts, 650 lumens, 2500 hours	130	120	Clear	C, CC-8	1000	855 lm	3 1/8	4 7/16
			11208		60A/W/RP	120	24	Soft White	C, CC-8	1000	850 lm	3 1/8	4 7/16
			11205		60A/W/4/RP	120	48	Soft White	C, CC-8	1000	850 lm	3 1/8	4 7/16
			11200		60A/W/4/144/RP	120	144	Soft White	C, CC-8	1000	850 lm	3 1/8	4 7/16
			11214		60A/RP	120	24	Standard Frost	C, CC-8	1000	870 lm	3 1/8	4 7/16



A19



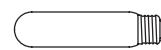
C15



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PAR46



T10



BR30

## GENERAL PURPOSE LAMPS

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Pkg Volts	Pkg Qty	Description	Class & Filament	Avg Rated Life(hrs)	Lumens CBCP	Beam Angle (in)	LCL (in)	MOL (in)
60	A19	Med	11180	●	60A/4/RP	120	48	Standard Frost	C, CC-8	1000	870 lm	3 1/8	4 1/16	
			10489	●  11	60A/CVP @ 120 volts, approximate 53 watts, 650 lumens, 2500 hours	130	24	Standard Frost	C, CC-8	1000	855 lm	3 1/8	4 1/16	
			11373	●  11	60A @ 120 volts, approximate 53 watts, 650 lumens, 2500 hours	130	48	Standard Frost	C, CC-8	1000	855 lm	3 1/8	4 1/16	
			11715	●	60A/BLACKLIGHT/RP	120	6	Blacklight	C, CC-8	1000		3 1/8	4 1/16	
			10576	●	60A/SPK	120	24	Soft Pink	C, CC-8	1000		3 1/8	4 1/16	
			12280	●	60A/GRO	120	6	Spot-GRO	C, C-9	1000		3 1/8	4 1/16	
			10390	●	60A/Y/RP	120	24	Yellow Bug Light	C, CC-8	1000		3 1/8	4 1/16	
			10386	●	60A/Y/RP	130	24	Yellow Bug Light	C, CC-8	1000		3 1/8	4 1/16	
			12455		60A/RS/XL @ 120 volts, approximate 53 watts, 340 lumens, 12500 hours.	130	24	Inside Frost Rough Service XL	C, C-9	5000	450 lm	2 1/8	4 1/16	
			10640		60A	24	120	Inside Frost Dental Spot	C, C-9	1000	1010 lm	3 1/8	4 1/16	
C15	Med Brass	14200			60C15/FAN/2PK	120	12	Clear Ceiling Fan Light	C, C-9	4000	528 lm		4 1/2	
K19	Med	10483	●		60K19/DR	120	24	Inside Frost Directional Reflector	C, CC-6	1150	630 lm		4 1/8	
		10485	●		60K19/DR/2PK	120	48	Inside Frost Directional Reflector	C, CC-6	1150	630 lm		4 1/8	
PAR46	Screw Term	15199		5,16	60PAR46	38	12	Locomotive Headlamp	C, CC-2V	800		3 3/4		
		15201		5,16	60PAR46/R	38	12	Red Train Warning	C, CC-2V	800		3 3/4		
S19	Med Brass	18513			60S19/CL/LANDMARK	120	12	Clear Landmark	C, C-9	10000	520 lm	3 1/8	4 1/16	
		18516			60S19/LANDMARK	120	12	Inside Frost Landmark	C, C-9	10000	480 lm	3 1/8	4 1/16	
T10	Med	18710	●		60T10/64	120	60	Clear	C, C-8	1000	655 lm		5 5/8	
		18711	●		60T10/CF	120	60	Inside Frost Showcase	C, C-8	1000	630 lm		5 5/8	
65	BR30	Med	19675		LN60	125	25	Opal White LINESTRA 1605	B, C-8	1000	460 lm		19 11/16	
			15223	1,2,4,5	65BR30/DAY/1/6/RP	120	6	Daylight Reflector	C, CC-6	2000	420 lm 60° 250 cd		5 3/8	
65	BR30	Med	15167	● 1,2,4,5	65BR30/FL/SL/RP	130	6	Reflector Safeline Flood	C, CC-6	2000	620 lm 60° 370 cd		5 3/8	
			15149	● 1,2,4,5	65BR30/SP/RP	120	6	Reflector Spot	C, CC-6	2000	620 lm 30° 580 cd		5 3/8	
			15172	● 1,2,4,5	65BR30/FL/CVP	130	6	Reflector Flood	C, CC-6	2000	620 lm 60° 370 cd		5 3/8	
			15160	● 1,2,4,5	65BR30/FL/RP	120	6	Reflector Flood	C, CC-6	2000	620 lm 60° 370 cd		5 3/8	
			15165	● 1,2,4,5	65BR30/FL	120	24	Reflector Flood	C, CC-6	2000	620 lm 60° 370 cd		5 3/8	
			13129	● 1,2,4,5	65BR30/FL	130	24	Reflector Flood	C, CC-6	2000	620 lm 60° 370 cd		5 3/8	
			15148	● 1,2,4,5	65BR30/TRAY	120	48	Reflector Flood	C, CC-6	2000	620 lm 60° 370 cd		5 3/8	



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PAR38



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## GENERAL PURPOSE LAMPS

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Description	Class & Filament	Avg Rated Life(hrs)	Lumens CBCP	Beam Angle (in)	LCL (in)	MOL (in)
65	BR30	Med	15150	●1,2,4,5	65BR30/A/RP	120	6	Amber Reflector Flood	C, CC-6	2000			5 3/8	
			15151	●1,2,4,5	65BR30/B/RP	120	6	Blue Reflector Flood	C, CC-6	2000			5 3/8	
			15152	●1,2,4,5	65BR30/G/RP	120	6	Green Reflector Flood	C, CC-6	2000			5 3/8	
			15153	●1,2,4,5	65BR30/PK/RP	120	6	Pink Reflector Flood	C, CC-6	2000			5 3/8	
			15161	●1,2,4,5	65BR30/R/RP	120	6	Red Reflector Flood	C, CC-6	2000			5 3/8	
			15156	●1,2,4,5	65BR30/GRO/RP	120	6	Spot-GRO Reflector	C, CC-6	2000			5 3/8	
			15154	●1,2,4,5	65BR30/Y/RP	120	6	Yellow Reflector Flood	C, CC-6	2000			5 3/8	
	Med Brass		15177	1,2,4,5	65BR30/DL/FL/RP	120	6	Double Life Reflector Flood	C, CC-6	4000	510 lm 60° 300 cd		5 3/8	
PAR38	E26 Med Skt	Med	13804	★▣▣	65PAR/SP	120	15	Spot Super Saver	C, CC-6	1750	715 lm 12° 5500 cd		5 5/16	
			13802	★▣▣	65PAR/FL	120	15	Flood Super Saver	C, CC-6	1750	715 lm 30° 1700 cd		5 5/16	
			13805	★▣▣11	65PAR/FL	130	15	Flood Super Saver	C, CC-6	1750	715 lm 30° 1700 cd		5 5/16	
@ 120 volts, approximate 57 watts, 540 lumens, 4375 hours														
67	A19	Med	11377	●	75A/67/SS	120	48	Standard Frost SuperSaver	C, CC-8	750	1050 lm	3 1/8	4 7/16	
			11381	●11	75A/67/SS	130	48	Standard Frost SuperSaver	C, CC-8	750	1020 lm	3 1/8	4 7/16	
@ 120 volts, approximate 59 watts, 780 lumens, 1875 hours														
			11394	●	75A/67/W/ES/4PK	120	48	Soft White Energy Saver	C, CC-8	750	1040 lm	3 1/8	4 7/16	
	Med Brass		11385	●	75A/67/SSXL	120	48	Standard Frost SuperSaver XL	C, CC-8	2500	880 lm	3 1/8	4 7/16	
			11389	●11	75A/67/SSXL	130	48	Standard Frost SuperSaver XL	C, CC-8	2500	860 lm	3 1/8	4 7/16	
@ 120 volts, approximate 59 watts, 660 lumens, 6250 hours														
75	A19	Med	11102	●	75A/DAY/RP/2/24	120	24	Daylight	C, CC-8	750	850 lm	3 1/8	4 7/16	
			10865	●	75A/DAY/RP/4/48	120	48	Daylight	C, CC-8	750	850 lm	3 1/8	4 7/16	
			10863	●	75A/DAY/4/160/RP	120	160	Daylight	C, CC-8	750	850 lm	3 1/8	4 7/16	
			11175	●	75ACL/DL/RP	120	24	Clear Double Life	C, CC-8	1500	1055 lm	3 1/8	4 7/16	
			11337	●	75A/DLSW/2PK/RP	120	24	Soft White Double Life	C, CC-8	1500	1035 lm	3 1/8	4 7/16	
			11331	●	75AWN/DLSW/4PK/RP	120	48	Soft White Double Life	C, CC-8	1500	1035 lm	3 1/8	4 7/16	
			11360	●	75AWN/DLSW/4/144/RP	120	144	Soft White Double Life	C, CC-8	1500	1035 lm	3 1/8	4 7/16	
			12579	●	75A/RS/RP/1	120	12	Inside Frost Rough Service	C, C-9	1000	818 lm	2 7/8	4 7/16	
			13001	●	75A/RS/2/RP	120	24	Inside Frost Rough Service	C, C-9	1000	818 lm	2 7/8	4 7/16	
			12586	●11	75A/RS/RP/1	130	24	Inside Frost Rough Service	C, C-9	1000	818 lm	2 7/8	4 7/16	
@ 120 volts, approximate 66 watts, 620 lumens, 2500 hours														
			11225	●	75A/CL/RP	120	24	Clear	C, CC-8	750	1200 lm	3 1/8	4 7/16	
			12500	●	75A/CL	120	120	Clear	C, CC-8	750	1200 lm	3 1/8	4 7/16	
			12502	●11	75A/CL	130	120	Clear	C, CC-8	750	1190 lm	3 1/8	4 7/16	
@ 120 volts, approximate 66 watts, 920 lumens, 1875 hours														



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BR40



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PAR38 Side Prong



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## GENERAL PURPOSE LAMPS

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Pkg Volts	Pkg Qty	Description	Class & Filament	Avg Rated Life(hrs)	Lumens CBCP	Beam Angle (in)	LCL (in)	MOL (in)
75	A19	Med	10967	●	75A/W/RP	120	24	Soft White	C, CC-8	750	1170 lm	3 1/8	4 1/16	
			10970	●	75A/W/4/RP	120	48	Soft White	C, CC-8	750	1170 lm	3 1/8	4 1/16	
			10941	●	75A/W/4/144/RP	120	144	Soft White	C, CC-8	750	1170 lm	3 1/8	4 1/16	
			12510	●	75A/CVP @ 120 volts, approximate 66 watts, 920 lumens, 1875 hours	130	24	Standard Frost	C, CC-8	750	1190 lm	3 1/8	4 1/16	
			12521	●	75A/RP	120	24	Standard Frost	C, CC-8	750	1190 lm	3 1/8	4 1/16	
			11374	● 11	75A @ 120 volts, approximate 66 watts, 920 lumens, 1875 hours	130	48	Standard Frost	C, CC-8	750	1190 lm	3 1/8	4 1/16	
			12525	●	75A/4/RP	120	48	Standard Frost	C, CC-8	750	1190 lm	3 1/8	4 1/16	
		Med Brass	12528	●	75A/RS/XL @ 120 volts, approximate 66 watts, 500 lumens, 12500 hours.	130	24	Inside Frost Rough Service XL	C, C-9	5000	700 lm	2 1/8	4 1/16	
	A21	Med	12554	● 15	75A21/RS/SL/RP	120	12	Safeline Rough Service Inside Frost	C, C-9	1000	800 lm	3 1/8	4 1/16	
		Med Brass	11566	⊗	75A21	12	24	Inside Frost RV-Marine	C, C-6	1000	1420 lm	3 1/8	5 5/16	
	BR38	Med	15620	★ □1,4	75/OPAR/BUG/RP	120	6	Outdoor Bug Light	C, CC-6	2000			5 5/16	
		Med Brass	15618	★ □1,4	75/OPAR/FL/RP	120	6	Outdoor Reflector Economy Flood	C, CC-6	2000	650 lm 45°		5 5/16	
			15607	★ □1,4,17	75/OPAR/FL	120	12	Outdoor Reflector Economy Flood	C, CC-6	2000	650 lm 45°		5 5/16	
	BR40	Med	15128	● 2,4,5	75BR/FL/RP	120	6	Reflector Flood	C, CC-6	2000	680 lm 60° 460 cd		6 1/2	
			15126	● 2,4,5	75BR/FL	120	24	Reflector Flood	C, CC-6	2000	680 lm 60° 460 cd		6 1/2	
			15125	● 2,4,5,11	75BR/FL @ 120 volts, approximate 66 watts, 520 lumens, 5000 hours	130	24	Reflector Flood	C, CC-6	2000	680 lm 60° 460 cd		6 1/2	
		Med Brass	15144	2,4,5	75BR/DL/FL/RP	120	6	Double Life Reflector Flood	C, CC-6	4000	610 lm 60° 400 cd		6 1/2	
			15213	2,4,5	75BR40/DL/FL/1/24	120	24	Double Life Reflector Flood	C, CC-6	4000	610 lm 60° 400 cd		6 1/2	
	ER30	Med	15109	● 1,2,4,5	75ER30/RP	120	6	Elliptical Reflector Flood	C, CC-6	2000	580 lm 30° 1500 cd		6 3/8	
			15100	● 1,2,4,5	75ER30	120	24	Elliptical Reflector Flood	C, CC-6	2000	580 lm 30° 1500 cd		6 3/8	
			15101	● 1,2,4,5,11	75ER30 @ 120 volts, approximate 66 watts, 440 lumens, 5000 hours	130	24	Elliptical Reflector Flood	C, CC-6	2000	580 lm 30° 1500 cd		6 3/8	
	K19	Med	12583	●	75K19/DR	120	24	Inside Frost Directional Reflector	C, CC-6	1150	855 lm		4 1/8	
	PAR38	Med Side Prong	13850	★ □	75PAR/3FL	120	12	Compact Flood	C, CC-6	2000	1040 lm 30° 1800 cd		4 5/16	
	R20	Med	14840	● Ø 3,12	75R20/RP	120	6	Reflector Flood	C, CC-9	2000	500 lm 45° 500 cd		3 15/16	



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## GENERAL PURPOSE LAMPS

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Description	Class & Filament	Avg Rated Life(hrs)	Lumens CBCP	Beam Angle LCL (in)	MOL (in)
75	R30	Med	15146	●▽	75R30/BBLACKLIGHT/RP	120	6	Blacklight	C, CC-6	1000			6½
90	A19	Med	11378	●▲	100A/90/SS	120	48	Standard Frost SuperSaver	C, CC-8	750	1480 lm	3½	4¾
			11382	●▲11	100A/90/SS	130	48	Standard Frost SuperSaver	C, CC-8	750	1480 lm	3½	4¾
					@ 120 volts, approximate 79 watts, 1130 lumens, 1875 hours								
			11396	●▲	100A/90/N/ES/4PK	120	48	Soft White Energy Saver	C, CC-8	750	1450 lm	3½	4¾
	Med Brass		11386	▲	100A/90/SS/XL	120	48	Standard Frost SuperSaver XL	C, CC-8	2500	1220 lm	3½	4¾
			11390	▲11	100A/90/SS/XL	130	48	Standard Frost SuperSaver XL	C, CC-8	2500	1230 lm	3½	4¾
					@ 120 volts, approximate 79 watts, 940 lumens, 6250 hours								
100	A19	Med	12952	●▲	100A/DAY/RP/2/24	120	24	Daylight	C, CC-8	750	1270 lm	3½	4¾
			12587	●▲	100A/DAY/RP/4/48	120	48	Daylight	C, CC-8	750	1270 lm	3½	4¾
			12948	●▲	100A/DAY/4/160/RP	120	160	Daylight	C, CC-8	750	1270 lm	3½	4¾
			11176	●▲	100A/CL/DL/RP	120	24	Clear Double Life	C, CC-8	1500	1550 lm	3½	4¾
			12805	●▲	100A/DLSW/2PK/RP	120	24	Soft White Double Life	C, CC-8	1500	1530 lm	3½	4¾
			11332	●▲	100A/DLSW/4PK/RP	120	48	Soft White Double Life	C, CC-8	1500	1530 lm	3½	4¾
			11365	●▲	100A/DLSW/4/144/RP	120	144	Soft White Double Life	C, CC-8	1500	1530 lm	3½	4¾
			12997	●▲	100A/RS/RP/1	120	12	Inside Frost Rough Service	C, C-9	1000	1260 lm	2¾	4¾
			13002	●▲	100A/RS/2/RP	120	24	Inside Frost Rough Service	C, C-9	1000	1260 lm	2¾	4¾
			12998	●▲11	100A/RS/2/RP	130	24	Inside Frost Rough Service	C, C-9	1000	1200 lm	2¾	4¾
					@ 120 volts, approximate 88 watts, 960 lumens, 2500 hours								
			11226	●▲	100A/CL/RP	120	24	Clear	C, CC-8	750	1720 lm	3½	4¾
			12529	●▲	100A/CL	120	120	Clear	C, CC-8	750	1720 lm	3½	4¾
			12531	●▲11	100A/CL	130	120	Clear	C, CC-8	750	1700 lm	3½	4¾
					@ 120 volts, approximate 88 watts, 1295 lumens, 1875 hours								
			12752	●▲	100A/W/RP	120	24	Soft White	C, CC-8	750	1690 lm	3½	4¾
			12770	●▲	100A/W/4/RP	120	48	Soft White	C, CC-8	750	1690 lm	3½	4¾
			12796	●▲	100A/W/4/144/RP	120	144	Soft White	C, CC-8	750	1690 lm	3½	4¾
			12735	●▲	100A/RP	120	24	Standard Frost	C, CC-8	750	1710 lm	3½	4¾
			12750	●▲	100A/4/RP	120	48	Standard Frost	C, CC-8	750	1710 lm	3½	4¾
			12530	●▲	100A/LHT	120	120	Standard Frost Left Hand Thread	C, CC-8	750	1710 lm	3½	4¾
			12709	●▲11	100A/CVP	130	24	Standard Frost	C, CC-8	750	1700 lm	3½	4¾
					@ 120 volts, approximate 88 watts, 1290 lumens, 1875 hours								
			11375	●▲11	100A	130	48	Standard Frost	C, CC-8	750	1700 lm	3½	4¾
					@ 120 volts, approximate 88 watts, 1290 lumens, 1875 hours								
			12766	●▲	100A/SPK/RP	120	24	Soft Pink	C, CC-8	1000		3½	4¾
			12763	●▲	100A/Y/RP	120	24	Yellow Bug Light	C, CC-8	1000		3½	4¾
	Med Brass		12559	▲11	100A/RS/XL	130	24	Inside Frost Rough Service XL	C, C-9	5000	1040 lm	2¾	4¾
					@ 120 volts, approximate 88 watts, 760 lumens, 12500 hours.								
A21	Med		13218	●	100A21/VS	130	48	Inside Frost Vibration Service	C, C-9	1000	1340 lm	3½	5½
					@ 120 volts, approximate 88 watts, 1020 lumens, 2500 hours.								



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PAR38



PAR46

## GENERAL PURPOSE LAMPS

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Pkg Volts	Pkg Qty	Description	Class & Filament	Avg Rated Life(hrs)	Lumens CBCP	Beam Angle	LCL (in)	MOL (in)
100	A21	Med	13404	●	100A21	230	24	Standard Frost	C, C-9	1000	1260 lm	3 1/8	5 1/16	
			13406	●	100A21	250	24	Standard Frost	C, C-9	1000	1230 lm	3 1/8	5 1/16	
			13397	● C	100A21	277	24	Standard Frost	C, C-7A	1000	1042 lm	3 1/8	5 1/16	
			12866	●	100A21	120	48	Standard Frost	C, CC-8	750	1675 lm	3 1/8	5 1/16	
			12909	●	100A21/LHT	120	48	Standard Frost Left Hand Thread	C, CC-8	750	1675 lm	3 1/8	5 1/16	
			12883	● 11	100A21 @ 120 volts, approximate 88 watts, 1260 lumens, 1875 hours	130	48	Standard Frost	C, CC-8	750	1650 lm	3 1/8	5 1/16	
	Med Brass		12946	11	100A21/99/XL @ 120 volts, approximate 88 watts, 1100 lumens, 6250 hours	130	48	Standard Frost Excel	C, CC-8	2500	1440 lm	3 1/8	5 1/16	
			12906		100A21/99/XL	120	48	Standard Frost Excel	C, CC-8	2500	1400 lm	3 1/8	5 1/16	
			12834	15	100A21/SL	120	48	Safeline Rhinocoat (Shatter Protected)	C, CC-8	750	1675 lm	3 1/8	5 1/16	
			12992	15	100A21/RS/SL/RP	120	12	Safeline Rough Service	C, C-9	1000	1260 lm	3 1/8	4 1/16	
A23	Med		12859	● ⊗ ⊖	100A23	34	12	Inside Frost	C, C-9	1000	1800 lm	4 3/8	6 1/16	
			13280		100A23/20	120	24	Clear Oven	C, C-9	750	1390 lm	4 3/8	6 1/16	
BR38	Med Brass		12858	⊗ ⊖	100A23	12	24	Inside Frost	C, C-6	1000	1940 lm	4 3/8	6 1/16	
			15624	★ □1,2,4,5	100/OPAR/FL/A/RP	120	6	Amber Reflector Flood	C, CC-6	2000			5 5/16	
			15626	★ □1,2,4,5	100/OPAR/FL/B/RP	120	6	Blue Reflector Flood	C, CC-6	2000			5 5/16	
			15627	★ □1,2,4,5	100/OPAR/FL/G/RP	120	6	Green Reflector Flood	C, CC-6	2000			5 5/16	
			15623	★ □1,2,4,5	100/OPAR/FL/R/RP	120	6	Red Reflector Flood	C, CC-6	2000			5 5/16	
BR40	Med		15622	★ □1,2,4,5	100/OPAR/FL/Y/RP	120	6	Yellow Reflector Flood	C, CC-6	2000			5 5/16	
			14871	● 4,5	100BR/FL/RP	120	6	Reflector Flood	C, CC-6	2000	935 lm 60° 900 cd		6 1/2	
			14851	● 4,5	100BR/FL	120	24	Reflector Flood	C, CC-6	2000	935 lm 60° 900 cd		6 1/2	
			14847	● 4,5,11	100BR/FL @ 120 volts, approximate 88 watts, 710 lumens, 5000 hours	130	24	Reflector Flood	C, CC-6	2000	935 lm 60° 900 cd		6 1/2	
K19	Med		12298	● □	100K19/DR	120	24	Inside Frost Directional Reflector	C, CC-6	1150	1235 lm		4 1/8	
PAR38	E26 Med Skt		13934	★ □	100PAR/FL/A/RP	120	6	Silicone Coated Amber Flood	C, CC-6	2000			5 5/16	
			13933	★ □	100PAR/FL/R/RP	120	6	Silicone Coated Red Flood	C, CC-6	2000			5 5/16	
			13948	★ □	100PAR/FL/B/RP	120	6	Silicone Coated Blue Flood	C, CC-6	2000			5 5/16	
			13949	★ □	100PAR/FL/G/RP	120	6	Silicone Coated Green Flood	C, CC-6	2000			5 5/16	
			13932	★ □	100PAR/FL/Y/RP	120	6	Silicone Coated Yellow Flood	C, CC-6	2000			5 5/16	
			13849	★ 2,4,18	100PAR38/HEAT/RED	120	15	Red Lens Heat Lamp	C, C-9	5000			5 5/16	
PAR46	Screw Term		15187	★ □5,16	100PAR46	60	12	Mine Locomotive	C, CC-2V	800	1290 lm		3 3/4	
S19	Med Brass		18514		100S19/CL/LANDMARK	120	12	Clear Landmark	C, C-9	10000	1020 lm	3 1/8	4 1/16	
			18509		100S19/LANDMARK	120	12	Inside Frost Landmark	C, C-9	10000	1000 lm	3 1/8	4 1/16	



A23



BR40



ER40



PAR38 Side Prong



A19



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## GENERAL PURPOSE LAMPS

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Description	Class & Filament	Avg Rated Life(hrs)	Lumens Beam Angle	LCL (in)	MOL (in)
100 200 300	PS25	3CONTACT Mogul	14374	●▼	100/300PS25/RP	120	12	Inside Frost 3-way 100/300W	C, CC-8	1200	1385 lm 3540 lm 4925 lm	4 1/4	6 3/4
105	A23	Med Brass	13364	5	K105A23/CL	125	24	Clear Krypton Filled ST Ltg	C, C-9	12000	1120 lm	4 3/8	6 1/16
120	BR40	Med	14915	1,2,4,5	120BR/DL/FL/RP	120	6	Double Life Reflector Flood	C, CC-6	4000	960 lm 60° 835 cd	6 1/2	
			14897	●1,2,4,5	120BR/SP/RP	120	6	Reflector Spot	C, CC-6	2000	1150 lm 25° 3300 cd	6 1/2	
			14911	●1,2,4,5	120BR/SP	120	24	Reflector Spot	C, CC-6	2000	1150 lm 25° 3300 cd	6 1/2	
			14909	●1,2,4,5,11	120BR/SP	130	24	Reflector Spot	C, CC-6	2000	1150 lm 25° 3300 cd	6 1/2	
@ 120 volts, approximate 105 watts, 880 lumens, 5000 hours													
	14888	●1,2,4,5,11	120BR/FL/CVP			130	6	Reflector Flood	C, CC-6	2000	1150 lm 60° 1000 cd	6 1/2	
@ 120 volts, approximate 105 watts, 880 lumens, 5000 hours													
	14896	●1,2,4,5	120BR/FL/RP			120	6	Reflector Flood	C, CC-6	2000	1150 lm 60° 1000 cd	6 1/2	
	14903	●1,2,4,5	120BR/FL			120	24	Reflector Flood	C, CC-6	2000	1150 lm 60° 1000 cd	6 1/2	
	14899	●1,4,11	120BR/FL			130	24	Reflector Flood	C, CC-6	2000	1150 lm 60° 1000 cd	6 1/2	
@ 120 volts, approximate 105 watts, 880 lumens, 5000 hours													
	150740	●1,2,4,5	120BR40/FL/SL			130	24	RHINOCAOT Safeline Flood	C, CC-6	2000	1150 lm 60° 1000 cd	6 1/2	
	14898	●1,2,4,5	120BR/GRO			120	6	Spot-GRO Reflector	C, CC-6	2000		6 1/2	
ER40	Med		15166	●1,2,4,5	120ER40	120	24	Elliptical Reflector Flood	C, CC-6	2000	1370 lm 30° 2350 cd	7 3/8	
			15168	●1,2,4,5,11	120ER40	130	24	Elliptical Reflector Flood	C, CC-6	2000	1370 lm 30° 2350 cd	7 3/8	
@ 120 volts, approximate 106 watts, 1040 lumens, 5000 hours													
PAR38	Med Side Prong		14572	★■17	150/120PAR/3FL/SS	120	15	Reflector Flood Super Saver	C, CC-6	2000	1900 lm 30° 4000 cd	4 5/16	
125	BR40	Med	14952	▽4,5	125BR40/1/RP	120	6	Reflector Infrared Brooder Bulb	C, CC-6	5000		6 1/2	
			15006	▽4,5	BROODERHEAT/1/24	120	24	Brooder Bulb	C, CC-6	5000		6 1/2	
135	A19	Med Brass	12830		150A/135/SS/XL	120	120	Standard Frost SuperSaver XL	C, CC-8	2500	2050 lm	3 1/8	4 7/16
			12831	11	150A/135/SS/XL	130	120	Standard Frost SuperSaver XL	C, CC-8	2500	2050 lm	3 1/8	4 7/16
@ 120 volts, approximate 119 watts, 1560 lumens, 6250 hours													
A21	Med		12820	●	150A21/135/SS	120	48	Standard Frost SuperSaver	C, CC-8	750	2450 lm	3 7/8	5 1/2



A21



A23



BR38



P25



PAR38



PAR38 Side Prong



PAR46

## GENERAL PURPOSE LAMPS

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Description	Class & Filament	Avg Rated Life(hrs)	Lumens CBCP	Beam Angle (in)	LCL (in)	MOL (in)
135	A21	Med	12863	●11	150A21/135/SS @ 120 volts, approximate 119 watts, 1870 lumens, 1875 hours	130	48	Standard Frost SuperSaver	C, CC-8	750	2450 lm	3 1/8	5 1/2	
150	A21	Med	13125	●	150A21/CL/RP	120	12	Clear Utility Light	C, CC-8	750	2780 lm	3 1/8	5 1/16	
			13136	●	150A21/CL	120	48	Clear	C, CC-8	750	2780 lm	3 1/8	5 1/16	
			13148	●11	150A21/CL @ 120 volts, approximate 132 watts, 2030 lumens, 1875 hours	130	48	Clear	C, CC-8	750	2730 lm	3 1/8	5 1/16	
			13101	●	150A21/W/RP	120	12	Soft White	C, CC-8	750	2640 lm	3 1/8	5 1/16	
			13165	●	150A21/IF/RP	120	12	Standard Frost Utility Light	C, CC-8	750	2740 lm	3 1/8	5 1/16	
			13141	●	150A21	120	48	Standard Frost	C, CC-8	750	2740 lm	3 1/8	5 1/16	
			13153	●11	150A21 @ 120 volts, approximate 132 watts, 2030 lumens, 1875 hours	130	48	Standard Frost	C, CC-8	750	2670 lm	3 1/8	5 1/16	
		Med Brass	13177		150A21/99/XL	120	48	Standard Frost Excel	C, CC-8	2500	2225 lm	3 1/8	5 1/16	
			13178	11	150A21/99/XL @ 120 volts, approximate 132 watts, 1690 lumens, 6250 hours	130	48	Standard Frost Excel	C, CC-8	2500	2225 lm	3 1/8	5 1/16	
A23	Med		15241	●	150A23/RS	120	48	Inside Frost Rough Service	C, C-17	1000	2090 lm	4 3/8	6 1/16	
			15243	●11	150A23/RS @ 120 volts, approximate 132 watts, 1590 lumens, 2500 hours	130	48	Inside Frost Rough Service	C, C-17	1000	2090 lm	4 3/8	6 1/16	
			13041	●	150A23	120	48	Inside Frost	C, CC-8	750	2810 lm	4 5/8	6 1/16	
		Med Brass	15250	11	150A23/CL/RS @ 120 volts, approximate 132 watts, 1590 lumens, 2500 hours	130	48	Clear Rough Service	C, C-17	1000	2110 lm	4 3/8	5 1/8	
BR38	Med		14869	●★▣1,4,17	150/OPAR/FL	120	48	Outdoor Reflector Economy Flood	C, CC-6	2000	1350 lm 45°		5 1/16	
		Med Brass	15619	★▣1,4,17	150/OPAR/FL/RP	120	6	Outdoor Reflector Economy Flood	C, CC-6	2000	1350 lm 45°		5 1/16	
			15608	★▣1,4,17	150/OPAR/FL	120	12	Outdoor Reflector Economy Flood	C, CC-6	2000	1350 lm 45°		5 1/16	
P25	Med Brass		15014	2	150P25/2SB	120	60	Silver Bowl Clear Hard Glass Button	C, C-5	200	2040 lm	3	4 3/4	
PAR38	E26 Med Skt		13921	★▣17	150PAR/SP @ 120 volts, approximate 132 watts, 1660 lumens, 1875 hours	130	15	Spot	C, CC-6	750	2175 lm 12° 18000 cd		5 5/16	
			13922	★▣17	150PAR/FL @ 120 volts, approximate 132 watts, 1660 lumens, 1875 hours	130	15	Flood	C, CC-6	750	2175 lm 30° 4500 cd		5 5/16	
		Med Side Prong	13848	★▣16	150PAR/3SP	125	12	Compact Spot	C, CC-6	2000	2175 lm 15° 11500 cd		4 5/8	
			13853	★▣16	150PAR/3FL	120	12	Compact Flood	C, CC-6	2000	2175 lm 30° 4000 cd		4 5/8	
			13854	★▣16	150PAR/3FL	125	12	Compact Flood	C, CC-6	2000	2175 lm 30° 4000 cd		4 5/8	
PAR46	Med Side Prong		15375	★▣5,16,19	150PAR46/3NSP	125	12	Narrow Spot	C, CC-2V	2000	1500 lm 8 x 12 VH 17500 cd		4	



PAR46



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PAR38



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## GENERAL PURPOSE LAMPS

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Description	Class & Filament	Avg Rated Life(hrs)	Lumens Beam Angle	LCL (in)	MOL (in)
150	PAR46	Screw Term	15190	★ 5,16	150PAR46	130	12	Clear Mine Headlamp	C, C-13	1000	1250 lm 8 x 15 VH		3 3/4
	PS25	Med	15255	● 11	150PS25/VS	130	60	Inside Frost Vibration Service  @ 120 volts, approximate 132 watts, 1580 lumens, 2500 hours	C, C-9	1000	2080 lm	5 1/4	6 15/16
			15207	● 11	150PS25/CL	130	60	Clear  @ 120 volts, approximate 132 watts, 1880 lumens, 1875 hours	C, C-9	750	2470 lm	5 1/4	6 15/16
			15280	●	150PS25	120	60	Inside Frost	C, C-9	750	2470 lm	5 1/4	6 15/16
			15276	●	150PS25/IF	120	60	Inside Frost	C, C-9	1000	2340 lm	5 1/4	6 15/16
			15282	● 11	150PS25	130	60	Inside Frost  @ 120 volts, approximate 132 watts, 1770 lumens, 1875 hours	C, C-9	750	2330 lm	5 1/4	6 15/16
	Med Brass		15431	11	150PS25/99/XL	130	60	Inside Frost Excel-Line  @ 120 volts, approximate 132 watts, 1420 lumens, 6250 hours	C, C-9	2500	1870 lm	5 1/4	6 15/16
			15293	15	150PS25/SL	120	60	Safeline Rhinocoat (Shatter Protected)	C, C-9	1000	2200 lm	5 1/4	6 15/16
			15300	15	150PS25/RS/SL	120	60	Safeline Rough Service	C, C-17	1000	2145 lm	4 3/8	5 15/16
T10	S14S		19690	▽	LN150	125	16	Opal White LINESTRA 1604	B, C-8	1000	930 lm		39 1/8
175	PAR38	E26 Med Skt	13836	★ 2,4,18	175W/PAR38/HEAT	120	15	Hard Glass PAR Heat Lamp	C, CC-6	5000			5 5/16
			13840	★ 2,4,18	175	120	15			5000			
189	PS25	Med Brass	15562		189PS25/64	120	60	Clear Street Lighting Group Replacement	C, C-9	3000	2825 lm	5 1/4	6 15/16
200	A21	Med	15476	●	200A21/CL/RP	120	12	Clear Utility Light	C, CC-8	750	3880 lm	3 7/8	5 5/16
			15491	● 11	200A21/CL	130	48	Clear  @ 120 volts, approximate 176 watts, 2960 lumens, 1875 hours	C, CC-8	750	3880 lm	3 7/8	5 5/16
			13103	●	200A21/W/1RP	120	12	Soft White	C, CC-8	750	3650 lm	3 7/8	5 5/16
			13107	● Ø	200A21	120	24	Soft White Recessed Ceiling	C, CC-8	750	3650 lm	3 7/8	5 5/16
			15499	●	200A21/RP	120	12	Standard Frost Utility Light	C, CC-8	750	3850 lm	3 7/8	5 5/16
			15543	● 11	200A21	130	48	Standard Frost  @ 120 volts, approximate 176 watts, 2960 lumens, 1875 hours	C, CC-8	750	3760 lm	3 7/8	5 5/16
	Med Brass		15555	11	200A21/99/XL	125	48	Standard Frost Excel  @ 120 volts, approximate 188 watts, 2220 lumens, 6250 hours	C, CC-8	2500	2910 lm	3 7/8	5 5/16
A23		Med	15457	●	200A23/RS	120	48	Inside Frost Rough Service	C, C-17	1000	3030 lm	4 3/8	5 7/8
			15458	● 11	200A23/RS	130	48	Inside Frost Rough Service  @ 120 volts, approximate 176 watts, 2220 lumens, 2500 hours	C, C-17	1000	2920 lm	4 3/8	5 7/8
			15505	● Ø	200A23	120	48	Inside Frost	C, CC-8	750	3930 lm	4 5/8	6 1/16
PAR46	Med Side Prong		15194	★ 5,16,19	200PAR46/3MFL	120	12	Medium Flood	C, CC-13	2000	2270 lm 15 x 25 VH 11500 cd		4
			15196	★ 5,16,19	200PAR46/3MFL	125	12	Medium Flood	C, CC-13	2000	2270 lm 15 x 25 VH 11500 cd		4
			15191	★ 5,16,19	200PAR46/3NSP	120	12	Narrow Spot	C, CC-13	2000	2270 lm 8 x 12 VH 31000 cd		4
			15193	★ 5,16,19	200PAR46/3NSP	125	12	Narrow Spot	C, CC-13	2000	2270 lm 8 x 12 VH 31000 cd		4



PAR56



PS25



PS30



BR38



BR40



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## GENERAL PURPOSE LAMPS

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Description	Class & Filament	Avg Rated Life(hrs)	Lumens CBCP	Beam Angle	LCL (in)	MOL (in)
200	PAR56	Mog End Prong	15007	★5,16,19	200PAR56/MFL	120	12	Medium Flood Clear	C, CC-13	2000	2270 lm 15 x 20 VH 15000 cd			5
		Screw Term	14968	★	200PAR56	30	12	Locomotive Headlamp	C, CC-8	500	3700 lm 9 x 9 VH 27000 cd			4 1/2
PS25	Med		15600	●11	200PS25	130	60	Inside Frost	C, CC-6	750	3700 lm	5 1/4	6 1/16	
			@ 120 volts, approximate 176 watts, 2820 lumens, 1875 hours											
		Med Brass	15816		200PS25/99/XL	120	60	Inside Frost Excel-Line	C, CC-6	2500	3000 lm	5 1/4	6 1/16	
			15818	11	200PS25/99/XL	130	60	Inside Frost Excel-Line	C, CC-6	2500	3000 lm	5 1/4	6 1/16	
			@ 120 volts, approximate 176 watts, 2360 lumens, 6250 hours											
PS30	Med		15865	●	200PS30/CL/R/S	250	60	Clear Rough Service	C, C-9	1000	2630 lm	6	8 1/16	
			15647	●	200PS/CL	130	60	Clear	C, C-9	750	3600 lm	6	8 1/16	
			@ 120 volts, approximate 176 watts, 2740 lumens, 1875 hours											
			15797	●	200PS/CL	250	60	Clear	C, C-9	1000	2920 lm	6	8 1/16	
			15820	●	200/CL	277	60	Clear	C, C-9	1000	2360 lm	6	8 1/16	
			15653	●11	200PS/IF	130	60	Inside Frost	C, C-9	750	3560 lm	6	8 1/16	
			@ 120 volts, approximate 176 watts, 2710 lumens, 1875 hours											
			15673	●	200PS/23	120	60	Inside Frost Rough Service	C, C-9	1000	3080 lm	6	8 1/16	
			15675	●11	200PS/23	130	60	Inside Frost Rough Service	C, C-9	1000	3080 lm	6	8 1/16	
			@ 120 volts, approximate 176 watts, 2350 lumens, 2500 hours											
	Med Brass		15725	11	200PS/CL/99/XL	130	60	Clear Excel-Line	C, C-9	2500	2875 lm	6	8 1/16	
			@ 120 volts, approximate 176 watts, 2190 lumens, 6250 hours											
			15691	11	200PS/IF/99/XL	130	60	Inside Frost Excel-Line	C, C-9	2500	2875 lm	6	8 1/16	
			@ 120 volts, approximate 176 watts, 2190 lumens, 6250 hours											
			15687	15	200PS/23/SL	120	60	Safeline Rough Service	C, C-9	1000	3080 lm	6	8 1/16	
			15648	15	200PS/SL	120	60	Safeline	C, C-9	1000	3080 lm	6	8 1/16	
202	PS25	Med Brass	15581	5	202PS25/CL	125	60	Clear Street Lighting Group Replacement	C, C-9	6000	2750 lm	5 1/4	6 1/16	
205	PS25	Med Brass	15547	5	205K/PS25/CL	125	60	Clear Street Light Krypton	C, C-9	12000	2650 lm	5 1/4	6 1/16	
250	BR38	Med Brass	14661	★2,11	250K/BR38/FL	125	12	Reflector Flood Krypton	C, CC-6	4000	3100 lm		5 1/2	
			@ 120 volts, approximate 220 watts, 2360 lumens, 10000 hours											
	BR40	Med	14664	●▽2,4,5,18	250BR40/1	120	6	Reflector IR Heat Lamp Clear	C, CC-6	5000				6 1/2
			14665	●▽2,4,5,18	250BR40	120	12	Reflector IR Heat Lamp Clear	C, CC-6	5000				6 1/2
	R40	Med	14663	★▽2,4,5,18	250R40/10	120	6	Red Bowl IR Heat Lamp Reflector Hard Glass	C, C-6	5000				6 1/2
300	BR40	Med Brass	14779	1,2,4,5	300BR/FL	120	24	Reflector Flood	C, CC-2V	2000	3030 lm 60° 2900 cd		6 1/2	
			14781	1,2,4,5,11	300BR/FL	130	24	Reflector Flood	C, CC-2V	2000	3030 lm 60° 2900 cd		6 1/2	
			@ 120 volts, approximate 264 watts, 2240 lumens, 5000 hours											
	PAR56	Mog End Prong	14950	★16,19	300PAR56/MFL	120	12	Medium Flood	C, CC-13	2000	3840 lm 11 x 25 VH 24000 cd			5
			14946	★16,19	300PAR56/MFL	130	12	Medium Flood	C, CC-13	2000	3840 lm 11 x 25 VH 24000 cd			5



PAR56



PS30



PS35



R40



BR40

INCANDESCENT

## GENERAL PURPOSE LAMPS

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Description	Class & Filament	Avg Rated Life(hrs)	Lumens CBCP	Beam Angle (in)	LCL (in)	MOL (in)
300	PAR56	Mog End	14953	★16,19	300PAR56/WFL	120	12	Wide Flood	C, CC-13	2000	3840 lm 20 x 35 VH 11000 cd		5	
			14945	★16,19	300PAR56/WFL	130	12	Wide Flood	C, CC-13	2000	3840 lm 20 x 35 VH 11000 cd		5	
			14947	★16,19	300PAR56/NSP	120	12	Narrow Spot	C, CC-13	2000	3840 lm 8 x 10 VH 68000 cd		5	
			14944	★16,19	300PAR56/NSP	130	12	Narrow Spot	C, CC-13	2000	3840 lm 8 x 10 VH 68000 cd		5	
			14967	★	25A/PAR56/WFL	12	12	Swimming Pool	C, C-6	1000	6000 lm 15 x 40 VH		4 1/2	
			15740	●	300M/CL/RP	120	12	Clear Utility Light	C, C-9	750	5870 lm	6	8 1/16	
PS30		Med	15742	●	300M/CL	120	60	Clear Utility Light	C, C-9	750	5870 lm	6	8 1/16	
			15744	●11	300M/CL @ 120 volts, approximate 264 watts, 4390 lumens, 1875 hours	130	60	Clear Utility Light	C, C-9	750	5820 lm	6	8 1/16	
			15735	●	300M/IF/RP	120	12	Inside Frost Utility Light	C, C-9	750	5860 lm	6	8 1/16	
			15737	●	300M/IF	120	60	Inside Frost Utility Light	C, C-9	750	5860 lm	6	8 1/16	
			15738	●	300M/IF/CVP/6 @ 120 volts, approximate 264 watts, 4390 lumens, 1875 hours	130	6	Inside Frost Utility Light	C, C-9	750	5760 lm	6	8 1/16	
			15739	●11	300M/IF @ 120 volts, approximate 264 watts, 4390 lumens, 1875 hours	130	60	Inside Frost Utility Light	C, C-9	750	5760 lm	6	8 1/16	
Med Brass		Brass	15758	11	300M/CL/99/XL @ 120 volts, approximate 264 watts, 3850 lumens, 6250 hours	130	60	Clear Excel-Line	C, C-9	2500	5050 lm	6	8 1/16	
			15761	11	300M/IF/99/XL @ 120 volts, approximate 264 watts, 3800 lumens, 6250 hours	130	60	Inside Frost Excel-Line	C, C-9	2500	4990 lm	6	8 1/16	
PS35	Mogul		15904		300PS35/CL/99/XL	120	24	Clear Excel-Line	C, C-9	2500	5190 lm	7	9 3/8	
			15925		300PS35/99IF/XL	120	24	Inside Frost Excel-Line	C, C-9	2500	5190 lm	7	9 3/8	
			15930		300PS35/99IF/XL	130	24	Inside Frost Excel-Line	C, C-9	2500	5070 lm	7	9 3/8	
			15876		300PS35/RS	130	24	Clear Rough Service	C, C-9	1000	5100 lm	7	9 3/8	
			15915		300PS35/CL	120	24	Clear Utility Light	C, C-9	1000	5700 lm	7	9 3/8	
			15917		300PS35/CL	130	24	Clear Utility Light	C, C-9	1000	5250 lm	7	9 3/8	
			16068		300PS35/CL	277	24	Clear	C, C-7A	1000	4220 lm	7	9 3/8	
			15918		300PS35/IF	120	24	Inside Frost Utility Light	C, C-9	1000	5700 lm	7	9 3/8	
			15920		300PS35/IF	130	24	Inside Frost Utility Light	C, C-9	1000	5250 lm	7	9 3/8	
R40	Mogul		14796	★2,4,20	300R/3FL	120	24	Reflector Flood	C, CC-2V	2000	3660 lm 60° 2375 cd		7 1/4	
327	PS35	Mogul	16182		327PS35	125	24	Clear Street Lighting Group Replacement	C, C-9	6000	4850 lm	7	9 3/8	
375	BR40	Med Skt	14746	RG3▽2,4,5,18	375BR40	120	24	IR Reflector Industrial	C, C-11	5000			7 1/4	
	R40	Med Skt	14747	★RG3▽2,18	375R40/1	120	24	Reflector IR Heat Lamp Clear	C, C-11	5000			7 5/8	



PAR64



PS35



R40



CA



B10



F10



G16.5

INCANDESCENT

## GENERAL PURPOSE LAMPS

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Description	Class & Filament	Avg Rated Life(hrs)	Lumens CBCP	Beam Angle (in)	LCL (in)	MOL (in)
500	PAR64	Ext Mog End Pr	14932	★5,16,19	500PAR64/MFL	120	6	Medium Flood	C, CC-13	2000	6500 lm 11 x 25 VH 37000 cd			6
			14934	★5,16,19	500PAR64/MFL	130	6	Medium Flood	C, CC-13	2000	6500 lm 11 x 25 VH 37000 cd			6
			14935	★5,16,19	500PAR64/WFL	120	6	Wide Flood	C, CC-13	2000	6500 lm 20 x 40 VH 13000 cd			6
			14937	★5,16,19	500PAR64/WFL	130	6	Wide Flood	C, CC-13	2000	6500 lm 20 x 40 VH 13000 cd			6
			14938	★5,16,19	500PAR64/NSP	120	6	Narrow Spot	C, CC-13	2000	6500 lm 7 x 12 VH 110000 cd			6
PS35	Mogul	16032			500PS35/CL	120	24	Clear	C, CC-8	1000	10000 lm	7	9 1/8	
		16034			500PS35/CL	130	24	Clear	C, CC-8	1000	10000 lm	7	9 1/8	
		16038			500PS35/IF	120	24	Inside Frost	C, CC-8	1000	10000 lm	7	9 1/8	
		16040			500PS35/IF	130	24	Inside Frost	C, CC-8	1000	10000 lm	7	9 1/8	
R40	Mogul	14835	★3,5		500R/3FL	120	24	Reflector Flood	C, CC-2V	2000	6925 lm 60° 4355 cd		7 1/4	
		14857	★3,5		500R/3FL	250	24	Reflector Flood	C, CC-11	2000	5100 lm 60° 3000 cd		7 1/4	

## DECORATIVE LAMPS

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Description	Class & Filament	Avg Rated Life(hrs)	MOL (in)
2	CA8	Candelabra	13497	●	2CA8C/CL/FL/BL	120	6	Clear Flicker	B	3000	3 1/2
			13496	●	2CA10/CL/FL/BL	120	6	Clear Flicker	B	3000	3 1/2
15	B10	Candelabra	13315	●▲	15B10C/DL/BL	120	12	Clear Double Life Décor Bent Tip	C, C-7A	3000	3 7/8
			13448	●▲	15B10C/BL/2PK	120	12	Clear Décor Bent Tip	C, C-7A	1500	3 7/8
			13782	●▲	15B10C/BL/4PK	120	24	Clear Décor Bent Tip	C, C-7A	1500	3 7/8
			13657	●▲	15B10CBAGPK	120	200	Clear Décor Bent Tip	C, C-7A	1500	3 7/8
			13675	●▲	15B10C/T/BL/2PK	120	12	Clear Décor Blunt Tip	C, C-7A	1500	3 5/8
			13433	●▲6	15B10/BL/2PK	120	12	Clear Décor Bent Tip	C, C-7A	1500	3 13/16
			13715	●▲6	15B10/T/BL/2PK	120	12	Clear Décor Blunt Tip	C, C-7A	1500	3 9/16
F10	Candelabra	Candelabra	13435	●	15FC/AIC/BL/2PK	120	12	Amber Flame Shape Iridescent	B, C-7A	1500	3 1/16
			13434	●	15FC/IC/BL/2PK	120	12	Clear Iridescent Flame Shape	B, C-7A	1500	3 1/16
			13436	●	15FC/W/BL/2PK	120	12	White Flame Shape	B, C-7A	1500	3 1/16
			13709	●	15G16.5C/4M	120	24	Clear Globe	B, C-7A	4000	3
G16.5		Candelabra	13616	●	15G16.5C	120	24	Clear Globe	B, C-7A	1500	3
			13617	●	15G16.5C/W	120	24	White Globe	B, C-7A	1500	3
			13306	●▼▲	25B10C/DL/BL/4PK	120	24	Clear Double Life Décor Bent Tip	C, C-7A	3000	3 7/8



B10



F15



G16.5



G25

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## DECORATIVE LAMPS

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Description	Class & Filament	Avg Rated Life(hrs)	MOL (in)
25	B10	Candelabra	13316	●	25B10C/DL/BL	120	12	Clear Double Life Décor Bent Tip	C, C-7A	3000	3 1/8
			13743	●	25B10C/CRYSTAL/DL/BL/2PK	120	12	Double Life Crystal Bent Tip	C, C-7A	3000	3 1/8
			13317	●	25B10C/DLF/BL	120	12	Frosted Double Life Décor Bent Tip	C, C-7A	3000	3 1/8
			13308*	●	25B10C/DLF/BL/4PK	120	24	Frosted Double Life Décor Bent Tip	C, C-7A	3000	3 1/8
			13452	●	25B10C/BL/2PK	120	12	Clear Décor Bent Tip	C, C-7A	1500	3 1/8
			13570	●	25B10C/BAGPK	120	200	Clear Décor Bent Tip	C, C-7A	1500	3 1/8
			13678	●	25B10C/T/BL/2PK	120	12	Clear Décor Blunt Tip	C, C-7A	1500	3 1/8
			13453	●	25B10C/F/BL/2PK	120	12	Frosted Décor Bent Tip	C, C-7A	1500	3 1/8
	Med		13318	● 6	25B10/DL/BL	120	12	Clear Double Life Décor Bent Tip	C, C-7A	3000	3 13/16
			13331*	● 6	25B10/DL/BL/4PK	120	24	Clear Double Life Décor Bent Tip	C, C-7A	3000	3 13/16
			13438	● 6	25B10/BL/2PK	120	12	Clear Décor Bent Tip	C, C-7A	1500	3 13/16
			13654	● 6	25B10/BL/4PK	120	24	Clear Décor Bent Tip	C, C-7A	1500	3 13/16
			13717	● 6	25B10/T/BL/2PK	120	12	Clear Décor Blunt Tip	C, C-7A	1500	3 9/16
			13439	● 6	25B10/F/BL/2PK	120	12	Soft White Décor Bent Tip	C, C-7A	1500	3 13/16
			13823	●	25F/AIC/BL/2PK	120	12	Amber Flame Shape Iridescent	C, C-7A	1500	4 1/2
F15	Med		13806	●	25F/CL	120	24	Clear Flame Shape	C, C-7A	1500	4 1/2
			13821	●	25F/I/CL/2PK	120	12	Iridescent Flame Shape	C, C-7A	1500	4 1/2
			13820	●	25F/W/BL/2PK	120	12	Soft White Flame Shape	C, C-7A	1500	4 1/2
			13704	●	25G16.5C/4M	120	24	Clear Globe	B, C-7A	4000	3
			13703	●	25G16.5C/W/4M	120	24	Soft White Globe	B, C-7A	4000	3
G16.5	Candelabra		13625	●	25G16.5C/BL	120	12	Clear Globe	B, C-7A	1500	3
			13618	●	25G16.5C	120	24	Clear Globe	B, C-7A	1500	3
			13622	●	25G16.5C/W/BL	120	12	White Globe	B, C-7A	1500	3
			10298	●	25G16.5/BL	120	12	Clear Globe	C, C-7A	1500	3
			10297	●	25G16.5/W/BL	120	12	White Globe	C, C-7A	1500	3
	Med		14145	●	25G25/DL/RP	120	6	Clear Double Life Globe	C, C-9	3000	4 7/16
			14276	●	25G25/4M	120	24	Clear Globe	C, C-9	4000	4 7/16
			14146	●	25G25/DLSW/RP	120	6	Soft White Double Life Globe	C, C-9	3000	4 7/16
			14103	●	25G25/DLSW/RP/48	120	48	Soft White Double Life Globe	C, C-9	3000	4 7/16
			14277	●	25G25/W/4M	120	24	Soft White Globe	C, C-9	4000	4 7/16
G25	Med		14105	●	25G25/DL/RP/48	120	48	Clear Double Life Globe	C, C-9	3000	4 7/16
			14282	●	25G25/RP	120	6	Clear Globe	C, C-9	1500	4 7/16
			14264	●	25G25	120	24	Clear Globe	C, C-9	1500	4 7/16
			14210	●	25G25/3PK/RP	120	24	Clear Globe	C, C-9	1500	4 7/16
			14286	●	25G25/W/RP	120	6	Soft White Globe	C, C-9	1500	4 7/16
			14265	●	25G25/W	120	24	Soft White Globe	C, C-9	1500	4 7/16



G25



G30



G40



B10



F15



G16.5

## DECORATIVE LAMPS

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Description	Class & Filament	Avg Rated Life(hrs)	MOL (in)
25	G25	Med	14211	●	25G25/W/3PK/RP	120	24	Soft White Globe	C, C-9	1500	4 7/16
			14404	●	25G30/W/RP	120	6	Soft White Globe	C, C-9	2500	5 1/2
			14685	●	25G40	120	6	Clear Globe	C, C-9	2500	6 15/16
			14901	●	25G40/W	120	6	Soft White Globe	C, C-9	2500	6 15/16
32	B10	Candelabra	13737	● V	32B10C/CRYSTAL/DL/BL/2PK	120	12	Double Life Crystal Bent Tip	C, C-7A	4000	3 7/8
40	B10	Candelabra	13319	● V	40B10C/DL/BL/2PK	120	12	Clear Double Life Décor Bent Tip	C, C-7A	3000	3 7/8
			13328	● V	40B10C/DL/BL/4PK	120	24	Clear Double Life Décor Bent Tip Four Pack	C, C-7A	3000	3 7/8
			13741	● V	40B10C/CRYSTAL/DL/BL/2PK	120	12	Double Life Crystal Bent Tip	C, C-7A	3000	3 7/8
			13714	● V	40B10C/CRYSTAL/DL/BL/4/24	120	24	Double Life Crystal Bent Tip	C, C-7A	3000	3 7/8
			13320	● V	40B10C/DLF/BL/2PK	120	12	Frosted Double Life Décor Bent Tip	C, C-7A	3000	3 7/8
			13309	● V	40B10C/DLF/BL/4PK	120	24	Frosted Double Life Décor Bent Tip	C, C-7A	3000	3 7/8
			13456	● V	40B10C/BL/2PK	120	12	Clear Décor Bent Tip	C, C-7A	1500	3 7/8
			13648	● V	40B10C/BL/4PK	120	24	Clear Décor Bent Tip	C, C-7A	1500	3 7/8
			13571	● V	40B10C/BAGPK	120	200	Clear Décor Bent Tip	C, C-7A	1500	3 7/8
			13681	● V	40B10C/T/BL/2PK	120	12	Clear Décor Blunt Tip	C, C-7A	1500	3 5/8
			13457	● V	40B10C/F/BL/2PK	120	12	Frosted Décor Bent Tip	C, C-7A	1500	3 7/8
			13682	● V	40B10C/F/T/BL/2PK	120	12	Frosted Décor Blunt Tip	C, C-7A	1500	3 5/8
		Med	13321	● V	40B10/DL/BL/2PK	120	12	Clear Double Life Décor Bent Tip	C, C-7A	3000	3 13/16
			13740	● V	40B10/CRYSTAL/DL/BL/2PK	120	12	Double Life Crystal Bent Tip	C, C-7A	3000	3 13/16
			13723	● V	40B10/CRYSTAL/DL/BL/4PK	120	24	Double Life Crystal Bent Tip	C, C-7A	3000	3 13/16
			13322	● V	40B10/DLF/BL/2PK	120	12	Frosted Double Life Décor Bent Tip	C, C-7A	3000	3 13/16
			13440	● V	40B10/BL/2PK	120	12	Clear Décor Bent Tip	C, C-7A	1500	3 13/16
			13651	● V	40B10/BL/4PK	120	24	Clear Décor Bent Tip	C, C-7A	1500	3 13/16
			13719	● V	40B10/T/BL/2PK	120	12	Clear Décor Blunt Tip	C, C-7A	1500	3 9/16
			13720	● V	40B10/F/T/BL/2PK	120	12	Frosted Décor Blunt Tip	C, C-7A	1500	3 9/16
			13441	● V	40B10/F/BL/2PK	120	12	Soft White Décor Bent Tip	C, C-7A	1500	3 13/16
			13986	●	40F/AIC/BL/2PK	120	12	Amber Flame Shape Iridescent	C, C-7A	1500	4 1/2
F15	Med		13974	●	40F/CL	120	24	Clear Flame Shape	C, C-7A	1500	4 1/2
			13985	●	40F/IC/BL/2PK	120	12	Iridescent Flame Shape	C, C-7A	1500	4 1/2
			13984	●	40F/NW/BL/2PK	120	12	White Flame Shape	C, C-7A	1500	4 1/2
			13700	● V	40G16.5C/4M	120	24	Clear Globe	C, C-7A	4000	3
			13699	● V	40G16.5C/W/4M	120	24	Soft White Globe	C, C-7A	4000	3
G16.5	Candelabra		13666	● V	40G16.5C/BL	120	12	Clear Globe	C, C-7A	1500	3
			13702	● V	40G16.5C	120	24	Clear Globe	C, C-7A	1500	3



G16.5



G25



G30



G40



A19



B10

## DECORATIVE LAMPS

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Description	Class & Filament	Avg Rated Life(hrs)	MOL (in)
40	G16.5	Candelabra	13667	●▼	40G16.5C/W/BL	120	12	White Globe	C, C-7A	1500	3
		Med	10300	●▼	40G16.5/BL	120	12	Clear Globe	C, C-7A	1500	3
			10299	●▼	40G16.5/W/BL	120	12	White Globe	C, C-7A	1500	3
	G25	Med	13966	●▲	40G25/DAY/1/6	120	6	Daylight Globe	C, C-9	1500	4 7/16
			14002	●▲	40G25/DAY/1/48	120	48	Daylight Globe	C, C-9	1500	4 7/16
			14147	●▲	40G25/DL/RP	120	6	Clear Double Life Globe	C, C-9	3000	4 7/16
			14148	●▲	40G25/DLSW/RP	120	6	Soft White Double Life Globe	C, C-9	3000	4 7/16
			14175	●▲	40G25/DLSW/1/48	120	48	Soft White Double Life Globe	C, C-9	3000	4 7/16
			14174	●▲	40G25/DL/1/48	120	48	Clear Double Life Globe	C, C-9	3000	4 7/16
			14191	●▲	40G25/CVP/130V	130	6	Clear Globe	C, C-9	1500	4 7/16
			14283	●▲	40G25/RP	120	6	Clear Globe	C, C-9	1500	4 7/16
			14266	●▲	40G25	120	24	Clear Globe	C, C-9	1500	4 7/16
			14212	●▲	40G25/3PK/RP	120	24	Clear Globe	C, C-9	1500	4 7/16
G30	Med		14190	●▲	40G25/N/CVP130V	130	6	Soft White Globe	C, C-9	1500	4 7/16
			14287	●▲	40G25/N/RP	120	6	Soft White Globe	C, C-9	1500	4 7/16
	Med		14267	●▲	40G25/N	120	24	Soft White Globe	C, C-9	1500	4 7/16
			14213	●▲	40G25/N/3PK/RP	120	24	Soft White Globe	C, C-9	1500	4 7/16
	G40		14235	●▲	40G25/N/DIYPACK	120	24	Soft White Globe	C, C-9	1500	4 7/16
			14405	●	40G30/N/RP	120	6	Soft White Globe	C, C-9	2500	5 1/2
	G40		14619	●	40G40/RP	120	6	Clear Globe	C, C-9	2500	6 15/16
			14620	●	40G40/N/RP	120	6	Soft White Globe	C, C-9	2500	6 15/16
60	A19	Med Brass	10613		60A/SB	120	120	Silver Bowl	C, CC-8	1000	4 7/16
		Candelabra	13777	●▼▲	60B10C/DL/BL/2PK	120	12	Clear Double Life Décor Bent Tip	C, C-7A	3000	3 7/8
	B10		13705	●▼▲	60B10C/DL/BL/4PK	120	24	Clear Double Life Décor Bent Tip Four Pack	C, C-7A	3000	3 7/8
			13744	●▼▲	60B10C/CRYSTAL/DL/BL/2PK	120	12	Double Life Crystal Bent Tip	C, C-7A	3000	3 7/8
			13749*	●▼▲	60B10C/CRYSTAL/DL/BL/4/24	120	24	Double Life Crystal Bent Tip	C, C-7A	3000	3 7/8
			13778	●▼▲	60B10C/DLF/BL/2PK	120	12	Frosted Double Life Décor Bent Tip	C, C-7A	3000	3 7/8
			13754*	●▼▲	60B10C/DLF/BL/4PK	120	24	Frosted Double Life Décor Bent Tip	C, C-7A	3000	3 7/8
			13460	●▼▲	60B10C/BL/2PK	120	12	Clear Décor Bent Tip	C, C-7A	1500	3 7/8
			13649	●▼▲	60B10C/BL/4PK	120	24	Clear Décor Bent Tip	C, C-7A	1500	3 7/8
			13572	●▼▲	60B10C/BAGPK	120	200	Clear Décor Bent Tip	C, C-7A	1500	3 7/8
			13684	●▼▲	60B10C/T/BL/2PK	120	12	Clear Décor Blunt Tip	C, C-7A	1500	3 7/8
			13461	●▼▲	60B10C/F/BL/2PK	120	12	Frosted Décor Bent Tip	C, C-7A	1500	3 7/8
			13685	●▼▲	60B10C/F/T/BL/2PK	120	12	Frosted Décor Blunt Tip	C, C-7A	1500	3 7/8
	Med		13323	●▼▲	60B10/DL/BL/2PK	120	12	Clear Double Life Décor Bent Tip	C, C-7A	3000	3 13/16
			13333*	●▼▲	60B10/DL/BL/4PK	120	24	Clear Double Life Décor Bent Tip	C, C-7A	3000	3 13/16



B10



C15



F15



G16.5



G25



G30



G40



A21



P25



PS25



PS35

INCANDESCENT

## DECORATIVE LAMPS

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Description	Class & Filament	Avg Rated Life(hrs)	MOL (in)
60	B10	Med	13324	●	60B10/DLF/BL/2PK	120	12	Frosted Double Life Décor Bent Tip	C, C-7A	3000	3 <sup>13</sup> / <sub>16</sub>
			13442	●	60B10/BL/2PK	120	12	Clear Décor Bent Tip	C, C-7A	1500	3 <sup>13</sup> / <sub>16</sub>
			13650	●	60B10/BL/4PK	120	24	Clear Décor Bent Tip	C, C-7A	1500	3 <sup>13</sup> / <sub>16</sub>
			13721	●	60B10/T/BL/2PK	120	12	Clear Décor Blunt Tip	C, C-7A	1500	3 <sup>9</sup> / <sub>16</sub>
			13443	●	60B10/F/BL/2PK	120	12	Frosted Décor Bent Tip	C, C-7A	1500	3 <sup>13</sup> / <sub>16</sub>
			13722	●	60B10/F/T/BL/2PK	120	12	Frosted Décor Blunt Tip	C, C-7A	1500	3 <sup>9</sup> / <sub>16</sub>
	C15	Med	13757	●	60C15/SG/BL	120	6	Spun-Glo Clear Fiber Wrapped	C, C-9	4000	4 <sup>1</sup> / <sub>2</sub>
	F15	Med	13992	●	60F/BL	120	12	Clear Flame Shape	C, C-7A	1500	4 <sup>1</sup> / <sub>2</sub>
			13993	●	60F/CL	120	24	Clear Flame Shape	C, C-7A	1500	4 <sup>1</sup> / <sub>2</sub>
			13982	●	60F/IC/BL/2PK	120	12	Iridescent Flame Shape	C, C-7A	1500	4 <sup>1</sup> / <sub>2</sub>
	G16.5	Candelabra	13665	●	60G16.5C/BL	120	12	Clear Globe	C, C-2	1500	3
			13664	●	60G16.5C/W/BL	120	12	Soft White Globe	C, C-2	1500	3
		Med	10302	●	60G16.5/BL	120	12	Clear Globe	C, C-7A	1500	3
			10301	●	60G16.5/W/BL	120	12	White Globe	C, C-7A	1500	3
	G25	Med	13967	●	60G25/DAY/1/6	120	6	Daylight Globe	C, C-9	1500	4 <sup>7</sup> / <sub>16</sub>
			14003	●	60G25/DAY/1/48	120	48	Daylight Globe	C, C-9	1500	4 <sup>7</sup> / <sub>16</sub>
			14149	●	60G25/DL/RP	120	6	Clear Double Life Globe	C, C-9	3000	4 <sup>7</sup> / <sub>16</sub>
			14150	●	60G25/DLSW/RP	120	6	Soft White Double Life Globe	C, C-9	3000	4 <sup>7</sup> / <sub>16</sub>
			14104	●	60G25/DLSW/RP/48	120	48	Soft White Double Life Globe	C, C-9	3000	4 <sup>7</sup> / <sub>16</sub>
			14106	●	60G25/DL/RP/48	120	48	Clear Double Life Globe	C, C-9	3000	4 <sup>7</sup> / <sub>16</sub>
			14261	●	60G25/RP	120	6	Clear Globe	C, C-9	1500	4 <sup>7</sup> / <sub>16</sub>
			14280	●	60G25	120	24	Clear Globe	C, C-9	1500	4 <sup>7</sup> / <sub>16</sub>
			14214	●	60G25/3PK/RP	120	24	Clear Globe	C, C-9	1500	4 <sup>7</sup> / <sub>16</sub>
			14262	●	60G25/W/RP	120	6	Soft White Globe	C, C-9	1500	4 <sup>7</sup> / <sub>16</sub>
			14281	●	60G25/W	120	24	Soft White Globe	C, C-9	1500	4 <sup>7</sup> / <sub>16</sub>
			14215	●	60G25/W/3PK/RP	120	24	Soft White Globe	C, C-9	1500	4 <sup>7</sup> / <sub>16</sub>
	G30	Med	14407	●	60G30/RP	120	6	Clear Globe	C, C-9	2500	5 <sup>1</sup> / <sub>2</sub>
			14406	●	60G30/W/RP	120	6	Soft White Globe	C, C-9	2500	5 <sup>1</sup> / <sub>2</sub>
	G40	Med	14621	●	60G40/RP	120	6	Clear Globe	C, C-9	2500	6 <sup>15</sup> / <sub>16</sub>
			14622	●	60G40/W/RP	120	6	Soft White Globe	C, C-9	2500	6 <sup>15</sup> / <sub>16</sub>
100	A21	Med	13195	● 2	100A21/1SB/IF	120	24	Silver Bowl	C, CC-6	1000	5 <sup>5</sup> / <sub>16</sub>
	G40	Med	14623	●	100G40/RP	120	6	Clear Globe	C, C-9	2500	6 <sup>15</sup> / <sub>16</sub>
			14624	●	100G40/W/RP	120	6	Soft White Globe	C, C-9	2500	6 <sup>15</sup> / <sub>16</sub>
150	G40	Med	14913	●	150G40/W/RP	120	6	Soft White Globe	C, C-9	2500	6 <sup>15</sup> / <sub>16</sub>
	P25	Med Brass	15014	2	150P25/2SB	120	60	Silver Bowl Clear Hard Glass Button	C, C-5	200	4 <sup>3</sup> / <sub>4</sub>
	PS25	Med	15271	●	150PS25/SB	120	60	Silver Bowl	C, C-9	1000	6 <sup>15</sup> / <sub>16</sub>
300	PS35	Mogul	15958		300PS35/SB/IF	120	24	Silver Bowl Inside Frost Brass Base	C, C-9	1000	9 <sup>3</sup> / <sub>8</sub>



A19



A21



A23

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## TRAFFIC SIGNAL LAMPS

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Description	Class & Filament	Avg Rated Life(hrs)	Approx Lumens	LCL (in)	MOL (in)
54	A19	Med Brass	10441	▼13	54A19TS/8M/SS	120	120	Clear Traffic Signal KR Filled w/ Heat Reflector	C, C-11V	8000	515	2 7/16	4 7/16
60	A19	Med Brass	10442	▼13	60A19TS/8M/SS	120	120	Clear Traffic Signal KR Filled w/ Heat Reflector	C, C-11V	8000	595	2 7/16	4 7/16
67	A21	Med Brass	12570	▼	67A21/40/8M	120	24	Clear Traffic Signal	C, C-9	8000	610	2 7/16	4 7/16
			12562	▼	67A21/40/8M	130	120	Clear Traffic Signal	C, C-9	8000	610	2 7/16	4 7/16
			12572	▼	67A21/40/8M	130	24	Clear Traffic Signal	C, C-9	8000	610	2 7/16	4 7/16
69	A21	Med Brass	12496	▼	69A21/TS/8M	120	24	Clear Traffic Signal	C, C-9	8000	640	2 7/16	4 7/16
			12497	▼	69A21/TS/8M	125	24	Clear Traffic Signal	C, C-9	8000	665	2 7/16	4 7/16
			12498	▼	69A21/TS/8M	130	24	Clear Traffic Signal	C, C-9	8000	640	2 7/16	4 7/16
90	A19	Med Brass	12299	▼13	90A19/1/TS/8M/SS	120	120	Clear Traffic Signal KR Filled w/ Heat Reflector	C, C-11V	8000	1000	3	4 7/16
			11151	▼★13	90A19/TS/8M/SS	120	120	Clear Traffic Signal KR Filled w/ Heat Reflector	C, C-11V	8000	1000	2 7/16	4 7/16
101	A23	Med Brass	13305	▼	101A23/6M	120	120	Inside Frost Traffic Signal	C, C-9	6000	900	4 3/8	6 1/16
116	A21	Med Brass	12833	▼	116A21/TS/8M	120	24	Clear Traffic Signal	C, C-9	8000	1260	2 7/16	4 7/16
			12838	▼	116A21/TS/8M	125	24	Clear Traffic Signal	C, C-9	8000	1235	2 7/16	4 7/16
			12817	▼	116A21/TS/8M	130	24	Clear Traffic Signal	C, C-9	8000	1260	2 7/16	4 7/16
135	A21	Med Brass	12843	▼13	135A21/TS/8M/SS	120	24	Clear Traffic Signal KR Filled w/ Heat Reflector	C, C-11V	8000	1750	3	4 7/16
170	A23	Med Brass	15017	▼	1950L/A23/8M	120	60	Clear Traffic Signal	C, C-9	8000	1950	3	4 3/4
			15019	▼	1950L/A23/8M	125	60	Clear Traffic Signal	C, C-9	8000	1950	3	4 3/4
			15021	▼	1950L/A23/8M	130	60	Clear Traffic Signal	C, C-9	8000	1950	3	4 3/4

## SYMBOLS & FOOTNOTES FOR INCANDESCENT LAMPS

Symbol	Description
	New item introduced within the past year.
	Indicates aluminum base.
	Do not operate in household sockets.
	Operate base down.
	Operate base down to horizontal.
	Heat resistant, hard glass.
	PAR lamps are suitable for indoor and outdoor use.
	Not recommended for horizontal operation.
	Do not operate in paper lined sockets.
	Operate in any position.
	This lamp or ballast meets minimum Federal efficiency standards.
	This ECOLOGIC® lamp was designed to pass the Federal TCLP criteria for classification as non-hazardous waste in most states. Disposal regulations may vary; check local and state regulations.
<b>RG3</b>	Lamp qualifies as Risk Group 3 per ANSI / IESNA RP27.3-96.
	Use Caution when operating this product. Read and understand all warnings and instructions on packaging before installation.

### Footnote Description

1	Should not be used in equipment where base temperature will exceed 500° F.
2	Operate only in porcelain sockets.
3	Not recommended for use in enclosed close-fitting housings.
4	May not give satisfactory performance if any accessory lighting equipment touches the glass bulb.
5	Should be shielded against moisture falling on bulb.
6	Not for use in ceiling fan fixtures
7	Nominal wattage - actual may be slightly higher to achieve required light output.
8	Indefinite long life. Designed for life in excess of 10,000 hours. In-service life depends upon burning conditions.
9	Average laboratory life is 200 hours for vacuum cleaner and 600 hours for sewing machine services.
10	Additional product information can be found in the SYLVANIA Automotive, Miniature and Sealed Beam Lamp Catalog Form 208.
11	Incandescent lamps operated at less than rated voltage provide a lower light output, longer life, lower color temperature and are less efficient in terms of lumens per watt.
12	In base up operation, heat may eventually deteriorate paper-lined or plastic sockets.
13	Minimum run. Check nearest OSRAM SYLVANIA Sales Office for details.
14	For diesel electric locomotives without voltage regulators.
15	Operation of lamp in any position other than base up may result in some loss of protective coating.
16	For use only with heat-resisting connector and with bulb supported by bulb rim or metal shell of base.
17	Operate only in porcelain or other socket approved for 150 watt PAR lamp.
18	Designed for service other than illumination.
19	A protective shield must be used external to the lamp.
20	High temperature base. Designed to operate in equipment where base temperature run between 500F - 570F.

## OSRAM SYLVANIA: THE LEADER IN HALOGEN LAMP TECHNOLOGY

Halogen lamps are generally of the 'lamp within a lamp' design. The outer 'lamp' or jacket is made from a heavy walled borosilicate glass.

The inner 'lamp' is the tungsten halogen capsule that is made from either glass or quartz and contains a filament, lead wires and a halogen gas mixture.

### CAPSYLITE IR®

Save energy while still making your merchandise stand out from the crowd. Energy efficient SYLVANIA CAPSYLITE IR lamps use a specially designed halogen light source that actually recycles some of the heat it creates to generate more light for less energy.



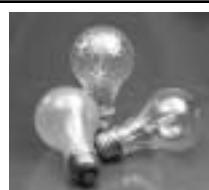
### Daylight Plus™ PAR

The special blue lenses on these halogen PAR lamps help to fill your space with whiter, more natural light.



### CAPSYLITE® Daylight Plus A-Line

Replace a standard incandescent lamp with a CAPSYLITE Daylight Plus A-Line lamp to get a crisp, bright, more natural light that really lasts. Average rated life for these lamp types is 3,000 to 3,500 hours - up to four times the ratings of the lamps that they replace!



### PAR38

PAR38 lamps are energy saving replacements for standard incandescent BR40 lamps. They are also the workhorses of retail lighting. SYLVANIA CAPSYLITE SPL PAR38 lamps offer cutting edge optics and optimal performance to make your merchandise look its best.



### PAR30 Long Neck

These energy efficient replacements for BR30 lamps are used everywhere from recessed cans to track lights. More efficient than competitors long neck PAR30 lamps because of our unique neck extender design, SYLVANIA PAR30LN SPL® lamps are the perfect choice every time.



### PAR20

SYLVANIA CAPSYLITE SPL PAR20 lamps are energy saving replacements for standard incandescent R20 lamps. Replacing a 50W R20 lamp with a SYLVANIA exclusive 35PAR20 lamp results in an energy savings of 15W per lamp with an increase in light output of nearly 10%!



### TRU-AIM® Low Voltage Lamps

SYLVANIA's complete line of TRU-AIM low voltage lamps offer something for everyone. Choose from standard MR16s (TRU-AIM), aluminized MR16s (TRU-AIM Brilliant) or top of the line TRU-AIM IR.

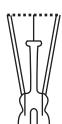


**FILAMENTS**

CC-8



CC-2V



CC-6



Axial (AX)



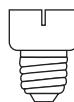
Tranverse (TR)



C-8 Double End

**BASES**E10  
Miniature Screw

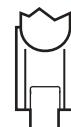
E11 Mini can



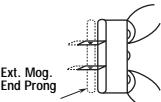
E26 Medium Skt.



E26 Medium

Recessed Single Contact  
RSC  
R7s

Screw Term.

DC Bayonet  
B15d  
BA15d

Mogul End Prong



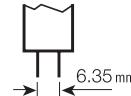
G4



G9



G53



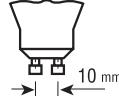
GY 6.35



GU4



GU5.3



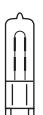
GU10



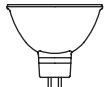
Med Side Pr.

**LAMPS**

T3, T4 BI-PIN



T4 G9.



MR16, MR11



PAR14



PAR16



PAR16 GU10



PAR20



PAR30



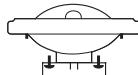
PAR30LN

PAR36  
Medium Skt.

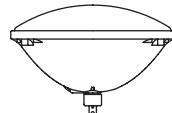
PAR38

PAR38  
Medium Side Prong

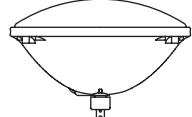
AR70



AR111



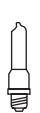
PAR56 Mog End Pr.



PAR64 Mog End Pr.



T4 DC Bayonet



T3, T4 Mini Can



T3, T4 RSC Double End



T10



A19



The following item was accepted into 2003 IESNA Progress Report which recognizes innovative products introduced to the industry during that year.

40 Watt PAR 20 CAPSYLITE IR®

## HOW TO READ PRODUCT INFORMATION - TUNGSTEN HALOGEN

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Lamp Finish	Beam Type	Class & Filament	Avg Rated Life (hrs)	Approx Lumens	CBCP	Beam Angle (in)	LCL (in)	MOL (in)
40	T4	G9	57017*	5,10	40CAPSYLITEG9/F/BL	120	10	Frosted		C, CC-2V	2000	480			1	1 7/8
60	PAR38	E26 Med Skt	14466	5,10,11	60PAR/CAP/IR/FL30	120	15	Flood	Flood	CC-8	3000	1110	3600	30		5 5/8
50	PAR30LN	E26 Med	14520	5,10,19,20	50PAR30LN/CAP/NFL25	120	15	Narrow Flood	CC-8		2500	660	2300	25		4 1/8

**Bulb** Describes the shape of the bulb followed by the bulb's major diameter given in eighths of an inch.

See page 35: Halogen Lamps.

**Base** See page 35: Base Identification.

**Symbols & Footnotes** All symbols and footnotes that apply to a specific product will appear in this space. The explanations of the symbols and footnotes are at the end of the halogen section on page 56-57.

**Lamp Finish** Applies only to non-reflector type lamps, usually either clear or frosted.

**Beam Type** Applies only to reflector type lamps. Describes the beam angle qualitatively as either a spot or a flood, etc.

## How to Read Ordering Abbreviations

40CAPSYLITE®/G9/F/BL	60PAR/CAP/IR/FL30	50PAR30LN/CAP/SPL/NFL25
40 Nominal lamp wattage	60 Nominal lamp wattage	50 Nominal lamp wattage
CAPSYLITE/G9 CAPSYLITE lamp with G9 base	PAR Bulb shape PAR38	PAR30LN Bulb shape PAR30 Long Neck
F Frosted finish	CAP CAPSYLITE lamp	CAP CAPSYLITE lamp
BL Blister Card Package	IR Infrared conserving capsule	SPL SPL Optical System
	FL30 Flood beam 30 degrees	NFL25 Narrow Flood beam 25 degrees

## ANSI BEAM ANGLE DESIGNATION

Beam angles for reflector lamps are designated to conform with ANSI C78.379 -Classification of the Beam Patterns of Reflector Lamps. For beam angles less than 13°, beam angles are rounded to the nearest whole number. For beam angles between 13° and 50°, values are rounded to the nearest 5°. For beam angles 50° and greater, the value is rounded to the nearest 10°. As an example, a family of lamps with an average beam angle of 13° is classified as 15°, and a family of lamps with an average beam angle of 55° would be classified as 60°.

## LIFE RATING

The average rated life for 130V tungsten halogen lamps operated at 120V is conservatively estimated to be approximately 2 times the life when operated at rated voltage (130V).

ANSI ITEM CODE NO.	L.L. ORDERING ABBREVIATION (EXCEPT VOLTS)	VOLTS	PAGE	ANSI ITEM CODE NO.	L.L. ORDERING ABBREVIATION (EXCEPT VOLTS)	VOLTS	PAGE	ANSI ITEM CODE NO.	L.L. ORDERING ABBREVIATION (EXCEPT VOLTS)	VOLTS	PAGE
BAB 54200	20MR16/FL/40	12	53	ETF 58737	150Q/DC	120	49	FMW 54203	35MR16/FL/40	12	53
EHM 58923	300T3Q/CL	120	50	ETG 58735	150Q/CL/MC/2	120	49	FNV 54206	50MR16/VWFL60	12	53
EHT 58762	250Q/CL/MC	120	49	ETH 58736	150Q/MC	120	49	FRA 58602	35MR16/SP20	12	53
ESL 58738	150Q/CL/MC	120	49	EVR 58766	500Q/CL/MC	120	49	FRB 54204	35MR16/NSP/8	12	53
ESM 58763	250Q/MC	120	49	EXN 54207	50MR16/FL/40	12	53	FPA 58563	65MR16/NSP/10	12	53
ESN 58761	100Q/CL/MC	120	49	EXT 54208	50MR16/NSP/12	12	53	FPC 58565	65MR16/NFL/25	12	53
ESP 58742	150Q/CL/DC/1	120	49	EXZ 54205	50MR16/NFL/25	12	53	FPB 58564	65MR16/FL/40	12	53
ESR 58755	100Q/CL/DC	120	49	EYT 58769	750Q/CL/MC	120	49	FTB 55109	20MR11/SP10	12	53
ESS 58720	250Q/CL/DC	120	49	EYV 58768	500Q/MC	130	49	FTD 55107	20MR11/FL35	12	53
ESX 54201	20MR16/NSP/8	12	53	EYW 58756	500Q/CL/MC	130	49	FTE 55113	35MR11/SP10	12	53
ETB 58753	250Q/DC	120	49	EYX 58767	500Q/MC	120	49	FTH 55111	35MR11/FL40	12	53
ETC 58741	150Q/CL/DC	120	49	FCL 58856	500T3Q/CL	120	50				
ETD 58757	100Q/DC	120	49	FCZ 58883	500T3Q	120	49				

## TUNGSTEN HALOGEN BRAND NAME GUIDE

SYLVANIA	GE*	PHILIPS**	OSRAM***
CAPSYLITE® SPL® PAR38	HALOGEN PLUS PAR 38	MasterLine PAR38 DiOptic	HALOPAR38
CAPSYLITE SPL PAR30	Compact PAR30	MasterLine PAR30S WISO	HALOPAR30
CAPSYLITE SPL PAR30 Long Neck	Compact PAR30 Long Neck	MasterLine PAR30L Long Neck WISO	
CAPSYLITE SPL PAR20	Compact PAR20	MasterLine PAR20 WISO	HALOPAR20
CAPSYLITE Designer 16	HALOGEN Compact PAR16	MasterLine PAR16	HALOPAR16
TRU-AIM TITAN®	ConstantColor Precise	Continuum Color	Decostar 51 TITAN
TRU-AIM® Standard MR16	Standard MR16	BrilliantLine Pro MR16	Decostar 51
TRU-AIM IR	PRECISE COVERGLASS IR MR16	MasterLine ES IRC MRC16	Decostar 51 IRC
TRU-AIM Standard MR11	STANDARD MR11	BrilliantLine Pro MRC11	Decostar 35
TRU-AIM BRILLIANT®		Continuum Pro Aluminum Coated	Decostar 51 ALU
STANDARD Bi-Pin	Quartz Halogen	Halogen Low Voltage Capsule	HALOSTAR Standard
STARLITE Bi-Pin		Halogen Low Voltage Capsule	HALOSTAR STARLITE
Double End	Quartzline Halogen	Halogen Double-Ended Linear	HALOLINE
SUPER Q	Quartzline Halogen	Halogen Single-Ended	HALOLUX Ceram
Double End Quartz Infrared Heat	Tubular Quartz Heat	Quartz Infrared Heat	
Large PAR	Quartzline Halogen	Halogen PAR56 and PAR64	
CAPSYLITE A-Line Midbreak	Halogen A-Line	Halogena	HALOLUX BT
Halogen T10			HALOLUX Ceram
AR111			HALOSPOT 111
AR70			HALOSPOT 70
SYLVANIA 250W CAPSYLITE PAR 38	Quartzline PAR38		
CAPSYLITE IR® PAR38	HIR PAR 38	MasterLine IRC PAR38	
CAPSYLITE IR PAR30	Compact HIR PAR 30		
CAPSYLITE COOL-LUX	Cool Beam PAR 38		

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For weight and measurement information, please visit [www.sylvania.com](http://www.sylvania.com)



A19



T10

## CAPSYLITE® A-LINE

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Lamp Finish	Class & Filament	Avg Rated Life(hrs)	Lumens	LCL (in)	MOL (in)
42	A19	E26 Med	18907		42A/CAP	120	12	Inside Frost	C, CC-8	3500	570	3 1/8	4 3/8
			18908		42A/CAP	130	12	Inside Frost	C, CC-8	3500	570	3 1/8	4 3/8
@ 120 volts, approximate 37 watts, 450 lumens, 7000 hours													
52	A19	E26 Med	18921		52A/CAP	120	12	Inside Frost	C, CC-8	3500	770	3 1/8	4 3/8
			18922		52A/CAP	130	12	Inside Frost	C, CC-8	3500	770	3 1/8	4 3/8
@ 120 volts, approximate 46 watts, 600 lumens, 7000 hours													
72	A19	E26 Med	18937		72A/CAP	120	12	Inside Frost	C, CC-8	3500	1150	3 1/8	4 3/8
			18938		72A/CAP	130	12	Inside Frost	C, CC-8	3500	1150	3 1/8	4 3/8
@ 120 volts, approximate 63 watts, 900 lumens, 7000 hours													

## DAYLIGHT PLUS™ A-LINE

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Lamp Finish	Class & Filament	Avg Rated Life(hrs)	Lumens	LCL (in)	MOL (in)
60	A19	E26 Med	18998*		60A/HAL/DAY/CL/CLAM	120	6	Clear	C, CC-8	3000	960	3 1/8	4 3/8
			18999*		60A/HAL/DAY/CLAM	120	6	Frosted	C, CC-8	3000	960	3 1/8	4 3/8
			18942*		60A/HAL/DAY/CRYSTAL/CLAM	120	6	Crystal	C, CC-8	3000	960	3 1/8	4 3/8
75	A19	E26 Med	19000*		75A/HAL/DAY/CL/CLAM	120	6	Clear	C, CC-8	3000	1330	3 1/8	4 3/8
			18997*		75A/HAL/DAY/CLAM	120	6	Frosted	C, CC-8	3000	1300	3 1/8	4 3/8
			18906*		75A/HAL/DAY/CRYSTAL/CLAM	120	6	Crystal	C, CC-8	3000	1330	3 1/8	4 3/8
100	A19	E26 Med	19003*		100A/HAL/DAY/CL/CLAM	120	6	Clear	C, CC-8	3000	1800	3 1/8	4 3/8
			18905*		100A/HAL/DAY/CLAM	120	6	Frosted	C, CC-8	3000	1800	3 1/8	4 3/8

## TUBULAR HALOGEN T10

A suitable protective shield, screening technique or both shall be used to protect people and surroundings from the possibility of a lamp shattering and from possible ultraviolet radiation.

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Lamp Finish	Class & Filament	Avg Rated Life(hrs)	Lumens	LCL (in)	MOL (in)
75	T10	E26 Med	18890	2	75T10HAL/CL	120	15	Clear	C, CC-2V	2000	1100	2 15/16	4 1/8
			18891	2	75T10HAL/F	120	15	Frosted	C, CC-2V	2000	1050	2 15/16	4 1/8
100	T10	E26 Med	18892	2	100T10HAL/CL	120	15	Clear	C, CC-2V	2000	1500	2 15/16	4 1/8
			18893	2	100T10HAL/F	120	15	Frosted	C, CC-2V	2000	1430	2 15/16	4 1/8
150	T10	E26 Med	18894	2,3	150T10HAL/CL	120	15	Clear	C, CC-2V	2000	2500	2 15/16	4 1/8
			18895	2,3	150T10HAL/F	120	15	Frosted	C, CC-2V	2000	2400	2 15/16	4 1/8
250	T10	E26 Med	18896	2,3	250T10HAL/CL	120	15	Clear	C, CC-2V	2000	4200	2 15/16	4 1/8
			18897	2,3	250T10HAL/F	120	15	Frosted	C, CC-2V	2000	4000	2 15/16	4 1/8



MR16



PAR20



PAR30

## INFRARED CONSERVING HALOGEN

### TRU-AIM IR® MR16

UV Filter capsule with axial filament in covered constant color, hard coated dichroic reflector and infrared reflective coating on the lamp capsule.

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Pkg Volts Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
20	MR16	GU5.3	58531	4,5,6, 7,8	20MR16/IR/SP10/C	12 20	Spot	C, AX	4000	6000	10	1 3/4	
			58532	4,5,6, 7,8	20MR16/IR/NFL25/C	12 20	Narrow Flood	C, AX	4000	2300	25	1 3/4	
			58533	4,5,6, 7,8	20MR16/IR/FL40/C	12 20	Flood	C, AX	4000	1000	40	1 3/4	
			58838	4,5,6, 7,8	20MR16/IR/WFL60/C	12 20	Wide Flood	C, AX	4000	450	60	1 3/4	
37	MR16	GU5.3	58641	4,5,6, 8,10	37MR16/IR/SP10/C	12 20	Spot	C, AX	4000	12500	10	1 3/4	
			58634	4,5,6, 8,10	37MR16/IR/NFL25/C	12 20	Narrow Flood	C, AX	4000	4400	25	1 3/4	
			58633	4,5,6, 8,10	37MR16/IR/FL40/C	12 20	Flood	C, AX	4000	2200	40	1 3/4	
			58837	4,5,6, 8,10	37MR16/IR/WFL60/C	12 20	Wide Flood	C, AX	4000	1100	60	1 3/4	
50	MR16	GU5.3	54175	4,5,6, 8,10	50MR16/IR/SP10/C	12 20	Spot	C, AX	4000	15000	10	1 3/4	
			54174	4,5,6, 8,10	50MR16/IR/NFL25/C	12 20	Narrow Flood	C, AX	4000	5700	25	1 3/4	
			54173	4,5,6, 8,10	50MR16/IR/FL40/C	12 20	Flood	C, AX	4000	2850	40	1 3/4	
			54237	4,5,6, 8,10	50MR16/IR/WFL60/C	12 20	Wide Flood	C, AX	4000	1430	60	1 3/4	

### CAPSYLITE IR® PAR20

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Pkg Volts Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
40	PAR20	E26 Med	14164	★  4,11,12	40PAR20/CAP/IR/NSP10	120 15	Narrow Spot	C, CC-8	4000	600	5000	10	3 1/4
			14166	★  4,11,12	40PAR20/CAP/IR/NFL30	120 15	Narrow Spot	C, CC-8	4000	600	1300	30	3 1/4
			14130	★  4,11,12	40PAR20/CAP/IR/WFL40	120 15	Wide Flood	C, CC-8	4000	600	1000	40	3 1/2

### CAPSYLITE IR® PAR30

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Pkg Volts Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
40	PAR30	E26 Med	13968	★  4,11,12	40PAR30/CAP/IR/NSP9	120 15	Narrow Spot	C, CC-8	4000	680	8800	9	3 5/8
			13969	★  4,11,12	40PAR30/CAP/IR/NFL25	120 15	Narrow Flood	C, CC-8	4000	680	2300	25	3 5/8
			13970	★  4,11,12	40PAR30/CAP/IR/FL40	120 15	Flood	C, CC-8	4000	680	1300	40	3 5/8
50	PAR30	E26 Med	14355	★  4,11,12	50PAR30/CAP/IR/NSP9	120 15	Narrow Spot	C, CC-8	3000	900	13000	9	3 5/8
			14109	★  4,11,12 @ 120 volts, approximate 44 watts, 690 lumens, 6000 hours.	50PAR30/CAP/IR/NSP9	130 15	Narrow Spot	C, CC-8	3000	900	13000	9	3 5/8
			14354	★  4,11,12	50PAR30/CAP/IR/NFL25	120 15	Narrow Flood	C, CC-8	3000	900	2900	25	3 5/8



PAR30



PAR38

## INFRARED CONSERVING HALOGEN

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
50	PAR30	E26 Med	14132	★  1,4,11,12 @ 120 volts, approximate 44 watts, 690 lumens, 6000 hours.	50PAR30/CAP/IR/NFL25	130	15	Narrow Flood	C, CC-8	3000	900	2900	25	3 5/8
			14714	★  4,11,12	50PAR30/CAP/IR/FL40	120	15	Flood	C, CC-8	3000	900	1400	40	3 5/8
			14131	★  1,4,11,12 @ 120 volts, approximate 44 watts, 690 lumens, 6000 hours.	50PAR30/CAP/IR/FL40	130	15	Flood	C, CC-8	3000	900	1400	40	3 5/8

### CAPSYLITE IR® PAR38

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
50	PAR38	E26 Med Skt	14136	★  4,11,12,13 @ 120 volts, approximate 44 watts, 650 lumens, 6000 hours.	50PAR38/CAP/IR/SP9	120	15	Spot	C, CC-8	3000	850	14000	9	5 5/16
			14124	★  1,4,11,12,13	50PAR38/CAP/IR/SP9	130	15	Spot	C, CC-8	3000	850	14000	9	5 5/16
			14138	★  4,11,12,13	50PAR38/CAP/IR/NFL25	120	15	Narrow Flood	C, CC-8	3000	850	3000	25	5 5/16
			14125	★  1,4,11,12,13 @ 120 volts, approximate 44 watts, 650 lumens, 6000 hours.	50PAR38/CAP/IR/NFL25	130	15	Narrow Flood	C, CC-8	3000	850	3000	25	5 5/16
55	PAR38	E26 Med Skt	14126	★  4,11,12,13	55PAR38/CAP/IR/XP/SP9	120	15	Spot	C, CC-8	6000	800	14000	9	5 5/16
			14127	★  4,11,12,13	55PAR38/CAP/IR/XP/FL30	120	15	Flood	C, CC-8	6000	800	2500	30	5 5/16
60	PAR38	E26 Med Skt	14485	★  4,11,12,13 @ 120 volts, approximate 53 watts, 845 lumens, 6000 hours.	60PAR38/CAP/IR/SP9	120	15	Spot	C, CC-8	3000	1110	20000	9	5 5/16
			14716	★  1,4,11,12,13	60PAR38/CAP/IR/SP9	130	15	Spot	C, CC-8	3000	1110	20000	9	5 5/16
			14360	★  4,11,12,13	60PAR38/CAP/IR/WSP12	120	15	Wide Spot	C, CC-8	3000	1110	12000	12	5 5/16
			14442	★  4,11,12,13	60PAR38/CAP/IR/NFL25	120	15	Narrow Flood	C, CC-8	3000	1110	5000	25	5 5/16
			14466	★  4,11,12,13	60PAR38/CAP/IR/FL30	120	15	Flood	C, CC-8	3000	1110	3600	30	5 5/16
			14715	★  1,4,11,12,13 @ 120 volts, approximate 53 watts, 845 lumens, 6000 hours.	60PAR38/CAP/IR/FL30	130	15	Flood	C, CC-8	3000	1110	3600	30	5 5/16
			14347	★  4,12,13	80PAR38/CAP/IR/SP10	120	12	Spot	C, CC-8	3000	1500	25000	10	5 5/16
80	PAR38	E26 Med Skt	14327	★  4,12,13	80PAR38/CAP/IR/FL25	120	12	Flood	C, CC-8	3000	1500	5500	25	5 5/16
			14324	★  4,12,13	100PAR38/CAP/IR/SP10	120	12	Spot	C, CC-8	3000	2070	29000	10	5 5/16
			14319	★  4,12,13	100PAR38/CAP/IR/NFL25	120	12	Narrow Flood	C, CC-8	3000	2070	6300	25	5 5/16
100	PAR38	E26 Med Skt	14311	★  4,12,13	100PAR38/CAP/IR/FL40	120	12	Flood	C, CC-8	3000	2070	3400	40	5 5/16



PAR20



PAR30LN



PAR38



PAR14



PAR16 GU10



PAR16

TUNGSTEN HALOGEN

## CAPSYLITE® PAR DAYLIGHT PLUS™ PAR

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Pkg Volts	Pkg Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
50	PAR20	E26 Med	15226*	★  12	50PAR20/DAY/NFL/RP	120	6	Narrow Flood	C, CC-8	2000	460	1000	30	3 1/8
	PAR30LN	E26 Med	15227*	★  12,15	50PAR30LN/DAY/NFL/RP	120	6	Wide Flood	C, CC-8	2000	580	550	50	4 5/8
	PAR38	E26 Med Skt	15229*	★  12	50PAR38/DAY/FL/RP	120	6	Flood	C, CC-8	2000	560	1550	30	5 5/16
60	PAR38	E26 Med Skt	15252*	★  12	60PAR38/CAP/DAY/SP9	120	15	Spot	C, CC-8	2500	725	13500	9	5 5/16
			15251*	★  12	60PAR38/CAP/DAY/FL30	120	15	Flood	C, CC-8	2500	725	2150	30	5 5/16
75	PAR30LN	E26 Med	15228*	★  12,15	75PAR30LN/DAY/NFL/RP	120	6	Wide Flood	C, CC-8	2000	1000	1000	50	4 5/8
	PAR38	E26 Med Skt	15230*	★  12	75PAR38/DAY/FL/RP	120	6	Flood	C, CC-8	2000	960	2800	30	5 5/16

## CAPSYLITE® PAR14

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Pkg Volts	Pkg Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
35	PAR14	E26 Med	14553	12,16	35PAR14/CAP/FL50/RP	120	6	Flood	C, CC-8	2000	300	85	50	2 7/16

## DESIGNER 16® - CAPSYLITE® PAR16

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Pkg Volts	Pkg Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
50	PAR16	GU10	59020*	★	50PAR16/HAL/GU10/FL/CLAM	120	6	Flood	C, CC-2V	1000	400	640	40	2 1/4
			59024	★	50PAR16/CAP/GU10/FL40	120	10	Flood	C, CC-2V	1000	400	640	40	2 1/4
60	PAR16	E26 Med	59037	12,16	60PAR16/HAL/NSP10/RP	120	6	Narrow Spot	C, CC-8	2000	650	5000	10	2 7/8
			59032	12,16	60PAR16/CAP/NSP10	120	15	Narrow Spot	C, CC-8	2000	650	5000	10	2 7/8
			59040	1,12,16 @ 120 volts, approximate 53 watts, 495 lumens, 4000 hours	60PAR16/CAP/NSP10	130	15	Narrow Spot	C, CC-8	2000	650	5000	10	2 7/8
			59031	12,16	60PAR16/HAL/NFL30/RP	120	6	Narrow Flood	C, CC-8	2000	650	1300	30	2 7/8
			59030	12,16	60PAR16/CAP/NFL30	120	15	Narrow Flood	C, CC-8	2000	650	1300	30	2 7/8
			59038	1,12,16 @ 120 volts, approximate 53 watts, 495 lumens, 4000 hours	60PAR16/CAP/NFL30	130	15	Narrow Flood	C, CC-8	2000	650	1300	30	2 7/8
			59035	12,16	75PAR16/HAL/NSP10/RP	120	6	Narrow Spot	C, CC-8	2000	900	7500	10	2 7/8
75	PAR16	E26 Med	59036	12,16	75PAR16/CAP/NSP10	120	15	Narrow Spot	C, CC-8	2000	900	7500	10	2 7/8
			59044	1,12,16 @ 120 volts, approximate 66 watts, 685 lumens, 4000 hours	75PAR16/CAP/NSP10	130	15	Narrow Spot	C, CC-8	2000	900	7500	10	2 7/8
			59033	12,16	75PAR16/HAL/NFL30/RP	120	6	Narrow Flood	C, CC-8	2000	900	1900	30	2 7/8
			59034	12,16	75PAR16/CAP/NFL30	120	15	Narrow Flood	C, CC-8	2000	900	1900	30	2 7/8
			59042	1,12,16 @ 120 volts, approximate 66 watts, 685 lumens, 4000 hours	75PAR16/CAP/NFL30	130	15	Narrow Flood	C, CC-8	2000	900	1900	30	2 7/8



PAR20



PAR30

TUNGSTEN HALOGEN

## CAPSYLITE® PAR CAPSYLITE IR® PAR20

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Pkg Volts Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
40	PAR20	E26 Med	14164	★  4,11,12	40PAR20/CAP/IR/NSP10	120 15	Narrow Spot	C, CC-8	4000	600	5000	10	3 1/4
			14166	★  4,11,12	40PAR20/CAP/IR/NFL30	120 15	Narrow Spot	C, CC-8	4000	600	1300	30	3 1/4
			14130	★  4,11,12	40PAR20/CAP/IR/WFL40	120 15	Wide Flood	C, CC-8	4000	600	1000	40	3 1/2

## CAPSYLITE® PAR20

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Pkg Volts Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
35	PAR20	E26 Med	14467	★  11,12	35PAR20/CAP/SPL/NSP10	120 15	Narrow Spot	C, CC-8	2500	360	3000	10	3 1/4
			14460	★  1,11,12 @ 120 volts, approximate 31 watts, 275 lumens, 5000 hours	35PAR20/CAP/SPL/NSP10	130 15	Narrow Spot	C, CC-8	2500	360	3000	10	3 1/4
			14464	★  11,12	35PAR20/CAP/SPL/NFL30	120 15	Narrow Flood	C, CC-8	2500	360	800	30	3 1/4
			14459	★  1,11,12 @ 120 volts, approximate 31 watts, 275 lumens, 5000 hours	35PAR20/CAP/SPL/NFL30	130 15	Narrow Flood	C, CC-8	2500	360	800	30	3 1/4
			14506	★  11,12	35PAR20/CAP/SPL/WFL40	120 15	Wide Flood	C, CC-8	2500	360	500	40	3 1/8
			14461	★  1,11,12 @ 120 volts, approximate 31 watts, 275 lumens, 5000 hours	35PAR20/CAP/SPL/WFL40	130 15	Wide Flood	C, CC-8	2500	360	500	40	3 1/8
50	PAR20	E26 Med	14500	★  11,12	50PAR20/HAL/SPL/NSP10	120 15	Narrow Spot	C, CC-8	2500	550	4600	10	3 1/4
			14528	★  1,11,12 @ 120 volts, approximate 44 watts, 420 lumens, 5000 hours	50PAR20/CAP/SPL/NSP10	130 15	Narrow Spot	C, CC-8	2500	550	4600	10	3 1/4
			14173	★  11,12	50PAR20/HAL/SPL/NFL30/RP	120 6	Narrow Flood	C, CC-8	2500	550	1200	30	3 1/4
			14502	★  11,12	50PAR20/HAL/SPL/NFL30	120 15	Narrow Flood	C, CC-8	2500	550	1200	30	3 1/4
			14529	★  1,11,12 @ 120 volts, approximate 44 watts, 420 lumens, 5000 hours	50PAR20/CAP/SPL/NFL30	130 15	Narrow Flood	C, CC-8	2500	550	1200	30	3 1/4
			14700	★  11,12	50PAR20/CAP/SPL/WFL40	120 15	Wide Flood	C, CC-8	2500	550	900	40	3 1/8

## CAPSYLITE IR® PAR30

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Pkg Volts Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
40	PAR30	E26 Med	13968*	★  4,11,12	40PAR30/CAP/IR/NSP9	120 15	Narrow Spot	C, CC-8	4000	680	8800	9	3 5/8
			13969*	★  4,11,12	40PAR30/CAP/IR/NFL25	120 15	Narrow Flood	C, CC-8	4000	680	2300	25	3 5/8
			13970*	★  4,11,12	40PAR30/CAP/IR/FL40	120 15	Flood	C, CC-8	4000	680	1300	40	3 5/8
50	PAR30	E26 Med	14355	★  4,11,12	50PAR30/CAP/IR/NSP9	120 15	Narrow Spot	C, CC-8	3000	900	13000	9	3 5/8
			14109	★  1,4,11,12 @ 120 volts, approximate 44 watts, 690 lumens, 6000 hours.	50PAR30/CAP/IR/NSP9	130 15	Narrow Spot	C, CC-8	3000	900	13000	9	3 5/8



PAR30

TUNGSTEN HALOGEN

## CAPSYLITE® PAR

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Pkg Volts	Pkg Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
50	PAR30	E26 Med	14354	★  4,11,12	50PAR30/CAP/IR/NFL25	120	15	Narrow Flood	C, CC-8	3000	900	2900	25	3 5/8
			14132	★  1,4,11,12	50PAR30/CAP/IR/NFL25 @ 120 volts, approximate 44 watts, 690 lumens, 6000 hours.	130	15	Narrow Flood	C, CC-8	3000	900	2900	25	3 5/8
			14714	★  4,11,12	50PAR30/CAP/IR/FL40	120	15	Flood	C, CC-8	3000	900	1400	40	3 5/8
			14131	★  1,4,11,12	50PAR30/CAP/IR/FL40 @ 120 volts, approximate 44 watts, 690 lumens, 6000 hours.	130	15	Flood	C, CC-8	3000	900	1400	40	3 5/8

## CAPSYLITE® PAR30

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Pkg Volts	Pkg Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
50	PAR30	E26 Med	14526	★  11,12	50PAR30/CAP/SPL/NSP9	120	15	Narrow Spot	C, CC-8	2500	660	8800	9	3 5/8
			14530	★  1,11,12	50PAR30/CAP/SPL/NSP9 @ 120 volts, approximate 44 watts, 500 lumens, 5000 hours	130	15	Narrow Spot	C, CC-8	2500	660	8800	9	3 5/8
			14527	★  11,12	50PAR30/CAP/SPL/NFL25	120	15	Narrow Flood	C, CC-8	2500	660	2300	25	3 5/8
			14531	★  1,11,12	50PAR30/CAP/SPL/NFL25 @ 120 volts, approximate 44 watts, 500 lumens, 5000 hours	130	15	Narrow Flood	C, CC-8	2500	660	2300	25	3 5/8
			14710	★  11,12	50PAR30/HAL/SPL/FL40	120	15	Flood	C, CC-8	2500	660	1300	40	3 5/8
			14533	★  1,11,12	50PAR30/CAP/SPL/FL40 @ 120 volts, approximate 44 watts, 500 lumens, 5000 hours	130	15	Flood	C, CC-8	2500	660	1300	40	3 5/8
			140840	★  1,11,12	60PAR30/CAP/SPL/NSP9 @ 120 volts, approximate 53 watts, 660 lumens, 6000 hours.	120	15	Narrow Spot	C, CC-8	3000	860	12000	9	3 5/8
60	PAR30	E26 Med	14332	★  11,12	60PAR30/CAP/SPL/NSP9	120	15	Narrow Spot	C, CC-8	3000	860	2775	25	3 5/8
			14333	★  1,11,12	60PAR30/CAP/SPL/NFL25	120	15	Narrow Flood	C, CC-8	3000	860	2775	25	3 5/8
			14090	★  1,11,12	60PAR30/CAP/SPL/NFL25 @ 120 volts, approximate 53 watts, 660 lumens, 6000 hours.	130	15	Narrow Flood	C, CC-8	3000	860	2775	25	3 5/8
			140840	★  1,11,12	60PAR30/CAP/SPL/FL40 @ 120 volts, approximate 53 watts, 660 lumens, 6000 hours.	130	15	Flood	C, CC-8	3000	860	1550	40	3 5/8
			14604	★  11,12	75PAR30/CAP/SPL/NSP9	120	15	Narrow Spot	C, CC-8	2500	1130	15400	9	3 5/8
75	PAR30	E26 Med	14628	★  1,11,12	75PAR30/CAP/SPL/NSP9 @ 120 volts, approximate 66 watts, 860 lumens, 5000 hours	130	15	Narrow Spot	C, CC-8	2500	1130	15400	9	3 5/8
			14603	★  11,12	75PAR30/CAP/SPL/NFL25	120	15	Narrow Flood	C, CC-8	2500	1130	4000	25	3 5/8
			14627	★  1,11,12	75PAR30/CAP/SPL/NFL25 @ 120 volts, approximate 66 watts, 860 lumens, 5000 hours	130	15	Narrow Flood	C, CC-8	2500	1130	4000	25	3 5/8
			14606	★  11,12	75PAR30/CAP/SPL/FL40	120	15	Flood	C, CC-8	2500	1130	2100	40	3 5/8
			14629	★  1,11,12	75PAR30/CAP/SPL/FL40 @ 120 volts, approximate 66 watts, 860 lumens, 5000 hours	130	15	Flood	C, CC-8	2500	1130	2100	40	3 5/8



PAR30LN



PAR36

TUNGSTEN HALOGEN

## CAPSYLITE® PAR

### CAPSYLITE® PAR30 LONG NECK

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation		Pkg Volts Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
35	PAR30LN	E26 Med	14759	★  11,12,15	35PAR30LN CAP SPL NSP9	120	15	Narrow Spot	C, CC-8	2500	450	5700	9	4 5/8
			14764	★  11,12,15	35PAR30LN CAP SPL NFL50	120	15	Wide Flood	C, CC-8	2500	450	450	50	4 5/8
50	PAR30LN	E26 Med	14509	★  11,12,15,19	50PAR30LN CAP SPL NSP9	120	15	Narrow Spot	C, CC-8	2500	660	8800	9	4 5/8
			14482	★  1,11,12,15,19	50PAR30LN CAP SPL NSP9	130	15	Narrow Spot	C, CC-8	2500	660	8800	9	4 5/8
<i>@ 120 volts, approximate 44 watts, 500 lumens, 5000 hours</i>														
50			14822	★  11,12,15,19	50PAR30LN CAP SPL NFL RP	120	6	Narrow Flood	C, CC-8	2500	660	2300	25	4 5/8
			14520	★  11,12,15,19	50PAR30LN CAP SPL NFL25	120	15	Narrow Flood	C, CC-8	2500	660	2300	25	4 5/8
50			14478	★  1,11,12,15,19	50PAR30LN CAP SPL NFL25	130	15	Narrow Flood	C, CC-8	2500	660	2300	25	4 5/8
			<i>@ 120 volts, approximate 44 watts, 500 lumens, 5000 hours</i>											
75	PAR30LN	E26 Med	14786	★  11,12,15	75PAR30LN CAP SPL NSP9	120	15	Narrow Spot	C, CC-8	2500	1130	15400	9	4 5/8
			14777	★  1,11,12,15	75PAR30LN CAP SPL NSP9	130	15	Narrow Spot	C, CC-8	2500	1130	15400	9	4 5/8
<i>@ 120 volts, approximate 66 watts, 860 lumens, 5000 hours</i>														
75			14824	★  11,12,15	75PAR30LN CAP SPL NFL RP	120	6	Narrow Flood	C, CC-8	2500	1130	4000	25	4 5/8
			14769	★  11,12,15	75PAR30LN CAP SPL NFL25	120	15	Narrow Flood	C, CC-8	2500	1130	4000	25	4 5/8
75			14778	★  1,11,12,15	75PAR30LN CAP SPL NFL25	130	15	Narrow Flood	C, CC-8	2500	1130	4000	25	4 5/8
			<i>@ 120 volts, approximate 66 watts, 860 lumens, 5000 hours</i>											
75			14823	★  11,12,15	75PAR30LN CAP SPL NFL RP	120	6	Wide Flood	C, CC-8	2500	1130	1100	50	4 5/8
			14768	★  11,12,15	75PAR30LN CAP SPL NFL50	120	15	Wide Flood	C, CC-8	2500	1130	1100	50	4 5/8
75			14785	★  1,11,12,15	75PAR30LN CAP SPL NFL50	130	15	Wide Flood	C, CC-8	2500	1130	1100	50	4 5/8
			<i>@ 120 volts, approximate 66 watts, 860 lumens, 5000 hours</i>											

### CAPSYLITE® PAR36

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation		Pkg Volts Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
36	PAR36		55100	★ 15	36PAR36 CAP NSP5	12	12	Very Narrow Spot	C, C-8	4000	500	17000	5	2 3/4
			55090	★ 15	36PAR36 CAP NSP13	12	12	Narrow Spot	C, C-8	4000	500	3500	13	2 3/4
			55091	★ 15	36PAR36 CAP NFL32	12	12	Wide Flood	C, C-8	4000	500	1000	32	2 3/4
50	PAR36		55118	★ 15	50PAR36 CAP NSP6	12	12	Narrow Spot	C, C-8	4000	700	25000	6	2 3/4



PAR38

## CAPSYLITE® PAR

### CAPSYLITE IR® PAR38

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Pkg Volts	Pkg Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
50	PAR38	E26 Med Skt	14136	★  4,11,12,13	50PAR38/CAP/IR/SP9	120	15	Spot	C, CC-8	3000	850	14000	9	5 5/16
			14124	★  1,4,11,12,13 @ 120 volts, approximate 44 watts, 650 lumens, 6000 hours.	50PAR38/CAP/IR/SP9	130	15	Spot	C, CC-8	3000	850	14000	9	5 5/16
			14138	★  4,11,12,13	50PAR38/CAP/IR/NFL25	120	15	Narrow Flood	C, CC-8	3000	850	3000	25	5 5/16
			14125	★  1,4,11,12,13 @ 120 volts, approximate 44 watts, 650 lumens, 6000 hours.	50PAR38/CAP/IR/NFL25	130	15	Flood	C, CC-8	3000	850	3000	25	5 5/16
55	PAR38	E26 Med Skt	14126	★  4,11,12,13	55PAR38/CAP/IR/XP/SP9	120	15	Spot	C, CC-8	6000	800	14000	9	5 5/16
			14127	★  4,11,12,13	55PAR38/CAP/IR/XP/FL30	120	15	Flood	C, CC-8	6000	800	2500	30	5 5/16
60	PAR38	E26 Med Skt	14485	★  4,11,12,13	60PAR38/CAP/IR/SP9	120	15	Spot	C, CC-8	3000	1110	20000	9	5 5/16
			14716	★  1,4,11,12,13 @ 120 volts, approximate 53 watts, 845 lumens, 6000 hours.	60PAR38/CAP/IR/SP9	130	15	Spot	C, CC-8	3000	1110	20000	9	5 5/16
			14360	★  4,11,12,13	60PAR38/CAP/IR/WSP12	120	15	Wide Spot	C, CC-8	3000	1110	12000	12	5 5/16
			14442	★  4,11,12,13	60PAR38/CAP/IR/NFL25	120	15	Narrow Flood	C, CC-8	3000	1110	5000	25	5 5/16
			14466	★  4,11,12,13	60PAR38/CAP/IR/FL30	120	15	Flood	C, CC-8	3000	1110	3600	30	5 5/16
			14715	★  1,4,11,12,13 @ 120 volts, approximate 53 watts, 845 lumens, 6000 hours.	60PAR38/CAP/IR/FL30	130	15	Flood	C, CC-8	3000	1110	3600	30	5 5/16
			14347	★  4,12,13	80PAR38/CAP/IR/SP10	120	12	Spot	C, CC-8	3000	1500	25000	10	5 5/16
80	PAR38	E26 Med Skt	14327	★  4,12,13	80PAR38/CAP/IR/FL25	120	12	Flood	C, CC-8	3000	1500	5500	25	5 5/16
			14324	★  4,12,13	100PAR38/CAP/IR/SP10	120	12	Spot	C, CC-8	3000	2070	29000	10	5 5/16
			14319	★  4,12,13	100PAR38/CAP/IR/NFL25	120	12	Narrow Flood	C, CC-8	3000	2070	6300	25	5 5/16
			14311	★  4,12,13	100PAR38/CAP/IR/FL40	120	12	Flood	C, CC-8	3000	2070	3400	40	5 5/16

## CAPSYLITE® PAR38

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Pkg Volts	Pkg Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
45	PAR38	E26 Med Skt	14590	★  11,12,13	45PAR38/CAP/SPL/SP9	120	15	Spot	C, CC-8	2500	560	10000	9	5 5/16
			14593	★  1,11,12,13 @ 120 volts, approximate 40 watts, 425 lumens, 5000 hours	45PAR38/CAP/SPL/SP9	130	15	Spot	C, CC-8	2500	560	10000	9	5 5/16
			14589	★  11,12,13	45PAR38/CAP/SPL/WSP12	120	15	Wide Spot	C, CC-8	2500	560	6300	12	5 5/16
			14592	★  1,11,12,13 @ 120 volts, approximate 40 watts, 425 lumens, 5000 hours	45PAR38/CAP/SPL/WSP12	130	15	Wide Spot	C, CC-8	2500	560	6300	12	5 5/16



PAR38

TUNGSTEN HALOGEN

## CAPSYLITE® PAR

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
45	PAR38	E26 Med Skt	14588	★  11,12,13	45PAR38/CAP/SPL/FL30	120	15	Flood	C, CC-8	2500	560	1500	30	5 5/16
			14591	★  1,11,12,13	45PAR38/CAP/SPL/FL30	130	15	Flood	C, CC-8	2500	560	1500	30	5 5/16
			@ 120 volts, approximate 40 watts, 425 lumens, 5000 hours											
50	PAR38	E26 Med Skt	15521*	★  11,12,13	50PAR38/HAL/SPL/SP9/RP	120	6	Spot	C, CC-8	2500	650	10500	9	5 5/16
			15520	★  11,12,13	50PAR38/HAL/SPL/FL30/RP	120	6	Flood	C, CC-8	2500	650	1850	30	5 5/16
60	PAR38	E26 Med Skt	14469	★  11,12,13	60PAR38/CAP/SPL/SP9	120	15	Spot	C, CC-8	3000	850	16000	9	5 5/16
			14449	★  1,11,12,13	60PAR38/CAP/SPL/SP9	130	15	Spot	C, CC-8	3000	850	16000	9	5 5/16
			@ 120 volts, approximate 53 watts, 645 lumens, 6000 hours											
			14423	★  11,12,13	60PAR38/CAP/SPL/SP12	120	15	Wide Spot	C, CC-8	3000	850	10500	12	5 5/16
			14472	★  12	60PAR38/CAP/SPL/NFL25	120	15	Narrow Flood	C, CC-8	3000	850	3700	25	5 5/16
			14468	★  11,12,13	60PAR38/CAP/SPL/FL30	120	15	Flood	C, CC-8	3000	850	2500	30	5 5/16
75	PAR38	E26 Med Skt	14854	★  11,12,13	75PAR38/HAL/SPL/SP/RP	120	6	Spot	C, CC-8	2500	1060	19200	9	5 5/16
			14514	★  11,12,13	75PAR38/CAP/SPL/SP9	120	15	Spot	C, CC-8	2500	1060	19200	9	5 5/16
			14516	★  1,11,12,13	75PAR38/CAP/SPL/SP9	130	15	Spot	C, CC-8	2500	1060	19200	9	5 5/16
			@ 120 volts, approximate 66 watts, 805 lumens, 5000 hours											
			14510	★  11,12,13	75PAR38/CAP/SPL/SP12	120	15	Wide Spot	C, CC-8	2500	1060	12300	12	5 5/16
			14853	★  11,12,13	75PAR38/HAL/SPL/FL/RP	120	6	Flood	C, CC-8	2500	1060	3150	30	5 5/16
			14513	★  11,12,13	75PAR38/CAP/SPL/FL30	120	15	Flood	C, CC-8	2500	1060	3150	30	5 5/16
			14446	★  1,11,12,13	75PAR38/CAP/SPL/FL/CVP	130	6	Flood	C, CC-8	2500	1060	3150	30	5 5/16
			@ 120 volts, approximate 66 watts, 805 lumens, 5000 hours											
			14515	★  1,11,12,13	75PAR38/CAP/SPL/FL30	130	15	Flood	C, CC-8	2500	1060	3150	30	5 5/16
90	PAR38	E26 Med Skt	@ 120 volts, approximate 66 watts, 805 lumens, 5000 hours											
			14586	★  11,12,13	90PAR38/CAP/SPL/SP9	120	15	Spot	C, CC-8	2500	1310	19000	9	5 5/16
			14587	★  1,11,12,13	90PAR38/CAP/SPL/SP9	130	15	Spot	C, CC-8	2500	1310	19000	9	5 5/16
			@ 120 volts, approximate 79 watts, 1000 lumens, 5000 hours											
			14580	★  11,12,13	90PAR38/CAP/SPL/SP12	120	15	Wide Spot	C, CC-8	2500	1310	14300	12	5 5/16



PAR38



PAR38

## CAPSLITE® PAR

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Pkg Volts	Pkg Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
90	PAR38	E26 Med Skt	14578	★  1,11,12,13	90PAR38/CAP/SPL/WSP12	130	15	Wide Spot	C, CC-8	2500	1310	14300	12	5 5/16
				@ 120 volts, approximate 79 watts, 1000 lumens, 5000 hours										
			14601	★  1,11,12,13	90PAR38/CAP/SPL/NFL25	130	15	Narrow Flood	C, CC-8	2500	1310	4700	25	5 5/16
				@ 120 volts, approximate 79 watts, 1000 lumens, 5000 hours										
			14579	★  11,12,13	90PAR38/CAP/SPL/FL30	120	15	Flood	C, CC-8	2500	1310	3500	30	5 5/16
			14647	★  1,11,12,13	90PAR38/CAP/SPL/FL/CVP	130	6	Flood	C, CC-8	2500	1310	3500	30	5 5/16
				@ 120 volts, approximate 79 watts, 1000 lumens, 5000 hours										
			14577	★  1,11,12,13	90PAR38/CAP/SPL/FL30	130	15	Flood	C, CC-8	2500	1310	3500	30	5 5/16
				@ 120 volts, approximate 79 watts, 1000 lumens, 5000 hours										
			14602	★  1,11,12,13	90PAR38/CAP/SPL/WFL50	130	15	Wide Flood	C, CC-8	2500	1310	1600	50	5 5/16
				@ 120 volts, approximate 79 watts, 1000 lumens, 5000 hours										
	Med Side Prong		14630	★  11,12,13	90PAR38/CAP/SPL/3WSP12	120	15	Wide Spot	C, CC-8	2500	1310	14300	12	5 5/16
			14632	★  11,12,13	90PAR38/CAP/SPL/3FL30	120	15	Flood	C, CC-8	2500	1310	3500	30	5 5/16
100	PAR38	E26 Med Skt	15522*	★  11,12,13	100PAR38/HAL/SPL/SP9/RP	120	6	Spot	C, CC-8	2500	1500	22000	9	5 5/16
			15585	★  11,12,13	100PAR38/HAL/SPL/FL30/RP	120	6	Flood	C, CC-8	2500	1500	4000	30	5 5/16
106	PAR38	E26 Med Skt	15003	★  11,12,13	106PAR38/CAP/SPL/SP10	120	15	Spot	C, CC-8	2000	1800	22500	10	5 5/16
			15001	★  11,12,13	106PAR38/CAP/SPL/WFL55	120	15	Wide Flood	C, CC-8	2000	1800	2000	55	5 5/16
120	PAR38	E26 Med Skt	14873	★  11,12,13	120PAR38/HAL/SPL/SP/XTRA/RP	120	6	Spot	C, CC-8	3000	1800	22500	10	5 5/16
			14856	★  11,12,13	120PAR38/CAP/SPL/SP10	120	15	Spot	C, CC-8	3000	1800	22500	10	5 5/16
			14874	★  1,11,12,13	120PAR38/CAP/SPL/SP10	130	15	Spot	C, CC-8	3000	1800	22500	10	5 5/16
				@ 120 volts, approximate 105 watts, 1370 lumens, 6000 hours										
			14848	★  11,12,13	120PAR38/CAP/SPL/NFL25	120	15	Narrow Flood	C, CC-8	3000	1800	7700	25	5 5/16
			14576	★  11,12,13	120PAR38/HAL/SPL/FL/XTRA/RP	120	6	Flood	C, CC-8	3000	1800	4600	30	5 5/16
			14855	★  11,12,13	120PAR38/CAP/SPL/FL30	120	15	Flood	C, CC-8	3000	1800	4600	30	5 5/16
			14861	★  1,11,12,13	120PAR38/CAP/SPL/FL30	130	15	Flood	C, CC-8	3000	1800	4600	30	5 5/16
				@ 120 volts, approximate 105 watts, 1370 lumens, 6000 hours										
			14594	★  11,12,13	120PAR38/CAP/SPL/WFL55	120	15	Wide Flood	C, CC-8	3000	1800	2000	55	5 5/16
250	PAR38	E26 Med Skt	15526	★  11,13,15,20,21,22	250PAR38/CAP/SPL/SP10	120	6	Spot	C, CC-8	4500	3600	46500	10	5 5/16
			15558	★  11,13,15,20,21,22	250PAR38/CAP/SPL/FL30	120	6	Flood	C, CC-8	4500	3600	9000	30	5 5/16



PAR30



PAR38



PAR56



PAR64



G9

TUNGSTEN HALOGEN

## CAPSYLITE® PAR

### CAPSYLITE COOL LUX

#### CAPSYLITE Cool Lux PAR30

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
50	PAR30	E26 Med	14916	★  12,13,23	50PAR30/CAP/SPL/2NFL25	120	15	Narrow Flood	C, CC-8	2500	600	1850	25	3 5/8

#### CAPSYLITE Cool Lux PAR38

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
90	PAR38	E26 Med Skt	14972	★  12,13,23	90PAR38/CAP/2SP12	120	15	Spot	C, CC-8	2500	1260	12000	12	5 5/16
			14971	★  12,13,23	90PAR38/CAP/SPL/2FL30	120	15	Flood	C, CC-8	2500	1260	3750	30	5 5/16
			14973	★  1,12,13,23	90PAR38/CAP/SPL/2FL30	130	15	Flood	C, CC-8	2500	1260	3750	30	5 5/16

@ 120 volts, approximate 79 watts, 1000 lumens, 5000 hours

## LARGE PAR

A suitable protective shield, screening technique or both shall be used to protect people and surroundings from the possibility of a lamp shattering and from possible ultraviolet radiation.

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
500	PAR56	Ext Mog End Pr	56210	★ 2,24,25	500PAR560/NSP	120	12	Narrow Spot	C, CC-6	4000	8800	78500	8x15	5
			56211	★ 2,24,25	500PAR560/MFL	120	12	Medium Flood	C, CC-6	4000	8800	40000	11x30	5
			56212	★ 2,24,25	500PAR560/WFL	120	12	Wide Flood	C, CC-6	4000	8800	19500	20x45	5
1000	PAR64	Ext Mog End Pr	56206	★ 2,24,25	1000PAR640/NSP	120	6	Narrow Spot	C, CC-6	4000	19400	135000	8x20	6
			56207	★ 2,24,25	1000PAR640/MFL	120	6	Medium Flood	C, CC-6	4000	19400	82000	10x30	6
			56208	★ 2,24,25	1000PAR640/WFL	120	6	Wide Flood	C, CC-6	4000	19400	23000	20x60	6

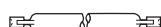
## CAPSYLITE® G9

Suitable for use in unshielded fixtures. Consult most recent luminaire standards for your area to determine luminaire requirements.

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Lamp Finish	Class & Filament	Avg Rated Life(hrs)	Lumens	LCL (in)	MOL (in)
25	T4	G9 Bipin	57020*	13,26,27	25CAPSYLITE/G9/CL	120	20	Clear	C, CC-2V	2000	255	7/8	1 1/16
			57016	13,26,27	25CAPSYLITE/G9/CL/BL	120	10	Clear	C, CC-2V	2000	255	7/8	1 1/16
			57021*	13,26,27	25CAPSYLITE/G9/F	120	20	Frosted	C, CC-2V	2000	230	7/8	1 1/16
			57015	13,26,27	25CAPSYLITE/G9/F/BL	120	10	Frosted	C, CC-2V	2000	230	7/8	1 1/16
40	T4	G9 Bipin	57022*	13,26,27	40CAPSYLITE/G9/CL	120	20	Clear	C, CC-2V	2000	510	7/8	1 1/16
			57018	13,26,27	40CAPSYLITE/G9/CL/BL	120	10	Clear	C, CC-2V	2000	510	7/8	1 1/16
			57025*	13,26,27	40CAPSYLITE/G9/F	120	20	Frosted	C, CC-2V	2000	480	7/8	1 1/16
			57017	13,26,27	40CAPSYLITE/G9/F/BL	120	10	Frosted	C, CC-2V	2000	480	7/8	1 1/16
60	T4	G9 Bipin	57023*	13,26,27	60CAPSYLITE/G9/CL	120	20	Clear	C, CC-2V	2000	830	1 1/16	2
			57014	13,26,27	60CAPSYLITE/G9/CL/BL	120	10	Clear	C, CC-2V	2000	830	1 1/16	2
			57024*	13,26,27	60CAPSYLITE/G9/F	120	20	Frosted	C, CC-2V	2000	790	1 1/16	2
			57019	13,26,27	60CAPSYLITE/G9/F/BL	120	10	Frosted	C, CC-2V	2000	790	1 1/16	2



T3, T4



T3

TUNGSTEN HALOGEN

## SUPER Q - SINGLE END QUARTZ

A suitable protective shield, screening technique or both shall be used to protect people and surroundings from the possibility of a lamp shattering and from possible ultraviolet radiation.

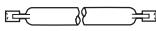
Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Lamp Finish	Class & Filament	Avg Rated Life(hrs)	Lumens	LCL (in)	MOL (in)
75	T3	E10	58876	C 2,28	75Q/CL/MS	28	12	Clear	C, CC-6	2000	1400	1 7/8	2 3/8
			58884	C 2,28	75Q/CL/MCRP	120	6	Clear	C, CC-8	2000	1400	1 7/8	2 9/16
100	T4	DC Bayonet	18858	C 2,28	100Q/CL/DC/64485	120	10	Clear	C, CC-2V	2000	1600	2 3/16	3 3/8
			58755	C 2,28	1000/CL/DC(ESR)	120	12	Clear	C, CC-2V	1000	1900	1 3/8	2 7/16
			58757	C 2,28	1000/DC(ETD)	120	12	Frosted	C, CC-2V	1000	1750	1 3/8	2 7/16
			58732	C 2,28	100Q/CL/DC	130	12	Clear	C, CC-2V	1000	1900	1 3/8	2 7/16
		E11 Mini Can	58817	C 2,28	1000/CL/MCRP(ESN)	120	6	Clear	C, CC-8	1000	1800	1 3/8	2 9/16
			58761	C 2,28	1000/CL/MC(ESN)	120	12	Clear	C, CC-2V	1000	1800	1 3/8	2 3/4
			58760	C 2,28	100Q/CL/MC	130	12	Clear	C, CC-2V	1000	1800	1 3/8	2 3/4
			58741	C 2,28	1500/CL/DC(ETC)	120	12	Clear	C, CC-8	2000	2800	1 1/2	2 3/4
150	T4	DC Bayonet	58742	C 2,28	1500/CL/DC/1(ESP)	120	12	Clear	C, CC-2V	1000	2400	1 3/8	2 7/16
			58748	C 2,28	1500/CL/DC	130	12	Clear	C, CC-2V	1000	2800	1 3/8	2 3/4
			58737	C 2,28	1500/DC(ETF)	120	12	Frosted	C, CC-8	2000	2700	1 1/2	2 3/4
		E11 Mini Can	58731	C 2,28	1500/CL/MC/RP(ETG)	120	6	Clear	C, CC-8	2000	2800	1 3/8	3
			58738	C 2,28	1500/CL/MC(ESL)	120	12	Clear	C, CC-2V	1000	2800	1 3/8	2 3/4
			58735	C 2,28	1500/CL/MC/2(ETG)	120	12	Clear	C, CC-8	2000	2800	1 1/2	3
			58733	C 2,28	1500/CL/MC	130	12	Clear	C, CC-2V	1000	2800	1 3/8	2 3/4
			58736	C 2,28	1500/MC(ETH)	120	12	Frosted	C, CC-8	2000	2700	1 1/2	3
			58720	C 2,28	2500/CL/DC(ESS)	120	12	Clear	C, CC-8	2000	5000	1 5/8	3 1/8
250	T4	DC Bayonet	58753	C 2,28	2500/DC(ETB)	120	12	Frosted	C, CC-8	2000	4850	1 5/8	3 1/8
			58754	C 2,28	2500/DC	130	12	Frosted	C, CC-8	2000	4850	1 5/8	3 1/8
		E11 Mini Can	58773	C 2,28	2500/CL/MC/RP(EHT)	120	6	Clear	C, CC-8	2000	5000	1 5/8	3 1/8
			58762	C 2,28	2500/CL/MC(EHT)	120	12	Clear	C, CC-8	2000	5000	1 5/8	3 1/8
			58764	C 2,28	2500/CL/MC	130	12	Clear	C, CC-8	2000	5000	1 5/8	3 1/8
			58763	C 2,28	2500/MC(ESM)	120	12	Frosted	C, CC-8	2000	4850	1 5/8	3 1/8
			58765	C 2,28	2500/MC	130	12	Frosted	C, CC-8	2000	4850	1 5/8	3 1/8
500	T4	E11 Mini Can	58766	C 2,28	5000/CL/MC(EVR)	120	12	Clear	C, CC-8	2000	10450	2	3 3/4
			58756	C 2,28	5000/CL/MC(EYW)	130	12	Clear	C, CC-8	2000	10000	2	3 3/4
			58767	C 2,28	5000/MC(EYX)	120	12	Frosted	C, CC-8	2000	10100	2	3 3/4
			58768	C 2,28	5000/MC(EYV)	130	12	Frosted	C, CC-8	2000	10000	2	3 3/4
750	T4	E11 Mini Can	58769	C 2,28	7500/CL/MC(EYT)	120	12	Clear	C, CC-8	500	16500	2	3 3/4

## DOUBLE END

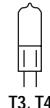
### DOUBLE END QUARTZ

A suitable protective shield, screening technique or both shall be used to protect people and surroundings from the possibility of a lamp shattering and from possible ultraviolet radiation.

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Lamp Finish	Class & Filament	Avg Rated Life(hrs)	Lumens	LCL (in)	MOL (in)
100	T3	RSC	58887	—2,28	100T3Q/SCL/RP	120	6	Clear	C, C-8	2000	1600		3 1/8
			58887	—2,28	100T3Q/CL/RP	120	12	Clear	C, C-8	2000	1600		3 1/8
150	T3	RSC	58885	—2,28	150T3Q/CL/RP	120	6	Clear	C, C-8	1500	2250		4 11/16
			58886	—2,28	150T3Q/SCL/RP	120	6	Clear	C, CC-8	2000	2400		3 1/8



T3



T3, T4

## DOUBLE END

A suitable protective shield, screening technique or both shall be used to protect people and surroundings from the possibility of a lamp shattering and from possible ultraviolet radiation.

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Lamp Finish	Class & Filament	Avg Rated Life(hrs)	Lumens	LCL (in)	MOL (in)
150	T3	RSC	58915	—2,28	150T3Q/S/CL	120	12	Clear	C, CC-8	2000	2400		3 1/8
200	T3	RSC	58917	—2,28	200T3Q/CL	120	12	Clear	C, CC-8	2000	3350		4 11/16
300	T3	RSC	58920	—2,28	300T3Q/CL/RP(EHM)	120	6	Clear	C, C-8	2000	9300		4 11/16
			58923	—2,20	300T3Q/CL(EHM)	120	12	Clear	C, C-8	2000	6000		4 11/16
			58919	—2,20	300T3Q/CL	130	12	Clear	C, C-8	2000	5950		4 11/16
500	T3	RSC	58865	—2,28	500T3Q/CL/RP(FCL)	120	6	Clear	C, CC-8	2000	8750		4 11/16
			58883	—2,28	500T3Q(FCZ)	120	12	Frosted	C, C-8	2000	9300		4 11/16
			58856	—2,20	500T3Q/CL(FCL)	120	12	Clear	C, CC-8	2000	8750		4 11/16
			58902	—2,20	500T3Q/CL	130	12	Clear	C, C-8	2000	8750		4 11/16
1000	T3	RSC	58948	—2,28	1000T3Q/CL	240	12	Clear	C, C-8	2000	21500		10 1/16
1500	T3	RSC	58859	—2,28	1500T3Q/CL208V	208	12	Clear	C, C-8	2000	33000		10 1/16
			58857	—2,28	1500T3Q/CL	240	12	Clear	C, C-8	2000	33000		10 1/16
			58858	—2,28	1500T3Q/CL277V	277	12	Clear	C, C-8	2000	33000		10 1/16

## BI-PIN

### STARLITE BI-PIN

UV filter quartz capsule with axial filament.

Suitable for use in unshielded fixtures. Consult most recent luminaire standards for your area to determine luminaire requirements.

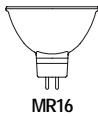
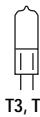
Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Lamp Finish	Class & Filament	Avg Rated Life(hrs)	Lumens	LCL (in)	MOL (in)
10	T3	G4	58692	27,29	10T3Q/CL/AX6V	6	40	Clear	C, AX	4000	130	7/8	1 1/4
			58691	27,29	10T3Q/CL/AX	12	40	Clear	C, AX	4000	130	7/8	1 1/4
20	T3	G4	58694	27,29	20T3Q/CL/AX	12	40	Clear	C, AX	4000	320	7/8	1 1/4
			58663	27,29	20T4Q/CL/AX	12	40	Clear	C, AX	4000	320	1 1/8	1 1/4
35	T4	GY6.35	58672	27,29	35T4Q/CL/AX	12	40	Clear	C, AX	4000	600	1 1/8	1 3/4
50	T4	GY6.35	58676	27,29	50T4Q/CL/AX	12	40	Clear	C, AX	4000	910	1 1/8	1 3/4
75	T4	GY6.35	58680	27,29	75T4Q/CL/AX	12	40	Clear	C, AX	4000	1450	1 1/8	1 3/4
90	T4	GY6.35	58684	27,29	90T4Q/CL/AX	12	40	Clear	C, AX	4000	1800	1 1/8	1 3/4

## STANDARD BI-PIN

UV filter quartz capsule with transverse filament.

Suitable for use in unshielded fixtures. Consult most recent luminaire standards for your area to determine luminaire requirements.

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Lamp Finish	Class & Filament	Avg Rated Life(hrs)	Lumens	LCL (in)	MOL (in)
5	T3	G4	58652	27,28,30	5T3Q/CL	12	40	Clear	C, TR	2000	60	7/8	1 1/4
			58651	27,28,31	5T3Q/F	12	40	Frosted	C, TR	2000	55	7/8	1 1/4
10	T3	G4	58650	27,28,30	10T3Q/CL/RP	12	6	Clear	C, TR	2000	140	7/8	1 1/4
			58658	27,28,30	10T3Q/CL	12	40	Clear	C, TR	2000	140	7/8	1 1/4
			58656	27,28,31	10T3Q/F	12	40	Frosted	C, TR	2000	130	7/8	1 1/4
20	T3	G4	58655	27,28,30	20T3Q/CL/RP	12	6	Clear	C, TR	2000	320	7/8	1 1/4
			58661	27,28,30	20T3Q/CL	12	40	Clear	C, TR	2000	320	7/8	1 1/4
50	T4	GY6.35	58660	27,28,30	50T4Q/CL/RP	12	6	Clear	C, TR	2000	910	1 1/8	1 3/4
			58675	27,28,30	50T4Q/CL	12	40	Clear	C, TR	2000	910	1 1/8	1 3/4
75	T4	GY6.35	58665	27,28,30	75T4Q/CL/RP	12	6	Clear	C, TR	2000	1200	1 1/8	1 3/4



T3, T4

MR16

**BI-PIN****BI-PIN 24VOLT**

A suitable protective shield, screening technique or both shall be used to protect people and surroundings from the possibility of a lamp shattering and from possible ultraviolet radiation.

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Lamp Finish	Class & Filament	Avg Rated Life(hrs)	Lumens	LCL (in)	MOL (in)
20	T3	G4	58662	32,33	20T30/CL/24V	24	40	Clear	C, AX	1000	320	7/8	1 1/4
50	T4	GY6.35	58678	32,33	50T40/CL/AX/24V	24	40	Clear	C, AX	2000	850	1 1/8	1 3/4

**TRU-AIM®****TRU-AIM IR MR16**

UV Filter capsule with axial filament in covered constant color, hard coated dichroic reflector and infrared reflective coating on the lamp capsule.

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
20	MR16	GU5.3	58531	4,5,6, 7,8	20MR16/IR/SP10/C	12	20	Spot	C, AX	4000	6000	10	1 3/4	
			58532	4,5,6, 7,8	20MR16/IR/NFL25/C	12	20	Narrow Flood	C, AX	4000	2300	25	1 3/4	
			58533	4,5,6, 7,8	20MR16/IR/FL40/C	12	20	Flood	C, AX	4000	1000	40	1 3/4	
			58838	4,5,6, 7,8	20MR16/IR/WFL60/C	12	20	Wide Flood	C, AX	4000	450	60	1 3/4	
37	MR16	GU5.3	58641	4,5,6, 8,10	37MR16/IR/SP10/C	12	20	Spot	C, AX	4000	12500	10	1 3/4	
			58634	4,5,6, 8,10	37MR16/IR/NFL25/C	12	20	Narrow Flood	C, AX	4000	4400	25	1 3/4	
			58633	4,5,6, 8,10	37MR16/IR/FL40/C	12	20	Flood	C, AX	4000	2200	40	1 3/4	
			58837	4,5,6, 8,10	37MR16/IR/WFL60/C	12	20	Wide Flood	C, AX	4000	1100	60	1 3/4	
50	MR16	GU5.3	54175	4,5,6, 8,10	50MR16/IR/SP10/C	12	20	Spot	C, AX	4000	15000	10	1 3/4	
			54174	4,5,6, 8,10	50MR16/IR/NFL25/C	12	20	Narrow Flood	C, AX	4000	5700	25	1 3/4	
			54173	4,5,6, 8,10	50MR16/IR/FL40/C	12	20	Flood	C, AX	4000	2850	40	1 3/4	
			54237	4,5,6, 8,10	50MR16/IR/WFL60/C	12	20	Wide Flood	C, AX	4000	1430	60	1 3/4	

**TRU-AIM TITAN® MR16**

UV Filter capsule with axial filament in constant color, hard coated dichroic reflector.

A suitable protective shield, screening technique or both shall be used to protect people and surroundings from the possibility of a lamp shattering and from possible ultraviolet radiation.

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Volts	Pkg Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
20	MR16	GU5.3	58550	5,7,32, 34	20MR16/T/NSP10(ESX)	12	10	Narrow Spot	C, AX	4000	5000	10	1 3/4	
			58551	5,7,32, 34	20MR16/T/FL40(BAB)	12	10	Flood	C, AX	4000	700	40	1 3/4	
			58562	5,7,32, 34	20MR16/T/WFL60	12	10	Very Wide Flood	C, AX	4000	350	60	1 3/4	
35	MR16	GU5.3	58558	5,10,32, 34	35MR16/T/NSP10(FRB)	12	10	Narrow Spot	C, AX	4000	8300	10	1 3/4	
			58547	5,10,32, 34	35MR16/T/NFL25	12	10	Narrow Flood	C, AX	4000	3100	25	1 3/4	



MR16

TUNGSTEN HALOGEN

## TRU-AIM TITAN® MR16

**UV Filter capsule with axial filament in constant color, hard coated dichroic reflector.**

A suitable protective shield, screening technique or both shall be used to protect people and surroundings from the possibility of a lamp shattering and from possible ultraviolet radiation.

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Pkg Volts	Pkg Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
35	MR16	GU5.3	58557	5,10,32, 34	35MR16/T/FL40(FMM)	12	10	Flood	C, AX	4000	1250	40	1 3/4	
			58552	5,10,32, 34	35MR16/T/WFL60	12	10	Very Wide Flood	C, AX	4000	650	60	1 3/4	
50	MR16	GU5.3	58556	5,10,32, 34	50MR16/T/NSP10(EXT)	12	10	Narrow Spot	C, AX	4000	11500	10	1 3/4	
			58555	5,10,32, 34	50MR16/T/NFL25(EXZ)	12	10	Narrow Flood	C, AX	4000	3200	25	1 3/4	
			58554	5,10,32, 34	50MR16/T/FL40(EXN)	12	10	Flood	C, AX	4000	2000	40	1 3/4	
			58553	5,10,32, 34	50MR16/T/WFL60(FMM)	12	10	Very Wide Flood	C, AX	4000	1000	60	1 3/4	
65	MR16	GU5.3	58566	5,10,32, 34	65MR16/T/NSP10(FPA)	12	10	Narrow Spot	C, AX	4000	14000	10	1 3/4	
			58567	5,10,32, 34	65MR16/T/NFL25	12	10	Narrow Flood	C, AX	4000	4000	25	1 3/4	
			58571	5,10,32, 34	65MR16/T/FL40(FPB)	12	10	Flood	C, AX	4000	2100	40	1 3/4	
			58572	5,10,32, 34	65MR16/T/WFL60	12	10	Very Wide Flood	C, AX	4000	1050	60	1 3/4	

## TRU-AIM BRILLIANT® MR16

**UV Filter capsule with axial filament in constant color, aluminized reflector.**

A suitable protective shield, screening technique or both shall be used to protect people and surroundings from the possibility of a lamp shattering and from possible ultraviolet radiation.

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Pkg Volts	Pkg Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
20	MR16	GU5.3	58589	5,7,32, 35	20MR16/B/NSP8	12	10	Narrow Spot	C, AX	4000	4650	8	1 3/4	
			58590	5,7,32, 35	20MR16/B/FL35	12	10	Flood	C, AX	4000	625	35	1 3/4	
35	MR16	GU5.3	58591	5,10,32, 35	35MR16/B/NSP10	12	10	Narrow Spot	C, AX	4000	8700	10	1 3/4	
			58593	5,10,32, 35	35MR16/B/FL35	12	10	Flood	C, AX	4000	1300	35	1 3/4	
50	MR16	GU5.3	58594	5,10,32, 35	50MR16/B/NSP11	12	10	Narrow Spot	C, AX	4000	10500	11	1 3/4	
			58595	5,10,32, 35	50MR16/B/NFL25	12	10	Narrow Flood	C, AX	4000	3000	25	1 3/4	
			58596	5,10,27, 35,36	50MR16/B/FL35	12	10	Flood	C, AX	4000	1900	35	1 3/4	
65	MR16	GU5.3	58559	5,10,32, 35	65MR16/B/NSP10	12	10	Narrow Spot	C, AX	4000	12500	10	1 3/4	
			58561	5,10,32, 35	65MR16/B/NFL25	12	10	Narrow Flood	C, AX	4000	3600	25	1 3/4	
			58560	5,10,32, 35	65MR16/B/FL35	12	10	Flood	C, AX	4000	2100	35	1 3/4	



MR16, MR11

**TRU-AIM®****TRU-AIM® MR16****UV Filter capsule with axial filament in dichroic reflector.**

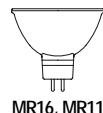
A suitable protective shield, screening technique or both shall be used to protect people and surroundings from the possibility of a lamp shattering and from possible ultraviolet radiation.

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Pkg Volts	Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
20	MR16	GU5.3	58576	5,7,32, 37	20MR16/NSP/RP(ESX)	12	6	Narrow Spot	C, AX	4000	6000	8	1 3/4	
			54201	5,7,32, 37	20MR16/NSP8(ESX)	12	20	Narrow Spot	C, AX	4000	6000	8	1 3/4	
			58646	5,7,32, 37	20MR16/FL/RP(BAB)	12	6	Flood	C, AX	4000	700	40	1 3/4	
			54200	5,7,32, 37	20MR16/FL40(BAB)	12	20	Flood	C, AX	4000	700	40	1 3/4	
35	MR16	GU5.3	54204	5,10,32, 37	35MR16/NSP8(FRB)	12	20	Narrow Spot	C, AX	4000	11000	8	1 3/4	
			58602	5,10,32, 37	35MR16/SP20(FRA)	12	10	Spot	C, AX	4000	2800	20	1 3/4	
			54203	5,10,32, 37	35MR16/FL40(FMW)	12	20	Flood	C, AX	4000	1400	40	1 3/4	
50	MR16	GU5.3	58629	5,10,32, 37	50MR16/NSP/RP(EXT)	12	6	Narrow Spot	C, AX	4000	11000	12	1 3/4	
			54208	5,10,32, 37	50MR16/NSP12(EXT)	12	20	Narrow Spot	C, AX	4000	11000	12	1 3/4	
			54205	5,10,32, 37	50MR16/NFL25(EXZ)	12	20	Narrow Flood	C, AX	4000	3200	25	1 3/4	
			58983	5,10,32, 37	50MR16/FL/RP(EXN)	12	6	Flood	C, AX	4000	2000	40	1 3/4	
			54207	5,10,32, 37	50MR16/FL40(EXN)	12	20	Flood	C, AX	4000	2000	40	1 3/4	
			54206	5,10,32, 37	50MR16/NNFL60(FNW)	12	20	Very Wide Flood	C, AX	4000	1200	60	1 3/4	
65	MR16	GU5.3	58563	5,10,32, 37	65MR16/NSP10(FPA)	12	10	Narrow Spot	C, AX	4000	14000	10	1 3/4	
			58565	5,10,32, 37	65MR16/NFL25(FPC)	12	10	Narrow Flood	C, AX	4000	4000	25	1 3/4	
			58564	5,10,32, 37	65MR16/FL40(FPB)	12	10	Flood	C, AX	4000	2100	40	1 3/4	

**TRU-AIM® MR11****UV Filter capsule with axial filament in dichroic reflector.**

A suitable protective shield, screening technique or both shall be used to protect people and surroundings from the possibility of a lamp shattering and from possible ultraviolet radiation.

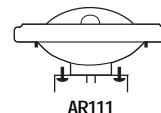
Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Pkg Volts	Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
20	MR11	GU4	55109	5,7,32, 37	20MR11/SP10(FTB)	12	10	Spot	C, AX	4000	5500	10	1 1/2	
			55107	5,7,32, 37	20MR11/FL35(FTD)	12	10	Flood	C, AX	4000	700	35	1 1/2	
35	MR11	GU4	55113	5,10,32, 37	35MR11/SP10(FTE)	12	10	Spot	C, AX	4000	3800	10	1 1/2	
			55111	5,10,32, 37	35MR11/FL35(FTH)	12	10	Flood	C, AX	4000	1500	35	1 1/2	



MR16, MR11



AR70



AR111

**TRU-AIM®****TRU-AIM® COVERED MR****TRU-AIM TITAN® Covered MR16**

UV Filter capsule with axial filament in constant color, hard coated dichroic reflector.

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Pkg Volts	Pkg Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
35	MR16	GU5.3	58549	5,8,10, 27,38	35MR16/TNFL25/C	12	10	Narrow Flood	C, AX	4000	1650	25	1 3/4	

**TRU-AIM BRILLIANT® Covered MR16**

UV Filter capsule with axial filament in constant color, aluminized reflector.

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Pkg Volts	Pkg Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
20	MR16	GU5.3	58570	5,7,8, 27,36	20MR16/B/FL35/C	12	10	Flood	C, AX	4000	600	35	1 3/4	
			58569	5,7,8, 27,36	20MR16/B/NSP8/C	12	10	Narrow Spot	C, AX	4000	4400	8	1 3/4	
35	MR16	GU5.3	58539	5,8,10, 27,36	35MR16/B/NSP8/C	12	10	Narrow Spot	C, AX	4000	8700	8	1 3/4	
50	MR16	GU5.3	58574	5,8,10, 27,36	50MR16/B/NSP11/C	12	10	Narrow Spot	C, AX	4000	10000	11	1 3/4	
			58575	5,8,10, 27,36	50MR16/B/FL35/C	12	10	Flood	C, AX	4000	1800	35	1 3/4	

**TRU-AIM Covered MR11**

UV Filter capsule with axial filament in dichroic reflector.

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Pkg Volts	Pkg Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
20	MR11	GU4	55119	5,7,8, 27,39	20MR11/FL35/C(FTD)	12	10	Flood	C, AX	4000	700	35	1 5/8	

**ALUMINUM REFLECTOR****AR70 ALUMINUM REFLECTOR**

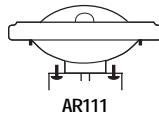
UV Filter capsule with axial filament in precisely engineered aluminum reflector.

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Pkg Volts	Pkg Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
20	AR70	BA15d	59013	27,40	20AR70/SP8	12	10	Spot	C, C-8	3000	7700	8	1 15/16	
			59012	27,40	20AR70/FL25	12	10	Flood	C, C-8	3000	900	25	1 15/16	
50	AR70	BA15d	59017	27,40	50AR70/SP8	12	10	Spot	C, C-8	3000	12500	8	1 15/16	
			59016	27,40	50AR70/FL25	12	10	Flood	C, C-8	3000	2600	25	1 15/16	

**AR111 ALUMINUM REFLECTOR**

UV Filter capsule with axial filament in precisely engineered aluminum reflector.

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Pkg Volts	Pkg Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
35	AR111	G53	55101	27,40	35AR111/SSP4/6V	6	6	Super Spot	C, C-8	3000	30000	4	2 3/8	
			55102	27,40	35AR111/SSP4	12	6	Super Spot	C, C-8	3000	40000	4	2 3/8	
			55110	27,40	35AR111/SP8	12	6	Spot	C, C-8	3000	14000	8	2 3/8	
			55114	27,40	35AR111/FL25	12	6	Flood	C, C-8	3000	2500	25	2 3/8	
50	AR111	G53	55105	27,40	50AR111/SSP4	12	6	Super Spot	C, C-8	3000	45000	4	2 3/8	
			55104	27,40	50AR111/SP8	12	6	Spot	C, C-8	3000	20000	8	2 1/4	
			55103	27,40	50AR111/FL25	12	6	Flood	C, C-8	3000	4000	25	2 3/8	
75	AR111	G53	55125	27,40	75AR111/SP8	12	6	Spot	C, C-8	3000	30000	8	2 3/4	



AR111

MR16

## ALUMINUM REFLECTOR

UV Filter capsule with axial filament in precisely engineered aluminum reflector.

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Pkg Volts	Pkg Qty	Beam Type	Class & Filament	Avg Rated Life(hrs)	Lumens	CBCP	Beam Angle	MOL (in)
75	AR111	G53	55123	27,40	75AR111/FL25	12	6	Flood	C, C-8	3000	5300	25	2 <sup>5</sup> / <sub>16</sub>	
			55124	27,40	75AR111/WFL45	12	6	Wide Flood	C, C-8	3000	2000	45	2 <sup>3</sup> / <sub>16</sub>	
100	AR111	G53	55129	27,40	100AR111/SP8	12	6	Spot	C, C-8	3000	48000	8	2 <sup>1</sup> / <sub>4</sub>	
			55127	27,40	100AR111/FL25	12	6	Flood	C, C-8	3000	8500	25	2 <sup>5</sup> / <sub>16</sub>	
			55128	27,40	100AR111/WFL45	12	6	Wide Flood	C, C-8	3000	2800	45	2 <sup>3</sup> / <sub>16</sub>	

## SIRIUS MR16

Watts	Bulb	Base	Product Number	Symbols & Footnotes	Ordering Abbreviation	Pkg Volts	Pkg Qty	Lamp Finish	Class & Filament	Avg Rated Life(hrs)	Lumens	LCL (in)	MOL (in)
50	MR16 SIG 64005	K23D	58701	32,37	50SIRIUS/SIG64005	10	10		C	6000	220		1 <sup>7</sup> / <sub>8</sub>

## SYMBOLS & FOOTNOTES FOR TUNGSTEN HALOGEN LAMPS

Symbol	Description
	New item introduced within the past year.
	Item will be discontinued when inventory is depleted.
	Heat resistant, hard glass.
	PAR lamps are suitable for indoor and outdoor use.
	Operate in any position.
	Operate horizontal.
	This lamp or ballast meets minimum Federal efficiency standards.
	New optical system being introduced during 1998.
	This ECOLOGIC® lamp was designed to pass the Federal TCLP criteria for classification as non-hazardous waste in most states. Disposal regulations may vary; check local and state regulations.
Footnote	Description
1	Approximate life for 130 volt tungsten halogen lamps operated at 120 volts is within the value calculated using the recommended equations for standard incandescent lamps, as set forth in the IES Handbook, 8th edition. Because of the uncertain nature of the halogen cycle on the coil when operated at less than rated voltage, life of tungsten halogen lamps varies considerably and unpredictably. OSRAM SYLVANIA does not recommend operation at other than rated voltage.
2	A suitable protective shield, screening technique, or both must be used to protect people and surroundings from the possibility of a lamp shattering and from possible ultraviolet radiation.
3	Operate only in porcelain sockets.
4	Infrared lamp technology
5	Max. seal temperature 350° C
6	UV Filter capsule with axial filament in covered constant color, hard coated dichroic reflector and infrared reflective coating on the lamp capsule.
7	Max pin temperature 220° C.
8	Max temperature at lens reflector joint 240° C.
9	UV Filter capsule with axial filament in constant color, hard coated Dichroic reflector and infrared reflective coating on the lamp capsule.
10	Max pin temperature 250° C.
11	State of the Art SPL Optics
12	In base up operation, heat may eventually deteriorate paper-lined or plastic sockets.
13	To avoid electric shock and/or skin burns, turn off power and allow bulb to cool before handling or attempting replacement.
15	For indoor or outdoor use where not directly exposed to weather. Exposure to weather may damage the bulb.
16	For Indoor Use only.
17	Not recommended for use in enclosed close-fitting housings.
19	Retrofit for 65BR30/FL, or 75R30/FL.
20	Because this bulb radiates considerable heat, do not use in enclosed, close fitting fixtures, or in close proximity to people, combustible materials, or substances adversely affected by heat or drying.
21	Even though this bulb may continue to light after the lens or reflector is cracked or broken, it should be replaced as soon as possible since the pressure filled inner capsule could unexpectedly shatter, creating a risk of personal injury or property damage. In addition, the inner capsule produces ultraviolet radiation that can cause injury to the eyes and skin with prolonged exposure without the blocking effect of the outer glass bulb.
22	Use only with ceramic/porcelain sockets and in fixtures rated for this bulb type, including voltage and wattage.
23	For use only in fixtures designed specifically for dichroic Reflector Lamps.
24	Should be shielded against moisture falling on bulb.
25	For use only with heat-resisting connector and with bulb supported by bulb rim or metal shell of base.
26	UV Filter Quartz
27	Suitable for use in unshielded fixtures. Consult most recent luminaire standards for your area to determine luminaire requirements.

**SYMBOLS & FOOTNOTES FOR TUNGSTEN HALOGEN LAMPS**

<b>Footnote</b>	<b>Description</b>
28	For use where seal temperature does not exceed 650° F.
29	Starlite Low Pressure - UV Filter Quartz
30	Standard Clear - UV Filter Quartz
31	Standard Frosted - UV Filter Quartz
32	A protective shield must be used external to the lamp.
33	Standard Clear - 24V - UV Filter Quartz - Not suitable for use in open fixtures.
34	UV Filter capsule with axial filament in constant color, hard coated dichroic reflector.
35	UV Filter capsule with axial filament in aluminized reflector.
36	UV Filter capsule with axial filament in covered aluminized reflector.
37	UV Filter capsule with axial filament in dichroic reflector.
38	UV Filter capsule with axial filament in covered constant color, hard coated dichroic reflector.
39	UV Filter capsule with axial filament in covered dichroic reflector.
40	UV Filter capsule with axial filament in precisely engineered aluminum reflector.

## MINIATURE & AUTOMOTIVE LAMPS

Ordering Abbreviation	Product Number	Bulb	Base	Avg Rated Life (hrs)	Approx Lumens	Amps	Design Voltage (V)	Pkg Qty	MOL (in)	Footnotes
1076	36183	S8	DC Bayonet	200	402.12	1.8	13	1000	2	
1130	36237	S8	DC Bayonet	200	263.89	2.63	6	1000	2	
1141	36377	S8	SC Bayonet	1000	263.89	1.44	13	1000	2	
1156	36521	S8	SC Bayonet	1200	402.00	2.1	13	1000	2	
1156	36521	S8	SC Bayonet	1200	402.00	2.1	13	1000	2	
1157	36561	S8	DC Index	1200 5000	402.00 38.00	2.1 0.6	13 14	1000	2	
120MB	34503	T2.5	Mini Bayonet	10000	4.52	0.025	120	1000	1.19	
120MB	34503	T2.5	Mini Bayonet	10000	4.52	0.025	120	1000	1.19	
120MB 6W	34513	T2.5	Mini Bayonet	3000	18.00	0.052	120	1000	1.19	
120PC	34519	T2	Bipin	7500		0.025	120	1000	1.125	1
120PSB	34557	T2	Slide Base # 5	10000		0.025	120	1000	1.11	
120PSB	34557	T2	Slide Base # 5	10000		0.025	120	1000	1.11	
12PSB	32983	T2	Slide Base # 5	12000		0.17	12	1000	1.11	
161	34691	T3.25	W2.1x9.2D	4000	12.57	0.19	14	1000	1.054	
168	34711	T3.25	W2.1x9.2D	1500	37.70	0.35	14	1000	1.054	
17	33061	T1.75	W2.1x4.9D	5000	8.17	0.065	28	1000	0.8	
1815	37329	T3.25	Mini Bayonet	3000	17.59	0.2	14	1000	1.19	
1816	37333	T3.25	Mini Bayonet	1000	37.70	0.33	13	1000	1.19	
1819	37351	T3.25	Mini Bayonet	2500	4.27	0.04	28	1000	1.19	
1820	37355	T3.25	Mini Bayonet	1000	20.11	0.1	28	1000	1.19	
1822	37367	T3.25	Mini Bayonet	1000	26.39	0.1	36	1000	1.19	
1829	37377	T3.25	Mini Bayonet	1000	12.57	0.07	28	1000	1.19	
1835	37387	T3.25	Mini Bayonet	5000	13.82	0.05	55	1000	1.19	
1847	37391	T3.25	Mini Bayonet	5000	4.78	0.15	6	1000	1.19	
1864	37413	T3.25	Mini Bayonet	1500	37.70	0.17	28	1000	1.19	
1893	37505	T3.25	Mini Bayonet	2500	25.13	0.33	14	1000	1.19	
1895	37531	G4.5	Mini Bayonet	2000	25.13	0.27	14	1000	1.06	
194	34761	T3.25	W2.1x9.2D	2500	25.13	0.27	14	1000	1.054	
1992 ERD	30215	T3.25	Wedge	150	804.00	2.5	14	24	1	
214-2 BU	34942	T3	End Caps	1000	50.27	0.52	14	1000	1.72	
2187	37747	T1.75	5/8" Wire Term	7000	3.70	0.04	28	1000	0.52	
222	34967	TL3	Mini Screw	5		0.22	2	1000	0.94	
2342 24:30V30MA	39307	T5	W2x4.6D	1000		0.3	24	200	0.78	
24E	33181	T2	Slide Base # 3	7000		0.035	24	1000	1.69	
24ESB	33189	T2	Slide Base # 5	8000		0.04	24	1000	1.11	
24MB	33213	T2.5	Mini Bayonet	10000	6.28	0.07	24	1000	1.19	
24PSB	33229	T2	Slide Base # 5	10000		0.072	24	1000	1.11	
24X	33257	T2	Slide Base # 3	8000		0.035	24	1000	1.69	
259	35027	T3.25	W2.1x9.2D	5000	8.17	0.25	6	1000	1.054	
28ESB	33285	T2	Slide Base # 5	6000		0.04	28	1000	1.11	
28MB	33311	T2.5	Mini Bayonet	5000	3.64	0.04	28	1000	1.19	
28PSB	33327	T2	Slide Base # 5	5000		0.04	28	1000	1.11	
3009 PLH	32169	T2	Socket					100	0.91	2,3,4
30110 PILOT TPLR	32161	T2	Dome Trans					1000	0.38	5
30112 PILOT TPLG	32159	T2	Dome Trans					1000	0.38	5
30120 PILOT FLR	32119	T2	Dome Fluted					1000	0.38	5
31099 PLH BAY	32173	T2.5 & T3.25	Socket					100	1.68	2,4,6
313	35133	T3.25	Mini Bayonet	500	43.92	0.17	28	1000	1.06	
3157WL	59894	S8	Wedge	1200 5000	402.12 37.69	2.1 0.59	13 14	1000	1.7	
327	35155	T1.75	SC Midg Flanged	4000	4.27	0.04	28	1000	0.63	
328	35169	T1.75	SC Midg Flanged	1000	4.27	0.2	6	1000	0.63	

## MINIATURE & AUTOMOTIVE LAMPS

Ordering Abbreviation	Product Number	Bulb	Base	Avg Rated Life (hrs)	Approx Lumens	Amps	Design Voltage (V)	Pkg Qty	MOL (in)	Footnotes
330	35183	T1.75	SC Midg Flanged	1500	6.28	0.08	14	1000	0.63	
334	35205	T1.75	Midget Groove	4000	4.27	0.04	28	1000	0.63	
3797 24V2W	39375	T2.75	BA9S	200	16.96	0.083	24	200	0.932	
382	35311	T1.75	SC Midg Flanged	15000	3.76	0.08	14	1000	0.63	
385	35321	T1.75	SC Midg Flanged	10000	1.88	0.04	28	1000	0.36	
387	35327	T1.75	SC Midg Flanged	7000	3.76	0.04	28	1000	0.63	
388	35349	T1.75	Midget Groove	7000	3.76	0.04	28	1000	0.63	
44	33459	T3.25	Mini Bayonet	3000	11.28	0.25	6	1000	0.94	
4414 PAR 36	30965	PAR36	2 Screw Terminal	300		1.41	13	12	2 3/4	
464	35413	T3.25	W2.1x9.2D	1500	37.70	0.17	28	1000	1.054	
47	33479	T3.25	Mini Bayonet	3000	6.28	0.15	6	1000	0.94	
48C	33507	T2	Slide Base # 3	7000		0.035	48	1000	1.69	
48PSB	33599	T2	Slide Base # 5	10000		0.05	48	1000	1.69	
502	35417	G4.5	Mini Screw	100	7.53	0.15	5	1000	1.06	
516/2PK/RP 12V	35920	T5	W2.1x9.2D	300	43.98	0.312	13	12	1.49	
52A TB OBS	33711	T2	Slide Base # 6	8000		0.03	24	1000	0.92	
53	33719	G3.5	Mini Bayonet	1000	12.57	0.12	14	1000	0.6	
55	33785	G4.5	Mini Bayonet	500	25.13	0.41	7	1000	0.84	
56	33831	T1.75	W2.1x4.9D	20000	1.88	0.115	5	1000	0.8	
57	33871	G4.5	Mini Bayonet	500	25.13	0.24	14	1000	0.84	
60MB	33927	T2.5	Mini Bayonet	7500	9.17	0.05	60	1000	1.19	
60PSB	33945	T2	Slide Base # 5	7500		0.05	60	1000	1.11	
6411 12V10W	39407	T3.25	SV8.5-8	200	100.53	0.83	12	200	1.61	
64111 12V5W	39431	T2.75	Mini Bayonet	240	80.42		12	200	1.29	7
6413 12V5W	39405	T3.25	SV8.5-8	200	100.53	0.4	12	200	1.61	
64150 H1 12V55W	31393	T2.5	P14.5S	225	1621.06		12	100	2.43	
64151 H3 12V55W	31397	T3.25	PK22S	225	1520.53		12	100	1.65	8,9
64156 H3 24V70W	31415	T3.25	PK22S	225	1834.69		24	100	1.65	8,9
6421 24V3W	39376	T3.25	SV8.5-8	1000	17.59	0.125	24	200	1.61	
6424 24V5W	39411	T3.25	SV8.5-8	200	61.95	0.2	24	200	1.61	
6429 24V10W	39397	T3.25	SV8.5-8	200	105.55	0.42	24	200	1.61	
656	35561	T3.25	W2.1x9.2D	2500	7.79	0.06	28	1000	1.054	
657	35565	T3.25	W2.1x9.2D	15000	7.79	0.08	28	1000	1.054	
657	35565	T3.25	W2.1x9.2D	15000	7.79	0.08	28	1000	1.054	
67	34021	G6	SC Bayonet	5000	50.27	0.69	14	1000	1.44	
68	34067	G6	DC Bayonet	5000	50.27	0.59	14	1000	1.44	
6PSB	32803	T2	Slide Base # 5	20000		0.14	6	1000	1.11	
73	34091	T1.75	W2.1x4.9D	15000	3.77	0.08	14	1000	0.8	
7327 BIPIN T1 3/4	38289	T1.75	Bipin	4000	4.27	0.04	28	1000	0.63	10
7371	38379	T1.75	Bipin	20000	1.25	0.04	12	1000	0.63	
7382	38417	T1.75	Bipin	15000	3.76	0.08	14	1000	0.63	
7511 P21W 24V21W	39361	S8	BAY15S	150	464.95	0.88	24	200	2.095	
755	35763	T3.25	Mini Bayonet	20000	4.15	0.15	6	1000	0.94	
755	35763	T3.25	Mini Bayonet	20000	4.15	0.15	6	1000	0.94	
756	35771	T3.25	Mini Bayonet	15000	3.90	0.08	14	1000	1.06	
757	35781	T3.25	Mini Bayonet	7500	7.79	0.08	28	1000	1.06	
85	34179	T1.75	W2.1x4.9D	7000	3.77	0.04	28	1000	0.8	
86	34201	T1.75	W2.1x4.9D	20000	5.03	0.2	6	1000	0.8	
88	34219	S8	DC Bayonet	300	188.50	1.91	7	1000	2	
89	34233	G6	SC Bayonet	750	75.40	0.58	13	1000	1.44	
90	34271	G6	DC Bayonet	750	75.40	0.58	13	1000	1.44	
90MB	34299	T2.5	Mini Bayonet	5000	4.67	0.03	90	1000	1.19	

## MINIATURE & AUTOMOTIVE LAMPS

Ordering Abbreviation	Product Number	Bulb	Base	Avg Rated Life (hrs)	Approx Lumens	Amps	Design Voltage (V)	Pkg Qty	MOL (in)	Footnotes
912	35869	T5	W2.1x9.2D	1000	150.80	1	13	500	1.49	
918	35923	T5	W2.1x9.2D	500	81.62	0.54	13	500	1.49	
918/2PK/RP 13V	35921	T5	W2.1x9.2D	500	81.68	0.54	13	12	1.49	
93	34311	S8	SC Bayonet	700	188.50	1.04	13	1000	2	
93BL2PK 13V	16810	S8	SC Bayonet	700	188.49	1.04	13	24	1.8	
94	34337	S8	DC Bayonet	700	187.87	1.04	13	1000	2	
NE51 B1A	32427	T3.25	Mini Bayonet	25000		0.3	105	1000		11
NE51H B2A	32429	T3.25	Mini Bayonet	25000		1.2	105	1000		11
PR12	38931	B3.5	SC Mini Flanged	15	37.69	0.5	6	1000	1 1/4	
PR13	38939	B3.5	SC Mini Flanged	15	25.13	0.5	5	1000	1 1/4	
PR2	38891	B3.5	SC Mini Flanged	15	10.05	0.5	2	1000	1 1/4	
PR3	38901	B3.5	SC Mini Flanged	15	18.84	0.5	4	1000	1 1/4	
PR4	38911	B3.5	SC Mini Flanged	10	5.02	0.27	2	1000	1 1/4	
PR6	38917	B3.5	SC Mini Flanged	30	5.65	0.3	2	1000	1 1/4	
SM2A PCS 30096	32249	T2	Solder Lugs					500	1.2	2,12,13

## FOOTNOTES FOR MINIATURE LAMPS

Footnote	Description
1	MOL = Excluding pins.
2	Socket dimensions front to panel to end of terminals.
3	UL File No. E31557(M) CSA File No.LR20904
4	Universal lamp housings for T2.5 and T3.25 miniature bayonet based lamps.
5	Universal lamp housings for T2 slide based pilot lamps.
6	UL File No. E31557(M) CSA File No.LR20904
7	Caution: Operates under pressure and may shatter. Use appropriate techniques to protect people and surroundings. Do not operate in close proximity to persons, combustible materials, or substances affected by heat or drying. Do not operate over 110% rated voltage because such operation increases pressure and lamps' tendency to shatter. Ultraviolet output may cause skin and eye irritation with prolonged exposure. Protect bulb from abrasions and scratches. Do not insert lamps when power is on. Follow operating instructions.
8	ECE Approved
9	Lamp Life B3 @ 13.2 volts.
10	There are two distinctively different lamps with this part number. When ordering T-1 3/4 , #7327, please also specify category and base type. S-11. #7327 discontinued.
11	Material : Black Phenolic
12	MIL-Std. 18236 B-MIL Std. 202B
13	Material : Plastic

# OSRAM SYLVANIA: THE LEADER IN ENERGY-SAVING HID LAMPS

## UNDERSTANDING HIGH INTENSITY DISCHARGE LIGHTING

A brief description of the catalog format and related terminology will assist the reader in understanding the information presented in this section.

All product families are listed in ascending wattage, followed by alphabetical bulb designation to simplify lamp identification. Performance ratings are based on tests conducted under controlled conditions on AC circuits with auxiliary equipment meeting current published ANSI specifications.

Lamp performance under typical service conditions may vary from rated values. Ratings and specifications are subject to change without notice.

For more information on HID SYSTEM SOLUTIONS, refer to page 92.

### ANSI CODE

This is a unique code that describes the class and the electrical characteristics of the lamp and ballast as well as the fixture requirements. The code is developed and assigned by the American National Standards Institute (ANSI). The ANSI CODE consists of type of lamp (S = HPS, H = Mercury, M = Metal Halide, L = LPS), followed by the ballast number, and for metal halide lamps followed by the fixture requirement (O, E, S, F).

### ARC LENGTH

Arc length is the dimension of the arc discharge measured from one electrode tip to the other. This is useful for optical design of reflectors and affects fixture efficiency.

### AVERAGE LIFE (HOURS)

The average life of a lamp is based on vertical operation (unless otherwise noted) of representative lamps operated under controlled conditions of at least 10 hours per start (except for M1500 and Briteline lamps, which are based on 5 hours per start). Average life is defined as the total operation hours at which 50% (Median) of any group of lamps is still operating (except for most High Pressure Sodium and Mercury lamps, for which 65% of the lamps are operating at the end of life). Variations in operating conditions such as bulb and base temperatures and line voltage can also affect lamp life.

Regular operation of lamps with off times less than 15 minutes will shorten the life of the lamp. Operating cycles shorter than 10 hours per start will reduce lamp life as follows:

- 5 hours / start - Approximately 75% of rating
- 2.5 hours / start - Approximately 55% of rating
- 1.25 hours / start - Approximately 40% of rating

### BASE

Most SYLVANIA HID lamp bases for general lighting are made of corrosion-resistant brass with special lubricant to provide easy removal at end of lamp life. See the following pages for all base illustrations.

**E26 Medium** - Medium (MED) bases are used on lamps in E17 bulbs and are limited to 175W maximum.

**E26 Medium Skirted** - Medium skirted (Med. Skt.) bases consist of a medium brass base with a skirt, which is mechanically connected to a PAR38 bulb.

**E39 Mogul** - All (MOG) bases are embossed with letters and numbers representing months and years. The date of installation can be recorded by marking the letter of the current month and the number that coincides with the last digit of the current year.

**EX39 Exclusionary Mogul Base** - Exclusionary Mogul bases (EXCL MOG) are bases used on metal halide lamps having shrouded arc tubes, permitting them to be used in open fixture applications. These bases are compatible with exclusionary or standard mogul sockets.

**E39 POM** - Position Oriented Mogul (POM) bases are used on lamps designed to operate only in the horizontal position and require a special POM socket. A pin located on the base engages in a slot within the POM socket ensuring proper operating position of the lamp within the fixture.  
**Rx7s / R7s Recessed Single Contact** - SYLVANIA double-ended HID lamps with recessed single contact (RSC) bases have silver plated contacts to provide maximum electrical contact.

### BULB

Each bulb description consists of a letter to indicate bulb shape, followed by numbers that indicate maximum bulb diameter in 1/8 inch increments. For example, a BT37 bulb is a blown shape with a tubular top, 37/8 of an inch or 4 5/8 inches in diameter. Illustrations of bulb shapes are shown on the following pages.

Although SYLVANIA HID bulbs are made of glass designed to resist thermal shock in normal applications, they must be shielded from direct contact with liquids, such as rain, during operation to avoid bulb breakage.

### COLOR RENDERING INDEX (CRI)

Color Rendering Index (CRI) is an international scale (numbering system) up to 100 indicating the relative color rendering quality of a light source when compared to a standard reference light source of the same chromaticity (color temperature). The CRI expresses the degree to which colors will appear "familiar" or "natural" under the light source selected. In general, the higher the CRI number, the better the color rendering properties of the light source being measured. The color rendering index of any two like sources should only be compared if those sources have the same correlated color temperature (CCT).

### CORRELATED COLOR TEMPERATURE (CCT)

The correlated color temperature of a light source, expressed in Kelvin (K), is a means of describing the appearance or chromaticity of the source. The correlated color temperature of the light source contributes to the visual appearance of the lighted space. "Warm" light sources have a low color temperature (2000-3000K) and feature more light in the red/orange/yellow range. Light with a higher color temperature (>4000K) features more blue and is referred to as "cool."

With new installations, or group relamps, all color performance evaluations should be made after at least 100 hours of operation (at recommended operating cycles) to allow the lamps to stabilize. Additional changes in chemistry within the arc tube over the life of the lamp may also cause the color temperature to shift as the lamp gets closer to the end of its rated life. To minimize color variation within an installation, it is recommended that HID lamps be group relamped and run on equal operating cycles.

### DIMMING HID

Most SYLVANIA HID products can be dimmed on stepped, bi-level dimming systems provided specific guidelines are followed. Generally, most Metalarc® metal halide lamps can be dimmed down to 50% of rated wattage depending on the lamp type and operating position. Lumalux® high pressure sodium lamps can also be dimmed down to 50% of rated wattage. In addition to lower light output, HID lamps may shift in overall color and exhibit a lower color rendering index (CRI) when operated in a dimmed mode. Some restrictions apply to both the operation of the ballast and lamp. For more information on dimming, please reference NEMA guidelines or contact a SYLVANIA representative.

## UNDERSTANDING HIGH INTENSITY DISCHARGE LIGHTING (continued)

### Fixture Requirement

Developed by the American National Standard Institute (ANSI), the fixture requirement code describes the type of fixture required for each lamp type. See lamp warnings for additional information and proper operating instructions.

**E** = Lamps classified as E-type are to be used ONLY in suitably rated enclosed luminaires.

**O** = Lamps classified as O-type, comply with ANSI Standard C78.387 for containment testing and may be used in open luminaires.

**S** = When operated within 15 degrees of vertical, this lamp may be operated in an open luminaire provided the installation is not near people or flammable or combustible material, otherwise it must be operated in a suitably enclosed luminaire.

**F** = F-rated lamps require an enclosed fixture with a U.V filter and lens interlock.

### HOT RESTRIKE

In most instances, if an HID lamp experiences a momentary power interruption or sudden voltage drop, the lamp may extinguish. A lamp that is still hot will not restart immediately. Because the arc tube within the lamp must cool down before it can re-start, HID lamps have hot restrike times ranging from 1-15 minutes depending on the product type.

### KEY TO DATE OF MANUFACTURE

Consult your SYLVANIA Sales Representative or call 1-800-LIGHTBULB.

### ORDERING ABBREVIATION

Ordering abbreviation provides a shorthand description of the lamp, using a unique code which can be used when ordering a lamp if you do not know the product number. This information can be found on the lamp etch.

### PACKAGE QUANTITY

This identifies the number of lamps contained in a standard shipping carton.

### PRODUCT NUMBER

Product number is a five digit number used to identify a specific SYLVANIA lamp and should be used when ordering.

## HOW TO READ PRODUCT INFORMATION - HID

Watts	Bulb	Base	Product Number	Ordering Abbreviation	ANSI Ballast No	Pkg Qty	Lamp Finish	Operating Position	Fix Req	Avg Rated Life(hrs)	Approx Lumens (initial)	Approx Lumens (mean)	CCT (K)	Symbols & Footnotes
100	E17	E26 Med	67506	LU100/MED	S54	20	Clear	Universal	O	24000+	9500	8000	22	2100 5,34
250	BT28	E39 Mogul	64578	MS250/PS/BU-ONLY	M153/E	6	Clear	Base up within 15° only	E	20000	23500	19000	65	4200 1,4,11,12
350 400	BT37	EX39 Excl Mogul	64769	MP350/400/PS/BU-ONLY	M131/O M155/O	6	Clear	Base up within 15° only	O	20000 40000	34000 40000	24500 29500	65 3500	3700 3500 * 4,5,12,14
1000	BT56	EX39 Excl Mogul	64714	MP1000/BU-ONLY	M47/O	6	Clear	Base up within 15° only	O	12000	107000	85500	65	3500 5,8,12

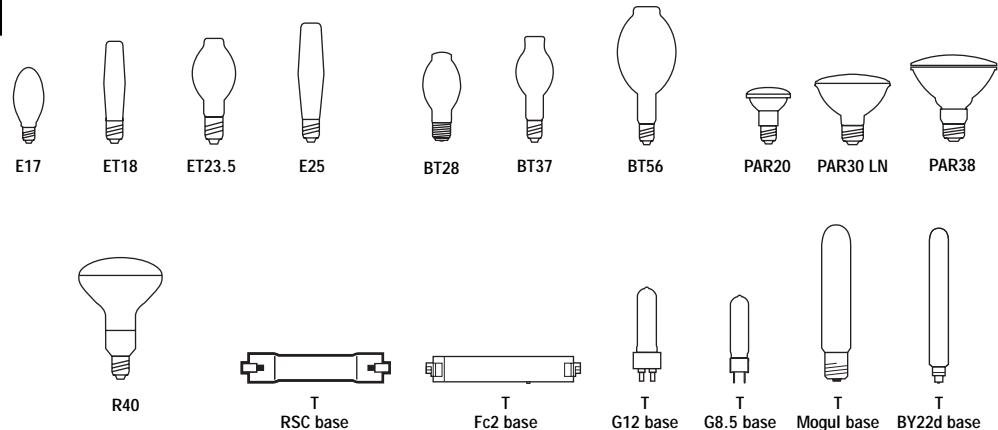
Please refer to the "Understanding High Intensity Discharge" section on previous pages for definitions and explanations of the category headers.

## HOW TO READ ORDERING ABBREVIATIONS

MS400PS/BU-ONLY	MP70PAR38/U/SP20/ECO	LU100/D/MED	H38BP-100/DX
MS	Super Metalarc	MP	Metalarc Pro-Tech
400	Wattage	70	Wattage
PS	Pulse Start	PAR38	Bulb Type
BU ONLY	Operating Position: Base up only	U	Operating Position
		SP20	Beam Type/Angle
		ECO	Ecologic
			ANSI Ballast Number
			Wattage
			Brite White
			Deluxe Coated

## BULBS

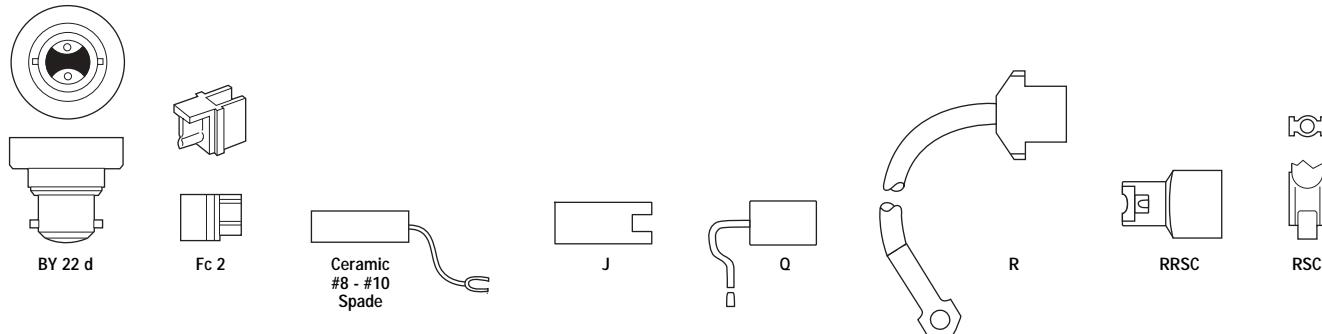
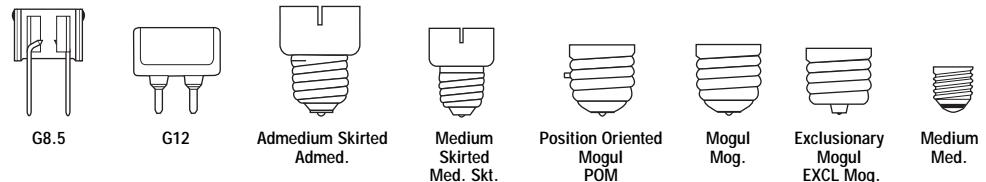
A bulb designation consists of a letter(s) to indicate the shape and a number(s) to indicate the approximate maximum diameter in eighths of an inch. Thus, an E17 lamp is an Ellipsoidal shape and 17/8 of an inch or 2 1/8 inches in diameter. Other letter designations include: BT=Bulbous Tubular; E or ED=Ellipsoidal; ET=Ellipsoidal Tubular; PAR=Parabolic; R=Reflector; T=Tubular.



## BASES

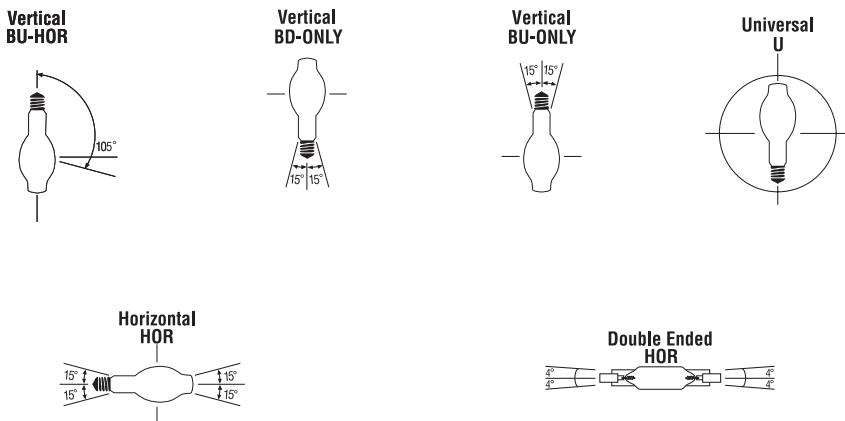
Lamps with screw bases have one lead-in wire soldered or welded to the center contact and the other soldered or welded to the upper rim of the base shell.

Bases with ceramic bodies have internal leads welded to either silver-plated contacts or external lead wires.



## OPERATING POSITIONS

A designated operating positions assure maximum lamp performance. Where it is not specified, the lamp is suitable for operation in any position.



## HID BRAND NAME GUIDE

Note: These tables are intended only as guides and may represent another lamp company's most similar product or product family rather than an identical match. Individual manufacturer's performance values should be consulted.

SYLVANIA	GE *	PHILIPS **
Metalarc®	Multi-Vapor	Metal Halide
Metalarc Ceramic	ConstantColor CMH	Master Color
	Protected Multi-Vapor	Protected Metal Halide
Metalarc Pro-Tech®		
Super Metalarc	High Output Multi-Vapor	Metal Halide
Metalarc Pulse Start	PulseArc Multi-Vapor	Pulse Start Metal Halide
Metalarc Super Saver	Watt-Miser High Output Multi-Vapor	Metal Halide
Metalarc Briteline	Arcstream	Double-Ended Metal Halide
HQI®	Arcstream	Double-Ended Metal Halide
Metalarc Safeline®	Saf-T-Gard Multi-Vapor	Safety Lifeguard Metal Halide

\*Trademark or registered trademark of General Electric Company.

SYLVANIA	GE *	PHILIPS **
Mercury Safeline	Saf-T-Gard Mercury	Safety Lifeguard Mercury Vapor
Lumalux®	Lucalox	Ceramalux HPS
Lumalux / ECO®	Ecolux	Ceramalux ALTO
Lumalux Plus® / ECO	Ecolux NC	Ceramalux ALTO Plus
Lumalux Mercury Free / ECO	-----	-----
Lumalux Standby	Lucalox Standby XL	Instant Restrike Ceramalux
Unalux®	E-Z Lux	Ceramalux RetroLux
SOX Low Pressure Sodium	SOX Low Pressure Sodium	SOX Low Pressure Sodium

\*\*Trademark or registered trademark of Philips.

## PHYSICAL DIMENSIONS

BRITELINE	PHYSICAL SIZE	(dimensions in mm)
Bulb	LCL	MOL
T7 (15000W)	127	256
T8	127	254
T9	127	254

HQI	PHYSICAL SIZE	(dimensions in mm)
Bulb	LCL	MOL
T6	57	114
T7 (150W)	66	132
T7.5	56	84
T9.5	81	163
T14.5	150	225
BT	175	285

MERCURY VAPOR	(dimensions in inches)	
Bulb	LCL	MOL
T16	7	11
E17	3 ¾	5 ½
ET23.5	5	7 ½
BT28/ED28	5	8 ½
BT37/ED37	7	11 ½
BT56	9 ½	15 ¾
PAR38	--	5 ½
R40	--	7 ½

## METALARC METAL HALIDE (dimensions in inches)

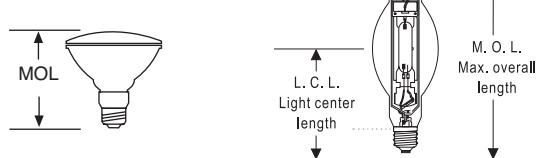
Physical size of Metalarc, Metalarc Ceramic, Super Metalarc & Metalarc Pro-Tech lamps

Bulb	LCL	MOL
T4.5	2	3 ½
E17/ED17	3 ½	5 ¼
ED18/ET18	5 ¾	9 ¼
BT28/ED28	5	8 ½
BT37/ED37	7	11 ½
BT56	9 ½	15 ¾
T6 (39, 70W)	2 ½	3 ½
T6 (150W)	2 ½	4 ¼
T7.5	2 ½	4 ¼
PAR20	--	3 ½
PAR30LN	--	4 ¼
PAR38	--	5 ½

## LUMALUX HIGH PRESSURE SODIUM (dimensions in inches)

Physical size of all Lumalux and Unalux lamps

Bulb	LCL	MOL
T7	5	10 ½
T16	6 ½	11 ½
E17	3 ½	5 ¼
ET18	5 ¾	9 ¼
ET23.5	5	7 ¼
E25	8 ¼	15 ½
BT28/ED28	5	8 ½
BT37/ED37	7	11 ½



## HID LAMP COLORS CORRELATED COLOR TEMPERATURE AND COLOR RENDERING INDEX

Please refer to the "Understanding High Intensity Discharge" section for additional information.

LAMP TYPE	COLOR TEMPERATURE	CRI
MERCURY	Brite White Deluxe (coated)	4000K
	Clear	5900K
METAL HALIDE	Metalarc®, Metalarc Ceramic, Super Metalarc, & HQI® Lamps	
	<i>See individual product listing for color temperature and CRI data</i>	
HIGH PRESSURE SODIUM	Lumalux® (clear)	1900K-2200K
	Lumalux (coated)	1900K-2100K
	Unalux® (clear)	1800K-2100K
LOW PRESSURE SODIUM	SOX (clear)	1800K
		-45-0



The following item was accepted into the 2003 IESNA Progress Report which recognizes innovative products introduced to the industry during that year.

150-watt METALARC POWERBALL® CERAMIC

For weight and measure information, please visit [www.sylvania.com](http://www.sylvania.com)

For more information about HID lamp warranties, please visit the warranty section of this catalog.

### Lamp Disposal Labeling

The following information appears on the packages of high intensity discharge lamps that contain mercury. For more information on lamp disposal labeling, see the inside back cover of this catalog.



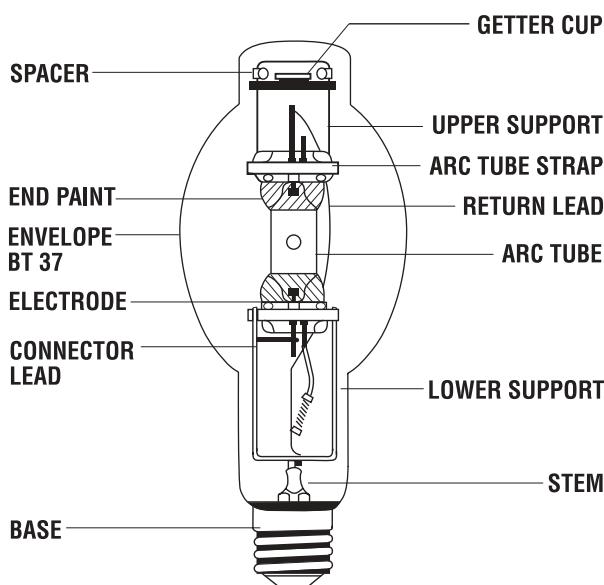
### LAMP WARNINGS:

HID Metal Halide and Mercury lamps are marked with a "T" or "R" on their packaging. These letters provide safety information about the lamp. Below is the text used by the FDA to describe each of the letters.

**T: WARNING:** This lamp should self-extinguish within 15 minutes after the outer envelope is broken or punctured. If such damage occurs, TURN OFF AND REMOVE LAMP to avoid possible injury from hazardous shortwave ultraviolet radiation.

**R: WARNING:** This lamp can cause serious skin burn and eye inflammation from shortwave ultraviolet radiation if outer envelope of the lamp is broken or punctured. Do not use where people will remain for more than a few minutes unless adequate shielding or other safety precautions are used. Lamps that will automatically extinguish when the outer envelope is broken or punctured are commercially available.

## GUIDE TO METAL HALIDE LAMPS



OSRAM SYLVANIA currently offers ten families of Metal Halide lamps: Standard METALARC®, COMPACT METALARC, SUPER METALARC, METALARC PRO-TECH®, METALARC POWERBALL® CERAMIC, METALARC PULSE START, METALARC SUPER SAVER, METALARC BRITELINE, METALARC SAFELINE®, and HQI®. These lamps are designed for general lighting applications such as commercial, industrial lighting and outdoor floodlighting where good color and high efficiency are desired.

**STANDARD METALARC(M)** — Offered in a range of wattages (from 175-1500 watts), standard Metalarc metal halide lamps allow for design flexibility with multiple light source solutions to choose from. Metalarc lamps have significantly higher efficacy than mercury vapor or incandescent products and considerably better CRI than mercury vapor and high pressure sodium lamps.

**COMPACT METALARC(M)** — These lamps have reduced outer jacket sizes compared to standard metal halide lamps for use in smaller fixtures. The reduced bulb diameter allows fixture manufacturers to design more versatile, less expensive and highly efficient luminaries.

**SUPER METALARC( MS )** — Super Metalarc lamps are position dedicated, which means that they are specifically designed to be run in particular operating positions.

Because of this feature, these lamps exhibit improved performance over standard, universal operating metal halide lamps of similar wattage. Product features include long life, higher maintained lumens and increased efficacy.

**METALARC PRO-TECH(MP)** — These are specially designed lamps that incorporate a protective shroud to contain an arc tube rupture. Metalarc Pro-Tech lamps can be used in open or enclosed fixtures. Dedicated bases are available on both low and high wattage lamp types.

**METALARC POWERBALL CERAMIC(MC or MCP)** — These lamps meet today's color critical needs by combining conventional metal halide pulse start characteristics with improved lamp-to-lamp color consistency and high CRI (>85). Most OSRAM SYLVANIA POWERBALL lamps use a patented rounded arc tube shape, which allows for a more uniform temperature and improved color consistency. Lamp types include clear and coated single-ended high and low wattage lamps, along with double ended and PAR configurations.

**METALARC PULSE START(M/PS)** — Metalarc Pulse Start lamps utilize metal halide performance with proven ignitor technology for longer life, improved lumen maintenance and reduced color shift over lamp life compared to standard metal halide products. Lamp configurations include low and high wattage types, both clear and coated. Metalarc Pro-Tech designs are also available for open fixture applications.

**METALARC SUPERSAVER(M/SS)** — Constructed with an enhanced arc tube for peak performance, Metalarc Super Saver lamps are designed as energy-saving, replacement metal halide lamps. The 360W Super Saver lamp is a direct retrofit for existing 400W products and the 150W Super Saver replaces 175 W lamps -- no ballast change is required.

**METALARC BRITELINE(M)** — These double-ended lamps are designed for compact fixtures, which provide excellent optical control and high efficiency. These higher wattage lamps are particularly well suited for sports lighting and outdoor floodlighting applications.

**METALARC SAFELINE(MT)** — Metalarc Safeline lamps are designed to self-extinguish when the outer bulb is broken reducing exposure to possible ultraviolet radiation. These lamps are recommended for use in sports facilities and other places of public assembly where the lamps may be subject to breakage by external objects.

**HQI** — With their compact size and very short arc length, HQI metal halide lamps allow luminaire manufacturers to design highly efficient fixtures using proven quartz arc tube technology. The high color rendering, white light, compact size, long life and high efficacy make these lamps ideal for color critical applications.

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## Enclosed fixture rated METALARC®, E-Type Lamp



ANSI Luminaire Code E  
ENCLOSED FIXTURE

THE FOLLOWING INSTRUCTIONS MUST BE COMPLIED WITH TO AVOID RISK OF PERSONAL INJURY, PROPERTY DAMAGE AND POOR LAMP PERFORMANCE.

- I. RUPTURE RISKS:** This Metal Halide lamp is constructed of an outer glass bulb with an internal arc-tube. Metal Halide arc-tubes operate at high pressure and at very high temperatures and can unexpectedly rupture due to internal causes or external factors such as a ballast failure or misapplication. An arc-tube rupture can burst and shatter the outer glass bulb resulting in the discharge of glass fragments and extremely hot particles. In the event of such rupture, **THERE IS A RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE.**

**TO REDUCE THESE RISKS:**

1. Only operate lamp in an enclosed fixture with a lens/diffuser material able to contain hot lamp fragments (up to 2192°F, 1200°C for a ceramic arc tube and 2012°F, 1100°C for quartz). If you are uncertain, contact your fixture manufacturer.
2. Only operate lamp with compatible ballast and fixture. (See catalog for specific information.)
3. Only operate lamp in designated operating positions. (See catalog for illustration.)
4. Lamp must be turned off for a minimum of fifteen minutes at least once a week.
5. Never expose an operating lamp to moisture (such as rain, sleet or snow).
6. Replace lamp if outer glass bulb is scratched, cracked or damaged in any way.
7. Electrically insulate any metal support in contact with the outer bulb to avoid glass decomposition.
8. Replace lamp at or before the end of rated life. (See catalog for rated life.)

FOR APPLICATIONS WHERE AN ADDITIONAL MEASURE OF SAFETY IS DESIRED, LAMPS USING AN INTERNAL SHIELD DESIGNED TO CONTAIN AN ARC-TUBE RUPTURE ARE AVAILABLE.

- II. ELECTRICAL SHOCK AND BURN HAZARD:** Do not remove or insert lamp while power is on. If outer glass bulb is broken, shut off power immediately and remove lamp after it has cooled.

**III. ULTRAVIOLET RADIATION EXPOSURE:**

WARNING: This lamp can cause serious skin burn and eye inflammation from shortwave ultraviolet radiation if the outer envelope of the lamp is broken or punctured. Do not use where people will remain for more than a few minutes unless adequate shielding or other safety precautions are used. Lamps that will automatically extinguish when the outer envelope is broken or punctured are commercially available. This product conforms to the following federal regulations: U.S.A.: 21 CFR 1040.30 and CANADA: SOR/80-381

**IV. LAMP INSTALLATION:**

1. Screw lamp firmly but not forcibly into socket to avoid breakage.
2. All horizontal lamps with position oriented mogul (POM) bases (with locating pin) require a POM socket. Do not remove pin from base.
3. All pulse start lamps require a socket rated to withstand a 4000 volt pulse.
4. Never install the lamp into an ordinary household socket.

- V. BROKEN ARC-TUBE:** Take care in handling and disposing of this lamp. If arc-tube is broken, avoid skin contact with any of the contents and fragments. See Product Safety Data Sheet for further details.

Enclosed fixture rated METALARC® E-Type (Ceramic & Quartz, G12, G8.5 & DE, UV-Stop Outer-jacket) Lamp

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**WARNING**

ANSI Luminaire Code E  
ENCLOSED FIXTURE

THE FOLLOWING INSTRUCTIONS MUST BE COMPLIED WITH TO AVOID RISK OF PERSONAL INJURY, PROPERTY DAMAGE AND POOR LAMP PERFORMANCE.

- I. RUPTURE RISKS:** This Metal Halide lamp is constructed of an outer glass bulb with an internal ceramic or quartz arc-tube. Metal Halide arc-tubes operate at high pressure and at very high temperatures and can unexpectedly rupture due to internal causes or external factors such as a ballast failure or misapplication. An arc-tube rupture can burst and shatter the outer glass bulb resulting in the discharge of glass fragments and extremely hot particles. In the event of such rupture, THERE IS A RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE.

**TO REDUCE RISKS:**

1. Only operate lamp in an enclosed fixture with a lens/diffuser material able to contain hot lamp fragments (up to 2192°F, 1200°C for a ceramic arc-tube and 2012°F, 1100°C for quartz). If you are uncertain, contact your fixture manufacturer.
  2. Only operate lamp with compatible ballast and fixture. (See catalog for specific information.)
  3. Only operate lamp in designated operating positions. (See catalog for illustration.)
  4. Lamp must be turned off for a minimum of fifteen minutes at least once a week.
  5. Never expose operating lamp to moisture (such as rain, sleet or snow).
  6. Replace lamp if outer glass bulb is scratched, cracked or damaged in any way.
  7. Electrically insulate any metal support in contact with the outer bulb to avoid glass decomposition.
  8. Replace lamp at or before the end of rated life. (See catalog for rated life.)
- II. ELECTRICAL SHOCK AND BURN HAZARD:** Do not remove or insert lamp while power is on. If outer glass bulb is broken, shut off power immediately and remove lamp after it has cooled.
- III. ULTRAVIOLET RADIATION EXPOSURE:**  
WARNING: This lamp can cause serious skin burn and eye inflammation from shortwave ultraviolet radiation if the outer envelope of the lamp is broken or punctured. Do not use where people will remain for more than a few minutes unless adequate shielding or other safety precautions are used. Lamps that will automatically extinguish when the outer envelope is broken or punctured are commercially available. This product conforms to the following federal regulations: U.S.A.: 21 CFR 1040.30 and CANADA: SOR/80-381
- IV. LAMP INSTALLATION:**
1. Ensure that lamp is securely seated in the socket.
  2. If lamp is touched with bare hands, clean fingerprints off with alcohol and wipe dry with clean, lint-free cloth.
  3. All sockets must be rated to withstand the maximum pulse voltage output of the ballast.
  4. Never install the lamp into an ordinary household socket or a fixture intended for tungsten halogen lamps.
- V. BROKEN ARC-TUBE:** Take care in handling and disposing of this lamp. If arc-tube is broken, avoid skin contact with any of the contents and fragments. See Product Safety Data Sheet for further details.

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**Open Fixture Rated, METALARC PRO-TECH®, O-Type Lamp**

**R**



**WARNING**

**ANSI Luminaire Code O  
OPEN FIXTURE permissible**

THE FOLLOWING INSTRUCTIONS MUST BE COMPLIED WITH TO AVOID RISK OF PERSONAL INJURY, PROPERTY DAMAGE AND POOR LAMP PERFORMANCE.

- I. RUPTURE RISKS:** This Metal Halide lamp is constructed of an outer glass bulb with an internal arc-tube. Metal Halide arc-tubes operate at high pressure and at very high temperatures and can unexpectedly rupture due to internal causes or external factors such as a ballast failure or misapplication. An arc-tube rupture can burst and shatter the outer glass bulb resulting in the discharge of glass fragments and extremely hot particles. In the event of such rupture, **THERE IS A RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE.**

**TO REDUCE THESE RISKS:**

1. Only operate with compatible ballast and fixture. (See catalog for specific information.)
2. Only operate lamp in designated operating positions. (See catalog for illustration.)
3. Lamp must be turned off for a minimum of fifteen minutes at least once a week.
4. Never expose operating lamp to moisture (such as rain, sleet or snow).
5. Replace lamp if outer glass bulb is scratched, cracked or damaged in any way.
6. Electrically insulate any metal support in contact with the outer glass bulb to avoid glass decomposition.
7. Replace lamp at or before the end of rated life. (See catalog for rated life.)

This lamp is intended for use in open fixtures since it contains a special shield which was designed to contain a ruptured arc-tube and thereby minimize the resultant risks of personal injury, property damage, burns and fire. In applications where an additional measure of safety is desired, an enclosed fixture may be used with a lens/diffuser material able to contain hot lamp fragments (up to 2192°F, 1200°C for a ceramic arc tube and 2012°F, 1100°C for quartz). If you are uncertain, contact your fixture manufacturer.

- II. ELECTRICAL SHOCK AND BURN HAZARD:** Do not remove or insert lamp while power is on. If outer glass bulb is broken, shut off power immediately and remove lamp after it has cooled.

**III. ULTRAVIOLET RADIATION EXPOSURE:**

**WARNING:** This lamp can cause serious skin burn and eye inflammation from shortwave ultraviolet radiation if the outer envelope of the lamp is broken or punctured. Do not use where people will remain for more than a few minutes unless adequate shielding or other safety precautions are used. Lamps that will automatically extinguish when the outer envelope is broken or punctured are commercially available. This product conforms to the following federal regulations: U.S.A.: 21 CFR 1040.30 and CANADA: SOR/80-381

**IV. LAMP INSTALLATION:**

1. Screw lamp firmly but not forcibly into socket to avoid breakage.
2. All pulse start lamps require a socket rated to withstand a 4000 volt pulse.
3. Never install the lamp into an ordinary household socket.

- V. BROKEN ARC-TUBE:** Take care in handling and disposing of this lamp. If arc-tube is broken, avoid skin contact with any of the contents and fragments. See Product Safety Data Sheet for further details.

METALARC®, S-Type Lamp

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ANSI Luminaire Code S  
ENCLOSED FIXTURE/Open if meets  
requirement of Paragraph I.1 below

THE FOLLOWING INSTRUCTIONS MUST BE COMPLIED WITH TO AVOID RISK OF PERSONAL INJURY, PROPERTY DAMAGE AND POOR LAMP PERFORMANCE.

- I. **RUPTURE RISKS:** This Metal Halide lamp is constructed of an outer glass bulb with an internal arc-tube. Metal Halide arc-tubes operate at high pressure and at very high temperatures and can unexpectedly rupture due to internal causes or external factors such as a ballast failure or misapplication. An arc-tube rupture can burst and shatter the outer glass bulb resulting in the discharge of glass fragments and extremely hot particles. In the event of such rupture, THERE IS A RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE.

TO REDUCE THESE RISKS:

1. Only operate lamp in an enclosed fixture with a lens/diffuser material able to contain hot lamp fragments (up to 2012°F, 1100°C). If you are uncertain, contact your fixture manufacturer. When operated within 15° of vertical, this lamp may be operated in an open fixture PROVIDED THE INSTALLATION IS NOT NEAR PEOPLE OR FLAMMABLE OR COMBUSTIBLE MATERIAL.
2. Only operate lamp with compatible ballast and fixture. (See catalog for specific information.)
3. Only operate lamp in designated operating positions. (See catalog for illustration.)
4. Lamp must be turned off for a minimum of fifteen minutes at least once a week.
5. Never expose an operating lamp to moisture (such as rain, sleet or snow).
6. Replace lamp if outer glass bulb is scratched, cracked or damaged in any way.
7. Electrically insulate any metal support in contact with the outer bulb to avoid glass decomposition.
8. Replace lamp at or before the end of rated life. (See catalog for rated life.)

FOR APPLICATIONS WHERE AN ADDITIONAL MEASURE OF SAFETY IS DESIRED, LAMPS USING AN INTERNAL SHIELD DESIGNED TO CONTAIN AN ARC-TUBE RUPTURE ARE AVAILABLE.

- II. **ELECTRICAL SHOCK AND BURN HAZARD:** Do not remove or insert lamp while power is on. If outer glass bulb is broken, shut off power immediately and remove lamp after it has cooled.

III. **ULTRAVIOLET RADIATION EXPOSURE:**

WARNING: This lamp can cause serious skin burn and eye inflammation from shortwave ultraviolet radiation if the outer envelope of the lamp is broken or punctured. Do not use where people will remain for more than a few minutes unless adequate shielding or other safety precautions are used. Lamps that will automatically extinguish when the outer envelope is broken or punctured are commercially available. This product conforms to the following federal regulations: U.S.A.: 21 CFR 1040.30 and CANADA: SOR/80-381

IV. **LAMP INSTALLATION:**

1. Screw lamp firmly but not forcibly into socket to avoid breakage.
2. All horizontal lamps with position oriented mogul (POM) bases (with locating pin) require a POM socket. Do not remove pin from base.
3. All pulse start lamps require a socket rated to withstand a 4000 volt pulse.
4. Never install the lamp into an ordinary household socket.

- V. **BROKEN ARC-TUBE:** Take care in handling and disposing of this lamp. If arc-tube is broken, avoid skin contact with any of the contents and fragments. See Product Safety Data Sheet for further details.

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METALARC® SAFELINE®, S-Type Lamp

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ANSI Luminaire Code S  
ENCLOSED FIXTURE/Open if meets  
requirement of Paragraph I.1 below

THE FOLLOWING INSTRUCTIONS MUST BE COMPLIED WITH TO AVOID RISK OF PERSONAL INJURY, PROPERTY DAMAGE AND POOR LAMP PERFORMANCE.

- I. **RUPTURE RISKS:** This Metal Halide lamp is constructed of an outer glass bulb with an internal arc-tube. Metal Halide arc-tubes operate at high pressure and at very high temperatures and can unexpectedly rupture due to internal causes or external factors such as a ballast failure or misapplication. An arc-tube rupture can burst and shatter the outer glass bulb resulting in the discharge of glass fragments and extremely hot particles. In the event of such rupture, **THERE IS A RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE.**

TO REDUCE THESE RISKS:

1. Only operate lamp in an enclosed fixture with a lens/diffuser material able to contain hot lamp fragments (up to 2012°F, 1100°C). If you are uncertain, contact your fixture manufacturer. When operated within 15° of vertical, this lamp may be operated in an open fixture PROVIDED THE INSTALLATION IS NOT NEAR PEOPLE OR FLAMMABLE OR COMBUSTIBLE MATERIAL.
2. Only operate lamp with compatible ballast and fixture. (See catalog for specific information.)
3. Only operate lamp in designated operating positions. (See catalog for illustration.)
4. Lamp must be turned off for a minimum of fifteen minutes at least once a week.
5. Never expose an operating lamp to moisture (such as rain, sleet or snow).
6. Replace lamp if outer glass bulb is scratched, cracked or damaged in any way.
7. Electrically insulate any metal support in contact with the outer bulb to avoid glass decomposition.
8. Replace lamp at or before the end of rated life. (See catalog for rated life.)

FOR APPLICATIONS WHERE AN ADDITIONAL MEASURE OF SAFETY IS DESIRED, LAMPS USING AN INTERNAL SHIELD DESIGNED TO CONTAIN AN ARC-TUBE RUPTURE ARE AVAILABLE.

- II. **ELECTRICAL SHOCK AND BURN HAZARD:** Do not remove or insert lamp while power is on. If outer glass bulb is broken, shut off power immediately and remove lamp after it has cooled.

- III **ULTRAVIOLET RADIATION EXPOSURE:** This lamp should self-extinguish within 15 minutes after the outer envelope is broken or punctured. If such damage occurs, TURN OFF AND REMOVE LAMP to avoid possible injury from hazardous shortwave ultraviolet radiation. This product conforms to the following federal regulations: U.S.A.: 21 CFR 1040.30 and CANADA: SOR/80-381

IV. **LAMP INSTALLATION:**

1. Screw lamp firmly but not forcibly into socket to avoid breakage.
2. Never install the lamp into an ordinary household socket.

- V. **BROKEN ARC-TUBE:** Take care in handling and disposing of this lamp. If arc-tube is broken, avoid skin contact with any of the contents and fragments. See Product Safety Data Sheet for further details.

METALARC® BRITELINE, F-Type Lamp



ANSI Luminaire Code F  
ENCLOSED FIXTURE with UV  
filter and lens interlock required

THE FOLLOWING INSTRUCTIONS MUST BE COMPLIED WITH TO AVOID RISK OF PERSONAL INJURY, PROPERTY DAMAGE AND POOR LAMP PERFORMANCE.

- I. **RUPTURE RISKS:** This Metal Halide lamp is constructed with a quartz arc-tube which operates at high pressure and at very high temperatures. The arc-tube can unexpectedly rupture due to internal causes or external factors such as a ballast failure or misapplication resulting in the discharge of glass fragments and extremely hot particles. In the event of such rupture, **THERE IS A RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE.**

**TO REDUCE THESE RISKS:**

1. Only operate lamp in an enclosed fixture with a lens/diffuser material able to contain hot lamp fragments (up to 2012°F, 1100°C). If you are uncertain, contact your fixture manufacturer.
2. Only operate lamp with compatible ballast and fixture. (See catalog for specific information.)
3. Only operate lamp in horizontal position. (See catalog for allowable deviation from horizontal.)
4. Lamp must be turned off for a minimum of fifteen minutes at least once a week.
5. Never expose operating lamp to moisture (such as rain, sleet or snow).
6. Replace lamp if bulb is scratched, cracked or damaged in any way.
7. Keep all metals at least 3 inches from the body of the arc tube to avoid glass decomposition.
8. Replace lamp at or before the end of rated life. (See catalog for rated life.)

- II. **ULTRAVIOLET RADIATION HAZARD:** THIS LAMP EMITS ULTRAVIOLET (UV) POWER DURING OPERATION AND IS IN RISK GROUP 3 PER ANSI-IESNA RP-27.3-96. THIS LAMP CAN CAUSE SERIOUS SKIN BURN AND EYE INJURY FROM SHORTWAVE ULTRAVIOLET RADIATION. IT **MUST BE OPERATED IN AN ENCLOSED FIXTURE WHICH FILTERS OUT THE HARMFUL SHORTWAVE ULTRAVIOLET RADIATION.** IF YOU ARE UNCERTAIN, CONTACT YOUR FIXTURE MANUFACTURER.

A power interlock device is required to automatically turn off the lamp if the fixture assembly is opened. It is strongly recommended that a power interlock device also turn off power to the lamp if the fixture lens is broken. If the fixture lens breaks and the lamp remains on, turn off power immediately and repair before re-energizing.

This lamp is to be used **ONLY** in a fixture specifically designed for use with this lamp and recommended for its use by the equipment manufacturer.

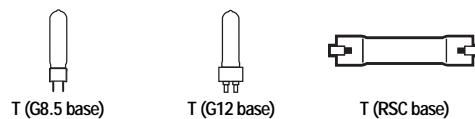
- III. **ELECTRICAL SHOCK AND BURN HAZARD:** Do not remove or insert lamp while power is on. Allow lamp to cool before removing.

- IV. **LAMP INSTALLATION AND FIXTURE:** Do not remove lamp from package until ready for use and then handle only with clean cotton gloves. If lamp is handled, fingerprints, grease or oils may be removed from the bulb by wiping with alcohol. This will remove materials which cause whitish spotting (devitrification) and premature lamp failure. Dry lamp carefully with clean cotton cloth.

1. Install lamp without undue pressure.
2. Ensure that lamp electrical connections are secure and nothing is touching bulb.
3. All seal gaskets and wire insulation must be shielded from the UV radiation produced by this lamp.
4. Fixture wiring must have a temperature rating of 250° C and a minimum voltage rating of 600 V RMS for all lamps except the 1500T7 lamp which must have a voltage rating of 1500V RMS.
5. For maximum performance, all double-ended lamps must be operated with the arc-tube tip up.

- V. **BROKEN ARC-TUBE:** Take care in handling and disposing of this lamp. If arc-tube is broken, avoid skin contact with any of the contents and fragments. See Product Safety Data Sheet for further details.

H  
D



## METALARC® METAL HALIDE METALARC POWERBALL® CERAMIC

High CRI, Pulse Start, UV Stop – Enclosed Fixtures Only

Watts	Bulb	Base	Product Number	Ordering Abbreviation	ANSI Code	Pkg Qty	Lamp Finish	Operating Position	Fix Req	Avg Rated Life (hrs)	Approx Lumens (initial)	Approx Lumens (mean)	CCT (K)	Symbols & Footnotes
39	T4.5	G8.5	64791	MC39TC/U/G8.5/830	M130/E	12	Clear	Universal	E	9000	3300	2640	82	3000 ☒1,2,3, 4,5
	T6	G12	64363	MC39T6/U/G12/830	M130/E	12	Clear	Universal	E	9000	3400	2720	82	3000 ☒1,2,3, 4,5
70	T4.5	G8.5	64792	MC70TC/U/G8.5/830	M139/E	12	Clear	Universal	E	9000	6600	5280	83	3000 ☒1,2,3, 4,5,6
	T6	G12	64361	MC70T6/U/G12/830	M139/E	12	Clear	Universal	E	9000	6700	5360	87	3000 ☒1,2,3, 4,5,6
			64338	MC70T6/U/G12/940	M139/E	12	Clear	Universal	E	9000	5800	4640	90	4200 ☒1,2,3, 4,5,6
	R7S RSC		64793	MC70T6/DE/830	M139/E	12	Clear	HOR ± 45°	E	12000	6600	5120	88	3000 ☒1,2,4, 5,6,7
150	T6	G12	64337	MC150T6/U/G12/940	M102/E	12	Clear	Universal	E	9000	12700	10160	90	4200 ☒1,2,3, 5,8
	T7.5	G12	64359	MC150T7.5/G12/U/830	M102/E	12	Clear	Universal	E	9000	14500	11600	89	3000 ☒1,2,3, 5,8
	R7S RSC		64794	MC150T7.5/DE/830	M102/E	12	Clear	HOR ± 45°	E	12000	14800	11840	91	3000 ☒1,2,5, 9

## METALARC POWERBALL CERAMIC

High CRI, Pulse Start, UV Stop – Open or Enclosed Fixtures

Watts	Bulb	Base	Product Number	Ordering Abbreviation	ANSI Code	Pkg Qty	Lamp Finish	Operating Position	Fix Req	Avg Rated Life (hrs)	Approx Lumens (initial)	Approx Lumens (mean)	CCT (K)	Symbols & Footnotes
70	E17	E26 Med	64739	MCP70/U/MED/830	M139/O	12	Clear	Universal	O	12000	5900	4700	88	3000 ☒1,5,6, 10,11
			64740	MCP70/C/U/MED/830	M139/O	12	Coated	Universal	O	12000	5500	4400	88	3000 ☒1,5,6, 10,11
100	E17	E26 Med	64743	MCP100/U/MED/830	M90/O	12	Clear	Universal	O	12000	9000	7200	85	3000 ☒1,5,10, 11,12
			64744	MCP100/C/U/MED/830	M90/O	12	Coated	Universal	O	12000	8500	6900	85	3000 ☒1,5,10, 11,12
150	E17	E26 Med	64741	MCP150/U/MED/830	M102/O	12	Clear	Universal	O	12000	13000	11000	89	3000 ☒1,5,8, 10,11
			64742	MCP150/C/U/MED/830	M102/O	12	Coated	Universal	O	12000	12000	10000	89	3000 ☒1,5,8, 10,11
250	BT28	EX39 Excl Mogul	64786	MCP250/PS/BU-ONLY/940	M153/O	6	Clear	BU ± 15°	O	15000	24000	19200	94	4200 ☒1,10,11, 13
			64821	MCP250/C/PS/BU-ONLY/940	M153/O	6	Coated	BU ± 15°	O	15000	22500	18000	94	4000 ☒1,10,11, 13

## METALARC POWERBALL CERAMIC - PAR LAMPS

High CRI, Pulse Start, UV Stop, PAR Type – Open or Enclosed Fixtures

Watts	Bulb	Base	Product Number	Ordering Abbreviation	ANSI Code	Pkg Qty	Beam Type	Beam Angle	Operating Position	Fix Req	Avg Rated Life (hrs)	Approx Lumens (initial)	Approx Lumens (mean)	CCT (K)	Symbols & Footnotes
39	PAR20	E26 Med	64747	MCP39PAR20/U/830/SP	M130/O	12	SP	10	Universal	O	9000	22000	2000	85	2900 ☒1,3,4, 5,10,11
			64748	MCP39PAR20/U/830/FL	M130/O	12	FL	30	Universal	O	9000	5000	2000	85	2900 ☒1,3,4, 5,10,11
	PAR30LN	E26 Med	64755	MCP39PAR30LN/U/830/SP	M130/O	6	SP	10	Universal	O	9000	39600	2300	85	2900 ☒1,3,4, 5,10,11



PAR30



PAR38



E17

## METALARC® METAL HALIDE

### METALARC POWERBALL® CERAMIC - PAR LAMPS

High CRI, Pulse Start, UV Stop, PAR Type – Open or Enclosed Fixtures

Watts	Bulb	Base	Product Number	Ordering Abbreviation	ANSI Code	Pkg Qty	Beam Type	Beam Angle	Operating Position	Fix Req	Avg Rated Life (hrs)	MBCP	Approx Lumens (initial)	CRI	CCT (K)	Symbols & Footnotes
39	PAR30LN	E26 Med	64756	MCP39PAR30LN/U/830/FL	M130/O	6	FL	30	Universal	O	9000	7400	2300	85	2900	
70	PAR30LN	E26 Med	64745	MCP70PAR30LN/U/830/SP	M139/O	6	SP	12	Universal	O	9000	46000	4400	85	2900	
			64746	MCP70PAR30LN/U/830/FL	M139/O	6	FL	30	Universal	O	9000	16000	4400	85	2900	
	PAR38	E26 Med Skt	64749	MCP70PAR38/U/SP/830/ECO	M139/O	6	SP	15	Universal	O	10000	40000	4300	85	3000	
			64750	MCP70PAR38/U/FL/830/ECO	M139/O	6	FL	25	Universal	O	10000	16000	4300	85	3000	
			64751	MCP70PAR38/U/VWFL/830/ECO	M139/O	6	VWFL	65	Universal	O	10000	3500	4300	85	3000	
100	PAR38	E26 Med Skt	64752	MCP100PAR38/U/SP/830/ECO	M90/O	6	SP	15	Universal	O	12000	58000	6500	85	3000	
			64753	MCP100PAR38/U/FL/830/ECO	M90/O	6	FL	25	Universal	O	12000	25000	6500	85	3000	
			64754	MCP100PAR38/U/VWFL/830/ECO	M90/O	6	VWFL	60	Universal	O	12000	6000	6500	85	3000	
150	PAR38	E26 Med Skt	64841*	MCP150PAR38/U/830/SP	M102/O	6	SP	15	Universal	O	9000	50000	9100	85	3000	
			64842*	MCP150PAR38/U/830/FL	M102/O	6	FL	25	Universal	O	9000	28000	9100	85	3000	
			64843*	MCP150PAR38/U/830/VWFL	M102/O	6	VWFL	65	Universal	O	9000	6500	9100	85	3000	

### METALARC PULSE START & METALARC PRO-TECH®

High Output, Reduced Color Shift, Low Wattage, Quartz – Open or Enclosed Fixtures

Watts	Bulb	Base	Product Number	Ordering Abbreviation	ANSI Code	Pkg Qty	Lamp Finish	Operating Position	Fix Req	Avg Rated Life (hrs)	Approx Lumens (mean)	CRI	CCT (K)	Symbols & Footnotes	
50	E17	E26 Med	64587	MP50/U/MED	M110/O	20	Clear	Universal	O	20000V 10000H	3450	1900	70	3000	10,11
			64588	MP50/C/U/MED	M110/O	20	Coated	Universal	O	20000V 10000H	3200	1750	70	2900	10,11
70	E17	E26 Med	64547	MP70/U/MED	M98/O	20	Clear	Universal	O	15000V 10000H	5200	3400	75	3000	10,11
			64546	MP70/C/U/MED	M98/O	20	Coated	Universal	O	15000V 10000H	4700	3100	75	2900	10,11
			64625	MPD70/U/MED/840	M98/O	20	Clear	Universal	O	7500V 6000H	5500	4000	80	4200	
			64621	MPD70/C/U/MED/840	M98/O	20	Coated	Universal	O	7500V 6000H	5100	3800	82	4000	
100	E17	E26 Med	64417	MP100/U/MED	M90/O	20	Clear	Universal	O	15000V 10000H	8500	5525	75	3000	10,11
			64418	MP100/C/U/MED	M90/O	20	Coated	Universal	O	15000V 10000H	7900	5800	75	2900	10,11
			64426	MPD100/U/MED/840	M90/O	20	Clear	Universal	O	7500V 6000H	8400	5800	82	4200	
			64433	MPD100/C/U/MED/840	M90/O	20	Coated	Universal	O	7500V 6000H	7700	5500	82	4000	



## METALARC® METAL HALIDE

### METALARC PULSE START & METALARC PRO-TECH®

High Output, Reduced Color Shift, Low Wattage, Quartz – Open or Enclosed Fixtures

Watts	Bulb	Base	Product Number	Ordering Abbreviation	ANSI Code	Pkg Qty	Lamp Finish	Operating Position	Fix Req	Avg Rated Life (hrs)	Approx Lumens (initial)	Approx Lumens (mean)	CCT (K)	Symbols & Footnotes
150	E17	E26 Med	64402	MP150/U/MED	M102/O	20	Clear	Universal	O	15000V 10000H	12900	10000	75	3000 10,11
			64406	MP150/C/U/MED	M102/O	20	Coated	Universal	O	15000V 10000H	11600	9000	75	2900 10,11
			64403	MPD150/U/MED/840	M102/O	20	Clear	Universal	O	7500V 6000H	12500	11000	88	4200 10,11
			64425	MPD150/C/U/MED/840	M102/O	20	Coated	Universal	O	7500V 6000H	11500	9500	88	4000 10,11

## METALARC PULSE START

High Output, Reduced Color Shift, Low Wattage, Quartz, PAR Type – Open or Enclosed Fixtures

Watts	Bulb	Base	Product Number	Ordering Abbreviation	ANSI Code	Pkg Qty	Beam Type	Beam Angle	Operating Position	Fix Req	Avg Rated Life (hrs)	Approx Lumens (initial)	Approx Lumens (mean)	CCT (K)	Symbols & Footnotes
70	PAR38	E26 Med Skt	64590	MP70PAR38/U/SP20/ECO	M98/O	6	SP	20	Universal	O	8500	18000	3400	75	3200 10,11,15,16
			64592	MP70PAR38/U/FL35/ECO	M98/O	6	FL	35	Universal	O	8500	10000	3400	75	3200 10,11,15,16
			64594	MP70PAR38/U/VWFL65/ECO	M98/O	6	VWFL	65	Universal	O	8500	3000	3400	75	3200 10,11,15,16
100	PAR38	E26 Med Skt	64580	MP100PAR38/U/SP20/ECO	M90/O	6	SP	20	Universal	O	8500	26000	5800	75	3000 10,11,15,16
			64582	MP100PAR38/U/FL35/ECO	M90/O	6	FL	35	Universal	O	8500	12000	5800	75	3000 10,11,15,16
			64584	MP100PAR38/U/VWFL65/ECO	M90/O	6	VWFL	65	Universal	O	8500	4500	5800	75	3000 10,11,15,16
150	PAR38	E26 Med Skt	64593	MP150PAR38/U/SP20/ECO	M102/O	6	SP	20	Universal	O	8500	34000	8800	75	3200 10,11,15,16
			64597	MP150PAR38/U/FL35/ECO	M102/O	6	FL	35	Universal	O	8500	17000	8800	75	3200 10,11,15,16
			64599	MP150PAR38/U/VWFL65/ECO	M102/O	6	VWFL	65	Universal	O	8500	7500	8800	75	3200 10,11,15,16

## METALARC PULSE START

High Output, Reduced Color Shift, High Wattage

Watts	Bulb	Base	Product Number	Ordering Abbreviation	ANSI Code	Pkg Qty	Lamp Finish	Operating Position	Fix Req	Avg Rated Life (hrs)	Approx Lumens (initial)	Approx Lumens (mean)	CCT (K)	Symbols & Footnotes
175	ED17	E26 Med	64171	MS175/PS/BU-ONLY/MED	M152/E	12	Clear	BU ± 15°	E	15000	17500	12800	65	4000 2,10,13,27
			64170	MS175/C/PS/BU-ONLY/MED	M152/E	12	Coated	BU ± 15°	E	15000	16600	12500	70	3700 2,10,13,27
	ED28	E39 Mogul	64815	MS175/PS/BU-ONLY	M152/E	12	Clear	BU ± 15°	E	15000	17500	12800	65	4200 2,10,13
			64816	MS175/C/PS/BU-ONLY	M152/E	12	Coated	BU ± 15°	E	15000	16000	12500	70	4000 2,10,13
200	ET23.5	E39 Mogul	64837	MS200/PS/BU-ONLY/ET23.5	M136/E	6	Clear	BU ± 15°	E	15000	19000	13300	65	4200 2,10,13
			64838	MS200/PS/BU-ONLY/BT28	M136/E	6	Clear	BU ± 15°	E	15000	19000	13500	65	4000 2,10,13
	BT28	E39 Mogul	64839	MS200/C/PS/BU-ONLY/BT28	M136/E	6	Coated	BU ± 15°	E	15000	18000	12800	65	3800 2,10,13
250	BT28	EX39 Excl Mogul	64789	MP250/PS/BU-ONLY	M153/O	6	Clear	BU ± 15°	O	15000	22500	17000	65	4000 10,11,13
			64790	MP250/C/PS/BU-ONLY	M153/O	6	Coated	BU ± 15°	O	15000	21000	16000	70	4000 10,11,13
	E39 Mogul		64578	MS250/PS/BU-ONLY	M153/E	6	Clear	BU ± 15°	E	20000	23500	19000	65	4200 2,10,13



BT28



BT37



E17

H  
D

## METALARC® METAL HALIDE

### METALARC PULSE START

High Output, Reduced Color Shift, High Wattage

Watts	Bulb	Base	Product Number	Ordering Abbreviation	ANSI Code	Pkg Qty	Lamp Finish	Operating Position	Fix Req	Avg Rated Life (hrs)	Approx Lumens (initial)	(mean)	CRI	CCT (K)	Symbols & Footnotes
250	BT28	E39 Mogul	64617	MS250/C/PS/BU-ONLY	M153/E	6	Coated	BU ± 15°	E	20000	21500	17000	70	3600	2,10,13
320	BT28	E39 Mogul	64507	MS320/PS/BU-HOR	M154/E	6	Clear	BU-HOR	E	20000V 15000H	32000V 30000H	21000V 19700H	65	4300	2,10,13,17
			64646	MS320/C/PS/BU-HOR	M154/E	6	Coated	BU-HOR	E	20000V 15000H	30000V 28000H	19700V 18400H	70	3900	2,10,13,17
320	BT28	EX39 Excl Mogul	64391	MP320/350/PS/BU-ONLY/BT28	M154/O M131/O	6	Clear	BU ± 15°	O	20000 20000	28600 33500	21000V 24000H	65	3800	10,11,13,17
			64349	MP320/350/C/PS/BU-ONLY/BT28	M154/O M131/O	6	Coated	BU ± 15°	O	20000 20000	27700 32000	19000V 22000H	70	3600	10,11,13,17
350	BT37	EX39 Excl Mogul	64769	MP350/400/PS/BU-ONLY	M131/O M155/O	6	Clear	BU ± 15°	O	20000 20000	33000 40000	24500V 29500H	65	3700	10,11,13,18
			64770	MP350/400/C/PS/BU-ONLY	M131/O M155/O	6	Coated	BU ± 15°	O	20000 20000	32000 39000	23000V 28000H	70	3500	10,11,13,18
400	BT37	E39 Mogul	64525	MS400/PS/BU-ONLY	M155/S	6	Clear	BU ± 15°	S	20000	42000	31000	65	4000	10,13,18,19, 20
			64527	MS400/C/PS/BU-ONLY	M155/S	6	Coated	BU ± 15°	S	20000	42000	29000	70	3600	10,13,18,19, 20
750	BT37	E39 Mogul	64787	MS750/PS/BU-HOR/BT37	M149/E	6	Clear	BU-HOR	E	16000V 12000H	80000V 68000H	60000V 51000H	65	4000	2,10,21
			64822	MS750/C/PS/BU-HOR/BT37	M149/E	6	Coated	BU-HOR	E	16000V 12000H	75000V 65000H	56000V 48500H	70	3700	2,10,21
1000	BT37	E39 Mogul	64351	M1000/PS/U/BT37	M141/E	6	Clear	Universal	E	15000V 9000H	110000V 107800H	96000V 86300H	65	3800	2,10

## METALARC SUPERSAVER®

Energy Saving, Metal Halide Retrofit

Watts	Bulb	Base	Product Number	Ordering Abbreviation	ANSI Code	Pkg Qty	Lamp Finish	Operating Position	Fix Req	Avg Rated Life (hrs)	Approx Lumens (initial)	(mean)	CRI	CCT (K)	Symbols & Footnotes
150	BT28	E39 Mogul	64719	M150/SS/U/BT-28	M107/E	6	Clear	Universal	E	10000V 7500H	13000V 12000H	7500V 8500H	65	4000	2,22,23
360	BT37	E39 Mogul	64655	MS360/SS/BU-HOR	M59/S	6	Clear	BU-HOR	S	20000V 15000H	36000V 30000H	23500V 19000H	65	3600	20,23,24
			64656	MS360/C/SS/BU-HOR	M59/S	6	Coated	BU-HOR	S	20000V 15000H	36000V 30000H	22500V 19000H	70	3600	20,23,24
	EX39 Excl Mogul		64737	MSP360/SS/BU-ONLY	M59/O	6	Clear	BU ± 15°	O	20000	36000	23500	65	4000	11,23,24
			64738	MSP360/C/SS/BU-ONLY	M59/O	6	Coated	BU ± 15°	O	20000	34500	22500	70	3600	11,23,24
ED28	E39 Mogul		64828	MS360/SS/BU-ONLY/ED28	M59/E	12	Clear	BU ± 15°	E	20000	36000	23400	65	4000	2,23,24
			64829	MS360/C/SS/BU-ONLY/ED28	M59/E	12	Coated	BU ± 15°	E	20000	34200	22000	70	3700	2,23,24

## METALARC SUPER

High Output, Position Dedicated

Watts	Bulb	Base	Product Number	Ordering Abbreviation	ANSI Code	Pkg Qty	Lamp Finish	Operating Position	Fix Req	Avg Rated Life (hrs)	Approx Lumens (initial)	(mean)	CRI	CCT (K)	Symbols & Footnotes
175	BT28	E39 POM Mogul	64439	MS175/HOR	M57/E	6	Clear	HOR ± 15°	E	7500	15000	10000	65	4200	2,25
			64440	MS175/C/HOR	M57/E	6	Coated	HOR ± 15°	E	7500	14500	9700	70	4000	2,25
250	BT28	E39 POM Mogul	64448	MS250/HOR	M58/E	6	Clear	HOR ± 15°	E	10000	23000	15000	65	4200	2,25



BT28



BT37



BT56



E17



ET18

## METALARC® METAL HALIDE

### METALARC SUPER

High Output, Position Dedicated

Watts	Bulb	Base	Product Number	Ordering Abbreviation	ANSI Code	Pkg Qty	Lamp Finish	Operating Position	Fix Req	Avg Rated Life (hrs)	Approx Lumens (initial)	CCT (K)	Symbols & Footnotes
250	BT28	E39 POM Mogul	64449	MS250/C/HOR	M58/E	6	Coated	HOR ± 15°	E	10000	22000	14000	70 3800 2,25
			64496	MS250/3K/HOR	M58/E	6	Coated	HOR ± 15°	E	10000	17200	12500	70 3200 2,25
400	BT28	E39 POM Mogul	64443	MS400/HOR/BT28	M59/E	6	Clear	HOR ± 15°	E	20000	40000	26000	65 4200 2,25
			64444	MS400/C/HOR/BT28	M59/E	6	Coated	HOR ± 15°	E	20000	36500	24000	70 3800 2,25
	BT37	E39 POM Mogul	64445	MS400/HOR	M59/E	6	Clear	HOR ± 15°	E	20000	40000	26000	65 4200 2,25
			64446	MS400/C/HOR	M59/E	6	Coated	HOR ± 15°	E	20000	38000	24000	70 3800 2,25
			64498	MS400/3K/HOR	M59/E	6	Coated	HOR ± 15°	E	20000	33500	23300	70 3200 2,25
BT28		E39 Mogul	64441	MS400/BU-ONLY/BT28	M59/E	6	Clear	BU ± 15°	E	20000	42000	26000	65 3800 2
			64450	MS400/BU-ONLY	M59/S	6	Clear	BU ± 15°	S	20000	42000	26000	65 4000 20,26
	BT37		64452	MS400/C/BU-ONLY	M59/S	6	Coated	BU ± 15°	S	20000	42000	24700	70 3600 20,26
			64454	MS400/3K/BU-ONLY	M59/S	6	Coated	BU ± 15°	S	20000	35000	22000	70 3200 20
			64451	MS400/BD-ONLY	M59/S	6	Clear	BD ± 15°	S	20000	42000	26000	65 4000 20
			64435	MS1000/BU-ONLY	M47/S	6	Clear	BU ± 15°	S	18000	115000	92000	65 4000 20
1000	BT56	E39 Mogul	64460	MS1000/C/BU-ONLY	M47/S	6	Coated	BU ± 15°	S	18000	110000	88000	70 3400 20
			64436	MS1000/BD-ONLY	M47/S	6	Clear	BD ± 15°	S	18000	115000	92000	65 4000 20

### STANDARD METALARC & METALARC PRO-TECH® (OPEN FIXTURE RATED)

Watts	Bulb	Base	Product Number	Ordering Abbreviation	ANSI Code	Pkg Qty	Lamp Finish	Operating Position	Fix Req	Avg Rated Life (hrs)	Approx Lumens (initial)	CCT (K)	Symbols & Footnotes
175	E17	E26 Med	64479	M175/U/MED	M57/E	20	Clear	Universal	E	10000V 7500H	14400V 12800H	9300	65 4000 2
			64480	M175/C/U/MED	M57/E	20	Coated	Universal	E	10000V 7500H	13000V 11080H	8400	70 3600 2
			64733	MP175/BU-ONLY/MED	M57/O	20	Clear	BU ± 15°	O	10000	14400	10800	65 3600 11
	BT28	E39 Mogul	64471	M175/U	M57/E	6	Clear	Universal	E	10000V 7500H	14400V 12800H	9300	65 4200 2
			64472	M175/C/U	M57/E	6	Coated	Universal	E	10000V 7500H	14000V 12000H	8400	70 3800 2
			64473	M175/3K/BU-ONLY	M57/E	6	Coated	BU ± 15°	E	10000	11800	7600	70 3200 2
	EX39 Excl	Mogul	64773	MP175/BU-ONLY	M57/O	6	Clear	BU ± 15°	O	10000	14400	10200	65 4000 11
			64774	MP175/C/BU-ONLY	M57/O	6	Coated	BU ± 15°	O	10000	12800	7800	70 3800 11
250	ET18	E39 Mogul	64474	M250/U/ET18	M58/E	10	Clear	Universal	E	10000	22000V 20000H	17500V 13500H	65 4000 2
			64457	M250/U	M58/E	6	Clear	Universal	E	10000	22000V 20000H	17000V 14100H	65 4200 2
			64458	M250/C/U	M58/E	6	Coated	Universal	E	10000	21500V 19500H	17000V 14000H	70 3800 2
	BT28	E39 Mogul	64475	M250/3K/BU-ONLY	M58/E	6	Coated	BU ± 15°	E	10000	17500	13000	70 3200 2
			64404	MP250/BU-ONLY	M58/O	6	Clear	BU ± 15°	O	10000	23000	17000	65 4000 11
			64405	MP250/C/BU-ONLY	M58/O	6	Coated	BU ± 15°	O	10000	20000	14350	70 3800 11
400	ET18	E39 Mogul	64575	M400/U/ET18	M59/E	10	Clear	Universal	E	20000V 15000H	36000V 33000H	23400V 21500H	65 4000 2

Note: LCL = 6 1/8 in; MOL = 9 3/4 in



## METALARC® METAL HALIDE

### STANDARD METALARC & METALARC PRO-TECH® (OPEN FIXTURE RATED)

Watts	Bulb	Base	Product Number	Ordering Abbreviation	ANSI Code	Pkg Qty	Lamp Finish	Operating Position	Fix Req	Avg Rated Life (hrs)	Approx Lumens (initial)	(mean)	CRI	CCT (K)	Symbols & Footnotes
400	BT28	E39 Mogul	64488	M400/U/BT28	M59/E	6	Clear	Universal	E	20000V 15000H	36000V 32000H	23500V 20500H	65	4000	2
			64489	M400/C/U/BT28	M59/E	6	Coated	Universal	E	20000V 15000H	36000V 32000H	22500V 20500H	70	3600	2
	BT37	E39 Mogul	64490	M400/U	M59/S	6	Clear	Universal	S	20000V 15000H	36000V 32000H	23500V 20500H	65	4000	20,26
			64492	M400/C/U	M59/S	6	Coated	Universal	S	20000V 15000H	36000V 32000H	22500V 20500H	70	3700	20,26
		EX39 Excl Mogul	64705	MP400/BU-ONLY	M59/O	6	Clear	BU ± 15°	O	20000	40000	26000	65	3600	11
			64706	MP400/C/BU-ONLY	M59/O	6	Coated	BU ± 15°	O	20000	38500	25000	70	3400	11
			64717	MP400/BD-ONLY	M59/O	6	Clear	BD ± 15°	O	20000	40000	26000	65	3600	11
	1000	BT37	64469	M1000/U/BT37	M47/E	6	Clear	Universal	E	15000V 9000H	110000V 107800H	93500V 86300H	65	3800	2
			64468	M1000/U	M47/S	6	Clear	Universal	S	18000V 12000H	110000V 107800H	86000V 86300H	65	4000	20
		BT56	64470	M1000/C/U	M47/S	6	Coated	Universal	S	18000V 12000H	107000V 101600H	80000V 80000H	70	3400	20
			64714	MP1000/BU-ONLY	M47/O	6	Clear	BU ± 15°	O	12000	107000	85500	65	3500	11
			64716	MP1000/C/BU-ONLY	M47/O	6	Coated	BU ± 15°	O	12000	100000	80000	70	3200	11
	1500	BT56	64431	M1500/BU-HOR	M48/E	6	Clear	BU-HOR	E	3000	170000V 153000H	140000V 127400H	70	4000	2,28
			64432	M1500/BD	M48/E	6	Clear	BD ± 15°	E	3000	167000	140000	70	4000	2

### METALARC BRITELINE®

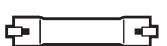
Double-Ended – Enclosed Fixtures Only

Watts	Bulb	Base	Product Number	Ordering Abbreviation	ANSI Code	Pkg Qty	Lamp Finish	Operating Position	Fix Req	Avg Rated Life (hrs)	Approx Lumens (initial)	(mean)	CRI	Arc Length (in)	Symbols & Footnotes
1500	T7	RX7S RRSC	66619	M1500T7/DE	TBD	10	Clear	HOR ± 4°	F	3000	150000	127500	65	4200	6.71
		Cer #8-10 Spade	66632	M1500T8/DE	M133/F	10	Clear	HOR ± 4°	F	6000	150000	120000	65	4200	4.3
2000	T8	RX7S RRSC	66627	M2000T8/DE	TBD	10	Clear	HOR ± 4°	F	3000	200000	170000	65	4000	7.09
		Cer #8-10 Spade	66631	M2000T9/DE	M134/F	10	Clear	HOR ± 4°	F	3000	200000	170000	65	4200	4.25

### METALARC SAFELINE®

Self-Extinguishing

Watts	Bulb	Base	Product Number	Ordering Abbreviation	ANSI Code	Pkg Qty	Lamp Finish	Operating Position	Fix Req	Avg Rated Life (hrs)	Approx Lumens (initial)	(mean)	CRI	CCT (K)	Symbols & Footnotes
400	BT37	E39 Mogul	64707	MT400/BU-ONLY	M59/S	6	Clear	BU ± 15°	S	20000	36000	22000	60	4500	20,33
			64709	MT400/C/BU-ONLY	M59/S	6	Coated	BU ± 15°	S	20000	35000	20600	65	4100	20,33



T (RSC base)

T (Fc2 base)

T (G12 base)

T (Mog base)

R30/R40

## HQI® METAL HALIDE (COMPACT, HIGH CRI, QUARTZ)

### HQI DOUBLE-ENDED (ENCLOSED FIXTURES)

Watts	Bulb	Base	Product Number	Ordering Abbreviation	ANSI Code	Pkg Qty	Lamp Finish	Operating Position	Fix Req	Avg Rated Life (hrs)	Approx Lumens (initial)	Approx Lumens (mean)	CRI	CCT (K)	Symbols & Footnotes
70	T6	R7S RSC	64364	HQI-DE70/NDX-E	Electronic	12	Clear	HOR ± 45° E		10000	6000	4900	85	3000	[2,5,30,34]
			64362	HQI-DE70/NDX	M85/E	12	Clear	HOR ± 45° E		8000	5500	3800	81	4000	[2,5]
			64360	HQI-DE70/NDX	M85/E	12	Clear	HOR ± 45° E		10000	4700	4300	80	3000	[2,5]
150	T7	R7S RSC	64366	HQI-DE150/NDX	M81/E	12	Clear	HOR ± 45° E		10000	11000	9000	81	3000	[2,5]
			64368	HQI-DE150/NDX	M81/E	12	Clear	HOR ± 45° E		10000	11250	9500	85	4200	[2,5]
250	T9.5	FC2	64374	HQI-DE250/NDX	M80/E	12	Clear	HOR ± 45° E		10000	20000	16000	85	4200	[2,5]
			64378	HQI-DE250/DX	M80/E	12	Clear	HOR ± 45° E		10000	20000	15500	93	5000	[2,5]

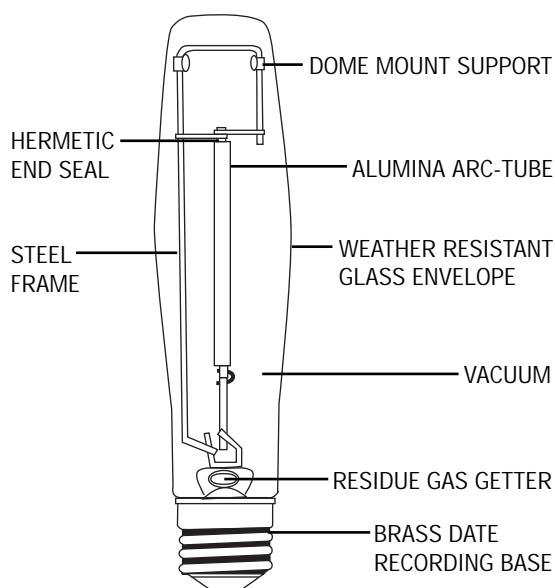
### HQI SINGLE-ENDDED (ENCLOSED FIXTURES)

Watts	Bulb	Base	Product Number	Ordering Abbreviation	ANSI Code	Pkg Qty	Lamp Finish	Operating Position	Fix Req	Avg Rated Life (hrs)	Approx Lumens (initial)	Approx Lumens (mean)	CRI	CCT (K)	Symbols & Footnotes
150	T7.5	G12	64342	HQI-SE 150/NDX	M81/E	12	Clear	Universal	E	9000	12500	8900	85	4200	[2,5]
250	T14.5	E40 Mogul	64350	HQI-SE250/DX	S50/E	12	Clear	Universal	E	9000	19000	16000	90	5200	[2,5,35]
400	BT	E40 Mogul	64352	HQI-SE400/DX	S51/E	12	Clear	Universal	E	9000	33000	24000	90	5200	[2,5,35]

### HQI FIBER-OPTIC INTEGRATED DICHROIC REFLECTOR (ENCLOSED FIXTURES)

Watts	Bulb	Base	Product Number	Ordering Abbreviation	ANSI Code	Pkg Qty	Lamp Finish	Operating Position	Fix Req	Avg Rated Life (hrs)	Approx Lumens (initial)	Approx Lumens (mean)	CRI	CCT (K)	Symbols & Footnotes
150	R30	2 Pin Connector	64339	HQI-R150/NDX/FO	M81/E	12	Clear	HOR	E	9000	11000	85	4200	[2,5]	

## GUIDE TO HIGH PRESSURE SODIUM LAMPS



High Pressure Sodium lamps are one of the most efficient HID sources available today. These lamps are used for general lighting applications where high efficiency and long life are desired while color rendering is not critical. Typical applications include street lighting, parking lot lighting, building floodlighting and general area lighting.

**LUMALUX PLUS® / ECO®** — These environmentally friendlier lamps are designed with lead-free, welded mogul bases and they contain significantly less Mercury than standard high pressure sodium lamps. They will not cycle at the end of life and are rated for 30,000 hours life. All lamps operate on existing high pressure sodium ballasts and pass the existing Federal TCLP limits.\*

**LUMALUX® MERCURY-FREE / ECO** — Lumalux Mercury-free lamps incorporate the latest technology to eliminate both mercury and lead allowing them to pass the Federal TCLP test.\* These lamps provide premium Lumalux performance and operate on existing high pressure sodium ballasts.

**LUMALUX AND LUMALUX / ECO** — Available in a broad range of wattages, in both clear and coated configurations, Lumalux and Lumalux / ECO lamps are ideal for a variety of applications. Lumalux medium based lamps are available in wattages ranging from 35-150 watts while mogul based lamps are offered in 50-1000 watts. The mogul based Lumalux / ECO lamps operate on standard high pressure sodium ballasts and pass the Federal TCLP test.\*

**LUMALUX STANDBY** — These lamps are designed with two arc tubes to provide instant restrike capability in the event of a momentary power interruption. With almost twice the life of standard high pressure sodium lamps, Lumalux Standby lamps are a great way to reduce maintenance costs.

**UNALUX®** — These high pressure sodium retrofit lamps are designed to operate on all Mercury reactor ballasts when increased light and reduced energy is desired.

**SOX** — These energy efficient low pressure sodium lamps emit a characteristic yellow light that is ideal for certain exterior street and area lighting.

\* based on NEMA LL Series Standards

### WARNING

#### LUMALUX, LUMALUX / ECO, LUMALUX PLUS / ECO, AND LUMALUX STANDBY LAMPS

THE FOLLOWING INSTRUCTIONS MUST BE COMPLIED WITH TO AVOID RISK OF PERSONAL INJURY, PROPERTY DAMAGE AND POOR LAMP PERFORMANCE.

**I. OPERATE WITH COMPATIBLE BALLAST AND FIXTURE ONLY:**

This lamp must be operated in a fixture and ballast which has an ANSI designation identical to that found on the lamp outer glass bulb, otherwise the lamp may rupture resulting in the discharge of hot particles.

**II. ELECTRICAL SHOCK AND BURN HAZARD:**

Do not remove or insert lamp when power is on. If outer glass bulb is broken, shut off power immediately and remove lamp after it has cooled.

**III. INSTALLATION AND OPERATING INSTRUCTIONS:**

See catalog for specific operating parameters.

1. A specially designed socket which is electrically rated to withstand a 4000 volt pulse is required for all High Pressure Sodium lamps except for the 750 and 1000 watt lamps which require a socket rated to withstand a 5000 volt pulse.
2. These lamps have a vacuum jacket and may implode if broken. For added safety, wear safety glasses and gloves when installing or removing bulbs.
3. To avoid burn injury, allow lamp to cool before removing from fixture.
4. Screw lamp firmly but not forcibly into socket to avoid breakage.
5. Replace lamps at or before end of rated life. (See catalog for rated life.)
6. Never install it into an ordinary household socket.
7. This lamp may be operated in any position.

**IV. PROPER CARE AND MAINTENANCE:**

To reduce the possibility of a rupture and premature lamp failure:

1. Do not use with luminaires which would cause an excessive increase in arc-tube operating voltage.
2. Do not expose operating lamp to moisture.
3. Replace lamp if outer glass bulb has been scratched, cracked, or damaged in any way.
4. Electrically insulate any metal support in contact with the outer glass bulb to avoid glass decomposition.

**V. BROKEN ARC-TUBE:** Take care in handling and disposing of this lamp. If arc-tube is broken, avoid skin contact with any of the contents and fragments. See Product Safety Data Sheet for further details.

## WARNING

### UNALUX®

THE FOLLOWING INSTRUCTIONS MUST BE COMPLIED WITH TO AVOID RISK OF PERSONAL INJURY, PROPERTY DAMAGE AND POOR LAMP PERFORMANCE.

**I. OPERATE WITH COMPATIBLE BALLAST AND FIXTURE ONLY:**

This lamp will operate safely and perform satisfactorily only when used with conventional high leakage reactance lag type auto-transformer or reactor mercury ballasts as indicated in the table below, otherwise the lamp may rupture resulting in the discharge of hot particles.

Mercury Lamp Wattage	ANSI Mercury Ballast No.	Sodium Replacement Lamp Type
175	H39	150
250	H37	215
400	H33	360
1000	H36	880

TO AVOID PREMATURE LAMP FAILURE, DO NOT USE WITH CW OR CWA BALLASTS.

**II. ELECTRICAL SHOCK AND BURN HAZARD:**

Do not remove or insert lamp when power is on. If outer glass bulb is broken, shut off power immediately and remove lamp after it has cooled.

**III. INSTALLATION AND OPERATING INSTRUCTIONS:**

See catalog for specific operating parameters.

- These lamps have a vacuum jacket and may implode if broken. For added safety, wear safety glasses and gloves when installing or removing lamps.
- To avoid burn injury, allow lamp to cool before removing from fixture.
- Screw lamp firmly but not forcibly into socket to avoid breakage.
- Replace lamp at or before the end of rated life. (See catalog for rated life.)
- This lamp may be operated in any position.

**IV. PROPER CARE AND MAINTENANCE:**

To reduce the possibility of a rupture and premature lamp failure:

- Do not use with luminaires which would cause an excessive increase in arc-tube operating voltage.
- Do not expose operating lamp to moisture.
- Replace lamp if outer glass bulb has been scratched, cracked or damaged in any way.
- Electrically insulate any metal support in contact with the outer glass bulb to avoid glass decomposition.

**V. BROKEN ARC-TUBE:** Take care in handling and disposing of this lamp. If arc-tube is broken, avoid skin contact with any of the contents and fragments. See Product Safety Data Sheet for further details.

## WARNING

ANSI LUMINAIRE Code F  
ENCLOSED FIXTURE with UV  
Filter and lens interlock required

### LUMALUX® Double-Ended Quartz Jacketed Lamps

**I. OPERATE WITH COMPATIBLE BALLAST AND FIXTURE ONLY:** This lamp must be operated in a fixture and ballast which has an ANSI designation identical to that found on the lamp outer glass bulb.

**II. ULTRAVIOLET RADIATION HAZARD:** THIS LAMP EMITS ULTRAVIOLET (UV) POWER DURING OPERATION AND IS IN RISK GROUP 2 PER ANSI-IESNA RP-27.3-96. THIS LAMP CAN CAUSE SERIOUS SKIN BURN AND EYE INJURY FROM SHORTWAVE ULTRAVIOLET RADIATION. IT **MUST** BE OPERATED IN AN ENCLOSED FIXTURE WHICH FILTERS OUT THE HARMFUL SHORTWAVE ULTRAVIOLET RADIATION. IF YOU ARE UNCERTAIN, CONTACT YOUR FIXTURE MANUFACTURER.

A power interlock device is required to automatically turn off the lamp if the fixture assembly is opened. It is strongly recommended that a power interlock device also turn off power to the lamp if the fixture lens is broken. If the fixture lens breaks and the lamp remains on, turn off power immediately and repair before re-energizing.

This lamp is to be used **ONLY** in a fixture specifically designed for use with this lamp and recommended for its use by the equipment manufacturer.

**III. ELECTRICAL SHOCK AND BURN HAZARD:** Do not remove or insert lamp while power is on. Allow lamp to cool before removing.

**IV. LAMP INSTALLATION AND FIXTURE:** Do not remove lamp from package until ready for use and then handle only with clean cotton gloves. If lamp is handled, fingerprints, grease or oils may be removed from the bulb by wiping with alcohol. This will remove materials which cause whitish spotting (devitrification) and premature lamp failure. Dry lamp carefully with clean cotton cloth.

- Install lamp without undue pressure.
- Ensure that lamp electrical connections are secure and nothing is touching bulb.
- All seal gaskets and wire insulation must be shielded from the UV radiation produced by this lamp.
- Fixture wiring must have a temperature rating of 250° C and a minimum voltage rating of 600 V RMS.
- Never install it into a fixture designed for use with tungsten halogen lamps.
- Do not expose operating lamp to moisture (such as rain, sleet or snow).
- Replace lamp if outer glass bulb has been scratched, cracked, or damaged in any way.

**V. BROKEN ARC-TUBE:** Take care in handling and disposing of this lamp. If arc-tube is broken, avoid skin contact with any of the contents and fragments. See Product Safety Data Sheet for further details.

## WARNING

### SOX LAMPS

**I. BURNS AND FIRE HAZARD:**

Sox lamps contain a quantity of sodium which may heat from a reaction with moisture in the air or on the skin if a lamp is broken. Hot sodium will burn spontaneously when exposed to the air. Sodium lamps must be packed, shipped, and stored in the wrapping provided to reduce the risk of breakage.

**II. IMPLOSION HAZARD:**

**Always wear safety glasses when handling lamp.** Low pressure sodium lamps are made of glass and are evacuated and could therefore implode if damaged or handled incorrectly. Replace lamp if outer glass bulb has been scratched, cracked, or damaged in any way. To reduce the possibility of a lamp cracking or breaking, do not expose operating lamp to rain, snow, or water.

**III. ELECTRICAL SHOCK AND BURN HAZARD:**

Do not remove or insert lamp when power is on. If outer glass bulb is broken, shut off power immediately and remove lamp after it has cooled.

**IV. OPERATE WITH COMPATIBLE BALLAST AND FIXTURE ONLY:**

This lamp must be operated in a fixture and ballast which was specifically designed for use with this lamp.

**V. INSTALLATION AND OPERATING INSTRUCTIONS:**

1. When operated in other than the base up orientation, single-based "SOX" lamps of from 35 watts to 180 watts must be supported at the end opposite to the base in such a way as to allow for thermal expansion and contraction along the lamp axis.
2. Install lamp firmly but not forcibly into socket to avoid breakage.
3. For maximum system performance, replace lamp at or before end of rated life. (See catalog for rated life.)
4. Only operate lamps in designated operating positions. (See catalog for illustration.)

**VI. LAMP DISPOSAL:**

To avoid the risk of personal injury or property damage from sodium reaction when disposing of spent lamps, the following procedure should be followed:

1. Before commencing, operator must be outfitted with appropriate OSHA-approved face mask, gloves and apron.
2. Place no more than 20 lamp(s) in a large, dry container. (Do not exceed one-quarter of the container height.)
3. Break lamp(s) into small pieces inside the container in a dry atmosphere and in a well ventilated area.
4. From a safe distance, carefully pour enough tap water into container to cover all materials.
5. After a few minutes, the reaction of the sodium with the large quantity of water will produce a mild sodium hydroxide solution which may be disposed of in accordance with applicable federal, state and local regulations.



ET23.5, BT28



ET18



E17

## LUMALUX® HIGH PRESSURE SODIUM

### LUMALUX PLUS/ECO

Non-Cycling, Environmentally Friendlier

Watts	Bulb	Base	Product Number	Ordering Abbreviation	ANSI Code	Pkg Qty	Lamp Finish	Operating Position	Fix Req	Avg Rated Life (hrs)	Approx Lumens (initial)	Approx Lumens (mean)	CCT (K)	Symbols & Footnotes
50	ET23.5	E39 Mogul	67607	LU50/PLUS/ECO	S68	20	Clear	Universal	0	30000	4000	3600	22	1900  10,15,36
70	ET23.5	E39 Mogul	67497	LU70/PLUS/ECO	S62	20	Clear	Universal	0	30000	6300	5600	22	1900  10,15,36
100	ET23.5	E39 Mogul	67559	LU100/PLUS/ECO	S54	20	Clear	Universal	0	30000	9800	8550	22	2100  10,15,36
150	ET23.5	E39 Mogul	67494	LU150/55/PLUS/ECO	S55	20	Clear	Universal	0	30000	16000	14400	22	2100  10,15,36, 37,38
200	ET18	E39 Mogul	67495	LU200/PLUS/ECO	S66	20	Clear	Universal	0	30000	22000	19800	22	2100  10,15,36
250	ET18	E39 Mogul	67572	LU250/PLUS/ECO	S50	20	Clear	Universal	0	30000	29000	26100	22	2100  10,15,36
310	ET18	E39 Mogul	67660	LU310/PLUS/ECO	S67	20	Clear	Universal	0	30000	37000	33300	22	2100  10,15,36
400	ET18	E39 Mogul	67312	LU400/PLUS/ECO	S51	20	Clear	Universal	0	30000	50000	45000	22	2100  10,15,36

### LUMALUX HGF/ECO®

Mercury Free, Environmentally Friendlier

Watts	Bulb	Base	Product Number	Ordering Abbreviation	ANSI Code	Pkg Qty	Lamp Finish	Operating Position	Fix Req	Avg Rated Life (hrs)	Approx Lumens (initial)	Approx Lumens (mean)	CCT (K)	Symbols & Footnotes
70	ET23.5	E39 Mogul	67565	LU70/HgF/ECO	S62	20	Clear	Universal	0	24000	6000	5100	22	2150  10,15
100	ET23.5	E39 Mogul	67558	LU100/HgF/ECO	S54	20	Clear	Universal	0	24000	9500	8500	22	2150  10,15
150	ET23.5	E39 Mogul	67566	LU150/55/HgF/ECO	S55	20	Clear	Universal	0	24000	15500	13200	22	2200  10,15,37, 38

### LUMALUX STANDARD & LUMALUX ECO®

Watts	Bulb	Base	Product Number	Ordering Abbreviation	ANSI Code	Pkg Qty	Lamp Finish	Operating Position	Fix Req	Avg Rated Life (hrs)	Approx Lumens (initial)	Approx Lumens (mean)	CCT (K)	Symbols & Footnotes
35	E17	E26 Med	67500	LU35/MED	S76	20	Clear	Universal	0	16000+	2250	2050	22	1900 10,39
			67501	LU35/D/MED	S76	20	Coated	Universal	0	16000+	2100	1935	22	1900 10,39
50	E17	E26 Med	67502	LU50/MED	S68	20	Clear	Universal	0	24000+	4000	3600	22	1900 10,39
			67503	LU50/D/MED	S68	20	Coated	Universal	0	24000+	3700	3420	22	1900 10,39
	ET23.5	E39 Mogul	67510	LU50/ECO	S68	20	Clear	Universal	0	24000+	4000	3600	22	1900  10,15,39
			67511	LU50/D	S68	20	Coated	Universal	0	24000+	3700	3420	22	1900 10,39
70	E17	E26 Med	67504	LU70/MED	S62	20	Clear	Universal	0	24000+	6300	5350	22	1900 10,39
			67505	LU70/D/MED	S62	20	Coated	Universal	0	24000+	5800	4900	22	1900 10,39
	ET23.5	E39 Mogul	67512	LU70/ECO	S62	20	Clear	Universal	0	24000+	6300	5500	22	1900  10,15,39
			67513	LU70/D	S62	20	Coated	Universal	0	24000+	5500	4900	22	1900 10,39
100	E17	E26 Med	67506	LU100/MED	S54	20	Clear	Universal	0	24000+	9500	8000	22	2100 10,39
			67507	LU100/D/MED	S54	20	Coated	Universal	0	24000+	8800	7500	22	2100 10,39
	ET23.5	E39 Mogul	67514	LU100/ECO	S54	20	Clear	Universal	0	24000+	9500	8000	22	2100  10,15,39
			67515	LU100/D	S54	20	Coated	Universal	0	24000+	8800	7500	22	2100 10,39
150	E17	E26 Med	67508	LU150/55/MED	S55	20	Clear	Universal	0	24000+	15800	13400	22	2100 10,37,38,39
			Note: LCL = 3 7/16 in; MOL = 5 11/16 in											
	ET23.5	E39 Mogul	67509	LU150/55/D/MED	S55	20	Coated	Universal	0	24000+	14500	12300	22	2100 10,37,38,39
			Note: LCL = 3 7/16 in; MOL = 5 11/16 in											
	BT28	E39 Mogul	67516	LU150/55/ECO	S55	20	Clear	Universal	0	24000+	16000	13800	22	2100  10,15,37, 39
			67517	LU150/55/D	S55	20	Coated	Universal	0	24000+	14000	12500	22	2100 10,37,39
BT28 E39 Mogul			67518	LU150/100	S56	10	Clear	Universal	0	24000+	15700	14100	22	2100 10,39,40



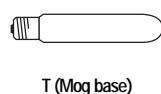
ET18



BT28, ET23.5



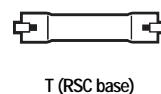
BT37



T (Mog base)



E25



T (RSC base)

## LUMALUX® HIGH PRESSURE SODIUM

### LUMALUX STANDARD & LUMALUX ECO®

Watts	Bulb	Base	Product Number	Ordering Abbreviation	ANSI Code	Pkg Qty	Lamp Finish	Operating Position	Fix Req	Avg Rated Life (hrs)	Approx Lumens (initial)	(mean)	CRI	CCT (K)	Symbols & Footnotes
200	ET18	E39 Mogul	67576	LU200/ECO	S66	20	Clear	Universal	O	24000+	22000	19800	22	2100	10,15,39
250	BT28	E39 Mogul	67521	LU250/D	S50	10	Coated	Universal	O	24000+	26000	23400	22	2100	10,39
	ET18	E39 Mogul	67578	LU250/ECO	S50	20	Clear	Universal	O	24000+	29000	26100	22	2100	10,15,39
310	ET18	E39 Mogul	67580	LU310/ECO	S67	20	Clear	Universal	O	24000+	37000	33300	22	2100	10,15,39
400	BT37	E39 Mogul	67524	LU400/D	S51	10	Coated	Universal	O	24000+	47500	40000	21	2100	10,39
	ET18	E39 Mogul	67533	LU400/ECO	S51	20	Clear	Universal	O	24000+	50000	45000	22	2100	10,15,39
600	T16	E39 Mogul	67610	LU600 SUPER	S106	12	Clear	Universal	O	24000	90000	81000	22	2200	41
750	BT37	E39 Mogul	67547	LU750	S111	6	Clear	Universal	O	24000+	105000	94500	22	2100	39,41
Note: LCL = 6 1/8 in; MOL = 11 1/2 in															
1000	E25	E39 Mogul	67307	LU1000	S52	6	Clear	Universal	O	24000+	130000	124000	22	2100	39,41

### LUMALUX STANDBY

Dual Arc Tube, Long Life

Watts	Bulb	Base	Product Number	Ordering Abbreviation	ANSI Code	Pkg Qty	Lamp Finish	Operating Position	Fix Req	Avg Rated Life (hrs)	Approx Lumens (initial)	(mean)	CRI	CCT (K)	Symbols & Footnotes
70	ET23.5	E39 Mogul	67540	LU70/SBY	S62	20	Clear	Universal	O	40000	6050	4950	22	1900	10,42
100	ET23.5	E39 Mogul	67542	LU100/SBY	S54	20	Clear	Universal	O	40000	9500	7600	22	2100	10,42
150	ET23.5	E39 Mogul	67544	LU150/55/SBY	S55	20	Clear	Universal	O	40000	15700	12100	22	2100	10,37,38,42
200	ET18	E39 Mogul	67586	LU200/100/SBY	S66	20	Clear	Universal	O	40000	21500	18000	22	2100	10,42
250	ET18	E39 Mogul	67582	LU250/SBY	S50	20	Clear	Universal	O	40000	27500	23200	22	2100	10,42
400	ET18	E39 Mogul	67584	LU400/SBY	S51	20	Clear	Universal	O	40000	47500	40000	22	2100	10,42
1000	E25	E39 Mogul	67543	LU1000/SBY	S52	6	Clear	Universal	O	24000+	127000	115000	22	2100	39,41

### UNALUX®

High Pressure Sodium Retrofit for Mercury

Watts	Bulb	Base	Product Number	Ordering Abbreviation	ANSI Code	Pkg Qty	Lamp Finish	Operating Position	Fix Req	Avg Rated Life (hrs)	Approx Lumens (initial)	(mean)	CRI	CCT (K)	Symbols & Footnotes
150	BT28	E39 Mogul	67528	ULX150	S63	10	Clear	Universal	O	24000	11800	10600	20	1800	43
215	BT28	E39 Mogul	67530	ULX215	S65	10	Clear	Universal	O	16000	20000	17000	20	2000	43
360	BT37	E39 Mogul	67531	ULX360	S64	10	Clear	Universal	O	16000	36500	32800	20	2060	43
880	E25	E39 Mogul	67318	ULX880		6	Clear	Universal	O	12000	101000	91000	20	2100	43,44
Note: LCL = 9 1/8 in; MOL = 15 1/8 in															

### SPECIALTY

Watts	Bulb	Base	Product Number	Ordering Abbreviation	ANSI Code	Pkg Qty	Lamp Finish	Operating Position	Fix Req	Avg Rated Life (hrs)	Approx Lumens (initial)	(mean)	CRI	CCT (K)	Symbols & Footnotes
400	T7	RX7S RRSC	67527	LU400T/RSC	S51	10	Clear	HOR	E	24000	46000	41400	21	2100	2,10
	T14.5	E40 Mogul	67711	400W PLANTASTAR	S51	12	Clear	Universal	O	16000	55000	50000	22	2000	41,45
600	T14.5	E40 Mogul	67712	600W PLANTASTAR	S106	12	Clear	Universal	O	16000	90000	81000	22	2000	41,45
1000	E25	E39 Mogul	67314	LU1000/PLANTASTAR	S52	6	Clear	Universal	O	24000	130000	124000	22	2100	41



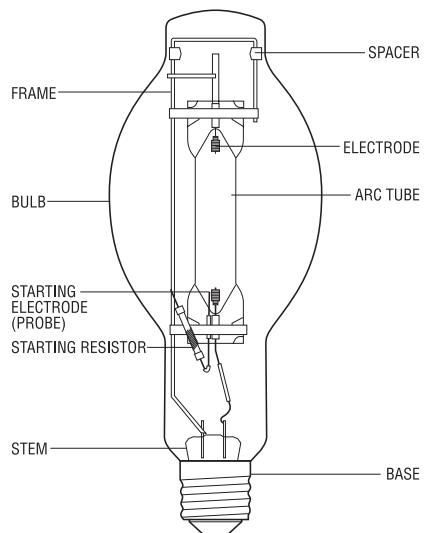
T (BY22D base)

## SOX LOW PRESSURE SODIUM

Watts	Bulb	Base	Product Number	Ordering Abbreviation	ANSI Code	Pkg Qty	Lamp Finish	Operating Position	Fix Req	Avg Rated Life (hrs)	Approx Lumens (initial)	CCT (K)	MOL (in)	Symbols & Footnotes
18	T17	BY22D	69510	<b>SOX18</b>	L69	12	Clear	BU ± 110°	E	16000	1800	1800	8.5	
35	T17	BY22D	69511	<b>SOX35</b>	L70	12	Clear	BU ± 110°	E	16000	4500	1800	12.24	
55	T17	BY22D	69512	<b>SOX55</b>	L71	12	Clear	BU ± 110°	E	16000	7300	1800	16.73	
90	T21	BY22D	69513	<b>SOX90</b>	L72	12	Clear	HOR ± 20°	E	16000	13500	1800	20.79	
135	T21	BY22D	69514	<b>SOX135</b>	L73	12	Clear	HOR ± 20°	E	16000	22000	1800	30.51	
180	T21	BY22D	69515	<b>SOX180</b>	L74RF	9	Clear	HOR ± 20°	E	16000	30000	1800	44.1	

H  
I  
D

## GUIDE TO MERCURY VAPOR LAMPS



OSRAM SYLVANIA Mercury lamps are designed primarily for use in general lighting applications where good efficiency and long life are desired while color rendering requirements are moderate. Applications include street lighting, industrial hi-bay, parking lot lighting, and general flood-lighting.

**STANDARD MERCURY** — Available in a wide range of lamp types from 40-1000 watts, in both clear and coated configurations, Mercury vapor lamps are ideal for a variety of lighting applications. PAR lamps offer floodlighting and ultra-violet spectra for special lighting applications.

**MERCURY SAFELINE®** — Designed to self extinguish when the outer bulb is broken, Mercury Safeline lamps are recommended for use in fixtures installed in sports facilities and other places of public assembly where lamps may be subject to breakage by external objects.

### WARNING

#### STANDARD MERCURY "R" LAMPS

- I. **RUPTURE RISKS:** This Mercury lamp is constructed of an outer glass bulb with an internal arc-tube made of quartz. Mercury arc-tubes operate at high pressure and at very high temperatures and can unexpectedly rupture due to internal causes or external factors such as a ballast failure or misapplication. An arc-tube rupture can burst and shatter the outer glass bulb resulting in the discharge of glass fragments and extremely hot quartz particles. In the event of such rupture, **THERE IS A RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE.**

##### TO REDUCE THESE RISKS:

1. Only operate lamp with compatible ballast and fixture. (See catalog for specific information.)
  2. Fixture lens/diffuser material must be able to contain hot lamp fragments (as high as 1832°F, 1000°C). If you are uncertain, contact your fixture manufacturer.
  3. Never expose an operating lamp to moisture (such as rain, sleet, or snow).
  4. Replace lamp if outer glass bulb is scratched, cracked or damaged in any way.
  5. Electrically insulate any metal support in contact with the outer bulb to avoid glass decomposition.
  6. Replace lamp at or before the end of rated life. (See catalog for rated life.)
- II. **ELECTRICAL SHOCK AND BURN HAZARD:** Do not remove or insert lamp when power is on. If outer glass bulb is broken, shut off power immediately and remove lamp after it has cooled.

III. **ULTRAVIOLET RADIATION EXPOSURE:**

**WARNING:** THIS LAMP CAN CAUSE SERIOUS SKIN BURN AND EYE INFLAMMATION FROM SHORT WAVE ULTRAVIOLET RADIATION IF OUTER ENVELOPE OF THE LAMP IS BROKEN OR PUNCTURED. DO NOT USE WHERE PEOPLE WILL REMAIN FOR MORE THAN A FEW MINUTES UNLESS ADEQUATE SHIELDING OR OTHER SAFETY PRECAUTIONS ARE USED. LAMPS THAT WILL AUTOMATICALLY EXTINGUISH WHEN THE OUTER ENVELOPE IS BROKEN OR PUNCTURED ARE COMMERCIALLY AVAILABLE.

THIS PRODUCT CONFORMS TO THE FOLLOWING FEDERAL REGULATIONS:  
U.S.A.: 21 CFR 1040.30      CANADA: SOR/80-381

IV. **INSTALLATION:**

1. Screw lamp firmly but not forcibly into socket to avoid breakage.
  2. To avoid damaging a lamp, never install it into an ordinary household socket.
  3. This lamp may be operated in any position.
- V. **BROKEN ARC-TUBE:** Take care in handling and disposing of this lamp. If arc-tube is broken, avoid skin contact with any of the contents and fragments. See Product Safety Data Sheet for further details.

## WARNING

### MERCURY SAFELINE®

THE FOLLOWING INSTRUCTIONS MUST BE COMPLIED WITH TO AVOID RISK OF PERSONAL INJURY, PROPERTY DAMAGE AND POOR LAMP PERFORMANCE.

- I. **RUPTURE RISKS:** This Mercury lamp is constructed of an outer glass bulb with an internal arc-tube made of quartz. Mercury arc-tubes operate at high pressure and at very high temperatures and can unexpectedly rupture due to internal causes or external factors such as a ballast failure or misapplication. An arc-tube rupture can burst and shatter the outer glass bulb resulting in the discharge of glass fragments and extremely hot quartz particles. In the event of such rupture, THERE IS A RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE.

**TO REDUCE THESE RISKS:**

1. Only operate lamp with compatible ballast and fixture. (See catalog for specific information.)
2. Fixture lens/diffuser material must be able to contain hot lamp fragments (as high as 1832°F, 1000°C). If you are uncertain, contact your fixture manufacturer.
3. Never expose an operating lamp to moisture (such as rain, sleet, or snow).
4. Replace lamp if outer glass bulb is scratched, cracked or damaged in any way.
5. Electrically insulate any metal support in contact with the outer bulb to avoid glass decomposition.
6. Replace lamp at or before the end of rated life. (See catalog for rated life.)

- II. **ELECTRICAL SHOCK AND BURN HAZARD:** Do not remove or insert lamp when power is on. If outer glass bulb is broken, shut off power immediately and remove lamp after it has cooled.

III. **ULTRAVIOLET RADIATION EXPOSURE:**

**WARNING:** This lamp should self-extinguish within 15 minutes after the outer envelope is broken or punctured. If such damage occurs, TURN OFF AND REMOVE LAMP to avoid possible injury from hazardous shortwave ultraviolet radiation.

THIS PRODUCT CONFORMS TO THE FOLLOWING FEDERAL REGULATIONS:  
U.S.A.: 21 CFR 1040.30      CANADA: SOR/80-381

IV. **INSTALLATION:**

1. Screw lamp firmly but not forcibly into socket to avoid breakage.
2. To avoid damaging a lamp, never install it into an ordinary household socket.
3. This lamp may be operated in any position.

- V. **BROKEN ARC-TUBE:** Take care in handling and disposing of this lamp. If arc-tube is broken, avoid skin contact with any of the contents and fragments. See Product Safety Data Sheet for further details.



E17



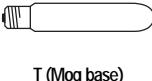
ET23.5, BT28



PAR38



R30/R40



T (Mog base)



BT56



BT37

## MERCURY

### MERCURY STANDARD

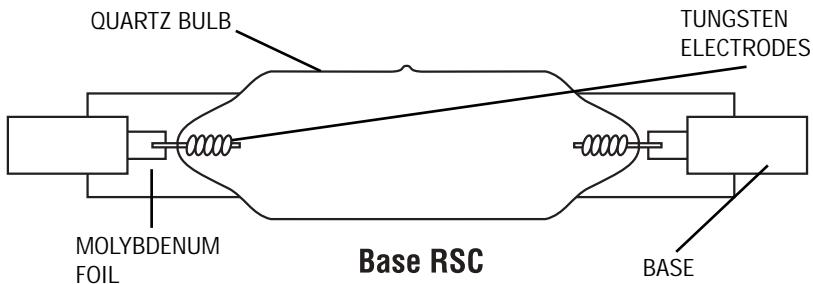
Watts	Bulb	Base	Product Number	Ordering Abbreviation	ANSI Code	Pkg Qty	Beam Type	Beam Angle	Lamp Finish	Operating Position	Fix Req	Avg Rated Life (hrs)	Approx Lumens (initial)	Approx Lumens (mean)	CRI	CCT (K)	Arc Length (in)	Symbols & Footnotes
40	E17	E26 Med	69400	H45/46DL-40/50/DX Note: LCL = 3 1/8 in; MOL = 5 1/8 in	H45/H46 20				Coated	Universal		24000+	1580	1300	45	4000		39,46,47
75	E17	E26 Med	69402	H43AV-75/DX	H43	20			Coated	Universal		24000+	2700	1800	45	4300		39,47
100	E17	E26 Med	69403	H38AV-100/DX	H38	20			Coated	Universal		24000+	4000	3560	45	4000		39,47
	ET23.5	E39 Mogul	69407	H38HT-100	H38	20			Clear	Universal		24000+	4000	3000	22	5900		39,47
			69408	H38JA-100/DX	H38	20			Coated	Universal		24000+	4100	3300	45	4000		39,47
	PAR38	AD Med Skt	68843	H44GS-100SP	H44	12	SP	8		Universal		16000	2500	1950	20	5900		
		E26 Med Skt	68846	H44JM-100/MDSKSP	H44	12	SP	8		Universal		16000	2500	1950	20	5900		
	R40	E26 Med	69405	H38BP-100/DX	H38	10	FL		Coated	Universal		24000+	2500	2000	45	4000		39,47
175	ED28	E39 Mogul	69444	H39KB-175	H39	6			Clear	Universal		24000+	7700	7150	22	5900		39,47
			69445	H39KC-175/DX	H39	6			Coated	Universal		24000+	8400	6800	45	4000		39,47
	R40	E26 Med	69406	H39BP-175/DX	H39	10	FL		Coated	Universal		24000+	5100	4100	45	4000		39,47
250	ED28	E39 Mogul	69447	H37KB-250	H37	6			Clear	Universal		24000+	11600	10800	22	5900		39,47
			69448	H37KC-250/DX	H37	6			Coated	Universal		24000+	12500	10000	45	4000		39,47
400	ED37	E39 Mogul	69449	H33CD-400	H33	6			Clear	Universal		24000+	20000	18700	22	5900		39,47
			69450	H33GL-400/DX	H33	6			Coated	Universal		24000+	23000	16200	43	4000		39,47
	T16	E39 Mogul	68893	H33AR-400	H33	6			Clear	Universal		12000	19500	16500	16	5900		47
1000	BT56	E39 Mogul	69332	H34GW-1000/DX	H34	6			Coated	Universal		16000+	55000	44000	45	4000		39,47,48
			69307	H36GV-1000	H36	6			Clear	Universal		24000+	55200	50000	22	5900		39,47,48
			69331	H36GW-1000/DX	H36	6			Coated	Universal		24000+	58000	48500	45	4000		39,47,48

### MERCURY SAFELINE®

Self-Extinguishing

Watts	Bulb	Base	Product Number	Ordering Abbreviation	ANSI Code	Pkg Qty	Lamp Finish	Operating Position	Fix Req	Avg Rated Life (hrs)	Approx Lumens (initial)	Approx Lumens (mean)	CRI	CCT (K)	Symbols & Footnotes
400	BT37	E39 Mogul	69451	H33GL-T400/DX	H33	6	Coated	Universal		24000+	19800	16000	45	4000	39,47

## GUIDE TO REPROGRAPHIC / PHOTOCHEMICAL LAMPS



OSRAM SYLVANIA reprographic and photochemical lamps are designed for applications other than general lighting. These applications include: plate making, photo resist exposure, imaging and other requiring the use of ultraviolet energy.

### UNJACKETED REPROGRAPHIC / PHOTOCHEMICAL, F-TYPE LAMP



THE FOLLOWING INSTRUCTIONS MUST BE COMPLIED WITH TO AVOID RISK OF PERSONAL INJURY, PROPERTY DAMAGE AND POOR LAMP PERFORMANCE.

- I. **RUPTURE RISKS:** This High Intensity Discharge (HID) lamp is constructed with a quartz arc-tube which operates at high pressure and at very high temperatures. The arc-tube can unexpectedly rupture due to internal causes or external factors such as a ballast failure or misapplication resulting in the discharge of glass fragments and extremely hot particles. In the event of such rupture, THERE IS A RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE.

#### TO REDUCE THESE RISKS:

1. Only operate lamp in an enclosed fixture with a lens/diffuser material able to contain hot lamp fragments (up to 2012°F, 1100°C). If you are uncertain, contact your fixture manufacturer.
2. Only operate lamp with compatible ballast (including capacitor and ignitor) and fixture.
3. Only operate lamp in horizontal position (Maximum deviation from horizontal is 15°).
4. Lamp must be turned off for a minimum of fifteen minutes at least once a week.
5. Never expose an operating lamp to moisture (such as rain, sleet or snow).
6. Replace lamp if bulb is scratched, cracked or damaged in any way.
7. Keep all metals at least 3 inches from the body of the arc-tube to avoid glass decomposition.
8. Do not operate lamps when output radiation falls below 75% of its initial value.

- II. **ULTRAVIOLET RADIATION HAZARD:** THIS LAMP EMITS ULTRAVIOLET (UV) POWER DURING OPERATION AND IS IN RISK GROUP 3 PER ANSI-IESNA RP-27.3-96. THIS LAMP CAN CAUSE SERIOUS SKIN BURN AND EYE INFLAMMATION FROM SHORTWAVE ULTRAVIOLET RADIATION. KEEP OUT OF DIRECT OR INDIRECT LIGHT DURING OPERATION UNLESS APPROPRIATE EYE AND SKIN PROTECTION IS WORN. A POWER INTERLOCK DEVICE IS RECOMMENDED TO AUTOMATICALLY TURN OFF THE LAMP IF THE FIXTURE ASSEMBLY IS OPENED.

DUE TO THE ULTRAVIOLET HAZARD, THIS LAMP IS TO BE USED ONLY IN EQUIPMENT SPECIFICALLY DESIGNED FOR USE WITH THIS LAMP AND RECOMMENDED FOR ITS USE BY THE EQUIPMENT MANUFACTURER.

- III. **ELECTRICAL SHOCK AND BURN HAZARD:** Do not remove or insert lamp while power is on. Allow lamp to cool before removing.

- IV. **LAMP INSTALLATION AND FIXTURE:** Do not remove lamp from package until ready for use and then handle only with clean cotton gloves. If lamp is handled, fingerprints, grease or oils may be removed from the bulb by wiping with alcohol. This will remove materials which cause whitish spotting (devitrification) and premature lamp failure. Dry lamp carefully with clean cotton cloth.

1. Install lamps without undue pressure.
2. Ensure that lamp electrical connections are secure and nothing is touching bulb.
3. The seal base temperature must not exceed 350° C and the bulb wall temperature, as measured in center, must be maintained between 600° C and 700° C.
4. If cooling is required to maintain the seal/base and the bulb wall temperatures of item 3 above, air interlock vane switches are recommended to protect against fan-motor failure.
5. All seal gaskets and wire insulation must be shielded from the UV radiation produced by this lamp.
6. Fixture wiring must have a temperature rating of 250° C and a minimum voltage rating of 600V RMS for lamps of less than 1000 watts and 1500V RMS for lamps of 1000 watts or greater.
7. For maximum performance, all double-ended lamps must be operated with the arc-tube tip up.

- V. **BROKEN ARC-TUBE:** Take care in handling and disposing of this lamp. If arc-tube is broken, avoid skin contact with any of the contents and fragments. See Product Safety Data Sheet for further details.

JACKETED REPROGRAPHIC / PHOTOCHEMICAL, E-TYPE LAMP



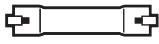
THE FOLLOWING INSTRUCTIONS MUST BE COMPLIED WITH TO AVOID RISK OF PERSONAL INJURY, PROPERTY DAMAGE AND POOR LAMP PERFORMANCE.

- I. RUPTURE RISKS:** This High Intensity Discharge (HID) lamp is constructed with a quartz arc-tube which operates at high pressure and at very high temperatures. The arc-tube can unexpectedly rupture due to internal causes or external factors such as a ballast failure or misapplication. An arc-tube rupture can burst and shatter the outer glass bulb resulting in the discharge of glass fragments and extremely hot particles. In the event of such rupture, **THERE IS A RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE.**

**TO REDUCE THESE RISKS:**

1. Only operate lamp in an enclosed fixture with a lens/diffuser material able to contain hot lamp fragments (up to 2012°F, 1100°C). If you are uncertain, contact your fixture manufacturer.
  2. Only operate lamp with compatible ballast (including capacitor and ignitor) and fixture.
  3. Only operate lamp in horizontal position. (Maximum deviation from horizontal is 15°).
  4. Lamp must be turned off for a minimum of fifteen minutes at least once a week.
  5. Never expose operating lamp to moisture (such as rain, sleet or snow).
  6. Replace lamp if outer glass bulb is scratched, cracked or damaged in any way.
  7. Electrically insulate any metal support in contact with the outer bulb to avoid glass decomposition.
  8. Do not operate lamps when output radiation falls below 75% of its initial value.
- II. ULTRAVIOLET RADIATION EXPOSURE:** THIS LAMP CAN CAUSE SERIOUS SKIN BURN AND EYE INFLAMMATION FROM SHORTWAVE ULTRAVIOLET RADIATION IF THE OUTER ENVELOPE OF THE LAMP IS BROKEN OR PUNCTURED. DO NOT USE WHERE PEOPLE WILL REMAIN FOR MORE THAN A FEW MINUTES UNLESS ADEQUATE SHIELDING OR OTHER SAFETY PRECAUTIONS ARE USED.
- III. ELECTRICAL SHOCK AND BURN HAZARD:** Do not remove or insert lamp while power is on. If outer glass bulb is broken, shut off power immediately and remove lamp after it has cooled.
- IV. LAMP INSTALLATION:**
1. Screw lamp firmly but not forcibly into socket to avoid breakage.
  2. Never install the lamp into an ordinary household socket.
- V. BROKEN ARC-TUBE:** Take care in handling and disposing of this lamp. If arc-tube is broken, avoid skin contact with any of the contents and fragments. See Product Safety Data Sheet for further details.

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T (RSC base)



ET23.5, BT28



ET18



BT37

## REPROGRAPHIC / PHOTOCHEMICAL

### REPROGRAPHIC

Watts	Bulb	Base	Product Number	Ordering Abbreviation	Pkg Qty	Operating Position	Fix Req	MOL (in)	Arc Length (in)	Primary Line(s) of Emission	Symbols & Footnotes
400	T5.5	J	66621 <sup>△</sup>	MP400T5.5/1.5J	10	HOR ± 15°	F	4.5	1.375	417nm	29,31,49
1200	T5.5	J	66573 <sup>△</sup>	MP1200T5.5/6J	10	HOR ± 15°	F	9	6	417nm	29,31,49
3000	T8	J	66562	MP3000T8/6J	10	HOR ± 15°	F	9.375	5.75	417nm	29,31,49

### LAMP & BALLAST SYSTEM

Watts	Product Number	Ordering Abbreviation	ANSI Code	Pkg Qty	Ballast Product Number	Ballast Voltage (VAC)	Circuit Type	Lamp Product Number	Bulb	Lamp Base	Finish	Fix Req	Symbols & Footnotes
100	67621	LU100/ECO LAMP/MULTI-BALLAST KIT	S54	1	47316	120/208/240/277	CWA	67514	ET23.5	E39 Mogul	Clear		10
150	67629	LU150/55/ECO LAMP/MULTI-BALLAST KIT	S55	1	47335	120/208/240/277	CWA	67516	ET23.5	E39 Mogul	Clear		10
175	64782 <sup>⊗</sup>	M175/U LAMP/SUPER5 BALLAST KIT	M57/E	1	47243	120/208/240/277/480	CWA	64471	BT28	E39 Mogul	Clear	E	2
250	67622 <sup>⊗</sup>	LU250/ECO LAMP/SUPER5 BALLAST KIT	S50	1	47634	120/208/240/277/480	CWA	67578	ET18	E39 Mogul	Clear		10
	64784 <sup>⊗</sup>	M250/U LAMP/SUPER5 BALLAST KIT	M58/E	1	47265	120/208/240/277/480	CWA	64457	BT28	E39 Mogul	Clear	E	2
400	67623 <sup>⊗</sup>	LU400/ECO LAMP/SUPER5 BALLAST KIT	S51	1	47647	120/208/240/277/480	CWA	67533	ET18	E39 Mogul	Clear		10
	64781 <sup>⊗</sup>	M400/U LAMP/SUPER5 BALLAST KIT	M59/S	1	47338	120/208/240/277/480	CWA	64490	BT37	E39 Mogul	Clear	S	20

## SYMBOLS & FOOTNOTES FOR HIGH INTENSITY DISCHARGE (HID) LAMPS

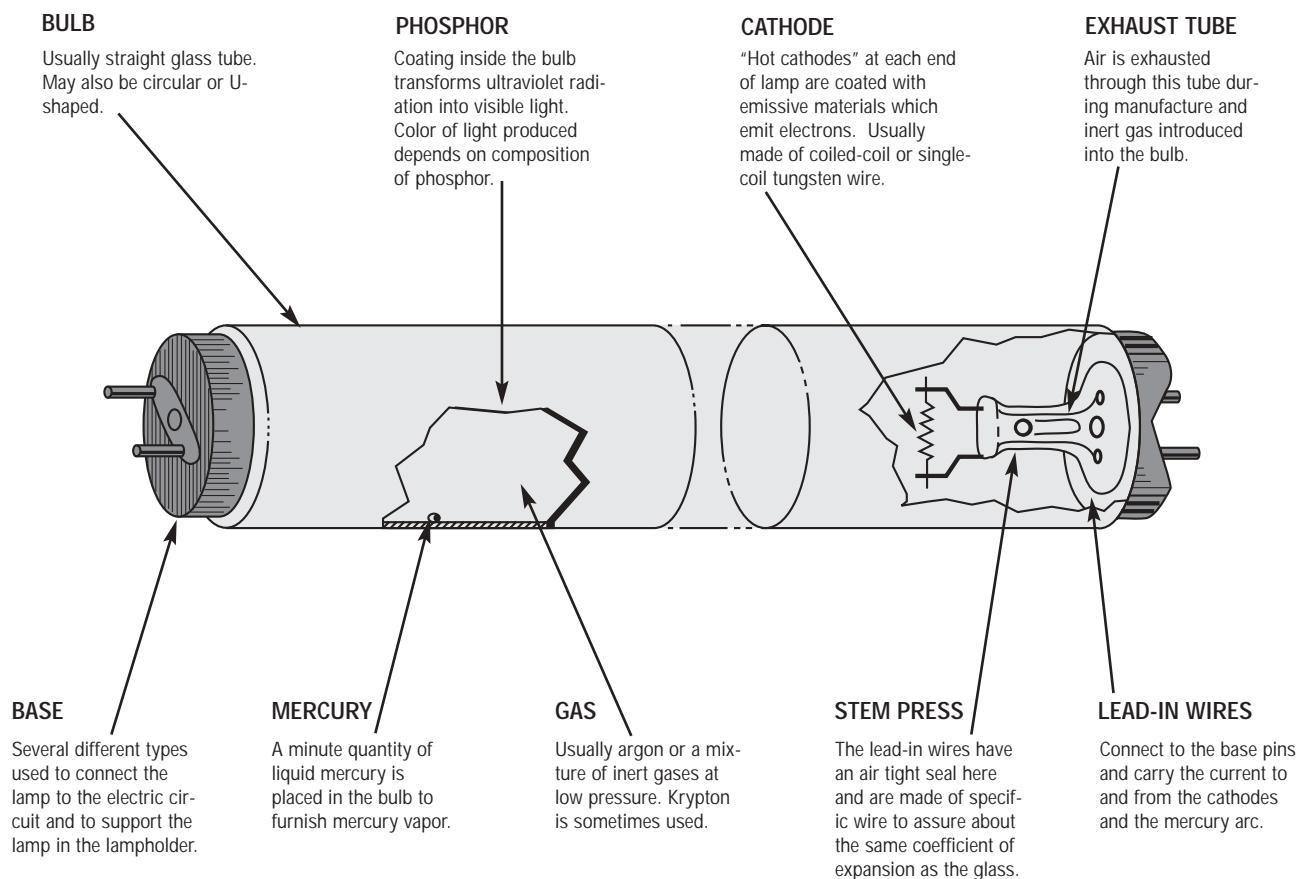
Symbol	Description
	New item introduced within the past year.
	Item will be discontinued when inventory is depleted.
	This ECOLOGIC® lamp was designed to pass the Federal TCLP criteria for classification as non-hazardous waste in most states. Disposal regulations may vary; check local and state regulations.
	This lamp is a High Color Rendering Lamp
Footnote	Description
1	Consult your OSRAM SYLVANIA Lighting Representative for compatible electronic operating systems.
2	E = Lamps classified as E-type are to be used ONLY in suitably enclosed luminaires. See lamp warning.
3	The circuit must include overcurrent protection (i.e. Thermally switched ballast).
4	Lamp requires a nominal Open Circuit Voltage of 230V or higher. Without an ignitor in the circuit minimum OCV is 209Vrms.
5	UV-Stop quartz
6	Lamps may be operated on ANSI M98 Compliant Ballast.
7	Lamps may be operated on ANSI M85 or M98 Compliant ballasts.
8	Lamps may be operated on a M142 Compliant ballast.
9	Lamps may be operated on ANSI M142 or M81 Compliant ballasts.
10	Use with 4000V pulse rated sockets only.
11	O = Lamps classified as O-type, comply with ANSI standard C78.387 for containment testing and may be used in open luminaires. See lamp warning.
12	Lamps may be operated on ANSI M140 Compliant Ballast.
13	When operated on ballasts having a sustaining voltage less than 270V, lamp life may be significantly reduced.
14	Beam angle conversion from 30 to 40 degrees in April 2004. Engineering estimate for CBCP is 10000.
15	Passes Federal TCLP test based on NEMA LL Series Standards. TCLP data available upon request. Disposal regulations may vary depending on location. Please check your local and state regulations
16	Lamps with a E26 medium skirt base are not compatible with exclusionary medium sockets.
17	Lamps may be operated on ANSI M132 (320W) Compliant ballasts.
18	Lamps may be operated on ANSI M135 (400W) Compliant ballasts.
19	20,000 average rated life based on 10 hrs/start. 30,000 average rated life based on 120 hrs/start.
20	S = When operated within 15 degrees of vertical, this lamp may be operated in an open luminaire provided the installation is not near people or flammable or combustible material, otherwise it must be operated in a suitably enclosed luminaire. See lamp warning.
21	When operating on a ballast with a sustaining voltage less than 310V, lamp life may be significantly reduced.
22	Operates at 150W on a 175W M57 ballast or a M107 ballast.
23	Please consult your ballast and fixture manufacturer for compatible systems.
24	Operates at 360 watts on 400W M59 ballast or a M165 ballast.
25	Horizontally oriented lamps require a position oriented mogul (POM) socket to accept position oriented mogul bases.
26	Lamps may be operated M155 or M135 pulse start ballast with a sustaining voltage greater than 270V. Performance will be as rated on a M59 ballast.
27	Lamps may be operated on ANSI M137 Compliant ballasts.
28	Published rated life based on 5 hours per start. Life rating will increase to 6,000 hours if operated for at least 10 hours per start in the base position. Lumens will be lower for operating positions other than base up. See lumen tilt factor curve.
29	Use in equipment where gasket material is protected from all lamp radiation.
30	Consult your OSRAM SYLVANIA Lighting Representative for lamp/ballast compatibility.
31	F = Enclosed luminaire with UV filter and lens interlock required. WARNING: This lamp emits ultraviolet radiation which can cause serious skin burn and eye inflammation. Additionally, this lamp operates under high pressure at very high temperatures. Should the lamp break there can exist a danger of personal injury and/or fire from the broken lamp particles being discharged. This lamp should only be used in fully enclosed luminaire with ultraviolet (UV) filter tempered glass lens capable of containing any particles discharges by breakage. Do not use this lamp if the filter lens is damaged or missing. This lamp should only be used in luminaires equipped with safety interlock lens switches. See lamp warning.
32	For use where seal temperature does not exceed 350° C.
33	Lamps must be operated on CW/CWA ballasts only

## SYMBOLS & FOOTNOTES FOR HIGH INTENSITY DISCHARGE (HID) LAMPS

Footnote	Description
34	Requires POWERTRONIC Ballast.
35	Requires 3000V minimum pulse.
36	Voltage rise due to fixture effect is to be evaluated using standard lamp types and not LUMALUX PLUS®/ECO® or LUMALUX® MERCURY FREE/ECO lamp types.
37	55 Volt lamp.
38	LU150/100 and LU150/55 lamps are not interchangeable.
39	Mean lumens measured at 50% of average rated life
40	100 Volt lamp.
41	Use with 5000V pulse rated sockets only.
42	Standby feature not guaranteed beyond 24,000 operating hours.
43	UNALUX® lamps must be operated on mercury lag or reactor ballasts only.
44	The ULX880 lamp should not be used on any circuit other than 480V H36 mercury reactor.
45	Use with 4-5kV ignitor.
46	Operates at 40 watts on H45 ballast, 50 watts on H46 ballast.
47	In general, Horizontal lumen values will be 5-10% lower than the vertical lumen values.
48	H34 and H36 lamps are not interchangeable.
49	Unjacketed reprographical/photochemical lamp.

## OSRAM SYLVANIA: THE LEADER IN ENERGY SAVING FLUORESCENT LAMPS

The fluorescent lamp is an electric discharge device which utilizes a low pressure mercury vapor arc to generate ultra-violet (plus a little visible) energy. The ultra-violet energy is absorbed by a phosphor coat on the inside of the glass tube and converted by the phosphor to visible wavelengths; the wavelengths of the light generated are determined by the composition of the phosphor. In addition to the small amount of mercury vapor, the fluorescent tube contains an atmosphere of an inert gas, usually argon, krypton, neon, or a mixture of two or more of these gases. The pressure of the gases contained in the lamp is very low, usually from 2 to 3 torr. Atmospheric pressure is 760 torr.



## HOW TO READ PRODUCT INFORMATION - COMPACT FLUORESCENT

Nominal Wattage	Bulb	MOL (in)	MOL (mm)	Base	Product Number	Ordering Abbreviation	NEMA Generic Designation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
20	T4	6.3	160	Med	29296	CF20EL/830/MED		6	6000	3000	82	1280	1101	   2,21,28, 36,63,64
26	T4	6.8	173	G24D-3	20710	CF26DD/830	CFQ26W/G24D/30	50	10000	3000	82	1800	1548	  2,21,28, 34,37
32	T4	5.5	140	GX24Q-3	20885	CF32DT/E/IN/835	CFTR32W/GX24Q/35	50	10000	3500	82	2400	2064	 2,21,28, 33,35,59
40	T5	22.6	573	2G11	20586	FT40DL/841/RS	FT40W/2G11/RS/41	10	20000	4100	82	3150	2709	 2,21,28

<b>Nominal Wattage</b>	Design wattage on reference ballast. Actual wattage dependent on ballast.
<b>Bulb</b>	Describes the shape of the bulb followed by the bulb's diameter at its widest point. The diameter value is expressed in eighths of an inch. Ex. T = Tubular, 4 = 4/8 inch = 1/2 inch. Please see page 103 for bulb illustrations.
<b>Base</b>	Base designations for compact fluorescent lamps are the NEMA designations. Please see page 104 for base illustrations.
<b>MOL</b>	Maximum overall length. The actual length of the lamp measured from the bottom of the base to the top outside edge of the glass. In many cases, the bottom of the base is the bottom of the center post of the base of the lamp.
<b>Symbols &amp; Footnotes</b>	Most symbols and footnotes that apply to a specific product will appear in this space. The explanations of the symbols and footnotes are at the end of the fluorescent section.
<b>Ordering Abbreviation</b>	A text description of the lamp. Please see below for several examples and explanations of some of the codes.
<b>NEMA Generic Designation</b>	Designation assigned by NEMA (National Electrical Manufacturers Association).
<b>CCT</b>	Correlated Color Temperature. The degree of "whiteness" of the light. Expressed in kelvins (K). Please see page 99 for more information.
<b>CRI</b>	Color Rendering Index. A numbering system for rating the relative color rendering quality of a light source compared to a standard. Please see page 99 for more information.
<b>Initial &amp; Mean Lumens</b>	Initial lumens are measured when the lamp has been operating for 100 hours. Mean lumens are typically measured at 40% of the rated life of the lamp. Compact Fluorescent lamp lumens are measured at 25°C (77°F).

### How to Read Ordering Abbreviations

CF26DD/830	CF32DT/E/IN/835	FT40DL/841/RS	CF20EL/830/MED
CF Compact Fluorescent	CF Compact Fluorescent	FT Fluorescent Twin	CF Compact Fluorescent
26 Nominal lamp wattage	32 Nominal lamp wattage	40 Nominal lamp wattage	20 Nominal lamp wattage
DD DULUX Double	DT DULUX Triple	DL DULUX Long	EL Electronic Lamp
8 82 CRI	E Electronic or dimming operation	8 82 CRI	8 82 CRI
30 3000K CCT	IN Amalgam	41 4100K CCT	30 3000K CCT
	8 82 CRI	RS Rapid Start	MED Medium screw base
	35 3500K CCT		

### DULUX® LAMP FAMILIES

- CF... DS = DULUX Single, 2-pin for magnetic operation, ECOLOGIC®
- CF... DS/E = DULUX Single, 4-pin for electronic or dimming operation
- CF... DD = DULUX Double, 2-pin for magnetic operation, ECOLOGIC
- CF... DD/E = DULUX Double, 4-pin for electronic or dimming operation, ECOLOGIC
- CF... DT = DULUX Triple, 2-pin for magnetic operation, ECOLOGIC
- CF... DT/E = DULUX Triple, 4-pin for electronic or dimming operation, ECOLOGIC
- CF... DT/E/IN = DULUX Triple, 4-pin for electronic or dimming operation, amalgam, ECOLOGIC
- FT... DL = Fluorescent Twin, DULUX Long, 4-pin
- CF... DF = DULUX Flat, 4-pin
- CF... EL = DULUX self-ballasted, medium screw base

## HOW TO READ PRODUCT INFORMATION - FLUORESCENT

Nominal Wattage	Bulb	Nominal Length(in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F (@35°C/95°F)	Mean @25°C/77°F (@35°C/95°F)	Symbols & Footnotes
32	T8	48	47.78	Med Bipin	21763	F032/835XP/ECO	30	24000	3500	85	3000	2850	(E) 2,21,31, 35,39,60,70
34	T12	48	47.78	Med Bipin	24594	F34CW/SS Formerly F40CW/SS	30	20000	4200	62	2650	2279	(E) 2,10,13, 19,21,42
54	T5	48	45.5	Mini Bipin	20857	FP54/830/HO	40	20000	3000	82	4450 5000	4228 4750	(E) 2,21,26,35,59
60	T12	96	94	Single Pin	29815	F96T12/CW/SS	15	12000	4200	62	5300	4664	(E) 2,15,21

<b>Nominal Wattage</b>	Design wattage on reference ballast. Actual wattage dependent on ballast.
<b>Bulb</b>	Describes the shape of the bulb followed by the bulb's diameter at its widest point. The diameter value is expressed in eighths of an inch. Ex. T = Tubular, 8 = 8/8 inch = 1 inch. Please see page 103 for bulb illustrations.
<b>Base</b>	Please see page 104 for base illustrations.
<b>Nominal Length</b>	The nominal length of linear fluorescent lamps is typically measured from back of lampholder to back of lampholder. PENTRON® linear lamp, CURVALUME® and Circline lamps are exceptions. The nominal length given for PENTRON linear lamps is the closest familiar nominal length. CURVALUME lamps are measured from the face of the bases to the outside of the glass bend. The measurement for Circline lamps is the outside diameter. Values are in inches.
<b>MOL</b>	Maximum overall length. The length of the lamp measured in inches.
<b>Symbols &amp; Footnotes</b>	Most symbols and footnotes that apply to a specific product will appear in this space. The explanations of the symbols and footnotes are at the end of the fluorescent section.
<b>Ordering Abbreviation</b>	A text description of the lamp. Please see below for several examples and explanations of some of the codes.
<b>CCT</b>	Correlated Color Temperature. The degree of "whiteness" of the light. Expressed in kelvins (K). Please see page 99 for more information.
<b>CRI</b>	Color Rendering Index. A numbering system for rating the relative color rendering quality of a light source compared to a standard. Please see page 99 for more information.
<b>Initial &amp; Mean Lumens</b>	Initial lumens are measured when the lamp has been operating for 100 hours. Mean lumens are typically measured at 40% of the rated life of the lamp. For longer life lamp such as the OCTRON® XP™ lamps, the mean lumens are measured at the same point in time as they are measured for the standard lamps they replace. Fluorescent lamp lumens are typically measured at 25°C (77°F). The lamp lumens are measured at both 25°C (77°F) and 35°C (95°F) for PENTRON linear lamps.

### How to Read Ordering Abbreviations

FO32/835XP/ECO	F34CW/SS	FP54/830/HO	F96T12/CW/SS
F Fluorescent	F Fluorescent	F Fluorescent	F Fluorescent
O OCTRON	34 Nominal lamp	P PENTRON	96 96" nominal length
32 Nominal lamp	wattage	54 Nominal lamp	T Tubular Shape Bulb
wattage	CW Cool White	wattage	12 Bulb diameter;
8 85 CRI	phosphor	8 82 CRI	1½ inch = 1 ½ inches
35 3500K CCT	SS SUPERSAVER® -	30 3000K CCT	CW Cool White phosphor
XP EXtended	reduced wattage	HO High Output	SS SUPERSAVER -
Performance	lamp		reduced wattage lamp
ECO® ECOLOGIC® -			
TCLP passing lamp			



The following items were accepted into the 2003 IESNA Progress Report which recognizes innovative products introduced to the industry during that year.

OCTRON® 28-watt 4-foot XP™ SUPERSAVER®

OCTRON 8-foot XP SUPERSAVER

OCTRON CURVALUME®XP SUPERSAVER

5000K ICETRON®

Colored PENTRON®

For weight and measurement information, please visit [www.sylvania.com](http://www.sylvania.com)

## Lamp Disposal Labeling

The following information appears on the packages of fluorescent lamps. For more information on lamp disposal labeling, see the inside back cover of this catalog.



## FLUORESCENT LAMP COLORS

COLOR	COLOR ABBREVIATION	CORRELATED COLOR TEMPERATURE(1)	COLOR RENDERING INDEX(2)
DULUX® 2700K	827	2700	82
OCTRON® "800" 2700K	827	2700	84
OCTRON XP™ "800" 2700K	827	2700	85
INCANDESCENT FLUORESCENT	IF	2750	89
SOFT WHITE	Soft White	2900	82
DELUXE WARM WHITE	WWX	2900	82
WARM WHITE	WW	3000	52
WARM WHITE PLUS	WWP	3000	70
DESIGNER® 3000K	D30	3000	70
DESIGNER WARM WHITE	DWW	3000	70
DESIGNER "800" 3000K	D830	3000	80
DESIGNER WARM WHITE PLUS	DWWP	3000	80
DULUX SOFT WHITE	830	3000	82
DULUX 3000K	830	3000	82
OCTRON "700" 3000K	730	3000	75
OCTRON XP "700" 3000K	730	3000	78
OCTRON "800" 3000K	830	3000	82
OCTRON XP "800" 3000K	830	3000	85
OCTRON XPS® "800" 3000K	830	3000	86
PENTRON® 3000K	830	3000	82
GRO-LUX® Aquarium WIDE SPECTRUM	GRO/AQ/WS	3400	89
WHITE	W	3450	57
DESIGNER 3500K	D35	3500	70
DESIGNER "800" 3500K	D835	3500	80
DULUX 3500K	835	3500	82
ICETRON® 3500K	835	3500	80
PENTRON 3500K	835	3500	82
OCTRON "700" 3500K	735	3500	75
OCTRON XP "700" 3500K	735	3500	78
OCTRON "800" 3500K	835	3500	82
OCTRON XP "800" 3500K	835	3500	85
OCTRON XPS "800" 3500K	835	3500	86
NATURAL WHITE	N	3600	86
DESIGNER 4100K	D41	4100	70
DESIGNER COOL WHITE	DCW	4100	70
DESIGNER "800" 4100K	D841	4100	80
DESIGNER COOL WHITE PLUS	DCWP	4100	80
DULUX 4100K	841	4100	82
ICETRON 4100K	841	4100	80
PENTRON 4100K	841	4100	82
OCTRON "700" 4100K	741	4100	75
OCTRON XP "700" 4100K	741	4100	78
OCTRON "800" 4100K	841	4100	82
OCTRON XP "800" 4100K	841	4100	85
OCTRON XPS "800" 4100K	841	4100	86
DELUXE COOL WHITE	CWX	4100	87
LITE WHITE	LW	4150	48
COOL WHITE	CW	4200	62
COOL WHITE PLUS	CWP	4100	70
DULUX 5000K	850	5000	82
ICETRON 5000K	850	5000	80
OCTRON "700" 5000K	750	5000	75
OCTRON "800" 5000K	850	5000	80
OCTRON XP "800" 5000K	850	5000	85
OCTRON "900" 5000K	950	5000	90
DESIGN 50®	DSGN50	5000	90
DAYLIGHT™	D	6500	76
OCTRON "700" 6500K	765	6500	75
OCTRON XP "800" 6500K	865	6500	85
DESIGNER 6500K	865	6500	80
DAYLIGHT DELUXE	DX	6500	88

## FLUORESCENT COMPETITIVE GUIDES

NOTE: These tables are intended only as guides and may represent another lamp company's most similar product or product family rather than an identical match. Individual manufacturer's performance values should be consulted. Environmental conditions, ballast type, and other auxiliary equipment may affect lamp performance.

### FLUORESCENT BRAND NAMES

SYLVANIA	GE*	PHILIPS**
CURVALUME® (FB)	MOD-U-LINE (U)	U-Bent (FB)
CWX		Home Light Everywhere (HL Everywhere)
DESIGN 50® (DSGN50)	Chroma 50 (C50)	Colortone 50 (C50)
DESIGNER® Series	Specification Series (SP)	SPEC
DESIGNER 800 Series	Specification Series (SPX)	Ultralume
DESIGNER Cool White	SP41	Home Light Cool (HL Cool)
DESIGNER Cool White PLUS	SPX41	41U
DESIGNER Warm White	Kitchen and Bath ULTRA (70 CRI)	SPEC30
DESIGNER Warm White PLUS (DWWP)	Kitchen and Bath ULTRA (80 CRI)	Home Light WX (HL WX)
DESIGNER 700, 3500K (D35)	SP35	Home Light Warm (HL Warm)
DULUX®	BIAX	PL
DULUX S	BIAX	PL
DULUX D, D/E	Double BIAX	PL-C
DULUX T, T/E	Triple BIAX	PL-T
DULUX F	---	---
DULUX L	High Lumen BIAX	PL-L
DULUX EL	Electronic Self Ballasted Lamps(was Compax)	Earth Light Lamps (SLS)
---	2D	---
---	GENURA	---
ECOLOGIC® (ECO®)	Ecolux (ECO)	ALTO
GRO-LUX®	Gro & Sho/Plant & Aquarium/Terrarium	Agro-Lite (AGRO)
ICETRON®	---	---
OCTRON®	T8 (was Trimline)	TL70/TL80
OCTRON 700 XP™ ECO	SP Ecolux XL T8 Lamps with Starcoat	TL700 PLUS ALTO
OCTRON 800 XP ECO	SPX Ecolux XL T8 Lamps with Starcoat	TL800 PLUS ALTO
OCTRON 800 XPS ECO	---	---
OCTRON 950	---	TL950
PENTRON®	T5 Starcoat	SILHOUETTE™
---	---	QL (similar to ICETRON, but not interchangeable)
SAFELINE®	covGuard	---
SUN STICK®	SUN (Sunshine)	C50
SUPERSAVER® (SS)	Watt-Miser (WM)	Econ-o-Watt (EW)
HO (800mA)	HO (800mA)	HO (800mA)
VHO (1500mA)	1500 (1500mA) & Power Grove	VHO (1500mA) (was SHO)
VHO/LT	T10/1500MA	VHO-0
XP®	XL	Advantage
XPS®		

\* Trademarks or registered trademarks of General Electric Company \*\* Trademarks or registered trademarks of Philips

### FLUORESCENT COLOR CROSS REFERENCE

SYLVANIA	GE	PHILIPS	SYLVANIA	GE	PHILIPS
CW	CW	CW	D41	SP41	Spec 41
CWX		CWX, HL Everywhere		SP65	
D	D	D	D830	SPX30	30U
DX	DX	DX	D835	SPX35	35U
DSGN50	C50	50	D841	SPX41	41U
DSGN50	SGN	C50	D865		
DCW, D41	SP41	HL Cool	730	SP30	730
DCWP	SPX41	U41	735	SP35	735
DWW, D30	KB / 70 CRI, SP30	SPEC30	741	SP41	741
DWWP, D830	KB / 82 CRI, SPX30	HL WX	750	SP50	750
D35	SP35	HL Warm	765	SP65	
GRO/AQ		AGRO	827	SPX27	27
GRO/WS/AQ	PL/AQ		830	SPX30	30, 830
LW	LW	LW	835	SPX35	35, 835
N	N	N	841	SPX41	41, 841
SUN STICK	SUN	C50	850	SPX50	50, 850
WW	WW	WW	865	SPX65	865
D30	SP30	Spec 30	950		950
D35	SP35	Spec 35			

## FLUORESCENT COMPETITIVE GUIDES (continued)

### FLUORESCENT ELECTRICAL INTERCHANGEABILITY

SYLVANIA	GE	PHILIPS
<b>Linear Lamps</b>		
F18T8/CW/K/23	F24" T8/CW/4	F15T8/CW/24
F18T8/CW/K/26	F26" T8/CW/4	F16T8/CW/26
F18T8/CW/K/28	F28" T8/CW/4	F17T8/CW/28
F18T8/CW/K/30	F30" T8/CW/4	F18T8/CW/30
F34CW/SS	F34CW/WM	F34CW/EW
Formerly known as F40CW/SS	F40CW/WM	F40CW/EW
F96T12/CW/SS	F96T12/CW/WM	F96T12/CW/EW
FB40/D41/6	F40/SP41/U/6	FB40/SPEC41/6
FB40/CW/6/SS (new FB34/CW/6/SS)	F40CW/U/6/WM (new F34CW/U/6/WM)	FB40/CW/6/EW (new F34/CW/6/EW)
OCTRON®	T8 (was Trimline)	TL70/TL80
OCTRON 700 Series	T8 SP	TL70
OCTRON 800 Series	T8 SPX	TL80
F017...	F17T8/SP(or SPX)...	F17T8/TL...
F025...	F25T8/SP(or SPX)...	F25T8/TL...
F032...	F32T8/SP(or SPX)...	F32T8/TL...
F032/..XP™	F32T8/XL/SP (or SPX)	F32T8/TL...PLUS
F032/..XPS®/ECO®	---	---
F030...XP/SS/ECO	F32T8/SP.../IS/WM/ECO	F32T8/ADV8.../EW
F028/..XP/SS/ECO	---	---
F040...	F40T8/SP... (or SPX)	F40T8/TL
F072...	---	---
F096...	F96T8/SP... (or SPX)	F96T8/TL...
F096/7...XP/ECO	F96T8/XL/SP...	---
F096/8...XP/ECO	F96T8/XL/SPX...	---
F096/8...XP/SS/ECO	F96T8/SP.../WM	---
---	---	F48T8/TL.../HO
---	---	F60T8/TL.../HO
---	---	F72T8/TL.../HO
F096.../HO	F96T8/SP (or SPX).../HO	F96T8/TL.../HO
---	F25T12/SP... (for T8 electronic ballasts)	---
FB016...	---	---
FB024...	---	---
FB031...	F31T8/SPX.../U	---
FB031...XP	---	---
FB032...	F32T8/SP(or SPX).../U6	FB32T8/TL.../6
FB032...XP	---	---
FB031...XPS/ECO	---	---
FB032/..XPS/ECO	---	---
FB032/8..XP/SS/ECO	---	---
FP14/8...	F14/T5/8...	F14T5/8...
FP21/8...	F21/T5/8...	F21T5/8...
FP28/8...	F28/T5/8...	F28T5/8...
FP35/8...	F35/T5/8...	F35T5/8...
FP24/8.../HO	F24/T5/8.../HO	F24T5/8.../HO
FP39/8.../HO	F39/T5/8.../HO	F39T5/8.../HO
FP54/8.../HO	F54/T5/8.../HO	F54T5/8.../HO
FP80/8.../HO	F80/T5/8.../HO	F80T5/8.../HO
---	F40T17/CW/IS	---
---	F96T17/...	---
HO (800mA)	HO (800mA)	HO (800mA)
F96T12/.../HO/COLDTEMP	F96T12/.../HO/CT	F96T12/.../HO-0
VHO (1500mA)	1500 or PG17 (both 1500mA)	VHO (1500mA)
VHO/LT (1500mA)	T10, 1500-0 (both 1500mA)	VHO-0 (1500mA)

### Compact Fluorescent Lamps

DULUX®	BIAX®	PL
<b>Medium Screw Base Lamps</b>		
CF...EL/830/MED	FLE...TBX/LT	
CF...EL/830/MED/1	FLE...TBX/L	UNIVERSAL SLS ---
CF...EL/TWIST (15W, 20W, 23W, 27W, 30W)	FLE...HLX/8/SW/CD (Spiral17W, 21W, 27W)	Twister-BC-EL/DT... (15W, 20W, 23W)
CF...EL/MINITWIST (7, 11, 13, 19, 23W)	---	---
---	---	UNIVERSAL/RH SLS.RH... (low THD)
CF28EL/3WAY/TWIST	FLE29QBX/D3 (3-Way Triple)	---
---	---	DIMMABLE SLS/D 20 (Dimmable)

## FLUORESCENT COMPETITIVE GUIDES (continued)

### FLUORESCENT ELECTRICAL INTERCHANGEABILITY (continued)

SYLVANIA	GE	PHILIPS
---	---	DIMMABLE SLS/D 23 (Dimmable)
---	FLE29QBX/DV (Dimmable Triple)	---
CF15EL/R30/830/MED	FLE15/TBX/L/R30	FLOOD SLS/R30 15
CF20EL/R40/830/MED	FLE20TBX/L/R40	FLOOD SLS/R40 20
CF15/EL/BR30	---	Reflector Flood BC-EL/A BR30 16
CF15EL/G30/830/MED	FLE15TBX/L/G29	DÉCOR GLOBE SLS/30 15
CF15EL/G30/830/MED	FLG17 (magnetic)	DÉCOR GLOBE SLS/30 15
CF20EL/G40/830/MED	---	DÉCOR GLOBE SLS/40 15
CF15EL/G/830 (low profile Globe)	FLG15/E-120	---
CF15EL/B/830 (Bullet)	FLB17 (magnetic)	FLE15/6/TC19
CF15EL/ALINE	FLE15/L/TC16	OUTDOOR EL/O 15
CF14EL/A19/1/BL/YELLOW	FLE15/L/TC16/BUG	BUG-A-WAY EL/O 15 BAW
---	FLE15/L/TC16/DAY	---
---	---	OUTDOOR EL/O 18
---	FLE20/6/T19	---
CF9EL/C/830 (A23)	---	---
---	FLE15/A2/A23	HOUSEHOLD EL/A 16
---	FLE20/A2/A24	---
CF30EL/CIRC/830/MED	FEA30CIR	---
---	FEA382D/SW (2D w/adapter)	---
---	FEA382D/835 (2D w/adapter)	---

#### Pin Base Lamps

CF...DS... (2-pin)	F... BX...	PL-S...
CFT13WDS/EC	F13BX/E	---
CF...DS/E... (4 pin)	---	---
CF...DD/... (2 pin)	F...DBX...	PL-C...
CF...DD/E... (4 pin)	F...DBX.../4P	PL-C.../4P
CF...DT... (2 pin)	---	---
CF...DT/E... (4 pin)	F...TBX.../4P	PL-T.../4P
CF42DT/E... (4 pin)	F42QBX/SPX.../A/4P	PL42W.../4P/...
CF...DF...	---	---
---	F...TBX/I/8.../A/4P (inverted post)	---
FT18DL/8...	F18BX/SPX...	PL-L 18W/...
FT18DL/8.../RS	F18BX/SPX.../RS	---
FT24DL/8...	F27/24BX/SPX...	PL-L 24W/...
FT36DL/8...	F39/36BX/SPX...	PL-L 36W/...
FT40DL/8.../RS	F40/30BX/SPX...	PL-L 40W/.../RS/IS
---	F50BX/SPX.../RS	PL-L 50W/.../RS
FT55DL/8...	F55BX/8...	---
---	F...2D/...	---

#### Induction Lamps

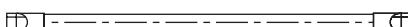
ICE 70/8... (ICETRON®)	---	---
ICE 100/8... (ICETRON)	---	---
ICE 150/8... (ICETRON)	---	---
---	EL23/R25/... (Genura™)	---
---	---	QL55W/... (QL)
---	---	QL85W/... (QL)
---	---	QL165W/... (QL)

For a more complete manufacturers' cross reference, please see that section of this catalog or visit the electronic catalog at [www.sylvania.com](http://www.sylvania.com).

## FLUORESCENT LAMPS

The bulb shape and size of a fluorescent lamp are expressed by means of a code consisting of the letter "T" (which designates that the bulb is "tubular" in shape) followed by a number that expresses the diameter in eighths of an inch. Diameters range from T2 ( $\frac{1}{4}$  inch) to T17 ( $2\frac{1}{8}$  inch). In nominal overall length, linear fluorescent lamps range from 6 to 96 inches. The nominal length is measured from back of lamp holder to back of lamp holder. For example, the actual overall length of the 40-watt rapid start T12 lamp with a nominal length of 48 inches is  $47\frac{3}{8}$  inches. The nominal length given for PENTRON® linear lamps is the closest familiar nominal length. CURVALUME® U-shaped fluorescent lamps are available as OCTRON® T8 lamps with leg spacings of 1  $\frac{1}{8}$  inches and 6 inches and as rapid start T12 lamps with leg spacings of 3  $\frac{1}{8}$  inches and 6 inches. The leg spacing is measured from the center of one leg to the center of the other leg. The overall length of the CURVALUME lamps is measured from the face of the bases to the outside of the glass bend. Circline lamps, which are circular in shape, are available as T9 lamps with outside diameters of 6  $\frac{1}{2}$ , 8, 12 and 16 inches as well as PENTRON T5 lamps with outside diameters of 8.85 and 11.77 inches. The overall length of DULUX® compact fluorescent lamps is measured from the bottom of the base to the outside edge of the glass. In many cases, the bottom of the base is the bottom of the center post of the base of the lamp.

### T2 MINIATURE



T2 Axial Base (2/8" Diameter)

### PREHEAT, RAPID START



Preheat T5 Miniature Bipin (5/8" diameter)  
PENTRON T5 Miniature Bipin (5/8" diameter)



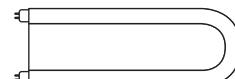
T8 Medium Bipin (1" diameter)



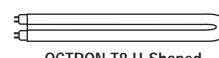
OCTRON T8 Medium Bipin (1" diameter)  
Rapid Start or Instant Start operation



T12 Medium Bipin (1-1/2" diameter)



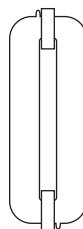
U-Shaped T12  
(1-1/2" diameter)  
6" leg spacing



OCTRON T8 U-Shaped  
with 1 5/8" leg spacing  
(1" diameter)

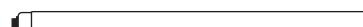


OCTRON T8 U-Shaped  
with 6" leg spacing  
(1" diameter)



ICETRON®

### HIGH OUTPUT AND VERY HIGH OUTPUT



OCTRON T8 Recessed Double Contact (1" diameter)



T12 Recessed Double Contact (1-1/2" diameter)



T14-1/2 Recessed Double Contact (1-13/16" diameter)

### INSTANT START



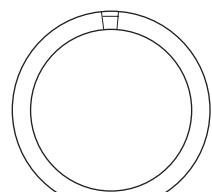
T6 Single Pin (3/4" diameter)



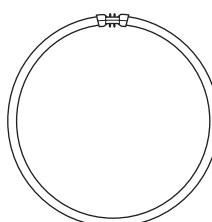
T8 Single Pin (1" diameter)  
OCTRON T8 Single Pin (1" diameter)



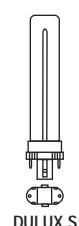
T12 Single Pin (1-1/2" diameter)



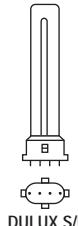
CIRCLINE 4-Pin T-9  
(6-1/2", 8", 12", 16"  
outside diameters)



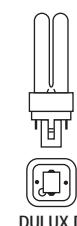
PENTRON CIRCLINE 4-  
Pin T5 (8.85" & 11.77"  
outside diameters)



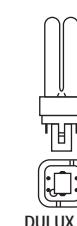
DULUX S



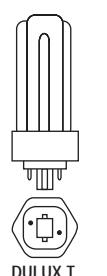
DULUX S/E



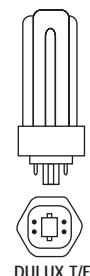
DULUX D



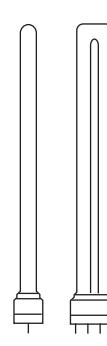
DULUX D/E



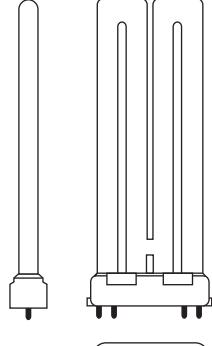
DULUX T



DULUX T/E  
DULUX T/E/IN



DULUX L



DULUX F



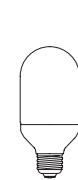
DULUX  
EL Triple



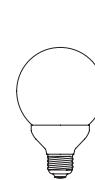
DULUX  
EL TWIST



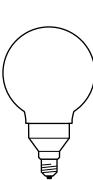
DULUX EL  
CLASSIC  
(A-Shape)



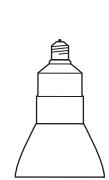
DULUX EL  
BULLET



DULUX EL  
Low  
Profile GLOBE



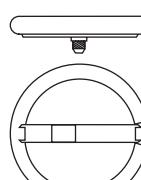
DULUX EL  
GLOBE



DULUX EL  
REFLECTOR



BR-30



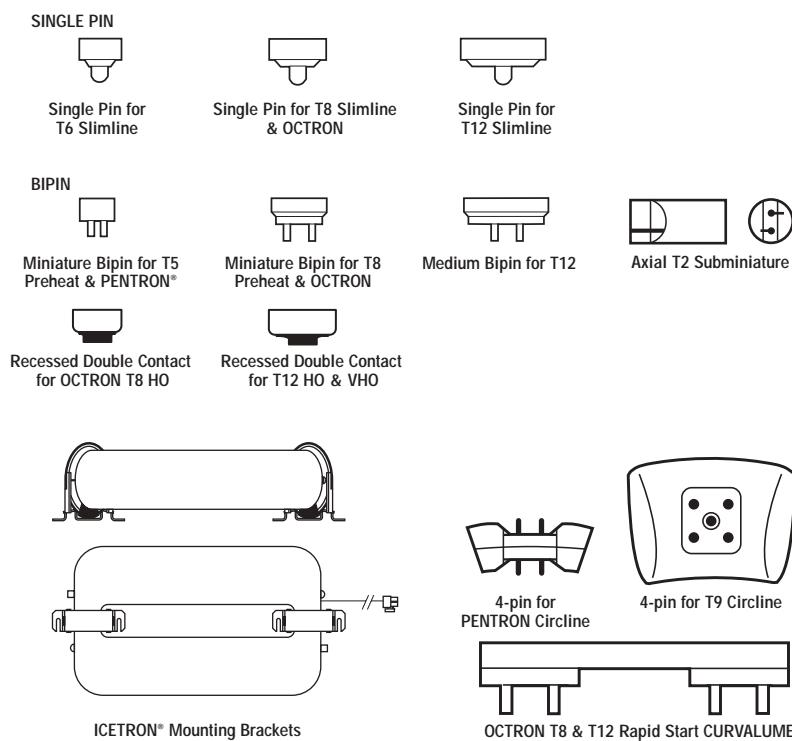
DULUX EL Circline (6-1/2"  
& 8" outside diameters)

## BASES

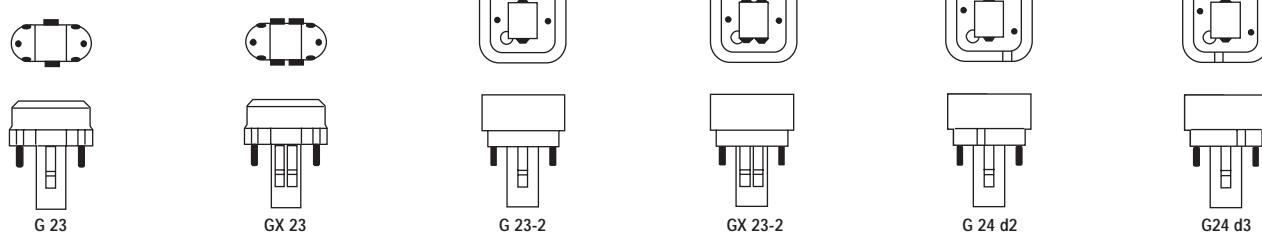
For linear Preheat and Rapid Start Lamps, four electrical contacts are required, two at each end of the lamp. This is accomplished in the standard line of lamps by the use of a miniature bipin base for T5 lamps and a medium bipin for T8 and T12 lamps. The OCTRON® T8 medium bipin lamps may also be operated as instant start lamps with the proper wiring and ballasts. When operating OCTRON bipin lamps with instant start ballasts, the two contacts in the lamp holder are shorted together and connected to the single circuit in the ballast. In Circline lamps, the cathodes are connected to a four-pin base located between the junction of the two ends of the lamp. High Output (HO) and Very High Output (VHO) lamps have recessed double contact (RDC) type bases. Slimline Instant Start lamps require only two electrical contacts, one on each lamp end and have single pin bases.

Pin-based compact fluorescent lamps have either 2 pins or 4 pins. Each 2-pin lamp has an internal starter and is designed for preheat, magnetic operation. The 4-pin lamps are designed for electronic ballast operation and are dimmable. These lamps have no internal starter; starting the lamps is a function of the ballast.

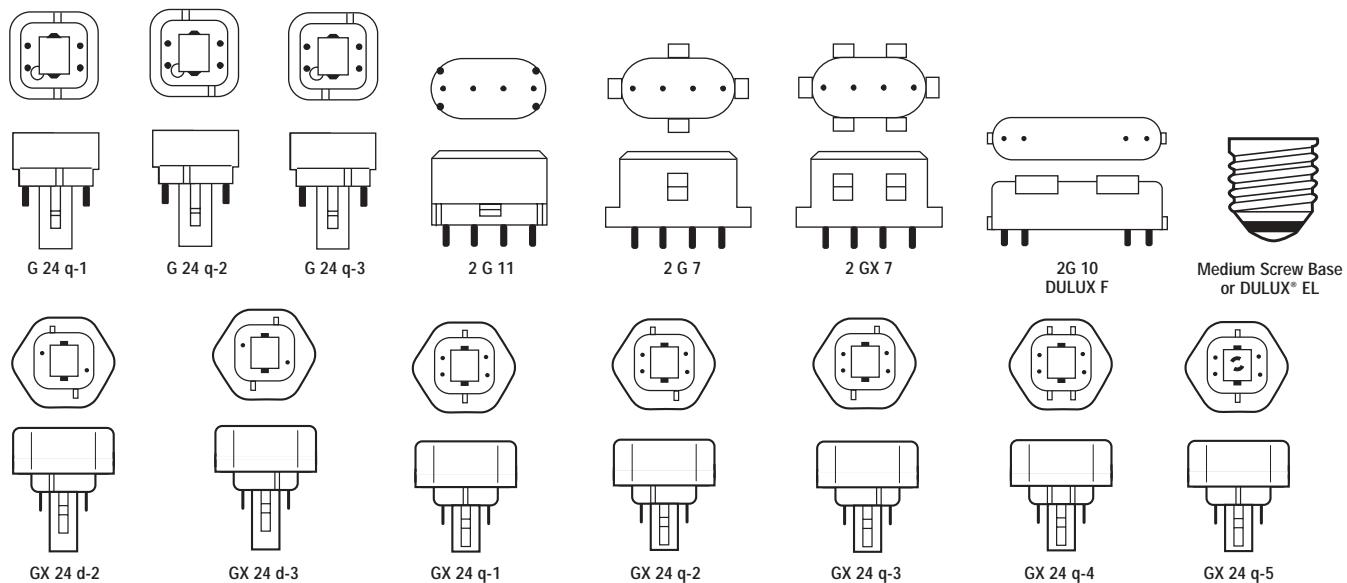
Medium screw base, compact fluorescent lamps have integral ballasts.



### FOR CHOKE/STARTER OPERATION



### FOR ELECTRONIC OR DIMMING OPERATION





DULUX® S

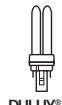
## DULUX® S PREHEAT 2-PIN ECOLOGIC® COMPACT FLUORESCENT LAMPS

with Starter in Lamp Base for Magnetic Ballast

Nominal Wattage	Bulb	MOL (in)	MOL (mm)	Base	Product Number	Ordering Abbreviation	NEMA Generic Designation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean	Symbols & Footnotes
5	T4	4.2	107	G23	20325	CF5DS/827	CFT5W/G23/827	50	10000	2700	82	230	198	1,2,3, 4,5,6
					20547	CF5DS/827/RP	CFT5W/G23/827	10	10000	2700	82	230	198	1,2,3, 4,5,6
					20303	CF5DS/841	CFT5W/G23/841	50	10000	4100	82	230	198	1,2,3, 4,5,6
7	T4	5.3	135	G23	20327	CF7DS/827	CFT7W/G23/827	50	10000	2700	82	400	344	1,2,3, 4,5,6
					20548	CF7DS/827/RP	CFT7W/G23/827	10	10000	2700	82	400	344	1,2,3, 4,5,6
					20310	CF7DS/835	CFTW/G23/835	50	10000	3500	82	400	344	1,2,3, 4,5,6
					20304	CF7DS/841	CFT7W/G23/841	50	10000	4100	82	400	344	1,2,3, 4,5,6
					20307	CF7DS/850	CFT7W/G23/850	50	10000	5000	82	400	344	1,2,3, 4,5,6
9	T4	6.5	165	G23	20536	CF9DS/827/RP	CFT9W/G23/827	10	10000	2700	82	580	499	1,2,3, 4,5,6
					20333	CF9DS/835	CFT9W/G23/835	50	10000	3500	82	580	499	1,2,3, 4,5,6
					20305	CF9DS/841	CFT9W/G23/841	50	10000	4100	82	580	499	1,2,3, 4,5,6
					20308	CF9DS/850	CFT9W/G23/850	50	10000	5000	82	580	499	1,2,3, 4,5,6
					20329	CF9DS/827	CFT9W/G23/827	50	10000	2700	82	800	688	1,2,3, 4,5,6
					20299	DULUX S 9W/78		50	10000	BLK				1,2,4,5,7
13	T4	7.1	180	GX23	20331	CF13DS/827	CFT13W/GX23/827	50	10000	2700	82	800	688	1,2,3, 4,5,6
					20374*	CFT13WDS/EC/827	CFT13W/GX23/827	10	10000	2700	82	800	688	1,2,3,5,8
					20549	CF13DS/827/RP	CFT13W/GX23/827	10	10000	2700	82	800	688	1,2,3, 4,5,6
					20283	CF13DS/830	CFT13W/GX23/830	50	10000	3000	82	800	688	1,2,3, 4,5,6
					20397*	CFT13WDS/EC/830	CFT13W/GX23/830	10	10000	3000	82	800	688	1,2,3,5,8
					20335	CF13DS/835	CFT13W/GX23/835	50	10000	3500	82	800	688	1,2,3, 4,5,6
					20368*	CFT13WDS/EC/835	CFT13W/GX23/835	10	10000	3500	82	800	688	1,2,3,5,8
					20306	CF13DS/841	CFT13DS/GX23/841	50	10000	4100	82	800	688	1,2,3, 4,5,6
					20375*	CFT13WDS/EC/841	CFT13W/GX23/841	10	10000	4100	82	800	688	1,2,3,5,8
					20309	CF13DS/850	CFT13W/GX23/850	50	10000	5000	82	800	688	1,2,3, 4,5,6



DULUX® S/E



DULUX® D

## DULUX® S/E 4-PIN COMPACT FLUORESCENT LAMPS

for Dimming and Electronic Ballast

Nominal Wattage	Bulb	MOL (in)	(mm)	Base	Product Number	Ordering Abbreviation	NEMA Generic Designation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
5	T4	3.4	85	2G7	20311	CF5DS/E/827	CFT5W/2G7/827	50	10000	2700	82	230	198	
					20315	CF5DS/E/841	CFT5W/2G7/841	50	10000	4100	82	230	198	
7	T4	4.5	115	2G7	20312	CF7DS/E/827	CFT7W/2G7/827	50	10000	2700	82	400	344	
					20316	CF7DS/E/841	CFT7W/2G7/841	50	10000	4100	82	400	344	
9	T4	5.7	145	2G7	20313	CF9DS/E/827	CFT9W/2G7/827	50	10000	2700	82	580	499	
					20317	CF9DS/E/841	CFT9W/2G7/841	50	10000	4100	82	580	499	
13	T4	6.2	157	2GX7	20314	CF13DS/E/827	CFT13W/2GX7/827	50	10000	2700	82	800	688	
					20284	CF13DS/E/830	CFT13W/2GX7/830	50	10000	3000	82	800	688	
					20318	CF13DS/E/841	CFT13W/2GX7/841	50	10000	4100	82	800	688	

## DULUX® D PREHEAT 2-PIN ECOLOGIC® COMPACT FLUORESCENT LAMPS

with Starter in Lamp Base for Magnetic Ballast

Nominal Wattage	Bulb	MOL (in)	(mm)	Base	Product Number	Ordering Abbreviation	NEMA Generic Designation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
9	T4	4.3	110	G23-2	20537	CF9DD/827/RP	CFQ9W/G23/827	10	10000	2700	82	525	452	
					20689	CF9DD/827	CFQ9W/G23/827	50	10000	2700	82	525	452	
					20783	CF9DD/830	CFQ9W/G23/830	50	10000	3000	82	525	452	
					20690	CF9DD/835	CFQ9W/G23/835	50	10000	3500	82	525	452	
13	T4	4.6	118	GX23-2	20538	CF13DD/827/RP	CFQ13W/GX23/827	10	10000	2700	82	780	671	
					20691	CF13DD/827	CFQ13W/GX23/827	50	10000	2700	82	780	671	
					20705	CF13DD/830	CFQ13W/GX23/830	50	10000	3000	82	780	671	
					20692	CF13DD/835	CFQ13W/GX23/835	50	10000	3500	82	780	671	
					20708	CF13DD/841	CFQ13W/GX23/841	50	10000	4100	82	780	671	
18	T4	6.0	153	G24D-2	20676	CF18DD/827	CFQ18W/G24D/827	50	10000	2700	82	1150	1075	
					20709	CF18DD/830	CFQ18W/G24D/830	50	10000	3000	82	1150	1075	
					20677	CF18DD/835	CFQ18W/G24D/835	50	10000	3500	82	1150	1075	
					20678	CF18DD/841	CFQ18W/G24D/841	50	10000	4100	82	1150	1075	
26	T4	6.8	173	G24D-3	20679	CF26DD/827	CFQ26W/G24D/827	50	10000	2700	82	1710	1548	
					20710	CF26DD/830	CFQ26W/G24D/830	50	10000	3000	82	1710	1548	
					20680	CF26DD/835	CFQ26W/G24D/835	50	10000	3500	82	1710	1548	



DULUX® D



DULUX® T

## DULUX® D PREHEAT 2-PIN ECOLOGIC® COMPACT FLUORESCENT LAMPS

Nominal Wattage	Bulb	MOL (in)	MOL (mm)	Base	Product Number	Ordering Abbreviation	NEMA Generic Designation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
26	T4	6.8	173	G24D-3	20681	CF26DD/841	CFQ26W/G24D/841	50	10000	4100	82	1710	1548	1,2,3, 4,5,6

## DULUX® D/E 4-PIN ECOLOGIC® COMPACT FLUORESCENT LAMPS

for Dimming and Electronic Ballast with End-of-Lamp Life (EOL) Protection

Nominal Wattage	Bulb	MOL (in)	MOL (mm)	Base	Product Number	Ordering Abbreviation	NEMA Generic Designation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
13	T4	5.2	131	G24Q-1	20682	CF13DD/E/827	CFQ13W/G24Q/827	50	12000	2700	82	900	774	1,2,3, 6,8,9,10
					20721	CF13DD/E/830	CFQ26W/G24Q/830	50	12000	3000	82	900	774	1,2,3, 6,8,9,10
					20671	CF13DD/E/835	CFQ13W/G24Q/835	50	12000	3500	82	900	774	1,2,3, 6,8,9,10
					20667	CF13DD/E/841	CFQ13W/G24Q/841	50	12000	4100	82	900	774	1,2,3, 6,8,9,10
18	T4	5.8	147	G24Q-2	20683	CF18DD/E/827	CFQ18W/G24Q/827	50	12000	2700	82	1150	1075	1,2,3, 6,8,9,10
					20724	CF18DD/E/830	CFQ18W/G24Q/830	50	12000	3000	82	1150	1075	1,2,3, 6,8,9,10
					20672	CF18DD/E/835	CFQ18W/G24Q/835	50	12000	3500	82	1150	1075	1,2,3, 6,8,9,10
					20668	CF18DD/E/841	CFQ18W/G24Q/841	50	12000	4100	82	1150	1075	1,2,3, 6,8,9,10
26	T4	6.5	166	G24Q-3	20684	CF26DD/E/827	CFQ26W/G24D/827	50	12000	2700	82	1710	1548	1,2,3, 6,8,9,10
					20722	CF26DD/E/830	CFQ26W/G24Q/830	50	12000	3000	82	1710	1548	1,2,3, 6,8,9,10
					20673	CF26DD/E/835	CFQ26W/G24Q/835	50	12000	3500	82	1710	1548	1,2,3, 6,8,9,10
					20669	CF26DD/E/841	CFQ26W/G24Q/841	50	12000	4100	82	1710	1548	1,2,3, 6,8,9,10

## DULUX® T PREHEAT 2-PIN ECOLOGIC® COMPACT FLUORESCENT LAMPS

with Starter in Lamp Base for Magnetic Ballast

Nominal Wattage	Bulb	MOL (in)	MOL (mm)	Base	Product Number	Ordering Abbreviation	NEMA Generic Designation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
18	T4	4.8	123	GX24D-2	20756	CF18DT/827	CFTR18W/GX24D/827	50	12000	2700	82	1200	1032	1,2,3, 4,5,6
26	T4	5.4	138	GX24D-3	20752	CF26DT/827	CFTR26W/GX24D/827	50	12000	2700	82	1800	1548	1,2,3, 4,5,6

## DULUX® T/E 4-PIN ECOLOGIC® COMPACT FLUORESCENT LAMPS

for Dimming and Electronic Ballast

Nominal Wattage	Bulb	MOL (in)	MOL (mm)	Base	Product Number	Ordering Abbreviation	NEMA Generic Designation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
13	T4	4.2	106	GX24Q-1	20891	CF13DT/E/827	CFTR13W/GX24Q/827	50	12000	2700	82	900	774	1,2,3, 6,8,9,10
					20892	CF13DT/E/830	CFTR13W/GX24Q/830	50	12000	3000	82	900	774	1,2,3, 6,8,9,10



DULUX® T

FLUORESCENT

## DULUX® T/E 4-PIN ECOLOGIC® COMPACT FLUORESCENT LAMPS

Nominal Wattage	Bulb	MOL (in)	MOL (mm)	Base	Product Number	Ordering Abbreviation	NEMA Generic Designation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
13	T4	4.2	106	GX24Q-1	20893	CF13DT/E/835	CFTR13W/GX24Q/835	50	12000	3500	82	900	774	1,2,3, 6,8,9,10
					20894	CF13DT/E/841	CFTR13W/GX24Q/841	50	12000	4100	82	900	774	1,2,3, 6,8,9,10
18	T4	4.6	116	GX24Q-2	20760	CF18DT/E/827	CFTR18W/GX24Q/827	50	12000	2700	82	1200	1032	1,2,3, 6,8,9,10
26	T4	5.2	124	GX24Q-3	20767	CF26DT/E/827	CFTR26W/GX24Q/827	50	12000	2700	82	1800	1548	1,2,3, 6,8,9,10
32	T4	5.8	147	GX24Q-3	20768	CF32DT/E/827	CFTR32W/GX24Q/827	50	12000	2700	82	2400	2064	1,2,3, 6,8,9,10,11

## DULUX® T/E/IN AMALGAM, 4-PIN ECOLOGIC® COMPACT FLUORESCENT LAMPS

for Dimming and Electronic Ballast for High and Low Temp Applications

Nominal Wattage	Bulb	MOL (in)	MOL (mm)	Base	Product Number	Ordering Abbreviation	NEMA Generic Designation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
18	T4	4.4	111	GX24Q-2	20875	CF18DT/E/IN/827	CFTR18W/GX24Q/827	50	12000	2700	82	1200	1032	1,2,3, 6,8,9,10,12
					20876	CF18DT/E/IN/830	CFTR18W/GX24Q/830	50	12000	3000	82	1200	1032	1,2,3, 6,8,9,10,12
					20877	CF18DT/E/IN/835	CFTR18W/GX24Q/835	50	12000	3500	82	1200	1032	1,2,3, 6,8,9,10,12
					20878	CF18DT/E/IN/841	CFTR18W/GX24Q/841	50	12000	4100	82	1200	1032	1,2,3, 6,8,9,10,12
26	T4	5.0	126	GX24Q-3	20879	CF26DT/E/IN/827	CFTR26W/GX24Q/827	50	12000	2700	82	1800	1548	1,2,3, 6,8,9,10,12
					20880	CF26DT/E/IN/830	CFTR26W/GX24Q/830	50	12000	3000	82	1800	1548	1,2,3, 6,8,9,10,12
					20881	CF26DT/E/IN/835	CFTR26W/GX24Q/835	50	12000	3500	82	1800	1548	1,2,3, 6,8,9,10,12
					20882	CF26DT/E/IN/841	CFTR26W/GX24Q/841	50	12000	4100	82	1800	1548	1,2,3, 6,8,9,10,12
32	T4	5.6	142	GX24Q-3	20883	CF32DT/E/IN/827	CFTR32W/GX24Q/827	50	12000	2700	82	2400	2064	1,2,3, 6,8,9,10,11,12
					20884	CF32DT/E/IN/830	CFTR32W/GX24Q/830	50	12000	3000	82	2400	2064	1,2,3, 6,8,9,10,11,12
					20885	CF32DT/E/IN/835	CFTR32W/GX24Q/835	50	12000	3500	82	2400	2064	1,2,3, 6,8,9,10,11,12
					20886	CF32DT/E/IN/841	CFTR32W/GX24Q/841	50	12000	4100	82	2400	2064	1,2,3, 6,8,9,10,11,12
42	T4	6.5	163	GX24Q-4	20887	CF42DT/E/IN/827	CFTR42W/GX24Q/827	50	12000	2700	82	3200	2752	1,2,3, 6,8,9,10,11,12
					20888	CF42DT/E/IN/830	CFTR42W/GX24Q/830	50	12000	3000	82	3200	2752	1,2,3, 6,8,9,10,11,12
					20871*	CF42DT/E/IN/835	CFTR42W/GX24Q/835	50	12000	3500	82	3200	2752	1,2,3, 6,8,9,10,11,12
					20890	CF42DT/E/IN/841	CFTR42W/GX24Q/841	50	12000	4100	82	3200	2752	1,2,3, 6,8,9,10,11,12
57	T4	7.76	197	GX24Q-5	20895	CF57DT/E/IN/827	CFTR57W/GX24Q/827	50	12000	2700	82	4300	3698	1,2,3, 6,8,9,10,11,12



DULUX® T



DULUX® L

## DULUX® T/E/IN AMALGAM, 4-PIN ECOLOGIC® COMPACT FLUORESCENT LAMPS

Nominal Wattage	Bulb	MOL (in)	MOL (mm)	Base	Product Number	Ordering Abbreviation	NEMA Generic Designation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
57	T4	7.76	197	GX24Q-5	20896	CF57DT/E/IN/830	CFTR57W/GX24Q/830	50	12000	3000	82	4300	3698	1,2,3, 6,8,9,10,11,12
					20897	CF57DT/E/IN/835	CFTR57W/GX24Q/835	50	12000	3500	82	4300	3698	1,2,3, 6,8,9,10,11,12
					20899	CF57DT/E/IN/841	CFTR57W/GX24Q/841	50	12000	4100	82	4300	3698	1,2,3, 6,8,9,10,11,12
70	T4	9.25	235	GX24Q-6	20794*	CF70DT/E/IN/827	CFTR70W/GX24Q/827	50	12000	2700	82	5200	4472	1,2,3, 6,8,9,10,11,12
					20795*	CF70DT/E/IN/830	CFTR70W/GX24Q/830	50	12000	3000	82	5200	4472	1,2,3, 6,8,9,10,11,12
					20796*	CF70DT/E/IN/835	CFTR70W/GX24Q/835	50	12000	3500	82	5200	4472	1,2,3, 6,8,9,10,11,12
					20797*	CF70DT/E/IN/841	CFTR70W/GX24Q/841	50	12000	4100	82	5200	4472	1,2,3, 6,8,9,10,11,12

## DULUX® L HIGH LUMEN COMPACT FLUORESCENT LAMPS

Nominal Wattage	Bulb	MOL (in)	MOL (mm)	Base	Product Number	Ordering Abbreviation	NEMA Generic Designation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
18	T5	9.0	229	2G11	20587	FT18DL/830	FT18W/2G11/830	10	12000	3000	82	1250	1075	1,2,3,8,9
					20595	FT18DL/830/RS	FT18W/2G11/RS/830	10	20000	3000	82	1250	1075	1,2,3,8,9
					20588	FT18DL/835	FT18W/2G11/835	10	12000	3500	82	1250	1075	1,2,3,8,9
					20594	FT18DL/835/RS	FT18W/2G11/RS/835	10	20000	3500	82	1250	1075	1,2,3,8,9
					20589	FT18DL/841	FT18W/2G11/841	10	12000	4100	82	1250	1075	1,2,3,8,9
					20593	FT18DL/841/RS	FT18W/2G11/RS/841	10	20000	4100	82	1250	1075	1,2,3,8,9
24	T5	12.9	326	2G11	20597	FT24DL/830	FT24W/2G11/830	10	12000	3000	82	1800	1548	1,2,3,8,9, 13
					20580	FT24DL/835	FT24W/2G11/835	10	12000	3500	82	1800	1548	1,2,3,8,9, 13
					20596	FT24DL/841	FT24W/2G11/841	10	12000	4100	82	1800	1548	1,2,3,8,9, 13
36	T5	16.6	422	2G11	20581	FT36DL/830	FT36W/2G11/830	10	12000	3000	82	2900	2494	1,2,3,8,9, 13
					20582	FT36DL/835	FT36W/2G11/835	10	12000	3500	82	2900	2494	1,2,3,8,9, 13
					20583	FT36DL/841	FT36W/2G11/841	10	12000	4100	82	2900	2494	1,2,3,8,9, 13
40	T5	22.6	573	2G11	20584	FT40DL/830/RS	FT40W/2G11/RS/830	10	20000	3000	82	3150	2709	1,2,3,8,9
					20585	FT40DL/835/RS	FT40W/2G11/RS/835	10	20000	3500	82	3150	2709	1,2,3,8,9
					20586	FT40DL/841/RS	FT40W/2G11/RS/841	10	20000	4100	82	3150	2709	1,2,3,8,9
					20576	FT40DL/850/RS	FT40W/2G11/RS/850	10	20000	5000	82	3150	2709	1,2,3,8,9
55	T5	21.1	535	2G11	20590	FT55DL/830	FT55W/2G11/830	10	12000	3000	82	4800	4128	1,2,3,8,9, 14
					20591	FT55DL/835	FT55W/2G11/835	10	12000	3500	82	4800	4128	1,2,3,8,9, 14
					20592	FT55DL/841	FT55W/2G11/841	10	12000	4100	82	4800	4128	1,2,3,8,9, 14
80	T5	22.6	573	2G11	20572	FT80DL/830	F180W/2G11/830	10	12000	3000	82	6000	5160	1,2,3,8,9, 14



DULUX® L



DULUX® F



DULUX® EL Triple



DULUX® EL Twist

FLUORESCENT

## DULUX® L HIGH LUMEN COMPACT FLUORESCENT LAMPS

Nominal Wattage	Bulb	MOL (in)	MOL (mm)	Base	Product Number	Ordering Abbreviation	NEMA Generic Designation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
80	T5	22.6	573	2G11	20622	FT80DL/835	FT80W/2G11/835	10	12000	3500	82	6000	5160	[CB] 1,2,3,8,9, 14
					20624	FT80DL/841	FT40W/2G11/841	10	12000	4100	82	6000	5160	[CB] 1,2,3,8,9, 14

## DULUX® F FLAT COMPACT FLUORESCENT LAMPS

Nominal Wattage	Bulb	MOL (in)	MOL (mm)	Base	Product Number	Ordering Abbreviation	NEMA Generic Designation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
18	T5	4.8	122	2G10	20551	CF18DF/830	CFM18W/2G10/830	10	10000	3000	82	1100	946	[CB] 1,2,3,8,9, 15
					20552	CF18DF/841	CFM18W/2G10/841	10	10000	4100	82	1100	946	[CB] 1,2,3,8,9, 15
24	T5	6.7	171	2G10	20553	CF24DF/830	CFM24W/2G10/830	10	10000	3000	82	1700	1462	[CB] 1,2,3,8,9, 15
					20558	CF24DF/841	CFM24W/2G10/841	10	10000	4100	82	1700	1462	[CB] 1,2,3,8,9, 15
36	T5	8.5	217	2G10	20559	CF36DF/830	CFM36W/2G10/830	10	10000	3000	82	2800	2408	[CB] 1,2,3,8,9, 15
					20560	CF36DF/841	CFM36W/2G10/841	10	10000	4100	82	2800	2408	[CB] 1,2,3,8,9, 15

## DULUX® EL SELF-BALLASTED COMPACT FLUORESCENT LAMPS

### Triple Tube Compact Fluorescent Lamps

Nominal Wattage	Bulb	MOL (in)	Base	Product Number	Ordering Abbreviation	Voltage	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
15	T4	5.7	Med	29307	CF15EL/830/MED/1	120	6	10000	3000	82	850	731	[CB] ④ 1,2, 3,16,17,18
20	T4	6.42	Med	29308	CF20EL/830/MED/1	120	6	10000	3000	82	1200	1032	[CB] ④ 1,2, 3,16,17,18
23	T4	6.93	Med	29310	CF23EL/830/MED/1	120	6	10000	3000	82	1450	1247	[CB] ④ 1,2, 3,16,17,18

### Mini Twist Compact Fluorescent Lamps

Nominal Wattage	Bulb	MOL (in)	Base	Product Number	Ordering Abbreviation	Voltage	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
7	MINITWIST	4.4	Med	29451⑥	CF7EL/MINITWIST/2700K	120	6	8000	2700	82	375	323	[CB] ④ 1,2, 3,16,17,18
				29379⑥	CF7EL/MINITWIST/1	120	6	8000	3000	82	375	323	[CB] ④ 1,2, 3,16,17,18
				29371⑥	CF7EL/MINITWIST/BL/1	120	6	8000	3000	82	375	323	[CB] ④ 1,2, 3,16,17,18
11	MINITWIST	4.5	Med	29378⑥	CF11EL/MINITWIST/1	120	6	8000	3000	82	600	516	[CB] ④ 1,2, 3,16,17,18
				29364⑥	CF11EL/MINITWIST/BL/1	120	6	8000	3000	82	600	516	[CB] ④ 1,2, 3,16,17,18
13	MINITWIST	4.5	Med	29409⑥	CF13EL/MINITWIST/2700K	120	6	8000	2700	82	800	688	[CB] ④ 1,2, 3,16,17,18
				29376	CF13EL/MINITWIST/1	120	6	8000	3000	82	800	688	[CB] ④ 1,2, 3,16,17,18



DULUX® EL Twist

## DULUX® EL SELF-BALLASTED COMPACT FLUORESCENT LAMPS

### Mini Twist Compact Fluorescent Lamps

Nominal Wattage	Bulb	MOL (in)	Base	Product Number	Ordering Abbreviation	Voltage	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
13	MINITWIST	4.5	Med	29116⊗	CF13EL/MINITWIST/BL/1	120	6	8000	3000	82	800	688	ENR ETL UL 1,2, 3,16,17,18
				29169⊗	CF13EL/MINITWIST/DAY/BL/1	120	6	8000	3500	82	800	688	ENR ETL UL 1,2, 3,16,17,18
19	MINITWIST	5.2	Med	29410⊗	CF19EL/MINITWIST/2700K	120	6	8000	2700	82	1200	1032	ENR ETL UL 1,2, 3,16,17,18
				29396⊗	CF19EL/MINITWIST	120	6	8000	3000	82	1200	1032	ENR ETL UL 1,2, 3,16,17,18
				29347⊗	CF19EL/MINITWIST/BL/1	120	5	8000	3000	82	1200	1032	ENR ETL UL 1,2, 3,16,17,18
				29367⊗	CF19EL/MINITWIST/DAY/BL/1	120	5	8000	3500	82	1200	1032	ENR ETL UL 1,2, 3,16,17,18
23	MINITWIST	5.75	Med	29411⊗	CF23EL/MINITWIST/2700K	120	6	8000	2700	82	1600	1376	ENR ETL UL 1,2, 3,16,17,18
				29397⊗	CF23EL/MINITWIST	120	6	8000	3000	82	1600	1376	ENR ETL UL 1,2, 3,16,17,18
				29394⊗	CF23EL/MINITWIST/BL/1	120	5	8000	3000	82	1600	1376	ENR ETL UL 1,2, 3,16,17,18
				29417⊗	CF23EL/MINITWIST/DAY/BL/1	120	5	8000	3500	82	1600	1376	ENR ETL UL 1,2, 3,16,17,18

### Twist Compact Fluorescent Lamps

Nominal Wattage	Bulb	MOL (in)	Base	Product Number	Ordering Abbreviation	Voltage	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
15	TWIST	5.13	Med	29286	CF15EL/TWIST	120	6	10000	3000	82	850	731	ENR ETL UL 1,2, 3,16,17,18
				29289	CF15EL/TWIST/BL/1	120	6	10000	3000	82	850	731	ENR ETL UL 1,2, 3,16,17,18
20	TWIST	5.5	Med	29287	CF20EL/TWIST	120	6	10000	3000	82	1200	1032	ENR ETL UL 1,2, 3,16,17,18
				29290	CF20EL/TWIST/BL/1	120	6	10000	3000	82	1200	1032	ENR ETL UL 1,2, 3,16,17,18
23	TWIST	5.88	Med	29288	CF23EL/TWIST	120	6	10000	3000	82	1450	1247	ENR ETL UL 1,2, 3,16,17,18
				29291	CF23EL/TWIST/BL/1	120	6	10000	3000	82	1450	1247	ENR ETL UL 1,2, 3,16,17,18
27	TWIST	6.1	Med	29412⊗	CF27EL/TWIST/2700K	120	6	10000	2700	82	1750	1505	ENR ETL UL 1,2, 3,16,17,18
				29390	CF27EL/TWIST	120	6	10000	3000	82	1750	1505	ENR ETL UL 1,2, 3,16,17,18
				29391	CF27EL/TWIST/1/BL	120	6	10000	3000	82	1750	1505	ENR ETL UL 1,2, 3,16,17,18
				29370⊗	CF27EL/TWIST/DAY/1/BL	120	6	10000	3500	82	1750	1505	ENR ETL UL 1,2, 3,16,17,18
				29353⊗	CF27EL/TWIST/5000K	120	6	10000	5000	82	1750	1505	ENR ETL UL 1,2, 3,16,17,18
30	TWIST	5.13	Med	29395⊗	CF30EL/TWIST	120	6	6000	3000	82	2000	1720	ENR ETL UL 1,2, 3,16,17,18



DULUX® EL Twist



DULUX® EL Classic



DULUX® EL Globe



DULUX® EL Reflector

FLUORESCENT

## DULUX® EL SELF-BALLASTED COMPACT FLUORESCENT LAMPS

### Twist Compact Fluorescent Lamps

Nominal Wattage	Bulb	MOL (in)	Base	Product Number	Ordering Abbreviation	Voltage	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
30	TWIST	5.13	Med	29392*	CF30EL/TWIST/1/BL	120	5	6000	3000	82	2000	1720	[CNSP] 1,2, 3,16,17,18
12 19 28	TWIST	5.75	3Contact Med	29351*	CF28EL/3WAY/TWIST/1	120	6	6000	3000	82	600	516	[CNSP] 1,2, 3,16,17,18
				29349*	CF28EL/3WAY/TWIST/1/BL	120	5	6000	3000	82	600	516	[CNSP] 1,2, 3,16,17,18
											1100	946	
											1600	1376	

### Classic (A-Shape) Compact Fluorescent Lamps

Nominal Wattage	Bulb	MOL (in)	Base	Product Number	Ordering Abbreviation	Voltage	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
14	A19	4.75	Med	29468*	CF14EL/A19	120	5	6000	3000	82	800	688	[CNSP] 1,2, 3,16,17,18
				29345*	CF14EL/A19/1/BL	120	5	6000	3000	82	800	688	[CNSP] 1,2, 3,16,17,18
				29346*	CF14EL/A19/1/BL/YELLOW	120	5	6000	YLW	82	475	409	[CNSP] 1,2, 3,16,17,18

### Decorative Compact Fluorescent Lamps

Nominal Wattage	Bulb	MOL (in)	Base	Product Number	Ordering Abbreviation	Voltage	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
4	Flame	4.25	Candelabra	29135*	CF4EL/DECO/CANDELABRA	120	6	6000	3000	82	160	138	[CNSP] 1,2, 3,16,17,18
				29121*	CF4EL/DECO/CANDELABRA/1/BL	120	6	6000	3000	82	160	138	[CNSP] 1,2, 3,16,17,18
7	Flame	5	Med	29167*	CF7EL/DECO/MEDIUM/1/BL	120	6	6000	3000	82	280	241	[CNSP] 1,2, 3,16,17,18

### Globe Compact Fluorescent Lamps

Nominal Wattage	Bulb	MOL (in)	Base	Product Number	Ordering Abbreviation	Voltage	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
11	G25	4.6	Med	29414*	CF11EL/G25/2700K	120	6	6000	2700	82	450	387	[CNSP] 1,2, 3,16,17,18
				29344*	CF11EL/G25/1/BL	120	5	6000	3000	82	450	387	[CNSP] 1,2, 3,16,17,18
				29368*	CF11EL/G25/DAY/1/BL	120	5	6000	3500	82	450	387	[CNSP] 1,2, 3,16,17,18
15	G30	5.5	Med	29195	CF15EL/G/830/MED	120	6	6000	3000	82	700	602	[CNSP] 1,2, 3,16,17,18
				29278	CF15EL/G/830/MED/1/BL	120	5	6000	3000	82	700	602	[CNSP] 1,2, 3,16,17,18

### Reflector Compact Fluorescent Lamps

Nominal Wattage	Bulb	MOL (in)	Base	Product Number	Ordering Abbreviation	Voltage	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
15	BR30	5.6	Med	29413*	CF15EL/BR30/2700K	120	6	6000	2700	82	560	482	[CNSP] 1,2, 3,16,17,18



DULUX® EL Reflector



Circline

## DULUX® EL SELF-BALLASTED COMPACT FLUORESCENT LAMPS

### Reflector Compact Fluorescent Lamps

Nominal Wattage	Bulb	MOL (in)	Base	Product Number	Ordering Abbreviation	Voltage	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
15	BR30	5.6	Med	29352	CF15EL/BR30/FROST	120	6	6000	3000	82	560	482	1,2, 3,16,17,18
				29331	CF15EL/BR30/FROST/1/BL	120	5	6000	3000	82	560	482	1,2, 3,16,17,18
				29366	CF15EL/BR30/DAY/BL/1	120	5	6000	3500	82	560	482	1,2, 3,16,17,18
20	BR40	6.5	Med	29399	CF20EL/BR40	120	6	8000	2700	82	900	774	1,2, 3,16,17,18

### Low Profile Bullet and Circline Electronic Compact Fluorescent Lamps

Nominal Wattage	Bulb	MOL (in)	Base	Product Number	Ordering Abbreviation	Voltage	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
15	T20	5.5	Med	29195	CF15EL/B/830/MED	120	6	6000	3000	82	700	602	1,2, 3,16,17,18
				29278	CF15EL/B/830/MED/1/BL	120	6	6000	3000	82	700	602	1,2, 3,16,17,18
30	T9	2.8	Med	29294	CF30EL/CIRC/830/MED	120	5	10000	3000	82	1800	1548	1,2, 3,16,17,18

## OCTRON® AND OCTRON® CURVALUME® FLUORESCENT LAMPS

OCTRON® lamps are T8 fluorescent lamps designed to be operated on dedicated magnetic rapid start or electronic instant start, rapid start or programmed rapid start (also known as programmed start) ballasts. OCTRON lamps may be operated on electronic instant start ballasts with ballast factors ranging from .71 to 1.20 at the nominal ballast input voltage. For details on various lamp/ballast system combinations, please refer to the Systems Performance Guide in the "SYLVANIA QUICKTRONIC® Ballast Technology & Specification Guide".

### OCTRON® 700 and 700 XP™ Lamps

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial	Mean @25°C/77°F	Symbols & Footnotes
14	T8	18	17.91	Med Bipin	21665	F013/730/ECO	30	20000	3000	75	830	745	1,2,6, 8,20,21
					21666	F013/735/ECO	30	20000	3500	75	830	745	1,2,6, 8,20,21
					21667	F013/741/ECO	30	20000	4100	75	830	745	1,2,6, 8,20,21
17	T8	24	23.78	Med Bipin	21918	F017/730/ECO	30	20000	3000	75	1300	1170	1,2,6, 8,20,21
					21636*	F017/730/XP/ECO	30	24000	3000	78	1325	1255	1,2,6, 8,21,22,23
					21769	F017/735/ECO	30	20000	3500	75	1300	1170	1,2,6, 8,20,21
					21699	F017/735/XP/ECO	30	24000	3500	78	1325	1255	1,2,6, 8,21,22,23
					21770	F017/741/ECO	30	20000	4100	75	1300	1170	1,2,6, 8,20,21
					21637*	F017/741/XP/ECO	30	24000	4100	78	1325	1255	1,2,6, 8,21,22,23
					21937	F025/730/ECO	30	20000	3000	75	1950	1755	1,2,6, 8,20,21
25	T8	36	35.78	Med Bipin	21638*	F025/730/XP/ECO	30	24000	3000	78	2050	1945	1,2,6, 8,21,22,23
					21941	F025/735/ECO	30	20000	3500	75	1950	1755	1,2,6, 8,20,21
					21698	F025/735/XP/ECO	30	24000	3500	78	2050	1945	1,2,6, 8,21,22,23
					21942	F025/741/ECO	30	20000	4100	75	1950	1755	1,2,6, 8,20,21
					21639*	F025/741/XP/ECO	30	24000	4100	78	2050	1945	1,2,6, 8,21,22,23
					21700	F025/765	30	20000	6500	75	2000	1800	1,2,8,20,21
					21961	F032/GOLD	10	20000			1700	1530	1,2,8,20,21,24
32	T8	48	47.78	Med Bipin	21234*	F032/AQUATIC/XP/ECO	30	24000	10000	52	1250		1,2,6,8,20, 21,22
					21997	F032/730/ECO	30	20000	3000	75	2800	2520	1,2, 6,8,20,21
					22006	F032/730/ECO/PALLET	1968	20000	3000	75	2800	2520	1,2, 6,8,20,21
					21711	F032/730/XP/ECO	30	24000	3000	78	2850	2705	1,2, 6,8,21,22,23
					21902*	F032/735/CVP	12	20000	3500	75	2800	2520	1,2, 20,21
					21998	F032/735/ECO	30	20000	3500	75	2800	2520	1,2, 6,8,20,21
					21945	F032/735/ECO/PALLET	1968	20000	3500	75	2800	2520	1,2, 6,8,20,21

## OCTRON® AND OCTRON® CURVALUME® FLUORESCENT LAMPS

### OCTRON® 700 and 700 XP™ Lamps

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens @25°C/77°F	Symbols & Footnotes
32	T8	48	47.78	Med Bipin	21678	F032/735/SL	30	20000	3500	75	2745	2470
					22044	F032/735/XP/ECO	30	24000	3500	78	2850	2705
					21981	F032/741/CVP	12	20000	4100	75	2800	2520
					21999	F032/741/ECO	30	20000	4100	75	2800	2520
					22181	F032/741/ECO/CVP	12	20000	4100	75	2800	2520
					22008	F032/741/ECO/PALLET	1968	20000	4100	75	2800	2520
					21712	F032/741/XP/ECO	30	24000	4100	78	2850	2705
					22141	F032/750/ECO	30	20000	5000	75	2650	2385
					22175	F032/765/ECO	30	20000	6500	75	2700	2430
40	T8	60	59.61	Med Bipin	22102	F040/730/ECO	30	20000	3000	75	3500	3150
					22103	F040/735/ECO	30	20000	3500	75	3500	3150
					22104	F040/741/ECO	30	20000	4100	75	3500	3150
59	T8	96	94	Single Pin	22030	F096/730/ECO	24	15000	3000	75	5700	5130
					21737	F096/735/ECO	24	15000	3500	75	5700	5130
					21736	F096/741/ECO	24	15000	4100	75	5700	5130
86	T8	96	93.91	Recessed DC	22041	F096/735/HO	24	18000	3500	75	8000	7200
					22042	F096/741/HO	24	18000	4100	75	8000	7200

### OCTRON® 800, 800 XP™ and 800 XPS® Lamps

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens @25°C/77°F	Symbols & Footnotes
17	T8	24	23.78	Med Bipin	22135	F017/830/ECO	30	20000	3000	82	1350	1240
					21785	F017/830/XP/ECO	30	24000	3000	85	1375	1305
					22150	F017/830/XPS/ECO	30	30000	3000	85	1400	1340
					22136	F017/835/ECO	30	20000	3500	82	1350	1240
					21778	F017/835/XP/ECO	30	24000	3500	85	1375	1305
					22151	F017/835/XPS/ECO	30	30000	3500	85	1400	1340

## OCTRON® AND OCTRON® CURVALUME® FLUORESCENT LAMPS

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### OCTRON® 800, 800 XP™ and 800 XPS® Lamps

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
17	T8	24	23.78	Med Bipin	22137⊗	F017/841/ECO	30	20000	4100	82	1350	1240	1,2,6, 8,20,21
					21907	F017/841/XP/ECO	30	24000	4100	85	1375	1305	1,2,6, 8,21,22,23
					22152⊗	F017/841/XPS/ECO	30	30000	4100	85	1400	1340	1,2,6, 8,21,28,31
25	T8	36	35.78	Med Bipin	22138⊗	F025/830/ECO	30	20000	3000	82	2150	1975	1,2,6, 8,20,21
					21910	F025/830/XP/ECO	30	24000	3000	85	2175	2065	1,2,6, 8,21,22,23
					22153⊗	F025/830/XPS/ECO	30	30000	3000	85	2200	2090	1,2,6, 8,21,28,31
					22139⊗	F025/835/ECO	30	20000	3500	82	2150	1975	1,2,6, 8,20,21
					21776	F025/835/XP/ECO	30	24000	3500	85	2175	2065	1,2,6, 8,21,22,23
					22154⊗	F025/835/XPS/ECO	30	30000	3500	85	2200	2090	1,2,6, 8,21,28,31
					22140⊗	F025/841/ECO	30	20000	4100	82	2150	1975	1,2,6, 8,20,21
					21774	F025/841/XP/ECO	30	24000	4100	85	2175	2065	1,2,6, 8,21,22,23
					22155⊗	F025/841/XPS/ECO	30	30000	4100	85	2200	2090	1,2,6, 8,21,28,31
28	T8	48	47.78	Med Bipin	22177⊗	F028/830/XP/SS/ECO	30	18000	3000	82	2725	2560	1,2,6, 22,23,29,30
					22178⊗	F028/835/XP/SS/ECO	30	18000	3500	82	2725	2560	1,2,6, 22,23,29,30
					22179⊗	F028/841/XP/SS/ECO	30	18000	4100	82	2725	2560	1,2,6, 22,23,29,30
30	T8	48	47.78	Med Bipin	22063	F030/830/XP/SS/ECO	30	18000	3000	82	2850	2680	1,2,6, 22,23,29,30
					22060	F030/835/XP/SS/ECO	30	18000	3500	82	2850	2680	1,2,6, 22,23,29,30
					22062	F030/841/XP/SS/ECO	30	18000	4100	82	2850	2680	1,2,6, 22,23,29,30
32	T8	48	47.78	Med Bipin	22039	F032/827/XP/ECO	30	24000	2700	84	3000	2850	1,2,6, 8,21,22,23
					21777	F032/830/ECO	30	20000	3000	82	2950	2710	1,2, 6,8,20,21
					21759	F032/830/XP/ECO	30	24000	3000	85	3000	2850	1,2,6, 8,21,22,23
					21680	F032/830/XPS/ECO	30	30000	3000	85	3100	2945	1,2,6, 8,14,21,28,31
					21779	F032/835/ECO	30	20000	3500	82	2950	2710	1,2, 6,8,20,21

## OCTRON® AND OCTRON® CURVALUME® FLUORESCENT LAMPS

### OCTRON® 800, 800 XP™ and 800 XPS® Lamps

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
32	T8	48	47.78	Med Bipin	21763	F032/835/XP/ECO	30	24000	3500	85	3000	2850	  1,2,6,8,21,22,23
					21697	F032/835/XPS/ECO	30	30000	3500	85	3100	2945	  1,2,6,8,14,21,28,31
					21676	F032835PLT 1776/CS 1/SKU	1776	20000	3500	82	2950	2714	  1,2,8,20,21
					21781	F032/841/ECO	30	20000	4100	82	2950	2710	  1,2,6,8,20,21
					21767	F032/841/XP/ECO	30	24000	4100	85	3000	2850	  1,2,6,8,21,22,23
					21681	F032/841/XPS/ECO	30	30000	4100	85	3150	2990	  1,2,6,8,14,21,28,31
					22143*	F032/850/ECO	30	20000	5000	80	2800	2576	  1,2,6,8,20,21
					22026	F032/850/XP/ECO	30	24000	5000	85	3000	2850	  1,2,6,8,21,22,23
40	T8	60	59.61	Med Bipin	22144*	F040/830/ECO	30	20000	3000	82	3650	3473	  1,2,6,8,20,21
					21912	F040/830/XP/ECO	30	24000	3000	85	3750	3560	  1,2,6,8,21,22,23
					22145*	F040/835/ECO	30	20000	3500	82	3650	3473	  1,2,6,8,20,21
					21911	F040/835/XP/ECO	30	24000	3500	85	3750	3560	  1,2,6,8,21,22,23
					22146*	F040/841/ECO	30	20000	4100	82	3650	3473	  1,2,6,8,20,21
					21916	F040/841/XP/ECO	30	24000	4100	85	3750	3560	  1,2,6,8,21,22,23
					22099*	F096/830/XP/SS/ECO	24	18000	3000	82	5700	5415	  1,2,6,34,35
55	T8	96	94	Single Pin	22100*	F096/835/XP/SS/ECO	24	18000	3500	82	5700	5415	  1,2,6,34,35
					22101*	F096/841/XP/SS/ECO	24	18000	4100	82	5700	5415	  1,2,6,34,35
					22147*	F096/830/ECO	24	15000	3000	82	5900	5428	  1,2,6,8,36
59	T8	96	94	Single Pin	22036	F096/830/XP/ECO	24	18000	3000	85	6100	5795	  1,2,6,8,14,22,35
					22148*	F096/835/ECO	24	15000	3500	82	5900	5428	  1,2,6,8,36
					21740*	F096/835/XP	24	18000	3500	85	6100	5795	 1,2,8,14,22,35
					22034	F096/835/XP/ECO	24	18000	3500	85	6100	5795	  1,2,6,8,14,22,35
					22149*	F096/841/ECO	24	15000	4100	82	5900	5428	  1,2,6,8,36
					22025*	F096/841/XP	24	18000	4100	85	6100	5795	 1,2,8,14,22,35
					22032	F096/841/XP/ECO	24	18000	4100	85	6100	5795	  1,2,6,8,14,22,35

T8 Single Pin

T8 Med Bipin

T8 U-Shaped (leg spacing of 1-5/8")

## OCTRON® AND OCTRON® CURVALUME® FLUORESCENT LAMPS

### OCTRON® 800, 800 XP™ and 800 XPS® Lamps

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
59	T8	96	94	Single Pin	22173	F096/850/ECO	24	15000	5000	80	5900	5428	(E) (B) (CR) 1,2,6,8,36
					22174	F096/850/XP/ECO	24	18000	5000	85	5900	5605	(B) (CR) 1,2,6,8,22,27
86	T8	96	93.91	Recessed DC	22037	F096/835/HO	24	18000	3500	84	8200	7380	(E) (CR) 1,2,8
					22040	F096/841/HO	24	18000	4100	80	8200	7380	(E) (CR) 1,2,8

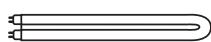
### OCTRON® 5000K And 6500K for Displays, Signage and Backlighting

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
14	T8	18	17.91	Med Bipin	21731	F013/865/XP/ECO	30	24000	6500	85	850	805	(B) (CR) 1,2,6,8,21,22,23
					21868	F014/950/20in	30	20000	5000	90	750	638	(CR) 1,2,8,20,21
15	T8	20	19.78	Med Bipin	21716	F014/865/XP/ECO	30	24000	6500	85	1000	950	(B) (CR) 1,2,6,8,21,22,23
					21726	FBO16/865XP	15	24000	6500	85	1125	1069	(CR) 1,2,8,21,22,23,37,38
17	T8	24	23.78	Med Bipin	21871	F017/950/24in	30	20000	5000	90	800	680	(CR) 1,2,8,20,21
					21718	F017/865/XP/ECO	30	24000	6500	85	1250	1188	(B) (CR) 1,2,6,8,21,22,23
21	T8	30	29.78	Med Bipin	21869	F021/950/30in	30	20000	5000	90	1000	850	(CR) 1,2,8,20,21
					21730	F021/865/XP/ECO	30	24000	6500	85	1600	1520	(B) (CR) 1,2,6,8,21,22,23
25	T8	36	35.78	Med Bipin	21872	F025/950/36in	30	20000	5000	90	1250	1063	(CR) 1,2,8,20,21
					21719	F025/865/XP/ECO	30	24000	6500	85	2000	1900	(B) (CR) 1,2,6,8,21,22,23
28	T8	40	39.78	Med Bipin	21870	F028/950/40in	30	20000	5000	90	1800	1530	(CR) 1,2,8,20,21
					21727	F028/865/XP/ECO	30	24000	6500	85	2250	2138	(B) (CR) 1,2,6,8,21,22,23
32	T8	48	47.78	Med Bipin	21880	F032/950/48in	30	20000	5000	90	1800	1530	(CR) 1,2,8,20,21
					21720	F032/865/XP/ECO	30	24000	6500	85	2850	2708	(B) (CR) 1,2,6,8,21,22,23
40	T8	60	59.61	Med Bipin	21873	F040/950/60in	30	20000	5000	90	2200	1870	(CR) 1,2,8,20,21
					21721	F040/865/XP/ECO	30	24000	6500	85	3650	3468	(B) (CR) 1,2,6,8,21,22,23

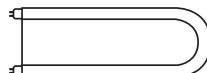
### OCTRON® CURVALUME® U-Shaped Lamps, 1 5/8" Leg Spacing

The OCTRON® CURVALUME® lamps are made to the same color standards and may be used in combination with other SYLVANIA OCTRON lamps to meet the needs of lighting installations where OCTRON T8 systems are used. Since Curvalume and linear OCTRON lamps of the same/similar wattages operate on the ballasts, the types of ballasts used in an installation can be minimized. When OCTRON FBO31 lamps are used in 2x2 luminaires, the 2x2 luminaires can deliver light levels similar to 2x4 luminaires with the same number of linear OCTRON lamps. The nominal length of the CURVALUME lamp is measured from base face to the outside of the glass bend.

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
16	T8	10.5	10.60	Med Bipin	21834	FBO16/830	15	20000	3000	82	1125	1035	(CR) 1,2,8,20,21,37,38
					21835	FBO16/835	15	20000	3500	82	1125	1035	(CR) 1,2,8,20,21,37,38



T8 U-Shaped (leg spacing of 1-5/8")



T8 U-Shaped (leg spacing of 6")

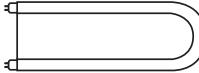
## OCTRON® AND OCTRON® CURVALUME® FLUORESCENT LAMPS

### OCTRON® CURVALUME® U-Shaped Lamps, 1 5/8" Leg Spacing

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
16	T8	10.5	10.60	Med Bipin	21836	FB016/841	15	20000	4100	82	1125	1035	1,2,8,20,21,37,38
					21726	FB016/865XP	15	24000	6500	85	1125	1069	1,2,8,21,22,23,37,38
24	T8	16.5	16.6	Med Bipin	21874	FB024/830	15	20000	3000	82	1925	1771	1,2,8,20,21,37,38
					21875	FB024/835	15	20000	3500	82	1925	1771	1,2,8,20,21,37,38
					21876	FB024/841	15	20000	4100	82	1925	1771	1,2,8,20,21,37,38
31	T8	22.5	22.6	Med Bipin	21877	FB031/830	15	20000	3000	82	2725	2507	1,2,8,20,21,37,38
					21693*	FB031/830/XP/ECO	15	24000	3000	85	2775	2636	1,2,6,8,21,22,23,37,38
					21878	FB031/835	15	20000	3500	82	2725	2507	1,2,8,20,21,37,38
					21695*	FB031/835/XP/ECO	15	24000	3500	85	2775	2636	1,2,6,8,21,22,23,37,38
					21879	FB031/841	15	20000	3500	82	2725	2507	1,2,8,20,21,37,38
					21696*	FB031/841/XP/ECO	15	24000	4100	85	2775	2636	1,2,6,8,21,22,23,37,38
					21926*	FB031/841XP	15	24000	4100	85	2775	2636	1,2,8,21,22,37,38
					21819	FB031/750	15	20000	5000	75	2600	2340	1,2,8,20,21,37,38

### OCTRON® CURVALUME® U-Shaped Lamps, 6" Leg Spacing

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
30	T8	22.5	22.6	Med Bipin	22170*	FB030/830XP/6/SS/ECO	16	18000	3000	82	2800	2632	1,2,6,22,23,29,30,37
					22171*	FB030/835XP/6/SS/ECO	16	18000	3500	82	2800	2632	1,2,6,22,23,29,30,37
					22172*	FB030/841XP/6/SS/ECO	16	18000	4100	82	2800	2632	1,2,6,22,23,29,30,37
32	T8	22.5	22.6	Med Bipin	22046	FB032/730/6/ECO	16	20000	3000	75	2750	2475	1,2,6,8,20,21,37
					21970*	FB032/830/6	16	20000	3000	82	2850	2622	1,2,8,20,21,37
					21663	FB032/830/6/ECO	16	20000	3000	82	2850	2622	1,2,6,8,20,21,37
					22054	FB032/830XP/6/ECO	16	24000	3000	85	2900	2755	1,2,6,8,21,22,23,37
					22094	FB032/830XPS/6/ECO	16	24000	3000	85	3000	2850	1,2,6,8,21,37,39,40
					22051	FB032/735/6/ECO	16	20000	3500	75	2750	2475	1,2,6,8,20,21,37



T8 U-Shaped (leg spacing of 6")



T5 Mini Bipin

## OCTRON® AND OCTRON® CURVALUME® FLUORESCENT LAMPS

### OCTRON® CURVALUME® U-Shaped Lamps, 6" Leg Spacing

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
32	T8	22.5	22.6	Med Bipin	21670	FBO32/835/6/ECO	16	20000	3500	82	2850	2622	1,2,6, 8,20,21,37
					21984 <sup>▲</sup>	FBO32/835XP/6	16	24000	3500	85	2900	2755	1,2,8,21,22, 23,37
					22055	FBO32/835XP/6/ECO	16	24000	3500	85	2900	2755	1,2,6, 8,21,22,23,37
					22095	FBO32/835XPS/6/ECO	16	24000	3500	85	3000	2850	1,2,6, 8,21,37,39,40
					22052	FBO32/741/6/ECO	16	20000	4100	75	2750	2475	1,2, 6,8,20,21,37
					21671	FBO32/841/6/ECO	16	20000	4100	82	2850	2622	1,2,6, 8,20,21,37
					22057	FBO32/841XP/6/ECO	16	24000	4100	85	2900	2755	1,2,6, 8,21,22,23,37
					22096 <sup>◎</sup>	FBO32/841XPS/6/ECO	16	24000	4100	85	3000	2850	1,2,6, 8,21,37,39,40
					22053	FBO32/750/6/ECO	16	20000	5000	75	2625	2363	1,2, 6,8,20,21,37

### PENTRON® T5 LAMPS

PENTRON® T5 lamps are designed to operate on dedicated electronic programmed rapid start (also known as programmed start) ballasts only. These lamps are globally standardized and are designed to operate with their peak light output at 35°C (95°F) ambient temperature. For comparison purposes and to accommodate existing lamp measurement standards, ratings are given at both 25°C (77°F) and 35°C (95°F). The new lamp dimensions allow for innovative fixture designs and improved fixture performance. A PENTRON Fixture Design Guide is available on request.

### PENTRON® High Performance T5 Lamps

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F (@35°C/95°F)	Mean @25°C/77°F (@35°C/95°F)	Symbols & Footnotes
14	T5	24	22.2	Mini Bipin	20810	FP14/830	40	20000	3000	82	1200 1350	1116 1256	1,2,8,9,11
					20907 <sup>◎</sup>	FP14/830/ECO	40	20000	3000	82	1200 1350	1116 1256	1,2,6, 8,9,11
					20812	FP14/835	40	20000	3500	82	1200 1350	1116 1256	1,2,8,9,11
					20908 <sup>◎</sup>	FP14/835/ECO	40	20000	3500	82	1200 1350	1116 1256	1,2,6, 8,9,11
					20822	FP14/841	40	20000	4100	82	1200 1350	1116 1256	1,2,8,9,11
					20914 <sup>◎</sup>	FP14/841/ECO	40	20000	4100	82	1200 1350	1116 1256	1,2,6, 8,9,11
21	T5	36	34	Mini Bipin	20823	FP21/830	40	20000	3000	82	1900 2100	1767 1953	1,2,8,9,11
					20919 <sup>◎</sup>	FP21/830/ECO	40	20000	3000	82	1900 2100	1767 1953	1,2,6, 8,9,11
					20832	FP21/835	40	20000	3500	82	1900 2100	1767 1953	1,2,8,9,11
					20921 <sup>◎</sup>	FP21/835/ECO	40	20000	3500	82	1890 2100	1767 1953	1,2,6, 8,9,11
					20835	FP21/841	40	20000	4100	82	1900 2100	1767 1953	1,2,8,9,11

**PENTRON® T5 LAMPS****PENTRON® High Performance T5 Lamps**

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F (@35°C/95°F)	Mean @25°C/77°F (@35°C/95°F)	Symbols & Footnotes
21	T5	36	34	Mini Bipin	20924*	FP21/841/ECO	40	20000	4100	82	1890 2100	1767 1953	1,2,6, 8,9,11
28	T5	48	45.8	Mini Bipin	20838*	FP28/60[RED]	40	10000			2100		1,2,8,9,11
					20839*	FP28/66[GREEN]	40	10000			3500		1,2,8,9,11
					20840*	FP28/67[BLUE]	40	10000			700		1,2,8,9,11
					20836*	FP28/830	40	20000	3000	82	2600 2900	2418 2697	1,2,8,9,11
					20868*	FP28/830/ECO	40	20000	3000	82	2600 2900	2418 2697	1,2,6, 8,9,11
					20841*	FP28/835	40	20000	3500	82	2600 2900	2418 2697	1,2,8,9,11
					20901*	FP28/835/ECO	40	20000	3500	82	2600 2900	2418 2697	1,2,6, 8,9,11
					20842*	FP28/841	40	20000	4100	82	2600 2900	2418 2697	1,2,8,9,11
					20902*	FP28/841/ECO	40	20000	4100	82	2600 2900	2418 2697	1,2,6, 8,9,11
					20843*	FP35/830	40	20000	3000	82	3300 3650	3069 3394	1,2,8,9,11
35	T5	60	57.6	Mini Bipin	20925*	FP35/830/ECO	40	20000	3000	82	3300 3650	3069 3394	1,2,6, 8,9,11
					20844*	FP35/835	40	20000	3500	82	3300 3650	3069 3394	1,2,8,9,11
					20926*	FP35/835/ECO	40	20000	3500	82	3300 3650	3069 3394	1,2,6, 8,9,11
					20845*	FP35/841	40	20000	4100	82	3300 3650	3069 3394	1,2,8,9,11
					20927*	FP35/841/ECO	40	20000	4100	82	3300 3650	3069 3394	1,2,6, 8,9,11

**PENTRON® High Output, High Performance T5 Lamps**

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F (@35°C/95°F)	Mean @25°C/77°F (@35°C/95°F)	Symbols & Footnotes
24	T5	24	22.2	Mini Bipin	20846	FP24/830/HO	40	20000	3000	82	1750 2000	1627 1860	1,2,8,9,11
					20928*	FP24/830/HO/ECO	40	20000	3000	82	1750 2000	1627 1860	1,2,6, 8,9,11
					20852	FP24/835/HO	40	20000	3500	82	1750 2000	1627 1860	1,2,8,9,11
					20929*	FP24/835/HO/ECO	40	20000	3500	82	1760 2000	1627 1860	1,2,6, 8,9,11
					20853	FP24/841/HO	40	20000	4100	82	1750 2000	1627 1860	1,2,8,9,11
					20931*	FP24/841/HO/ECO	40	20000	4100	82	1760 2000	1627 1860	1,2,6, 8,9,11
39	T5	36	34	Mini Bipin	20854	FP39/830/HO	40	20000	3000	82	3100 3500	2883 3255	1,2,8,9,11

**PENTRON® T5 LAMPS****PENTRON® High Output, High Performance T5 Lamps**

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F (@35°C/95°F)	Mean @25°C/77°F (@35°C/95°F)	Symbols & Footnotes
39	T5	36	34	Mini Bipin	20932*	FP39/830/HO/ECO	40	20000	3000	82	3100 3500	2883 3255	1,2,6, 8,9,11
					20855	FP39/835/HO	40	20000	3500	82	3100 3500	2883 3255	1,2,8,9,11
					20933*	FP39/835/HO/ECO	40	20000	3500	82	3100 3500	2883 3255	1,2,6, 8,9,11
					20856	FP39/841/HO	40	20000	4100	82	3100 3500	2883 3255	1,2,8,9,11
					20934*	FP39/841/HO/ECO	40	20000	4100	82	3100 3500	2883 3255	1,2,6, 8,9,11
54	T5	48	45.8	Mini Bipin	20857*	FP54/830/HO	40	20000	3000	82	4450 5000	4138 4650	1,2,8,9,11
					20903*	FP54/830/HO/ECO	40	20000	3000	82	4450 5000	4138 4650	1,2,6, 8,9,11
					20858*	FP54/835/HO	40	20000	3500	82	4450 5000	4138 4650	1,2,8,9,11
					20904*	FP54/835/HO/ECO	40	20000	3500	82	4450 5000	4138 4650	1,2,6, 8,9,11
					20860*	FP54/841/HO	40	20000	4100	82	4450 5000	4138 4650	1,2,8,9,11
					20906*	FP54/841/HO/ECO	40	20000	4100	82	4450 5000	4138 4650	1,2,6, 8,9,11
					20862*	FP54/860/HO/ECO	40	20000	6000	82	4050 5000	3766 4418	1,2,6, 8,9,11
80	T5	60	57.6	Mini Bipin	20863*	FP80/830/HO	40	20000	3000	82	6150 7000	5719 6510	1,2,8,9,11
					20935*	FP80/830/HO/ECO	40	20000	3000	82	6150 7000	5719 6510	1,2,6, 8,9,11
					20864*	FP80/835/HO	40	20000	3500	82	6150 7000	5719 6510	1,2,8,9,11
					20936*	FP80/835/HO/ECO	40	20000	3500	82	6150 7000	5719 6510	1,2,6, 8,9,11
					20865*	FP80/841/HO	40	20000	4100	82	6150 7000	5719 6510	1,2,8,9,11
					20937*	FP80/841/HO/ECO	40	20000	4100	82	6150 7000	5719 6510	1,2,6, 8,9,11

**PENTRON® Circline T5 Lamps**

Nominal Wattage	Bulb	Outside Diameter (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F (@35°C/95°F)	Mean @25°C/77°F (@35°C/95°F)	Symbols & Footnotes
22	T5	8.66 - 9.06	2GX13	20702	FPC22/830	12	12000	3000	82	1800	1585	1,2,8,9,11
				20712	FPC22/835	12	12000	3500	82	1800	1585	1,2,8,9,11
				20715	FPC22/841	12	12000	4100	82	1800	1585	1,2,8,9,11
40	T5	11.54 - 12.01	2GX13	20731	FPC40/830	12	12000	3000	82	3200	2815	1,2,8,9,11
				20732	FPC40/835	12	12000	3500	82	3200	2815	1,2,8,9,11
				20733	FPC40/841	12	12000	4100	82	3200	2815	1,2,8,9,11



Circline 4-Pin T5

T12 Med Bipin

**PENTRON® T5 LAMPS****PENTRON® Circline T5 Lamps**

Nominal Wattage	Bulb	Outside Diameter (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens @25°C/77°F	Initial Mean	Mean @25°C/77°F	Symbols & Footnotes
55	T5	11.54 - 12.01	2GX13	20741	FPC55/830/HO	12	12000	3000	82	4000	3520	1,2,8,9,11	
				20750	FPC55/835/HO	12	12000	3500	82	4000	3520	1,2,8,9,11	
				20751	FPC55/841/HO	12	12000	4100	82	4000	3520	1,2,8,9,11	

**RAPID START LAMPS****3' SUPERSAVER® Rapid Start Lamps**

Rapid start lamps, 3-foot and 4-foot in length, are typically designated by their wattage: e.g. F40 = Fluorescent 40W. Therefore, lamps previously designated as F30T12/RS/SS, F40/SS and FB40/SS energy saving types will now be designated as F25T12/RS/SS, F34/SS and FB34/SS, respectively, to comply with standard lamp designation nomenclature for these families of lamps.

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens @25°C/77°F	Initial Mean	Symbols & Footnotes
25	T12	36	35.78	Med Bipin	23451	F25T12/D30/RS/SS formerly F30T12/D30/RS/SS	30	18000	3000	70	2050	1804	1,2,42
					23473	F25T12/MW/RS/SS formerly F30T12/MW/RS/SS	30	18000	3000	52	1975	1679	1,2,42
					23485	F25T12/D35/RS/SS formerly F30T12/D35/RS/SS	30	18000	3500	70	2050	1804	1,2,42
					23472	F25T12/CW/RS/SS formerly F30T12/CW/RS/SS	30	18000	4200	62	1925	1636	1,2,42

**3' Standard Rapid Start Lamps**

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens @25°C/77°F	Initial Mean	Symbols & Footnotes
30	T12	36	35.78	Med Bipin	23474	F30T12/D830/RS	30	18000	3000	80	2290	2061	1,2,8,43
					23490	F30T12/MW/RP	6	18000	3000	52	2275	1934	1,2,8,43
					23482	F30T12/MW/RS	30	18000	3000	52	2275	1934	1,2,8,43
					23484	F30T12/D35/RS	30	18000	3500	70	2250	1980	1,2,8,43
					23139	F30T12/D835/RS	30	18000	3500	80	2290	2061	1,2,8,43
					23477	F30T12/CWX/RS	30	18000	4100	87	1600	1360	1,2,8,43
					23488	F30T12/D41/RS	30	18000	4100	70	2250	1980	1,2,8,43
					23493	F30T12/CW/RP	6	18000	4200	62	2200	1870	1,2,8,43
					23476	F30T12/CW/RS	30	18000	4200	62	2200	1870	1,2,8,43
					23487	F30T12/CW/RS/UPC	30	18000	4200	62	2200	1870	1,2,8,43
					23478	F30T12/D/RS	30	18000	6500	76	1900	1615	1,2,8,43

**4' SUPERSAVER® Rapid Start Lamps**

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens @25°C/77°F	Initial Mean	Symbols & Footnotes
34	T12	48	47.78	Med Bipin	24535	F34/D30/SS/ECO formerly F40/D30/SS/ECO	30	20000	3000	70	2800	2520	1,2,6,43,44,45,46
					24589	F34/D830/SS formerly F40/D830/SS	30	20000	3000	80	2900	2610	1,2,43,44,45,46
					24544	F34/D830/SS/ECO formerly F40/D830/SS/ECO	30	20000	3000	80	2900	2610	1,2,43,44,45,46
					24595	F34WW/SS formerly F40WW/SS	30	20000	3000	52	2750	2365	1,2,43,44,45,46

**RAPID START LAMPS****4" SUPERSAVER® Rapid Start Lamps**

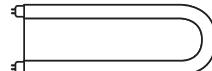
Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
34	T12	48	47.78	Med Bipin	24538	F34WW/SS/ECO formerly F40WW/SS/ECO	30	20000	3000	52	2750	2365	(E) (L) 1,2,6, 43,44,45,46
					24591	F34W/SS formerly F40W/SS	30	20000	3450	57	2750	2365	(E) (L) 1,2,43,44,45, 46
					24585	F34/D35/SS formerly F40/D35/SS	30	20000	3500	70	2800	2520	(E) (CRI) 1,2,43, 44,45,46
					24522	F34/D35/SS/CVP formerly F40/D35/SS/CVP	10	20000	3500	70	2800	2520	(E) (CRI) 1,2,43, 44,45,46
					24540	F34/D35/SS/ECO formerly F40/D35/SS/ECO	30	20000	3500	70	2800	2520	(L) (CRI) 1,2,6, 43,44,45,46
					24547	F34/D835/SS/ECO formerly F40/D835/SS/ECO	30	20000	3500	80	2900	2610	(E) (L) (CRI) 1,2, 6,43,44,45,46
					24542	F34/D41/SS/ECO formerly F40/D41/SS/ECO	30	20000	4100	70	2800	2520	(L) (CRI) 1,2,6, 43,44,45,46
					24554	F34/D841/SS/ECO formerly F40/D841/SS/ECO	30	20000	4100	80	2900	2610	(E) (L) (CRI) 1,2, 6,43,44,45,46
					24588	F34CWX/SS formerly F40CWX/SS	30	20000	4100	87	1925	1656	(CRI) 1,2,43,44,45, 46
					24590	F34LW/SS formerly F40LW/SS	30	20000	4150	48	2825	2430	(E) 1,2,43,44,45, 46
					24566	F34LW/SS/ECO formerly F40LW/SS/ECO	30	20000	4150	48	2825	2430	(E) (L) 1,2,6, 43,44,45,46
					24508*	F34CW/RS/SS/672PLT formerly F40CW/RS/SS/672PLT	672	20000	4200	62	2650	2279	(E) 1,2,43,44,45, 46
					24594	F34CW/SS formerly F40CW/SS	30	20000	4200	62	2650	2279	(E) 1,2,43,44,45, 46
					24516	F34CW/SS/10 formerly F40CW/SS/10	10	20000	4200	62	2650	2279	(E) 1,2,43,44,45, 46
					24524	F34CW/SS/CVP formerly F40CW/SS/CVP	10	20000	4200	62	2650	2279	(E) 1,2,43,44,45, 46
					24596	F34CW/SS/ECO formerly F40CW/SS/ECO	30	20000	4200	62	2650	2279	(E) (L) 1,2,6, 43,44,45,46
					24396	F34CW/SS/SL formerly F40CW/SS/SL	30	20000	4200	62	2600	2235	(E) 1,2,25,26,43, 44,45
					28012**	F34CW/SS/UPC formerly F40CW/SS/UPC	30	20000	4200	62	2650	2279	(E) 1,2,43,44,45, 46
					24706	F34/D865/SS formerly F40/D865/SS	30	20000	6500	80	2650	2385	(E) (CRI) 1,2,43, 44,45,46
					24599	F34/DX/SS formerly F40/DX/SS	30	20000	6500	88	1930	1565	(CRI) 1,2,43,44,45, 46

**4" Standard Rapid Start Lamps**

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
40	T12	48	47.78	Med Bipin	24673	F40/G0	10	20000			1980		1,2,8,43,44,46, 47
					24454	F40IF	30	20000	2750	89	1480	1273	(CRI) 1,2,8,43,44, 46,47



T12 Med Bipin



T12 U-Shaped (leg spacing of 3-5/8" or 6")

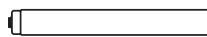
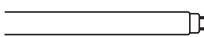
## RAPID START LAMPS

### 4' Standard Rapid Start Lamps

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
40	T12	48	47.78	Med Bipin	24521	F40/D30/ECO	30	20000	3000	70	3200	2880	(E) (L) 1,2,6,8,43,44,46,47
					24543	F40/D830/ECO	30	20000	3000	80	3300	2970	(E) (L) 1,2,6,8,43,44,46,47
					24537	F40/D35/ECO	30	20000	3500	70	3200	2880	(E) (L) 1,2,6,8,43,44,46,47
					24546	F40/D835/ECO	30	20000	3500	80	3300	2970	(E) (L) 1,2,6,8,43,44,46,47
					24438	F40N	30	20000	3600	86	2100	1806	(E) (L) 1,2,8,43,44,46,47
					24584	F40/D41	30	20000	4100	70	3200	2880	(E) (L) 1,2,8,43,44,46,47
					24541	F40/D41/ECO	30	20000	4100	70	3200	2880	(E) (L) 1,2,6,8,43,44,46,47
					24553	F40/D841/ECO	30	20000	4100	80	3300	2970	(E) (L) 1,2,6,8,43,44,46,47
					24442	F40CWX	10	20000	4100	87	2150	1849	(E) 1,2,8,43,44,46,47
					24441	F40CWX	30	20000	4100	87	2150	1849	(E) 1,2,8,43,44,46,47
					24683	F40DSGN50	30	20000	5000	90	2200	1892	(E) 1,2,8,43,44,46,47
					24570	F40/D865	30	20000	6500	80	3000	2700	(E) (L) 1,2,8,43,44,46,47
					24477	F40/DX	30	20000	6500	88	2180	1770	(E) 1,2,8,43,44,46,47

### CURVALUME® Rapid Start SUPERSAVER® - U-Shaped, 6" Leg Spacing

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
34	T12	22.5	22.6	Med Bipin	24063	FB34/D30/6/SS formerly FB40/D30/6/SS	12	18000	3000	70	2730	2457	(E) (L) 1,2,43,45
					24047	FB34/NW/6/SS formerly FB40/NW/6/SS	12	18000	3000	52	2650	2279	(E) 1,2,43,45
					24052	FB34/NW/6/SS/ECO formerly FB40/NW/6/SS/ECO	12	18000	3000	52	2650	2279	(E) (L) 1,2,6,43,45
					24062	FB34/NW/6/SS/UPC formerly FB40/NW/6/SS	12	18000	3000	52	2650	2279	(E) 1,2,43,45
					24065	FB34/D35/6/SS formerly FB40/D35/SS	12	18000	3500	70	2730	2457	(E) (L) 1,2,43,45
					24067	FB34/D41/6/SS formerly FB40/D41/SS	12	18000	4100	70	2730	2457	(E) (L) 1,2,43,45
					24049	FB34/LW/6/SS formerly FB40/LW/6/SS	12	18000	4150	48	2800	2408	(E) 1,2,43,45
					24046	FB34/CW/6/SS formerly FB40/CW/6/SS	12	18000	4200	62	2600	2236	(E) 1,2,43,45
					24054	FB34/CW/6/SS/ECO formerly FB40/CW/6/SS/ECO	12	18000	4200	62	2600	2236	(E) (L) 1,2,6,43,45



T12 Med Bipin

Circline 4-Pin T9

T12 RDC

FLUORESCENT

## RAPID START LAMPS

### CURVALUME® Rapid Start SUPERSAVER® - U-Shaped, 6" Leg Spacing

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
34	T12	22.5	22.6	Med Bipin	24059	FB34/CW/6/SS/UPC formerly FB40/CW/SS/6	12	18000	4200	62	2600	2236	③ 1,2,43,45

### CURVALUME® Rapid Start Standard Lamps - U-Shaped, 6" Leg Spacing

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
40	T12	22.5	22.6	Med Bipin	24080	FB40/D30/6	12	18000	3000	70	3050	2745	③ ④ 1,2,8,43
					24017	FB40/D830/6	12	18000	3000	80	3200	2880	③ ④ 1,2,8,43
					24081	FB40/D35/6	12	18000	3500	70	3050	2745	③ ④ 1,2,8,43
					24004	FB40/CWX/6	12	18000	4100	87	2100	1806	④ 1,2,8,43
					24082	FB40/D41/6	12	18000	4100	70	3050	2745	③ ④ 1,2,8,43

### Circline T9 Rapid Start Lamps

Nominal Wattage	Bulb	Outside Diameter (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
20	T9	6.25-6.75	4 Pin	20155	FC6T9/MW/RS	12	8000	3000	52	800	696	1,2,8,48
				20156	FC6T9/CW/RS	12	8000	4200	62	750	653	1,2,8,48
22	T9	8.00-8.50	4 Pin	20209	FC8T9/DWW/RP	6	12000	3000	70	1100	990	④ 1,2,8,48
				20088	FC8T9/MW/RS	12	12000	3000	52	1050	914	1,2,8,48
				20148	FC8T9/CW/RS	12	12000	4200	62	1050	914	1,2,8,48
				20151	FC8T9/CW/RS/6 PACK	6	12000	4200	62	1050	914	1,2,8,48
				20080	FC8T9/D/RS	12	12000	6500	76	900	783	④ 1,2,8,48
30	T9	8.00-8.50	4 Pin	20210	FC8T9/830/EL	6	10000	3000	80	1850	1591	④ 1,2,3,16,17,49
32	T9	11.50-12.0	4 Pin	20233	FC12T9/DWW/RP	6	15000	3000	70	2100	1806	④ 1,2,8,48
				20037	FC12T9/MW/RS	12	15000	3000	52	1950	1697	1,2,8,48
				20142	FC12T9/CW/RS	12	15000	4200	62	1925	1675	1,2,8,48
				20143	FC12T9/CW/RS/6 PACK	6	15000	4200	62	1925	1675	1,2,8,48
				20030	FC12T9/D/RS	12	15000	6500	76	1650	1436	④ 1,2,8,48
40	T9	15.5-16	4 Pin	20057	FC16T9/MW/RS	12	18000	3000	52	2800	2436	1,2,8,48
				20132	FC16T9/CW/RS	12	18000	4200	62	2750	2393	1,2,8,48
				20072	FC16T9/D/RS	12	18000	6500	76	2350	2045	④ 1,2,8,48

### High Output (800mA) Rapid Start SUPERSAVER® Lamps

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
55	T12	48	46	Recessed DC	25137	F48T12D35/HO/SS	30	12000	3500	70	3750	3375	④ 1,2,50,51
95	T12	96	93.91	Recessed DC	25008	F96T12/D830/HO/SS	15	12000	3000	80	8750	8050	③ ④ 1,2,50,51
					25011	F96T12/WW/HO/SS	15	12000	3000	52	7700	6237	③ 1,2,50,51

**RAPID START LAMPS****High Output (800mA) Rapid Start SUPERSAVER® Lamps**

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens @25°C/77°F	Symbols & Footnotes
95	T12	96	93.91	Recessed DC	25024	F96T12/D35/HO/SS	15	12000	3500	48	8350 7515	(E) 1,2,50, 51
					25001	F96T12/CW/HO/SS/ECO	15	12000	4050	62	8000 6480	(L) 1,2,6,50,51
					25023	F96T12/D41/HO/SS	15	12000	4100	70	8350 7515	(E) 1,2,50, 51
					25025	F96T12/LW/HO/SS	15	12000	4150	48	8000 6480	(E) 1,2,50,51
					25010	F96T12/CW/HO/SS	15	12000	4200	62	8000 6480	(E) 1,2,50,51

**High Output (800mA) Rapid Start Lamps**

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens @25°C/77°F	Symbols & Footnotes
25	T12	18	15.91	Recessed DC	25303	F18T12/DSGN50/HO	30	9000	5000	90	850 740	(E) 1,2,8
35	T12	24	21.91	Recessed DC	25313	F24T12/CW/HO	30	9000	4200	62	1650 1337	1,2,8
					25312	F24T12/DSGN50/HO	30	9000	5000	90	1200 1044	(E) 1,2,8
					25314	F24T12/D/HO	30	9000	6500	76	1400 1134	(E) 1,2,8
42	T12	30	27.91	Recessed DC	25322	F30T12/CW/HO	30	9000	4200	62	2250 1825	1,2,8
45	T12	36	33.91	Recessed DC	25333	F36T12/CW/HO	30	9000	4200	62	2850 2309	1,2,8
					25334	F36T12/DSGN50/HO	30	9000	5000	90	2100 1701	(E) 1,2,8
					25332	F36T12/D/HO	30	9000	6500	76	2500 2025	(E) 1,2,8
55	T12	42	39.91	Recessed DC	25342	F42T12/CW/HO	30	9000	4200	62	3400 2754	1,2,8
					25344	F42T12/DSGN50/HO	30	9000	5000	90	2550 2066	(E) 1,2,8
					25343	F42T12/D/HO	30	9000	6500	76	3050 2471	(E) 1,2,8
60	T12	48	46	Recessed DC	25148	F48T12/D830/HO	30	12000	3000	80	4400 4048	(E) 1,2,8,51
					25147	F48T12/WW/HO	30	12000	3000	52	4130 3345	1,2,8,51
					25154	F48T12/D35/HO	30	12000	3500	70	4250 3825	(E) 1,2,8,51
					25144	F48T12/CWX/HO	30	12000	4100	87	2800 2268	(E) 1,2,8,51
					25136	F48T12/D41/HO	30	12000	4100	70	4250 3443	(E) 1,2,8,51
					25146	F48T12/CW/HO	30	12000	4200	62	4050 3281	1,2,8,51
					25122	F48T12/CW/HO/ECO	30	12000	4200	62	4050 3281	(L) 1,2,6,8,51
					25153	F48T12/DSGN50/HO	30	12000	5000	90	3050 2471	(E) 1,2,8,51
75	T12	60	57.91	Recessed DC	25150	F48T12/D/HO	30	12000	6500	76	3600 2916	(E) 1,2,8,51
					25127	F60T12/WW/HO	30	12000	3000	52	5250 4253	1,2,8,51
					25128	F60T12/D35/HO	30	12000	3500	70	5600 5040	(E) 1,2,8,51
					25126	F60T12/CW/HO	30	12000	4200	62	5200 4212	1,2,8,51
					25119	F60T12/DSGN50/HO	30	12000	5000	90	3850 3119	(E) 1,2,8,51
80	T12	64	61.91	Recessed DC	25120	F60T12/D/HO	30	12000	6500	76	4600 3826	(E) 1,2,8,51
					25352	F64T12/CW/HO	30	12000	4200	62	5750 4658	1,2,8,51
					25355	F64T12/DSGN50/HO	30	12000	5000	90	4200 3402	(E) 1,2,8,51
					25353	F64T12/D/HO	30	12000	6500	76	4900 3969	(E) 1,2,8,51
85	T12	72	69.91	Recessed DC	25097	F72T12/D30/HO	15	12000	3000	70	6650 5985	(E) 1,2,8,51,52
					25098	F72T12/D830/HO	15	12000	3000	80	6750 6210	(E) 1,2,8,51,52

**RAPID START LAMPS****High Output (800mA) Rapid Start Lamps**

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
85	T12	72	69.91	Recessed DC	25177	F72T12/WW/HO	15	12000	3000	52	6400	5184	1,2,8,51,52
					27249	F72T12/D35/HO	15	12000	3500	70	6650	5985	[E] 1,2,8,51,52
					25281	F72T12/D835/HO	15	12000	3500	80	6750	6210	[E] 1,2,8,51,52
					25182	F72T12/N/HO	15	12000	3600	86	4400	3564	[E] 1,2,8,51,52
					25187	F72T12/CWX/HO	15	12000	4100	87	4560	3694	[E] 1,2,8,51,52
					27245	F72T12/D41/HO	15	12000	4100	70	6650	5985	[E] 1,2,8,51,52
					25176	F72T12/CW/HO	15	12000	4200	62	6250	5063	1,2,8,51,52
					25171	F72T12/CW/HO/ECO	15	12000	4200	62	6250	5063	[E] 1,2,6,8,52
					25190	F72T12/DSGN50/HO	15	12000	5000	90	4600	3726	[E] 1,2,8,51
					25189	F72T12/D/HO	15	12000	6500	76	5550	4496	[E] 1,2,8,51,52
100	T12	84	81.91	Recessed DC	25383	F84T12/D35/HO	15	12000	3500	70	7880	7092	[E] 1,2,8,51
					25384	F84T12/CW/HO	15	12000	4200	62	7550	6115	1,2,8,51
					25386	F84T12/DSGN50/HO	15	12000	5000	90	5600	4536	[E] 1,2,8,51
					25385	F84T12/D/HO	15	12000	6500	76	6700	5427	[E] 1,2,8,51
110	T12	96	93.91	Recessed DC	25149	F96T12/D30/HO	15	12000	3000	70	9050	8145	[E] [E] 1,2,8,51
					25152	F96T12/D830/HO	15	12000	3000	80	9400	8648	[E] [E] 1,2,8,51
					25165	F96T12/D35/HO	15	12000	3500	70	9050	8145	[E] [E] 1,2,8,51
					25166	F96T12/D835/HO	15	12000	3500	80	9400	8648	[E] [E] 1,2,8,51
					25162	F96T12/N/HO	15	12000	3600	86	6050	4900	[E] 1,2,8,51
					25158	F96T12/CWX/HO	15	12000	4100	87	6100	5307	[E] 1,2,8,51
					25184	F96T12/D41/HO	15	12000	4100	70	9050	8145	[E] [E] 1,2,8,51
					25114	F96T12/D841/HO	15	12000	4100	80	9400	8648	[E] 1,2,8,51
					25129	F96T12/CW/HO/CT/ECO	15	12000	4200	62	8600	6966	[E] 1,2,6,8,51,53
					25164	F96T12/DSGN50/HO	15	12000	5000	90	6450	5225	[E] 1,2,8,51
					25185	F96T12/D865/HO	15	12000	6500	80	8800	7920	[E] [E] 1,2,8,51

**High Output (800mA) Rapid Start Lamps for Cold Temperature Operation**

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
110	T12	96	93.91	Recessed DC	25134	F96T12/CW/HO/COLD TEMP	15	12000	4200	62	8600	6966	1,2,8,51,53
					25118	F96T12/CW/HO/COLD/10/CVP	10	12000	4200	62	8600	6966	1,2,8,51,53
					25129	F96T12/CW/HO/CT/ECO	15	12000	4200	62	8600	6966	[E] 1,2,6,8,51,53
					25135	F96T12/D/HO/COLD TEMP	15	12000	6500	76	7600	6156	[E] 1,2,8,51,53

**RAPID START LAMPS****Very High Output (1500mA) Rapid Start Lamps**

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens @25°C/77°F	Initial Symbols & Footnotes	Mean
115	T12	48	46	Recessed DC	25248	F48T12/CW/VHO	30	10000	4200	62	6600	4620	1,2,8,54
					25249	F48T12/CW/VHO/LT	30	10000	4200	62	6750	5250	1,2,8,54,55,56
					21260	F48T12/CW/VHO/PB/30	6	10000	4200	62			1,2,8,57
					25244	F48T12/D/VHO	30	10000	6500	76	5600	3920	E1,2,8,54
135	T12	60	57.91	Recessed DC	25262	F60T12/CW/VHO	30	10000	4200	62	8700	6090	1,2,8,54
141	T12	60	57.91	Recessed DC	25263	F60T12/CW/VHO/LT	30	10000	4200	62	8700	6090	1,2,8,54,55,56
160	T12	72	69.91	Recessed DC	25272	F72T12/CW/VHO	15	10000	4200	62	10600	7420	1,2,8,54
					25274	F72T12/CW/VHO/LT	15	10000	4200	62	11000	7700	1,2,8,54,55,56
					25270	F72T12/D/VHO	15	10000	6500	76	9400	6580	E1,2,8,54
195	T12	96	93.91	Recessed DC	25296	F96T12/CW/VHO/SS	15	10000	4200	62	13000	9100	1,2,8,54,58
215	T12	96	93.91	Recessed DC	25211	F96T12/WW/VHO	15	10000	3000	52	14000	9800	1,2,8,54
					25209	F96T12/CW/VHO	15	10000	4200	62	14000	9800	1,2,8,54
					25292	F96T12/CW/VHO/LT	15	10000	4200	62	15000	10500	1,2,8,54,55,56
					25210	F96T12/D/VHO	15	10000	6500	76	11600	8120	E1,2,8,54

**INSTANT START LAMPS****Slimline Instant Start SUPERSAVER® Lamps**

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens @25°C/77°F	Initial Symbols & Footnotes	Mean
32	T12	48	46.00	Single Pin	24829	F48T12/D35/SS	30	9000	3500	70	2575	2369	E1,2,59
					24825	F48T12/D41/SS	30	9000	4100	70	2575	2369	E1,2,59
					24823	F48T12/CW/SS	30	9000	4200	62	2450	2200	1,2,59
60	T12	96	94	Single Pin	29825	F96T12/D30/SS	15	12000	3000	70	5600	5152	E1,2,51,59
					29809	F96T12/D30/SS/ECO	15	12000	3000	70	5600	5152	E1,2,6,51,59
					29823	F96T12/D830/SS	15	12000	3000	80	5800	5452	E1,2,51,59
					29854	F96T12/D830/SS/ECO	15	12000	3000	80	5800	5452	E1,2,6,51,59
					29795	F96T12/WW/SS/ECO	15	12000	3000	52	5500	4840	E1,2,6,51,59
					29819	F96T12/D35/SS	15	12000	3500	70	5600	5152	E1,2,51,59
					29808	F96T12/D35/SS/ECO	15	12000	3500	70	5600	5152	E1,2,6,51,59
					29811	F96T12/D835/SS	15	12000	3500	80	5800	5452	E1,2,51,59
					29859	F96T12/D835/SS/ECO	15	12000	3500	80	5800	5452	E1,2,6,51,59
					29814	F96T12/CWX/SS	15	12000	4100	87	3850	3388	E1,2,51,59
					29853	F96T12/D41/SS/ECO	15	12000	4100	70	5600	5152	E1,2,6,51,59
					29812	F96T12/D841/SS	15	12000	4100	80	5800	5452	E1,2,6,51,59

T12 Single Pin

T6 Single Pin

T8 Single Pin

**INSTANT START LAMPS****Slimline Instant Start SUPERSAVER® Lamps**

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial Mean @25°C/77°F	Symbols & Footnotes
60	T12	96	94	Single Pin	29860	F96T12/D841/SS/ECO	15	12000	4100	80	5800 5452	(E)  1,2,6,51,59
					29820	F96T12/LW/SS	15	12000	4150	48	5600 4928	(E) 1,2,51,59
					29815	F96T12/CW/SS	15	12000	4200	62	5300 4664	(E) 1,2,51,59
					29805	F96T12/CW/SS/CVP	10	12000	4200	62	5300 4664	(E) 1,2,51,59
					29505	F96T12/CW/SS/ECO	15	12000	4200	62	5300 4664	(E)  1,2,6,51,59
					29816	F96T12/CW/SS/UPC	15	12000	4200	62	5300 4664	(E) 1,2,51,59
					29851	F96T12/D865/SS	15	12000	6500	80	5300 4770	(E)  1,2,51,59
					29828	F96T12/DX/SS	15	12000	6500	88	3860 3397	(E) 1,2,51,59
					29868	F96T12/DX/SS/ECO	15	12000	6500	88	3860 3397	(E)  1,2,6,51,59

**Slimline Instant Start Lamps**

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial Mean @25°C/77°F	Symbols & Footnotes
21	T12	24	22.0	Single Pin	22403	F24T12/CW	30	7500	4200	62	1150 1000	1,2,8
25	T6	42	40	Single Pin	24270	F42T6/WW	24	7500	3032	52	1825 1606	(E)  1,2,8
					24269	F42T6/D35	24	7500	3500	70	1830 1684	(E)  1,2,8
					24266	F42T6/CW	24	7500	4200	62	1750 1540	(E) 1,2,8
30	T12	36	34	Single Pin	23618	F36T12/CW	30	7500	4200	62	1970 1734	1,2,8
38	T6	64	62	Single Pin	26470	F64T6/WW	24	7500	3000	52	2900 2552	(E) 1,2,8
					26469	F64T6/D35	24	7500	3500	70	2930 2696	(E) 1,2,8
					26466	F64T6/CW	24	7500	4200	62	2800 2464	(E) 1,2,8
T8		72	70	Single Pin	27270	F72T8/WW	24	7500	3000	52	3100 2728	(E) 1,2,8
					27266	F72T8/CW	24	7500	4200	62	3050 2684	(E) 1,2,8
					27200	F72T8/D	24	7500	6500	76	2600 2288	(E)  1,2,8
39	T12	48	46	Single Pin	24827	F48T12/CW/ECO	30	9000	4200	62	2820 2482	1,2,6,8
					24836	F48T12D/ECO	30	9000	6500	76	2450 2156	1,2,6,8
					24832	F48T12/D35	30	9000	3500	70	3000 2760	(E) 1,2,8
					24830	F48T12/CW	30	9000	4200	62	2820 2482	1,2,8
					24834	F48T12/D	30	9000	6500	76	2450 2156	(E) 1,2,8
50	T12	60	58	Single Pin	26018	F60T12/D35	30	12000	3500	70	3850 3542	(E) 1,2,8,51
					26001	F60T12/CW	30	12000	4200	62	3700 3256	1,2,8,51
					26002	F60T12/D	30	12000	6500	76	3000 2640	(E) 1,2,8,51
51	T8	96	94	Single Pin	29666	F96T8/CW	24	7500	4200	62	4000 3520	(E) 1,2,8
					29650	F96T8/D	24	7500	6500	76	3550 3124	(E)  1,2,8
52	T12	64	62	Single Pin	26403	F64T12/CW	30	12000	4200	62	3900 3432	1,2,8,51
					26404	F64T12/D	30	12000	6500	76	3300 2904	(E) 1,2,8,51
55	T12	72	70	Single Pin	27255	F72T12/D830	15	12000	3000	80	4800 4512	(E) 1,2,8,51

T12 Single Pin

T12 Med Bipin

## INSTANT START LAMPS

### Slimline Instant Start Lamps

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
55	T12	72	70	Single Pin	27250	F72T12/D35	15	12000	3500	70	4700	4324	 
					27243	F72T12/D41	15	12000	4100	70	4700	4324	
					27256	F72T12/CW	15	12000	4200	62	4500	3960	1,2,8,51
					27259	F72T12/D	15	12000	6500	76	3800	3432	
70	T12	84	82	Single Pin	28417	F84T12/CW	15	12000	4200	62	5300	4664	1,2,8,51
75	T12	96	94	Single Pin	29818	F96T12/D30	15	12000	3000	70	6420	5906	 
					29796	F96T12/D30/ECO	15	12000	3000	70	6420	5906	 
					29827	F96T12/D830	15	12000	3000	80	6550	6157	 
					29856	F96T12/D830/ECO	15	12000	3000	80	6550	6157	 
					29685	F96T12/D35	15	12000	3500	70	6420	5906	 
					29686	F96T12/D35/ECO	15	12000	3500	70	6420	5906	 
					29843	F96T12/D835	15	12000	3500	80	6550	6157	 
					29838	F96T12/D835/ECO	15	12000	3500	80	6550	6157	 
					29478	F96T12/CWX	15	12000	4100	87	4400	3872	
					29858	F96T12/CWX/CVP	10	12000	4100	87	4400	3872	
					29489	F96T12/CWX/UPC	15	12000	4100	87	4400	3872	
					29797	F96T12/D41/CVP	10	12000	4100	70	6420	5906	 
					29798	F96T12/D41/ECO	15	12000	4100	70	6420	5906	 
					29852	F96T12/D41/UPC	15	12000	4100	70	6420	5906	 
					29857	F96T12/D841	15	12000	4100	80	6550	6157	 
					29850	F96T12/D841/ECO	15	12000	4100	80	6550	6157	 
					29833	F96T12/DSGN50	15	12000	5000	90	4400	3872	
					29849	F96T12/D865	15	12000	6500	80	6000	5520	 
					29500	F96T12/DX	15	12000	6500	88	4360	3837	

### Instant Start Bipin Lamp

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
40	T12	48	47.78	Med Bipin	24571	F40T12/CW/IS	30	9000	4200	62	3000	2640	1,2,8,60

T5 Mini Bipin

T8 Med Bipin

T12 Med Bipin

**PREHEAT LAMPS****Miniature T5 Preheat Lamps (Starter Required)**

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
4	T5	6	5.91	Mini Bipin	20416	F4T5/CW	24	6000	4200	62	135	117	1,2
					20415	F4T5CW/BL/1/6	6	6000	4200	62	135	117	1,2
					20420	F4T5/D	24	6000	6500	76	115	100	1,2
6	T5	9	8.91	Mini Bipin	20617	F6T5/WW	24	7500	3000	52	275	239	1,2
					20616	F6T5/CW	24	7500	4200	62	270	235	1,2
					20619	F6T5CW/BL/1/6	6	7500	4200	62	270	235	1,2
					20620	F6T5/D	24	7500	6500	76	260	226	1,2
8	T5	12	11.91	Mini Bipin	20817	F8T5/WW	24	7500	3000	52	400	348	1,2
					20819	F8T5/WW/BL/1/6	6	7500	3000	52	400	348	1,2
					20821	F8T5/WW	24	7500	3450	57	400	348	1,2
					20837	F8T5/CWX	24	7500	4100	87	270	235	1,2
					20816	F8T5/CW	24	7500	4200	62	390	339	1,2
					20834	F8T5CW/BL/1/6	6	7500	4200	62	390	339	1,2
					20824	F8T5/DSGN50	24	7500	5000	90	280	244	1,2
					20820	F8T5/D	24	7500	6500	76	350	305	1,2
13	T5	21	20.4	Mini Bipin	21301	L13W/25	25	7500	4000	75	700	630	1,2
					21317	F13T5/WW	24	7500	3000	52	880	766	1,2
			20.91	Mini Bipin	21332	F13T5/WW/BL/1/6	6	7500	3000	52	880	766	1,2
					21316	F13T5/CW	24	7500	4200	62	860	748	1,2
					21315	F13T5CW/BL/1/6	6	7500	4200	62	860	748	1,2

**Standard T8 and T12 Preheat Lamps (Starter Required)**

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
13	T8	12	11.71	Med Bipin	21766	F13T8/CW	24	7500	4200	62	530	461	1,2
14	T8	15	14.78	Med Bipin	21486	F14T8/CW	24	7500	4200	62	685	644	1,2
					21488	F14T8/D	24	7500	6500	76	575	561	1,2
15	T12	15	14.78	Med Bipin	21451	F14T12/DWW/RP	6	9000	3000	70	720	648	1,2
					21435	F14T12/WW	30	9000	3000	52	660	574	1,2
					21536*	F14T12/DCW/1/6/RP	6	9000	4100	70	720	648	1,2
					21409	F14T12/CW	30	9000	4200	62	650	566	1,2
					21410	F14T12/CW/6/RP	6	9000	4200	62	650	566	1,2
					21411	F14T12/D	30	9000	6500	76	590	513	1,2
					21610	F15T8/D830	24	7500	3000	82	920	846	1,2
15	T8	18	17.78	Med Bipin	21701	F15T8/WW	24	7500	3000	52	845	735	1,2
					21765	F15T8/WW/RP	6	7500	3000	52	845	735	1,2
					21609	F15T8/D35	24	7500	3500	70	940	846	1,2
					21682	F15T8/N	24	7500	3600	86	560	487	1,2
					21627**	F15T8/CW	24	7500	4100	87	600	522	1,2
					21603	F15T8/DCW/RP	6	7500	4100	70	900	810	1,2

**PREHEAT LAMPS****Standard T8 and T12 Preheat Lamps (Starter Required)**

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens @25°C/77°F	Initial	Mean	Symbols & Footnotes
15	T8	18	17.78	Med Bipin	21616	F15T8/CW	24	7500	4200	62	825	718	1,2	
					21619	F15T8/CW/6PK	6	7500	4200	62	825	718	1,2	
					21642	F15T8/DSGN50	24	7500	5000	90	600	539	[E]	
					21600	F15T8/D	24	7500	6500	76	700	653	[E]	
	T12	18	17.78	Med Bipin	21551	F15T12/DWW/RP	6	9000	3000	70	770	693	[E]	
					21542	F15T12/MW	30	9000	3000	52	770	670	1,2	
					21544	F15T12/MW/RP	6	9000	3000	52	770	670	1,2	
					21535	F15T12/DCW/RP	6	9000	4100	76	770	693	[E]	
					21532	F15T12/CW	30	9000	4200	62	750	653	1,2	
					21513	F15T12/CW 6PK	6	9000	4200	62	750	653	1,2	
					21534	F15T12/D	30	9000	6500	76	660	574	[E]	
18	T8	24	23.78	Med Bipin	23014	F18T8CW/K24	24	7500	4200	62	1190	1035	1,2	
					23012	F18T8CW/K24/1/12/UPC	12	7500	4200	62	1190	1035	1,2	
	26	25.78	Med Bipin		23025	F18T8/CW/K26PLT	3168	7500	4200	62	1280	1079	1,2	
					23027	F18T8CW/K26	24	7500	4200	62	1280	1079	1,2	
					21728	F18T8/D/K26	24	7500	6500	76	1100	957	[E]	
	28	27.78	Med Bipin		23028	F18T8CW/K28	24	7500	4200	62	1360	1131	1,2	
20	T12	30	29.78	Med Bipin	23030	F18T8CW/K30	24	7500	4200	62	1400	1200	1,2	
					22080	F20T12/CW/21	30	7500	4200	62	1020	887	1,2	
		22	21.78	Med Bipin	22085	F20T12/D/22	30	7500	6500	76	975	848	[E]	
		24	23.78	Med Bipin	22997	F20T12/G	10	9000					1,2	
					22075	F20T12/D830	30	9000	3000	80	1350	1242	[E]	
					22252	F20T12/DWW/RP	6	9000	3000	70	1300	1170	[E]	
					22131	F20T12/MW	30	9000	3000	52	1250	1088	1,2	
					22134	F20T12/MW/RP	6	9000	3000	52	1250	1088	1,2	
					22251	F20T12/D35	30	9000	3500	70	1300	1170	[E]	
					22082	F20T12/CWX	30	9000	4100	87	890	774	[E]	
					22255	F20T12/D41	30	9000	4100	70	1300	1170	[E]	
					22256	F20T12/DCW/RP	6	9000	4100	76	1300	1170	[E]	
					22078	F20T12/CW	30	9000	4200	62	1200	1044	1,2	
					22015	F20T12/CW/RP	6	9000	4200	62	1200	1044	1,2	
					22073	F20T12/CW/UPC	30	9000	4200	62	1200	1044	1,2	
					22119	F20T12/DSGN50	30	9000	5000	90	880	766	[E]	
25	T12	28	27.78	Med Bipin	22527	F25T12/CW/28	30	7500	4200	62	1670	1453	1,2	
					22333	F25T12/MW/30	30	7500	3000	52	1750	1523	1,2	
		30	29.78	Med Bipin	22528	F25T12/CW/30	30	7500	4200	62	1730	1505	1,2	
					22529	F25T12/CW/33	30	7500	4200	62	1850	1610	1,2	
					22531	F25T12/D/33	30	7500	6500	76	1600	1392	[E]	

**PREHEAT LAMPS****Standard T8 and T12 Preheat Lamps (Starter Required)**

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
30	T8	36	35.78	Med Bipin	23140	F30T8/DWW/RP	6	7500	3000	70	2360	2124	[E] 1,2
					23701	F30T8/WW	24	7500	3000	52	2150	1871	1,2
					23182	F30T8/N	24	7500	3600	86	1500	1305	[E] 1,2
					23127	F30T8/CWX	24	7500	4100	87	1550	1349	[E] 1,2
					23121	F30T8/CW	6	7500	4200	62	2180	1897	1,2
					23116	F30T8/CW	24	7500	4200	62	2180	1897	1,2
					23100	F30T8/D	24	7500	6500	76	1850	1653	[E] 1,2
40	T12	48	47.2	Med Bipin	24409	L40W/30-1	25		3000	50			1,2,43,44,47
65	T8			Med Bipin	24736	L 65W/10 S	25		6000	75			[E] 1,2,8
70	T8	70	70	Med Bipin	20804	L70W / 21 - 840	25	15000	4000	80	6550	6026	[E] 1,2,8

**SPECIALTY FLUORESCENT LAMPS****SAFELINE® Shatter Resistant Coated Lamps**

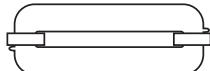
Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
32	T8	48	47.78	Med Bipin	21678	F032/735/SL	30	20000	3500	75	2745	2470	[E] [CH] 1,2,20, 21,25,26
34	T12	48	47.78	Med Bipin	24396	F34CW/SS/SL formerly F40CW/SS/SL	30	20000	4200	62	2600	2235	[E] 1,25,26,43,44, 45

**Weather-Shielded Jacketed Lamps**

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
70	T14.5	60	57.91	Recessed DC	21124	FJ60T12/CW/HO	8	12000	4200	62	5300	4293	1,2,8,51,61
110	T12	96	93.1	Recessed DC	21356	FJ96T12/CW/HO	8	12000	4200	62	8500	6885	1,2,8,51,61
128	T12	48	45.91	Recessed DC	21330	FJ48T12/CW/VHO/LT	12	10000	4200	62	6750	4725	1,2,8,54,56,61
165	T12	72	69.91	Recessed DC	21335	FJ72T12/CW/VHO/LT	8	10000	4200	62	10700	7490	1,2,8,54,56,61
215	T12	96	93.1	Recessed DC	21340	FJ96T12/CW/VHO/LT	8	10000	4200	62	15300	10710	1,2,8,54,56,61

**GRO-LUX® Lamps for Plant Growth & Aquariums**

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
15	T8	18	17.78	Med Bipin	21657	F15T8/GRO/AQ/RP	6	7500		66	325		[WL] 1,2,8,62
20	T12	24	23.78	Med Bipin	22029	F20T12/GRO/AQ/RP	6	9000			480		[WL] 1,2,8,62
					22013	F20T12/GRO/AQ/WS/RP	6	9000	3400	89	750		[WL] 1,2,8,62
30	T8	36	35.78	Med Bipin	23160	F30T8/GRO/AQ/RP	6	7500		66	800		[WL] 1,2,8,62
					24660	F40/GRO/AQ/RP	6	20000			1200		[WL] 1,2,8,43,44, 46,47
					24671	F40/GRO/AQ/WS/RP	6	20000	3400	89	1700		[WL] 1,2,8,43,44, 46,47



T2 Axial Base

Icetron

## SPECIALTY FLUORESCENT LAMPS

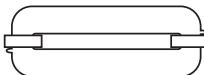
### Miniature T2 Lamps

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
6	T2	8.6	8.6	Axial	26204	FM6/830	20	10000	3000	80	330	297	1,2,8,9,11, 63,64
					26233	FM6/835	20	10000	3500	80	330	297	1,2,8,9,11, 63,64
					26213	FM6/841	20	10000	4100	80	330	297	1,2,8,9,11, 63,64
8	T2	12.6	12.6	Axial	26237	FM8/830	20	10000	3000	80	540	486	1,2,8,9,11, 63,64
					26234	FM8/835	20	10000	3500	80	540	486	1,2,8,9,11, 63,64
					26232	FM8/841	20	10000	4100	80	540	486	1,2,8,9,11, 63,64
11	T2	16.6	16.6	Axial	26239	FM11/830	20	10000	3000	80	750	675	1,2,8,9,11, 63,64
					26235	FM11/835	20	10000	3000	80	750	675	1,2,8,9,11, 63,64
					26231	FM11/841	20	10000	4100	80	750	675	1,2,8,9,11, 63,64
13	T2	20.6	20.6	Axial	26253	FM13/830	20	10000	3000	80	930	837	1,2,8,9,11, 63,64
					26291	FM13/835	20	8000	3500	80	960	837	1,2,8,9,11, 63,64
					26230	FM13/841	20	10000	4100	80	930	837	1,2,8,9,11, 63,64

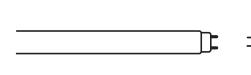
### ICETRON® Inductively Coupled, Electrodeless Lamps

The ICETRON® System is a unique adaptation of the inductively coupled electrodeless technology delivering high luminous efficacy, extremely long system life of 100,000 hours in a shape uniquely suited for a variety of lighting applications. The ICETRON lamps and ballasts are designed as dedicated systems and are not interchangeable with other lamps and ballasts. Please consult OSRAM SYLVANIA for fixture design and application assistance. An ICETRON Design Guide is available on request.

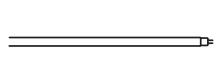
Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
70	T17	12.32	Mounting Bkts		26081 <sup>△</sup>	ICE70/835	1	100000	3500	80	6200	4588	1,2,11,65,66, 67,68,69
					26087	ICE70/835/2P/ECO	1	100000	3500	80	6200	4588	1,2,6, 11,66,67,68,69
					26082 <sup>△</sup>	ICE70/841	1	100000	4100	80	6200	4588	1,2,11,65,66, 67,68,69
					26088	ICE70/841/2P/ECO	1	100000	4100	80	6200	4588	1,2,6, 11,66,67,68,69
					26089	ICE70/850/2P/ECO	1	100000	5000	80	5950	4588	1,2,6, 11,66,67,68,69
100	T17	12.32	Mounting Bkts		26100 <sup>△</sup>	ICE100/835	1	100000	3500	80	8000	5920	1,2,11,65,66, 67,68,69
					26102	ICE100/835/2P/ECO	1	100000	3500	80	8000	5920	1,2,6, 11,66,67,68,69
					26101 <sup>△</sup>	ICE100/841	1	100000	4100	80	8000	5920	1,2,11,65,66, 67,68,69
					26103	ICE100/841/2P/ECO	1	100000	4100	80	8000	5920	1,2,6, 11,66,67,68,69



Icetron



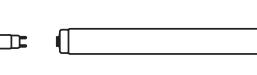
T12 Med Bipin



T5 Mini Bipin



T8 Med Bipin



T12 RDC

## SPECIALTY FLUORESCENT LAMPS

### ICETRON® Inductively Coupled, Electrodeless Lamps

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial Mean @25°C/77°F	Symbols & Footnotes
100	T17	12.32		Mounting Bkts	26105	ICE100/850/2P/ECO	1	100000	5000	80	7600 5920	1,2,6, 11,66,67,68,69
150	T17	16.28		Mounting Bkts	26150	ICE150/835	1	100000	3500	80	12000 8880	1,2,11,65,66, 67,68,69
					26152	ICE150/835/2P/ECO	1	100000	3500	80	12000 8880	1,2,6, 11,66,67,68,69
					26151	ICE150/841	1	100000	4100	80	12000 8880	1,2,11,65,66, 67,68,69
					26153	ICE150/841/2P/ECO	1	100000	4100	80	12000 8880	1,2,6, 11,66,67,68,69
					26155	ICE150/850/2P/ECO	1	100000	5000	80	11650 8880	1,2,6, 11,66,67,68,69

### Diazo (SDB)

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial Mean @25°C/77°F	Symbols & Footnotes
65	T12	48	47.78	Med Bipin	24465	F40T12/SDB/65W	30	1000				86

### Blacklight, Preheat Lamps (Starter Required)

These lamps are not intended and should not be used for diagnostic, therapeutic or cosmetic purposes.

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial Mean @25°C/77°F	Symbols & Footnotes
6	T5	9	8.91	Mini Bipin	20633	F6T5/350BL	24	7500				1,2,71,72,73
8	T5	12	11.91	Mini Bipin	20833	F8T5/350BL	24	7500				1,2,71,72,74
15	T8	18	17.78	Med Bipin	21623	F15T8/350BL	24	7500				1,2,71,72,75
20	T12	24	23.78	Med Bipin	22113	F20T12/350BL	24	9000				1,2,71,72,76
22	T12	15	14.78	Med Bipin	21445	F15T12/350BL/500/PH	30					1,2,71,72,77
25	T8	18	17.78	Med Bipin	21703	F25T8/350BL/18in	24					1,2,71,72,78
30	T8	36	35.78	Med Bipin	23113	F30T8/350BL	24	7500				1,2,71,72,79
32	T12	18	17.78	Med Bipin	21525	F18T12/350BL/700/PH	30					1,2,71,72,80

### Blacklight, Rapid Start Lamps (No Starter Required)

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial Mean @25°C/77°F	Symbols & Footnotes
40	T12	48	47.78	Med Bipin	24922	F40/350BL	30	20000				1,2,43,44,46,47, 72,81
115	T12	48	45.91	Recessed DC	25251	FR48T12/350BL/VHO/180	30	10000				1,2,72,82,83

### Blacklight Blue, Preheat Lamps (Starter Required)

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial Mean @25°C/77°F	Symbols & Footnotes
4	T5	6	5.91	Mini Bipin	20425	F4T5/BLB	24	6000				1,2,71,72
8	T5	12	11.91	Mini Bipin	20825	F8T5/BLB	24	7500				1,2,71,72
15	T8	18	17.78	Med Bipin	21625	F15T8/BLB	6	7500				1,2,71,72,84
20	T12	24	23.78	Med Bipin	22116	F20T12/BLB/RP	6	9000				1,2,71,72,84

**SPECIALTY FLUORESCENT LAMPS****Blacklight Blue, Rapid Start Lamps (No Starter Required)**

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
40	T12	48	47.78	Med Bipin	24026	F40/BLB/RP	6	20000			1,2,43,44,46,47,72,85		

**Germicidal, Preheat Lamps (Starter Required)**

Nominal Wattage	Bulb	Nominal Length (in)	MOL (in)	Base	Product Number	Ordering Abbreviation	Pkg Qty	Avg Rated Life (hrs)	CCT (K)	CRI	Approx Lumens Initial @25°C/77°F	Mean @25°C/77°F	Symbols & Footnotes
8	T5	12	11.91	Mini Bipin	20811	G8T5	24	6000			1,2,32,71,87		
15	T8	18	17.78	Med Bipin	21612	G15T8	24	7500			1,2,32,71,87		
30	T8	36	35.78	Med Bipin	23112	G30T8	24	7500			1,2,32,71,87		

## FLUORESCENT PREHEAT LAMP STARTERS

### GLOSTAT Starters

Product Number	Ordering Abbreviation	Pkg Qty	Description	Symbols & Footnotes
42812	FS-2	100	Fluorescent starter for use with F14, F15 and F20 preheat fluorescent lamps. UL, CSA	(UL)
42901	FS-2/BL/2PK	12	Fluorescent starter for use with F14, F15 and F20 preheat fluorescent lamps, bulk pack with 2 starters. UL, CSA	(UL)
44812	FS-4	100	Fluorescent starter for use with F13, F30 and F40 preheat lamps. UL, CSA	(UL)
44820	FS-4	1000	Fluorescent starter for use with F13, F30 and F40 preheat lamps. UL, CSA	(UL)
44900	FS-4/BL	100	Fluorescent starter for use with F13, F30 and F40 preheat lamps, blister pack. UL, CSA	(UL)
44902	FS-4/BL/2PK	12	Fluorescent starter for use with F13, F30 and F40 preheat lamps, blister pack with 2 starters. UL, CSA	(UL)
45812	FS-5	100	Fluorescent starter for use with F4, F6 and F8 preheat fluorescent lamps. UL, CSA	(UL)
45813	FS-5/BL/2PK	12	Fluorescent starter for use with F4, F6 and F8 preheat fluorescent lamps, blister pack with 2 starters. UL, CSA	(UL)
43813	FS-12/BL/2PK	12	Fluorescent starter for use with FC12 Circline lamps when operated by preheat ballasts and F22T8 preheat lamps, blister pack with 2 starters. UL, CSA	(UL)
42512	FS-25	100	Fluorescent starter for use with FC6 (20W) & FC8 (22W) Circline lamps when operated by preheat ballasts; F25 and F18T8 preheat lamps. UL, CSA	(UL)
42513	FS-25/BL/2PK	12	Fluorescent starter for use with FC6 (20W) & FC8 (22W) Circline lamps when operated by preheat ballasts; F25 and F18T8 preheat lamps, blister pack with 2 starters. UL, CSA	(UL)
44901	ST 111 STARTER	800	Fluorescent starter for use with 4, 6, 8, 10, 13, 15, 16, 18, 20, 22, 30, 32, 36, 38, 40, 58, 65, 80W preheat lamps; 18, 24 & 36W DULUX L lamps when operated by preheat ballasts. ENEC & VDE approved	(UL)
44903	ST 151 STARTER	800	Fluorescent starter for series operation for use with 4, 6, 8, 15, 16, 18, 20, 22W preheat lamp; 18 & 24W DULUX L lamps when operated by preheat ballasts; ENEC & VDE approved	(UL)
44910	ST 191 STARTER	800	Fluorescent starter for use with 100, 115 & 140W preheat lamps; ENEC & VDE approved	(UL)

### COP STARTERS WITH CUTOUT AND MANUAL RESET

Product Number	Ordering Abbreviation	Pkg Qty	Description	Symbols & Footnotes
42302	FS-20 (COP-20)	100	Fluorescent starter with cutout and manual reset for use with F15 & F20 preheat lamps. UL, CSA	(UL)
44102	FS-40/400 (COP-40/400)	100	Fluorescent starter with cutout and manual reset for use with F40 preheat lamps. UL, CSA	(UL)

### HID STARTER

Product Number	Ordering Abbreviation	Pkg Qty	Description	Symbols & Footnotes
44918	SE600	800	Replacement starter element (built-in spark gap type) for igniters used with Powerstar HQI metal halide and Vialox HPS lamps. Replace each time lamp is replaced.	

## SYMBOLS & FOOTNOTES FOR FLUORESCENT LAMPS

Symbol	Description
	New item introduced within the past year.
	Item will be discontinued when inventory is depleted.
	QUICK60+® warranty
	Rating given for 200mA operation.
	This fluorescent lamp generates radiant energy which is most beneficial for plant propagation and enhances vegetative and reproductive growth of many plants for home and commercial use.
	This lamp or ballast meets minimum Federal efficiency standards.
	This ECOLOGIC® lamp was designed to pass the Federal TCLP criteria for classification as non-hazardous waste in most states. Disposal regulations may vary; check local and state regulations.
	This lamp is a High Color Rendering Lamp
	Product is Canadian Standards Association approved for the Canadian market
	Product is Underwriters Laboratories listed

Footnote	Description
1	Approximate initial lumens after 100 hours operation.
2	The life ratings of fluorescent lamps are based on 3 hr. burning cycles under specified conditions and with ballast meeting ANSI specifications. If burning cycle is increased, there will be a corresponding increase in the average hours life.
3	Rule of Thumb for Compact Fluorescent Lamps: Divide wattage of incandescent lamp by 4 to determine approximate wattage of compact fluorescent lamp that will provide similar light output.
4	Minimum starting temperature: CF5: -22 degrees F; CF7: -4 degrees F; CF9: 14 degrees F; CF13DS: 14 degrees F; CF13DD: -4 degrees F; CF18DD: 5 degrees F; CF18DT: -4 degrees F; CF26: 14 degrees F.
5	2 pin CF lamps should never be installed in 4 pin sockets regardless if lamp will fit.
6	SYLVANIA ECOLOGIC® fluorescent lamps are designed to pass the Federal Toxic Characteristic Leaching Procedure (TCLP) criteria for classification as non-hazardous waste in most states. TCLP test results are available upon request. Lamp disposal regulations may vary, check your local & state regulations. For more information, please visit <a href="http://www.lamprecycle.org">www.lamprecycle.org</a>
7	CAUTION: This lamp emits ultraviolet (UV) power during operation and is in Risk Group 1 per ANSI/IESNA RP-27.3-96. Exposure at less than 0.3 meters (12 inches) should be limited; for example exposure at 0.2m (8 inches) should not exceed 4 hours in an 8 hour interval (see ANSI/IESNA RP-27.1-96). Certain medications and chemicals can increase an individual's sensitivity. Consult your physician for specific information. Protective eyewear should be worn in occupational situations involving long term exposure in close proximity to the lamp. This lamp is not intended and should not be used for diagnostic, therapeutic or cosmetic purposes.
8	Minimum starting temperature is a function of the ballast; consult the ballast manufacturer.
9	There is a NEMA supported, industry issue where T2, T4, and T5 fluorescent and compact fluorescent lamps operated on high frequency ballasts may experience an abnormal end-of-life phenomenon. This end-of-life phenomenon can result in one or both of the following: 1. Bulb wall cracking near the lamp base. 2. The lamp can overheat in the base area and possibly melt the base and socket. NEMA recommends that high frequency compact fluorescent ballasts have an end-of-life shutdown circuit which will safely and reliably shut down the system in the rare event of an abnormal end-of-life failure mode described above. The final requirements of this system are yet to be defined by ANSI. For additional information refer to NEMA papers on their WEBSITE at <a href="http://www.NEMA.org">www.NEMA.org</a> .
10	This 4-pin DULUX® lamp has an internal end-of-life mechanism (EOL) that shuts down the lamp preventing abnormal end-of life failure modes. This lamp was designed for use with high frequency ballasts that do not have their own end-of-life (lamp) sensing circuits, but it is also compatible with high frequency ballasts that have their own end-of-life (lamp) sensing circuits.
11	Lumen output and life rated on high frequency operation.
12	Amalgam compact fluorescent lamps provide at least 90% light output from 40-140 degrees F. Non-amalgam compact fluorescent lamps provide at least 90% light output from 60-100 degrees F in the base up position, the temperature range is narrower for horizontal or base down.
13	These lamps may also be operated on rapid start circuits. On rapid start circuits the 24 watt lamp operates at 27 watts and the 36 watt lamp operated at 39 watts. Rated lamp life is unchanged.
14	Lumen output rated on high frequency operation. 60 HZ operation would result in lower lumen output.
15	DULUX® F lamps can typically be operated on DULUX L and PENTRON® HO ballasts of the same/similar wattage. Check with the ballast manufacturer to verify lamp/ballast compatibility.
16	Minimum starting temperature for DULUX EL lamps is 0° F, unless otherwise specified in product literature.

## SYMBOLS & FOOTNOTES FOR FLUORESCENT LAMPS

Footnote	Description
17	DULUX® ELs meet CSA, FCC and UL requirements.
18	Caution: DULUX EL units cannot be used on dimming circuits, emergency exit fixtures or lights, electronic timers, photocells or lighted switches. In outdoor applications, use only in enclosed fixtures to avoid exposure to weather. Use only on 120V, 60 Hz circuits. Never disassemble or modify lamp. Install or remove unit from fixture by grasping plastic base. Best performance achieved when operated at 77degrees F (25 degrees C).
19	Minimum starting temperature for EL Globes & Reflectors is -22 degrees F. Minimum starting temperature for EL Triples, Twists and Mini Twists is 0 degrees F.
20	The life rating of OCTRON® and OCTRON Curvalume lamps operated on magnetic rapid start ballasts is 20,000 hours. The life rating of OCTRON and OCTRON Curvalume lamps operated on instant start electronic ballasts is 15,000 hours.
21	OCTRON lamps should be operated only with magnetic rapid start ballasts designed to operate 265 mA, T8 lamps or high frequency (electronic) ballasts that are either instant start, or rapid start, or programmed rapid start specifically designed to operate T8 lamps. OCTRON lamps may be operated on instant start ballasts with ballast factors ranging from a minimum of 0.71 to a maximum of 1.20 at the nominal ballast input voltage. When OCTRON lamps are operated in the instant start mode, the two wires or two contacts of each socket should be connected to each other. They should then be connected to the appropriate ballast lead wire using National Electric Code techniques.
22	Life rating of OCTRON XP™ lamps operated on instant start electronic ballasts is 18,000 hours based on the industry standard life test cycle of 3 hours per start.
23	The lamp lumen maintenance factor used to determine the mean lumen value was 95%. This is the lamp lumen maintenance factor at 8,000 hours, 40% of 20,000 hours. It was used to allow comparison to standard OCTRON® lamps with an average rated life of 20,000 hours. The lamp lumen maintenance factor at 40% of the 24,000 hour average rated life of this lamp, 9600 hours, would be 94%.
24	Gold OCTRON lamp has plastic tube guard which filters wavelengths less than 525nm and provides shatter protection.
25	SAFELINE® lamps satisfy the criteria of having a non-shattering covering for prevention of glass and other lamp components in your product by containment within the safety coating material. The covering must be intact or the lamp must be replaced to be in compliance. An onsite inspector will require correction if the lamps are installed improperly or not maintained properly.
26	SAFELINE lamps are intended for indoor use only. Lamps must be used in ambient temperatures below 135 degree F. The coating is designed to withstand constant operating temperatures up to 239 degrees F and has a melting point in excess of 500 degrees F. Lamps must be used with sockets that provide adequate lamp pin to socket contact. Lamps must not be used with defective ballasts sockets, or fixtures with improper wiring.
27	The lumen maintenance factor used to determine the mean lumens value was 90%, measured at 40% of the average rated life, 15,000 hours. The lumen maintenance factor at 4,000-4,800 hours (for comparison to F96T12 HO and F96T12 Slimline instant start lamps) is 91%.
28	The lamp lumen maintenance factor used to determine the mean lumen value was 95%. This is the lamp lumen maintenance factor at 8000 hours, 40% of 20,000 hours. It was used for comparison to standard OCTRON® lamps with an average rated life of 20,000 hours. The lamp lumen maintenance factor at 40% of 24,000 hours, 9600 hours, would be 94%; the lamp lumen maintenance factor at 40% of 30,000 hours, 12,000 hours, would be 93%
29	This lamp may also be operated by the OSRAM SYLVANIA QUICKTRONIC® PSN ballast (.88 BF), or the QUICTRONIC PSX ballast (.71 BF).
30	Recommended to be used on any F32 T8 Instant Start circuit. It is not recommended to be used:(1) with Rapid Start circuits unless the open circuit voltage is greater than 550V, (2) at lamp ambient temperatures below 60 degrees F or in drafty locations, (3) on low power factor ballast, (4) dimming ballast or (5) inverter operated emergency lighting systems unless any of the above equipment is specifically listed for use with the OCTRON® SUPERSAVER® 28 or 30 watt, 4 foot or 30W U-bent T8 lamp. Any of the above situations could result in lamp starting and stabilization problems.
31	The 30,000 hour average rated life of the FO32/800XPS/ECO OCTRON® lamp is based on operation at 3 hours per start on a dedicated QUICKTRONIC® PSX ballast. If operated on other ballasts for T8 OCTRON lamps, lamp life will be 20,000 hours for rapid start operation, 24,000 hours for programmed rapid start operation and 15,000 hours for instant start operation at 3 hours per start.
32	Germicidal lamps can be operated on corresponding wattage preheat ballasts.
33	Mean lumens at 8,000 hours (40% of 20,000 hours for comparison to standard OCTRON and F40 rapid start lamps). The lumen maintenance factor at 40% of average rated life (9,600 hours) is 94%.
34	Recommended to be used on any F96 T8 Instant Start circuit. It is not recommended to be used: (1) at lamp ambient temperatures below 60 degrees F or in drafty locations, (2) on low power factor ballast, or (3) inverter operated emergency lighting systems unless any of the above equipment is specifically listed for use with the OCTRON FO96 SUPERSAVER 55 watt T8 lamp. Any of the above situations could result in lamp starting and stabilization problems.

## SYMBOLS & FOOTNOTES FOR FLUORESCENT LAMPS

Footnote	Description
35	The lumen maintenance factor used to determine the mean lumen value was 95%. This is the lamp lumen maintenance factor at 6000 hours, 40% of 15,000 hours. It was used to allow comparison to standard OCTRON® lamps with an average rated life of 15000 hours. The lamp lumen maintenance factor at 40% of the 18,000 hour average rated life of this lamp, 7200 hours, would be 94%.
36	The lumen maintenance factor used to determine the mean lumens value was 92%, measured at 40% of the average rated life, 15,000 hours. The lumen maintenance factor at 4,000-4,800 hours (for comparison to F96T12 HO and F96T12 Slimline instant start lamps) is 93%.
37	Approximate length of OCTRON CURVALUME lamps is measured from base face to outside of glass bend.
38	For optimum performance OCTRON CURVALUME 1 5/8 inch leg spacing lamps in the 3000K, 3500K and 4100K color temperatures are now available only in the 82CRI version (800 series). These lamps are made to the same color standards and may be used in combination with other SYLVANIA OCTRON lamps to meet the needs of lighting installations where T8 lamps are used.
39	The 30,000 hour average rated of the OCTRON® XPS CURVALUME® lamp is based on operation at 3 hours per start by a dedicated QUICKTRONIC® PSX ballast. If operated by other ballasts for T8 OCTRON lamps, life will be the same as that of the XP version of the lamp: typically 24,000 hours for rapid or programmed rapid start operation and 18,000 hours for instant start operation at 3 hours per start.
40	The lamp lumen maintenance factor used to determine the mean lumen value was 95%. This is the lamp lumen maintenance factor at 8,000 hours, 40% of 20,000 hours. It was used to allow comparison to standard OCTRON lamps with an average rated life of 20,000 hours. The lamp lumen maintenance factor at 40% of 24,000 hours, 9600 hours, would be 94%; the lamp lumen maintenance factor at 40% of 30,000 hours, 12000 hours, would be 93%.
42	Recommended only for use on 2-lamp, 30 watt rapid-start high power factor lead, indoor ballasts that meet ANSI standards. Not intended for use: (1) at lamp ambient temperatures below 60 degrees F or in drafty locations, (2) on low power factor ballasts, (3) reduced current/reduced light output ballasts, (4) dimming ballasts, or (5) on inverter operated emergency lighting systems unless any of the above equipment is specifically listed for use with 25 watt lamps.
43	Average rated life is measured at 3 hours per start on 2-lamp, rapid start magnetic ballasts per IES recommended practice. Lamp life on single-lamp rapid start ballasts may be reduced.
44	Average life rating at 12 hours operation per start is 28,800 hours.
45	Recommended for use on one or two lamp 40 watt rapid start, high power factor, lead, indoor ballasts that meet ANSI standards. Not intended for use: (1) at lamp ambient temperatures below 60 degrees F or in drafty locations, (2) on low power factor ballasts, (3) reduced current/reduced light output ballasts, (4) dimming ballasts, or (5) on inverter operated emergency lighting systems unless any of the above equipment is specifically listed for use with 34 watt lamps.
46	The "RS" designation has been eliminated to simplify the ordering abbreviation.
47	40W Rapid Start Lamps may be used in starter operated fixtures designed for 40W preheat lamps. Life rating for preheat service is approximately 15,000 hours average.
48	Rating for OSRAM SYLVANIA Circline lamps are based on operation in Rapid Start circuits. They will also operate on preheat circuits.
49	Caution: DULUX® EL Circline units cannot be used on dimming circuits, emergency exit fixtures or lights, electronic timers, photocells or lighted switches. In outdoor applications, use only in enclosed fixtures to avoid exposure to weather. Use only on 120V, 60 Hz circuits.
50	Recommended for use on one or two lamp high power factor, lead, 8-foot lamp, high output, indoor ballasts that meet ANSI standards. Not intended for use: (1) at lamp ambient temperatures below 60 degrees F or in drafty locations, (2) on low power factor ballasts, (3) reduced current/reduced light output ballasts, (4) dimming ballasts, or (5) on inverter operated emergency lighting systems unless any of the above equipment is specifically listed for use with 95 watt lamps.
51	Average life rating at 12 hours operation per start is 18,000 hours.
52	May be operated at 100 watts (1000MA) same as F84T12/HO.
53	Labeled for cold temperature (below 60 degrees F) operation only per EPACT.
54	Average life rating at 12 hours operation per start is 15,000 hours.
55	Low temperature performance rated at 35 degrees F ambient.
56	Low temperature performance rated at 35 degrees F ambient.
57	Cool White lamp with 30 degree aperture (Power Beam).
58	Recommended for use on 2-lamp high power factor, lead, 8-foot lamp, very high output, indoor ballasts that meet ANSI standards. Not intended for use: (1) at lamp ambient temperatures below 60 degrees F or in drafty locations, (2) on low power factor ballasts, (3) reduced current/reduced light output ballasts, (4) dimming ballasts, or (5) on inverter operated emergency lighting systems unless equipment is specifically listed for use with 195 watt lamps.
59	Recommended for use on one or two lamp high power factor, lead, instant-start, indoor ballasts that meet ANSI standards. Not intended for use: (1) at lamp ambient temperatures below 60 degrees F or in drafty locations, (2) on low power factor ballasts, (3) reduced current/reduced light output ballasts, (4) dimming ballasts, or (5) on inverter operated emergency lighting systems unless any of the above equipment is specifically listed for use with 32 watt or 60 watt lamps.

## SYMBOLS & FOOTNOTES FOR FLUORESCENT LAMPS

Footnote	Description
60	For operation on instant start circuits. Use only in fixtures equipped with Instant Start Ballasts.
61	A fluorescent jacketed lamp consists of a T12 (1 1/2" diameter) lamp enclosed inside a T14.5 (1 13/16" diameter) glass jacket. A jacketed fluorescent lamp operates efficiently over a wide range of climatic conditions, including extremes of cold and strong wind in which an unjacketed (bare) lamp would be inefficient or inoperable. The jacket size provides the clearance necessary to minimize damaging lamp-jacket contact; narrow bands of rubber placed between the lamp and the jacket further prevent contact. A weather-tight seal is formed by neoprene rubber end caps.
62	Preheat lamp, starter required.
63	Due to their small diameter, T2 miniature fluorescent lamps operate at higher surface temperatures than other fluorescent lamps. To avoid possible burns, do not touch the lamp during operation and allow sufficient cooling time before removing the lamp from the fixture. The typical bulb wall temperature during operation is 120 degrees at the ends. The maximum allowable bulb wall temperature is 150 degrees C. To avoid electrical shock, turn electrical power off before removing or installing the lamp.
64	Use only with electronic ballasts which have been specifically designed to operate T2 miniature fluorescent lamps and to reliably and safely control all lamp operating modes including end-of-lamp-life sensing circuitry. If a non-conforming ballast is used, very high temperatures (350 degrees C typical) may be generated at the ends of the lamp especially during end-of-lamp-life operation, causing the lamp to crack and resulting in potential fire, electrical shock, or burn hazards.
65	Current ballast design incorporates a modular 2-Pin connector plugin from the lamp. An adapter, NAED code 26240, is available to connect 3-Pin lamp types to current (2-Pin) design ballasts.
66	Color and CRI at amalgam tip temperature of 149 degrees F (65 degrees C) for ICETRON 70 and ICETRON 100 and at 158 degrees F (70 degrees C) amalgam tip temperature for ICETRON 150.
67	ICETRON diameter is the outside diameter of the ferrite coil. ICETRON MOL is the length from the outside edge of the mounting bracket on one end to the outside edge of the mounting bracket on the opposite end.
68	WARNING: ICETRON® Inductively Coupled Electrodeless Fluorescent lamp. Read these warnings and instructions before installing and using this lamp. 1. This lamp operates at a higher temperature (130 C) than standard fluorescent lamps. To avoid the possibility of minor skin burns, do not touch lamp or metal mounting brackets during operation and allow sufficient cooling time prior to servicing, handling, or replacing lamp. 2. This lamp generates electric and magnetic fields during operation. The electric and magnetic fields generated by this lamp during operation in typical lighting applications do not pose exposure risks relative to the limits documented in ANSI C95.1. 3. To prevent electric shock, shut off the main power to the fixture and allow at least two minutes for ballast voltage to discharge before attempting to service or replace lamp. 4. To obtain optimum safety and system performance, use only with OSRAM SYLVANIA ballast. 5. To avoid potential electric shock hazard, do not use lamp if wires or insulation are cut or pulled out of connector. 6. To avoid potential electric shock hazard, do not use lamp if wires or insulation are cut or pulled out of connector.
69	WARNING: ICETRON® Inductively Coupled Electrodeless Fluorescent lamp. Read these warnings and instructions before installing and using this lamp. Instructions for Installation and Use. 1. To avoid premature lamp or ballast failure and ensure proper lamp, ballast, and system performance, make sure lamp, ballast, and fixture are properly installed. Electrical interconnects, electrical grounds, thermal management, and heat sinking specifications and requirements must be fully adhered to in all applications. (See OSRAM SYLVANIA ICETRON DESIGN GUIDE.) 2. Do not alter the electrical connector on lamp and/or ballast. To do so may adversely affect lamp operation, ballast life, and/or emission of EMI (electromagnetic interference). 3. This product may cause interference with radios, cordless telephones, and remote control devices. If interference occurs, relocate the radios, cordless telephones, and/or remote control devices away from this product.
70	The /2P version of the ICETRON lamp is supplied with a 24 inch lead wire terminated by a 2-Pin connector rather than the old 12 inch lead, 3-Pin connector design. The /2P versions are powered by QT1X100 ICE/UNV-T or QT1X150 ICE/UNV-T ballasts.
71	Starter required.
72	These lamps are not intended and should not be used for diagnostic, therapeutic, or cosmetic purposes.
73	CAUTION: This lamp emits ultraviolet (UV) power during operation and is in Risk Group 1 per ANSI/IESNA RP-27.3-96. Exposure at less than 0.35 meters (14 inches) should be limited; for example exposure at 0.25m (10 inches) should not exceed 4 hours in an 8 hour interval (see ANSI/IESNA RP-27.1-96). Certain medications and chemicals can increase an individual's sensitivity. Consult your physician for specific information. Protective eyewear should be worn in occupational situations involving long term exposure in close proximity to the lamp. This lamp is not intended and should not be used for diagnostic, therapeutic or cosmetic purposes.
74	CAUTION: This lamp emits ultraviolet (UV) power during operation and is in Risk Group 2 per ANSI/IESNA RP-27.3-96. Exposure at less than 0.45 meters (18 inches) should be limited; for example exposure at 0.3m (12 inches) should not exceed 4 hours in an 8 hour interval (see ANSI/IESNA RP-27.1-96). Certain medications and chemicals can increase an individual's sensitivity. Consult your physician for specific information. Protective eyewear should be worn in occupational situations involving long term exposure in close proximity to the lamp. This lamp is not intended and should not be used for diagnostic, therapeutic or cosmetic purposes.
75	CAUTION: This lamp emits ultraviolet (UV) power during operation and is in Risk Group 2 per ANSI/IESNA RP-27.3-96. Exposure at less than 0.55 meters (22 inches) should be limited; for example exposure at 0.4m (16 inches) should not exceed 4 hours in an 8 hour interval (see ANSI/IESNA RP-27.1-96). Certain medications and chemicals can increase an individual's sensitivity. Consult your physician for specific information. Protective eyewear should be worn in occupational situations involving long term exposure in close proximity to the lamp. This lamp is not intended and should not be used for diagnostic, therapeutic or cosmetic purposes.

## SYMBOLS & FOOTNOTES FOR FLUORESCENT LAMPS

Footnote	Description
76	CAUTION: This lamp emits ultraviolet (UV) power during operation and is in Risk Group 2 per ANSI/IESNA RP-27.3-96. Exposure at less than 0.65 meters (26 inches) should be limited; for example exposure at 0.45m (18 inches) should not exceed 4 hours in an 8 hour interval (see ANSI/IESNA RP-27.1-96). Certain medications and chemicals can increase an individual's sensitivity. Consult your physician for specific information. Protective eyewear should be worn in occupational situations involving long term exposure in close proximity to the lamp. This lamp is not intended and should not be used for diagnostic, therapeutic or cosmetic purposes.
77	CAUTION: This lamp emits ultraviolet (UV) power during operation and is in Risk Group 2 per ANSI/IESNA RP-27.3-96. Exposure at less than 0.6 meters (24 inches) should be limited; for example exposure at 0.45m (18 inches) should not exceed 4 hours in an 8 hour interval (see ANSI/IESNA RP-27.1-96). Certain medications and chemicals can increase an individual's sensitivity. Consult your physician for specific information. Protective eyewear should be worn in occupational situations involving long term exposure in close proximity to the lamp. This lamp is not intended and should not be used for diagnostic, therapeutic or cosmetic purposes.
78	CAUTION: This lamp emits ultraviolet (UV) power during operation and is in Risk Group 2 per ANSI/IESNA RP-27.3-96. Exposure at less than 0.7 meters (28 inches) should be limited; for example exposure at 0.54m (20 inches) should not exceed 4 hours in an 8 hour interval (see ANSI/IESNA RP-27.1-96). Certain medications and chemicals can increase an individual's sensitivity. Consult your physician for specific information. Protective eyewear should be worn in occupational situations involving long term exposure in close proximity to the lamp. This lamp is not intended and should not be used for diagnostic, therapeutic or cosmetic purposes.
79	CAUTION: This lamp emits ultraviolet (UV) power during operation and is in Risk Group 2 per ANSI/IESNA RP-27.3-96. Exposure at less than 0.75 meters (30 inches) should be limited; for example exposure at 0.55m (22 inches) should not exceed 4 hours in an 8 hour interval (see ANSI/IESNA RP-27.1-96). Certain medications and chemicals can increase an individual's sensitivity. Consult your physician for specific information. Protective eyewear should be worn in occupational situations involving long term exposure in close proximity to the lamp. This lamp is not intended and should not be used for diagnostic, therapeutic or cosmetic purposes.
80	CAUTION: This lamp emits ultraviolet (UV) power during operation and is in Risk Group 2 per ANSI/IESNA RP-27.3-96. Exposure at less than 0.8 meters (31 inches) should be limited; for example exposure at 0.55m (22 inches) should not exceed 4 hours in an 8 hour interval (see ANSI/IESNA RP-27.1-96). Certain medications and chemicals can increase an individual's sensitivity. Consult your physician for specific information. Protective eyewear should be worn in occupational situations involving long term exposure in close proximity to the lamp. This lamp is not intended and should not be used for diagnostic, therapeutic or cosmetic purposes.
81	CAUTION: This lamp emits ultraviolet (UV) power during operation and is in Risk Group 2 per ANSI/IESNA RP-27.3-96. Exposure at less than 1.0 meters (39 inches) should be limited; for example exposure at 0.64m (24 inches) should not exceed 4 hours in an 8 hour interval (see ANSI/IESNA RP-27.1-96). Certain medications and chemicals can increase an individual's sensitivity. Consult your physician for specific information. Protective eyewear should be worn in occupational situations involving long term exposure in close proximity to the lamp. This lamp is not intended and should not be used for diagnostic, therapeutic or cosmetic purposes.
82	Blacklight lamp with 180 degree reflector.
83	CAUTION: This lamp emits ultraviolet (UV) power during operation and is in Risk Group 2 per ANSI/IESNA RP-27.3-96. Exposure at less than 2.0 meters (79 inches) should be limited; for example exposure at 1.4m (55 inches) should not exceed 4 hours in an 8 hour interval (see ANSI/IESNA RP-27.1-96). Certain medications and chemicals can increase an individual's sensitivity. Consult your physician for specific information. Protective eyewear should be worn in occupational situations involving long term exposure in close proximity to the lamp. This lamp is not intended and should not be used for diagnostic, therapeutic or cosmetic purposes.
84	CAUTION: This lamp emits ultraviolet (UV) power during operation and is in Risk Group 1 per ANSI/IESNA RP-27.3-96. Exposure at less than 0.25 meters (10 inches) should be limited; for example exposure at 0.14m (6 inches) should not exceed 4 hours in an 8 hour interval (see ANSI/IESNA RP-27.1-96). Certain medications and chemicals can increase an individual's sensitivity. Consult your physician for specific information. Protective eyewear should be worn in occupational situations involving long term exposure in close proximity to the lamp. This lamp is not intended and should not be used for diagnostic, therapeutic or cosmetic purposes.
85	CAUTION: This lamp emits ultraviolet (UV) power during operation and is in Risk Group 1 per ANSI/IESNA RP-27.3-96. Exposure at less than 0.3 meters (12 inches) should be limited; for example exposure at 0.14m (6 inches) should not exceed 4 hours in an 8 hour interval (see ANSI/IESNA RP-27.1-96). Certain medications and chemicals can increase an individual's sensitivity. Consult your physician for specific information. Protective eyewear should be worn in occupational situations involving long term exposure in close proximity to the lamp. This lamp is not intended and should not be used for diagnostic, therapeutic or cosmetic purposes.
86	CAUTION: This lamp emits ultraviolet (UV) power during operation and is in Risk Group 1 per ANSI/IESNA RP-27.3-96. Exposure at less than 0.3 meters (12 inches) should be limited; for example exposure at 0.15m (6 inches) should not exceed 4 hours in an 8 hour interval (see ANSI/IESNA RP-27.1-96). Certain medications and chemicals can increase an individual's sensitivity. Consult your physician for specific information. Protective eyewear should be worn in occupational situations involving long term exposure in close proximity to the lamp. This lamp is not intended and should not be used for diagnostic, therapeutic or cosmetic purposes.
87	WARNING: To prevent possible serious injury, eyes and skin should not be exposed to direct or reflected ultraviolet power emitted by this lamp. This lamp is in Risk Group 3 per ANSI/IESNA RP-27.3-96. Adequate protection should be provided by clothing, gloves, opaque materials, and ordinary window glass. Although this lamp will operate in standard fluorescent fixtures, it should not be used for general lighting applications.



## QUICKTRONIC® ELECTRONIC BALLASTS THE SYSTEM SOLUTION™

### OCTRON® T8 Systems

#### Instant Start

Normal Light Output	30 to 40% energy savings over F40T12 magnetic systems with comparable light output.
High Light output	20% more lumen output than F40T12 magnetic systems while saving nearly 20% in energy. 30% more light output than standard T8 systems - fewer lamps/ballasts/fixtures required.
Low Power	77% ballast factor for reduced wattage applications. 15% energy savings over standard T8 systems and 30% over F34T12 magnetic systems.
Instant Start Professional - Universal Voltage	30 to 40% energy savings over F40T12 magnetic systems with comparable light output.
High Efficiency	Saves 6% over standard electronic T8 ballasts.
Programmed Rapid Start Professional (PROStart®) Universal Voltage	Operates linear and U bend T8 lamps in applications where extended lamp life is required. In short cycle applications, delivers over twice the number of start cycles as IS or RS Circuits
PSX T8 Universal Voltage Professional (PROStart)	Extra low (0.71) ballast factor ballast combined with high lumen output OCTRON XPS® T8 lamps delivers 15% energy savings over standard 700 series T8/88% BF systems with comparable light output
Dimming (HELIOS™) Professional	Operates linear and U-bend equivalent T8 lamps over a wide dimming range (100-5% and 100-10% models). Controlled via standard 0-10V fluorescent dimmers. Ideal for both energy management and architectural applications.
Instant Start 8 Foot T8	
Normal Light Output	Over 30% energy savings when compared to F96T12 magnetic systems.
High Light Output	30% more light output than standard T8 systems and 20% more than F96T12 systems.
Instant Start 8 foot T8 Professional	Over 30% energy savings when compared to F96T12 magnetic systems

### SLIMLINE T12 and T12HO Systems

T12 Rapid Start and T12HO Rapid Start 8 foot	15% energy savings over standard magnetic systems
T12 Instant Start 8 foot	88% Ballast Factor for most standard applications. Operates silently and provides energy savings of 10 to 15%

### PENTRON® T5 Systems (PROStart)

T5 Programmed Rapid Start Professional	Contains QUICKSENSE® end-of-lamp-life sensing technology Over 10% more lumen output than T8 systems at comparable power levels. New benchmark for 2-lamp system efficacy of 92 LPW.
T5HO Programmed Rapid Start Professional	Provides nearly twice the light output (188%) of T8 systems.
T5HO Dimming (HELIOS) Professional	Provides nearly twice the light output (188%) of T8 systems. Operates PENTRON®HO, PENTRON HO Circline and DULUX®L T5 lamps over a wide (100-1%) dimming range.

### Compact Fluorescent TT5 Systems

TT5 Instant Start	Contains QUICKSENSE end-of-lamp-life sensing technology Over 30% more lumen output than 34T12 systems at nearly the same input power.
TT5 Programmed Rapid Start Professional (PROStart)	Over 20% more lumen output than 34T12 systems.

### Compact Fluorescent T4 Systems (PROStart)

Universal Voltage	Contains QUICKSENSE end-of-lamp-life sensing technology Four mounting styles of low profile, lightweight enclosures provide simple assembly for any fixture application.
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### Fluorescent Miniature T2 Systems

Fluorescent Miniature T2 Systems	Small diameter lamp and low profile ballast create new design opportunities. Contains end-of-lamp-life sensing technology.
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### ICETRON® Systems

ICETRON® Systems	Longest life available from a fluorescent system in the market today. Lamp can last 100,000 hours, reducing maintenance costs and extending relamping cycles.
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### Electronic Metal Halide Systems

Electronic Metal Halide Systems	Small and light weight. Electronic design delivers performance levels unattainable with standard magnetic systems, including up to 15% energy savings.
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NOTE: For LED power supplies and modules, go to the LED Systems section.



## HOW TO READ PRODUCT INFORMATION - ELECTRONIC BALLASTS

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Wiring Method	Symbols & Footnotes
FO32T8	2	120	49913	QT2X32T8/120ISN-SC	10	0.90	59	0.51	Leads	④ ⑤ 1,2,3,4
FO32T8	2	277	49914	QT2X32T8/277ISN-SC	10	0.90	59	0.22	Leads	④ ⑤ 1,2,3,4

**Dimensions** Go to [www.sylvania.com](http://www.sylvania.com)

**Wiring Diagram** Go to [www.sylvania.com](http://www.sylvania.com)

**Wiring Method** Indicates if product has lead wires or wiretrap connectors

## HOW TO READ ORDERING ABBREVIATIONS

QT2X32T8/120ISN-SC	QTP3X32T8/UNV ISN-SC	QTP2X32T8/UNVPSN-SC
<b>QT</b> QT - QUICKTRONIC® <b>2x</b> Number of lamps the ballast operates <b>32T8</b> Lamp wattage or length <b>120</b> Input voltage <b>ISN</b> Starting Method/Ballast Factor <b>SC</b> Case Size	<b>QTP</b> QTP - QUICKTRONIC Professional Series <10%THD <b>3x</b> Number of lamps the ballast operates <b>32</b> Lamp wattage or length <b>T8</b> Lamp type <b>UNV</b> Input voltage (120-277V) <b>IS</b> Starting Method <b>N</b> Ballast Factor <b>SC</b> Case Size	<b>QTP</b> QTP - QUICKTRONIC Professional Series <10%THD <b>2x</b> Number of lamps the ballast operates <b>32</b> Lamp wattage or length <b>T8</b> Lamp type <b>UNV</b> Input voltage (120-277V) <b>PS</b> Starting method <b>N</b> Ballast factor <b>SC</b> Case size

## BALLAST CATEGORIES

<b>QUICKTRONIC</b>	SYLVANIA QUICKTRONIC electronic ballasts feature high power quality (<20% THD).
<b>QUICKTRONIC Professional Series</b>	SYLVANIA QUICKTRONIC Professional Series (QTP) of electronic ballasts feature high power quality. (<10% THD), lightweight, low profile designs.
<b>Number of lamps the ballast operates</b>	1x, 1/2x, 2x, 3x, 4x.
<b>Lamp type</b>	T8, T12, T12HO, T5, T5HO, TT5 & DL - DULUX® L, CF - T4 Compact Fluorescent, FM - T2 Fluorescent Miniature, ICE - ICETRON®, MH - Metal Halide.
<b>Input voltage</b>	120, 230, 277, 347, UNV - Universal 120-277.
<b>Starting Method</b>	IS - Instant start, PS - Programmed Rapid Start, DIM - Dimming, RS - Rapid Start.
<b>Ballast Factor</b>	N - Normal Ballast Factor(0.85-1.00), L - Low Ballast Factor(0.75-0.80), H - High Ballast Factor(1.13-1.20), X - Very Low Ballast Factor(0.71), PLUS - High Ballast Factor(1.15-1.20), LP - Low Ballast Factor(0.77).
<b>Case Size</b>	Go to <a href="http://www.sylvania.com">www.sylvania.com</a>
<b>Packaging configuration</b>	Distributor Pack.
<b>Leads vs Connectors</b>	Go to <a href="http://www.sylvania.com">www.sylvania.com</a>

For more information about Electronic ballast warranties, please visit the warranty section of this catalog or go to:

[www.sylvania.com/business/ballast/warranty.htm](http://www.sylvania.com/business/ballast/warranty.htm)



## T8 FLUORESCENT

### T8 INSTANT START, <20%THD

#### Normal Light Output

Operates FBO16, FO17, FBO24, FO25, FBO31, FO32, FBO32, FO40 & SUPERSAVER® Equivalents; For F40T8 operation use 1 lamp on a 2 lamp ballast, 2 lamps on a 3 lamp ballast or 3 lamps on a 4 lamp ballast

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Wiring Method	Symbols & Footnotes
FO32/XP	1	120	49911	QT1X32T8120ISNSC	10	0.90	30	0.26	Leads	G G 1,2,4,6,7,8, 9,10,11,12,13
				QT1X32T8277ISNSC						
	2	120	49913	QT2X32T8120ISNSC	10	0.90	59	0.51	Leads	G G 1,2,4,5,6, 7,8,9,10,11,12,13
				QT2X32T8277ISNSC						
				QT2X32T8347ISNSC						
	3	120	49240	QT2X32T8347ISNSC	10	0.90	59	0.18	Leads	G G 1,2,4,5,6,7, 8,9,10,11,12,13
				QT3X32T8/120-ISN-SC						
				QT3X32T8/277-ISN-SC						
	4	120	49915	QT3X32T8/347IS	10	0.90	87	0.26	Leads	G G 1,2,4,5,6,7,8, 9,10,11,12,13
				QT3X32T8/347IS						
				QT4X32T8/120-ISN-SC						
	4	277	49917	QT4X32T8/277-ISN-SC	10	0.89	114	0.95	Leads	G G 1,2,4,5,6,7, 8,9,10,11,12,13
				QT4X32T8/347IS						
				QT4X32/347IS						

#### High Light Output

Operates FBO31, FO32, FBO32 & SUPERSAVER® Equivalents

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Wiring Method	Symbols & Footnotes
FO32/XP	2	120	49923	QT2X32T8/120-ISH-SC	10	1.20	78	0.67	Leads	G G 1,2,4,6,7, 8,9,10,11,12,13
				QT2X32T8/277-ISH-SC						
				QT2X32/347PLUS						
	3	120	49525	QT3X32/120PLUS	10	1.18	112	0.96	Leads	G G 1,2,4,6,7,8, 9,10,11,12,13
				QT3X32/277PLUS						
				QHE4X32T8277ISH						
	4	277	49521	QHE4X32T8277ISH	10	1.15	148	0.53	Leads	G G 1,2,4,6,7,8, 9,10,11,12,13
				QHE4X32T8277ISH						
				QHE4X32T8277ISH						

• Data shown is based on primary lamp type.



## T8 FLUORESCENT

### T8 INSTANT START, <10%THD

High Light Output, Universal Voltage

Operates FBO31, FO32, FBO32 & SUPERSAVER® Equivalents

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Wiring Method	Symbols & Footnotes
FO32/XP	3	Universal 120-277	49845*	QTP3X32T8UNVISHSC	10	1.18	114/111	0.95/0.41	Leads	④ ⑤ 1,2,4,6,7,8,9,10

### T8 INSTANT START, <20%THD

Low Power Systems

Operates FBO16, F017, FBO24, F025, FBO31, F032, FBO32, F040 & SUPERSAVER® Equivalents; For F40T8 operation use 1 lamp on a 2 lamp ballast, 2 lamps on a 3 lamp ballast or 3 lamps on a 4 lamp ballast

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Wiring Method	Symbols & Footnotes
FO32/XP	1	120	49931*	QT1X32T8/120-ISL-SC	10	0.77	28	0.24	Leads	④ ⑤ ⑥ 1,2,4,6,7,8,9,10,11,12,13
		277	49932*	QT1X32T8/277-ISL-SC	10	0.77	26	0.10	Leads	④ ⑤ ⑥ 1,2,4,6,7,8,9,10,11,12,13
	2	120	49933	QT2X32T8/120-ISL-SC	10	0.77	51	0.44	Leads	④ ⑤ ⑥ 1,2,4,5,6,7,8,9,10,11,12,13
		277	49934	QT2X32T8/277-ISL-SC	10	0.77	51	0.19	Leads	④ ⑤ ⑥ 1,2,4,5,6,7,8,9,10,11,12,13
		347	49241	QT2X32T8347ISLSC	10	0.77	51	0.15	Leads	④ ⑤ ⑥ 1,2,4,5,6,7,8,9,10,11,12,13
	3	120	49935*	QT3X32T8/120-ISL-SC	10	0.77	76	0.66	Leads	④ ⑤ ⑥ 1,2,4,5,6,7,8,9,10,11,12,13
		277	49936	QT3X32T8/277-ISL-SC	10	0.77	76	0.29	Leads	④ ⑤ ⑥ 1,2,4,5,6,7,8,9,10,11,12,13
	4	120	49537*	QT4X32/120LP	10	0.77	98	0.84	Leads	④ ⑤ ⑥ 1,2,4,5,6,7,8,9,10,11,12,13
		277	49538	QT4X32/277LP	10	0.77	98	0.37	Leads	④ ⑤ ⑥ 1,2,4,5,6,7,8,9,10,11,12,13
		347	49225	QT4X32/347LP	10	0.77	98	0.29	Leads	④ ⑤ ⑥ 1,2,4,5,6,7,8,9,10,11,12,13

### T8 INSTANT START, <10%THD

Universal Voltage

Operates FBO16, F017, FBO24, F025, FBO31, F032, FBO32, F040 & SUPERSAVER® Equivalents; For F40T8 operation use 1 lamp on a 2 lamp ballast, 2 lamps on a 3 lamp ballast or 3 lamps on a 4 lamp ballast

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Wiring Method	Symbols & Footnotes
FO32/XP	1	Universal 120-277	49941	QTP1X32T8/UNV-ISN-SC	10	0.88	30	0.26/0.11	Leads	④ ⑤ ⑥ 1,2,4,6,7,8,9,11,12,13,17
	2	Universal 120-277	49943	QTP2X32T8/UNV-ISN-SC	10	0.88	59	0.50/0.21	Leads	④ ⑤ ⑥ 1,2,4,5,6,7,8,9,11,12,17
	3	Universal 120-277	49945	QTP3X32T8/UNV-ISN-SC	10	0.88	87	0.75/0.32	Leads	④ ⑤ ⑥ 1,2,4,5,6,7,8,9,11,12
	4	Universal 120-277	49947	QTP4X32T8/UNV-ISN-SC	10	0.88	114	0.95/0.40	Leads	④ ⑤ ⑥ 1,2,4,5,6,7,8,9,11,12,24

\* Data shown is based on primary lamp type.



## T8 FLUORESCENT

### HIGH EFFICIENCY, <10%THD

#### Instant Start

ISN, ISL: Operates FBO16, F017, FBO24, F025, FBO31, F032, FBO32 & SUPERSAVER® Equivalents

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Wiring Method	Symbols & Footnotes
F032/XP	1	Universal 120-277	49851*	QHE1X32T8UNVISNSC	10	0.88	28	0.25/0.11	Leads	④ ⑤ ⑥ ⑦, ⑧,⑨,⑪,⑫,⑯
	2	Universal 120-277	49853*	QHE2X32T8UNVISNSC	10	0.88	55	0.47/0.20	Leads	④ ⑤ ⑥ ⑦, ⑧,⑨,⑪,⑫,⑯
	3	Universal 120-277	49855*	QHE3X32T8UNVISNSC	10	0.88	83/82	0.69/0.30	Leads	④ ⑤ ⑥ ⑦, ⑧,⑨,⑪,⑫,⑯
	4	Universal 120-277	49857*	QHE4X32T8UNVISNSC	10	0.88	108/107	0.91/0.39	Leads	④ ⑤ ⑥ ⑦, ⑧,⑨,⑪,⑫,⑯
	2	Universal 120-277	49863*	QHE2X32T8UNVISLSC	10	0.78	48	0.41/0.18	Leads	④ ⑤ ⑥ ⑦, ⑧,⑨,⑪,⑫,⑯
	4	Universal 120-277	49867*	QHE4X32T8UNVISLSC	10	0.78	95	0.80/0.35	Leads	④ ⑤ ⑥ ⑦, ⑧,⑨,⑪,⑫,⑯

#### T8 PROGRAMMED START, <10%THD

##### Universal Voltage Xtreme System Low Ballast Factor

Operates FBO24, F025, FBO31, F032, FBO32

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Wiring Method	Symbols & Footnotes
F032/XPS	1	Universal 120-277	51420	QTP1X32T8/UNVPSX TC	10	0.71	25	0.21/0.09	Leads	④ ⑤ ⑥ ⑦, ⑧,⑩,⑪,⑫,⑯
	2	Universal 120-277	51425	QTP2X32T8/UNVPSX TC	10	0.71	47/46	0.40/0.17	Leads	④ ⑤ ⑥ ⑦, ⑧,⑩,⑪,⑫,⑯
	3	Universal 120-277	51430	QTP3X32T8/UNVPSX SC	10	0.71	73/71	0.59/0.25	Leads	④ ⑤ ⑥ ⑦, ⑧,⑩,⑪,⑫,⑯
	4	Universal 120-277	51435	QTP4X32T8/UNVPSX SC	10	0.71	93/91	0.78/0.33	Leads	④ ⑤ ⑥ ⑦, ⑧,⑩,⑪,⑫,⑯

##### Universal Voltage SUPERSAVER® Xtreme System Low Ballast Factor

Operates F030WSS & F028WSS Lamps

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Wiring Method	Symbols & Footnotes
F030/SS	1	Universal 120-277	51420	QTP1X32T8/UNVPSX TC	10	0.71	24	0.21/0.09	Leads	④ ⑤ ⑥ ⑦, ⑧,⑩,⑪,⑫,⑯
F028/SS	1	Universal 120-277	51420	QTP1X32T8/UNVPSX TC	10	0.71	22	0.19/0.09	Leads	④ ⑤ ⑥ ⑦, ⑧,⑩,⑪,⑫,⑯
F030/SS	2	Universal 120-277	51425	QTP2X32T8/UNVPSX TC	10	0.71	44/43	0.37/0.16	Leads	④ ⑤ ⑥ ⑦, ⑧,⑩,⑪,⑫,⑯
F028/SS	2	Universal 120-277	51425	QTP2X32T8/UNVPSX TC	10	0.71	41/40	0.35/0.15	Leads	④ ⑤ ⑥ ⑦, ⑧,⑩,⑪,⑫,⑯
F030/SS	3	Universal 120-277	51430	QTP3X32T8/UNVPSX SC	10	0.71	69/67	0.58/0.24	Leads	④ ⑤ ⑥ ⑦, ⑧,⑩,⑪,⑫,⑯
F028/SS	3	Universal 120-277	51430	QTP3X32T8/UNVPSX SC	10	0.71	64/62	0.55/0.23	Leads	④ ⑤ ⑥ ⑦, ⑧,⑩,⑪,⑫,⑯
F030/SS	4	Universal 120-277	51435	QTP4X32T8/UNVPSX SC	10	0.71	88/86	0.74/0.31	Leads	④ ⑤ ⑥ ⑦, ⑧,⑩,⑪,⑫,⑯
F028/SS	4	Universal 120-277	51435	QTP4X32T8/UNVPSX SC	10	0.71	82/80	0.70/0.30	Leads	④ ⑤ ⑥ ⑦, ⑧,⑩,⑪,⑫,⑯

\* Data shown is based on primary lamp type.



## T8 FLUORESCENT

### T8 PROGRAMMED START, <10%THD

#### Universal Voltage Normal Light Output

Operates FBO16, F017, FBO24, F025, FBO31, F032, FBO32, & SUPERSAVER® Equivalents

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Wiring Method	Symbols & Footnotes
F032/XP	1	Universal 120-277	51400*	QTP1X32T8/UNVPSNTC	10	0.88	31/30	0.26/0.11	Leads	Ⓐ Ⓛ 2,4,6,8,9,10,11,12,17,75
	2	Universal 120-277	51405	QTP2X32T8/UNVPSNTC	10	0.88	60/58	0.50/0.21	Leads	Ⓐ Ⓛ 2,4,6,8,9,10,11,12,17,75
	3	Universal 120-277	51410*	QTP3X32T8/UNVPSNSC	10	0.88	88/85	0.74/0.31	Leads	Ⓐ Ⓛ 2,4,6,8,9,10,11,12,17,75
	4	Universal 120-277	51415*	QTP4X32T8/UNVPSNSC	10	0.88	118/113	0.99/0.41	Leads	Ⓐ Ⓛ 2,4,6,8,9,10,11,12,17,75

### T8 INSTANT START, <20%THD, 8 FOOT

#### Normal Light Output

Operates F096T8 & SUPERSAVER® Equivalents

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Wiring Method	Symbols & Footnotes
F096T8	2	120	49581	QT2X59/120IS	10	0.88	110	0.95	Leads	Ⓐ Ⓛ 1,2,4,5,6,7,8,9,10,11,12,13
		277	49582	QT2X59/277IS	10	0.88	110	0.41	Leads	Ⓐ Ⓛ 1,2,4,5,6,7,8,9,10,11,12,13
		347	49217	QT2X59/347IS	10	0.88	110	0.33	Leads	Ⓐ 1,2,4,5,6,7,8,9,10,11,12,13

#### High Light Output

Operates F096T8 & SUPERSAVER® Equivalents

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Wiring Method	Symbols & Footnotes
F096T8		120	49583	QT2X59/120PLUS	6	1.19	151	1.30	Leads	Ⓐ Ⓛ 1,2,6,7,8,9,10,11,12,13
		277	49584	QT2X59/277PLUS	6	1.19	151	0.56	Leads	Ⓐ Ⓛ 1,2,6,7,8,9,10,11,12,13

### T8 INSTANT START, <10%THD, 8 FOOT

Operates F096T8 & SUPERSAVER® Equivalents

#### Normal Light Output - Universal Voltage

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Wiring Method	Symbols & Footnotes
F096T8	2	Universal 120-277	49598	QTP2X59T8/UNV-ISN-SC	20	0.88	112/110	0.93/0.40	Leads	Ⓐ Ⓛ 1,2,4,6,8,9,10,11,12,13

\* Data shown is based on primary lamp type.



## T5 LINEAR FLUORESCENT

### T5HO PROGRAMMED START, <10%THD

QTP1X54T5HOUNV PSN and QTP2X54T5HOUNV PSN operates FP54T5HO, FT55DL, FPC55; QTP1X3924T5HOUNV PSN and QTP2X3924T5HOUNV PSN operates FPC22, FT24DL, CF24DF, FP24T5HO, FT36DL, CF36DF, FPC40, FP39T5HO; QTP1X80T5HOUNV PSN operates FP80T5HO and FT80T5DL

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Wiring Method	Symbols & Footnotes
FP24T5HO	1	Universal 120-277	49100	QTP1X3924T5HOUNVPSN	10	1	29	0.23/0.10	Leads	④ ⑤ 1,2,4,6,8,9, 10,11,12,17,23
FP39T5HO	1	Universal 120-277	49100	QTP1X3924T5HOUNVPSN	10	1	42	0.36/0.15	Leads	④ ⑤ 1,2,4,6,8,9, 10,11,12,17,23
FP24T5HO	1	Universal 120-277	49101	QTP1X3924T5HOUNVPSN NL	20	1	29	0.23/0.10	Wiretrap Connectors	④ ⑤ 1,2,4,6,8,9, 10,11,12,17,23
FP39T5HO	1	Universal 120-277	49101	QTP1X3924T5HOUNVPSN NL	20	1	42	0.36/0.15	Wiretrap Connectors	④ ⑤ 1,2,4,6,8,9, 10,11,12,17,23
FP54T5HO	1	Universal 120-277	49120	QTP1X54T5HOUNVPSN	10	1	62/60	0.51/0.21	Leads	④ ⑤ 1,2,4,6,8,9, 10,11,12,17,23
			49121	QTP1X54T5HOUNVPSN NL	20	1	62/60	0.51/0.21	Wiretrap Connectors	④ ⑤ 1,2,4,6,8,9, 10,11,12,17,23
FP80T5HO	1	Universal 120-277	49151	QTP1X80T5HOUNVPSN NL	20	1	90	0.74/0.32	Wiretrap Connectors	④ ⑤ 1,2,4,6,8,9, 10,11,12,17,23
FP24T5HO	2	Universal 120-277	49110	QTP2X3924T5HOUNVPSN	10	1	55/54	0.47/0.20	Leads	④ ⑤ 1,2,4,6,8,9, 10,11,12,17,23
FP39T5HO	2	Universal 120-277	49110	QTP2X3924T5HOUNVPSN	10	1	85/83	0.76/0.32	Leads	④ ⑤ 1,2,4,6,8,9, 10,11,12,17,23
FP24T5HO	2	Universal 120-277	49111	QTP2X3924T5HOUNVPSN NL	20	1	55/54	0.47/0.20	Wiretrap Connectors	④ ⑤ 1,2,4,6,8,9, 10,11,12,17,23
FP39T5HO	2	Universal 120-277	49111	QTP2X3924T5HOUNVPSN NL	20	1	85/83	0.76/0.32	Wiretrap Connectors	④ ⑤ 1,2,4,6,8,9, 10,11,12,17,23
FP54T5HO	2	Universal 120-277	49130	QTP2X54T5HOUNVPSN	10	1	121/118	1.00/0.43	Leads	④ ⑤ 1,2,4,6,8,9, 10,11,12,17,23
			49131	QTP2X54T5HOUNVPSN NL	20	1	121/118	1.00/0.43	Wiretrap Connectors	④ ⑤ 1,2,4,6,8,9, 10,11,12,17,23

### T5 PROGRAMMED START, <10% THD

#### Universal Voltage

Operates FP14, FP21, FP28, FP35

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Wiring Method	Symbols & Footnotes
FP28T5	1	Universal 120-277	49171	QTP1x28T5UNVPSN NL	20	1.00	32	0.28/0.12	Wiretrap Connectors	④ ⑤ 1,2,4,6,8,9, 10,11,12,17,23
	2	Universal 120-277	49181	QTP2X28T5UNVPSN NL	20	1.00	65/63	0.55/0.23	Wiretrap Connectors	④ ⑤ 1,2,4,6,8,9, 10,11,12,17,23

### T5HO PROGRAMMED START, <10%THD

#### Discrete Voltage

QTP1x80T5HOPSN operates FP80T5HO

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Wiring Method	Symbols & Footnotes
FP80T5HO	1	120	49660	QTP1x80T5HO/120PSN-E	20	1.00	91	0.75	Wiretrap Connectors	④ ⑤ 2,4,6,8,9,10, 11,12,13,16
		277	49670	QTP1x80T5HO/277PSN-E	20	1.00	90	0.33	Wiretrap Connectors	④ ⑤ 2,4,6,8,9,10, 11,12,13,16

• Data shown is based on primary lamp type.



## TT5 COMPACT FLUORESCENT

### TT5 INSTANT START, <20%THD

Operates FT40DL

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Wiring Method	Symbols & Footnotes
FT40DL	1	120 277	49641 49642	QT1X40/120DL QT1X40/277DL	10	0.96	40 0.33 0.14	Leads	④ ⑤ 1,2,4,5,6,7, 8,9,10,11,12,13	
	2	120	49643	QT2X40/120DL	10	0.96	75	0.63	Leads	④ ⑤ 1,2,4,5,6,7, 8,9,10,11,12,13
		277	49644	QT2X40/277DL	10	0.96	75	0.28	Leads	④ ⑤ 1,2,4,5,6,7, 8,9,10,11,12,13
	3	120	49645	QT3X40/120DL	10	0.96	110	0.94	Leads	④ ⑤ 1,2,4,5,6,7, 8,9,10,11,12,13
		277	49646	QT3X40/277DL	10	0.96	110	0.42	Leads	④ ⑤ 1,2,4,5,6,7, 8,9,10,11,12,13

### TT5 PROGRAMMED START, <10%THD

#### Normal Light Output

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Wiring Method	Symbols & Footnotes
FT40DL	1	120	50320	QTP1X40TT5/120PSN F	20	0.88	38	0.32	Leads	④ ⑤ 2,4,6,8,9,10, 11,12,13,16
		277	50330	QTP1X40TT5/277PSN F	20	0.88	37	0.13	Leads	④ ⑤ 2,4,6,8,9,10, 11,12,13,16
	2	120	50340	QTP2X40TT5/120PSN F	20	0.88	76	0.63	Leads	④ ⑤ 2,4,6,8,9,10, 11,12,13,16
		277	50350	QTP2X40TT5/277PSN F	20	0.88	73	0.27	Leads	④ ⑤ 2,4,6,8,9,10, 11,12,13,16
	3	120	50360	QTP3X40TT5/120PSN B	20	0.88	110	0.92	Leads	④ ⑤ 2,4,6,8,9,10, 11,12,13,16
		277	50370	QTP3X40TT5/277PSN B	20	0.88	108	0.39	Leads	④ ⑤ 2,4,6,8,9,10, 11,12,13,16

## T4 COMPACT FLUORESCENT

### PROGRAMMED START UNIVERSAL VOLTAGE <10% THD

Product Number	Ordering Abbreviation	Pkg Qty	Primary Lamp Type	No. of Lamps	Ballast Factor	Input Voltage (VAC)	Input Wattage (W)	Circuit Type	Wiring Method	Symbols & Footnotes
51718	QTP 1/2X13CF/UNV BS	20		1	1.0	Universal	16	Series	Wiretrap Connectors	④ ⑤ 8,9,10,11,17,25,28
51778	QTP 1/2X13CF/UNV QS	16	13W DD/E,T/E	2	1.0	120-277	29			
51748	QTP 1/2X13CF/UNV TS	20								
51723	QTP 1/2X18CF/UNV BS	20	18W DD/E,T/E	1	1.0	Universal	20	Series	Wiretrap Connectors	④ ⑤ 8,9,10,11,17,25,28
51783	QTP 1/2X18CF/UNV QS	16		2	1.0	120-277	38			
51753	QTP 1/2X18CF/UNV TS	20								
51733	QTP 2X26CF/UNV BS	20	26W DD/E, T/E 26W DD/E, T/E 32W DT/E 42W DT/E	1	1.0	Universal	28	Series	Wiretrap Connectors	④ ⑤ 8,9,10,11,17,25,28
51793	QTP 2X26CF/UNV QS	16		2	1.0	120-277	54			
51763	QTP 2X26CF/UNV TS	20		1	0.98		35			
				1	1.0		45			
Note: QTPx26CF/UNV models now also operate one lamp as shown above										
51738	QTP 1/2XCF/UNV BM	20	26W DD/E, T/E 26W DD/E, T/E 32W DT/E 42W DT/E	1	1.02	Universal	28	Series	Wiretrap Connectors	④ ⑤ 6,8,9,10,11,17,25,28
51798	QTP 1/2XCF/UNV PM	18		2	1.02	120-277	57			
51768	QTP 1/2XCF/UNV TM	18		1	0.97		36			
				1	1.0		46			
51743	QTP 2X26/32/42CF/UNV BM	20	26W DT/E	2	1.02	Universal	54	Series	Wiretrap Connectors	④ ⑤ 6,8,9,10,11,17,25,28,
51803	QTP 2X26/32/42CF/UNV PM	18	32W DT/E	2	0.96	120-277	69			
51773	QTP 2X26/32/42CF/UNV TM	18	42W DT/E	2	0.95		94			
51740	QT 1X57CF/UNV BM	20	57W DT/E	1	1	Universal	62	Series	Wiretrap Connectors	④ ⑤ 6,8,9,10,11,17,25,28
51800	QT 1X57CF/UNV PM	18	70W DT/E	1	0.92	120-277	71			

\* Data shown is based on primary lamp type.



## T8 FLUORESCENT

### T8 DIMMING, <10%THD

0-10V

Operates FBO31, F032, FBO32

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Control Setting	Wiring Method	Symbols & Footnotes
F032/XP	1	120	50700	QTP1X32T8/120DIM5 B	20	0.94	32	0.27	100%-5%	Leads	④ ⑤ 2,4,6,8,9,10, 11,13,29,30,31
		277	50710	QTP1X32T8/277DIM5 B	20	0.94	32	0.12	100%-5%	Leads	④ ⑤ 2,4,6,8,9,10, 11,13,29,30,31
2	120	50720	QTP2X32T8/120DIM5 B	20	0.94	66	0.57	100%-5%	Leads	④ ⑤ 2,4,6,8,9,10, 11,13,29,30,31	
		277	50730	QTP2X32T8/277DIM5 B	20	0.94	66	0.25	100%-5%	Leads	④ ⑤ 2,4,6,8,9,10, 11,13,29,30,31
3	120	50750	QTP3X32T8/120DIM5-Q	20	0.88	93	0.78	100%-5%	Leads	④ ⑤ 2,4,6,8,9,10, 11,13,29,30,31	
		277	50760	QTP3X32T8/277DIM5-Q	20	0.88	93	0.34	100%-5%	Leads	④ ⑤ 2,4,6,8,9,10, 11,13,29,30,31
4	120	50770	QTP4X32T8/120DIM10 Q	20	0.88	120	1.10	100%-10%	Leads	④ ⑤ 2,4,6,8,9,10, 11,13,29,30,31	
		277	50780	QTP4X32T8/277DIM10 Q	20	0.88	120	0.55	100%-10%	Leads	④ ⑤ 2,4,6,8,9,10, 11,13,29,30,31

## T5 LINEAR FLUORESCENT

### T5HO DIMMING, <10% THD

0-10V

Operates FP54T5HO

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Control Setting	Wiring Method	Symbols & Footnotes
FP54T5HO	1	120	49671	QT1X54/120PHO-DIM	20	1.00	62	0.54	100%-1%	Wiretrap	④ ⑤ 2,4,6,8,9,10, 11,13,29,31,32
		277	49672	QT1X54/277PHO-DIM	20	1.00	61	0.23	100%-1%	Wiretrap	④ ⑤ 2,4,6,8,9,10, 11,13,29,31,32
2	120	49673	QT2X54/120PHO-DIM	20	1.00	120	1.07	100%-1%	Wiretrap	④ ⑤ 2,4,6,8,9,10, 11,13,29,31,32	
		277	49674	QT2X54/277PHO-DIM	20	1.00	117	0.45	100%-1%	Wiretrap	④ ⑤ 2,4,6,8,9,10, 11,13,29,31,32

## T8 FLUORESCENT

### T8 DIMMING, <10%THD

DALI

Operates FBO31, F032, FBO32

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Control Setting	Wiring Method	Symbols & Footnotes
F032/XP	1	Universal 120-277	51350	QTP1X32T8/UNV DALI	25	1.00	36	0.31/0.13	100% - 1%	Wiretrap	④ 8,9,10,11,17,24,31,32
	2	Universal 120-277	51352	QTP2X32T8/UNV DALI	25	1.00	72/70	0.61/0.26	100% - 1%	Wiretrap	④ 8,9,10,11,17,24,31,32

• Data shown is based on primary lamp type.



## T5 LINEAR FLUORESCENT

### T5HO DIMMING, <10%THD

#### DALI

Operates FP54T5HO

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Wiring Method	Symbols & Footnotes
FP54T5HO	1	Universal 120-277	51364*	QTP1X54T5HO/UNV DALI	25	1.00	62/61	0.52/0.22	Wiretrap Connectors	*@8,9,10,11,17,24,31,32
	2	Universal 120-277	51366*	QTP2X54T5HO/UNV DALI	25	1.00	122/119	1.05/0.44	Wiretrap Connectors	*@8,9,10,11,17,24,31,32

### T5 DIMMING, <10%THD

#### DALI

Operates FP28T5

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Wiring Method	Symbols & Footnotes
FP28T5	1	Universal 120-277	51356*	QTP1X28T5/UNV DALI	25	1.00	32	0.27/0.11	Wiretrap Connectors	*@8,9,10,11,17,24,31,32
	2	Universal 120-277	51358*	QTP2X28T5/UNV DALI	25	1.00	64/62	0.55/0.23	Wiretrap Connectors	*@8,9,10,11,17,24,31,32

## T12 FLUORESCENT

### T12 INSTANT START, <20%THD, 8 FOOT

#### Normal Light Output

Operates F60T12, F72T12, F84T12, F96T12, F96T12/SS

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Wiring Method	Symbols & Footnotes
F96T12	2	120	49881	QT2X96/120IS	10	0.88	135	1.20	Leads	*@2,4,5,6,7,9,10,11,13,16,32,63
		277	49882	QT2X96/277IS	10	0.88	135	0.52	Leads	*@2,4,5,6,7,9,10,11,13,16,32,63

### T12HO RAPID START, <20%THD, 8 FOOT

Operates F48T12/HO, F60T12/HO, F72T12HO, F84T12/HO, F96T12HO, F96T12/HO/SS

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Wiring Method	Symbols & Footnotes
F96T12/HO	2	120	49883	QT2X96/120HO	10	0.88	210	1.79	Leads	*@2,4,5,6,7,9,10,11,13,16,48,63
		277	49884	QT2X96/277HO	10	0.88	210	0.78	Leads	*@2,4,5,6,7,9,10,11,13,16,48,63

### T12 RAPID START, <10%THD

Operates F40T12

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Wiring Method	Symbols & Footnotes
F40T12	1	120	50560	QTP1X40T12/120RSN B	20	0.875	38	0.34	Leads	*@2,4,6,8,9,10,11,13,32,34
		277	50570	QTP1X40T12/277RSN B	20	0.875	38	0.14	Leads	*@2,4,6,8,9,10,11,13,32,34
	2	120	50580	QTP2X40T12/120RSN B	20	0.84	69	0.68	Leads	*@2,4,6,8,9,10,11,13,32,34

\* Data shown is based on primary lamp type.



## T12 FLUORESCENT

### T12 RAPID START, <10%THD

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Wiring Method	Symbols & Footnotes
F40T12	2	277	50590	QTP2X40T12/277RSN B	20	0.835	68	0.27	Leads	Ⓐ ⓒ 2,4,6,8,9,10, 11,13,32,34
	3	120	50600	QTP3X40T12/120RSN B	20	0.875	109	0.92	Leads	Ⓐ ⓒ 2,4,6,8,9,10, 11,13,32,34
		277	50610	QTP3X40T12/277RSN B	20	0.865	105	0.45	Leads	Ⓐ ⓒ 2,4,6,8,9,10, 11,13,32,34

## ICETRON® UNIVERSAL VOLTAGE

QT1x100ICE/UNV operates ICE70, ICE100; QT1x150ICE/UNV operates ICE100, ICE150

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Wiring Method	Symbols & Footnotes
ICE70	1	Universal 120-277	49753	QT1X100ICE/UNV-T	5	1.05	79/77	0.66/0.29	Connectors	Ⓐ ⓒ 4,6,8,9,10,11, 17,20,63,72,76,77,78
ICE100	1	Universal 120-277	49753	QT1X100ICE/UNV-T	5	1.00	106/103	0.88/0.37	Connectors	Ⓐ ⓒ 4,6,8,9,10,11, 17,20,63,72,76,77
			49772	QT1X150ICE/UNV-T	5	1.38	154/149	1.28/0.54	Connectors	Ⓐ ⓒ 2,4,6,8,9,10, 11,17,20,63,72,77
ICE150	1	Universal 120-277	49772	QT1X150ICE/UNV-T	5	1.00	161/156	1.34/0.58	Connectors	Ⓐ ⓒ 2,4,6,8,9,10, 11,17,20,63,72,77

## METAL HALIDE

### UNIVERSAL VOLTAGE

QTP1x39MH/UNV operates (M130) PAR20, PAR30, T-6; QTP1x70MH/UNV operates (M143/M98) PAR30, PAR38, ED-17, (M139) T-6; QTP1x100MH/UNV operates (M140/M90) PAR38, ED-17

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Wiring Method	Symbols & Footnotes
39W T6	1	Universal 120-277	51940	QTP 1X39MH/UNV F	10	1.00	45	0.38/0.16	Leads	Ⓐ ⓒ 4,6,8,9,10,11, 17,25,27,37,38,39
			51941	QTP 1X39MH/UNV J	10	1.00	45	0.38/0.16	Leads	Ⓐ ⓒ 4,6,8,9,10,11, 17,25,27,37,38,39
70W T6	1	Universal 120-277	51942	QTP 1X70MH/UNV F	10	1.00	80	0.68/0.29	Leads	Ⓐ ⓒ 4,6,8,9,10,11, 17,25,27,37,38,39
			51943	QTP 1X70MH/UNV J	10	1.00	80	0.68/0.29	Leads	Ⓐ ⓒ 4,6,8,9,10,11, 17,25,27,37,38,39
100W E17	1	Universal 120-277	51944	QTP 1X100MH/UNV F	10	1.00	112	0.95/0.40	Leads	Ⓐ ⓒ 4,6,8,9,10,11, 17,25,27,37,38,39
			51945	QTP 1X100MH/UNV J	10	1.00	112	0.95/0.40	Leads	Ⓐ ⓒ 4,6,8,9,10,11, 17,25,27,37,38,39

## T2 FLUORESCENT MINIATURE

Operates FM6/H, FM8/H, FM11/H, FM13/H

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Wiring Method	Symbols & Footnotes
FM13/H	2	Universal 120-277	49734	QT-FM	50	1.00	33	0.28/0.14	Wiretrap Connectors	Ⓐ ⓒ 1,4,6,8,9,10, 11,13,24,32

• Data shown is based on primary lamp type.

## HOW TO READ PRODUCT INFORMATION - MAGNETIC FLUORESCENT BALLASTS

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Power (W)	Input Current (Amps)	Symbols & Footnotes
F34T12	2	120	48001	MB2x40/120RS-SRNK	10	0.88	73	0.65	③ ④ ⑤ ① 1,2,3
F96T12/HO	2	120	48131	MB2x96/HO/120RS-SRNK	4	0.95	450	3.8	③ ④ ⑥ ① 1,2,3
F15T12	1	120	48200	MB1x15/120PH-TP	16	0.79	32	0.60	③ ④ ① 1,2,3

## HOW TO READ ORDERING ABBREVIATIONS

MB2x40/120RS-SRNK		MB2x96/VHO/120RS-SRNK		MB1x15/120PH-TP	
MB	Magnetic ballast	MB	Magnetic ballast	MB	Magnetic ballast
2x	Number of lamps the ballast operates	2x	Number of lamps the ballast operates	1x	Number of lamps the ballast operates
40	Lamp wattage or length	96	Lamp wattage or length	15	Lamp wattage or length
120	Input voltage	VHO	Starting method/lamp type	120	Input voltage
RS	Starting method/lamp type	120	Input voltage	PH	Starting method/lamp type
SRNK	Product is Shrinkwrapped	RS	Starting method/lamp type	TP	Thermal protection
	SRNK	Product is Shrinkwrapped			

## BALLAST CATEGORIES

Number of lamps the ballast operates	1x, 2x
Input voltage	120, 277
Starting method/lamp type	IS - Instant start, RS - Rapid start, PH - Preheat/trigger start, CIRC - Circline, HO - High output, VHO - Very High Output

Sylvania Magnetic Fluorescent ballasts are all rated for 60Hz input frequency.

### Rapid Start Ballasts

These ballasts operate the popular 40W T12 and T8 lamps with a smooth start to ensure proper operation. A rapid start ballast removes the need for the separate starter required with pre-heat lamps and also eliminates the flicker associated with pre-heat starting.

### Slimline Ballasts

Slimline ballasts are designed for use with single pin T12 lamps and do not require separate starters. Slimline ballasts start lamps with a high starting voltage without preheating the coils. Slimline lamps are specially constructed to utilize this starting method, and provide good system efficacy because no power is used to heat the coils.

### HO and VHO Ballasts

HO and VHO ballasts are rapid start T12 ballasts designed to operate the High Output and Very High Output T12 lamps popular in retail and industrial environments. They come in larger versions of the standard magnetic F-Can to handle the higher power loads of these systems.

### Trigger Start Ballasts

Trigger Start ballasts are designed to start a preheat lamp without the use of a starter.

### HO Sign Ballasts

HO Sign ballasts are rapid start T12 ballasts designed for cold weather and outdoor applications which provide reliable performance in sign applications.

### Circline and Pre-Heat Ballasts

These products are available for the most popular circline and pre-heat lamp types, and come in standard and thermally protected models. Pre-Heat ballasts also require the use of an external starter to ignite the lamps.

For more information about Magnetic ballast warranties, please visit the warranty section of this catalog.

## CERTIFICATIONS -



Depicts ballast is listed by Underwriters Laboratories Inc. in accordance with UL 1029 for HID ballasts, and UL 935 for Fluorescent ballasts.



Depicts ballast is listed by Underwriters Laboratories Inc. in accordance with UL 1029 and CAN/CSA - 22.2 No. 74 for Canada.



Depicts ballast is a recognized component by Underwriters Laboratories Inc. in accordance with UL 1029 for US and CAN/CSA - 22.2 No. 74 for Canada.



Depicts ballast is certified by the Canadian Standards Association in accordance with CAN/CSA - 22.2 No. 74-92.



Indicates SYLVANIA ballast complies with National Energy Conservation Amendments of 1988 (unless otherwise indicated).



Indicates SYLVANIA ballast complies with Canadian Energy Standards (unless otherwise indicated).

## RAPID START

### T12 & T10

High Power Factor; Class A Sound Rating; MB2x30 also operates F30SS; MB1x40 also operates F40, FB40, FB40SS, F40T10, F30 or F30SS; MB2x40 also operates F40, FB40, FB40SS or F40T10; MB1x40/120RES is Normal Power Factor and operates only F40T12, FC12T9 or FC16T9

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Symbols & Footnotes
F30T12	2	120	48409	<b>MB2X30/120RS-SRNK</b>	10	0.95	80	0.67	Ⓐ Ⓛ 4,6,8,32,40,41,43
			277	<b>MB2X30/277RS-SRNK</b>	10	0.95	80	0.29	Ⓐ Ⓛ 4,6,8,32,40,41,43
F34T12	1	120	48011	<b>MB1X40/120RS-SRNK</b>	10	0.91	44	0.38	Ⓔ Ⓛ 4,6,8,32,40,41,43
			277	<b>MB1X40/277RS-SRNK</b>	10	0.91	44	0.16	Ⓔ Ⓛ 4,6,8,32,40,41,43
	2	120	48001	<b>MB2X40/120RS-SRNK</b>	10	0.88	73	0.65	Ⓔ Ⓛ 4,6,8,32,40,41,43
			277	<b>MB2X40/277RS-SRNK</b>	10	0.89	77	0.29	Ⓔ Ⓛ 4,6,8,32,40,41,43
F40T12	1	120	48210	<b>MB1X40/120RES-SRNK</b>	16	0.60	31	0.53	Ⓐ Ⓛ 4,6,8,32,40,43,44,45

## INSTANT START

### T12 SLIMLINE

High Power Factor; Class B Sound Rating; MB2x48 also operates F48T12SS; MB1x96 & MB2x96 also operates F96T12SS, F84, F72, F64 or F60

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Symbols & Footnotes
F48T12	2	120	48122	<b>MB2X48/120IS-SRNK</b>	6	0.93	87	0.77	Ⓐ Ⓛ 4,6,8,12,41,43,46
			277	<b>MB2X48/277IS-SRNK</b>	6	0.93	88	0.34	Ⓐ Ⓛ 4,6,8,12,41,43,46
F96T12	1	120	48124	<b>MB1X96/120IS-SRNK</b>	6	0.93	101	0.90	Ⓐ Ⓛ 4,6,8,32,41,43,46
			277	<b>MB1X96/277IS-SRNK</b>	6	0.93	101	0.39	Ⓐ Ⓛ 4,6,8,32,41,43,46
	2	120	48018	<b>MB2X96/120IS-SRNK</b>	6	0.93	160	1.39	Ⓔ Ⓛ 4,6,8,32,41,43,46
			277	<b>MB2X96/277IS-SRNK</b>	6	0.93	162	0.60	Ⓔ Ⓛ 4,6,8,32,41,43,46

## RAPID START

### T12HO

High Power Factor; Class C Sound Rating; MB1x96HO and MB2x96HO also operates F96T12HOSS, F84HO, F72HO, F60HO, F48HO, F42HO, F36HO or F24HO. MB1/2x48/96HO also operates one F48HO, F60HO, F72HO, F84HO, F96HO or two F24HO or two F36HO

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Symbols & Footnotes
F96T12/HO	1	120	48127	<b>MB1X96/HO/120RS-SRNK</b>	4	0.95	136	1.19	Ⓐ Ⓛ 4,6,8,41,43,48,49
			277	<b>MB1X96/HO/277RS-SRNK</b>	4	0.94	138	0.53	Ⓐ Ⓛ 4,6,8,41,43,48,49
	2	120	48025	<b>MB2X96/HO/120RS-SRNK</b>	4	0.95	243	2.05	Ⓔ Ⓛ 4,6,8,41,43,48,49
			277	<b>MB2X96/HO/277RS-SRNK</b>	4	0.95	242	0.90	Ⓔ Ⓛ 4,6,8,41,43,48,49

• Data shown is based on primary lamp type.

## RAPID START

### T12HO

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Symbols & Footnotes
F48T12/HO	2	120	48151	MB1/2x48/96/HO/120RS-SRNK	4	0.95	154	1.33	SC ④ 4,6,8,43,48,49

### T12HO SIGN BALLAST

Also operates any T12HO lamp within quantity of lamp and lamp length requirements, see [www.sylvania.com](http://www.sylvania.com) for further information

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Symbols & Footnotes
F96T12/HO	1-2	120	48225	MSB-12-0412-TP	1	0.88	124	1.10	SC ④ 5,6,8,48,49,52, 53
F72T12/HO	2-4	120	48226	MSB-24-0620-TP	1	0.92	266	2.23	SC ④ 5,6,8,48,49,52, 55
			48227	MSB-24-1224-TP	1	0.83	290	2.51	SC ④ 5,6,8,48,49,52, 57
F120T12/HO	2-4	120	48228	MSB-24-2040-TP	1	0.80	471	3.96	SC ④ 5,6,8,48,49,52, 59
F72T12/HO	4-6	120	48229	MSB-46-1240-TP	1	0.78	383	3.37	SC ④ 5,6,8,48,49,52, 60
F96T12/HO	4-6	120	48232	MSB-46-2448-TP	1	0.85	588	4.92	SC ④ 5,6,8,48,49,52, 61

## COMPONENTS

### J-BOX COVER

Cover for Sign & F-Can Ballasts

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Symbols & Footnotes
			48275*	JBOXCOVER (FOR SIGN AND FCAN BALLASTS)	2				

## RAPID START

### T12VHO

High Power Factor; Class D Sound Rating: MB1x96VHO also operates F96T12VHOSS, F72T12VHO, F60T12VHO or F48T12VHO; MB2x96VHO also operates F96T12VHOSS or F72T12VHO

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Symbols & Footnotes
F96T12/VHO	1	120	48129	MB1X96/VHO/120RS-SRNK	4	0.92	218	1.96	SC ④ 4,6,8,41,43,48, 49
		277	48130	MB1X96/VHO/277RS-SRNK	4	0.91	212	0.81	SC ④ 4,6,8,41,43,48, 49
2	120	48131	MB2X96/VHO/120RS-SRNK	4	0.95	452	3.80	SC ④ 4,6,8,41,43,48, 49	
		277	48132	MB2X96/VHO/277RS-SRNK	4	0.93	423	1.57	SC ④ 4,6,8,41,43,48, 49

\* Data shown is based on primary lamp type.

## **PREHEAT/TRIGGER START**

T5, T8 & T12

Normal Power Factor; Class A Sound Rating; MB1x8 also operates F6T5 & F4T5; MB1x15, MB1x20 & MB2x20 operates F14T12, F15T12, F20T12, F14T8 & F15T8

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Symbols & Footnotes
F8T5	1	120	48475	MB1X8/120PH/TP/S	40	0.97	10	0.16	Ⓐ Ⓛ 4,6,8,32,43
F15T12	1	120	48200	MB1X15/120PH/TP	16	0.98	33	0.69	Ⓐ Ⓛ 4,6,8,32,40,43,45
F20T12	1	120	48201	MB1X20/120PH/TP	40	0.83	22	0.34	Ⓐ Ⓛ 4,6,8,32,62
			48202	MB1X20/120PH	40	0.83	22	0.34	Ⓐ Ⓛ 6,8,32,62
	2	120	48203	MB2X20/120PH/TP	16	0.58	41	0.47	Ⓐ Ⓛ 4,6,8,32,40,43

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## RAPID START

T8

High Power Factor; Class A Sound Rating; MB1x17 also operates FBO16; MB1x25/32-LW also operates FO25; MB1x25/32 & MB2x25/32 also operates FBO32, FBO31, FO25 & FBO24

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Symbols & Footnotes
F017	1	120	48312*	MB1X17/120RS	10	1.05	31	0.27	Ⓐ Ⓛ 4,6,8,32,40
F032	1	120	48096*	MB1x25/32/120RS-LW	10	0.84	33	0.29	Ⓐ Ⓛ 4,6,8,32,40
	1	120	48240*	MB1X25/32/120RS-SRNK	10	0.94	44	0.39	Ⓐ Ⓛ 4,6,8,32,40,43
F032	1	277	48241*	MB1X25/32/277RS-SRNK	10	0.93	43	0.16	Ⓐ Ⓛ 4,6,8,32,40,43
	2	120	48242*	MB2X25/32/120RS-SRNK	10	0.94	74	0.63	Ⓐ Ⓛ 4,6,8,32,40,43
		277	48243*	MB2X25/32/277RS-SRNK	10	0.93	75	0.28	Ⓐ Ⓛ 4,6,8,32,40,43

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T9 CIRCLINE

Normal Power Factor; Class A Sound Rating; MB1x32 also operates FC16T9

Primary Lamp Type	No of Lamps	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	Ballast Factor	Input Wattage (W)	Input Current (Amps)	Symbols & Footnotes
FC8T9	1	120	48230	MB1X22/120CIRC	16	0.82	29	0.63	Ⓐ Ⓛ 4,6,8,32,40,43
FC12T9	1	120	48231	MB1X32/120CIRC	16	0.62	31	0.61	Ⓐ Ⓛ 4,6,8,32,40,43

- Data shown is based on primary lamp type.

## HOW TO READ PRODUCT INFORMATION - MAGNETIC HID BALLAST

Primary Lamp Type	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	ANSI Code	Input Power (W)	Max. Input Current (Amps)	Open Circuit Voltage	Circuit Type	Symbols & Footnotes
M250PS	120/208/ 240/277/ 480	47282	M250/SUPER5-PS-KIT	1	M138	288	250/1.40 1.30/1.10 0.65	290	CWA	20,22, 24,25
H100	120/208/ 240/277	46522	H100-MULTI-KIT	1	H38	120	1.05/0.60 0.52/0.45	250	CWA	20,22, 24,25
LU100	120	47304	LU100/120R	1	S54	120	2.70	120	Reactor/NPF	21,22

### Circuit Type

CWA - Constant wattage autotransformer, CWI - Constant wattage isolated,  
HX-HPF - (Autolag) High reactance autotransformer, R-NPF - Reactor normal power factor

## HOW TO READ ORDERING ABBREVIATIONS

M250/SUPER5-PS-KIT		H100-MULTI-KIT		LU100/120R	
M	Lamp Type-METALARC Metal Halide	H	Lamp Type-Mercury	LU	Lamp Type-LUMALUX High Pressure Sodium
250	Lamp wattage	100	Lamp wattage	100	Lamp wattage
SUPER5	Input Voltage	MULTI	Input Voltage	120	Input Voltage
PS	Pulse Start	KIT	Packaging configuration	R	Ballast Type-Reactor Ballast
KIT	Packaging configuration				

## BALLAST CATEGORIES

Lamp type	M-METALARC metal halide, LU-LUMALUX High Pressure Sodium, H-Mercury
Input voltage	Super5 - 120/208/240/277/480; Multi-120/208/240/277; 120/240; 120; 277; 480; 480/120T (480/120TAP)

SYLVANIA HID Ballasts are available in easy-to-use replacement kits for the range of metal halide, high pressure sodium and mercury lamps. These ballast kits help to eliminate the hassles of identifying what's required for a replacement or upgrade by providing an array of components in each kit. New Super5 Kits can be used for multiple taps styles 120/208/240/277 & 480V application minimizing hassles associated with selecting the wrong voltage product. All are rated for 60Hz input frequency and utilize dry film capacitors where applicable.

### METALARC® Metal Halide Magnetic Ballast Kits

Named for SYLVANIA METALARC lamps, these kits include core and coil, capacitors, ignitors (where required), brackets and mounting hardware. Available for a broad range of metal halide and pulse start metal halide lamps, most kits are also suitable for use with like wattage mercury lamps. Each is clearly labeled with the appropriate combinations.

### METALARC Indoor Enclosed HID Ballasts

New Indoor Enclosed ballasts for indoor applications where remote mounting is required. Remote mounting allows for cooler ballast operation, easy replacement and minimal noise.

### F-Can HID Ballasts

New F-Can ballasts for indoor applications operate a range of metal halide, pulse start metal halide and high pressure sodium lamps with minimal noise. Available in a fluorescent can type ballast and are thermally protected.

### LUMALUX® High Pressure Sodium Magnetic Ballast Kits

These kits, named for the SYLVANIA LUMALUX high pressure sodium lamps, include core and coil, capacitors, ignitors, brackets and mounting hardware.

### LUMALUX High Pressure Sodium Reactor Ballasts

Available for low wattage lamps, these ballasts are the simple reactor ballasts popular for 120V applications. Power factor correction capacitors are available for installations requiring higher power factors than normal.

### MERCURY Magnetic Ballast Kits

These kits are available for the array of available mercury lamps and include core and coil, capacitor, brackets and mounting hardware. Some models also offer dual lamp capability.

For more information about Magnetic ballast warranties, please visit the warranty section of this catalog.

## METALARC® METAL HALIDE CORE & COIL KITS

Primary Lamp Type	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	ANSI Code	Input Wattage (W)	Input Current (Amps)	Open Circuit Voltage	Circuit Type	Symbols & Footnotes
M175	120/208/ 240/277/480	47243	M175/SUPER5-KIT	1	M57, H39	210	1.96/1.15/ 1.00/0.86/0.54	305	CWA	■8,14,20,48,65
	120/208/ 240/277	47735	M175/MULTI-KIT	1	M57, H39	210	1.80/1.04/ 0.90/0.78	305	CWA	■8,4,20,48,65
	480	47035	M175/480-KIT	1	M57, H39	210	0.54	305	CWA	■8,14,20,48,65
	480/120TAP	47253	M175/480/120T-KIT	1	M57, H39	210	0.54	305	CWA	■8,14,20,48,65
	120/277	47254	M175/120/277-KIT	1	M57, H39	210	1.80/0.78	305	CWA	■8,14,20,48,65
M250	120/208/ 240/277/480	47265	M250/SUPER5-KIT	1	M58, H37	290	2.50/1.45/ 1.25/1.10/0.63	300	CWA	■8,14,20,48,65
	120/208/ 240/277	47737	M250/MULTI-KIT	1	M58, H37	290	2.50/1.45/ 1.25/1.10	300	CWA	■8,14,20,48,65
	480	47611	M250/480-KIT	1	M58, H37	290	0.63	300	CWA	■8,14,20,48,65
	480/120TAP	47268	M250/480/120T-KIT	1	M58, H37	290	0.63	300	CWA	■8,14,20,48,65
	120/208/ 240/277	47049	M250/MULTI 3X4-KIT	1	M58, H37	294	3.16/2.15/ 1.60/1.40	300	CWA	■8,14,20,48,65
	480	47050	M250/480-3X4-KIT	1	M58, H37	294	0.86	300	CWA	■8,14,20,48,65
M400	120/208/ 240/277/480	47338	M400/SUPER5-KIT	1	M59, H33	458	4.00/2.30/ 2.00/1.70/1.00	300	CWA	■8,14,20,48,65
	120/208/ 240/277	47739	M400/MULTI-KIT	1	M59, H33	458	4.00/2.30/ 2.00/1.70	300	CWA	■8,14,20,48,65
	480	47065	M400/480-KIT	1	M59, H33	458	1.00	300	CWA	■8,14,20,48,65
	480/120TAP	47394	M400/480/120T-KIT	1	M59, H33	458	1.00	300	CWA	■8,14,20,48,65
	120/240	47075	M2X400/120/240-KIT	1	M59, H33	880	7.90/3.95	630	CWA	■8,14,20,48,65
M1000	120/208/ 240/277/480	47427	M1000/SUPER5-KIT	1	M47, H36	1080	9.20/5.30/ 4.60/4.00/2.30	420	CWA	■8,14,20,48,65
	120/208/ 240/277	47744	M1000/MULTI-KIT	1	M47, H36	1080	9.00/5.20/ 4.50/3.90	421	CWA	■8,14,20,48,65
	480	47655	M1000/480-KIT	1	M47, H36	1080	2.30	421	CWA	■8,14,20,48,65
	480/120TAP	47432	M1000/480/120T-KIT	1	M47, H36	1080	2.30	421	CWA	■8,14,20,48,65
M1500	120/208/ 240/277	46808	M1500/MULTI-KIT	1	M48	1605	13.50/7.80/ 6.75/5.85	435	CWA	■8,14,20,48,65
	480	47095	M1500/480-KIT	1	M48	1605	3.50	435	CWA	■8,14,20,48,65
	480/120TAP	47434	M1500/480/120T-KIT	1	M48	1605			CWA	■8,14,20,48,65

## PULSE START CORE & COIL KITS

Primary Lamp Type	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	ANSI Code	Input Wattage (W)	Input Current (Amps)	Open Circuit Voltage	Circuit Type	Symbols & Footnotes
M39	120/208/ 240/277	47001	M35/MULTI-HQ/CI-KIT	1	M130	58	0.50/0.29/ 0.25/0.22	215	CWA	■8,14,20,48,50,65
	120/277	47203	M35/120/277-KIT	1	M130	54	1.02/0.45	235	HX-HPF	■8,14,20,48,50,65
M50	120/208/ 240/277	47007	M50/MULTI-KIT	1	M110	67	1.33/0.77/ 0.68/0.58	250	HX-HPF	■8,14,20,48,50,65
	120/277	47204	M50/120/277-KIT	1	M110	67	1.33/0.58	250	HX-HPF	■8,14,20,48,50,65
M70	120/208/ 240/277	47013	M70/MULTI-KIT	1	M98	95	1.70/0.96/ 0.83/0.72	250	HX-HPF	■8,14,20,48,50,65

• Data shown is based on primary lamp type.

## METALARC® METAL HALIDE PULSE START CORE & COIL KITS

Primary Lamp Type	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	ANSI Code	Input Wattage (W)	Input Current (Amps)	Open Circuit Voltage	Circuit Type	Symbols & Footnotes
M70	120/277	47217	M70/120/277-KIT	1	M98	95	1.70/1.72	250	HX-HPF	FL8,14,20,48,50,65
	120/208/ 240/277	47645	M70/MULTI-HQ/CI-KIT	1	M98, M85, M139, M143	95	0.94/0.55/ 0.48/0.41	215	CWA	FL8,14,20,48,50,65
M100	120/208/ 240/277	47019	M100/MULTI-KIT	1	M90	130	2.16/1.25/ 1.10/0.95	250	HX-HPF	FL8,14,20,48,50,65
	120/277	47219	M100/120/277-KIT	1	M90	130	2.16/0.95	250	HX-HPF	FL8,14,20,48,50,65
M150	120/208/ 240/277	47682	M150/MULTI-PS-KIT	1	M102	185	3.60/2.06/ 1.78/1.55	260	HX-HPF	FL8,14,20,48,50,65
	240/277	47640	M150/MULTI-PS-CWA-KIT	1	M81, M102, M142	189	1.80/1.03/ 0.90/0.78	215	CWA	FL8,14,20,48,50,65
	120/277	47228	M150/120/277-PS-KIT	1	M102	185	3.60/1.55	260	HX-HPF	FL8,14,20,48,50,65
	120/208/ 240/277	47229	M150/MULTI-KIT	1	M81	185	3.60/2.05/ 1.80/1.55	245	HX-HPF	FL8,14,20,48,50,65
M175/PS	120/208/ 240/277	47686	M175/MULTI-PS-KIT	1	M137, M152	208	1.80/1.10/ 0.90/0.80	275	CWA	FL8,14,20,48,50,65
	480	46801	M175/480-PS-KIT	1	M137, M152	208	0.50	275	CWA	FL8,14,20,48,50,65
M200/PS	120/208/ 240/277	47690	M200/MULTI-PS-KIT	1	M136	232	2.00/1.20/ 1.00/0.90	270	CWA	FL8,14,20,48,50,65
	480	46802	M200/480-PS-KIT	1	M136	232	0.50	270	CWA	FL8,14,20,48,50,65
	480/120TAP	47259	M200/480/120T-PS-KIT	1	M136	232	0.50	270	CWA	FL8,14,20,48,50,65
HQI250	120/277	47273	M250/120/277-KIT	1	M80	290	5.50/2.30	240	HX-HPF	FL8,14,20,48,50,65
M250/PS	120/208/ 240/277/480	47282	M250/SUPER5-PS-KIT	1	M138, M153	288	2.50/1.40/ 1.30/1.10/0.65	290	CWA	FL8,14,20,48,50,65
	120/208/ 240/277	47112	M250/MULTI-PS-KIT	1	M138, M153	288	2.50/1.40/ 1.30/1.10	280	CWA	FL8,14,20,48,50,65
	480	47106	M250/480-PS-KIT	1	M138, M153	288	0.65	290	CWA	FL8,14,20,48,50,65
	480/120TAP	47283	M250/480/120T-PS-KIT	1	M138, M153	288	0.65	290	CWA	FL8,14,20,48,50,65
M320/PS	120/208/ 240/277	47676	M320/MULTI-PS-KIT	1	M132	368	3.2/1.9/ 1.62/1.4	270	CWA	FL8,14,20,48,50,65
	480	46803	M320/480-PS-KIT	1	M132, M154	368	0.90	270	CWA	FL8,14,20,48,50,65
	480/120TAP	47303	M320/480/120T-PS-KIT	1	M132, M154	368	1.90	270	CWA	FL8,14,20,48,50,65
M350/PS	120/208/ 240/277	47695	M350/MULTI-PS-KIT	1	M131	400	3.40/2.00/ 1.70/1.50	275	CWA	FL8,14,20,48,50,65
	480	47697	M350/480-PS-KIT	1	M131	400	0.90	275	CWA	FL8,14,20,48,50,65
	480/120TAP	47337	M350/480/120T-PS-KIT	1	M131	400	0.90	275	CWA	FL8,14,20,48,50,65
M400/PS	120/208/ 240/277/480	47400	M400/SUPER5-PS-KIT	1	M135, M155	452	3.80/2.20/ 1.90/1.70/1.00	275	CWA	FL8,14,20,48,50,65
	120/208/ 240/277	47132	M400/MULTI-PS-KIT	1	M135, M155	452	3.80/2.20/ 1.90/1.70	270	CWA	FL8,14,20,48,50,65
	480	47138	M400/480-PS-KIT	1	M135, M155	452	1.00	270	CWA	FL8,14,20,48,50,65
	480/120TAP	47403	M400/480/120T-PS-KIT	1	M135, M155	452	1.00	275	CWA	FL8,14,20,48,50,65
M450/PS	120/208/ 240/277	47405	M450/MULTI-PS-KIT	1	M144	508	4.30/2.50/ 2.20/1.90	275	CWA	FL8,14,20,48,50,65
	480	46804	M450/480-PS-KIT	1	M144	512	1.10	275	CWA	FL8,14,20,48,50,65

• Data shown is based on primary lamp type.

## METALARC® METAL HALIDE PULSE START CORE & COIL KITS

Primary Lamp Type	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	ANSI Code	Input Wattage (W)	Input Current (Amps)	Open Circuit Voltage	Circuit Type	Symbols & Footnotes
M450/PS	480/120TAP	47408	M450/480/120T-PS-KIT	1	M144	505	1.10	275	CWA	¶8,14,20,48,50,65
M750/PS	120/208/ 240/277	47717	M750/MULTI-PS-KIT	1	M149	818	7.00/4.00/ 3.50/3.00	360	CWA	¶8,14,20,48,50,65
	120/277/ 347/480	47409	M750/120/277/347/480-PS-KIT	1	M149	818	7.00/3.00/ 2.45/1.75	360	CWA	¶8,14,20,48,50,65
	480	47718	M750/480-PS-KIT	1	M149	818	1.75	360	CWA	¶8,14,20,48,50,65
M1000/PS	120/208/ 240/277	47416	M1000/MULTI-PS-KIT	1	M141	1080	9.00/5.20/ 4.50/3.90	421	CWA	¶8,14,20,48,50,65
	120/277/ 347/480	47417	M1000/120/277/347/480-PS-KIT	1	M141	1080	9.00/3.90/ 3.20/2.40	421	CWA	¶8,14,20,48,50,65
	480	46805*	M1000/480-PS-KIT	1	M141	1080	2.30	421	CWA	¶8,14,20,48,50,65
HQI2000	277/347/ 480	47090	M2000/277/347/480-HQI-RL-KIT	1		2200	8.50/6.60/ 4.90	370	Reg. Lag	¶8,14,20,48,50,65

### F-CAN

Primary Lamp Type	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	ANSI Code	Input Wattage (W)	Input Current (Amps)	Open Circuit Voltage	Circuit Type	Symbols & Footnotes
M175	120/277	47743	M175/120/277/F-CAN	1	M57, H39	205	1.75/0.75	310	CWA	¶6,8,33,48,68,69
M250	120/277	47751	M250/120/277/F-CAN	1	M58, H37	295	2.60/1.10	310	CWA	¶6,8,33,48,68,69
M400	120/277	47759	M400/120/277/F-CAN	1	M59, H33	460	3.90/1.70	300	CWA	¶6,8,47,48,68,69

### PULSE START F-CAN

Primary Lamp Type	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	ANSI Code	Input Wattage (W)	Input Current (Amps)	Open Circuit Voltage	Circuit Type	Symbols & Footnotes
M39	120/277	47680	M35/120/277/F-CAN	1	M130	54	1.05/0.45	235	HX-HPF	¶6,8,11,48,50,68,69
M50	120/277	47195*	M50/120/277/F-CAN	1	M110	67	1.33/0.58	250	HX-HPF	¶6,8,33,48,50,68,69
M70	120/277	47693	M70/120/277/F-CAN	1	M139	95		HX-HPF	¶6,8,48,50,68,69	
		47694	M70/120/277/F-CAN	1	M98, M143, M139	94	1.95/0.85	250	HX-HPF	¶6,8,33,48,50,68,69
M100	120/277	47734	M100/120/277/F-CAN	1	M90	125	2.50/1.07	260	HX-HPF	¶6,8,33,48,50,68,69
M150	120/277	47738	M150-PS/120/277/F-CAN	1	M102	180		CWA		¶6,8,48,50,68,69
M175/PS	120/277	47741	M175-PS/120/277/F-CAN	1	M137	205		CWA		¶6,8,48,50,68,69
M200/PS	120/277	47747	M200-PS/120/277/F-CAN	1	M136	232		CWA		¶6,8,48,50,68,69
M250/PS	120/277	47749	M250-PS/120/277/F-CAN	1	M138, M153	295	2.70/1.17	300	CWA	¶6,8,33,48,50,68,69
M320/PS	120/277	47753	M320-PS/120/277/F-CAN	1	M132, M154	375	3.35/1.46	300	CWA	¶6,8,47,48,50,68,69
M400/PS	120/277	47757	M400-PS/120/277/F-CAN	1	M135, M155	465	4.10/1.80	285	CWA	¶6,8,47,48,50,68,69

### INDOOR ENCLOSED

Primary Lamp Type	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	ANSI Code	Input Wattage (W)	Input Current (Amps)	Open Circuit Voltage	Circuit Type	Symbols & Footnotes
M175	120/208/ 240/277	47153	M175/MULTI-I/D	1	M57, H39	210	1.80/1.04/ 0.90/0.78	305	CWA	¶6,8,48,71

\* Data shown is based on primary lamp type.

## METALARC® METAL HALIDE INDOOR ENCLOSED

Primary Lamp Type	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	ANSI Code	Input Wattage (W)	Input Current (Amps)	Open Circuit Voltage	Circuit Type	Symbols & Footnotes
M250	120/208/ 240/277	47158	M250/MULTI-I/D	1	M58, H37	290	2.50/1.45/ 1.25/1.10	300	CWA	¶ 6,48,71
M400	120/208/ 240/277	47172	M400/MULTI-I/D	1	M59, H33	458	4.00/2.30/ 2.00/1.70	300	CWA	¶ 6,48,71
M1000	120/208/ 240/277	47207	M1000/MULTI-I/D	1	M47, H36	1080	9.00/5.20/ 4.50/3.90	421	CWA	¶ 6,48,71

## LUMALUX® HIGH PRESSURE SODIUM

### CORE & COIL REACTOR

Primary Lamp Type	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	ANSI Code	Input Wattage (W)	Input Current (Amps)	Open Circuit Voltage	Circuit Type	Symbols & Footnotes
LU35	120	47269	LU35/120R	12	S76	45	1.10	120	R-NPF	¶ 8,50,65,72
		47537	LU35/120R-INT	12	S76	45	1.10	120	R-NPF	¶ 8,50,65,72,73
LU50	120	47274	LU50/120R	12	S68	60	1.45	120	R-NPF	¶ 8,50,65,72
		47548	LU50/120R-INT	12	S68	60	1.45	120	R-NPF	¶ 8,50,65,72,73
LU70	120	47284	LU70/120R	12	S62	81	1.95	120	R-NPF	¶ 8,50,65,72
		47558	LU70/120R-INT	12	S62	81	1.95	120	R-NPF	¶ 8,50,65,72,73
LU100	120	47304	LU100/120R	12	S54	120	2.70	120	R-NPF	¶ 8,50,65,72
		47585	LU100/120R-INT	12	S54	120	2.70	120	R-NPF	¶ 8,50,65,72,73
LU150	120	47319	LU150/120R	12	S55	170	4.10	120	R-NPF	¶ 8,50,65,72
		47616	LU150/120R-INT	12	S55	170	4.10	120	R-NPF	¶ 8,50,65,72,73

### CORE & COIL KITS

Primary Lamp Type	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	ANSI Code	Input Wattage (W)	Input Current (Amps)	Open Circuit Voltage	Circuit Type	Symbols & Footnotes
LU35	120/240	47271	LU35/120/240-KIT	1	S76	55			HX-HPF	¶ 8,14,20,50,65,72
LU50	120/277	47549	LU50/120/277-KIT	1	S68	66	1.05/0.45	120	HX-HPF	¶ 8,14,20,50,65,72
LU70	120/208/ 240/277	47301	LU70/MULTI-KIT	1	S62	91	1.43/0.85/ 0.72/0.62	120	HX-HPF	¶ 8,14,20,50,65,72
	480	47579	LU70/480-KIT	1	S62	91	0.35	120	HX-HPF	¶ 8,14,20,50,65,72
	120/277	47571	LU70/120/277-KIT	1	S62	91	1.43/0.62	120	HX-HPF	¶ 8,14,20,50,65,72
LU100	120/208/ 240/277	47316	LU100/MULTI-KIT	1	S54	128	2.00/1.16/ 1.00/0.87	120	HX-HPF	¶ 8,14,20,50,65,72
	480	47593	LU100/480-KIT	1	S54	128	0.50	120	HX-HPF	¶ 8,14,20,50,65,72
	120/277	47592	LU100/120/277-KIT	1	S54	128	2.00/0.87	120	HX-HPF	¶ 8,14,20,50,65,72
LU150	120/208/ 240/277	47335	LU150/MULTI-KIT	1	S55	188	2.81/1.65/ 1.45/1.25	120	HX-HPF	¶ 8,14,20,50,65,72
	480	47619	LU150/480-KIT	1	S55	188	0.80	120	HX-HPF	¶ 8,14,20,50,65,72
	480/120TAP	47621	LU150/480/120T-KIT	1	S55	190			HX-HPF	¶ 8,14,20,50,65,72
	120/277	47617	LU150/120/277-KIT	1	S55	188	2.81/1.25	120	HX-HPF	¶ 8,14,20,50,65,72
	480	47623	LU150/480-CWA-KIT	1	S55	185	0.40	110	CWA	¶ 8,14,20,50,65,72
LU200	120/208/ 240/277	47628	LU200/MULTI-KIT	1	S66	230	1.96/1.13/ 0.98/0.85	182	CWA	¶ 8,14,20,50,65,72

• Data shown is based on primary lamp type.

## LUMALUX® HIGH PRESSURE SODIUM CORE & COIL KITS

Primary Lamp Type	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	ANSI Code	Input Wattage (W)	Input Current (Amps)	Open Circuit Voltage	Circuit Type	Symbols & Footnotes
LU200	480	47631	LU200/480-KIT	1	S66	230	0.50	182	CWA	¶8,14,20,50,65,72
LU250	120/208/ 240/277/480	47634	LU250/SUPER5-KIT	1	S50	295	2.50/1.50/ 1.30/1.10/0.65	190	CWA	¶8,14,20,50,65,72
	120/208/ 240/277	47357	LU250/MULTI-KIT	1	S50	295	2.50/1.50/ 1.30/1.10	185	CWA	¶8,14,20,50,65,72
	480	47358	LU250/480-KIT	1	S50	295	0.65	185	CWA	¶8,14,20,50,65,72
	480/120TAP	47637	LU250/480/120T-KIT	1	S50	295			CWA	¶8,14,20,50,65,72
	120/277	47642	LU250/120/277-KIT	1	S50	295	2.50/1.10	185	CWA	¶8,14,20,50,65,72
LU310	120/208/ 240/277	47643	LU310/MULTI-KIT	1	S67	355	3.00/1.73/ 1.50/1.30	185	CWA	¶8,14,20,50,65,72
	480	47644	LU310/480-KIT	1	S67	355	0.75	185	CWA	¶8,14,20,50,65,72
LU400	120/208/ 240/277/480	47647	LU400/SUPER5-KIT	1	S51	464	3.80/2.20/ 1.90/1.70/1.00	190	CWA	¶8,14,20,50,65,72
	120/208/ 240/277	47364	LU400/MULTI-KIT	1	S51	464	3.90/2.25/ 1.95/1.70	190	CWA	¶8,14,20,50,65,72
	480	47376	LU400/480-KIT	1	S51	464	1.00	190	CWA	¶8,14,20,50,65,72
	480/120TAP	47657	LU400/480/120T-KIT	1	S51	465			CWA	¶8,14,20,50,65,72
	120/277	47656	LU400/120/277-KIT	1	S51	464	3.90/1.70	190	CWA	¶8,14,20,50,65,72
LU750	120/208/ 240/277	47712	LU750/MULTI-KIT	1	S111	830	6.80/4.00/ 3.50/3.10	220	CWA	¶8,14,20,50,65,72
	480	47658	LU750/480-KIT	1	S111	830	1.75	220	CWA	¶8,14,20,50,65,72
LU1000	120/208/ 240/277/480	47659	LU1000/SUPER5-KIT	1	S52	1100	9.50/5.50/ 4.70/4.10/2.40	440	CWA	¶8,14,20,50,65,72
	120/208/ 240/277	47389	LU1000/MULTI-KIT	1	S52	1100	9.50/5.50/ 4.80/4.10	435	CWA	¶8,14,20,50,65,72
	480	47391	LU1000/480-KIT	1	S52	1100	2.40	435	CWA	¶8,14,20,50,65,72

### F-CAN

Primary Lamp Type	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	ANSI Code	Input Wattage (W)	Input Current (Amps)	Open Circuit Voltage	Circuit Type	Symbols & Footnotes
LU35	120/277	47761	LU35/120/277/F-CAN	1	S76	47	0.80/0.35	120	HX-HPF	¶6,8,33,50,68,69,72
LU50	120/277	47762	LU50/120/277/F-CAN	1	S68	65	1.05/0.46	125	HX-HPF	¶6,8,33,50,68,69,72
LU70	120/277	47763	LU70/120/277/F-CAN	1	S62	90	1.50/0.65	120	HX-HPF	¶6,8,33,50,68,69,72
LU100	120/277	47764	LU100/120/277/F-CAN	1	S54	125	1.95/0.85	120	HX-HPF	¶6,8,33,50,68,69,72
LU150	120/277	47765	LU150/120/277/F-CAN	1	S55	185	3.05/1.32	120	HX-HPF	¶6,8,33,50,68,69,72
LU250	120/277	47777	LU250/120/277/F-CAN	1	S50	298			CWA	¶6,8,50,68,69,72

## MERCURY VAPOR

### CORE & COIL KITS

Primary Lamp Type	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	ANSI Code	Input Wattage (W)	Input Current (Amps)	Open Circuit Voltage	Circuit Type	Symbols & Footnotes
H46	120/208/ 240/277	46518	H50/MULTI-KIT	1	H46	68	0.60/0.35/ 0.30/0.26	235	CWA	¶8,14,20,48,65

• Data shown is based on primary lamp type.

## MERCURY VAPOR CORE & COIL KITS

Primary Lamp Type	Input Voltage (VAC)	Product Number	Ordering Abbreviation	Pkg Qty	ANSI Code	Input Wattage (W)	Input Current (Amps)	Open Circuit Voltage	Circuit Type	Symbols & Footnotes
H43	120/208/ 240/277	46519	H75/MULTI-KIT	1	H43	92	0.80/0.46/ 0.40/0.35	250	CWA	FL8,14,20,48,65
H38/H44	120/208/ 240/277	46522	H100/MULTI-KIT	1	H38, H44	120	1.05/0.60/ 0.52/0.45	250	CWA	FL8,14,20,48,65
	277	47472	H100/277-KIT	1	H38, H44	120	0.45	250	CWA	FL8,14,20,48,65
	120/240	47471	H100/DUAL-KIT	1	H38, H44	120	1.05/0.52	250	CWA	FL8,14,20,48,65
H39	120/208/ 240/277	47489	H175/MULTI-KIT	1	H39	205	1.85/1.10/ 0.92/0.80	250	CWA	FL8,14,20,48,65
	480	47490	H175/480-KIT	1	H39	205	0.45	250	CWA	FL8,14,20,48,65
H37	120/208/ 240/277	47499	H250/MULTI-KIT	1	H37	285	2.55/1.5/ 1.27/1.1	260	CWA	FL8,14,20,48,65
	480	47500	H250/480-KIT	1	H37	285	0.62	270	CWA	FL8,14,20,48,65
	480/120TAP	46531	H250/480/120T-KIT	1	H37	285	0.62	270	CWA	FL8,14,20,48,65
H33	120/208/ 240/277	47509	H400/MULTI-KIT	1	H33	455			CWA	FL8,14,20,48,65
	480	47510	H400/480-KIT	1	H33	454	1.00	250	CWA	FL8,14,20,48,65
	480/120TAP	46533	H400/480/120T-KIT	1	H33	454	1.00	250	CWA	FL8,14,20,48,65
	120	47517	H2X400/120-KIT	1	H33	880	7.8	495	CWA	FL8,14,20,48,65
	277	47518	H2X400/277-KIT	1	H33	880	3.38	495	CWA	FL8,14,20,48,65
H36	120/208/ 240/277	47524	H1000/MULTI-KIT	1	H36	1080	9.2/5.36/ 4.6/4.0	420	CWA	FL8,14,20,48,65
	480	47525	H1000/480-KIT	1	H36	1080	2.3	420	CWA	FL8,14,20,48,65

## COMPONENTS

### CAPACITORS

Replacement capacitors for SYLVANIA HID ballasts only

Product Number	Ordering Abbreviation	General Description	Diameter	Height	Symbols & Footnotes
47912	CAP 24MF 480VAC	24MF 480VAC (MIN) Capacitor			
47920	CAP 26MF 525VAC	26MF 525VAC Capacitor			
47926	CAP40MFD280VAC	40MF 280 VAC Capacitor			
47927	CAP52MFD280VAC	52MF 280 VAC Capacitor			
47932	CAP 35MF 280VAC	35MF 280 Capacitor			
47938	CAP28.5MFD330VAC	28.5MF 330 VAC (MIN) Capacitor			
47942	CAP 55MF 300VAC	55MF 300VAC Capacitor			
47952	CAP 10MF 400VAC	10MF 400VAC Capacitor			
47954	CAP 15MF 400VAC (MIN)	15MF 400VAC Capacitor			

• Data shown is based on primary lamp type.

## COMPONENTS

### IGNITORS

Replacement ignitors for SYLVANIA HID ballasts only

Product Number	Ordering Abbreviation	General Description	Diameter	Height	Symbols & Footnotes
47996	IGNITOR MH PS 35-150	35-150W MH Ignitor	1.25x2.00	2.50	
47997	IGNITOR MH PS 175-400	175-400W MH Ignitor	1.75	2.00	
47998	IGNITOR MH PS 750-1000	750-1000W MH Ignitor	1.17x1.90	2.50	
47843	IGNITOR HPS 35-150	35-150W HPS Ignitor	1.375	2.40	
47844	IGNITOR HPS 200-400	200-400W HPS Ignitor	1.25x2.00	2.50	
47847	IGNITOR HPS 600-1000	600-1000W HPS Ignitor	1.87x1.89	2.50	
47877	HPS IGN 35-150W	35-150W HPS Ignitor	2.315	2.83	

- Data shown is based on primary lamp type.

## SYMBOLS & FOOTNOTES FOR ELECTRONIC & MAGNETIC BALLAST CONTROL SYSTEMS

<b>Symbol</b>	<b>Description</b>
	New item introduced within the past year.
	Item will be discontinued when inventory is depleted.
	Product is Canadian Standards Association certified for U.S. and Canadian markets
	Electronic Control Systems Logo
	Dimmable Logo T5
	QUICK60+® warranty
	QUICKSENSE® Circuitry
	PROStart® Programmed Start
	cULus
	This lamp or ballast meets minimum Federal efficiency standards.
	Product is Canadian Standards Association approved for the Canadian market
	Product is Canadian Standards Association certified for the U.S. market
	Product complies with the requirements of Canadian Standards Association energy efficiency and performance standards
	Product is Underwriters Laboratories listed
	Product is an Underwriters' Laboratories recognized component, certified for both U.S. and Canadian requirements
	Product is an Underwriters' Laboratories recognized component
<b>Footnote</b>	<b>Description</b>
1	Remote Mounting up to 18 feet
2	70C Max Case Temperature
4	UL Listed Class P, Type 1 Outdoor
5	Insulate unused leads
6	Ground ballast case
7	Lampholder must be shorted per diagram
8	Install in accordance with National Electric Codes
9	Complies with FCC 47 CFR Part 18, Non-Consumer
10	ANSI 62.41 Cat. A Transient Protection
11	Class A Sound Rating.
12	Minimum Starting Temperature: 0F/-18C.
13	Input Frequency: 60Hz.
14	Product is a kit containing the core & coil, capacitor, ignitor (where required), brackets and mounting hardware
15	Remote Mounting up to 12 feet
16	Remote Mounting up to 10 feet
17	Input Frequency: 50/60Hz.
18	Wiring diagram applies to instant start standard, low power (LP), PLUS, and HD10 ballast types.
19	Oil Filled Capacitor
20	Product contains installation instructions

## SYMBOLS & FOOTNOTES FOR ELECTRONIC & MAGNETIC BALLAST CONTROL SYSTEMS

Footnote	Description
21	Remote mounting defined by harness length
22	Remote Mounting up to 19 feet (keep red wires short for 1&2 lamp).
23	Type CC
24	75C Max Case Temperature
25	Minimum Starting Temperature: -5F/-20C.
26	Remote Mounting up to 19 feet (keep red wires short for 1&2 lamp models).
27	ANSI C62.41 cat. B3 Transient Protection.
28	Remote mounting - Typically 6ft with suitable ground plane, but varies by model and application. Contact ECS Application Engineering for information on longer applications.
29	Remote Mounting up to 7 feet
30	Minimum Starting Temperature: 60F/16C.
31	Data shown is at full light output.
32	Minimum Starting Temperature: 50F/10C.
33	Class B Sound Rating.
34	Remote mounting up to 8 feet.
35	85C Max Case Temperature
36	90C Max Case Temperature
37	Suitable for recessed use.
38	90C max. case Temperature, thermally protected.
39	Remote mounting - Typically 6ft, but varies by application, remote capability up to 15ft. Contact OSRAM SYLVANIA for details.
40	Mount lamps within 1/2 " of grounded metal reflector
41	Minimum starting temperature: 60 F / 16 C with SS lamps
42	Full light output
43	Product is individually shrink-wrapped
44	For residential use only
45	Circuit Interrupting Lampholder required
46	Cutout Lampholder
47	Class C Sound Rating.
48	Minimum starting temperature: -20 F / -29 C
49	Mount lamps within 1" of grounded metal reflector
50	High Voltage Pulse Present on Open Circuit
51	White painted metal enclosure
52	Thermal protection: Class P, Type 2 outdoor
53	For any 1 or 2 T12/RS/HO 800mA lamp combination provided total lamp length is not less than 4 ft. nor more than 12 ft.
54	Class D Sound Rating.
55	For any 2, 3 or 4 T12/RS/HO 800mA lamp combination provided total lamp length is not less than 6 ft. nor more than 20 ft.
56	Normal ambient temperature: 77 F / 25 C
57	For any 2, 3 or 4 T12/RS/HO 800mA lamp combination provided total lamp length is not less than 12 ft. nor more than 24 ft.
58	Class E sound rating
59	For any 2, 3 or 4 T12/RS/HO 800mA lamp combination provided total lamp length of each circuit (A) and circuit (B) is not less than 10 ft. nor more than 20 ft. Circuit "A" consists of lamp 1, 2 Circuit "B" consists of lamp 3, 4
60	For any 4,5 or 6 T12/RS/HO 800mA lamp combination provided total lamp length of each circuit (A) and circuit (B) is not less than 6 ft. nor more than 20 ft. Circuit "A" consists of lamp 1, 2, 3 Circuit "B" consists of lamp 4, 5, 6
61	For any 4, 5 or 6 T12/RS/HO 800 mA lamp combination provided total lamp length of each circuit (A) and circuit (B) is not less than 12 ft. nor more than 24 ft. Circuit "A" consists of lamp 1, 2, 3 Circuit "B" consists of lamp 4, 5, 6
62	Starter required
63	High power factor

## **SYMBOLS & FOOTNOTES FOR ELECTRONIC & MAGNETIC BALLAST CONTROL SYSTEMS**

<b>Footnote</b>	<b>Description</b>
64	Connector Included
65	Ground Ballast Core
66	Maximum ambient temperature: 104 F / 40 C
67	Dry Capacitor
68	Suitable for Recessed Use Do not install insulation within 3 inches of ballast sides or above ballast in such a manner to entrap heat.
69	UL Listed Type 1 Outdoor, Auto-reset thermal protector
70	Minimum starting temperature: -22 F / -30 C
71	Insulate unused leads individually for 600V
72	Minimum Starting Temperature: -40F/-40C.
73	Reactor with Integral Ignitor
74	Contact OSRAM SYLVANIA for UL benchtop coil rise code
75	Remote mounting up to 18 feet. Keep blue wires short i.e. lamp(s) attached to the blue leads to remain in the fixture that houses the ballast.
76	65C Max Case Temperature.
77	Use only with an overall electrical enclosure - protect from exposure to water.
78	Minimum starting temperature for 70W lamp: -13F/-25C.

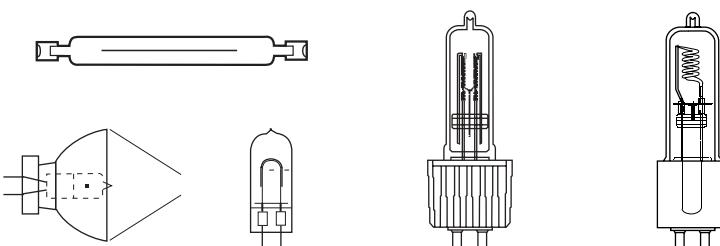
## OSRAM BRAND PHOTO-OPTIC LIGHT SOURCES

Lighting to provide solutions in diverse applications such as effect lighting, stage, studio, TV, projection systems, microlithography, medical/scientific, industrial, and airfield/aircraft.

### Photo-Optic Lamp Types

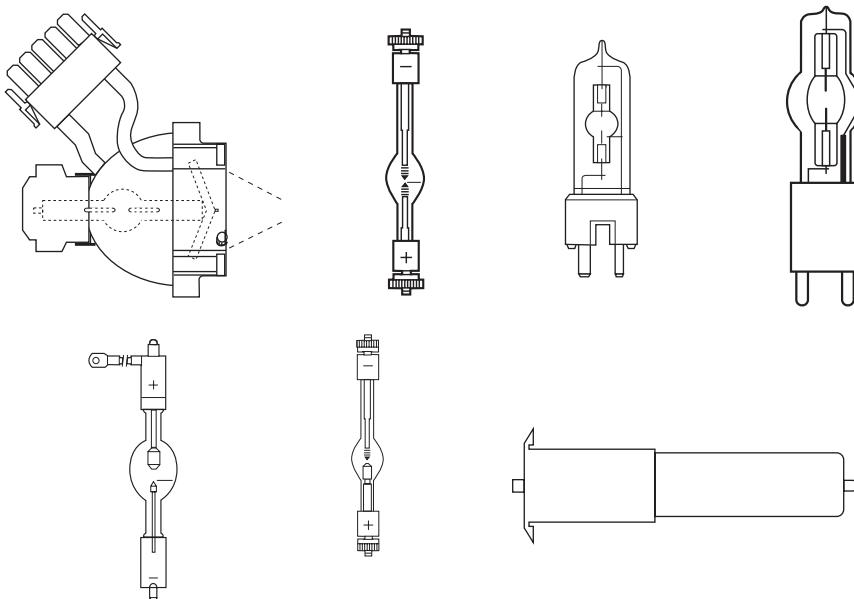
#### HALOGEN

Airfield/Aircraft  
Audio Visual  
Special Purpose Heat Lamps  
Studio, Theatre, TV & Video  
HPL  
HPR™  
OSRAM STUDIOLINE®



#### DISCHARGE

HBO®  
HMD®  
HMI®  
HMP®  
HSD®  
HSR®  
HTI®  
LINEX®  
VIP®  
XBO®  
XERADEX®



The following item was accepted into the 2003 IESNA Progress Report which recognizes innovative products introduced to the industry during that year.

LINEX Mercury-Free Xenon Fluorescent Systems

#### IMPORTANT! PHOTO-OPTIC WARNINGS

In accordance with ANSI/IESNA Standard RP-27, all Photo-Optic Discharge lamps are Risk Group 3 products, and all Photo-Optic Incandescent and Tungsten Halogen lamps are Risk Group 2 products.

Please read and understand the Safety and Warning Instructions for each lamp type before use. Safety and Warning Instructions can be found at the end of this Photo-Optic section.

## AUDIOVISUAL

ANSI Code	Product Number	Ordering Abbreviation	Application	Watts	Volts	Base	Lumens	Avg Rated Life(hrs)	Bulb	Pkg Qty	Footnotes
BAA	54924	<b>BAA</b>	Projector	75	28	GX5.3		2000	MR16	24	
BBA	11619	<b>BBA 118V</b>	Photoflood No.1/Enlarger & Printer	250	118	Med		4	A21	12	
BCK	54576	<b>BCK</b>	Projector - Slide	500	120	G17t		50	T6	24	1
BHC/DYS/DYV	54836	<b>BHC/DYS/DYV</b>	Projector, Microfilm, Stage & Studio	600	120	GZ9.5	17500	75	T6	24	
BHC/DYS/DYV/X	54868	<b>BHC/DYS/DYV/X</b>	Projector, Microfilm, Stage & Studio	600	120	GZ9.5	14500	250	T6	24	
BHC/DYS/DYV-5	54835	<b>BHC/DYS/DYV-5</b>	Projector, Microfilm, Stage & Studio	600	125	GZ9.5	17500	75	T6	24	2
BRJ/EVB	54039	<b>BRJ/EVB 64633 HLX</b>	Projector, Microfilm, Microscope, Studio	150	15	G6.35	5600	50	T3.25	100	
BRL	54034	<b>BRL 64610 HLX</b>	Projector, Microfilm, Microscope, Studio	50	12	G6.35	1600	50	T3	100	
BRL	54035	<b>BRL 64610 HLX BULK</b>	Project, Microfilm, Microscope, Studio	50	12	G6.35	1600	50	T3	250	
BRN	54698	<b>BRN</b>	Projector	1200	120	G17q		20	T7	24	3
BVA	54673	<b>BVA</b>	Projector	900	120	GY9.5		75	T7	24	
BVE	54812	<b>BVE</b>	Projector, Microfilm, Stage & Studio	625	120	GY9.5		50	T6	24	
CAX	58831	<b>CAX</b>	Projector, Microfilm, Microscope, Studio	50	120	DC Bayonet	750	250	T4	24	
CBA	54580	<b>CBA</b>	Projector - Slide	500	120	G17t		50	T6	24	1
DDK	54729*	<b>DDK</b>	Projector	80	19	GX5.3	150	50	T3.15	24	4
DDL	54660	<b>DDL</b>	Projector - Microfilm	150	20	GX5.3		500	MR16	24	
DDM	54737	<b>DDM</b>	Projector - Slide	80	19	GX5.3	400	50	MR16	24	4
DDS	54944	<b>DDS</b>	Projector - Microfilm	80	21	GX5.3		1000	MR16	24	
DED	54726	<b>DED</b>	Projector - Microfilm	85	14	GX5.3	150	1000	MR16	24	4
DEK/DFW	74440*	<b>DEK/DFW</b>	Projector	500	120	Trufocus			T12	24	
DNE	54409	<b>DNE</b>	Projector	150	120	GX7.9	100	15	TB16	24	4
DNF	54411	<b>DNF</b>	Projector - 8mm	150	21	GX7.9	300	25	MR18	24	
DVY	54528	<b>DVY</b>	Projector, Stage & Studio	650	120	G5.3	20000	25	T6	12	
DYH	54561	<b>DYH</b>	Projector, Stage & Studio	600	120	G5.3	17000	75	T5	24	
DZE	54755	<b>DZE</b>	Projector, Microfilm, Stage & Studio	150	24	GZ9.5	4000	100	T4	24	
EBV	11558	<b>EBV 118V</b>	Super Photoflood/ No.2	500	118	Med Brass	17800	8	PS25	24	
ECA	13365	<b>ECA 120V</b>	Super Photoflood	250	120	Med Brass	6500	20	A23	24	
ECT	11560	<b>ECT 120V</b>	Photoflood	500	120	Med Brass	13650	60	PS25	24	
EFM	54123	<b>EFM 64607</b>	Projector - 8mm	50	8	GZ6.35		50	MR16	20	
EFN	54126	<b>EFN 64615 HLX</b>	Projector - 8mm	75	12	GZ6.35		50	MR16	20	
EFP	54189	<b>EFP 64627 HLX</b>	Projector - 8mm	100	12	GZ6.35		50	MR16	20	
EFP/X	54192	<b>EFP/X 64629 HLX</b>	Projector - 8mm	100	12	GZ6.35		600	MR16	20	
EFR	54210	<b>EFR 64634 HLX</b>	Projector - 8mm	150	15	GZ6.35		50	MR16	20	
EFR-5/X	54211*	<b>EFR-5/X 64620 HLX</b>	Projector - 8mm	150	15	GY6.35		500	MR16	20	
EHA	54585	<b>EHA</b>	Projector, Microfilm, Stage & Studio	500	120	GY9.5		50	T6	24	3

## AUDIOVISUAL

ANSI Code	Product Number	Ordering Abbreviation	Application	Watts	Volts	Base	Lumens	Avg Rated Life(hrs)	Bulb	Pkg Qty	Footnotes
EHE	54038	<b>EHE 64626 HLX</b>	Projector	100	12	PG22	3600	50	T4	30	
EHJ	54045	<b>EHJ 64655 HLX</b>	Projector, Microfilm, Microscope, Studio	250	24	G6.35	10000	50	T4	100	
EJA	54753	<b>EJA</b>	Projector - Fiber optics	150	21	GX5.3	354	40	MR16	24	
EJL	54730	<b>EJL</b>	Projector - 16mm Color printer	200	24	GX5.3	725	50	MR16	24	4
EJM	54747	<b>EJM</b>	Projector - 8mm	150	21	GX5.3	170	40	TB18	24	4
EJV	54732	<b>EJV</b>	Projector - 8mm, Printer	150	21	GX5.3	270	100	MR16	24	4
EKE	54842	<b>EKE</b>	Projector - 8mm, Fiber-Optics	150	21	GX5.3	80	200	MR16	24	4
EKE/X	58771	<b>EKE/X</b>	Projector - 8mm, Fiber-Optics	150	21	GX5.3	80	1000	MR16	24	4
EKP/ENA	54734	<b>EKP/ENA</b>	Projector - 8mm	80	30	GX5.3	115	25	MR16	24	4
ELC	54212	<b>ELC 64653 HLX</b>	Overhead projection, fiber-optic, entertainment	250	24	GX5.3		50	MR16	20	
ELC	54840	<b>ELC</b>	Overhead projection, fiber-optic, entertainment	250	24	GX5.3	800	50	MR16	24	4
ELC-3/X	54841	<b>ELC-3/X</b>	Overhead projection, fiber-optic, entertainment	250	24	GX5.3	550	300	MR16	24	4
ELC-7/X	54811	<b>ELC-7/X BULK</b>	Overhead projection, fiber-optic, entertainment	250	24	GX5.3	475	700	MR16	100	4
ELC-7/X	54814	<b>ELC-7/X</b>	Overhead projection, fiber-optic, entertainment	250	24	GX5.3	475	700	MR16	24	4
ELC-HL	54804	<b>ELC-HL</b>	Overhead projection, fiber-optic, entertainment	250	24	GX5.3	950	50	MR16	24	
ELD	54745	<b>ELD</b>	Projector - Microfilm	150	21	GX5.3	350	40	MR16	24	4
ELH	54776	<b>ELH</b>	Projector - Overhead	300	120	GY5.3	525	35	MR16	24	4
ELS	54810	<b>ELS</b>	Projector	50	16	GX7.9	20	650	TB14	24	4
ELV	54765	<b>ELV</b>	Projector	150	22	GX7.9	225	100	TB18	24	4
ELZ	54816	<b>ELZ</b>	Projector	150	21	GX7.9	350	60	TB18	24	4
EMG	54828	<b>EMG</b>	Projector	500	220	GY9.5		75	T6	24	
EMM/EKS	54960	<b>EMM/EKS</b>	Projector - 16mm	250	24	GX7.9	725	50	MR14	24	4
ENG	54957	<b>ENG</b>	Projector	300	120	GY5.3	690	15	MR16	24	4
ENH	54986	<b>ENH</b>	Projector - Slide	250	120	GY5.3	340	175	MR16	24	4
ENH-5	54988	<b>ENH-5</b>	Projector - Overhead	250	125	GY5.3	340	175	MR16	24	4
ENL	58786	<b>ENL</b>	Projector - Display, Fiber-Optics	50	12	GX5.3	85	4000	MR16	24	
ENX	54984	<b>ENX</b>	Projector - Overhead	360	82	GY5.3	460	75	MR16	24	4
ENX-5	54913	<b>ENX-5</b>	Projector - Overhead	360	86	GY5.3	540	75	MR16	24	4
ENX-7	54916	<b>ENX-7</b>	Projector - Overhead	360	88	GY5.3	540	75	MR16	24	4
EPR	54829	<b>EPR</b>	Projector	500	120	G17t		50	T6	24	1
EPS	54977	<b>EPS</b>	Projector	500	240	G17t		50	T6	24	1,3
EPS/230	54975	<b>EPS/230</b>	Projector	500	230	G17t		50	T6	24	3,5
EPT	58782	<b>EPT</b>	Projector - Fiber-Optics	42	11	GX5.3		8000	MR16	24	
EPV	54926	<b>EPV</b>	Projector - Microfilm	90	14	GX5.3	36	500	MR16	24	4

## AUDIOVISUAL

ANSI Code	Product Number	Ordering Abbreviation	Application	Watts	Volts	Base	Lumens	Avg Rated Life(hrs)	Bulb	Pkg Qty	Footnotes
EPX	54927	EPX	Projector - Microfilm	90	14	GX5.3	43	500	MR16	24	4
EPZ	54743	EPZ	Projector - Microfilm	50	14	GX5.3	80	3000	MR16	24	4
ERK	55050	ERK BULK	Projector	12	6	Wedge		150	T2.25	500	
ERM	55054	ERM BULK	Projector	7	6	Wedge		30	T2.25	500	
ESA/FHD	54025	ESA/FHD 64225	Projector	10	6	G4	200	100	T3	100	
ESB	54019	ESB 64250 HLX	Projector	20	6	G4	480	100	T3.5	100	
ETJ	54928	ETJ	Projector	250	120	GY5.3	600	175	MR16	24	4
EVA	54052	EVA 64623 HLX	Projector, Microfilm, Microscope, Studio	100	12	GY6.35	2800	2000	T4	100	
EVC	54047	EVC 64657 HLX	Projector, Microfilm, Microscope, Studio	250	24	G6.35	9000	300	T4	100	
EVD	54100	EVD 64663 HLX	Projector, Microfilm, Studio	400	36	G6.35	16000	50	T6	24	6
EVD	54103	EVD 64663 HLX BULK	Projector, Microfilm, Studio	400	36	G6.35	16000	50	T6	100	
EVW	54723	EVW	Projector	250	82	GY5.3	390	50	MR16	24	4
EXR	54392	EXR	Projector - Slide	300	82	GX5.3	925	35	MR13	24	4
EXR	54393	EXR BULK	Projector - Slide	300	82	GX5.3		35	MR13	100	4
EXW	54388	EXW	Projector - Slide	300	82	GX5.3	1050	15	MR13	24	4
EXY	54394	EXY	Projector - Slide	250	82	GX5.3	400	200	MR13	24	4
EYB	54446	EYB	Projector, Stage & Studio	360	82	G5.3	10000	75	T3.5	24	
EYB-5	54448	EYB-5	Projector, Microfilm, Stage & Studio	360	86	G5.3	10000	75	T3.5	24	
EYB-7	54455	EYB-7	Projector, Microfilm, Stage & Studio	360	88	G5.3	10000	75	T3.5	24	
EZE	54386	EZE	Projector, Stage & Studio	150	82	GX5.3	350	150	MR13	24	4
FBV	54568	FBV	Projector, Microfilm, Stage & Studio	250	30	E10	7000	6	T3	12	
FCR	54036	FCR 64625 HLX	Projector, Microfilm, Microscope, Studio	100	12	GY6.35	3600	50	T3.5	100	
FCS	54041	FCS 64640 HLX	Projector	150	24	G6.35	6000	50	T4	100	
FCS	54042	FCS 64640 HLX BULK	Projector	150	24	G6.35	6000	50	T4	250	
FDS/DZE	54055	FDS/DZE 64643	Projector, Microfilm, Microscope, Studio	150	24	GY9.5	5000	100	T4	30	
FDT 64628	54031	FDT 64628	Projector, Stage & Studio	100	12	GY9.5	3000	50	T4	30	
FDV	54054	FDV 64642 HLX	Projector, Microfilm, Microscope, Studio	150	24	G6.35	5000	300	T4	100	
FHS	54979	FHS	Projector - Slide	300	82	GX5.3	650	70	MR16	24	4
FKT/EYH	54547	FKT/EYH	Projector - Video Camera	250	120	G5.3	5400	200	T6	24	
FLE	54383	FLE	Projector	360	82	GY5.3	1250	75	MR16	24	4,7
FLT	54440	FLT	Projector - Video Camera, Microfilm	25	14	G4		500	MR11	24	8
FNS	58635	FNS 64512	Projector, Stage & Studio	300	120	GX6.35	9500	15	T5	25	
FNT	54044	FNT 64656PT HLX	Projector, Microfilm, Microscope, Studio	275	24	G6.35	10000	75	T4	100	

## AUDIOVISUAL

ANSI Code	Product Number	Ordering Abbreviation	Application	Watts	Volts	Base	Lumens	Avg Rated Life(hrs)	Bulb	Pkg Qty	Footnotes
FNT	54046	<b>FNT 64656PT HLX BULK</b>	Projector, Microfilm, Microscope, Studio	275	24	G6.35	10000	75	T4	250	
FSG	54899	<b>FSG</b>	Projector	1200	120	P28s	28000	100	T7	12	
FSX	54897	<b>FSX/230</b>	Projector	400	230	GY9.5		75	T6	24	3
FSY	54898	<b>FSY</b>	Projector	400	240	GY9.5		75	T6	24	3
FXL	54912	<b>FXL</b>	Projector - Overhead	410	82	GY5.3	640	75	MR16	24	
FXL-HL	54904	<b>FXL-HL</b>	Projector - Overhead	410	82	GY5.3	850	40	MR16	24	4
GCB	54430	<b>GCB</b>	Projector, Stage & Studio, Video	200	30	G5.3	5300	200	T3	24	
GCC	54432	<b>GCC</b>	Projector, Stage & Studio	100	12	G5.3	3100	200	T3	24	
GCD	54845	<b>GCD</b>	Projector, Microfilm, Stage & Studio	590	50	GZ9.5	21500	50	T6	24	
	53998	<b>64638 HLX</b>	Projector	100	24	G6.35	2900	300	T3	100	
	53999	<b>64265 HLX</b>	Projector	30	6	G4	765	100	T2	100	
	54021	<b>64251 HLX</b>	Projector	20	6	PG22	500	100	T3	30	
	54022	<b>64260</b>	Projector	30	12	PG22	800	50	T3	30	
	54023	<b>64261</b>	Projector	30	12	G6.35	750	50	T3.25	100	
	54026	<b>62138 HLX</b>	Projector	100	12	GZ6		25	T3	100	
	54027	<b>64275</b>	Projector	35	6	G4	780	50	T3	100	
	54028	<b>64611 HLX</b>	Projector	50	12	G6.35	1350	100	T3.25	100	
	54032	<b>64621 HLX</b>	Projector, Microfilm, Stage & Studio, Aircraft	100	12	PG22	2750	2000	T3	30	
	54050	<b>64223</b>	Projector	10	6	G4	150	300	T3	100	
	54056	<b>64650</b>	Projector, Microfilm, Microscope, Studio	50	23	G6.35	1000	1300	T4	100	
	54057	<b>64664 HLX</b>	Projector, Microfilm, Microscope, Studio	400	36	G6.35	14500	150	T6	25	9
	54058	<b>64665 HLX</b>	Projector, Microfilm, Microscope, Studio	400	36	G6.35	12200	300	T6	25	
	54120	<b>64258 HLX</b>	Projector	20	12	G4		2000	T3	100	
	54121	<b>64617S</b>	Projector	75	12	G5.3-4.8		25	MR11	20	
	54122	<b>64255</b>	Projector	20	8	GZX4		50	MR11	20	
	54124	<b>64617</b>	Projector	75	12	G5.3-4.8		25	MR11	20	
	54125	<b>64624</b>	Projector	100	12	G5.3-4.8		25	MR11	20	
	54136	<b>64654 HLX</b>	Projector, Microfilm, Microscope, Studio	250	24	GY9.5	9000	300	T6	30	
	54138	<b>64602</b>	Projector, Microfilm, Microscope, Studio	50	12	G6.35	1000	1100	T3.25	100	
	54214	<b>64637</b>	Projector	100	12	GZ6.35		1500	MR16	20	
	54233	<b>64635 HLX</b>	Projector, Fiber-Optic	150	15	GZ6.35		50	MR16	20	
	54400	<b>85T3/RM</b>	Projector	85	82	GX5.3		40	MR16	24	
	54466	<b>120/T4/SPECIAL</b>	Projector	120	24	Special	2750	500	T4	24	
	58729	<b>60T4QCL</b>	Medical Overhead Illumination	60	24	BA15d	1280	500	T4	12	
	58939	<b>220T4Q/2PPF</b>	Medical Overhead Illumination	220	22	GY9.5	6200	200	T4	12	

## AUDIOVISUAL

ANSI Code	Product Number	Ordering Abbreviation	Application	Watts	Volts	Base	Lumens	Avg Rated Life(hrs)	Bulb	Pkg Qty	Footnotes
58941	235T40/2PPF		Medical Overhead Illumination	235	33	G29.5	5800	200	T4	12	
76302	70335 BULK		Special Purpose	27	6	Special				200	
76304	70314 (390153)		Special Purpose	25	6	P47D				100	
76305	70313 (390158)		Special Purpose	30	6	P47D				100	
76311	8013		Projector	10	6	BA15d		200		100	10
76313	8017		Projector	15	6	DC Bayonet		1000		100	
76314	8018		Projector	15	6	DC Bayonet		100		100	10,11
76317	8025		Projector		6	BA20d		300		100	10
76319	8029		Projector	60	15	BA20d		25		100	
76321	8100		Projector		5	E14		600		100	
76362	91645		Special Purpose	50	110	PY280				100	

## STUDIO, THEATRE, TV & VIDEO

ANSI Code	Product Number	Ordering Abbreviation	Application	Watts	Volts	Base	Lumens	Avg Rated Life(hrs)	Bulb	Pkg Qty	Footnotes
BCM	54694	BCM	Stage & Studio	20000	230	G38	580000	350	T32	1	
BTL	54685	BTL	Stage & Studio	500	120	P28s	11000	750	T6	12	
BTM	54686	BTM	Stage & Studio	500	120	P28s	13000	100	T6	12	
BTN	54687	BTN	Stage & Studio	750	120	P28s	17000	500	T7	12	
BTP	54688	BTP	Stage & Studio	750	120	P28s	20000	200	T7	12	
BTR	54689	BTR	Stage & Studio	1000	120	P28s	27500	250	T6	12	
BVM	58638	BVM 64540	Stage & Studio	650	230	GX6.35	20000	15	T8	25	12
BVT	54690	BVT	Stage & Studio	1000	120	P40s	23000	500	T7	6	
BVV	54691	BVV	Stage & Studio	1000	120	P40s	27500	200	T6	6	
BVW	54692	BVW	Stage & Studio	2000	120	P40s	59000	280	T9.5	6	
CXZ	54717	CXZ	Stage & Studio	1500	120	G38	38500	325	T8	6	
CYV	54706	CYV	Stage & Studio	1000	120	G38	27500	200	T7	6	
CYX	54613	CYX	Stage & Studio	2000	120	G38	55000	300	T9	6	
DNS/FMC	54655	DNS/FMC	Stage & Studio	500	120	P28s	11000	500	T6	24	
DNT/FMD	54658	DNT/FMD	Stage & Studio	750	120	P28s	17000	500	T7	24	10
DPY	54647	DPY	Stage & Studio	5000	120	G38	143000	500	T17	1	
DTA	54716	DTA	Stage & Studio	1500	120	P40s	39000	100	T8	6	
DTY	54696	DTY	Stage & Studio	10000	120	G38	290500	350	T24	1	
DWE	54500	DWE	Stage & Studio	650	120	Screw Term	24000	100	PAR36	12	
DWT	58937	DWT	Stage & Studio	1000	120	RX7s	22000	2000	T6	12	
DXW	53997	DXW	Stage & Studio	1000	120	R7s	28000	150	T5	12	13
EFX	54787	EFX	Stage & Studio	500	120	G22	10000	2000	T5	12	
EGE	54648	EGE	Stage & Studio	500	120	P28s	10000	2000	T5	12	
EGG	54652	EGG	Stage & Studio	750	120	P28s	15000	2000	T5	12	
EGJ	54654	EGJ	Stage & Studio	1000	120	P28s	25500	400	T6	12	
EGK	54656	EGK	Stage & Studio	1000	120	P28s	24500	400	T6	12	
EGN	54659	EGN	Stage & Studio	500	120	G22	13000	100	T6	12	

## STUDIO, THEATRE, TV & VIDEO

ANSI Code	Product Number	Ordering Abbreviation	Application	Watts	Volts	Base	Lumens	Avg Rated Life(hrs)	Bulb	Pkg Qty	Footnotes
EGR	54662	<b>EGR</b>	Stage & Studio	750	120	G22	20000	200	T7	12	
EGT	54664	<b>EGT</b>	Stage & Studio	1000	120	G22	27500	250	T6	12	
EGW	58637	<b>EGW 64535</b>	Stage & Studio	650	120	GX6.35	20000	15	T8	25	
EHC/EHB	54506	<b>EHC/EHB</b>	Stage & Studio	500	120	G9.5	13000	300	T4	12	
EHD	54508	<b>EHD</b>	Stage & Studio	500	120	G9.5	10600	2000	T4	12	
EHF	54510	<b>EHF</b>	Stage & Studio	750	120	G9.5	20400	300	T5	12	
EHG	54512	<b>EHG</b>	Stage & Studio	750	120	G9.5	15400	2000	T5	12	
EHP	58942	<b>EHP</b>	Stage & Studio	300	120	R7s	5000	2500	T4	12	
EHR	58936	<b>EHR</b>	Stage & Studio	400	120	R7s	7500	2000	T4	12	
EHZ	54550 <sup>a</sup>	<b>EHZ</b>	Stage & Studio	300	120	R7s	5900	2000	T2.5	12	14
EJG	54598	<b>EJG</b>	Stage & Studio	750	120	R7s	20600	400	T3	12	
EKB	54837	<b>EKB</b>	Stage & Studio	420	120	GZ9.5	11000	75	T6	24	
FAD	54574	<b>FAD</b>	Stage & Studio	650	120	R7s	16500	100	T4	12	
FAL	58860	<b>FAL</b>	Projector, Stage & Studio	420	120	R7s	11000	75	T4	24	14
FCB	54483	<b>FCB</b>	Projector, Stage & Studio	600	120	R7s	16500	75	T4	24	
FCM	54442	<b>FCM</b>	Stage & Studio	1000	120	R7s	28000	400	T3	12	
FDA	54471	<b>FDA</b>	Stage & Studio	400	120	R7s	10400	250	T4	12	14
FDB	54435	<b>FDB</b>	Stage & Studio	1500	120	R7s	41200	400	T4	12	
FDN	54534	<b>FDN</b>	Stage & Studio	500	120	R7s	12800	400	T2.5	12	
FEL	54570	<b>FEL</b>	Stage & Studio	1000	120	G9.5	27500	300	T6	12	
FEP/220	54636	<b>FEP/220</b>	Stage & Studio	1000	220	G9.5	23000	150	T6	12	
FEP/240	54515	<b>FEP/240</b>	Stage & Studio	1000	240	G9.5	23000	150	T6	12	15
FER	54571	<b>FER</b>	Stage & Studio	1000	120	RX7s	27500	500	T6	12	
FEV	54441	<b>FEV</b>	Stage & Studio	200	120	BA15d	5500	50	T4	12	
FEX/230	54514	<b>FEX/230 64781</b>	Stage & Studio	2000	230	RX7s	50000	300	T8	12	12
FEX/240	54518	<b>FEX/240 64781</b>	Stage & Studio	2000	240	RX7s	50000	300	T8	12	
FEY	54559	<b>FEY</b>	Stage & Studio	2000	120	RX7s	57400	400	T8	12	
FFJ	54488	<b>FFJ</b>	Stage & Studio	600	120	R7s	16500	75	T4	24	14
FFM	58862	<b>FFM</b>	Stage & Studio	420	120	R7s	11000	75	T4	24	14
FFT	54350	<b>FFT</b>	Stage & Studio	1000	120	R7s	27000	300	T3	12	
FHM	54532	<b>FHM</b>	Stage & Studio	1000	120	R7s	27300	300	T3	12	
FKW	54711	<b>FKW</b>	Stage & Studio	300	120	GY9.5	7800	200	T6	24	
FLK	54589	<b>FLK</b>	Stage & Studio	575	115	G9.5	16500	300	T5	12	16
FMR	54412	<b>FMR</b>	Stage & Studio	600	120	GY9.5	12500	2000	T5	24	
FRG	54629	<b>FRG</b>	Stage & Studio	500	120	GY9.5	13000	150	T6	24	
FRK	54631	<b>FRK</b>	Stage & Studio	650	120	GY9.5	16900	200	T6	24	
FSH	54436	<b>FSH</b>	Projector, Stage & Studio	125	120	G5.3	2500	200	T3	24	
FTK	54875	<b>FTK</b>	Stage & Studio	500	120	GY9.5	12000	200	T6	24	
FVL	54459	<b>FVL</b>	Stage & Studio	200	120	GX5.3	5200	200	T4	24	
FVM	54434 <sup>a</sup>	<b>FVM</b>	Stage & Studio	105	120	GX5.3	2250	250	T4	24	
GCA	54428	<b>GCA</b>	Projector - Video, Studio	250	120	G5.3	5700	200	T3	24	

## STUDIO, THEATRE, TV & VIDEO

ANSI Code	Product Number	Ordering Abbreviation	Application	Watts	Volts	Base	Lumens	Avg Rated Life(hrs)	Bulb	Pkg Qty	Footnotes
GKV	54511	<b>GKV</b>	Stage & Studio	600	230	G9.5	14000	300	T6	25	5
GLA	54516	<b>GLA 575/115/2000</b>	Stage & Studio	575	115	G9.5	10500	2000	T6	12	17
GLC	54507	<b>GLC 575/115/300</b>	Stage & Studio	575	115	G9.5	15500	300	T6	12	17,18
GLF	54460	<b>GLF</b>	Stage & Studio	235	230	G5.3	5100	100	T4	24	
	20607	<b>STUDIOLINE 55W/3200</b>	Compact Fluorescent /Studio-TV	55		2G11	3800	8000	T5	10	
	20608	<b>STUDIOLINE 55W/5600</b>	Compact Fluorescent /Studio-TV	55		2G11	3800	8000	T5	10	
	54001	<b>64501</b>	Stage & Studio	150	120	GX6.35	4500	25	T4	25	
	54232	<b>64614</b>	Projector, Video, Studio	75	12	G5.3-4.8		25	T2.5	20	
	54499	<b>4515 PAR36 30W</b>	Stage & Studio	30	6	Screw Term	67000	100	PAR36	12	
	54549	<b>HPR 575/115</b>	Stage & Studio	575	115	G9.5	18000	300	T5	12	16
	54602	<b>HPL750/115 (UCF)</b>	Stage & Studio	750	115		21900	300	T6	12	19
	54603	<b>HPL750/230 (UCF)</b>	Stage & Studio	750	230	Special	19750	300	T6	12	19
	54604	<b>HPL550/77X (UCF)</b>	Stage & Studio	550	77		12160	2000	T6	12	19
	54605	<b>HPL750/120 (UCF)</b>	Stage & Studio	750	120	Special	21900	300	T6	12	19
	54611	<b>HPL750/115/X (UCF)</b>	Stage & Studio	750	115		16400	1500	T6	12	19
	54614	<b>HPL750/240 (UCF)</b>	Stage & Studio	750	240	Special	19750	300	T6	12	19
	54618	<b>HPL575/230 (UCF)</b>	Stage & Studio	575	230	Special	14900	400	T6	12	19
	54619	<b>HPL575/240 (UCF)</b>	Stage & Studio	575	240	Special	14900	400	T6	12	19
	54622	<b>HPL575/115 (UCF)</b>	Stage & Studio	575	115		16520	300	T6	12	19
	54623	<b>HPL550/77 (UCF)</b>	Stage & Studio	550	77		16170	300	T6	12	19
	54625	<b>HPL375/115 (UCF)</b>	Stage & Studio	375	115		10540	300	T6	12	19
	54649	<b>HPL375/115/X (UCF)</b>	Stage & Studio	375	115		8000	1000	T8	12	19
	54653	<b>HPL750/120/X (UCF)</b>	Stage & Studio	750	120	Special	16400	1500	T6	12	19
	54807	<b>HPL575/115/X (UCF)</b>	Stage & Studio	575	115		12360	2000	T6	12	19
	54813	<b>HPL550/64 (UCF)</b>	Stage & Studio	550	64	Special	16340	300	T6	12	19
	54815	<b>HPL575/120/X (UCF)</b>	Stage & Studio	575	120	Special	12360	2000	T6	12	19
	54817	<b>HPL575/120 (UCF)</b>	Stage & Studio	575	120	Special	16460	300	T6	12	19
	54822	<b>HPL575/100 (UCF)</b>	Stage & Studio	575	100	Special	16730	300	T6	12	19
	54825	<b>HPL750/77 (UCF)</b>	Stage & Studio	750	77		22950	300	T6	12	19
	58636	<b>64515</b>	Stage & Studio	300	230	GX6.35	8500	15	T5	25	12
	58639	<b>64573</b>	Stage & Studio	1000	120	GX6.35	33000	15	T8	25	
	58640	<b>64575</b>	Stage & Studio	1000	230	GX6.35	33000	15	T8	25	12

## LARGE PAR

ANSI Code	Product Number	Ordering Abbreviation	Application	Watts	Volts	Base	Lumens	Avg Rated Life(hrs)	Bulb	Pkg Qty	Footnotes
EXC/230	56280	<b>EXC/230</b>	Stage & Studio	1000	230	Ext Mog End Pr		300	PAR64	6	20,21
EXC/240	56232	<b>EXC/240</b>	Stage & Studio	1000	240	Ext Mog End Pr		300	PAR64	6	20,21
EXD/230	56281	<b>EXD/230</b>	Stage & Studio	1000	230	Ext Mog End Pr		300	PAR64	6	20
EXD/240	56233	<b>EXD/240</b>	Stage & Studio	1000	240	Ext Mog End Pr		300	PAR64	6	20
EXE/230	56283	<b>EXE/230</b>	Stage & Studio	1000	230	Ext Mog End Pr		300	PAR64	6	20

## STUDIO, THEATRE, TV & VIDEO

### LARGE PAR

ANSI Code	Product Number	Ordering Abbreviation	Application	Watts	Volts	Base	Lumens	Avg Rated Life(hrs)	Bulb	Pkg Qty	Footnotes
EXE/240	56234	EXE/240	Stage & Studio	1000	240	Ext Mog End Pr		300	PAR64	6	20
EXG	56282	EXG/230	Stage & Studio	1000	230	Ext Mog End Pr		300	PAR64	6	20,22
FFN	56214	FFN	Stage & Studio	1000	120	Ext Mog End Pr		800	PAR64	6	20,23
FFP	56215	FFP	Stage & Studio	1000	120	Ext Mog End Pr		800	PAR64	6	20,21
FFR	56217	FFR	Stage & Studio	1000	120	Ext Mog End Pr		800	PAR64	6	20,24
FFS	56216	FFS	Stage & Studio	1000	120	Ext Mog End Pr		800	PAR64	6	20,22
	14974	350PAR56/SP	Train Ditch Light	350	75	MEP		750	PAR56	12	20

## SPECIAL PURPOSE HEAT LAMPS

ANSI Code	Product Number	Ordering Abbreviation	Watts	Volts	Base	Lumens	Avg Rated Life(hrs)	Bulb	Pkg Qty	Footnotes
FRN	54588	FRN 2000T8Q	2000	120	G9.5	56500	200	T8	12	25,26
	54007	64514	300	120	GX6.35	7700	75	T6	25	25,26
	54008	64516/300T6/CL	300	230	GX6.35	7300	75	T6	25	12,25,26
	54546	750/120/T5/RTP	750	120	G9.5	15400	2000	T5	15	25,26
	54560	1000TQ/RTP/CR/BULK	1000	120	G9.5	25000	2000	T6	15	25,26,27
	54584	1000Q/T6/RTPFS	1000	120	G9.5	27500	300	T6	12	25,26
	54633	1500Q/T6/RTPGS	1500	120	G9.5	42000	300	T6	12	
	54752	1000T6QRTP/X	1000	120	G9.5	25000	2000	T6	12	
	59803	2500T3Q/IR/7 480V	2500	480	RSC		5000	T3	12	25,26,28
	59822	500T3Q/IR/7 120V	500	120	RSC		5000	T3	12	25,26,28
	59841	1600T3Q/IR/7 240V	1600	240	RSC		5000	T3	12	25,26,28
	59850	500T3Q/IR 120V	500	120	Flex Nickel Leads		5000	T3	12	25,26,28
	59859	3650T3Q/IR/CL 480V	3650	480	Flex Nickel Leads		5000	T3	12	25,26,28
	59860	1000T3Q/IR 230-250V	1000	240	Flex Nickel Leads		5000	T3	12	25,26,28
	59864	1600T3Q/IR 240V	1600	240	Flex Nickel Leads		5000	T3	12	25,26,28
	59867	2500T3Q/IR 480V	2500	480	Flex Nickel Leads		5000	T3	12	25,26,28
	59870	3800T3Q/IR 570V	3800	570	Flex Nickel Leads		5000	T3	12	25,26,28
	59934	1200T3Q/IR/CL/HT 144V	1200	144	Flex Nickel Leads		3000	T3	12	25,28,29,30
	59936	1600T3Q/IR 277V	1600	277	Flex Nickel Leads		5000	T3	12	25,26,28

## AIRCRAFT

Watts	Bulb	Volts	Base	Product Number	Ordering Abbreviation	Application	Beam Type	CBCP	Filament	Avg Rated Life(hrs)	MOL (mm)	Pkg Qty	Footnotes
100	T3	12	PG22	54032	64621 HLX	Projector, Microfilm, Stage & Studio, Aircraft				2000	48	30	
250	PAR46	28	Screw Term	15399	4551	Aircraft Taxiing	VNSP	75000	CC-6	25	95.25	12	23
450	PAR46	28	Screw Term	56229	Q4681	Aircraft Landing / Taxiway	VNSP	310000	CC-6	50	63.5	12	20,23
600	PAR64	28	Screw Term	14936	4559	Aircraft Landing / Taxiway	VNSP	600000	CC-8	25	101.6	6	23
				56222	Q4559	Aircraft Landing / Taxiway	VNSP	600000	CC-8	100	101.6	6	20,23

## AIRCRAFT

Watts	Bulb	Volts	Base	Product Number	Ordering Abbreviation	Application	Beam Type	CBCP	Filament	Avg Rated Life(hrs)	MOL (mm)	Pkg Qty	Footnotes
600	PAR64	28	Screw Term	56223	Q4559X	Aircraft Landing / Taxiway	VNSP	765000	CC-8	100	101.6	6	20,23
1000	PAR64	28	Screw Term	14988	4557	Aircraft Landing/Taxiway	VNSP	540000	CC-8	25	101.6	6	23
				14994	5557	Aircraft Landing/Taxiway	VNSP	540000	CC-8	50	101.6	6	23,31

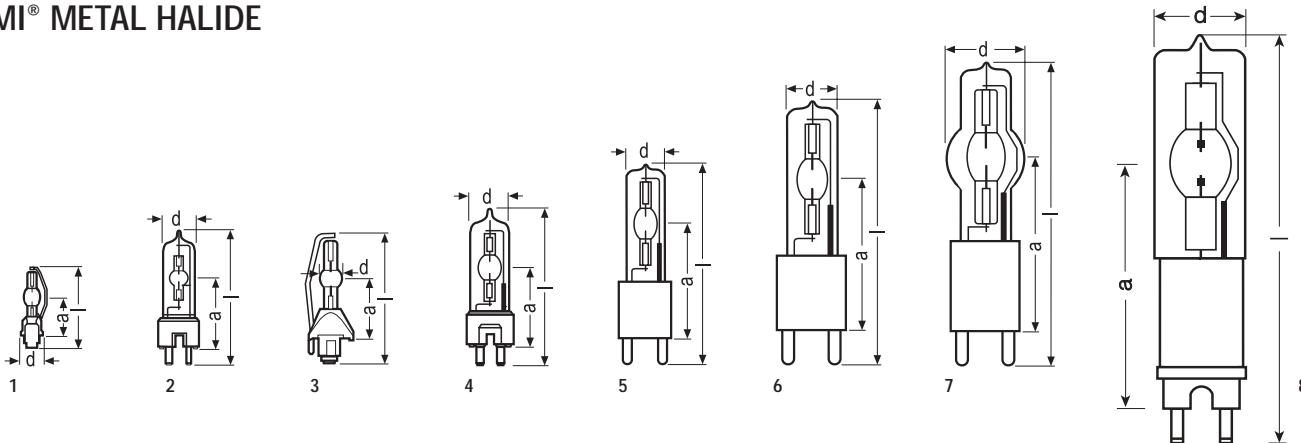
## AIRFIELD

Watts	Bulb	Base	Product Number	Ordering Abbreviation	Application	Current (A)	Lumens	Filament	Avg Rated Life(hrs)	LCL (mm)	MOL (mm)	Pkg Qty	Footnotes
30	MR16	Special	58537	6.6A/30MR16/64331A/SP	Airfield/Airport	6.6						10	
			58730	6.6A/30MR16/64331AC/FL	Airfield / Airport	6.6			1000			10	32
T3.5	GZ9.5		58779	6.6A/30T3.5/64322/EXL/DL	Airfield/Airport	6.6	400	C-8	2000	16	58	30	
T10	Med Prefocus		17980	6.6A/30T10/1P	Airfield/Airport	6.6	400	C-2V	1000	38.1	100	60	
40	MR11	PK30d	58787	6.6A/40MR11/64333B	Airfield / Airport	6.6			1500			10	33
45	MR16	Special	58545	6.6A/45MR16/64337A45-15	Airfield / Airport	6.6	19000		1500			10	
		PK30d	58758	6.6A/45MR16/64337B45-15	Airfield / Airport	6.6			1500			10	33
T3	R7s		58704	6.6A/45T3/CL/64315	Airfield/Airport	6.6	750	C-8	1000	23	47.5	25	
T3.5	GZ9.5		58775	6.6A/45T3.5/64320/EXM	Airfield/Airport	6.6	875	C-8	1000	25.4	44.5	100	
	G6.35		58813	6.6A/45T3.5Q/64321	Airfield / Airport	6.6	840	C-8	1200	33	50	100	
T4	PK30d		58697	6.6A/45T4/64319 FEMALE	Airfield/Airport	6.6	800	C-8	1000	20	53	100	34,35
			58705	6.6A/45T4/CL/64317	Airfield/Airport	6.6	800	C-8	1000	16	58	100	35
	Special		58722	6.6A/45T4/64319Z	Airfield/Airport	6.6	800	C-8	1000	20	53	100	36,37
T10	Med Prefocus		17981	6.6A/45T10/P	Airfield/Airport	6.6	675	C-2V	1000	38.1	100	60	
48	MR16	Special	58711	6.6A/48MR16/64338AC	Airfield / Airport	6.6			1000			10	
			58792	6.6A/48MR16/64337A48-15	Airfield/Airport	6.6	20000		1500			10	35
65	T4	Special	58726	6.6A/65T4/64328Z/HXL	Airfield/Airport	6.6	1450	C Bar 6	1000	20	53	100	37,38
100	T4	Special	58703	6.6A/100T4/64341Z/HXL	Airfield/Airport	6.6	2700	C Bar 6	1000	20	55	100	37,39
		PK30d	58706	6.6A/100T4/64342Z/HXL	Airfield/Airport	6.6	2700	C Bar 6	1000	20	58	100	35
			58709	6.6A/100T4/64341/HXL	Airfield/Airport	6.6		C Bar 6	1000	20	55	100	35
105	MR16	PK30d	58759	6.6A/105MR16/64339B	Airfield/Airport	6.6			1000			10	33
			58785	6.6A/105MR16/64339A	Airfield / Airport	6.6			1000			10	35
	Special		58816	6.6A/105MR16/64339C	Airfield / Airport	6.6			1000			10	37
115	T4	GY9.5	58794	6.6A/115T4Q/58798/2PPF/EVV	Airfield/Airport	6.6	2900	C Bar 6	1000	39.1	57	30	40,41
		DCR	58819	6.6A/115T4Q/DCR/DL	Airfield/Airport	6.6		C Bar 6	1000	26.9	60.3	100	
150	T4	PK30d	58717	6.6A/150T4/64361/HXL	Airfield/Airport	6.6	3600	C Bar 6	1000	20	58	100	35,42
		Special	58724	6.6A/150T4Q/64361Z/HXL	Airfield/Airport	6.6	3600	C Bar 6	1000	20	58	100	37
	GY9.5		58777	6.6A/150T4Q/64354/EWR/DL	Airfield/Airport	6.6	4000	C Bar 6	1500	39.1	65	30	40,41
175	T4	GY9.5	58795	6.6A/175T4Q/58799/2PPF/DL	Airfield/Airport	6.6	4700	C Bar 6	1000	39.1	57	30	41,43
200	PAR64	Ext Mog End Pr	14985▲	6.6A/200PAR64/2	Airfield/Airport	6.6		CC-6	1000		114.3	6	
			56220	6.6A/200PAR640/2P	Airfield/Airport	6.6		CC-6	2000		114.3	6	20,44
T4	PK30d		58649	6.6A/200T4/64382A/HXL	Airfield/Airport	6.6	4800	CC-6	1000	20	64	100	
	Special		58708	6.6A/200T4/64382/HXL	Airfield/Airport	6.6	4800	CC-6	1000	20	64	100	45
	GY9.5		58789	6.6A/200T4Q/2PPF/58750/EZL/DL	Airfield/Airport	6.6	5200	CC-6	1000	39.1	57.0	30	40,41

## AIRFIELD

Watts	Bulb	Base	Product Number	Ordering Abbreviation	Application	Current (A)	Lumens	Filament	Avg Rated Life(hrs)	LCL (mm)	MOL (mm)	Pkg Qty	Footnotes
200	T4	G6.35	58815	<b>6.6A/200T4Q/64386</b>	Airfield / Airport	6.6	4700	C Bar 6	1200	33	47	100	
		DCR	58821	<b>6.6A/200T4Q/CL/DCR/DL</b>	Airfield/Airport	6.6	5000	CC-6	1000	27	80.9	100	
	T5	R7s	58707	<b>6.6A/200T5/CL/64380</b>	Airfield/Airport	6.6	4400	CC-8	1000	21.3	60.2	25	
204	T14	Med Prefocus	17983	<b>6.6A/204T14/2P</b>	Airfield/Airport	6.6	4220	C-13	500	55.5	146	24	

## HMI® METAL HALIDE



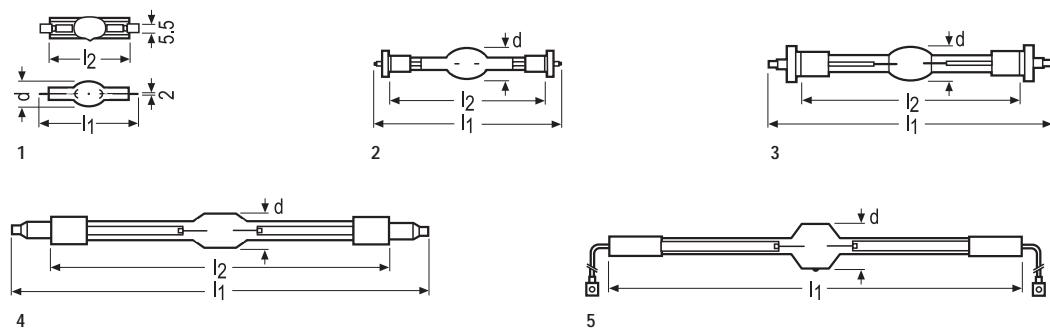
### HMI® SINGLE-ENDED

Ordering Abbreviation	HMI 123 W	HMI 200 W/SE	HMI 250 W/SE	HMI 400 W/SE	HMI 575 W/SE
Product Number	54059	54061	54062	54137	54063
Watts (W)	125	200	270	400	575
Volts (V)	80	70	50	70	95
Current (A)	1.7	3.0	5.0	6.9	7.0
Lumens (lm)	8500	16000	16200	33000	49000
Color Temp (K)	6000	6000	6000	6000	6000
Length l max (mm)	64	80	84	110	145
Distance a (mm)	26.7	39	35	60	70
Diameter d (mm)	10	20	12	23	30
Electrode Gap - cold (mm)	4	5	5	6	7
Avg Rated Life (hrs)	150	200	250	650	750
Operating Position	Any	Any	p 45	Any	Any
Base	Special	GZY9.5	FaX1.5	GZZ9.5	G22
Hot Restart	Yes	Yes	Yes	Yes	Yes
Fig No	1	2	3	4	5
Symbols & Footnotes	1	1	1,2,3	4	4

### HMI® SINGLE-ENDED

Ordering Abbreviation	HMI 1200 W/SE	HMI 2500 W/SE	HMI 4000 W/SE	HMI 6000 W/SE	HMI 12000 W/SE
Product Number	54067	54070	54072	54099	54113
Watts (W)	1200	2500	4000	6000	12000
Volts (V)	100	115	200	123	160
Current (A)	13.8	25.6	24.0	55	84
Lumens (lm)	110000	240000	380000	600000	1150000
Color Temp (K)	6000	6000	6000	6000	6000
Length l max (mm)	200	225	250	360	450
Distance a (mm)	107	127	142	210	255
Diameter d (mm)	42	60	75	75	100
Electrode Gap - cold (mm)	10	14	20	23	27
Avg Rated Life (hrs)	750	500	500	500	300
Operating Position	Any	Any	Any	s 135	s 135
Base	G38	G38	G38	GX38	GX38
Hot Restart	Yes	Yes	Yes	Yes	Yes
Fig No	6	7	7	8	8
Symbols & Footnotes	4	4	4	4,5,6	4,5,6

## HMI® METAL HALIDE



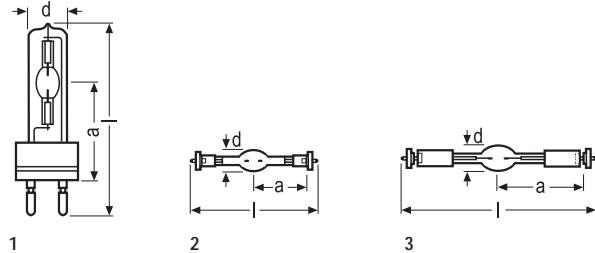
### HMI® DOUBLE-ENDED

Ordering Abbreviation	HMI 200 W	HMI 575 W/GS	HMI 1200 W/GS	HMI 1200 W/S	HMI 2500 W/GS
Product Number	54060	54098	54066	54088	54069
Watts (W)	200	575	1200	1200	2500
Volts (V)	80	95	100	100	115
Current (A)	3.1	7.0	13.8	13.8	25.6
Lumens (lm)	14000	49000	110000	110000	240000
Color Temp (K)	6000	6000	6000	6000	6000
Length l <sub>1</sub> max (mm)	75	135	220	135	355
Length l <sub>2</sub> max (mm)	60	115	180	115	290
Diameter d (mm)	14	21	27	21	31.5
Electrode Gap - cold (mm)	10	7	10	7	14
Avg Rated Life (hrs)	300	1000	750	750	500
Operating Position	p 15	Any	Any	Any	p 30
Base	X515	SFc10-4	SFc15.5	SFc10-4	SFa21
Hot Restart	Yes	Yes	Yes	Yes	Yes
Fig No	1	2	3	2	4
Symbols & Footnotes	4	4,7	4,7	4,8,9	4,7

### HMI® DOUBLE-ENDED

Ordering Abbreviation	HMI 2500 W/S	HMI 4000 W	HMI 6000 W	HMI 12000 W/GS	HMI 18000 W
Product Number	54068	54071	54073	54074	54075
Watts (W)	2500	4000	6000	12000	18000
Volts (V)	115	200	123	160	225
Current (A)	25.6	24.0	55.0	84.0	88.0
Lumens (lm)	240000	380000	570000	1150000	1700000
Color Temp (K)	6000	6000	6000	6000	6000
Length l <sub>1</sub> max (mm)	210	405	450	470	500
Length l <sub>2</sub> max (mm)	150	340			
Diameter d (mm)	31.5	36	54	64	70
Electrode Gap - cold (mm)	14	34	21	25	44
Avg Rated Life (hrs)	500	500	500	500	250
Operating Position	p 30	p 15	p 15	p 15	p 15
Base	SFa21	SFa21	S25.5	S30	S30
Hot Restart	Yes	Yes	Yes	Yes	Yes
Fig No	4	4	5	5	5
Symbols & Footnotes	4,8,9	4,10	4	4,7	4,10

## HMP® METAL HALIDE



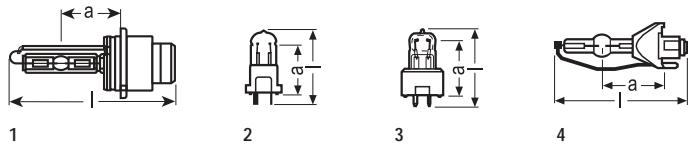
### HMP® SINGLE-ENDED

<b>Ordering Abbreviation</b>	HMP 575 SE	
Product Number	54145	
Watts (W)	575	
Volts (V)	100	
Current (A)	6.7	
Lumens (lm)	49000	
Color Temp (K)	6000	
Length l (mm)	145	
Distance a (mm)	70	
Diameter d (mm)	30	
Electrode Gap - cold (mm)	7	
Avg Rated Life (hrs)	1000	
Operating Position	Any	
Base	G22	
Hot Restart	Yes	
Fig No	1	
Symbols & Footnotes	4,11	

### HMP® DOUBLE-ENDED

<b>Ordering Abbreviation</b>	HMP 400 DE	HMP 575 DE
Product Number	54146	54144
Watts (W)	400	575
Volts (V)	100	100
Current (A)	4.8	6.7
Lumens (lm)	33000	49000
Color Temp (K)	6000	6000
Length l (mm)	92	135
Distance a (mm)	35	57.5
Diameter d (mm)	16	21.5
Electrode Gap - cold (mm)	5.5	7
Avg Rated Life (hrs)	750	1000
Operating Position	p 45	Any
Base	SFXc10-4	SFXc10-4
Hot Restart	Yes	Yes
Fig No	2	3
Symbols & Footnotes	4,12,13	4,11

## HTI® METAL HALIDE



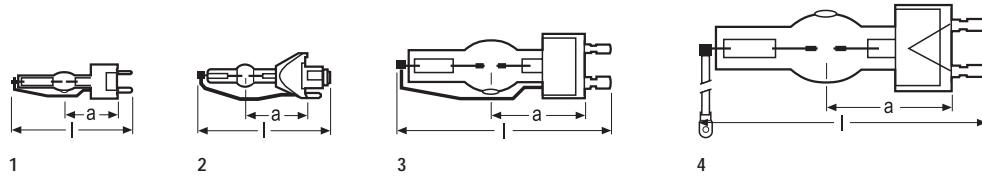
### HTI® SINGLE-ENDED

Ordering Abbreviation	HTI S 35/12	HTI 150 W	HTI 152 W
Product Number	69000	54078	54079
Watts (W)	35	150	150
Volts (V)	85	90	95
Current (A)	2.5	1.8	1.8
Lumens (lm)	3200	9500	9500
Average Luminance (cd/cm <sup>2</sup> )	6500	5000	4200
Color Temp (K)	4250	6500	5000
Length l max (mm)	79.5	46	48
Distance a (mm)	27.1	30	30
Electrode Gap - cold (mm)	4.2	5.0	6.75
Avg Rated Life (hrs)	3000	750	2000
Operating Position	p 10	Any	Any
Base	P32d-2	GY9.5	GY9.5
Hot Restart	Yes	No	No
Fig No	1	2	3
Symbols & Footnotes	1,2	4,14	4

### HTI® SINGLE-ENDED

Ordering Abbreviation	HTI 250 W/SE	HTI 400 W/SE	HTI 404 W/SE
Product Number	54091	54084	54106
Watts (W)	270	400	400
Volts (V)	45	55	55
Current (A)	6	7.3	7.3
Lumens (lm)	10000	28000	28000
Average Luminance (cd/cm <sup>2</sup> )	40000	30000	40000
Color Temp (K)	4900	4800	6000
Length l max (mm)	80	84	84
Distance a (mm)	35	35	35
Electrode Gap - cold (mm)	2.5	4.0	3.0
Avg Rated Life (hrs)	250	250	500
Operating Position	p 45	p 45	p 45
Base	FaX1.5	FaX1.5	FaX1.5
Hot Restart	Yes	Yes	Yes
Fig No	4	4	4
Symbols & Footnotes	1,2,3,15	1,2,3,15,16,17,18	1,15,16

## HTI® METAL HALIDE



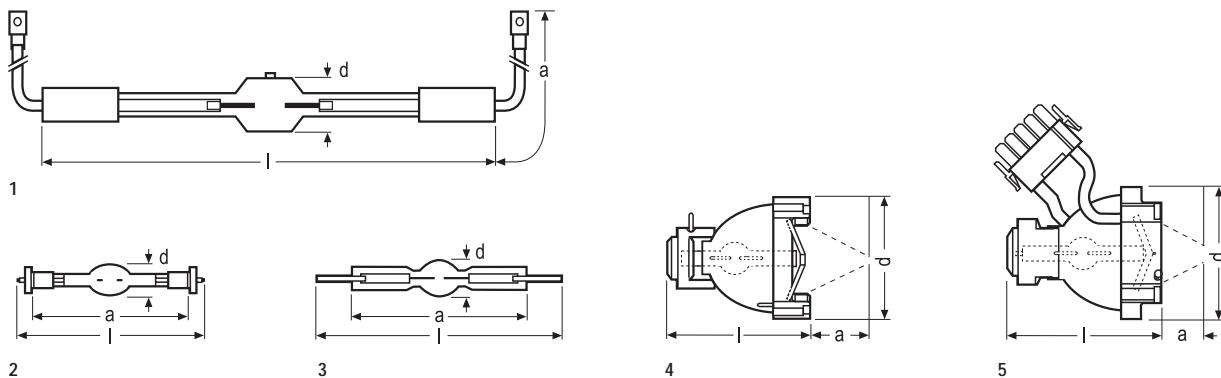
### HTI® SINGLE-ENDED

Ordering Abbreviation	HTI 405 W/SE	HTI 600 W/SE	HTI 705 W/SE
Product Number	54139	54087	54130
Watts (W)	400	600	700
Volts (V)	55	95	70
Current (A)	7.3	7.7	10
Lumens (lm)	28000	48000	59000
Average Luminance (cd/cm <sup>2</sup> )	40000	25000	
Color Temp (K)	5800	5300	5700
Length l max (mm)	80	84	85
Distance a (mm)	36.5	35	39
Electrode Gap - cold (mm)	3.0	5.5	4
Avg Rated Life (hrs)	500	300	500
Operating Position	p 45	p 45	p 45
Base	GY9.5	FaX1.5	GY9.5
Hot Restart	No	Yes	No
Fig No	1	2	1
Symbols & Footnotes	1,2,6,15,17,18	3,4,15,16	6,15

### HTI® SINGLE-ENDED

Ordering Abbreviation	HTI 1200 W/SE	HTI 2500 W/SE
Product Number	54141	54142
Watts (W)	1200	2500
Volts (V)	100	115
Current (A)	13.8	25.6
Lumens (lm)	99000	240000
Average Luminance (cd/cm <sup>2</sup> )	26000	30000
Color Temp (K)	4500	6000
Length l max (mm)	135	180
Distance a (mm)	59	85
Electrode Gap - cold (mm)	7	14
Avg Rated Life (hrs)	600	600
Operating Position	s 135	s 135
Base	GY22	G22+Cable
Hot Restart	Yes	Yes
Fig No	3	4
Symbols & Footnotes	4,6,15,19	4,6,20

## HTI® METAL HALIDE



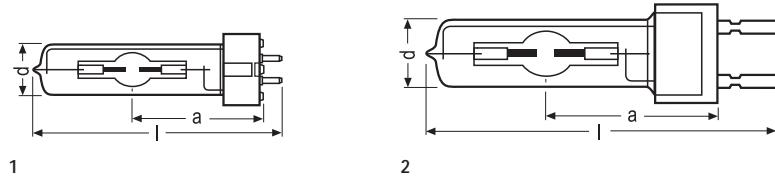
## HTI® DOUBLE-ENDED

Ordering Abbreviation	HTI 300 W/DEL	HTI 300 W/DX	HTI 600 W/D	HTI 700 W/DE	HTI 4000 W/DE
Product Number	54112	54143	54140	54117	54133
Watts (W)	300	300	600	700	4000
Volts (V)	85	100	95	73	115
Current (A)	4.3	3.6	7.7	10	39.0
Lumens (lm)	20000	22000	48000	59000	360000
Average Luminance (cd/cm²)		20000	25000		35000
Color Temp (K)	5700	6500	5300	5600	6300
Length l max (mm)	92	92	75	135	270
Distance a (mm)	70	70	59	115	140
Diameter d (mm)	16	16	16	18	40
Electrode Gap - cold (mm)	5.5	5.5	5.5	4	15
Avg Rated Life (hrs)	3000	750	300	750	500
Operating Position	p 45	p 45	p 45	Any	p 30
Base	SFc10-4	SFc10-4	Special	Special	S25.5
Hot Restart	Yes	Yes	Yes	Yes	Yes
Fig No	1	1	2	1	3
Symbols & Footnotes	4	4,21	4	4,6	4

## HTI® WITH DICHROIC REFLECTOR

Ordering Abbreviation	HTI 250 W/22	HTI 250 W/32	HTI 250 W/32C	HTI 400 W/24	HTI 403 W/24
Product Number	54080	54081	54089	54083	54104
Watts (W)	270	270	270	400	400
Volts (V)	45	45	45	55	55
Current (A)	6	6	6	7.3	7.3
Color Temp (K)	5600	5600	5600	5600	5600
Length l max (mm)	73	73	73	73	73
Working Distance a (mm)	22	32	32	24	24
Diameter d (mm)	67	67	67	67	67
Electrode Gap - cold (mm)	2.5	2.5	2.5	4.0	4.0
Avg Rated Life (hrs)	250	250	250	250	750
Operating Position	P 20	P 20	P 20	P 20	P 20
Hot Restart	Yes	Yes	Yes	Yes	YES
Fig No	4	4	5	5	5
Symbols & Footnotes	1	1,22	4	1	1

## HSR® METAL HALIDE



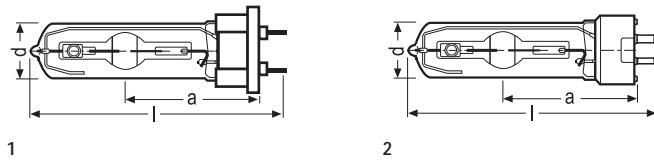
### HSR® WITH OUTER JACKET

Ordering Abbreviation	HSR 400/60	HSR 575/60	HSR 575/72
Product Number	54102	54115	54116
Watts (W)	400	575	575
Volts (V)	67	95	95
Current (A)	6.9	7	7
Lumens (lm)	33000	49000	49000
Average Luminance (cd/cm <sup>2</sup> )	20000	10000	10000
Color Temp (K)	5900	6000	7200
Length <i>l</i> (mm)	110	125	125
Distance <i>a</i> (mm)	62	65	65
Diameter <i>d</i> (mm)	23	30	30
Electrode Gap - cold (mm)	5	7	7
Avg Rated Life (hrs)	650	1000	1000
Operating Position	Any	Any	Any
Base	GX9.5	GX9.5	GX9.5
Hot Restart	No	No	No
Fig No	1	1	1
Symbols & Footnotes	4	4	4

### HSR® WITH OUTER JACKET

Ordering Abbreviation	HSR 700/60	HSR 1200/60
Product Number	54107	54168
Watts (W)	700	1200
Volts (V)	72	100
Current (A)	11	13.8
Lumens (lm)	58000	110000
Average Luminance (cd/cm <sup>2</sup> )	10000	20000
Color Temp (K)	6000	6000
Length <i>l</i> (mm)	155	175
Distance <i>a</i> (mm)	75	85
Diameter <i>d</i> (mm)	30	40
Electrode Gap - cold (mm)	8	10
Avg Rated Life (hrs)	1000	1000
Operating Position	Any	Any
Base	G22	G22
Hot Restart	No	No
Fig No	2	2
Symbols & Footnotes	4	4

## HSD® METAL HALIDE



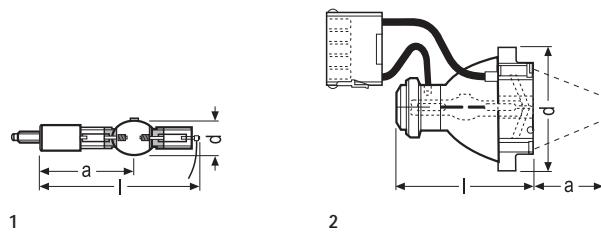
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### HSD® WITH OUTER JACKET

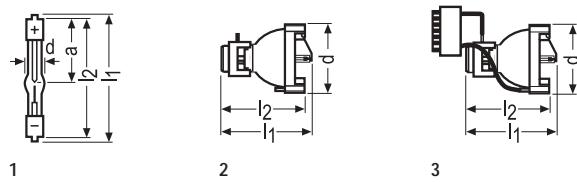
Ordering Abbreviation	HSD 150/70	HSD 200/60	HSD 250/60	HSD 250/78	HSD 575/72
Product Number	54119	54167	54170	54118	54129
Watts (W)	150	200	250	250	575
Volts (V)	97	70	90	90	88
Current (A)	1.8	3.3	3.1	3.1	7.4
Lumens (lm)	12000	13000	17000	17000	45000
Color Temp (K)	7000	6000	6000	7800	7200
Length l (mm)	105	108	110	108	135
Distance a (mm)	56	55	55	55	65
Diameter d (mm)	20	23	23	23	30
Electrode Gap - cold (mm)	5.5	5	5	5	7
Avg Rated Life (hrs)	2000	2000	2000	3000	3000
Operating Position	Any	Any	Any	Any	Any
Base	G12	GY9.5	GY9.5	GY9.5	GX9.5
Hot Restart	No	No	No	No	No
Fig No	1	2	2	2	2
Symbols & Footnotes	4,23	4	4,24	4	4

## VIP® VIDEO AND DATA PROJECTION



Ordering Abbreviation	VIP S 170/13	VIP R 273/45
Product Number	69320	69327
Watts (W)	170	270
Volts (V)	85	38
Current (A)	2.0	7.1
Lumens (lm)	11900	17000
Average Luminance (cd/cm <sup>2</sup> )	30000	100000
Color Temp (K)	9000	5800
Length l (mm)	62	73
Distance a (mm)	35	45
Diameter d (mm)	13	67
Arc Length (mm)	5	1.9
Avg Rated Life (hrs)	4000	1000
Operating Position	Horizontal, tip-off up	Horizontal, tip-off up
Base	SFc10-4	
Hot Restart	Yes	Yes
Fig No	1	2
Symbols & Footnotes	1,25	1,25,26

## XBO® <= 450W XENON SHORT ARC



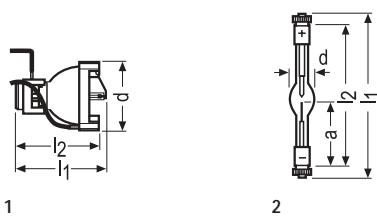
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Ordering Abbreviation	XBO 75 W/2	XBO 75 W/2 OFR	XBO 100 W OFR	XBO R 100 W/45 OFR	XBO R 100 W/45C OFR
Product Number	69231	69232	69233	69197	69191
Watts (W)	75	75	100	100	100
Volts (V)	14	14	14	13	13
Type of Current	DC	DC	DC	DC	DC
Current (A)	5.4	5.4	7.0	7.0	7.0
Current Control Range (A)					
Lumens (lm)	1000	1000	1900		
Luminous Intensity (cd)	100	100	270		
Average Luminance (cd/cm²)	40000	40000	31000		
Luminous Area -- w x h (mm)	0.25 x 0.5	0.25 x 0.5	0.4 x 0.8	0.4 x 0.9	0.4 x .09
Length l <sub>1</sub> max (mm)	90	90	90	83	83
Length l <sub>2</sub> max (mm)	82	82	82	75	75
Distance a (mm)	43	43	44.5		
Diameter d (mm)	10	10	11	67	67
Avg Rated Life Vertical (hrs)	400	400	500		
Avg Rated Life Horizontal (hrs)	400	400		500	500
Operating Position	s 105	s 105	s 105	p 15	p 15
Forced Cooling			Required	Required	Required
Base Anode	SFa9-2	SFa7.5-2	SFa9-2		
Base Cathode	SFa7.5-2	SFa7.5-2	SFa7.5-2		
Fig No	1	1	1	2	3
Symbols & Footnotes	27,28,29,30	28,29,30,31	29,30,31	28,29,31,32,33,34	28,29,30,31,34

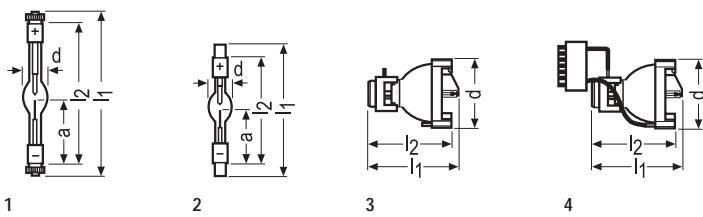
## XBO® <= 450W XENON SHORT ARC



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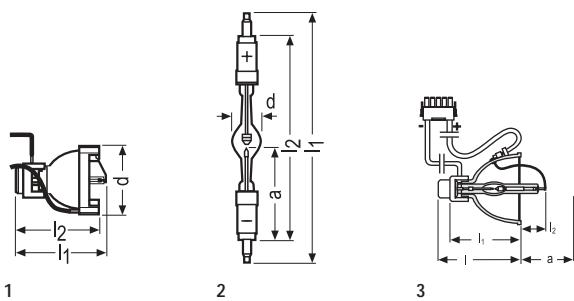
Ordering Abbreviation	XBO R 101 W/45C OFR	XBO 150 W/1	XBO 150 W/1 OFR	XBO 150 W/4
Product Number	69190	69234	69235	69238
Watts (W)	100	150	150	150
Volts (V)	13	20	20	20
Type of Current	DC	DC	DC	DC
Current (A)	7.0	7.5	7.5	7.5
Current Control Range (A)				
Lumens (lm)		3000	3000	3000
Luminous Intensity (cd)		300	300	300
Average Luminance (cd/cm <sup>2</sup> )		15000	15000	15000
Luminous Area -- w x h (mm)		0.5 x 2.2	0.5 x 2.2	0.5 x 2.2
Length $l_1$ max (mm)	83	150	150	150
Length $l_2$ max (mm)	75	127	127	127
Distance $a$ (mm)		57	57	57
Diameter $d$ (mm)	67	20		20
Avg Rated Life Vertical (hrs)		1200	1200	1200
Avg Rated Life Horizontal (hrs)	500			
Operating Position	p 15	s 15	s 15	s 15
Forced Cooling	Required	Required	Required	Required
Base Anode		SFc12-4	SFc12-4	SFc12-4
Base Cathode		SFcX12-4	SFcX12-4	SFcX12-4
Fig No	1	2	2	2
Symbols & Footnotes	28,31,34,35,36	28,29,30,37,38	28,29,30,31,38	28,29,30,39

## XBO® <= 450W XENON SHORT ARC



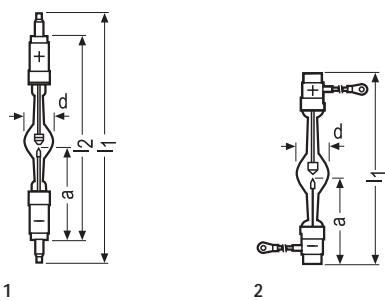
Ordering Abbreviation	XBO 150 W/CR OFR	XBO 150 W/S	XBO R 180 W/45/OFR	XBO R 180 W/45C OFR
Product Number	69237	69236	69186	69183
Watts (W)	150	150	180	180
Volts (V)	18	20	14	14
Type of Current	DC	DC	DC	DC
Current (A)	8.5	7.5	12	12
Current Control Range (A)				
Lumens (lm)	2900	2200		
Luminous Intensity (cd)	290	220		
Average Luminance (cd/cm²)	20000	18000		
Luminous Area -- w x h (mm)	0.5 x 1.6	0.5 x 1.9		
Length l <sub>1</sub> max (mm)	150	117	90	90
Length l <sub>2</sub> max (mm)	127	96	75	75
Distance a (mm)	57	47.5		
Diameter d (mm)	20	20	67	67
Avg Rated Life Vertical (hrs)	3000	1000	500	500
Avg Rated Life Horizontal (hrs)	1200	800		
Operating Position	s15 p15	s15 p15	p 15	p 15
Forced Cooling	Required	Required	Required	Required
Base Anode	SFc12-4	SFa12-11		
Base Cathode	SFcX12-4	SFa12-11		
Fig No	1	2	3	4
Symbols & Footnotes	28,29,30,31,40,41	8,28,29,30,40	28,29,30,31,34,42	28,29,30,31,34,35

## XBO® <= 450W XENON SHORT ARC



Ordering Abbreviation	XBO R 181 W/45C OFR	XBO 250 W OFR	XBO R 300 W/60C OFR	XBO 450 W
Product Number	69184	69239	69167	69241
Watts (W)	180	250	300	450
Volts (V)	14	13	17	17
Type of Current	DC	DC	DC	DC
Current (A)	12	18	16	25
Current Control Range (A)		14-20	14 - 19	17-30
Lumens (lm)		4800		13000
Luminous Intensity (cd)		530		1300
Average Luminance (cd/cm²)		26000		35000
Luminous Area -- w x h (mm)		0.7 x 1.7		0.9 x 2.7
Length $l_1$ max (mm)	90	226	62	260
Length $l_2$ max (mm)	75	192	30	212
Distance $a$ (mm)		93	60	95.5
Diameter $d$ (mm)	67	25	82.5	29
Avg Rated Life Vertical (hrs)	500	1200		2000
Avg Rated Life Horizontal (hrs)			1000	
Operating Position	p 15	s 15	p20	s 30
Forced Cooling	Required	Required	Required	Required
Base Anode		SFa16-8		SFa20-8
Base Cathode		SFa16-10		SFa20-10
Fig No	1	2	3	2
Symbols & Footnotes	28,29,30,31,34,35,36	28,29,30,31	28,29,30,31,35,43	28,29,30,44,45

## XBO® <= 450W XENON SHORT ARC

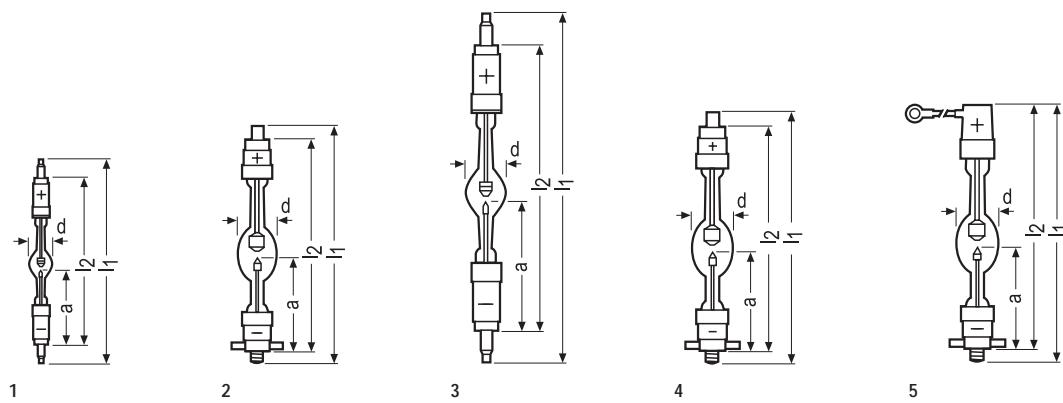


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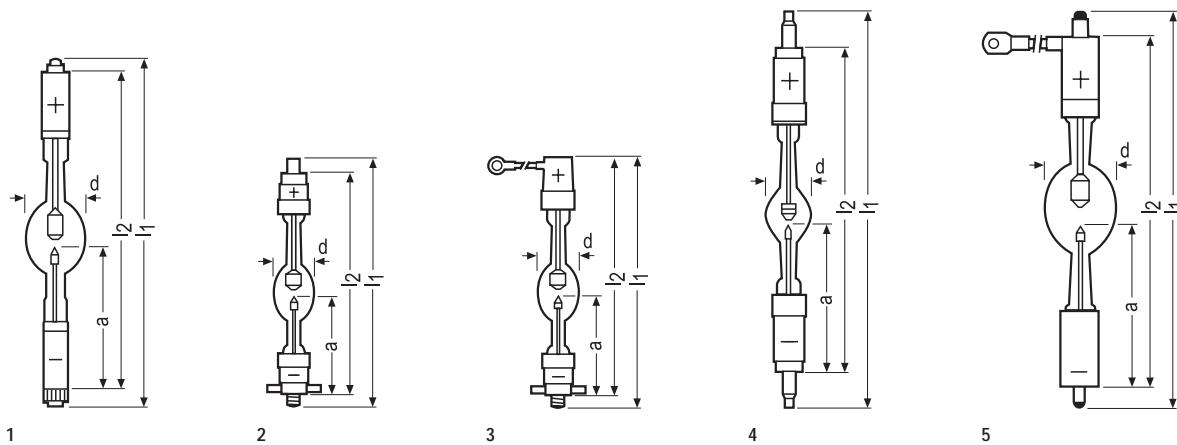
Ordering Abbreviation	XBO 450 W OFR	XBO 450 W/1	XBO 450 W/2 OFR	XBO 450 W/4
Product Number	69245	69242	69243	69244
Watts (W)	450	450	450	450
Volts (V)	17	17	17	17
Type of Current	DC	DC	DC	DC
Current (A)	25	25	25	25
Current Control Range (A)	17-30	17-30	17-30	17-30
Lumens (lm)	13000	13000	13000	13000
Luminous Intensity (cd)	1300	1300	1300	1300
Average Luminance (cd/cm²)	35000	45000	35000	35000
Luminous Area -- w x h (mm)	0.9 x 2.7	0.7 x 2.2	0.9 x 2.7	0.9 x 2.7
Length $l_1$ max (mm)	260	260	177	260
Length $l_2$ max (mm)	212	212		212
Distance $a$ (mm)	95.5	95.5	79	95.5
Diameter $d$ (mm)	29	29	29	29
Avg Rated Life Vertical (hrs)	2000	800	2000	2000
Avg Rated Life Horizontal (hrs)		800		
Operating Position	s 30	s 100	s 30	s 30
Forced Cooling	Required	Required	Required	Required
Base Anode	SFa20-8	SFa20-8	SK19/36	SFa20-8
Base Cathode	SFa20-10	SFa20-10	SK19/36	SFa20-10
Fig No	1	1	2	1
Symbols & Footnotes	28,29,30,31	28,29,30	28,29,30,31	28,29,30,39

## XBO® >450W XENON SHORT ARC CINEMA FILM PROJECTION



Ordering Abbreviation	XBO 500 W/H OFR	XBO 700 W/HS OFR	XBO 900 W OFR	XBO 1000 W/HS OFR	XBO 1000 W/HSC OFR
Product Number	69257	69260	69261	69263	69264
Watts (W)	500	700	900	1000	1000
Volts (V)	17	18	19	19	19
Type of Current	DC	DC	DC	DC	DC
Current (A)	28	37	45	50	50
Current Control Range (A)	17-30	30-45	30-53	30-55	30-55
Lumens (lm)	14500	20000	30000	32000	32000
Luminous Intensity (cd)	1450	2000	3000	3000	3000
Average Luminance (cd/cm²)	40000	40000	50000	60000	60000
Luminous Area -- w x h (mm)	0.9 x 2.5	1.1 x 2.9	1.1 x 3.3	1.1 x 2.8	1.1 x 2.8
Length l <sub>1</sub> max (mm)	190	235	325	235	236
Length l <sub>2</sub> max (mm)	165	205	277	205	222
Distance a (mm)	75	95	123	95	95
Diameter d (mm)	35	40	40	40	40
Avg Rated Life Vertical (hrs)	2000	1500	2400	2000	2000
Avg Rated Life Horizontal (hrs)	2000	1500		2000	2000
Operating Position	s30 p30	s20 p20	s 30	s20 p20	s20 p20
Forced Cooling	Required	Required	Required	Required	Required
Magnetic Arc Stabilization	Required				
Base Anode	SFa16-8	SFa27-11	SFa25-10	SFa27-11	SK27/50
Base Cathode	SFa15-10	SFcX27-8	SFa25-12	SFcX27-8	SFcX27-8
Fig No	1	2	3	4	5
Symbols & Footnotes	2,28,29,30,31,46	2,8,28,29,30,31,46	28,29,30,31,46	2,8,28,29,30,31,46	2,8,28,29,30,31,35,46

## XBO® >450W XENON SHORT ARC CINEMA FILM PROJECTION



Ordering Abbreviation	XBO 1000 W/HTP OFR	XBO 1600 W/HS OFR	XBO 1600 W/HSC OFR	XBO 1600 W OFR	XBO 1600 W/CA OFR
Product Number	69265	69268	69269	69266	69267
Watts (W)	1000	1550	1550	1600	1600
Volts (V)	21	23	23	24	24
Type of Current	DC	DC	DC	DC	DC
Current (A)	45	65	65	65	65
Current Control Range (A)	30-55	50-70	50-70	45-75	45-75
Lumens (lm)	35000	70000	60000	60000	60000
Luminous Intensity (cd)	3200	5500	5500	6000	6000
Average Luminance (cd/cm²)	45000	70000	70000	65000	65000
Luminous Area -- w x h (mm)	1.0 x 4.0	1.0 x 3.2	1.0 x 3.2	1.4 x 4.0	1.4 x 4.0
Length l <sub>1</sub> max (mm)	330	235	236	370	370
Length l <sub>2</sub> max (mm)	277	205	222	322	322
Distance a (mm)	123	95	95	142.5	143
Diameter d (mm)	46	46	46	52	52
Avg Rated Life Vertical (hrs)	2400	2000	2000	2400	2400
Avg Rated Life Horizontal (hrs)	2400	2000	2000		
Operating Position	s30 p30	s20 p20	s20 p20	s 30	s 30
Forced Cooling		Required	Required	Required	Required
Magnetic Arc Stabilization	Required				
Base Anode	SFa25-14	SFa27-11	SK27/50	SFa27-10	SFaX27-10
Base Cathode	SFc25-14	SFcX27-8	SFcX27-8	SFa27-12	SFa27-12
Fig No	1	2	3	4	5
Symbols & Footnotes	2,28,29,30,31,46	2,8,28,29,30,31,46	2,8,28,29,30,31,35,46	28,29,30,31,46	28,29,30,31,46,47

## XBO® >450W XENON SHORT ARC CINEMA FILM PROJECTION

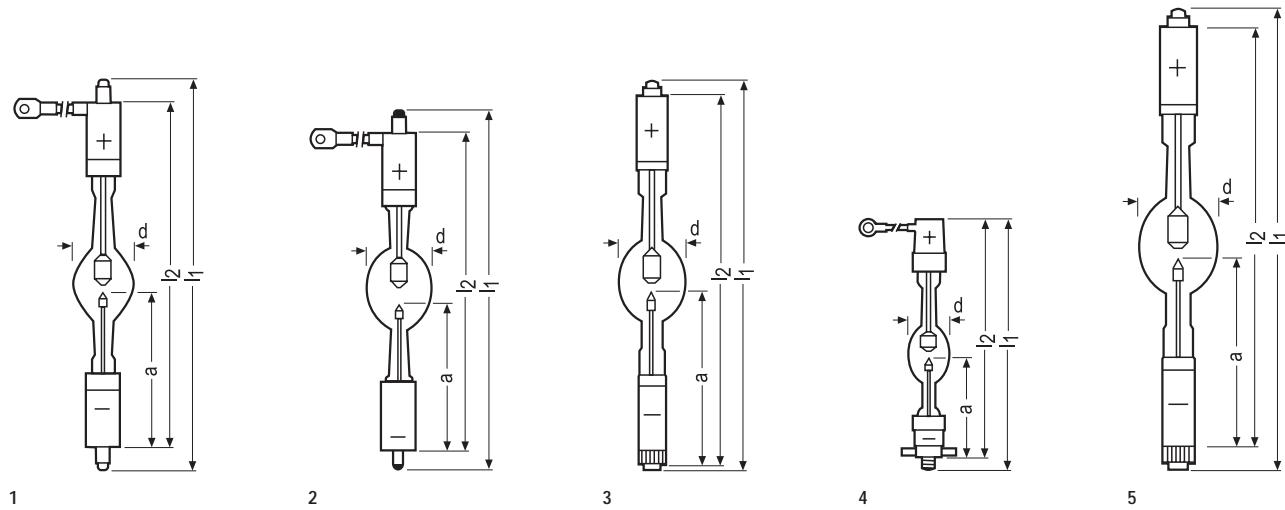
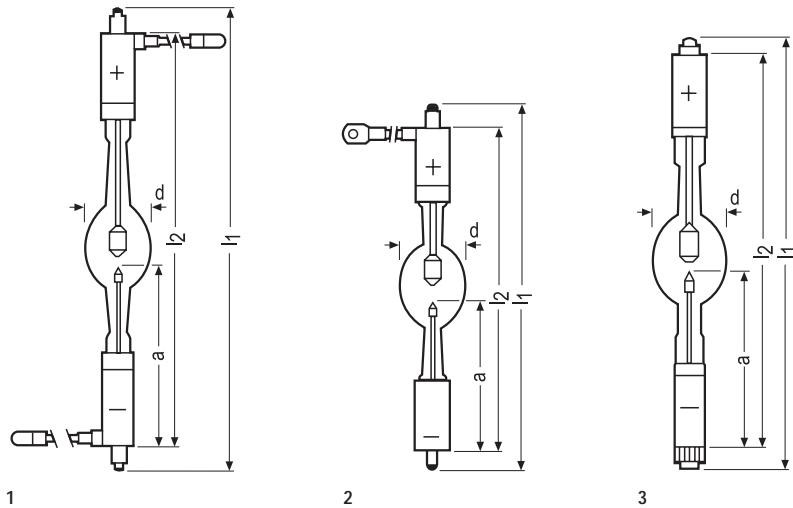


PHOTO OPTIC DISCHARGE

Ordering Abbreviation	XBO 2000 W/H OFR	XBO 2000 W/HS OFR	XBO 2000 W/HTP OFR	XBO 2000 W/SHSC OFR	XBO 2001 W/HTP OFR
Product Number	69258	69270	69247	69256	69310
Watts (W)	2000	2000	2000	2000	2000
Volts (V)	28	25	27	26	25
Type of Current	DC	DC	DC	DC	DC
Current (A)	70	80	70	70	80
Current Control Range (A)	50-85	50-85	50-85	50-85	50-85
Lumens (lm)	80000	80000	80000	80000	80000
Luminous Intensity (cd)	7500	7500	7500	7500	7500
Average Luminance (cd/cm²)	80000	80000	75000	80000	75000
Luminous Area -- w x h (mm)	1.3 x 4.8	1.3 x 4.0	1.3 x 4.8	1.3 x 4.0	1.3 x 4.8
Length l <sub>1</sub> max (mm)	370	342	375	236	375
Length l <sub>2</sub> max (mm)	322	302	322	222	322
Distance a (mm)	142.5	145	142.5	95	142.5
Diameter d (mm)	52	60	52	46	52
Avg Rated Life Vertical (hrs)	2400	2400	2400	2400	2400
Avg Rated Life Horizontal (hrs)	2400	2400	2400	2400	2400
Operating Position	s30 p30	s30 p30	s30 p30	s20 p20	s30 p30
Forced Cooling	Required	Required		Required	Required
Magnetic Arc Stabilization	Required		Required		Required
Base Anode	SFaX27-10	SFaX27-9.5	SFa25-14	SK27/50	SFa25-14
Base Cathode	SFaX27-12	SFa27-7.9	SFc25-14	SFcX27-8	SFc25-14
Fig No	1	2	3	4	5
Symbols & Footnotes	2,28,29,30,31,46	2,8,28,29,30,31,46	2,28,29,30,31,46, 48,49	2,28,29,30,31,35,46, 50,51	2,28,29,30,31,40,46, 48,49

## XBO® >450W XENON SHORT ARC CINEMA FILM PROJECTION



Ordering Abbreviation	XBO 2500 W OFR	XBO 2500 W/HS OFR	XBO 3000 W/H OFR	XBO 3000 W/HS OFR	XBO 3000 W/HTP OFR
Product Number	69248	69249	69251	69250	69252
Watts (W)	2500	2500	3000	3000	3000
Volts (V)	29	26	30	30	30
Type of Current	DC	DC	DC	DC	DC
Current (A)	85	90	100	100	100
Current Control Range (A)	60-95	70-100	60-110	60-110	60-110
Lumens (lm)	100000	100000	130000	130000	130000
Luminous Intensity (cd)	9500	10000	12000	12000	12000
Average Luminance (cd/cm²)	60000	80000	90000	90000	85000
Luminous Area -- w x h (mm)	1.5 x 6.0	1.5 x 4.5	1.7 x 5.0	1.7 x 5.0	1.7 x 5.0
Length $l_1$ max (mm)	428	342	428	342	405
Length $l_2$ max (mm)	382	302	382	302	357
Distance $a$ (mm)	167.5	145	167.5	145	162.5
Diameter $d$ (mm)	60	60	66	60	66
Avg Rated Life Vertical (hrs)	2000	1800	1800	1800	1800
Avg Rated Life Horizontal (hrs)		1500	1500	1500	1500
Operating Position	s 30	s30 p20	s30 p30	s30 p30	s30 p30
Forced Cooling		Required	Required	Required	Required
Magnetic Arc Stabilization			Required		Required
Base Anode	SFaX27-13	SFaX27-9.5	SFaX27-13	SFaX27-9.5	SFa27-14
Base Cathode	SFaX27-14	SFa27-7.9	SFa27-14	SFa27-7.9	SFc27-14
Fig No	1	2	2	2	3
Symbols & Footnotes	28,29,30,31,46	2,8,28,29,30,31,46	2,28,29,30,31,46	2,8,28,29,30,31,46	2,28,29,30,31,46,48

## XBO® >450W XENON SHORT ARC CINEMA FILM PROJECTION

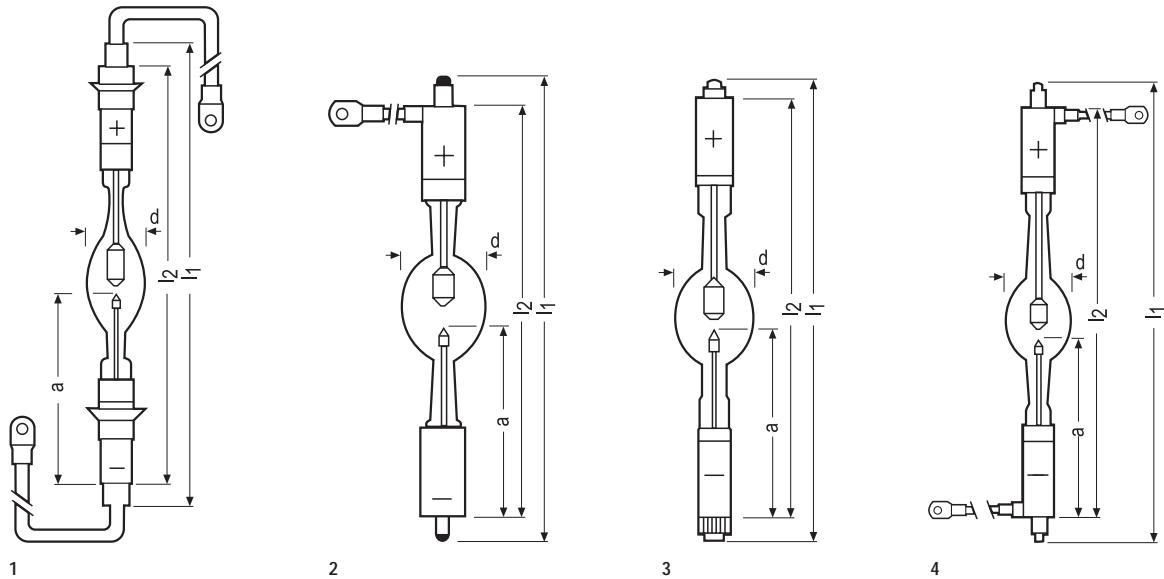
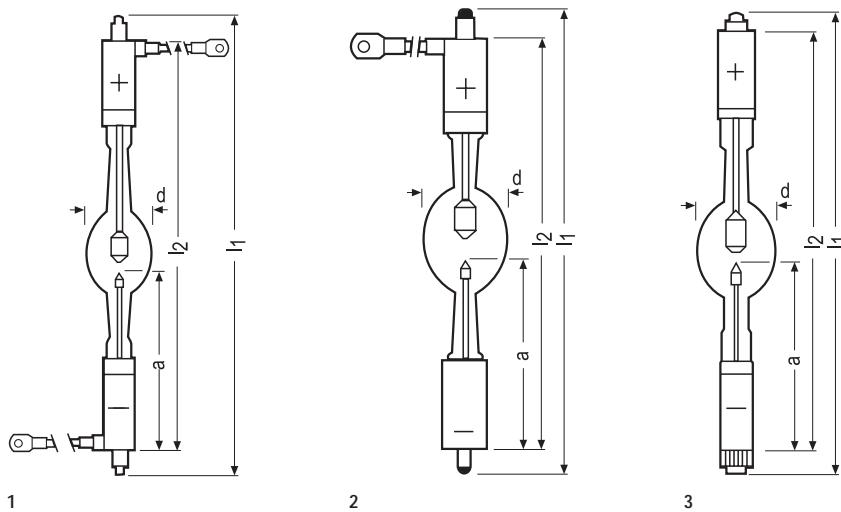


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Ordering Abbreviation	XBO 4000 W OFR	XBO 4000 W/HS OFR	XBO 4000 W/HTP OFR	XBO 4200 W/CA OFR	XBO 4200 W/GS OFR
Product Number	69253	69254	69296	69294	69350
Watts (W)	4000	4000	4000	4200	4200
Volts (V)	32	28	31	29	29
Type of Current	DC	DC	DC	DC	DC
Current (A)	120	135	130	140	140
Current Control Range (A)	80-140	80-150	100-140	80-160	80-160
Lumens (lm)	180000	155000	155000	190000	190000
Luminous Intensity (cd)	19000	17000	16000	20000	20000
Average Luminance (cd/cm²)	70000	90000	90000	100000	100000
Luminous Area -- w x h (mm)	2.0 x 7.5	1.9 x 6.0	1.9 x 6.0	2.1 x 5.7	2.1 x 5.7
Length l <sub>1</sub> max (mm)	432	410	433	428	428
Length l <sub>2</sub> max (mm)	384	370	382	382	382
Distance a (mm)	176	171	167.5	167.5	167.5
Diameter d (mm)	60	70	70	70	60
Avg Rated Life Vertical (hrs)	1000	1000	1200	1000	500
Avg Rated Life Horizontal (hrs)		1000	1200		500
Operating Position	s 15	s20 p20	s20 p20	s 15	s 15
Forced Cooling	Required	Required	Required	Required	Required
Magnetic Arc Stabilization					
Base Anode	SFa30-18	SFaX30-9.5	SFa27-14	SFaX27-13	SFaX27-13
Base Cathode	SFa30-20	SFa30-7.9	SFc27-14	SFaX27-14	SFaX27-14
Fig No	1	2	3	4	4
Symbols & Footnotes	28,29,30,31,46	2,8,28,29,30,31,46	2,28,29,30,31,46,48	28,29,30,31,46,47,52	7,28,29,30,31,46

## XBO® >450W XENON SHORT ARC CINEMA FILM PROJECTION



Ordering Abbreviation	XBO 4500 W/H/S	XBO 4500 W/HTP	XBO 5000 W/H OFR	XBO 5000 W/HTP OFR
Product Number	69359*	69360*	69315	69336
Watts (W)	4500	4500	5000	5000
Volts (V)	32	32	34	35
Type of Current	DC	DC	DC	DC
Current (A)	135	135	140	140
Current Control Range (A)	80-150	100-150	100-150	100-150
Lumens (lm)	200000	200000	225000	225000
Luminous Intensity (cd)	20000	20000	27000	22000
Average Luminance (cd/cm²)	120000	120000	95000	95000
Luminous Area -- w x h (mm)	1.8 x 6.0	1.8 x 6.0	2.2 x 6.5	2.2 x 6.5
Length $l_1$ max (mm)	410	433	433	433
Length $l_2$ max (mm)	370	370	382	382
Distance $a$ (mm)	171	171	168	165
Diameter $d$ (mm)	70	70	70	70
Avg Rated Life Vertical (hrs)	1000	1000	1000	1000
Avg Rated Life Horizontal (hrs)	1000	1000	1000	1000
Operating Position	s15 p15	s15 p15	s15 p15	s15 p15
Forced Cooling	Required	Required	Required	Required
Magnetic Arc Stabilization	Required	Required	Required	Required
Base Anode	SFa30-7.9	SFa27-14	SFaX30-16	SFa27-14
Base Cathode	SFaX30-9.5	SFc27-14	SFa28-18	SFc27-14
Fig No	1	3	2	3
Symbols & Footnotes	28,46	28,46	2,28,29,30,31,46,48	2,28,29,30,31,46,48

## XBO® >450W XENON SHORT ARC CINEMA FILM PROJECTION

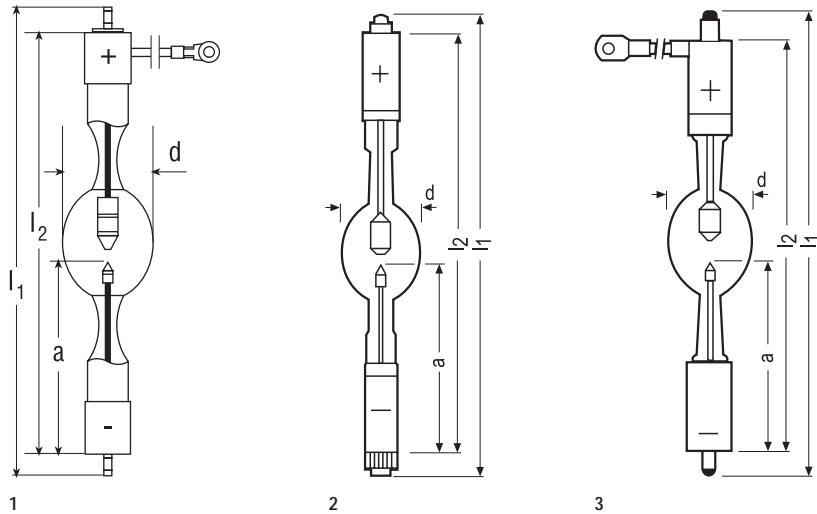
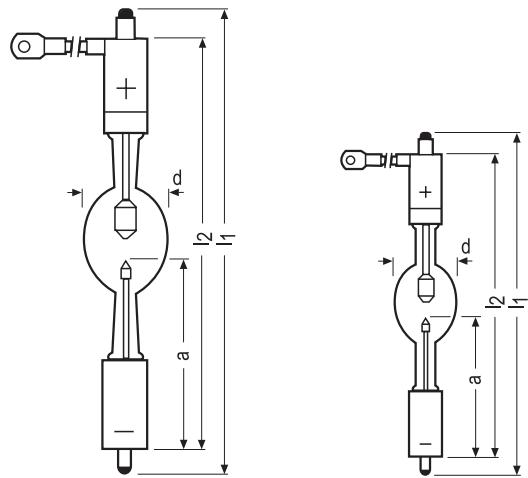


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Ordering Abbreviation	XBO 6000 W/HS OFR	XBO 6000 W/HTP OFR	XBO 6500 W	XBO 7000 W/HS OFR
Product Number	69339	69340	69298	69295
Watts (W)	6000	6000	6500	7000
Volts (V)	37	37	40	42
Type of Current	DC	DC	DC	DC
Current (A)	160	160	160	160
Current Control Range (A)	110 - 165	110 - 165	80-160	110-165
Lumens (lm)	300000	280000	325000	350000
Luminous Intensity (cd)	28000	28000	32000	35000
Average Luminance (cd/cm²)	105000	105000	95000	100000
Luminous Area -- w x h (mm)	2.0 x 7.5	2.0 x 7.5	2.3 x 9.0	2.0 x 7.5
Length $l_1$ max (mm)	433	433	483	433
Length $l_2$ max (mm)	393	382	434	393
Distance $a$ (mm)	170.5	165	200	170.5
Diameter $d$ (mm)	78	78	60	78
Avg Rated Life Vertical (hrs)	600	600	500	500
Avg Rated Life Horizontal (hrs)	600	600		500
Operating Position	s15 p15	s15 p15	s 10	s15 p15
Forced Cooling	Required	Required	Required	Required
Magnetic Arc Stabilization		Required		Required
Base Anode	SFaX30-9.5	SFa30-14	SFa30-20	SFaX30-9.5
Base Cathode	SFa30-7.9	SFc30-14	SFa30-22	SFa30-8.0
Fig No	1	2	3	3
Symbols & Footnotes	2,8,28,29,30,31,46	28,29,30,31,46,53,54	28,29,30,46	2,28,29,30,31,46

## XBO® >450W XENON SHORT ARC CINEMA FILM PROJECTION



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Ordering Abbreviation	XBO 7000 W/HSH OFR	XBO 8000 W/HS OFR	XBO 10000 W/C OFR	XBO 10000 W/HS OFR
Product Number	69301	69351	69297	69342
Watts (W)	7000	8000	9600	10000
Volts (V)	43	45	59	51
Type of Current	DC	DC	DC	DC
Current (A)	160	175	160	195
Current Control Range (A)	110-165	150-180	110-170	160-200
Lumens (lm)	350000	400000	500000	500000
Luminous Intensity (cd)	35000	40000	47500	45000
Average Luminance (cd/cm²)	110000	110000	80000	90000
Luminous Area -- w x h (mm)	2.0 x 7.5	2.3 x 10.5	2.7 x 14.0	2.4 x 12.0
Length l <sub>1</sub> max (mm)	433	433	483	433
Length l <sub>2</sub> max (mm)	393	393	434	393
Distance a (mm)	170.5	170.5	200	170.5
Diameter d (mm)	78	90	78	90
Avg Rated Life Vertical (hrs)	500	500	500	500
Avg Rated Life Horizontal (hrs)	500	500		500
Operating Position	s 15, p15	s 15, p15	s 15	s15 p15
Forced Cooling	Required	Required	Required	Required
Magnetic Arc Stabilization	Required	Required		Required
Base Anode	SFaX 30-9.5	SFaX 30-9.5	SK30-20	SFaX 30-9.5
Base Cathode	SFa30-7.9	SFa 30-7.9	SFa30-22	SFa30-7.9
Fig No	1	1	2	2
Symbols & Footnotes	2,28,29,30,31,46	2,28,29,30,31,46	28,29,30,31,35,46,55	2,28,29,30,31,46

## HBO® MERCURY SHORT ARC

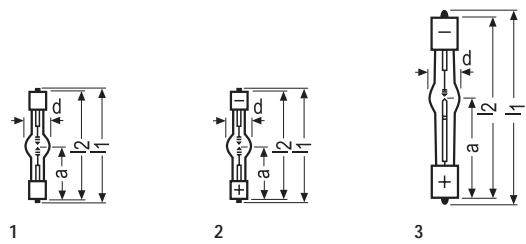
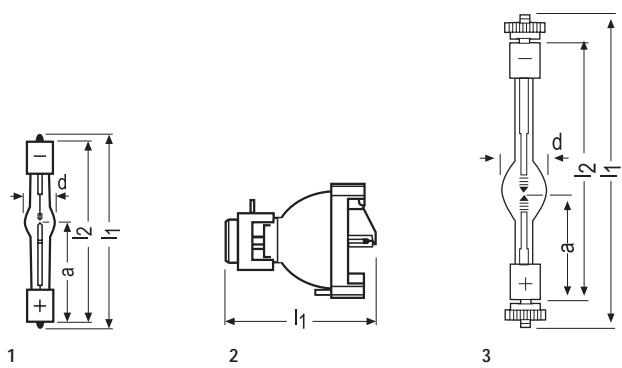


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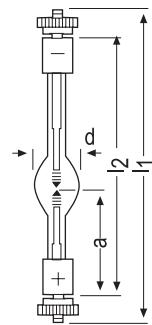
Ordering Abbreviation	HBO 50 W AC L1	HBO 50 W AC L2	HBO 50 W/3	HBO 100 W/2
Product Number	69213	69214	69215	69217
Watts (W)	50	50	50	100
Volts (V)	37	42	23	20
Type of Current	AC	AC	DC	DC
Current (A)	1.45	1.3	2.3	5.0
Lumens (lm)	2000	2000	1300	2200
Luminous Intensity (cd)	230	230	150	260
Average Luminance (cd/cm²)	30000	30000	90000	170000
Luminous Area - w x h (mm)	0.3 x 1.0	0.3 x 1.0	0.2 x 0.35	0.25 x 0.25
Luminous Efficacy (lm/W)	40	40	26	22
Length l <sub>1</sub> max (mm)	53	53	53	90
Length l <sub>2</sub> max (mm)	47	47	47	82
Distance a (mm)	22	22	22	43
Diameter d (mm)	8.5	8.5	9	10
Avg Rated Life (hrs)	100	100	200	200
Operating Position	s 45, anode down	s 45, anode down	s 45, anode down	s 90, anode down
Cooling	Convection	Convection	Convection	Convection
Base Anode	SFa6-2	SFa6-2	SFa6-2	SFa7.5-2
Base Cathode	SFa6-2	SFa6-2	SFa8-2	SFa9-2
Fig No	1	1	2	3
Symbols & Footnotes				

## HBO® MERCURY SHORT ARC



Ordering Abbreviation	HBO 103 W/2	HBO R 103 W/45	HBO 200 W/2 L1	HBO 200 W/2 L2
Product Number	69182	69311	69198	69222
Watts (W)	100	100	200	200
Volts (V)	23	23	61	53
Type of Current	DC	DC	DC or AC	DC or AC
Current (A)	4.44	4.3		
Lumens (lm)	2550		9500	9500
Luminous Intensity (cd)	270 MIN		1000	1000
Average Luminance (cd/cm²)	150000		40000	40000
Luminous Area - w x h (mm)	0.25 x 0.25		0.6 x 2.2	0.6 x 2.2
Luminous Efficacy (lm/W)	30		47.5	47.5
Length $l_1$ max (mm)	90	81.50	128	128
Length $l_2$ max (mm)	82		102	102
Distance $a$ (mm)	43		40	40
Diameter $d$ (mm)	10		17	17
Avg Rated Life (hrs)	300	300	400	400
Operating Position	s 90, anode down	p 15	s 45, anode down	s 45, anode down
Cooling	Convection	Convection	Convection	Convection
Base Anode	SFa7.5-2	Pin	SFc10-4	SFc10-4
Base Cathode	SFa9-2	Pin	SFc10-4	SFc10-4
Fig No	1	2	3	3
Symbols & Footnotes	56	34,57	58,59,60	58,59,60

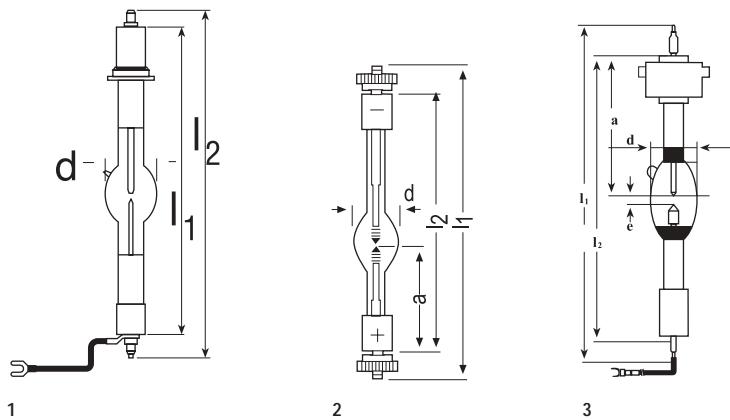
## HBO® MERCURY SHORT ARC



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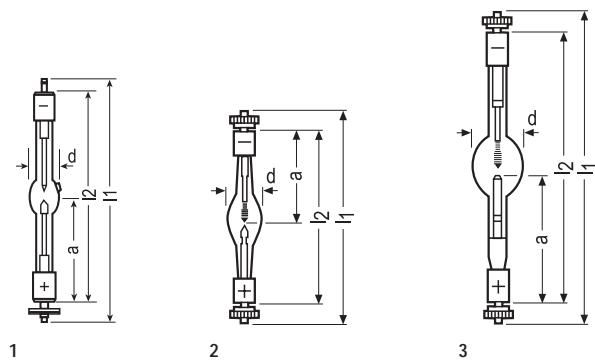
Ordering Abbreviation	HBO 200 W/2 TM L1	HBO 200 W/2 TM L2	HBO 200 W/4	HBO 200 W/DC
Product Number	69221	69223	69224	69225
Watts (W)	200	200	200	200
Volts (V)	47	47	61	57
Type of Current	DC or AC	DC or AC	AC	DC
Current (A)			3.6	3.5
Lumens (lm)	9500	9500	9500	10000
Luminous Intensity (cd)	1000	1000	1000	1100
Average Luminance (cd/cm²)	40000	40000	40000	40000
Luminous Area - w x h (mm)	0.6 x 2.2	0.6 x 2.2	0.6 x 2.2	0.75 x 2.3
Luminous Efficacy (lm/W)	47.5	47.5	47.5	50
Length l <sub>1</sub> max (mm)	128	128	128	128
Length l <sub>2</sub> max (mm)	102	102	102	102
Distance a (mm)	40	40	40	40
Diameter d (mm)	17	17	17	17
Avg Rated Life (hrs)	400	200	200	1000
Operating Position	s 45, anode down	s 45, anode down	s 45, anode down	s 15, anode down
Cooling	Convection	Convection	Convection	Convection
Base Anode	8-32 UNC-3A	8-32 UNC-3A	SFc10-4	SFc10-4
Base Cathode	8-32 UNC-3A	8-32 UNC-3A	SFc10-4	SFc10-4
Fig No	1	1	1	1
Symbols & Footnotes	61	61	62	

## HBO® MERCURY SHORT ARC



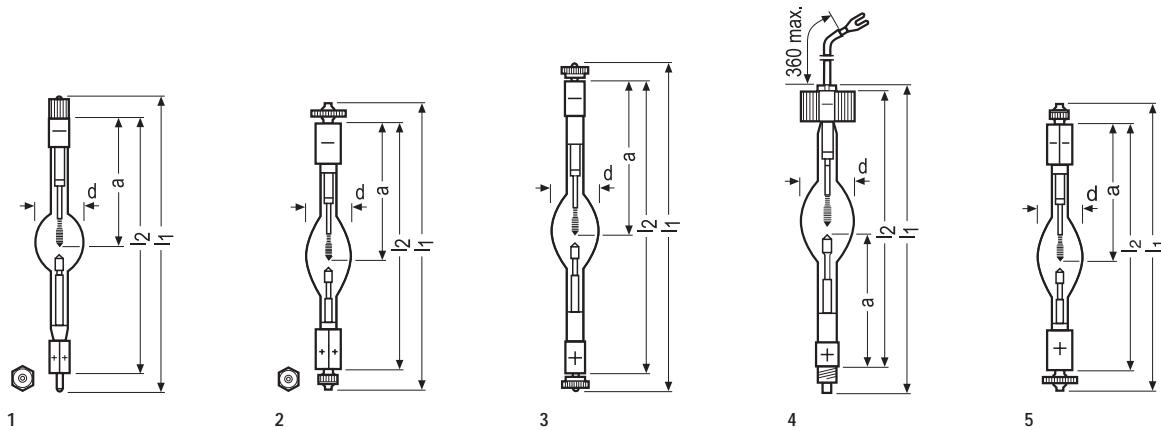
Ordering Abbreviation	HBO 201 W/HS-D2	HBO 202 W/I	HBO 250 W/HS
Product Number	69168	69316	69364
Watts (W)	200	200	250
Volts (V)	25	61	40
Type of Current	DC	AC	DC
Current (A)	8	3.6	6.25
Lumens (lm)			
Luminous Intensity (cd)		1000	
Average Luminance (cd/cm²)		40000	
Luminous Area - w x h (mm)		0.6 x 2.2	
Luminous Efficacy (lm/W)		47.5	
Length l <sub>1</sub> max (mm)	150	128	143
Length l <sub>2</sub> max (mm)	127	102	125
Distance a (mm)		40	62
Diameter d (mm)	20	17	20
Avg Rated Life (hrs)	1000	200	1000
Operating Position	Vertical, anode up	s 45, anode down	Vertical, anode down
Cooling	Convection	Convection	Convection
Base Anode	SFcX32-22	SFc10-4	SFa 13-5/20
Base Cathode	SFcX12-4/15	SFc10-4	Special
Fig No	1	2	3
Symbols & Footnotes	28,63	64	63

## HBO® MERCURY SHORT ARC FOR MICROLITHOGRAPHY



Ordering Abbreviation	HBO 250 W/BY	HBO 350 W	HBO 350 W/S	HBO 450 W/GS	HBO 500 W/A
Product Number	69246	69226	69228	69343	69205
Watts (W)	250	350	350	450	500
Volts (V)	40	68	68	50	60
Type of Current	DC	DC	DC	DC	DC
Current (A)	6.5	5.3	5.15	9	8.3
Radiant Intensity 350..450 nm (mW/sr)		4600	4700		6200
Length l <sub>1</sub> max (mm)	152	128	127	150	190
Length l <sub>2</sub> max (mm)	125	102	103	105	161.5
Distance a (mm)	62	45	52.5	53	73
Diameter d (mm)	20	20	20	22	29
Electrode Gap -- cold (mm)	2	2.9	3	2.2	4.5
Avg Rated Life (hrs)	1000	600	600	600	800
Operating Position	Vertical, anode down				
Cooling	Forced Base	Convection	Convection	Convection	Convection
Base Anode	SFC13-5/20	SFCY10-4	SFCY10-4	SFC 13-5/15	SFCY13-5
Base Cathode	SFC13-5/20	SFCY10-4	SFCY10-4	SFC 13-5/15	SFCY13-5
Fig No	1	2	2	1	3
Symbols & Footnotes		67,68,69,70	67,70	71	70,71,72

## HBO® MERCURY SHORT ARC FOR MICROLITHOGRAPHY



Ordering Abbreviation	HBO 500 W/B	HBO 1000 W/CEL	HBO 1000 W/G	HBO 1000 W/NEL	HBO 1002 W/CEL
Product Number	69206	69175	69208	69176	69177
Watts (W)	500	750	750	750	750
Volts (V)	48	47	47	47	47
Type of Current	DC	DC	DC	DC	DC
Current (A)	10.3	16	16	16	16
Radiant Intensity 350..450 nm (mW/sr)	5800	8300	8300	8300	8300
Length l <sub>1</sub> max (mm)	180	175	197	190	175
Length l <sub>2</sub> max (mm)	151.5	157	169.5	168	157
Distance a (mm)	78.5	78.5	85	84.5	78.5
Diameter d (mm)	29	28	28	28	28
Electrode Gap -- cold (mm)	3	3	3	3	3
Avg Rated Life (hrs)	800	2500	600	2500	2500
Operating Position	Vertical, anode down				
Cooling	Convection	Convection	Forced Base	Convection	Convection
Base Anode	SFcX13-5/20	SxFc15-6/20	SFcX14-6/25	SFa15-5/16	SFc15-6/20
Base Cathode	SFcY 13-15/20	SFc15-6/20	SFcX15-4/20	SFa14-5/21	SXFc15-6/20
Fig No	1	2	3	4	5
Symbols & Footnotes	70,71,73,74	75,76,77	67,76	71,76,78,79,80	76

## HBO® MERCURY SHORT ARC FOR MICROLITHOGRAPHY

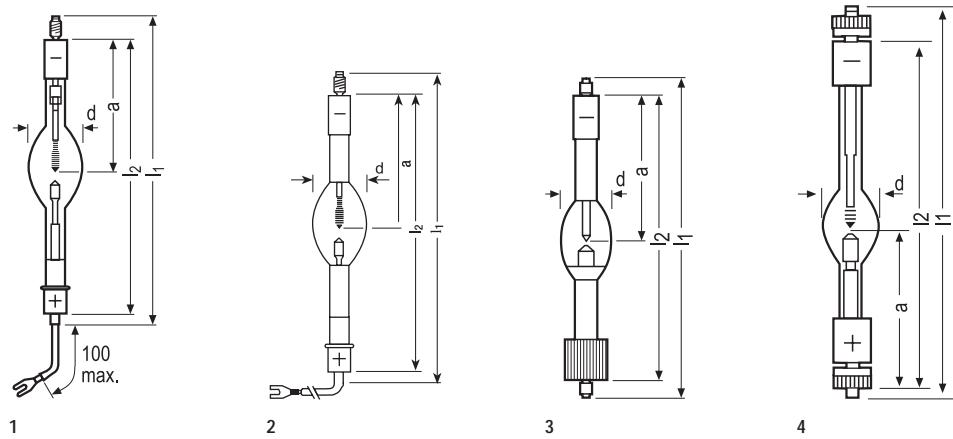
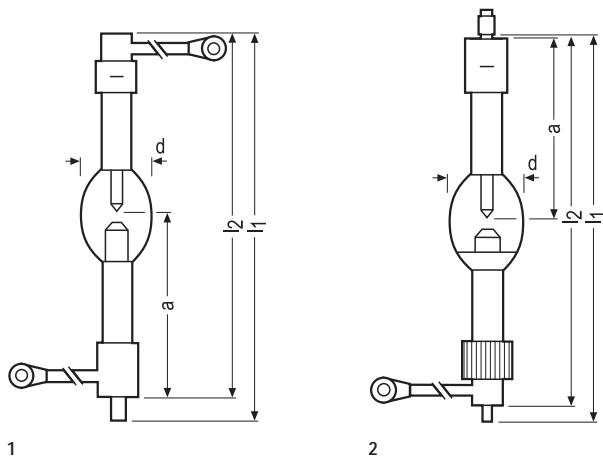


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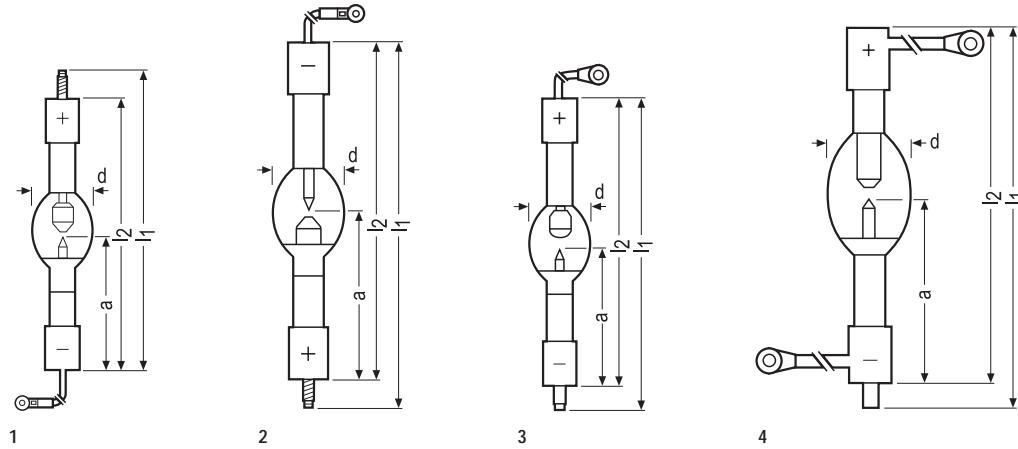
Ordering Abbreviation	HBO 1002 W/NEL	HBO 1002 W/NIL	HBO 1003 W/PI	HBO 1003 W/PIL	HBO 1000 W/D
Product Number	69273	69347	69195	69180	69200
Watts (W)	750	750	750	750	1000
Volts (V)	47	25	26	26	38
Type of Current	DC	DC	DC	DC	DC
Current (A)	16	27.1	27.1	25.8	26.5
Radiant Intensity 350..450 nm (mW/sr)	8300				10800
Length l <sub>1</sub> max (mm)	190	187	197	195	240
Length l <sub>2</sub> max (mm)	168	168	169.5	169.5	208
Distance a (mm)	78.5	78.5	85	85	89.5
Diameter d (mm)	28	29	29	29	40
Electrode Gap -- cold (mm)	3	3	3	3	3
Avg Rated Life (hrs)	2500	1500	850	1500	1000
Operating Position	Vertical, anode down				
Cooling	Convection	Forced Base	Forced Base	Forced Base	Forced Base
Base Anode	SFaX14-5/21	SFaX14-5/21	SFcX14-6/25	SFcX14-6/25	SFc15-6/25
Base Cathode	SFc15-6/25	SFc15-6/25	SFc15-6/25	SFc15-6/25	SFc15-6/25
Fig No	1	2	3	3	4
Symbols & Footnotes	77,81	77,82	76,83,84	76,83,85	

## HBO® MERCURY SHORT ARC FOR MICROLITHOGRAPHY



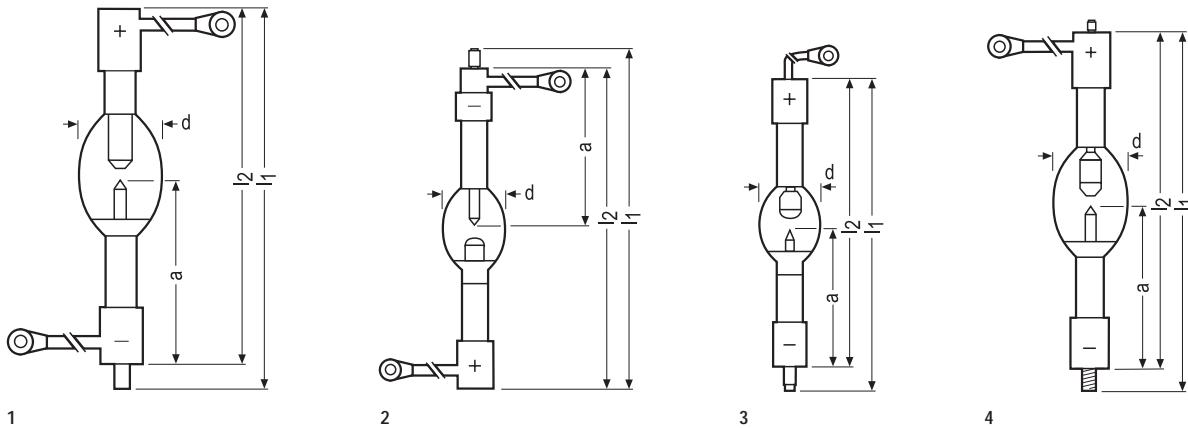
Ordering Abbreviation	HBO 1500 W/CI	HBO 1500 W/CIEL	HBO 1500 W/CIL	HBO 1500 W/PI	HBO 1500 W/PIL
Product Number	69185	69171	69179	69319	69181
Watts (W)	1500	1500	1500	1500	1500
Volts (V)	23	23	23	23	23
Type of Current	DC	DC	DC	DC	DC
Current (A)	65.2	65.2	65.2	65.2	65.2
Radiant Intensity 350..450 nm (mW/sr)					
Length l <sub>1</sub> max (mm)	262	262	262	267	273
Length l <sub>2</sub> max (mm)	242	242	242	240	242
Distance a (mm)	122	122	122	118	118
Diameter d (mm)	52	52	52	47	46
Electrode Gap -- cold (mm)	4	4	4	4	4
Avg Rated Life (hrs)	850	2250	1500	850	1500
Operating Position	Vertical, anode down				
Cooling	Forced Base				
Base Anode	SFa27-10/35	SFa27-20/22	SFa27-10/35	SFc30-6/25	SFc30-6/25
Base Cathode	SFa27-20/23	SFa27-20/23	SFa27-20/23	SFc27-10/35	SFc27-10/35
Fig No	1	1	1	2	2
Symbols & Footnotes	86,87,88	87,88,89	86,88	66,90	66,91,92

## HBO® MERCURY SHORT ARC FOR MICROLITHOGRAPHY



Ordering Abbreviation	HBO 2000 W/NIL	HBO 2001 W/NIEL	HBO 2001 W/NIL	HBO 2002 W/NIL	HBO 2001 W/CIEL
Product Number	69303	69306	69292	69287	69166
Watts (W)	1750	1750	1750	1750	2000
Volts (V)	26	26	26	24	26
Type of Current	DC	DC	DC	DC	DC
Current (A)	67	67	67	67	77
Radiant Intensity 350..450 nm (mW/sr)					
Length l <sub>1</sub> max (mm)	241	251	251	254	329
Length l <sub>2</sub> max (mm)	221	231	231	234	309
Distance a (mm)	112.25	112.5	112	107.5	148.75
Diameter d (mm)	52	52	50	52	62
Electrode Gap -- cold (mm)	4.5	4.5	4.5	4.5	4
Avg Rated Life (hrs)	1500	2250	1500	1500	2250
Operating Position	Vertical, anode up	Vertical, anode down	Vertical, anode down	Vertical, anode up	Vertical, anode up
Cooling	Forced Base	Forced Base	Forced Base	Forced Base	Forced Base
Base Anode	SFc27-12/35	SFc27-10/35	SFc27-10/35	SFc27-7/35	SF33.5/50 with cable connection (M8)
Base Cathode	SFc27-7/35	SFc27-7/35	SFaX27-7/35	SFc27-10x1.25/35	SFa33.5-10/50 with cable connection (M6)
Fig No	1	2	2	3	4
Symbols & Footnotes	88,92	88,92	88,92	86,92	89,93,94

## HBO® MERCURY SHORT ARC FOR MICROLITHOGRAPHY



Ordering Abbreviation	HBO 2001 W/CIL	HBO 2002 W/MA	HBO 2011 W/NIL	HBO 2500 W/PIL
Product Number	69189	69199	69288	69172
Watts (W)	2000	2000	2000	2500
Volts (V)	26	37	24	28
Type of Current	DC	DC	DC	DC
Current (A)	77	54	80	90
Radiant Intensity 350..450 nm (mW/sr)				
Length $l_1$ max (mm)	329	292	256	350
Length $l_2$ max (mm)	307	272	236	315
Distance $a$ (mm)	149	138.5	107.75	149
Diameter $d$ (mm)	62	62	52	62
Electrode Gap -- cold (mm)	4.5	3	4.5	6.7
Avg Rated Life (hrs)	1500	1000	1500	1500
Operating Position	Vertical, anode up	Vertical, anode down	Vertical, anode up	Vertical, anode up
Cooling	Forced Base	Forced Base	Forced Base	Forced Base
Base Anode	SF33.5/50	SF27/35	SFc27-7/35	SFc30-6/50
Base Cathode	SFa33.5-10//50	SFa27-10/35	SFc27-12x1.5/35	SFc30-6.3/50
Fig No	1	2	3	4
Symbols & Footnotes	86,92,93,95	28,86,88,92,96	86,92	28,89,92,97

## HBO® MERCURY SHORT ARC FOR MICROLITHOGRAPHY

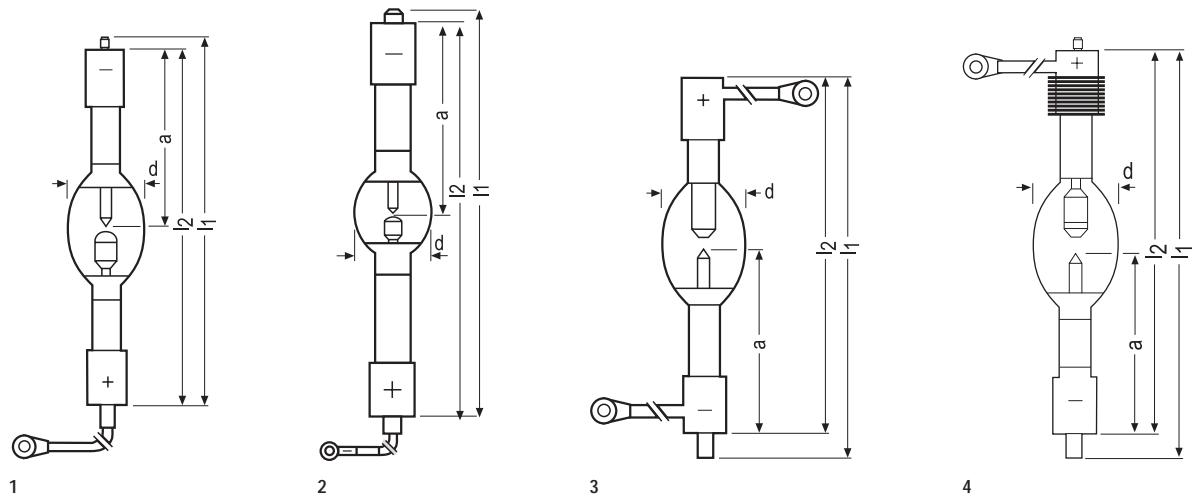
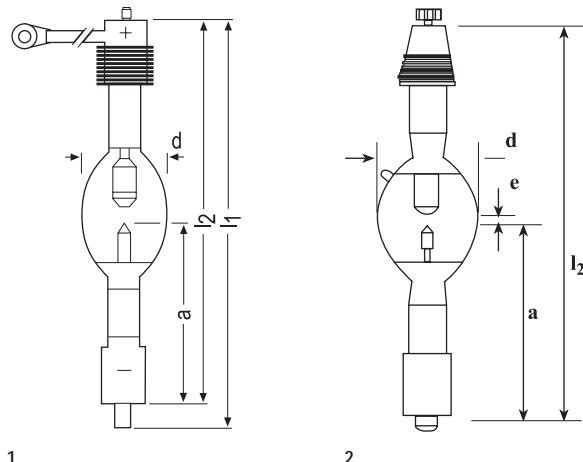


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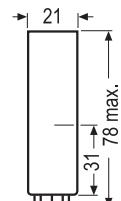
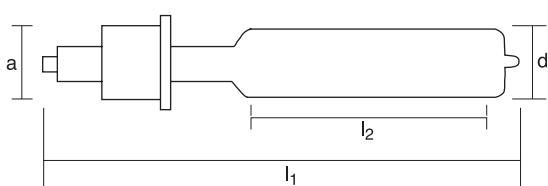
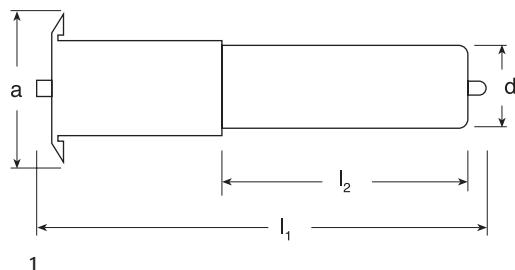
Ordering Abbreviation	HBO 2501 W/NIL	HBO 2510 W/NIL	HBO 2700 W/CIL	HBO 3500 W/PI
Product Number	69289	69299	69344	69174
Watts (W)	2500	2500	2700	3400
Volts (V)	23	23	24	23
Type of Current	DC	DC	DC	DC
Current (A)	110	109	110	148
Radiant Intensity 350..450 nm (mW/sr)				
Length $l_1$ max (mm)	367	367	334	340
Length $l_2$ max (mm)	327	327	309	315
Distance a (mm)	157.75	157.5	148.75	154
Diameter d (mm)	70	70	62	77
Electrode Gap -- cold (mm)	4.5	4.5		4.5
Avg Rated Life (hrs)	1500	1500	1500	850
Operating Position	Vertical, anode down	Vertical, anode up	Vertical, anode up	Vertical, anode up
Cooling	Forced Base	Forced Base	Forced Base	Forced Base
Base Anode	SFc33.5-8/50	SFc33.5-8/50	SFa33.5/50	SFaX40-6/50
Base Cathode	SFc33.5-14/5	SFc33.5-14/50	SFa33.5-14.59	SFc32.5-6.7/50
Fig No	1	2	3	4
Symbols & Footnotes	28,86	28,92,98	71,86,99	28,89,92,100

## HBO® MERCURY SHORT ARC FOR MICROLITHOGRAPHY



Ordering Abbreviation	HBO 3500 W/PIL	HBO 3501 W/PIL	HBO 3501 W/PIL	HBO 4500 W/CIL	HBO 5500 W/PI
Product Number	69169	69127	69165	69162*	69164
Watts (W)	3400	3400	3400	4500	5000
Volts (V)	23	23	23	30	25
Type of Current	DC	DC	DC	DC	DC
Current (A)	148	148	148	148	200
Radiant Intensity 350..450 nm (mW/sr)					
Length l <sub>1</sub> max (mm)	360	360	360	360	
Length l <sub>2</sub> max (mm)	315	315	315	315	355
Distance a (mm)	154	154	154	154	154
Diameter d (mm)	77	77	77	77	85
Electrode Gap -- cold (mm)	4.5	4.5	4.5		5.5
Avg Rated Life (hrs)	1500	850	1500	1500	850
Operating Position	Vertical, anode up	Vertical, anode up	Vertical, anode up	Vertical, anode up	Vertical, anode up
Cooling	Forced Base	Forced Base	Forced Base	Forced Base	Forced Base
Base Anode	SFaX40-6/50	SFaX40-6/50	SFc32.5-6.7/50	SFA40-6/50	SFCX 42.5-6/50
Base Cathode	SFc32.5-6.7/50	SFc32.5-6.7/50	SFaX40-6/50 with cable connection (M10)	SFC32.5-6.7/50	SFa 37.5-9/50
Fig No	1	1	1	1	2
Symbols & Footnotes	28,65,89,92	28,89,92	65,85,91,97,99,101,10 2,103	65,66	9,30,83,89,104

## EXCIMER AND SPECTRAL LAMPS



### EXCIMER - XERADEX

Ordering Abbreviation	XERADEX 20	XERADEX 20/HV	XERADEX 20/SY45/45
Product Number	69338	69352	69349
Watts (W)	20	20	20
Length l <sub>1</sub> max (mm)	245	245	300
Length l <sub>2</sub> max (mm)	120	120	125
Distance a (mm)	75	75	45
Diameter d (mm)	40	40	40
Avg Rated Life (hrs)	1500	1500	1500
Operating Position	Any	Any	Any
Fig No	1	1	2
Symbols & Footnotes	105,106,107,108	105,106,107,109	105,106,107,110

### SPECTRAL

Ordering Abbreviation	Na 10 FL		
Product Number	69284		
Elements	Sodium		
Watts (W)	9		
Volts (V)	16		
Current (A)	0.57		
Type of Current	AC		
Operating Position	Vertical, base down		
Base	Pico 9		
Fig No	3		
Symbols & Footnotes	111,112		

## LAMP BASES



BA15d  
IEC 7004-11  
DIN 49721  
DL  
Bayonet



BA15s  
IEC 7004-11A  
DIN 49720  
SC  
Bayonet



BA20d  
IEC 7004-12  
DIN 49730



E10  
IEC 7004-22  
DIN 49610  
miniature  
Edison



E14  
IEC 7004-23  
DIN 49615  
small  
Edison



E27/E26  
IEC 7004-21  
DIN 49620  
E26-NA  
E27-EURO



E40/E39  
IEC 7004-21  
DIN 49625  
E39-NA  
E40-EURO



FaX1.5-3x1



G4  
IEC 7004-72  
DIN 49757  
2-pin



GX5.3  
IEC 7004-61  
DIN 49640  
2-pin



G5.3-4.8  
2-pin



GY5.3  
2-pin



G6.35-15  
G6.35-20  
G6.35-25  
IEC 7004-59  
2-pin



GX6.35-25  
IEC 7004-59  
2-pin



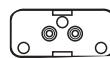
GY6.35-15  
IEC 7004-59  
2-pin



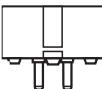
GZ6.35  
IEC 7004-59 A  
DIN 49754  
2-pin



GZX9.5  
GZ9.5  
IEC 7004-70 B  
DIN 49756  
2-pin  
pre-focus



G9.5  
IEC 7004-70  
medium  
2-pin

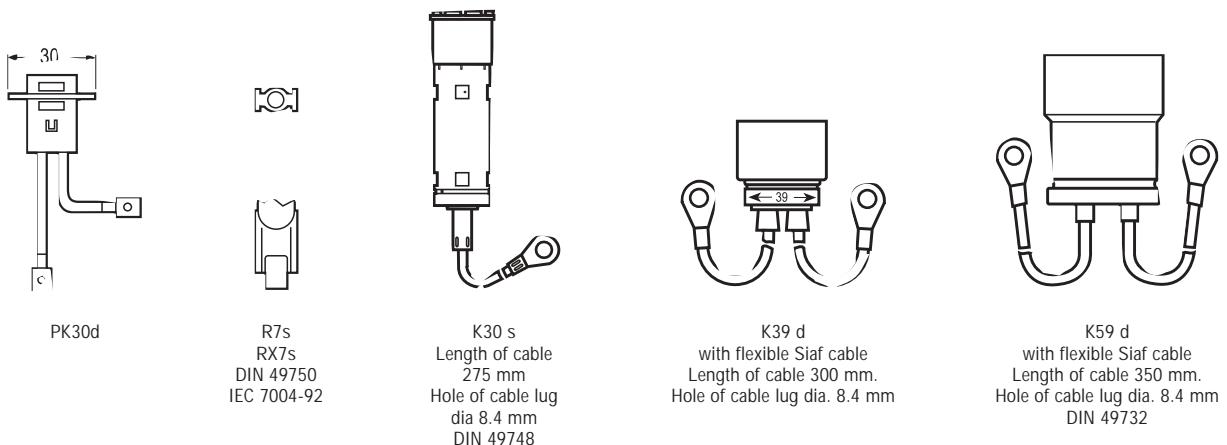
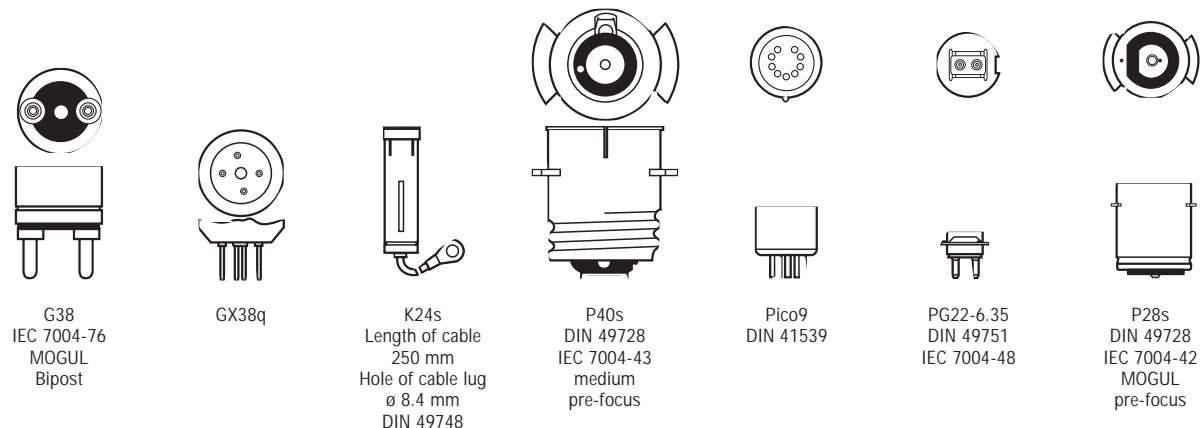
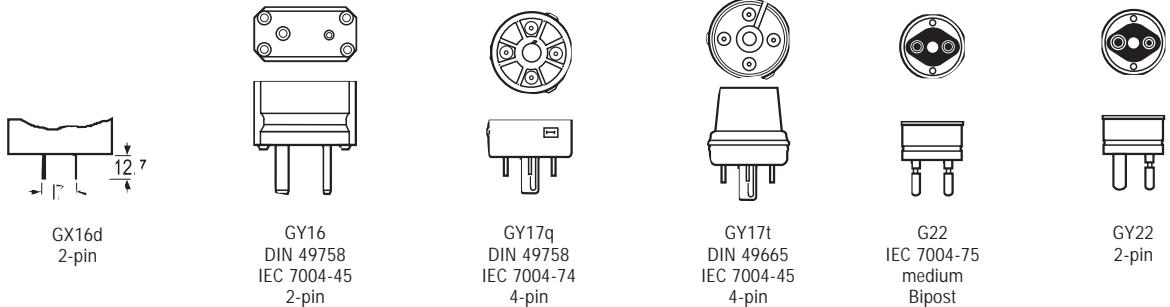


GY9.5  
DIN 49638  
IEC 7004-70 A  
2-pin  
pre-focus

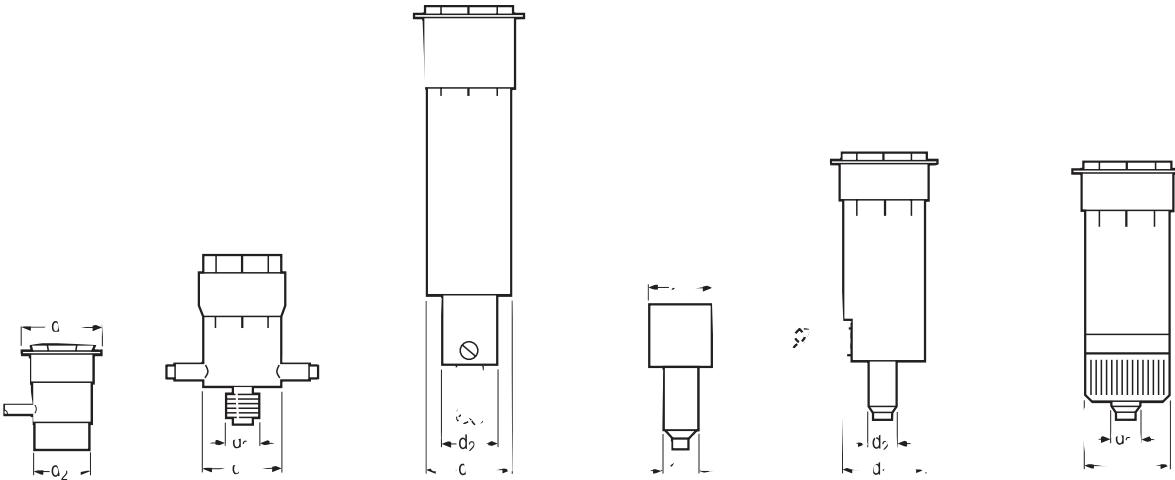


GY9.5  
GZ9.5  
DIN 49756  
IEC 7004-70 B  
2-pin  
pre-focus

## LAMP BASES



## LAMP BASES



SK27-50

SFcX27-8  
(5/16-18UNC-2 A)

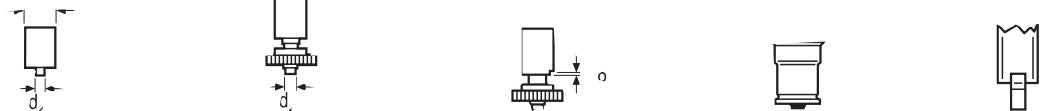
SFa15-10  
SFa16-8  
SFa16-10  
SFa20-8  
SFa20-10  
SFa25-10

SFa27-8  
SFa27-10  
SFa27-11  
SFa27-12  
SFa27-14  
SFa28-18

SFa21-12  
DIN 49759

SFaX27-10  
SFaX27-9.5  
SFaX27-12  
SFaX27-13  
SFaX27-14  
SFaX30-9.5  
SFaX30-16

SFc25-14 (M 14x1.5)  
SFc27-14 (M 14x1.5)



SFa5-2  
SFa6-2  
SFa7.5-2  
SFa8-2  
SFa9-2  
SFa12-11  
SFa21-5

SFcX12-4  
(with M4 thread and  
centering collar)  
  
SFcX 13-4  
SFcX 15-4 (with US inch  
thread 8-32 UNC-3A and  
centering collar)

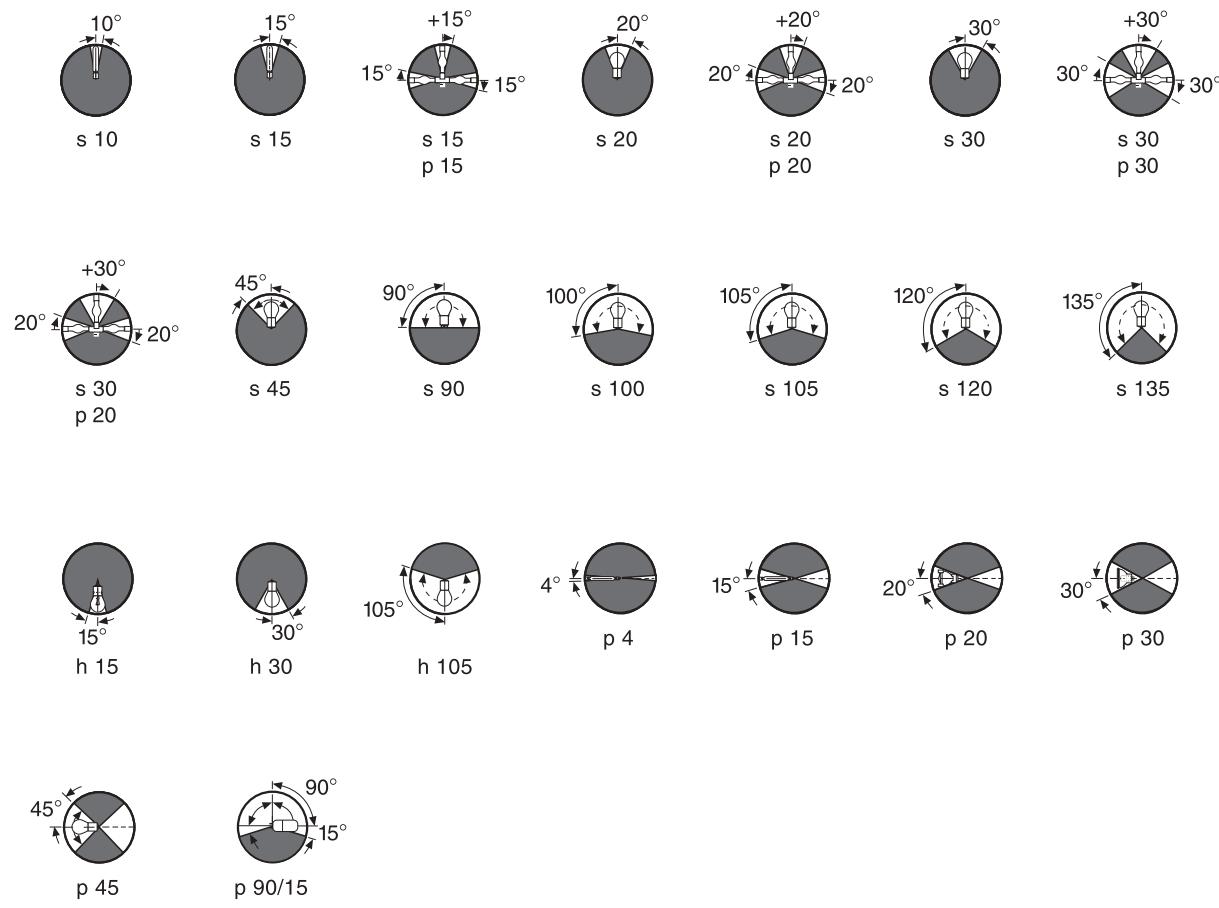
SFc10-4 M4-thread  
SFc6-3 M3-thread  
SFc12-4 M4-thread  
SFc13-4 M4-thread

SX15s

X515  
DIN 49613

## OPERATING POSITIONS

### Schematic diagrams



## GENERAL INFORMATION

In North America, OSRAM brand Photo-Optic lighting products are sold by OSRAM SYLVANIA AND OSRAM SYLVANIA LTD. Sales are subject to standard terms and conditions of sale prevailing as of the date of purchase.

Operational data and dimensions are nominal values. OSRAM reserves the right to make technical modifications without notice. All supplies are subject to availability.

® = Registered trademarks of OSRAM GmbH

Lamps are designated in accordance with ANSI standard C78.370-1982 (As amended).

When disposing of spent lamps, always consult federal, state, local and/or provincial hazardous waste disposal rules and regulations to ensure proper disposal.

Use of improper, unapproved or unsuitable ballasts will negatively impact the performance of Photo-Optic lamps and could void the lamp warranty. A list of power supply manufacturers is available upon request.

Discharge lamps in the HMD®, HMI®, HMP®, HTI®, HSR®, HSD®, HBO®, OSRAM STUDIOLINE® and VIP® types and the spectral lamps contain small quantities of harmful substances (such as mercury).

## SYMBOLS & FOOTNOTES FOR PHOTO-OPTIC HALOGEN LAMPS

Symbol	Description
	New item introduced within the past year.
	Item will be discontinued when inventory is depleted.
Footnote	Description
1	Base - filament connections: Pins 1 and 4.
2	Lamp has monoplane filament.
3	Lamp has internal proximity reflector.
4	Lumens refers to screen lumens.
5	Lamp also available as a 240V model (Product Number 54977).
6	Product number 54100 is the replacement for product number 54048.
7	Lamp service life 75hr life is defined at 76V with a duty cycle of 45 min. ON / 15 min. OFF.
8	Lamp suited for video camera heads; 500hr life @ 1.8V/ 45 min. ON / 15 min. OFF.
9	Lamp has round-core double filament.
10	h (Operating Position) = Vertical, base up
11	Lamp has a flat core filament with filament area perpendicular to the lamp axis.
12	Lamp also available in 240 V model.
13	Length l1 = Contact to contact.
14	Length l = Contact to contact.
15	Lamp also available as 115V model (Product Number 54636).
16	Lamp interchangeable with HX 600
17	Lamp has a biplane filament.
18	Lamp interchangeable with HX 602
19	High-performance HPL halogen lamps are manufactured under license from ETC, Inc.
20	Do not tilt perpendicular to the filament.
21	NSP=Narrow Spot
22	WFL=Wide Flood
23	VNSP=Very Narrow Spot.
24	MFL=Medium Flood
25	For use where seal temperature does not exceed 650F.
26	Life at rated voltage and at 650F maximum seal temperature.
27	Clean room ready packaging.
28	A suitable protective shield, screening technique, or both must be used to protect people and surroundings from the possibility of a lamp shattering and from possible ultraviolet radiation.
29	High temperature base. Retards seal deterioration where seal temperature exceeds 650F.
30	Usually limited to intermittent burning.
31	Average service life of lamp if operated with 400W is 100 hrs.
32	Snap-on connector, female / male contact.
33	Connector = Female, round, with 4mm pin.
34	Lamp also available with male connectors (Product Number 58722)
35	Female contact is according to DIN 46247.
36	Lamp also available with female connectors (Product Number 58697)
37	Male contacts according to DIN 46248.
38	Lamp also available with female connectors (Product Number 58721)
39	Lamp also available with female connectors (Product Number 58709)
40	This lamp type is twice the life of the ANSI standard version.
41	WARNING: Lamp only for use where seal temperature does not exceed 650 degrees F (343 degrees C). Minimum bulb wall temperature 480 degrees F (249 degrees C).
42	Lamp also available with male contact according to DIN 46248. 64361/HLX Z (Product Number 58717)

## SYMBOLS & FOOTNOTES FOR PHOTO-OPTIC HALOGEN LAMPS

Footnote	Description
43	This lamp type is twice the life of the standard version.
44	Max. Beam Candlepower (MBCP) : 175 kcd.
45	Lamp has snap-on male contact to DIN 46248.

## SYMBOLS & FOOTNOTES FOR PHOTO-OPTIC DISCHARGE LAMPS

Symbol	Description
	New item introduced within the past year.
	Item will be discontinued when inventory is depleted.

### Footnote Description

1	Type of current: square-wave AC.
2	p (Operating Position) = Horizontal
3	OSRAM socket #46721, cable length 22" for use with the following OSRAM lamps: HTI 250W/SE (product number 54091), HTI 400W/SE (product number 54084), HTI 600W/SE (product number 54087), and HMI 250W/SE (product number 54062).*
4	Type of current: sine-wave (sinusoidal) AC.
5	In horizontal operation position it is recommended that the "lead connection" wire be in the top position with filler tip facing down.
6	Optimized lamp seal technology to withstand interior base temperatures of up to 450 degrees C.
7	GS=Gap Shortened
8	S=Short
9	Lamp bases need to be forced cooled.
10	Necessary input voltage: 380 volt.
11	Permitted wattage range: 400W to 700W.
12	Lamp filler tip needs to point upwards during operation.
13	Permitted wattage range: 300W to 600W.
14	Lamp arc needs to be in horizontal operating position.
15	Current bar needs to be positioned underneath the discharge arc during operation.
16	Lampholder for FaX 1.5 base = HMI Socket 46721 (Product Number 69302).
17	All HTI® lamps are hot restrikeable with the exception of HTI 150, HTI 152, HTI 405 W/SE, and 705 W/SE.
18	SE=Single Ended
19	WARNING: Lamp has a special GY22 base. Ignition voltage must be applied only to the thin pin.
20	WARNING: The contact pins on the base are connected internally. The electrode farthest from the base must be connected via cable.
21	DX=Type of Double Ended
22	Lamp is also available with connecting cable and plug-in contact. HTI 250W/32 C (Product Number 54089).
23	When operated on electronic control gear (ECG) service life extended to 3000h.
24	Lamp HSD 250/78 also available with 7800K color temperature and average rated life at 3000 hr. Product Number 54118.
25	All VIP® lamps are for AC operation on electronic power supplies and are hot restrikeable. All VIP® lamps need forced cooling.
26	Lamp has an elliptical reflector.
27	Lamp also available in ozone-free version XBO 75 W/2 OFR (Product Number 69232)
28	This lamp has positive pressure even when cold. Please read safety/warning instructions before using this lamp.
29	Distance a is from end of base to the respective electrode tip (cold) - see lamp drawing.
30	With vertical operating position: anode(+) on top.
31	OFR=Ozone Free
32	Lamp also available with connecting cable and plug-in contact. XBO R 100W/45 C OFR (Product Number 69191).
33	Lamp current not to exceed 7.2A.
34	The focus lies 45mm in front of the mounting rim (working distance).
35	C=Cable

## SYMBOLS & FOOTNOTES FOR PHOTO-OPTIC DISCHARGE LAMPS

Footnote	Description
36	The connecting cables do not have a plug-in connector.
37	Lamp also available in ozone-free version XBO 150 W/1 OFR (Product Number 69235)
38	Lamp also available in Suprasil quartz glass version: XBO 150 W/4 (Product Number 69238).
39	Lamp uses Suprasil quartz glass.
40	Magnetic arc stabilization required.
41	Lamp is suitable for Crosfield color scanner (CR = Crosfield).
42	Lamp also available with connecting cable and plug-in contact. XBO 180W/45 C OFR (Product Number 69183).
43	Lamp focus is 60mm in front of reflector rim.
44	Lamp also available in ozone-free version XBO 450 W OFR (Product Number 69245)
45	Lamp also available in Suprasil quartz glass version XBO 450 W/4 (Product Number 69244)
46	Photometric data is measured in vertical operating position at rated wattage.
47	CA=Cable on anode base
48	TP=Threaded Pin
49	Lamp also available as XBO 2001 W/HTP OFR (Product Number 69310).
50	SHSC=Super short
51	Lamp has same dimensions as XBO 1600 W/HSC OFR (Product Number 69268).
52	Lamp also available as XBO 4200 W/GS with 60mm bulb diameter and 500 hrs life.
53	H=Suitable for horizontal operation
54	Magnetic arc stabilization: necessary for horizontal operation
55	Lamp XBO 10000 W/HS OFR also available with current control range 160-299 amps. Product Number 69342.
56	Lamp optimized for fluorescence microscopy.
57	Lamp also available with AMP plug contact. HBO R 103/45 C (Product Number 69311).
58	For DC operation both Product Numbers 69198 & 69222 can be used (47...65Volts / 3.1...4.2Amps). For AC operation Product Number 69198 (L1 version 57 65 Volt / 3.6 Amps) or Product Number 69222 (L2 version 49 57 Volt / 4.2 Amps) can be used.
59	Lamp also available with threaded pin 8-32 UNC-3A: HBO 200 W/2TM (Product Number 69223).
60	Technical data if operated on AC current: Volts=65, Lumens=10,000 lm, Luminous Efficacy=50 lm/W.
61	For DC operation both Product Numbers 69221 & 69223 can be used (47...65 Volts / 3.1...4.2Amps). For AC operation Product Number 69221 (L1 version 57 65 Volt / 3.6 Amps) or Product Number 69223 (L2 version 49 57 Volt / 4.2 Amps) can be used.
62	Lamp also available with increased radiation in the wavelength range below 450nm for UV-curing. HBO 202W/4 (Product Number 69316).
63	2000hr warranty against non-passive lamp failure.
64	Lamp same as HBO 200 W/4 (Product Number 69224 but with increased radiation in the wavelength range below 450nm for UV-curing.
65	Lamp also available with 850 hrs (HBO 3500 W/PI, Product Number 69174)
66	Anode Base=Cooling fins with cable connection (M 8).
67	Anode and Cathode Base with UNC-3A thread.
68	Lamps suitable for pulse operation between 250W and 500W. Maximum permissible average power is 350W (also for constant power operation).
69	HBO 350W (Product Number 69226) replaces HBO 350 W/G (Product Number 69227).
70	Lamp service life is defined with a switch-on/switch off duty cycle of 12hours ON / 30 minutes OFF.
71	Maximum permitted base temperature: 200 degrees C (392 degrees F).
72	Lamp base(s) with M 5x0.9 thread.
73	Cathode base with M 5x 0.9 thread
74	Lamp anode base (hexagon) with thread M5x0.9
75	Anode Base=Hexagon base with M 6 thread.
76	Lamps suitable for pulse operation between 700W and 1000W. Maximum permissible average power is 750W (also for constant power operation).
77	Cathode Base=Sleeve base with M 6 thread.
78	Cathode base with cable connection (M 5)
79	Cathode Base with cooling fins.
80	Anode sleeve base without thread.

## SYMBOLS & FOOTNOTES FOR PHOTO-OPTIC DISCHARGE LAMPS

Footnote	Description
81	Anode Base=Sleeve base with cable connection (M 5)
82	Anode Base=Sleeve base with cable connection (M 6).
83	Lamp has cooling fins on anode base.
84	Lamp also available as Longlife version HBO 1003 W/PIL (Product Number 69180) with 1500hr life.
85	Lamp also available as version HBO 1003 W/PI with 850hr life (Product Number 69195)
86	Anode Base with cable connection (M 8).
87	Lamp also available as Longlife version HBO 1500 W/CIL (Product Number 69179) with 1500hr life.
88	Cathode Base with cable connection (M 8).
89	Anode Base with cable connection (M 10).
90	Lamp also available as Longlife version HBO 1500 W/PIL (Product Number 69181) with 1500hr life.
91	Lamp also available with 850 hr HBO 1500 W/PI (Product Number 69319)
92	Lamp should not be ignited more than ten times over lifetime.
93	Lamp also available as version HBO 2001 W/CI with 850hr life (Product number 69219)
94	Lamp also available as version HBO 2001 W/CIL with 1500hr life (product number 69189)
95	Cathode Base with cable connection (M 6).
96	The average rated life of this lamp depends on the operating mode (initial power setting).
97	Lamp also available as version HBO 2500 W/PI with 850hr life (Product Number 69178)
98	Anode base with cable: length 340mm; connector 8/25.
99	Distance a = Distance (cold) of either anode base to anode tip or cathode base to cathode tip depending on lamp type.
100	Lamp also available as Longlife version HBO 3500 W/PIL with 1500hr life (Product Number 69169).
101	Average service life of lamp if operated with 400W is 100 hrs.
102	Also available with 850h, HBO 3501 W/PI: NAED 69127.
103	SHP - series (Super High Performance Technology).
104	Lamp life may vary depending on duty cycle and application.
105	The XERADEX® 20 lamp must be operated with DBD 20/110-240/ECG-XERADEX power supply (Product Number 69128 or 69129).
106	XERADEX lamps are only to be operated in appropriate equipment. Read and understand the Product Safety Warnings before using this product. XERADEX lamps generate a strong 172 nm (VUV) radiation. This short-wave radiation will convert atmospheric oxygen (O <sub>2</sub> ) surrounding the lamp into ozone (O <sub>3</sub> ). Ozone gas is toxic when inhaled in high concentrations over long periods of time. Ozone levels can be measured and monitored with commercial measuring equipment. Always keep ozone levels below the applicable TLV (threshold limit value).
107	XERADEX lamp life is rated in terms of 70% of initial UVC output on a continuous burn cycle.
108	Base is KF50 flange fitting; lamp is designed for use in vacuum environments at pressures above 300 mbar.
109	Base is KF50 flange fitting; lamp is designed for use in high vacuum environments at pressures above 200 mbar and below 10 <sup>-3</sup> mbar.
110	Base is KF40 flange fitting; lamp is designed for use in high vacuum environments at pressures above 30 mbar and below 10 <sup>-3</sup> mbar.
111	For Na 10 FL (product number 69284) use adapter no. 454/s using Pico 9 bases with P28 sockets.
112	Safety: Because the danger from glare, UV radiation and overpressure during operation, spectral lamps may only be operated in sealed housings specially designed for the purpose. Suitable filters must be fitted to ensure that UV radiation is reduced to permissible levels.

## WARNING

### TUNGSTEN HALOGEN & INCANDESCENT PHOTO-OPTIC LAMPS

The following information pertains to all Photo-Optic Tungsten-Halogen and Incandescent lamps including Infrared Heat Lamps, Current-Controlled Airfield Lamps, PAR and other Reflector Lamps.

**WARNING:**

In accordance with ANSI/IESNA Standard RP-27, Photo-Optic incandescent & tungsten halogen lamps are Risk Group 2 products.

**Read and understand this warning before using this bulb!**

**THIS LAMP EMITS ULTRAVIOLET AND INFRARED RADIATION. ALWAYS WEAR SUITABLE EYE PROTECTION WHEN WORKING NEAR THIS LAMP. THIS LAMP OPERATES AT HIGH PRESSURE AND AT HIGH TEMPERATURE AND MAY SHATTER UNEXPECTEDLY. THIS LAMP MUST BE USED IN A FIXTURE THAT HAS A SUITABLE PROTECTIVE SHIELD AND/OR SCREEN TO PROTECT PEOPLE AND SURROUNDINGS AGAINST THE RISK OF PERSONAL INJURY AND/OR PROPERTY DAMAGE FROM LAMP SHATTERING AND EXPOSURE TO INFRARED OR ULTRAVIOLET RADIATION.**

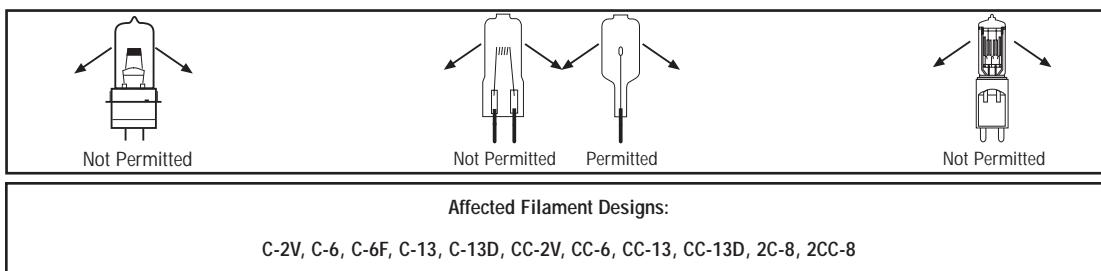
**ALL OF THE FOLLOWING PROCEDURES MUST BE FOLLOWED FOR SAFETY AND TO OBTAIN SATISFACTORY LAMP PERFORMANCE.**

**GENERAL SAFETY AND INSTALLATION TIPS:**

1. This lamp generates UV (ultraviolet) and/or IR (infrared) radiation. Prolonged exposure to this lamp may cause skin and eye irritation from the radiation when operated at or above rated voltage.  
*Please note that lamp with reference number 64614 has enhanced UV output as a result of its reflector coating.*
2. To avoid risk of serious eye injury from the intense light, do not stare at operating lamp.
3. Because this lamp radiates considerable heat, do not use in close proximity to people, combustible materials, or substances adversely affected by heat or drying.
4. To avoid shattering of glass parts and/or lens/reflector, keep water, other liquids and metal objects from contacting hot glass surfaces. Protect the entire lamp from moisture (rain, snow, etc.) to avoid cracking or breaking.
5. Protect the lamp from contamination, abrasion and scratches. Do not use if lamp is scratched, cracked or damaged in any way.
6. For safe and proper lamp operation, operate at rated voltage and wattage. Operation above rated voltage increases UV output and internal pressure, thus increasing the risk of rupture.
7. This lamp (for reflectorized lamps, this applies to inner lamp capsule) operates at high internal pressure and at high surface temperature and may unexpectedly shatter resulting in hot, flying fragments of glass or metal. Although this lamp was carefully constructed, tested and inspected before packing and shipping, under certain conditions beyond the manufacturer's control, the glass parts could crack or break.
8. For PAR and other reflectorized lamps: Even though this lamp may continue to operate after the reflector and/or lens is broken or damaged, it should be replaced as soon as possible since the pressure-filled inner lamp capsule could unexpectedly shatter if scratched or otherwise damaged, creating a risk of personal injury or property damage.

**LAMP MOUNTING AND OPERATION:**

1. Use only in equipment/fixture specifying this lamp type, including voltage and wattage. Use in circuits, which do not exceed rated voltage and in sockets and equipment designed for its use.
2. Do not touch or handle the quartz glass with bare fingers. Contaminants can burn in at high operating temperatures and cause glass to recrystallize. This makes the glass opaque and milky; it increasingly loses its strength, and the risk of bursting increases. If lamp is touched, clean with denatured alcohol and wipe dry with a soft, clean lint-free cloth before operating.
3. Make sure lamp is properly installed into socket to obtain good electrical contact and to avoid damaging lamp and/or socket. A heat resistant connector should be used to make electrical contact to the lamp base for safety and to obtain rated lamp life. To avoid damage to lamps with bipin bases, do not twist. Pull old lamp straight out and push new lamp straight in. For safe and proper operation of lamps with lead wires, please ensure that the lamp is securely supported and the lead-wires are securely connected to the electrical supply.  
*For PAR 36, 46, 56, 64 lamps:* To avoid breaking, the lamp must be supported by its rim.
4. Operating temperatures deteriorate lamp sockets. Socket condition may affect lamp life. Replace socket if deterioration of socket or lamp base contacts is observed.
5. Do not move, bump or bounce equipment/fixture during operation because mechanical shock can cause shattering and failure of the lamp.
6. For PAR 36, 46, 56 and 64 lamps: Lamp should be operated with a protective shield (especially in public places -- churches, auditoriums, etc) to prevent the risk of personal injury or property damage from flying lamp fragments in the event of the lamp cracking or breaking.
7. To avoid risk of burns or electrical shock, do not remove or insert lamp when power is on, allow lamp to cool to room temperature before removing or storing.
8. Replace all equipment/fixture covers and shields after servicing to prevent personal injury or property damage.
9. All Photo-Optic lamps have a range of permissible operating positions. Please see relevant operating position information in our literature or on-line catalog and only operate lamps at the operating positions specified. The basic rule for all single-ended Photo-Optic halogen and incandescent lamps is that the lamp may only be tilted/inclined perpendicular to the plane through both filament lead-wires (see illustrations and list of affected filament designs below).



10. Keep lamp seal temperature below 350°C (660°F) and the lamp wall temperature between 250°C (480°F) and 900°C (1650°F). When used in equipment designed to provide cooling to operating lamp, do not obstruct equipment cooling system.
11. Filaments for high luminance applications are designed in such a way that the incandescent elements do not block each other in the direction of projection. The positioning of single filament coils in one plane is called a monoplane filament. Biplane filaments have the incandescent elements staggered forward and backward in two parallel planes while maintaining adequate spacing to prevent arc-over.
12. Note: Photometric values of a frosted lamp will vary from the published values of the same non-frosted type.

## TUNGSTEN HALOGEN & INCANDESCENT PHOTO-OPTIC LAMPS (continued)

### LAMP DIMMING:

1. Incandescent lamps (non-halogen): Incandescent lamps perform according to fixed relationships between luminous flux, luminous efficacy, color temperature, electrical voltage, electrical current and electrical power consumption. In general, a 5% increase in applied lamp voltage results in half the lamp life, and conversely a 5% reduction of lamp voltage results in twice the lamp life.
2. Tungsten-Halogen Lamps: In standard incandescent lamp operation, there is an inverse relationship of lamp life vs. supply voltage; i.e., the lower the voltage, the longer the life. In some tungsten halogen lamps, however, this holds true only when operated within 5 to 10% of the rated voltage. Further dimming, beyond the 10%, may affect the halogen chemistry in the lamp and may cause filament corrosion. There are also tungsten halogen lamps that only achieve nominal lamp lives regardless of the level of dimming that is used. Unlike standard incandescent lamps, the relationships in halogen lamps are not clear-cut because of the halogen chemical cycle. For the vaporized tungsten to be removed from the inner bulb wall, a minimum bulb wall temperature is necessary. This temperature is directly related to the power input to the lamp such that a reduction in power effects a reduction in the bulb wall temperature. Special design techniques have been incorporated in modern halogen lamps to prevent blackening regardless of the level of dimming. Consideration must be given to lamp dimming in applications that require maximum constancy of color temperature (photographic and video recording, for example), since the color temperature changes with the filament temperature.

### CURRENT-CONTROLLED HALOGEN LAMPS:

Some lamp types are designed for constant current operation, primarily for airfield applications. They are usually operated in series with an isolation transformer tap connected to each lamp to ensure that all lamps have the same brightness. Constant current-operated lamps differ in performance from the published values of constant applied voltage lamps. Direct series connection of non-constant current designed lamps is not recommended.

### INFRARED HEAT LAMPS:

These lamps are designed for use in applications specifically requiring an infrared radiation source. Infrared radiation from these lamps causes surfaces to be heated. These lamps operate at high temperatures. Allow sufficient cooling time before handling. A listing of Kelvin temperatures, method for electrical connection, and operating positions with appropriate cooling recommendations for tungsten halogen special heat lamps can be found in the OSRAM literature or in the on-line catalog.

**CAUTION:** The infrared reflector lamp, HLX 64635 is specially designed to produce high temperatures at its focal point (approximately 1300°C / 2372°F) for soldering, welding and heating applications.

### LAMP DISPOSAL:

1. Disposal of spent lamps must be in accordance with applicable federal, state/provincial, and local regulations.
2. Lamp users in North America may obtain specific state or province information concerning disposal regulations, toll free, by calling 1-866-666-6850.
3. OSRAM SYLVANIA Products Inc. cannot advise lamp users as to general or specific disposal regulations for federal, state/provincial, and/or local municipalities.

## WARNING

### METAL HALIDE PHOTO-OPTIC LAMPS [HMI®, HMD®, HMP®, HSD®, HSR®, HTI®]

#### WARNING:

In accordance with ANSI/IESNA Standard RP-27, Photo-Optic metal halide lamps are a Risk Group 3 product.

*Read and understand this warning before using this lamp!*

**THIS LAMP EMITS ULTRAVIOLET AND INFRARED RADIATION. ALWAYS WEAR SUITABLE EYE PROTECTION WHEN WORKING NEAR THIS LAMP. THIS LAMP OPERATES AT HIGH PRESSURE AND AT HIGH TEMPERATURE AND MAY SHATTER UNEXPECTEDLY. THIS LAMP MUST BE USED IN A FIXTURE THAT HAS A SUITABLE PROTECTIVE SHIELD AND/OR SCREEN TO PROTECT PEOPLE AND SURROUNDINGS AGAINST THE RISK OF PERSONAL INJURY AND/OR PROPERTY DAMAGE FROM LAMP SHATTERING AND EXPOSURE TO INFRARED OR ULTRAVIOLET RADIATION.**

#### RUPTURE & RADIATION (UV-IR-VISIBLE) HAZARD:

1. All Photo-Optic metal halide lamps operate at high internal pressures (upwards of 500psi or 35bar possible) and may unexpectedly rupture resulting in the discharge of hot fragments (approximately 800°C / 1472°F) of quartz and/or metal particles, as well as the release of mercury/mercury vapor. In the event of such a rupture, there is a risk of personal injury, burns and fire.
2. All Photo-Optic metal halide lamps generate ultraviolet (UV), infrared (IR) and visible radiation during operation. This radiation can cause permanent damage to the eyes (including blindness) and serious injury to the skin (including burns and blistering). To avoid eye damage, other personal injury and/or property damage, the lamp **MUST** be operated in a suitable fixture.
3. A suitable fixture is one that will prevent the arc from being viewed directly while operating, and in the event of a lamp rupture, will prevent hot (up to 800°C / 1472°F), flying fragments of quartz and/or metal from escaping into the area.
4. To minimize the risk of a lamp rupture, replace the lamp at or before the end of rated life (see OSRAM SYLVANIA product catalog for rated life) or when the lamp shows signs of blackening.
5. The discharge vessel of Photo-Optic metal halide lamps is constructed of quartz glass that is filled with a quantity of mercury, elemental metals and/or rare earth elements. These lamps are **not** at positive pressure when cold (not operating, at room temperature).

#### GENERAL SAFETY & INSTALLATION TIPS

##### BROKEN LAMPS (MERCURY VAPOR RELEASE AND DISPOSAL):

1. In the event of a lamp rupturing during operation, all personnel should leave the area immediately to avoid the inhalation of mercury vapor. The area should then be thoroughly ventilated for a minimum of 30 minutes or until the mercury vapor in the area is below the ACGIH TLV (American Conference of Governmental Industrial Hygienists Threshold Limit Value). Inhalation vapor or small particles of mercury or its compounds can be harmful to lungs, kidneys and nervous system. Penetration of the skin or ingestion can also be harmful.
  2. To avoid mercury vapor getting into air conditioning systems, mercury vapor-absorbing filters should be used. *When the lamp housing has cooled, mercury residue may be picked up with special mercury adsorptive agents or a mercury vacuum cleaner (available from laboratory safety equipment suppliers) and disposed of in accordance with local, state and federal regulations.* There should be no direct skin contact with and/or inhalation of mercury residues that may be residing in lamp housing, optics or lamp parts.
- If a cold (room temperature) lamp is broken, proceed with clean up and disposal as indicated above (in the ***bold, italic statement***).

## METAL HALIDE PHOTO-OPTIC LAMPS [HMI<sup>®</sup>, HMD<sup>®</sup>, HMP<sup>®</sup>, HSD<sup>®</sup>, HSR<sup>®</sup>, HTI<sup>®</sup>](continued)

### INSTALLATION:

1. Do not use if lamp is scratched, cracked or damaged in any way.
2. To prevent electric shock, shut off main power to the fixture before attempting to service or replace lamp.
3. To avoid damaging the quartz and causing premature lamp failure, do not handle lamp with bare hands. Use clean gloves.
4. If the quartz parts are inadvertently touched, clean fingerprints off with denatured alcohol and wipe dry with a clean, soft, lint-free cloth. Do not use cleaning rags or material that can leave a residue.
5. To prevent skin burns, allow lamp to cool before handling.
6. To avoid breakage, mounting of the lamp must be free of mechanical stress during installation and during operation by allowing for thermal expansion along its axis.
7. Photo-Optic metal halide lamps should not be subjected to force/stress during installation. Single-ended lamp types use a metal bar, which runs parallel to the lamp body and provides an electrical path for the lamp current (from the socket end to the opposite end of the lamp). To avoid overheating the lamp current bar, Photo-Optic metal halide lamp types without outer jackets should not have the lamp current bar positioned above the discharge arc during operation. Single-ended lamp types with outer jackets may be operated in any position and with any current bar position.
8. Replace all fixture covers and shields after replacing lamp to prevent eye damage, other personal injury or property damage.
9. Use only in instruments/equipment specifying this light source.
10. **CAUTION - Shorting Hazard:** The HTI 2500 W/SE has both base pins connected to the same point inside the lamp socket. A lead wire on the opposite side of the lamp provides the current connection necessary for operating the lamp.
11. Make sure lamp is properly installed into socket/connector to obtain good electrical and thermal contact and avoid damaging lamp and/or socket/connector. electrical connections should be free from dirt and corrosion. Socket/connector condition may affect lamp life. Replace socket/connector or lamp if deterioration (pitting, scorching, corrosion, etc.) is observed.

Please note that certain Photo-Optic, AC metal halide lamps have dedicated pins or connectors for high voltage ignition.

### OPERATION:

1. Magnetic current-limiting ballasts (chokes) provide sine-wave current operation for lamps. However, electronic control gear (ECG) allows for square wave current operation, often at higher frequencies. Some Photo-Optic metal halide lamps have been designed for, and therefore require, ECG square-wave operation. Please see OSRAM literature for power requirements for your specific lamp type.
2. Operate with compatible power supply and fixture only.
3. OSRAM Photo-Optic metal halide discharge lamps are designed for either hot re-start (high ignition voltages) or cold start (low ignition voltages only). Please see OSRAM literature for power requirements for your specific lamp type.
4. To ensure that lamps operate at the correct power during AC operation, connections on the ballast/choke in the power supply should be made to the correct voltage taps; i.e., tap voltage should match input line voltage. To avoid wall blackening, overheating or other premature failure modes, OSRAM strongly advises against operating Photo-Optic metal halide lamps at higher than rated wattage ("boosted operation"). Only OSRAM HMP Photo-Optic metal halide lamps are offered with a unique power feature allowing for operation at increased wattage of up to 1.5 times their rated wattage, but with reduced service life. For safe lamp operation and optimum performance, use only those ballasts/power supplies that have been approved by OSRAM. See your OSRAM dealer for a list of approved equipment.
5. Dimming of Photo-Optic metal halide lamps, like incandescent lamps, causes a drop in luminous output. If a metal halide lamp is dimmed by electrical means, it will not reach its optimum operating state and, unlike incandescent lamps, will not last longer. When dimmed, the lamp wall temperature falls more rapidly on a lamp that has no outer jacket. In metal halide lamps without an outer jacket, reduced power operation causes an increase in the color temperature and a reduction in CRI. Lamps with outer jackets can have either a vacuum or filling gas (often Nitrogen) within. Metal halide lamps with outer jackets tend to maintain their color properties better under dimmed conditions because the outer jacket provides thermal insulation against internal lamp cooling.
6. Photo-Optic metal halide lamps need 5 to 20 minutes (depending on lamp type and cooling conditions) before they reach their operating temperatures. To ensure proper ignition on subsequent start-up, lamps should not be switched off during the warm-up period.
7. Average service life of these lamps is determined by the ON/OFF duty cycle. Lamp performance is reduced with increased duty cycle.

### OPERATING POSITION:

Photo-Optic metal halide lamps may only be used in the operating positions described in the OSRAM SYLVANIA product catalog. Please note that lamp photometric values and arc stability can be effected by the operating position.

### OZONE GENERATION:

- During operation, Photo-Optic metal halide lamps produce a spectrum that ranges from about 150 nm in the ultraviolet region to the infrared region.
- If the quartz glass bulb is transparent in the ultraviolet region between 180 and 220 nm, this short-wave radiation will convert a small quantity of atmospheric oxygen (O<sub>2</sub>) surrounding the lamp into ozone (O<sub>3</sub>). Moreover, the oxygen molecules will link together with the nitrogen (N<sub>2</sub>) in the air, creating nitrogen oxides (NO<sub>x</sub>). (Some believe that the smell attributed to ozone is in actuality from the nitrogen oxides.)
- Ozone gas is toxic when inhaled in high concentrations over long periods of time. Ozone levels can be measured and monitored with commercial measuring equipment. Always keep ozone levels below the applicable TLV (threshold limit value).
- An "ozone smell" (or smell of nitrogen oxide) may be detected shortly after ignition. There are two probable causes for this condition. O<sub>3</sub> and NO<sub>x</sub> production is caused by the (short-duration) radiation of the spark gap used for lamp ignition. Or, the cold condition of the quartz glass bulb has slightly shifted its UV-absorption characteristics thus permitting a small amount of radiation in the very short-wave ultraviolet range to be emitted by the bulb. Typically, after the lamp has run up to its operating temperature range, virtually no ozone is produced by the lamp, as a rule, due to the quartz glass absorption and the self-absorption of the plasma.

### LAMP COOLING:

1. All Photo-Optic metal halide lamp bases must be kept below 230°C (446°F) during operation to prevent premature lamp failure. If convection cooling is inadequate, forced air-cooling may be used. Please see OSRAM literature for cooling requirements of specific lamp types.
2. If forced air-cooling is used, care must be taken to direct airflow at the bases only. Striking elsewhere on the lamp with the airflow will result in poor lamp performance or premature failure.
3. Discoloration, surface pitting, and/or corrosion of the lamp connections indicates a thermal overload. To obtain optimum lamp performance, components exhibiting these conditions must be cleaned or replaced.

### LAMP REMOVAL:

- Turn off power to the lamp and allow lamp to cool (forced or convection) for a minimum of 30 minutes prior to shutting main fixture power and opening fixture. Do not remove lamp until it has cooled.
- Lamps should be placed in their original OSRAM SYLVANIA packaging for temporary storage until disposal and/or transportation to a disposal location. See "Lamp Transportation" and "Lamp Disposal" sections below for relevant information.

## METAL HALIDE PHOTO-OPTIC LAMPS [HMI®, HMD®, HMP®, HSD®, HSR®, HTI®] (continued)

### LAMP TRANSPORTATION:

1. All Photo-Optic metal halide lamps should be transported ONLY in their original packaging.
2. Transportation in non-original packaging can damage the lamp and void warranty.
3. U.S. Federal regulations require mercury-containing lamps to be shipped ONLY in DOT-compliant packaging. Original OSRAM packaging is DOT-compliant.

### MERCURY FILL OF Photo-Optic METAL HALIDE LAMPS:

- Mercury is referred to by its chemical symbol, Hg, which is derived from the Greek and Latin "hydrargyrum," a silvery shiny liquid metal at room temperature. In humid air it is covered with a gray oxide skin. Of all metals it has the highest vapor pressure which increases exponentially with rising temperatures. For this reason, mercury is volatile at room temperature. The colorless and odorless vapors produced are poisonous and heavier than air.
- The inhalation (respiration) of mercury or mercury compounds as vapor or dust will lead to the damage of lungs, kidneys, and the nervous system. Apart from inhalation, mercury can be transmitted through the skin (penetration) or through the gastro-intestinal tract (ingestion), which is also harmful.
- The ACGIH TLVs are merely guidelines to assist in the control of health hazards. The ACGIH states that the TLVs refer to airborne concentrations of substances and represent conditions under which it is believed that nearly all workers may be repeatedly exposed day after day without adverse health effects. Therefore, the TLV for mercury should never be exceeded.
- Analytical detection of mercury vapor is possible by means of gas/vapor detector tubes (rough measurement) or air-monitors that absorb mercury vapor.

OSRAM metal halide lamps have the following mercury contents:

Lamp Family	Maximum Mercury Content (mg)
HMI	1200
HMP	70
HTI	180
HSR/HSD	110
HMD	520

### PROPERTIES OF MERCURY:

- Chemical symbol: Hg
- Atomic number: 80
- Molecular Weight: 200.59
- Density: 13.6 g/cm³ @ 20°C / 68°F
- Melting Point: -39°C / -38.2°F
- Boiling Point: 357°C / 674°F
- Vapor pressure: 160 Pa @ 20°C / 68°F  
370 Pa @ 30°C / 86°F  
823 Pa @ 40°C / 104°F
- Concentration in air: 13.6 mg/m³ @ 20°C / 68°F  
29.6 mg/m³ @ 30°C / 86°F  
62.7 mg/m³ @ 40°C / 104°F
- CAS Registry Number: 7439-97-6
- RCRA waste number: U151
- Other Names: Hydrargyrum, Colloidal mercury, Kwik, Mercure, Mercurio, Metallic mercury, Quecksilber, Quick silver, Liquid Silver

### LAMP DISPOSAL:

1. Disposal of spent lamps must be in accordance with applicable federal, state/provincial, and local regulations. State laws may differ in their disposal requirements for lamps.
2. Lamp users in North America may obtain specific state or province information concerning disposal regulations, toll free, by calling 1-866-666-6850.
3. OSRAM SYLVANIA Products Inc. cannot advise lamp users as to general or specific disposal regulations for federal, state/provincial, and/or local municipalities. It is the responsibility of the waste generator to ensure proper classification and disposal of waste products.



### WARNING

## VIP® SUPER HIGH PRESSURE MERCURY LAMPS (PHOTO-OPTIC)

### WARNING:

In accordance with ANSI/IESNA Standard RP-27, VIP Super High Pressure Mercury Lamps are Risk Group 3 products.

Read and understand this entire statement before using this lamp!

### RUPTURE & RADIATION (UV- VISIBLE) HAZARD:

1. The discharge vessel of Super High Pressure Mercury VIP lamps is constructed of quartz glass that is filled with a quantity of mercury. These lamps are not pressurized when cold (i.e., at room temperature).
2. *All Super High Pressure Mercury VIP lamps have high internal pressures (up to approximately 3,675 psi or 250 bar) during operation and may unexpectedly rupture resulting in the discharge of hot fragments (approximately 800°C / 1472°F) of quartz and/or metal particles, as well as the release of mercury/mercury vapor.* In the event of such a rupture, there is a risk of personal injury, burns, and fire.
3. *Super High Pressure Mercury VIP lamps generate intense ultraviolet (UV), visible and infrared radiation during operation. This radiation can cause permanent damage to the eyes (including blindness) and serious injury to the skin (including burns and blistering).* To avoid eye damage, other personal injury, and/or property damage, the lamp MUST be operated in a suitable fixture.
4. A suitable fixture is one that will prevent the arc from being viewed directly while operating, and in the event of a lamp rupture, will prevent hot (up to 800°C / 1472°F), flying fragments of quartz and/or metal from escaping into the area.
5. To minimize the risk of a lamp rupture, replace the lamp at or before the end of rated life (see OSRAM SYLVANIA product catalog for rated life).

## VIP® SUPER HIGH PRESSURE MERCURY LAMPS (PHOTO-OPTIC) (continued)

### BROKEN LAMPS (MERCURY VAPOR RELEASE AND DISPOSAL):

1. In the event of a lamp rupturing during operation, all personnel should leave the area immediately to avoid the inhalation of mercury vapor. The area should then be thoroughly ventilated for a minimum of 30 minutes or until the mercury vapor in the area is below the ACGIH TLV (American Conference of Governmental Industrial Hygienists Threshold Limit Value). Inhaling vapor or small particles of mercury or its compounds can be harmful to lungs, kidneys, and nervous system. Penetration of the skin or ingestion can also be harmful.
2. When the lamp housing has cooled, mercury residue may be picked up with special mercury adsorptive agents or a mercury vacuum cleaner (available from laboratory safety equipment suppliers) and disposed of in accordance with local, state, and federal regulations. There should be no direct skin contact with and/or inhalation of mercury residues that may be residing in lamp housing, optics or lamp parts.
3. If a cold (room temperature) lamp is broken, proceed with clean-up and disposal as indicated in item 2 above.

### GENERAL SAFETY & INSTALLATION TIPS

#### INSTALLATION:

1. Do not use if lamp or any lamp parts such as reflector, front glass, etc. are scratched, cracked, or damaged in any way.
2. To prevent electric shock, shut off main power to the fixture before attempting to service or replace lamp.
3. If the quartz parts are inadvertently touched, clean fingerprints off with denatured alcohol and wipe dry with a soft, clean, lint-free cloth. Do not use cleaning rags or material that can leave a residue.
4. To prevent skin burns, allow lamp to cool before handling.
5. To avoid breakage, mounting of the lamp must be free of mechanical stress during installation and during operation by allowing for thermal expansion.
6. Super High Pressure Mercury VIP lamps should not be subjected to force/stress during installation.
7. Replace all fixture covers and shields after replacing lamp to prevent eye damage, other personal injury, or property damage.
8. Use only in instruments/equipment specifying this light source.
9. Make sure lamp is properly connected to avoid damaging lamp and/or socket/connector. Electrical connections should be free from dirt and corrosion. Socket/connector condition may affect lamp life.
10. Replace socket/connector or lamp if deterioration (pitting, scorching, corrosion, etc.) of either is observed.

#### OPERATION:

1. Super High Pressure Mercury VIP lamps are designed for operation on AC only.
2. Operate with compatible power supply and fixture only.
3. Super High Pressure Mercury VIP lamps need approximately 5 minutes (depending on lamp type and cooling conditions) before they reach their operating temperatures. To ensure proper ignition on the following start-up, lamps should not be switched off during the warm-up period.
4. The average service life of Super High Pressure Mercury VIP lamps is influenced by their ON/OFF-duty cycle. Lamp performance is reduced with increased duty cycle.

#### OPERATING POSITION:

Super High Pressure Mercury VIP lamps may only be operated in the positions described in the OSRAM SYLVANIA product catalog and/or technical literature.

#### LAMP COOLING:

1. To prevent premature failure, forced-air cooling is required. Maximum permitted lamp temperatures are described in the available technical literature.
2. Discoloration, surface pitting, and/or corrosion of the lamp connections indicate a thermal overload. Components exhibiting these conditions must be cleaned or replaced.

#### LAMP REMOVAL:

Turn off power to the lamp and allow lamp to cool (forced) for a minimum of 15 minutes prior to shutting main fixture power and opening fixture. Do not remove lamp until it has cooled.

#### LAMP TRANSPORTATION:

1. All Super High Pressure Mercury VIP lamps should be transported ONLY in their original packaging.
2. Transportation in non-original packaging can result in damage to the lamp thus voiding the warranty.
3. U.S. Federal regulations require mercury-containing lamps to be shipped ONLY in DOT-compliant packaging. Original OSRAM packaging is DOT-compliant.

#### MERCURY FILL OF SUPER HIGH PRESSURE MERCURY VIP LAMPS:

Mercury is referred to by its chemical symbol, Hg, which is derived from the Greek and Latin "hydrargyrum," a silvery, shiny liquid metal at room temperature. In humid air it is covered with a gray oxide skin. Of all metals it has the highest vapor pressure which increases exponentially with rising temperatures. For this reason, mercury is volatile at room temperature. The colorless and odorless vapors produced are poisonous and heavier than air.

The inhalation (respiration) of mercury or mercury compounds as vapor or dust may lead to the damage of lungs, kidneys, and the nervous system. Apart from inhalation, mercury can be transmitted through the skin (penetration) or through the gastro-intestinal tract (ingestion), which is also harmful.

Threshold Limit Values (TLVs) are not fine lines between safe and dangerous concentrations but are guidelines to assist in the control of health hazards. They represent the maximum exposure to substances, both short-term and long-term, that a person may experience without resulting in health-related problems. Therefore, the TLV for mercury should never be exceeded.

Analytical detection of mercury vapor is possible by means of gas/vapor detector tubes (rough measurement) or air-monitors that absorb mercury vapor.

OSRAM Super High Pressure Mercury VIP lamps have the following mercury contents:

Power level	Maximum Mercury content (mg)
100-200W	12

#### PROPERTIES OF MERCURY:

- Chemical symbol: Hg
- Atomic number: 80
- Molecular Weight: 200.59
- Density: 13.6 g/cm³ @ 20°C / 68°F
- Melting Point: -39°C / -38.2°F
- Boiling Point: 357°C / 674°F
- Vapor pressure: 160 Pa @ 20°C / 68°F  
370 Pa @ 30°C / 86°F  
823 Pa @ 40°C / 104°F

## VIP® SUPER HIGH PRESSURE MERCURY LAMPS (PHOTO-OPTIC) (continued)

- Concentration in air: 13.6 mg/m<sup>3</sup> @ 20°C / 68°F  
29.6 mg/m<sup>3</sup> @ 30°C / 86°F  
62.7 mg/m<sup>3</sup> @ 40°C / 104°F
- CAS Registry Number: 7439-97-6
- RCRA waste number: U151
- Other Names: Hydrargyrum, Colloidal mercury, Kwik, Mercure, Mercurio, Metallic mercury, Quecksilber, Quick silver, Liquid Silver

### LAMP DISPOSAL:

1. Disposal of spent lamps must be in accordance with applicable federal, state/provincial, and local regulations. Some U.S. states differ in their disposal requirements for lamps containing mercury.
2. Lamp users in North America may obtain specific state or province information concerning disposal regulations, toll free, by calling 1-866-666-6850.
3. OSRAM SYLVANIA INC. cannot advise lamp users as to general or specific disposal regulations for federal, state/provincial, and/or local municipalities.



### WARNING

## XBO® HIGH PRESSURE XENON LAMPS

### WARNING:

In accordance with ANSI/IESNA Standard RP-27, this XBO bulb is a Risk Group 3 product.

*Read and understand this warning before using this bulb!*

XBO lamps are at high internal pressure when cold (up to 35 bar or approximately 525 psi) and at operating temperature (up to 80 bar or approximately 1200 psi at bulb wall temperatures of 600°C to 800°C). Therefore, XBO lamps may unexpectedly rupture resulting in the discharge of hot fragments of quartz and/or glass and metal. In the event of such a rupture, there is a risk of personal injury, burns and fire. Only handle lamps with their protective covers in place. Do not handle lamps without their protective covers unless government-approved (OSHA-approved in the U.S.A.) safety glasses, facemask (with neck protector), chest protector, and gauntlets are worn.

### RUPTURE & RADIATION (UV-VISIBLE-IR) HAZARDS:

1. Intense ultraviolet (UV), visible, and infrared (IR) radiation is also generated during operation. This radiation can cause permanent damage to the eyes (including blindness) and serious injury to the skin (including burns and blistering). Some operating lamps also generate ozone (O<sub>3</sub>). Others, designated "OFR," are constructed of materials that prevent the generation of ozone. See the "Ozone Generation" section below.
2. To avoid eye damage, other personal injury and/or property damage, the lamp MUST be operated in a suitable fixture. A suitable fixture is one that will prevent the arc from being viewed directly while operating. It is ventilated to the outside for those lamps that produce ozone and, in the event of a rupture, will prevent hot (up to 800°C), flying fragments of quartz and/or glass or metal from escaping into the surrounding area.
3. To minimize the risk of a lamp rupture, the lamp must be replaced at or before the end of rated life (see catalog for rated life) or when the lamp shows signs of advanced blackening or quartz devitrification (recrystallization, a white, frosted appearance).
4. XBO lamps are constructed of quartz glass, tungsten electrodes and either tungsten support rods or molybdenum foils. High wattage XBO lamps used for cinema film projection have nickel-plated end caps (bases). Reflectorized XBO lamps have a dichroic-coated borosilicate glass reflector.

### GENERAL SAFETY & INSTALLATION TIPS

#### INSTALLATION:

1. Do not use if lamp is scratched, cracked, or damaged in any way.
2. To prevent electric shock, shut off main power to the fixture before attempting to service or replace lamp.
3. To avoid damaging the quartz and causing premature lamp failure, do not handle lamp with bare hands.
4. Handle lamp ONLY with suitable, clean, safety gloves. See special handling instructions for using government-approved personal protective safety equipment with high-pressure lamps.
5. If the quartz parts (or the reflector for reflectorized lamps) are inadvertently touched, clean fingerprints off with denatured alcohol and wipe dry with a soft, clean, lint-free cloth. Do not use cleaning rags or material that can leave a residue.
6. To prevent skin burns, allow lamp to cool before handling.
7. To avoid breakage, mounting of the lamp must be free of mechanical stress during installation and during operation by allowing for thermal expansion along its axis. For this reason, XBO lamps should be fixed at one end only and the electrical connection on the other end must be flexible enough to avoid stressing the lamp.
8. XBO lamps should not be subjected to force/stress during installation.
9. Handle lamp only with protective safety cover in place. When installing lamp, remove safety cover only AFTER fully securing lamp in lamphouse/fixture and immediately preceding the replacement of equipment covers or closing of lamphouse door.
10. Replace all fixture covers and shields after replacing lamp to prevent eye damage, other personal injury, and/or property damage.
11. Use only in instruments/equipment specifying this lamp type.
12. Make sure lamp is properly installed into socket/connector to obtain good electrical and thermal contact and avoid damaging lamp and/or socket/connector. Electrical connections should be free from dirt and corrosion.
13. Socket/connector condition may affect lamp life. Replace socket/connector or lamp if deterioration (pitting, scorching, corrosion, etc.) of either is observed.
14. All XBO lamps are designed for DC operation. Make sure that the polarity is correct before turning power on. Incorrect polarity can destroy the lamp in a matter of seconds. Operate with compatible power supply and fixture only.
15. For best performance, operate this XBO lamp at rated current. Note: some low wattage XBO lamps may not be operated above their specified rated wattage. See catalog for details.
16. For those XBO lamps that have a current control range, the current may be increased to its maximum value to compensate for loss of light over the life of the lamp. Operating the lamp at minimum current does not prolong the life of the lamp. The DC current may only be varied within specified control limits for the selected type. (See catalog for these limits for your specific lamp type.)

## XBO® HIGH PRESSURE XENON LAMPS (continued)

17. When installing bare lamps that have an included flat washer, slip the washer over the threaded pin on the cathode (- negative) side. Removal of this flat washer (after half the average life) will allow a rotation of the lamp by 180° resulting in better output maintenance over life for horizontally operated lamps. This should be done only if darkening is evident in the upper part of the bulb. In instances where bare lamp cathode bases are provided with two metal pins, they may be engaged with the two slots on the protective cover to screw the cathode end of the lamp into its socket.

### LAMP REMOVAL:

- Turn off power to the lamp and allow it to cool (forced or convection) for a minimum of 15 minutes prior to shutting main fixture power and opening fixture. Do not remove lamp until it has cooled. After the lamp has cooled, place the protective cover around it and reverse the procedure described above. See special handling instructions for using government-approved safety equipment with high-pressure lamps.
- Lamp should be placed in the original OSRAM SYLVANIA packaging for temporary storage until disposal and/or transportation to a disposal location. See "Lamp Disposal" section below for transportation and spent lamp disposal information.

### OPERATING POSITION:

- XBO bare lamps are designed to operate vertically. Of those, some (having an "H" in their designation) may also be operated in the horizontal position as well. For vertically operated lamps, the anode (+ positive) electrode must be on the top. See catalog for operating position and permissible deviation for your specific type.
- Some horizontally operated lamps require magnetic arc stabilization. Check the catalog for your specific lamp type.
- XBO reflector lamps are designed to operate with lamp/reflector axis within 15° of the horizontal position.

### LAMP COOLING:

- Discoloration, surface pitting, and/or corrosion of the lamp indicates a thermal overload. Components exhibiting these conditions must be cleaned or replaced.
- If forced-air cooling is used, care must be taken to direct airflow at the lamp bases only. Striking the lamp elsewhere with the airflow will result in poor lamp performance or premature failure.
- To prevent premature failure, the following cooling instructions must be followed:

**Bare lamps** - Bases must be kept below 230°C (445°F) during operation. If convection cooling is insufficient and additional cooling is required, forced air-cooling may be used. If forced air is used, care must be taken to direct airflow at bases only, since striking elsewhere on the lamp with the airflow will result in poor lamp performance or premature failure. See catalog for your specific lamp type to learn whether forced air-cooling is required.

**Reflector lamps** - To avoid damaging the reflector coating, do not allow the outer reflector surface to exceed the maximum temperature of 250°C (480°F). [Optimum temperature: 175-200°C (345-390°F)] To prevent premature failure, the lamp ends must not exceed the maximum temperature of 350°C (660°F). [Optimum temperature: 200-250°C (385-480°F)] Forced air-cooling is therefore required and the air flow must be directed perpendicular to the lamp/reflector axis, through the slots in the openings of both ceramics. See catalog for diagram.

### OZONE GENERATION:

An electrical discharge in xenon gas generates radiant energy ranging from approximately 140 nm in the UV region to far into the infrared region. Xenon lamps are made of quartz glass. The quartz glass allows for the transmission of short UV wavelengths starting from approximately 140 nm, depending on the quartz type. Ozone gas (O<sub>3</sub>) is generated by the conversion of oxygen (O<sub>2</sub>) in the air by UV energy in the range of approximately 110-200 nm. Ozone is extremely toxic and will cause serious health problems if inhaled in excess of allowable limits over a prolonged period of time. For more information on allowable limits, please refer to the ACGIH (American Conference of Governmental Industrial Hygienists) publication, "TLVs and BEIs" (Threshold Limit Values and Biological Exposure Indices). Ozone production can be suppressed in xenon discharge lamps by adding materials to the quartz glass that block short-wave UV transmission.

### QUARTZ GLASS DESIGN OPTIONS:

OSRAM XBO® xenon lamps are offered in three quartz glass designs. They are:

- OSRAM XBO W/4:** These lamps are fabricated from synthetic Suprasil quartz glass. Suprasil quartz is low in impurities and provides for maximum short-wave UV transmission and consequently allows for the production of ozone. These lamps should always be used with external ventilation with no possible direct exposure to humans. Under no circumstances may the applicable maximum allowable workplace concentration of ozone be exceeded for any OSRAM xenon XBO lamps.
- OSRAM XBO:** These lamps use standard quartz glass and will also emit UV radiation that produces ozone. These lamps, like the W/4 types, must always be externally ventilated. With these types of lamps, health risks must always be minimized by suitably extracting the air from the lamp housing and externally venting it.
- OSRAM XBO OFR:** These lamps are designated "Ozone-Free" and are characterized by the letters "OFR" in the order description. OSRAM XBO OFR type lamps have their quartz glass transparently coated to effectively suppress radiation below approximately 250 nm, resulting in the elimination of ozone production during operation.

### LAMP DISPOSAL:

- There is a risk that a lamp could rupture because of its high internal pressure (both hot and at room temperature). A lamp rupture could result in personal injury or property damage from flying fragments of glass and/or metal. Therefore, spent (end-of-life) lamps should ALWAYS be stored in the protective covers and packaging in which they originally came, and ultimately depressurized before release for disposal. The following is one example of a depressurizing method for XBO lamps prior to disposal, but it may not be the most suitable or appropriate method depending on the circumstance:
  - The operator must wear government-approved (OSHA-approved in the U.S.A.) safety glasses, facemask (with neck protector), chest protector, and gauntlets during this entire procedure.
  - With protective lamp covers in place, place lamps<sup>1</sup> into steel drum<sup>2</sup> and lock down cover with bolt ring and bolt.
  - Drop drum onto solid surface (concrete floor) from at least five feet. Increase height as needed to ensure all lamps are depressurized.
  - Wait for dust to settle (about 5 minutes) before opening drum. Loosen bolt and allow gas to escape before complete removal of cover.
- <sup>1</sup> The lamps should not exceed the half-full point in the drums. Adjust the maximum number of lamps accordingly.
- <sup>2</sup> 8, 20, or 30-gallon drums, depending on quantity of lamps to be de-pressurized, are available. Drums of 20-gauge steel are recommended and are available from many safety supply companies.
- Disposal of spent lamps must be in accordance with applicable federal, state/provincial, and local regulations. State laws differ in their disposal requirements.
- Lamp users in North America may obtain specific state or province information concerning disposal regulations, toll free, by calling 1-866-666-6850.
- OSRAM SYLVANIA Products Inc. cannot advise lamp users as to general or specific disposal regulations for federal, state/provincial, and/or local municipalities.

## HBO® HIGH PRESSURE MERCURY LAMPS

### WARNING:

In accordance with ANSI/IESNA Standard RP-27, this HBO bulb is a Risk Group 3 product.

**Read and understand this warning before using this bulb!**

### RUPTURE & RADIATION (UV- VISIBLE) HAZARD:

1. The discharge vessel of HBO lamps is constructed of quartz glass that is filled with a quantity of mercury and either Argon or Xenon gas. Most HBO lamps are not at positive pressure when cold (not operating, at room temperature). However, there are several HBO lamps that DO have a positive internal pressure of upto approximately 8 bar (or approximately 120 psi) in the cold (room temperature) state. The printing of the following bold warning statement on individual packages identifies them as positive-pressure lamps.

### WARNING

**RISK OF LAMP RUPTURING. TO AVOID PERSONAL INJURY OR PROPERTY DAMAGE, ALWAYS WEAR PROTECTIVE CLOTHING WHEN HANDLING THESE LAMPS.** Never handle these lamps unless government-approved (OSHA-approved in the U.S.A.) safety glasses, facemask (with neck protector), chest protector, and gauntlets are worn.

These positive-pressure lamps may unexpectedly rupture resulting in the discharge of quartz and/or metal fragments as well as exposing the surrounding area to mercury. In the event of such a rupture, there is a risk of personal injury or property damage. Therefore these positive-pressure lamps should be handled in accordance with these safety instructions.

2. All HBO lamps have high internal pressures (400 - 1100 psi or 30 to 75 bar) during operation and may unexpectedly rupture resulting in the discharge of hot fragments (approximately 800°C / 1472°F) of quartz and/or metal particles, as well as the release of mercury/mercury vapor. In the event of such a rupture, there is a risk of personal injury, burns, and fire.
3. All HBO lamps generate intense ultraviolet (UV) and visible radiation during operation. This radiation can cause permanent damage to the eyes (including blindness) and serious injury to the skin (including burns and blistering). To avoid eye damage, other personal injury, and/or property damage, the lamp **MUST** be operated in a suitable fixture.
4. A suitable fixture is one that will prevent the arc from being viewed directly while operating, and in the event of a lamp rupture, will prevent hot (up to 800°C / 1472°F), flying fragments of quartz and/or metal from escaping into the area.
5. Fixtures for lamps that produce ozone during operation should be ventilated and filtered to the outside for ozone removal.
6. To minimize the risk of a lamp rupture, replace the lamp at or before the end of rated life (see OSRAM SYLVANIA product catalog for rated life) or when the lamp shows signs of blackening.

### BROKEN LAMPS (MERCURY VAPOR RELEASE AND DISPOSAL):

1. In the event of a lamp rupturing during operation, all personnel should leave the area immediately to avoid the inhalation of mercury vapor. The area should then be thoroughly ventilated for a minimum of 30 minutes or until the mercury vapor in the area is below the ACGIH TLV (American Conference of Governmental Industrial Hygienists Threshold Limit Value). Inhalating vapor or small particles of mercury or its compounds can be harmful to lungs, kidneys, and nervous system. Penetration of the skin or ingestion can also be harmful.
2. To avoid mercury vapor getting into air conditioning systems, instruments/equipment using lamps of 350 watts or greater should be connected to separate air exhaust systems through mercury vapor-absorbing filters. When the lamp housing has cooled, **mercury residue may be picked up with special mercury adsorptive agents or a mercury vacuum cleaner (available from laboratory safety equipment suppliers) and disposed of in accordance with local, state, and federal regulations.** There should be no direct skin contact with and/or inhalation of mercury residues that may be residing in lamp housing, optics or lamp parts. If a cold (room temperature) lamp is broken, proceed with clean-up and disposal as indicated above (in the **bold, italicized statement**).

### GENERAL SAFETY & INSTALLATION TIPS

#### INSTALLATION:

1. Do not use if lamp is scratched, cracked, or damaged in any way.
2. To prevent electric shock, shut off main power to the fixture before attempting to service or replace lamp.
3. To avoid damaging the quartz and causing premature lamp failure, do not handle lamp with bare hands.
4. Only handle lamp with suitable, clean safety gloves. See special, bolded warning for using government-approved safety equipment when handling positive-pressure lamps.
5. If the quartz parts are inadvertently touched, clean fingerprints off with denatured alcohol and wipe dry with a soft, clean, lint-free cloth. Do not use cleaning rags or material that can leave a residue.
6. To prevent skin burns, allow lamp to cool before handling.
7. To avoid breakage, mounting of the lamp must be free of mechanical stress during installation and during operation by allowing for thermal expansion along its axis. For this reason, HBO lamps should be fixed at one end only and the electrical connection on the other end must be flexible enough to avoid stressing the lamp.
8. HBO lamps should not be subjected to force/stress during installation.
9. Replace all fixture covers and shields after replacing lamp to prevent eye damage, other personal injury, or property damage.
10. Use only in instruments/equipment specifying this light source.
11. Make sure lamp is properly installed into socket/connector to obtain good electrical and thermal contact and avoid damaging lamp and/or socket/connector. Electrical connections should be free from dirt and corrosion.
12. Socket/connector condition may affect lamp life. Replace socket/connector or lamp if deterioration (pitting, scorching, corrosion, etc.) of either is observed.

#### OPERATION:

1. Some HBO lamps are designed for operation on only AC or only DC while some are designed for operation on either AC or DC.
2. Note: all HBO lamps with power consumption of 350 W and higher are only suited for DC operation. Make sure that the polarity is correct before turning power on. Incorrect polarity can destroy the lamp in a matter of seconds.
3. Operate with compatible power supply and fixture only.
4. To ensure that AC-suited lamps operate at correct power during AC operation, connections on the ballast/choke in the power supply should be made to the voltage taps that are marked the same as the marking on the lamp base (L1 or L2). Some power supplies are equipped with a switch (or taps) for selecting L1 or L2. For correct and safe lamp operation, use only those ballasts/power supplies that have been approved or meet minimum requirements as specified by OSRAM. See your OSRAM dealer for list of approved equipment.
5. HBO lamps need 5 to 20 minutes (depending on lamp type and cooling conditions) before they reach their operating temperatures. To ensure proper ignition on subsequent start-up, lamps should not be switched off during the warm-up period.
6. The average service life of high wattage HBO lamps ( $\geq$ 350 watts) is determined by their ON/OFF duty cycle. These lamps have been designed for a limited amount of ignitions only (less than 10). Lamp performance is reduced with increased duty cycle.

## HBO® HIGH PRESSURE MERCURY LAMPS (continued)

### OPERATING POSITION:

HBO lamps may only be operated in the operating positions described in the OSRAM SYLVANIA product catalog.

Some HBO lamps are designed to operate horizontally (mainly low wattage types in the power range of 50 to 200 W) and others, vertically (all lamp types with power consumption of 350 W and higher). Greater arc stability is obtained in vertically operating lamps when they are operated as close to vertical as possible. See catalog for permissible operating positions and electrode positions.

### OZONE GENERATION:

During operation, HBO lamps produce a spectrum that ranges from about 150 nm in the ultraviolet region to the infrared region.

If the quartz glass bulb is transparent in the ultraviolet region between 180 and 220 nm, this short-wave radiation will convert a small quantity of atmospheric oxygen ( $O_2$ ) surrounding the lamp into ozone ( $O_3$ ). Moreover, the oxygen molecules will link together with the nitrogen ( $N_2$ ) in the air, creating nitrogen oxides ( $NO_x$ ). (Some believe that the smell attributed to ozone is in actuality from the nitrogen oxides.)

Ozone gas is toxic when inhaled in high concentrations over long periods of time. Ozone levels can be measured and monitored with commercial measuring equipment. Always keep ozone levels below the applicable TLV (threshold limit value).

The production of ozone and nitrogen oxide can be suppressed by using doped quartz glass, which absorbs the ozone-producing ultraviolet radiation. The quartz glass used in high wattage i-line (365nm) enhanced HBO lamps only transmits wavelengths above 250 nm, which provides effective, ozone-free lamps. Please be advised that the OSRAM HBO 4000 W/PL lamp is designed to generate UV wavelengths below 250nm. Consequently, this lamp will generate ozone in operation and should be externally ventilated.

An "ozone smell" (or smell of nitrogen oxide) may be detected shortly after ignition. There are two probable causes for this condition.  $O_3$  and  $NO_x$  production is caused by the (short-duration) radiation of the spark gap used for lamp ignition. Or, the cold condition of the quartz glass bulb has slightly shifted its UV-absorption characteristics thus permitting a small amount of radiation in the very short-wave ultraviolet range to be emitted by the bulb. Typically, after the lamp has run up to its operating temperature range, virtually no ozone is produced by the lamp, as a rule, due to the quartz glass absorption and the self-absorption of the plasma.

### LAMP COOLING:

1. To prevent premature failure, lamp base temperatures must be kept below 230°C (446°F) for 50 to 350 watt lamps and below 200°C (392°F) for all lamps with power consumption of more than 350 watts.
2. Discoloration, surface pitting, and/or corrosion of the lamp connections indicates a thermal overload. Components exhibiting these conditions must be cleaned or replaced.
3. If convection cooling is insufficient and additional cooling is required, cooling fins may be applied to the bases and/or forced air may be used.
4. If forced air is used, care must be taken to direct airflow at the bases only. Striking elsewhere on the lamp with the airflow will result in poor lamp performance or premature failure.

### LAMP REMOVAL:

Turn off power to the lamp and allow lamp to cool (forced or convection) for a minimum of 30 minutes prior to shutting main fixture power and opening fixture. Do not remove lamp until it has cooled. See special, bolded warning for using government-approved safety equipment when handling positive-pressure lamps.

Lamps should be placed in their original OSRAM SYLVANIA packaging for temporary storage until disposal and/or transportation to a disposal location. See "Lamp Transportation" and "Lamp Disposal" sections below for relevant information.

### LAMP TRANSPORTATION:

1. All HBO lamps should be transported **ONLY** in their original packaging.
2. Transportation in non-original packaging can damage the lamp and void warranty.
3. U.S. Federal regulations require mercury-containing lamps to be shipped **ONLY** in DOT-compliant packaging. Original OSRAM packaging is DOT-compliant.
4. When transporting positive-pressure lamps, the bolded warning found in the "Rupture & Radiation Hazard" section **MUST** be placed on outside surface of the shipping carton and the warning instructions must also be placed inside the shipping packaging.

### MERCURY FILL OF HBO LAMPS:

Mercury is referred to by its chemical symbol, Hg, which is derived from the Greek and Latin "hydrargyrum," a silvery shiny liquid metal at room temperature. In humid air it is covered with a gray oxide skin. Of all metals it has the highest vapor pressure which increases exponentially with rising temperatures. For this reason, mercury is volatile at room temperature. The colorless and odorless vapors produced are poisonous and heavier than air.

The inhalation (respiration) of mercury or mercury compounds as vapor or dust will lead to the damage of lungs, kidneys, and the nervous system. Apart from inhalation, mercury can be transmitted through the skin (penetration) or through the gastro-intestinal tract (ingestion), which is also harmful.

The ACGIH threshold limit values (TLVs) are merely guidelines to assist in the control of health hazards. The ACGIH says that the TLVs refer to airborne concentrations of substances and represent conditions under which it is believed that nearly all workers may be repeatedly exposed day after day without adverse health effects. Therefore, the TLV for mercury should never be exceeded.

Analytical detection of mercury vapor is possible by means of gas/vapor detector tubes (rough measurement) or air-monitors that absorb mercury vapor.

OSRAM HBO® lamps have the following mercury contents:

Power level	Maximum Mercury content (mg)
50 - 200 W	110
350 W	300
500 W	500
1,000 W	600
1,500 W	800
2,000 - 2,500 W	5,000
3,500 W and higher	12,000

## HBO® HIGH PRESSURE MERCURY LAMPS (continued)

### PROPERTIES OF MERCURY:

• Chemical symbol:	Hg
• Atomic number:	80
• Molecular Weight:	200.59
• Density:	13.6 g/cm <sup>3</sup> @ 20°C / 68°F
• Melting Point:	-39°C / -38.2°F
• Boiling Point:	357°C / 674°F
• Vapor pressure:	160 Pa @ 20°C / 68°F 370 Pa @ 30°C / 86°F 823 Pa @ 40°C / 104°F
• Concentration in air:	13.6 mg/m <sup>3</sup> @ 20°C / 68°F 29.6 mg/m <sup>3</sup> @ 30°C / 86°F 62.7 mg/m <sup>3</sup> @ 40°C / 104°F
• CAS Registry Number:	7439-97-6
• RCRA waste number:	U151
• Other Names:	Hydrargyrum, Colloidal mercury, Kwik, Mercure, Mercurio, Metallic mercury, Quecksilber, Quick silver, Liquid Silver

### LAMP DISPOSAL:

1. Disposal of spent lamps must be in accordance with applicable federal, state/provincial, and local regulations. State laws differ in their disposal requirements for lamps containing mercury.
2. Lamp users in North America may obtain specific state or province information concerning disposal regulations, toll free, by calling 1-866-666-6850.



3. OSRAM SYLVANIA Products Inc. cannot advise lamp users as to general or specific disposal regulations for federal, state/provincial, and/or local municipalities.

### Special disposal note for cold, positive-pressure lamps (see "RUPTURE & RADIATION HAZARD" section for applicable lamps)

There is a risk that these lamps could rupture because of their high internal pressure when hot (during operation) and when cold (at room temperature when not operating). A lamp rupture could result in personal injury or property damage from flying fragments of quartz and/or metal. Therefore, spent (end-of-life) lamps should ALWAYS be stored in the packaging in which they originally came.

## Lamp Disposal Labeling

The following information appears on the packages and/or stuffer of mercury-containing Photo-Optic lamps. For more information on lamp disposal labeling, see the inside back cover of this catalog.



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## OSRAM PLANON®

### New Fluorescent Technology

The OSRAM PLANON® is a two-dimensional, mercury-free light source based on the operating principle of excimer discharge.



#### OSRAM technology sets standards Mercury-free light tile

The luminous body of OSRAM PLANON® can be compared with a tile. Thanks to its specific shape and unique uniform light output, PLANON® opens new construction and application possibilities for the lighting industry.

#### Unique advantages

The new mercury-free discharge light source OSRAM PLANON® has a number of unique product characteristics:

##### Unique lighting power

- wide viewing and illumination angle
- uniform high luminance from center to edge
- diagonal lengths from 10.4" to 21.3"
- ultra flat at <10mm (0.4")

##### Extremely long lamp life, up to 100,000 hours

- absence of failure-prone electrodes
- no bulb darkening

##### Extremely thin ≤10mm

##### Mercury-free

- luminous flux not related to temperature
  - same light output from -30°C to +85°C ambients
- instant light with high luminance

##### Lamp and ballast available as system



#### Applications

- LCD backlighting
- Architectural effects
- Digital imaging
- Indoors or outdoors
- Signage backlighting
- Film and photography lighting
- Information displays
- Task lighting

## OSRAM OPTO SEMICONDUCTORS

### THE LEADER IN LED GENERAL LIGHTING SOLUTIONS

Innovative light-emitting diodes are compound semiconductors that convert electric current directly to light. Just a few millimeters in size, LEDs offer distinct advantages through advanced technology, making them a real alternative to conventional lamps in many applications.

#### TECHNOLOGICAL ADVANTAGES

- Low power consumption and heat generation
- Extremely long life
- Negligible early failures
- High color efficiency
- Small dimensions
- High resistance to shock and vibration
- Directed radiation
- No IR/UV radiation -Optimized power supplies and controls

#### USER BENEFITS

- Creative design possibilities for innovative light solutions through a variety of LED colors, compactness and flexible modularization
- Economically attractive because of low power consumption, long life and minimal maintenance
- Maximized safety due to excellent reliability, even in difficult operating conditions

#### CREATIVE LIGHT SOLUTIONS FOR ALL KINDS OF APPLICATIONS

LED modules and power supplies from OSRAM Opto Semiconductors are the ideal basis for creative design-ins and new light solutions in a wide range of applications:

- Colored light of your choice - LEDs emit yellow, orange, red, blue, green and white light, 3 color multi - LED (RGB) option are available
- Colored light with plexiglass optics for highly decorative effects
- Can be adapted to complex structures - e.g. backlighting of letters - through compact, flexible modules
- Extremely low-profile light solutions
- Reliable orientation lighting that is easy to install and integrates perfectly in the existing architecture with minimal structural change
- Economical operation through low power consumption
- Reliable outdoor operation through mechanical ruggedness in a wide range of operating temperatures
- Ideal for powering by solar energy through minimum consumption and low forward voltage

#### VERTICALLY INTEGRATED

OSRAM Opto Semiconductors offers the core competencies needed for LED lamp module and power supply production - from discrete components through electrical, thermal and optical design to complex modules and electronic controls.

#### CONNECTORS

Please call 1-800-LIGHTBULB for assistance.

#### COMPLETE SYSTEMS ENGINEERING

Our solutions come complete with matching power supplies, dimming and RGB controls. Dimmers are compatible with industry standard protocols such as 0-10 V and DMX 512 (with DMX to 0-10V converters).

#### COMPLETE LIGHT SOURCE SOLUTION

Combined with OSRAM SYLVANIA, OSRAM Opto Semiconductors offers the full spectrum of lighting solutions for any project.

#### Standards and regulations

In the case of LEDs and LED modules, there are regulations for protection of the human eye against excessive doses of radiation. These are based on the tolerances issued by the ICNRP. OSRAM Opto Semiconductors can submit certification by an accredited test laboratory for all standard modules. LED lamp modules and power supplies by OSRAM are UL recognized and listed in the Sign Accessories Manual (SAM).

The stipulations of the low voltage directive are not applicable to LED modules because of their operating voltage of 10 or 24 V DC. LED modules do not produce any interference in the context of EMC.

The major directives for eye safety:

1. IEC 60825-1 A2: Safety of Laser Devices
2. ANSI IESNA RP - 27.1 to 27.3
3. ACGIH (American Conference of Governmental Industrial Hygienists)
4. CIE TC 6-47 Photobiological Safety of Lamps and LampSystems

## TRULY ILLUMINATING: LED MODULES FROM OSRAM OS

LED modules from OSRAM Opto Semiconductors consist of a certain number of LEDs with integrated passive or active current regulation. The single LEDs are mounted on either rigid or flexible printed circuit boards. Secondary optical elements such as lenses, reflectors and surface light guides can be added for enhanced performance.

### POSSIBILITIES TODAY AND TOMORROW

OSRAM Opto Semiconductors produces a high-performance selection of fully contained LED modules - power-saving and cost-saving - for a wide range of conventional and emerging uses in general lighting.

### THREE FAMILIES - VERSATILE AND FLEXIBLE

LED modules without a lens system

- LINEARlight (Rigid or flexible; Monochromatic or integrated RGB)
- BACKlight
- COINlight

LED modules with a lens system

- EFFECTlight

LED modules with light guides

- MARKERlight (rectangular, square, round)
- LEDtag

### LED MODULES ACCESSORIES

- Optics, dimming

### ELECTRICAL DESIGN OF MODULES

In electrical terms, LEDs are semiconductor diodes. Their major electrical characteristics are:

- Forward voltage  $V_f$
- Forward current  $I_f$

To ensure long life, the specified forward current should not be exceeded. Modules from OSRAM OS exhibit the following features:

- Series connection of LEDs
- Combined with passive and active current limiting
- Current control device (BCR) are built in for all the OSRAM LED lamp modules
- Operation on 10 V DC and 24 V DC
- Easy operation with OPTOTRONIC® power supplies

## THE RIGHT CONNECTION - OSRAM LED SYSTEMS FOR LIGHTING

OSRAM Opto Semiconductors offers you more than first-class LEDs and LED modules. You no longer have to spend your time looking for any extra components you need. Instead you can focus on what is essential for you: your product and your business. In addition to LED modules we deliver optimized power supplies, dimming and RGB controls, and other accessories (pg. 264 & 265). For the latest information call 1-800-LIGHTBULB.

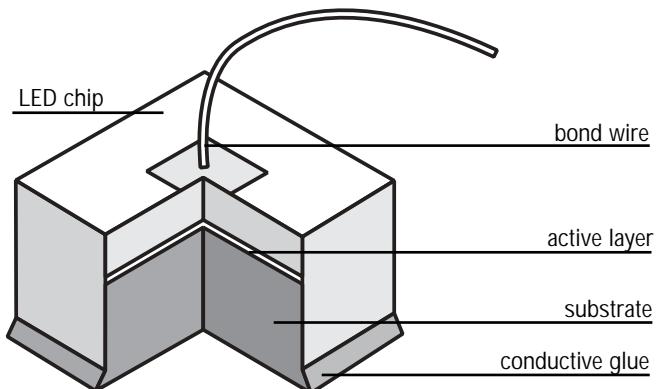
### OPTOTRONIC POWER SUPPLY

- Electronically stabilized, load-insensitive DC output voltage
- Shortcircuit-proof and overload protected
- Designed and built to all applicable standards
- For power supply and packages, please refer to page 265
- Long Life
- Low ripple voltage

## OSRAM OPTO SEMICONDUCTORS: LED TECHNOLOGY IS THE FUTURE

### HOW DOES AN LED WORK?

A light-emitting diode consists of several layers of semiconductor material. When the diode is forward biased, light is generated in a thin layer, the so-called active layer. Unlike incandescent lamps, which radiate a continuous spectrum, an LED emits an almost monochromatic light of a particular color. The color of the light depends on the material used. Two material systems - AlInGaP and InGaN - are used for creating high brightness LEDs in all colors from red to blue and also in white using phosphors. The efficiency of LEDs has very much improved in the last few years, and has already reached levels of 30lm/W and more - depending on the color. This is the result of high-quality production and advanced technologies.



### LED PACKAGES

The typical size of an LED is approximately a few hundred micrometers. The semiconductor is mounted in a package for easy electrical contact and environmental protection. There are two basic types of packages:



#### •THT (through-hole technology)

*This kind of package is soldered "through holes" to the circuit board. The most common type is the radial 5 mm package. The LED chip is seated in the reflector, which is connected to the cathode lead. A bond wire establishes electrical contact to the anode. The light is emitted by a lens integrated into the package. Different radiation characteristics are produced as a function of chip-to-lens spacing and the shape of the lens.*



#### •SMT (surface-mount technology)

*This modern design consists of a plastic package that also serves as the reflector. The LED chip is seated in the cavity. This cavity is filled with epoxy resin to improve light output and protect the chip against environmental influences. SMT components can be assembled faster and with better quality than THT components.*

### ELECTRICAL DATA

The highest luminosity is produced with a DC voltage source. The necessary forward voltage depends on the color of the LED light, varying between 2 and 4 V at forward currents up to 70mA.

### TEMPERATURE RESPONSE

The optical output power drops as temperature increases. Temperature dependence is more significant in yellow LEDs than in green ones. This drop in power, as a function of temperature, can be reversed and has nothing to do with degradation. The maximum operating temperature for LEDs is normally 100 °C, and this should not be exceeded.

### LIFETIME AND DEGRADATION

Just like a conventional source of light, the intensity of LED light gradually diminishes in the course of continuous operation. When an LED produces 50% of its original luminous efficiency, it has, by definition, reached the end of its life. Under reasonable operating conditions LEDs can last up to 100,000 hours.

### WHITE LIGHT LEDs

To generate white light, the radiation of a blue diode is used to stimulate a secondary (fluorescent) emission from a properly chosen phosphor. By setting the appropriate concentration of luminescent material, the blue primary light from the diode combined with the yellow light emitted by the phosphor creates a spectral wavelength distribution that is perceived as white by the human eye. The color rendering index thus achieved is approximately 80.



The following item was accepted into the 2003 IESNA Progress Report which recognizes innovative products introduced to the industry during that year.

LINEARlight Color Mix

## HOW TO READ PRODUCT INFORMATION - LED lamp modules

Product Number	70011	70017	70010	70027
Ordering Abbreviation	BACKLIGHT/615/OS/LM03A/A	FXLIGHT/505/OS/WL01A/V	LINEAR/OS/LM01A/W	ML/82X33/OS/ML01B/B
Operating Voltage (V)	10	24	10	10
Power (W)	4	1.3	3.2	1.2
Color	Amber Red	Verde	White	Blue
Wavelength (nm) Color Coordinates	617	503		470
LEDs/Module	32	10	32	12
Operating Temperature (°C)	-30 to +65	-30 to +65	-30 to +65	-30 to +65
Dimensions (mm)	559 x 30 x 6	70 x 28 x 34.5	448 x 10 x 3.5	112.3 x 48 x 7
Inter-LED Spacing (mm)	15		14	
Luminous Flux (lm)	54		29	
Luminous Intensity (cd)	0.535	2000	0.3	
Viewing Angle (°)	120	4	120	
Maximum Board Spacing (mm)				
Luminous Area (mm <sup>2</sup> )				79.5 x 3

<b>Operating Voltage (V)</b>	DC voltage applied to the entire module.
<b>Wavelength (nm) / Color Coordinates</b>	The center wavelength of the light emitted by the LED expressed in nm OR the CIE X and Y color coordinates for white light sources.
<b>Inter-LED Spacing (mm)</b>	Space between individual LEDs mounted on the module.
<b>Luminance (lm) or (cd/m<sup>2</sup>)</b>	When reported in lm, this is the total amount of light leaving the module, also known as luminous flux. When reported in cd/m <sup>2</sup> , this is the brightness of the LED module when viewing it. The cd/m <sup>2</sup> value applies only to MARKERlights products.
<b>Luminous Intensity (cd)</b>	Intensity of the light shining out from the module. This value is especially important on EFFECTlights.
<b>Viewing Angle (°)</b>	2 times the angle between the peak intensity at the center of the beam and the 50% intensity direction.
<b>Maximum Board Spacing (mm)</b>	Applies only to BACKlights. This is the maximum separation between two consecutive boards in a BACKlight module.
<b>Luminous Area (mm<sup>2</sup>)</b>	Applies only to MARKERlights. This is the area that actually appears lit when looking towards the module.

## Weight & Measurement

For weight and measurement information, please visit [www.sylvania.com](http://www.sylvania.com).

## OPTOTRONIC® LED Power Supplies

OSRAM OPROTRONIC power supplies are compact and electronically stabilized. The wide range of input voltage from 100 to 240 V<sub>A.C.</sub> enables worldwide use on single-phase A.C. power lines. These supplies are available in 10 V<sub>d.c.</sub> and 24 V<sub>d.c.</sub> outputs. The OPTOTRONIC power supplies are protected against open circuit, short circuit, and overload and overheating. They are UL recognized and FCC compliant.

### KEY SYSTEM FEATURE

- New, small enclosure size (OT6, OT20, OT25 fit into small junction box)
- Lightweight, low profile
- -20°C through 50°C operation
- Wide input voltage range
- Isolated output
- UL Class 2 output
- Weather resistant housing
- Long life
- Short circuit and overload protection
- Low power supply losses
- Remote mounting possible
- OT50 model rated for outdoor, damp location

### OT RGB controls are ideal for Colormixing or Color sequencing applications

- Pulse width modulation (PWM) dimming
- Dimming range of 0-100% with OTDIM & OT RGB 3CH DIM

Item Number ————— 51500 OT 6/ 100-240/ 10 COS ————— Circular Opto Semi-conductors; S: Square  
OPTOTRONIC ————— Output Voltage (DC)  
Output Wattage (6 Watts) ————— Input Voltage (AC)

Item Number	Description	For LED Lamp Modules Family
51500	OT6/100-240/10COS	LINEARlight, BACKlight, MARKERlight (Rectangular), and LINEARlight FLEX SIDELED
51505	OT25/120/10	LINEARlight, BACKlight, MARKERlight (Rectangular), and LINEARlight FLEX SIDELED
51508	OT50/120/10	LINEARlight, BACKlight, MARKERlight (Rectangular), and LINEARlight FLEX SIDELED
51501	OT6/100-240/24COS	MARKERlight (Square & Circular), EFFECTlight, COINlight TOPLED, COINlight SIDELED and LINEARlight - FLEX TOPLED
		LINEARlight Colormix RGB and LINEARlight Flex TOP Colormix RGB
51512	OT20/120-240/24S	MARKERlight (Square & Circular), EFFECTlight, COINlight TOPLED, COINlight SIDELED and LINEARlight - FLEX TOPLED
		LINEARlight Colormix RGB and LINEARlight Flex TOP Colormix RGB

### System Life / Warranty

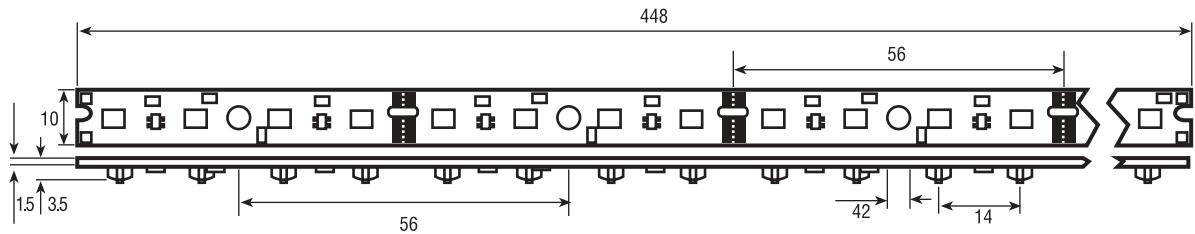
OPTOTRONIC LED Power Supply Products are covered by our LED System Warranty, a comprehensive light source, and power supply system warranty. For additional detail, refer to our latest version of the LED System Warranty bulletin found in the warranty section of this catalog.

## OSRAM LED Lamp Modules Accessories

### LINEARlight OPTICS OP4x1-20

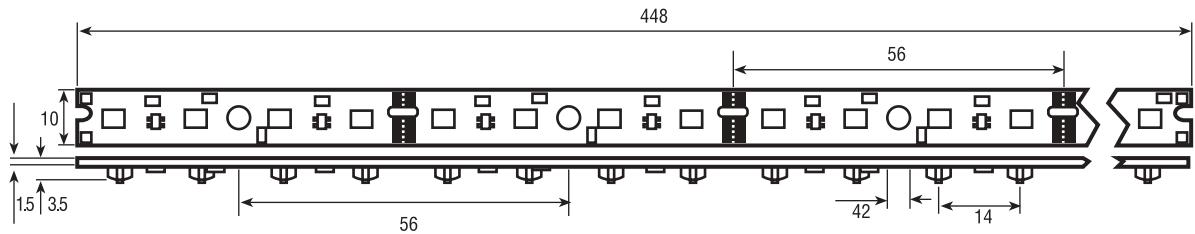
LINEARlight Optics is a supplementary optical lens for the LINEARlight module. The optical effect of the optics is a reduction of the viewing angle from 120° to 20° and / or 25° and proportional intensification of the light. The optic provides light intensification and mechanical protection of the LED module. The optic is suitable for all LED colors.

Each modules lens optic is 56<sub>mm</sub> long and covers 4 LEDs, which is the smallest divisible unit of LINEARlight. Eight optics are needed to cover the full length of a LINEARlight strip. The guide pin feature ensures precise alignment that can be easily snapped into place.



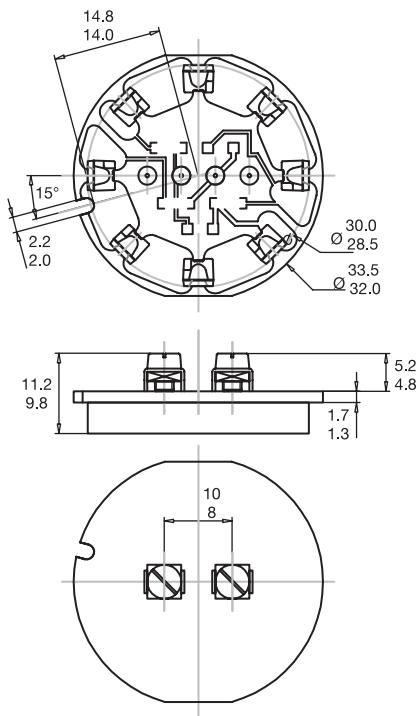
## LINEARLIGHT – RIGID

Product Number	70006	70007	70008	70083
Ordering Abbreviation	LINEAR/587/OS/LM01A/Y1	LINEAR/615/OS/LM01A/A	LINEAR/525/OS/LM01A/T1	LINEAR/610/OS/LM01A
Operating Voltage (V)	10	10	10	10
Power (W)	4.00	4.00	4.00	4.00
Color	Yellow	Amber Red	True Green	Orange
Wavelength (nm)	587	617	525	606
LEDs/Module	32	32	32	32
Operating Temperature (°C)	-30 to +65	-30 to +65	-30 to +65	-30 to +65
Dimensions (mm)	448 X 10 X 3.5	448 X 10 X 3.5	448 x 10 x 3.5	448 X 10 X 3.5
Inter-LED Spacing (mm)	14.000	14.000	14.000	14.000
Luminous Flux (lm)	69	54	36	86
Luminous Intensity (cd)	0.72	0.56	0.38	0.90
Viewing Angle (°)	120	120	120	120



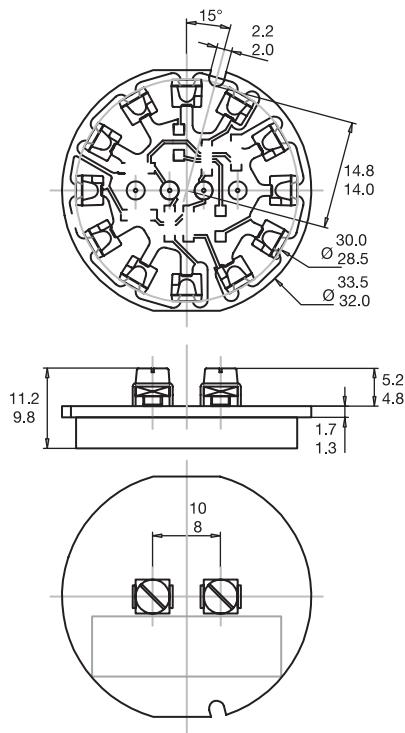
## LINEARLIGHT – RIGID

Product Number	70009	70010	70044
Ordering Abbreviation	LINEAR/470/OS/LM01A/B1	LINEAR/OS/LM01AW1	LINEAR/633/OS/LM1AS1
Operating Voltage (V)	10	10	10
Power (W)	4.00	3.20	4
Color	Blue	White	Super Red
Wavelength (nm)	470		633
Color Temp (K)		5400K, 4700K	
LEDs/Module	32	32	32
Operating Temperature (°C)	-30 to +65	-30 to +65	-30 to +65
Dimensions (mm)	448 x 10 x 3.5	448 X 10 X 3.5	448 X 10 X 3.5
Inter-LED Spacing (mm)	14.000	14.000	14.000
Luminous Flux (lm)	9	29	54
Luminous Intensity (cd)	0.09	0.30	0.56
Viewing Angle (°)	120	120	120



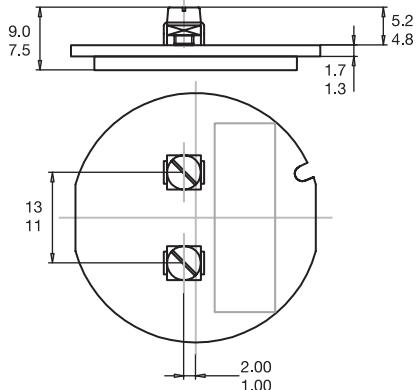
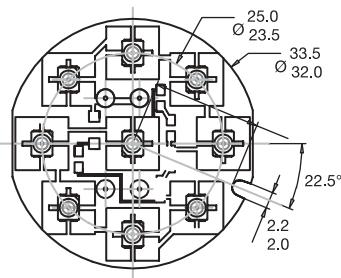
## COINLIGHT – SIDELED – 8 LEDs

Product Number	70046	70047	70048	70049	70050
Ordering Abbreviation	COIN/615/OS/CM01B/A	COIN/587/OS/CM01B/Y	COIN/525/OS/CM01B/T	COIN/470/OS/CM01B/B	COIN/OS/CM01B/W
Operating Voltage (V)	24	24	24	24	24
Power (W)	0.50	0.50	0.90	0.90	0.90
Color	Amber Red	Yellow	True Green	Blue	White
Wavelength (nm)	615	587	528	470	X=0.32; Y=0.31
LEDs/Module	8	8	8	8	8
Operating Temperature (°C)	-30 to +65	-30 to +65	-30 to +65	-30 to +65	-30 to +65
Dimensions (mm)	33 X 5.5 X 11	33 X 5.5 X 11			
Inter-LED Spacing (degrees)	45				
Luminous Flux (lm)	3	2	3	1	5
Luminous Intensity (cd)	135	0.105	0.135	0.04	0.195
Viewing Angle (°)	120	120	120	120	120



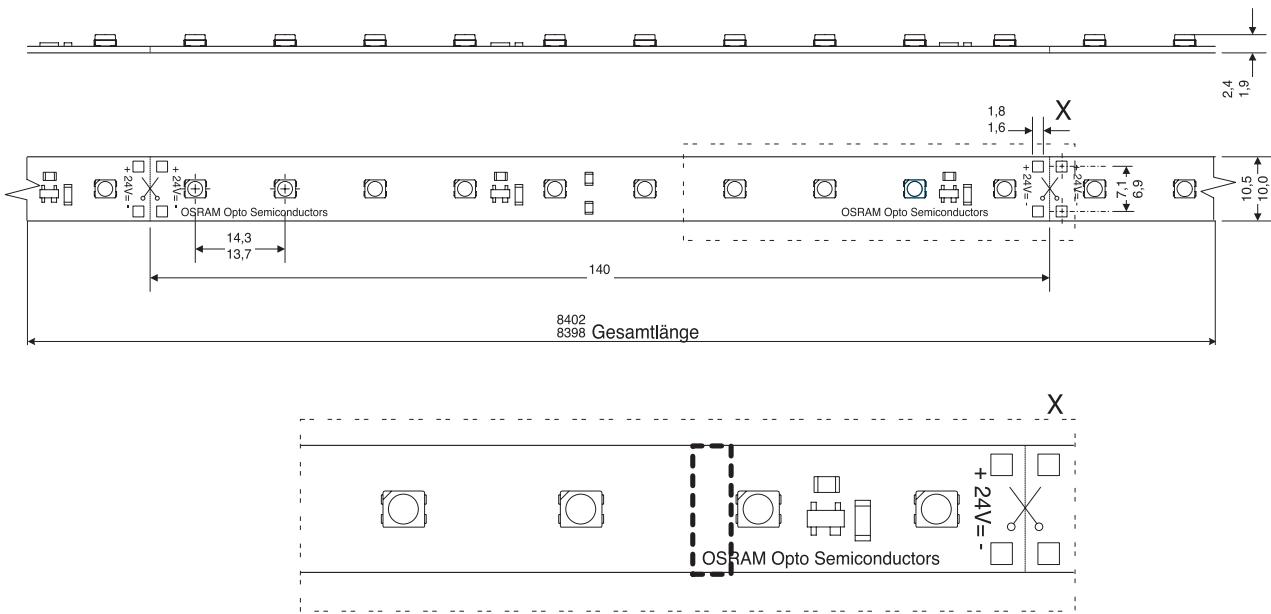
## COINLIGHT – SIDELED – 12 LEDs

Product Number	70051	70052	70053	70054	70055
Ordering Abbreviation	COIN/587/OS/CM01C/Y	COIN/615/OS/CM01C/A	COIN/525/OS/CM01C/T	COIN/470/OS/CM01C/B	COIN/OS/CM01C/W
Operating Voltage (V)	24	24	24	24	24
Power (W)	1.50	1.50	1.30	1.30	1.30
Color	Yellow	Amber Red	True Green	Blue	White
Wavelength (nm)	587	615	525	470	X=0.32; Y=0.31
LEDs/Module	12	12	12	12	12
Operating Temperature (°C)	-30 to +65	-30 to +65	-30 to +65	-30 to +65	-30 to +65
Dimensions (mm)	33 X 5.5 X 11	33 X 5.5 X 11			
Luminous Flux (lm)	3.6	4.3	3.7	1.4	6.5
Luminous Intensity (cd)	0.105	0.135	0.135	0.04	0.195
Viewing Angle (°)	120	120	120	120	120



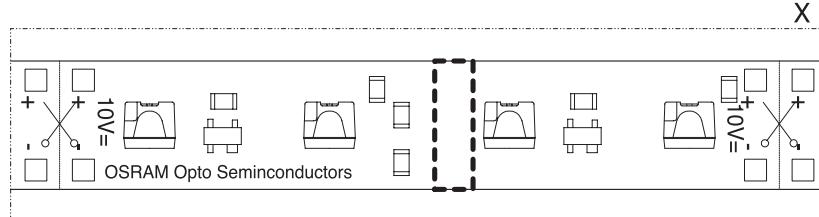
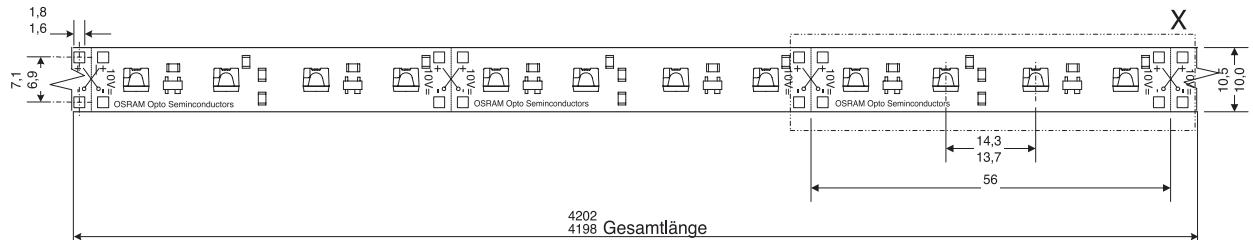
## COINLIGHT – TOPLED

Product Number	70056	70057	70058	70059	70060
Ordering Abbreviation	COIN/OS/CM01E/W1	COIN/617/OS/CM01E/A1	COIN/587/OS/CM01E/Y1	COIN/525/OS/CM01E/T1	COIN/470/OS/CM01E/B1
Operating Voltage (V)	24	24	24	24	24
Power (W)	1.20	1.2	1.2	1.20	1.20
Color	White	Amber Red	Yellow	True Green	Blue
Wavelength (nm)	X=0.32; Y=0.31	617	587	525	470
LEDs/Module	9	9	9	9	9
Operating Temperature (°C)	-30 to +55	-30 to +55	-30 to +55	-30 to +55	-30 to +55
Dimensions (mm)	33 X 3.5 X 9	33 X 3.5 X 9	33 X 3.5 X 9	33 X 3.5 X 9	33 X 3.5 X 9
Luminous Flux (lm)	10	24	19	10	3
Luminous Intensity (cd)	0.37	0.89	0.70	0.37	0.11
Viewing Angle (°)	120	120	120	120	120



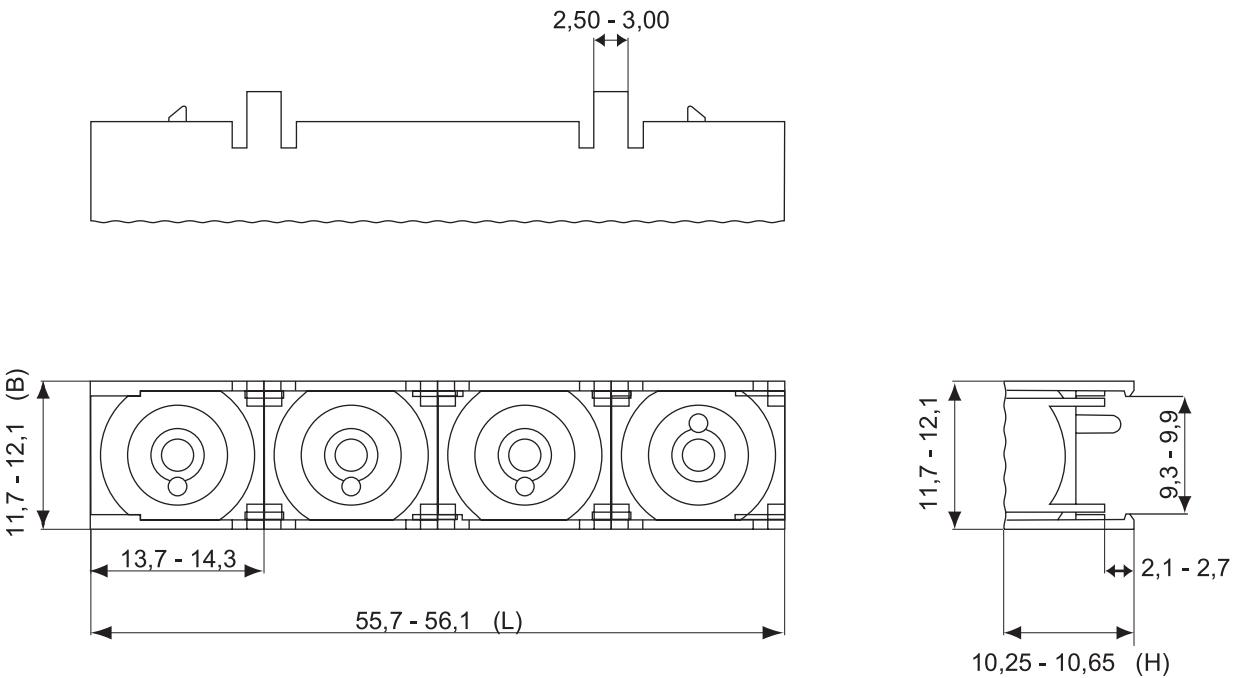
## LINEARLIGHT – FLEXIBLE – TOPLED

Product Number	70061	70062	70063	70064	70065
Ordering Abbreviation	LINEARFLEXTOP/587/OS /LM10A/Y1	LINEARFLEXTOP/617/OS /LM10A/A	LINEARFLEXTOP/525/OS /LM10A/T1	LINEARFLEXTOP/470/OS /LM10A/B1	LINEARFLEXTOP/OS /LM10A/W1
Operating Voltage (V)	24	24	24	24	24
Power (W)	72.0	72.0	72.0	72.0	57.6
Color	Yellow	Amber Red	True Green	Blue	White
Wavelength (nm)	587	617	525	469	5400K, 4700K
Color Temp (K)					5400K, 4700K
LEDs/Module	600	600	600	600	600
Operating Temperature (°C)	-30 to +65	-30 to +65	-30 to +65	-30 to +65	-30 to +65
Dimensions (mm)	8400 X 10 X 2.5	8400 X 10 X 2.5	8400 X 10 X 2.5	8400 X 10 X 2.5	8400 X 10 X 2.5
Inter-LED Spacing (mm)	14.000	14.000	14.000	14.000	14.000
Luminous Flux (lm)	1290	930	675	170	540
Luminous Intensity (cd)	0.72	0.53	0.38	0.09	0.30
Viewing Angle (°)	120	120	120	120	120



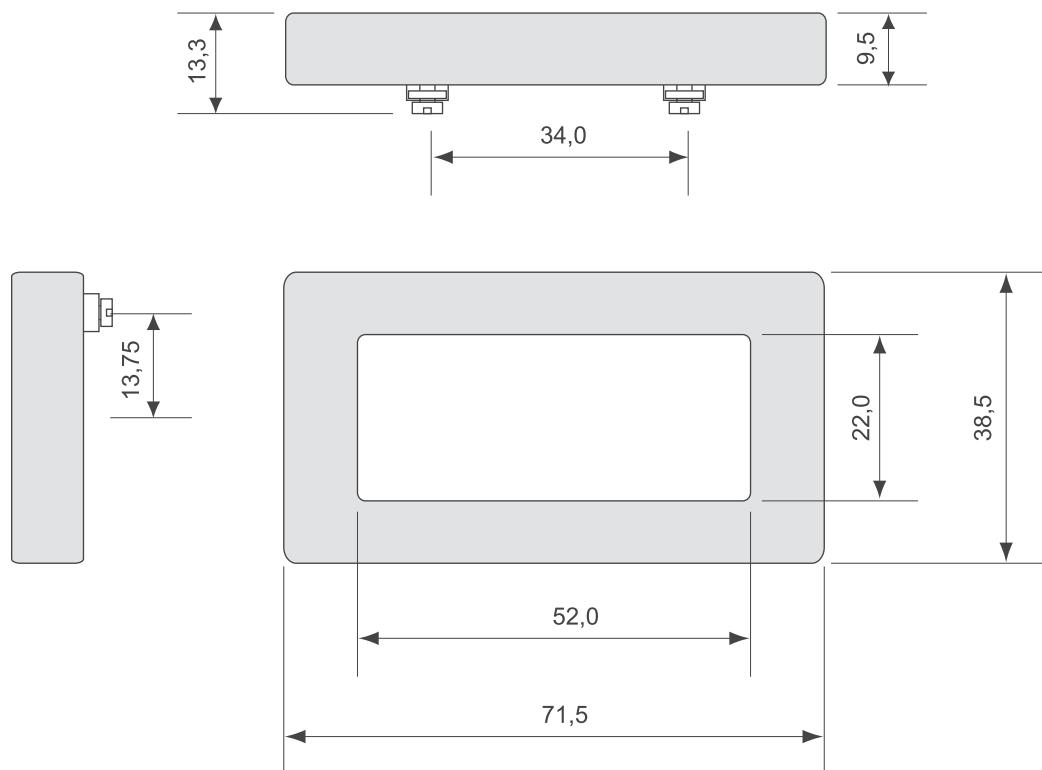
## LINEARLIGHT – FLEXIBLE – SIDELED

Product Number	70066	70067	70068	70069	70070
Ordering Abbreviation	LINEARFLEXSIDE/615 /OS/LM11A/A	LINEARFLEXSIDE/587 /OS/LM11A/Y1	LINEARFLEXSIDE/525 /OS/LM11A/T	LINEARFLEXSIDE/470 /OS/LM11A/B	LINEARFLEXSIDE /OS/LM11A/W1
Operating Voltage (V)	10	10	10	10	10
Power (W)	15.0	22.5	30.0	30.0	30.0
Color	Amber Red	Yellow	True Green	Blue	White
Wavelength (nm)	615	587	528	470	5400K, 4700K
Color Temp (K)					
LEDs/Module	300	300	300	300	300
Operating Temperature (°C)	-30 to +65	-30 to +65	-30 to +65	-30 to +65	-30 to +65
Dimensions (mm)	4200X10X4.5	4200X10X4.5	4200X10X4.5	4200X10X4.5	4200X10X4.5
Inter-LED Spacing (mm)	14.000	14.000	14.000	14.000	14.000
Luminous Flux (lm)	117	405	147	37	405
Luminous Intensity (cd)	0.135	0.45	0.16	0.04	0.45
Viewing Angle (°)	120	120	120	120	120



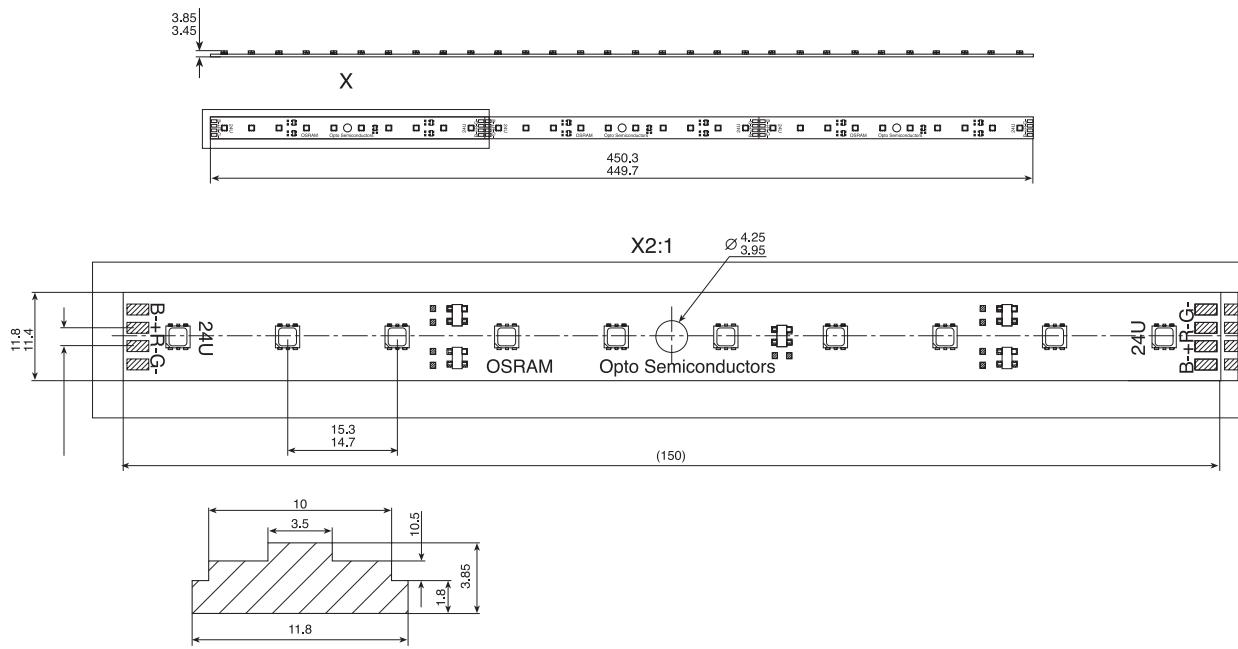
## OPTICS ACCESSORIES

Product Number	70072
Ordering Abbreviation	LINEARLT OPTICS OS-OP4X1-20
Operating Voltage (V)	
Power (W)	
Color	
Wavelength (nm)	
LEDs/Module	
Operating Temperature (°C)	-30 to +65
Dimensions (mm)	
Inter-LED Spacing (mm)	
Luminous Flux (lm)	
Luminous Intensity (cd)	0.7 - 6.0
Viewing Angle (°)	20 (except 25° for white)
Maximum Board Spacing (mm)	



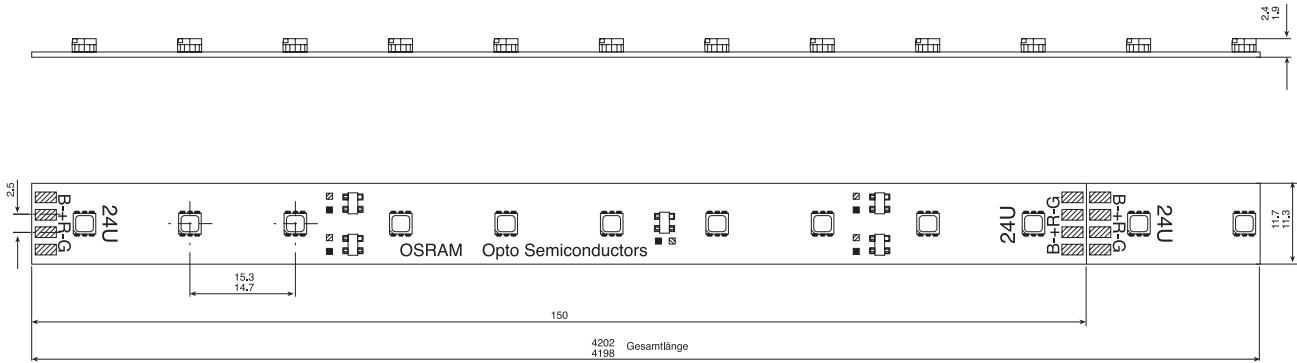
## LED TAG

Product Number	70073	70074	70075	70076	70077
Ordering Abbreviation	LEDTAG/633/OS-ML90A-S	LEDTAG/606/OS-ML90A-O	LEDTAG/528/OS-ML90A-T	LEDTAG/470/OS-ML90A-B	LEDTAG/OS-ML90A-W
Operating Voltage (V)	9	9	9	9	9
Power (W)	0.18	0.18	0.36	0.36	0.36
Color	Super Red	Orange	True Green	Blue	White
Wavelength (nm)	633	606	528	470	X=0.32; Y=0.31
LEDs/Module	4	4	4	4	4
Operating Temperature (°C)	-30 to +45	-10 to +45	-10 to +45	-10 to +45	-10 to +45
Dimensions (mm)	71,5 X 38,5 X 14	71,5 X 38,5 X 14			
Inter-LED Spacing (mm)					
Luminance (cd/m²)	185	420	290	85	420
Luminous Intensity (cd)					
Viewing Angle (°)					
Maximum Board Spacing (mm)					



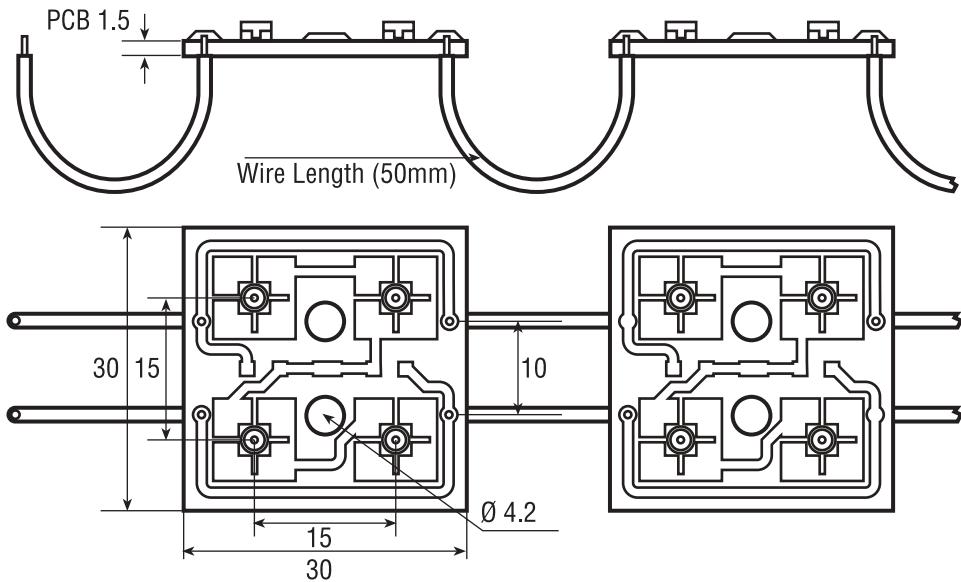
## LINEARLIGHT COLOR MIX

Product Number	70080			
Ordering Abbreviation	LINEARCOLORMIX/OS /LM01M/RGB			
Operating Voltage (V)	24	24	24	24
Power (W)	8.3	1.8	3.6	2.9
Color	All colors	Red	Green	Blue
Wavelength (nm)	---	617	525	467 for -B7; 473 for -B8
LEDs/Module	30	30	30	30
Operating Temperature (°C)	-30...+65	-30...+65	-30...+65	-30...+65
Dimensions (mm)	450 x 12 x 4			
Inter-LED Spacing (mm)	15			
Luminous Flux (lm)	91	32	51	8
Luminous Intensity (cd)	1.0	0.36	0.57	0.09
	120	120	120	120
Viewing Angle (°)				



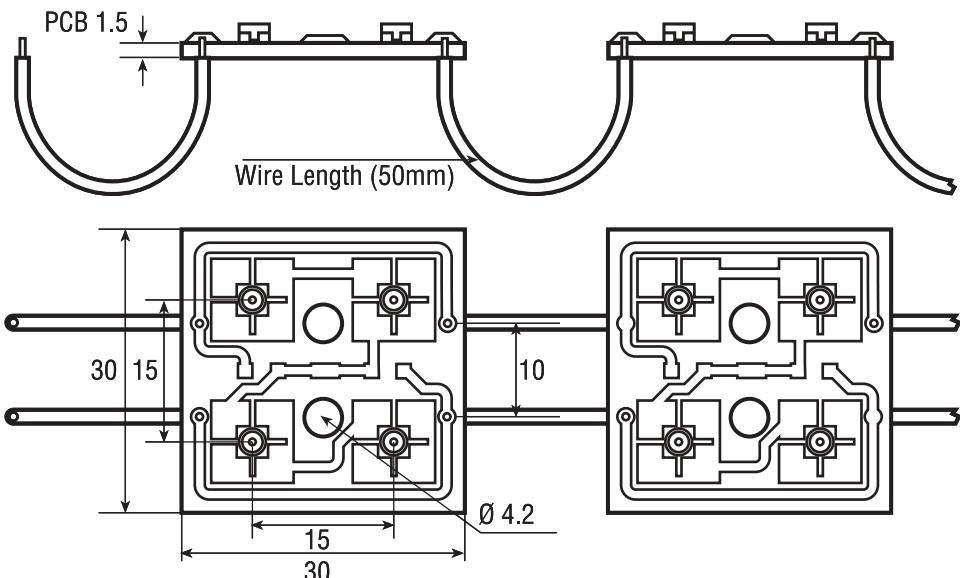
## LINEARLIGHT FLEX TOP COLORMIX

Product Number	70082			
Ordering Abbreviation	LINEARFLEXTOPCOLORMIX /OS/LM10M/RGB			
Operating Voltage (V)	24	24	24	24
Power (W)	77.5	16.8	33.6	27.1
Color	All colors	Red	Green	Blue
Wavelength (nm)	---	617	525	467, 473
LEDs/Module	280	280	280	280
Operating Temperature (°C)	-30...+65	-30...+65	-30...+65	-30...+65
Dimensions (mm)	4200 x 11.5 x 2.5			
Inter-LED Spacing (mm)	15			
Luminous Flux (lm)	849	299	476	75
Luminous Intensity (cd)	1.0	0.36	0.57	0.09
Viewing Angle (°)	120	120	120	120



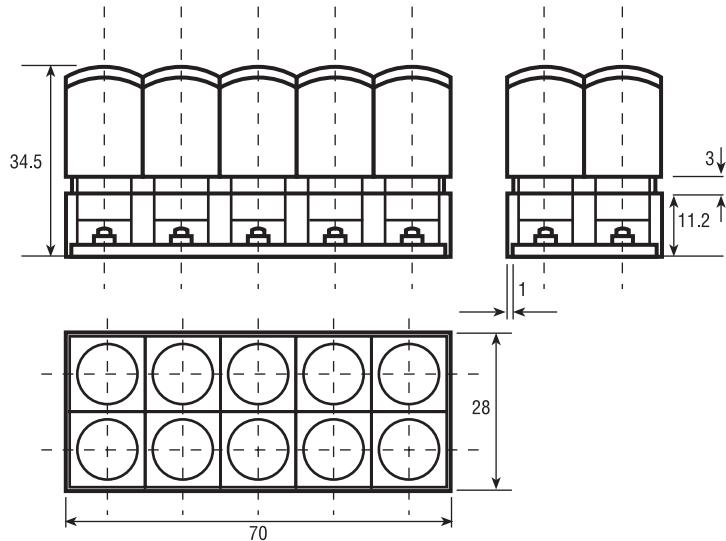
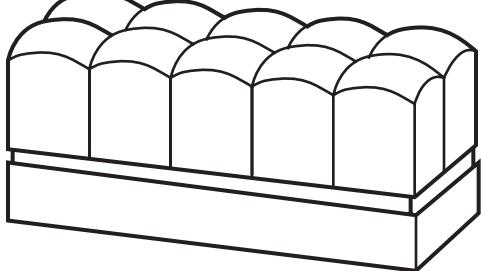
## BACKLIGHT

Product Number	70011	70012	70013
Ordering Abbreviation	BACKLITE/615/OS/LM03A/A	BACKLITE/587/OS/LM03A/Y1	BACKLITE/525/OS/LM03A/T1
Operating Voltage (V)	10	10	10
Power (W)	4.00	4.0	4.00
Color	Amber Red	Yellow	True Green
Wavelength (nm)	617	587	525
LEDs/Module	32	32	32
Operating Temperature (°C)	-30 to +65	-30 to +65	-30 to +65
Dimensions	559 x 30 x 6	559 X 30 X 6	559 x 30 x 6
Inter-LED Spacing	15.000	15.000	15.000
Luminous Flux (lm)	54	69	36
Luminous Intensity (cd)	0.535	0.72	0.38
Viewing Angle (°)	120	120	120



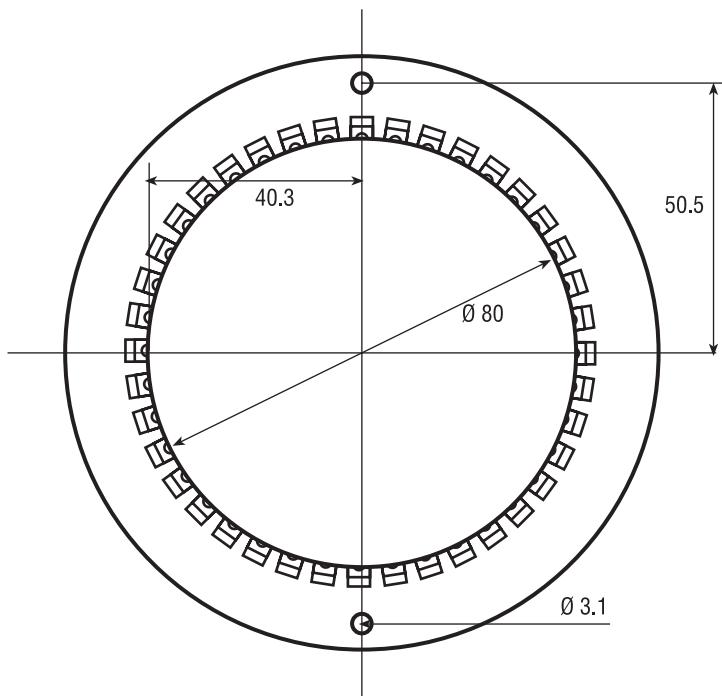
## BACKLIGHT

Product Number	70014	70045	70071	70081
Ordering Abbreviation	BACKLITE/470/OS/LM03A/B	BACKLITE/OS/LM03A/W1	BACKLITE/610/OS/LM03B/O	BACKLITE/633/OS/LM03A/S
Operating Voltage (V)	10	10	10	10
Power (W)	4.00	3.20	4.0	4.0
Color	Blue	White	Orange	Super Red
Wavelength (nm)	470		606	633
Color Temp (K)		6500K, 5400K		
LEDs/Module	32	32	32	32
Operating Temperature (°C)	-30 to +65	-30 to +65	-30 to +65	-30 to +65
Dimensions	559 X 30 X 6	559x30x6	559X30X6	559x30x6
Inter-LED Spacing	15.000	15.000	15.000	15.000
Luminous Flux (lm)	9	29	86	54
Luminous Intensity(cd)	0.09	0.30	0.90	0.535
Viewing Angle (°)	120	120	120	120



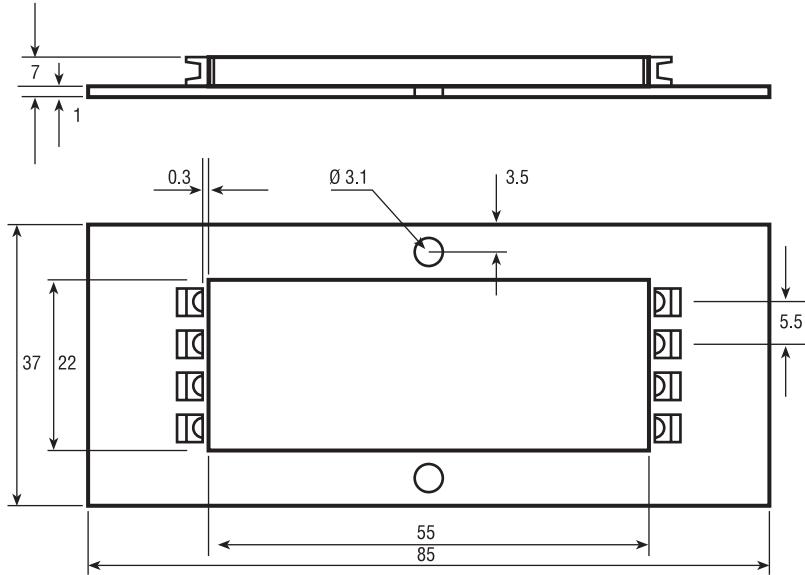
## EFFECTLIGHT

Product Number	70015	70016	70017	70018
Ordering Abbreviation	FXLITE/615/OS/WL01A/A1	FXLITE/587/OS/WL01A/Y1	FXLITE/505/OS/WL01A/V1	FXLITE/470/OS/WL01A/B1
Operating Voltage (V)	24	24	24	24
Power (W)	1.1	1.1	1.3	1.3
Color	Amber Red	Yellow	Verde	Blue
Wavelength (nm)	617	587	503	469
LEDs/Module	10	10	10	10
Operating Temperature (° C)	-30 to +65	-30 to +65	-30 to +65	-30 to +65
Dimensions (mm)	70 x 28 x 34.5			
Luminous Intensity (cd)	3500	2500	2000	350
Viewing Angle (°)	4	4	4	4



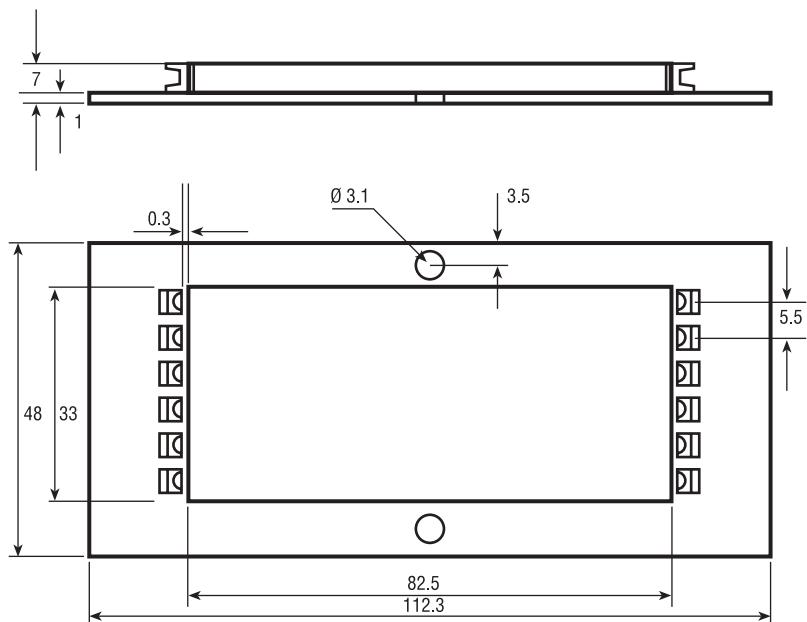
## MARKERLIGHT – CIRCULAR

Product Number	70039	70040	70041	70042	70043
Ordering Abbreviation	ML/80D/615/OS/ML03A/A	ML/80D/587/OS/ML03A/Y1	ML/80D/525/OS/ML03A/T	ML/80D/470/OS/ML03A/B	ML/80D/OS/ML03A/W1
Operating Voltage (V)	24	24	24	24	24
Power (W)	1.92	2.88	3.84	3.84	3.84
Color	Amber Red	Yellow	True Green	Blue	White
Wavelength (nm) / Color Coordinates	615	587	528	470	X=0.32 Y=0.31
LEDs/Module	40	40	40	40	40
Operating Temperature (deg C)	-30 to +65	-30 to +65	-30 to +65	-30 to +65	-30 to +65
Dimensions (mm)	110 x 110 x 7	110 x 110 x 7	110 x 110 x 7	110 x 110 x 7	110 x 110 x 7
Luminance (cd/m <sup>2</sup> )	705	1630	705	205	2050
Luminous Area (diameter, mm)	77	77	77	77	77



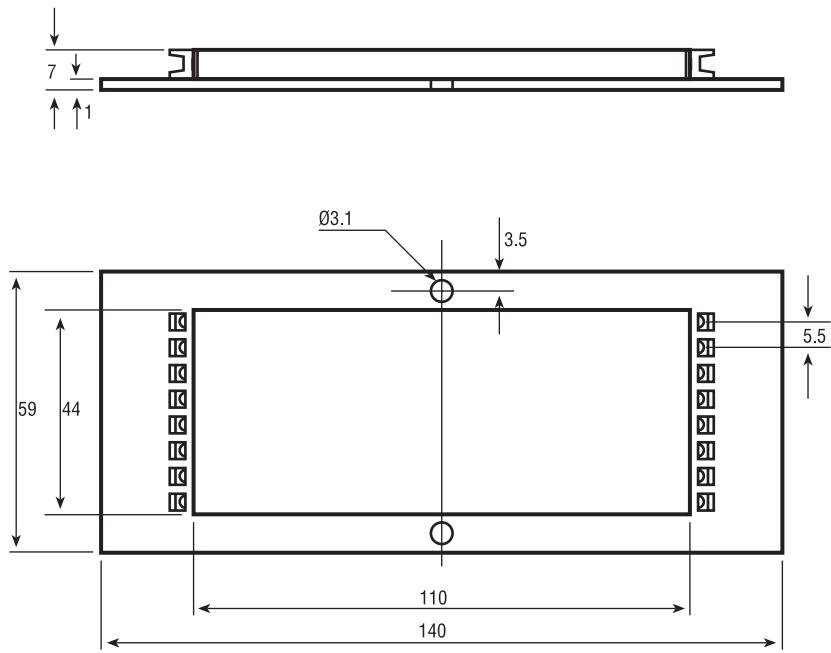
## MARKERLIGHT – RECTANGULAR – SMALL

Product Number	70019	70020	70021	70022	70023
Ordering Abbreviation	ML/55X22/615/OS/ML01A/A	ML/55X22/587/OS/ML01A/Y	ML/55X22/525/OS/ML01A/T	ML/55X22/470/OS/ML01A/B	ML/55X22/OS/ML01A/W
Operating Voltage (V)	10	10	10	10	10
Power (W)	0.40	0.40	0.80	0.80	0.80
Color	Amber Red	Yellow	True Green	Blue	White
Wavelength (nm) / Color Coordinates	615	587	525	470	X = 0.32 Y = 0.31
LEDs/Module	8	8	8	8	8
Operating Temperature (deg C)	-30 to +65	-30 to +65	-30 to +65	-30 to +65	-30 to +65
Dimensions (mm)	85 x 37 x 7	85 x 37 x 7	88 x 37 x 7	85 x 37 x 7	85 x 37 x 7
Luminance (cd/m <sup>2</sup> )	715	440	725	140	880
Luminous Area (mm)	52 x 22	52 x 22	52 x 22	52 x 22	52 x 22



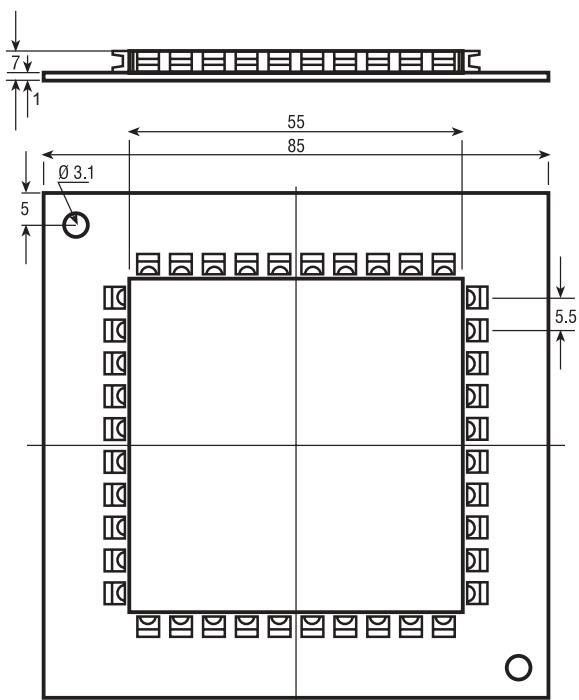
## MARKERLIGHT – RECTANGULAR – MEDIUM

Product Number	70024	70025	70026	70027	70028
Ordering Abbreviation	ML/82X33/615/OS/ML01B/A	ML/82X33/587/OS/ML01B/Y	ML/82X33/525/OS/ML01B/T	ML/82X33/470/OS/ML01B/B	ML/82X33/OS/ML01B/W
Operating Voltage (V)	10	10	10	10	10
Power (W)	0.60	0.60	1.20	1.20	1.20
Color	Amber Red	Yellow	True Green	Blue	White
Wavelength (nm) / Color Coordinates	615	587	525	470	X = 0.32 Y = 0.31
LEDs/Module	12	12	12	12	12
Operating Temperature (deg C)	-30 to +65	-30 to +65	-30 to +65	-30 to +65	-30 to +65
Dimensions (mm)	112.5 x 48 x 7	112.5 x 48 x 5			
Luminance (cd/m <sup>2</sup> )	405	370	410	90	360
Luminous Area (mm)	79.5 x 33	79.5 x 33	79.5 x 33	79.5 x 33	79.5 x 33



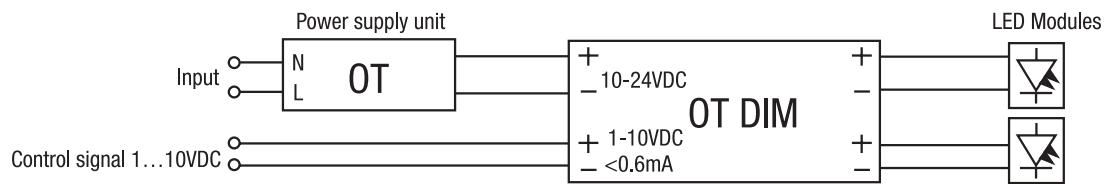
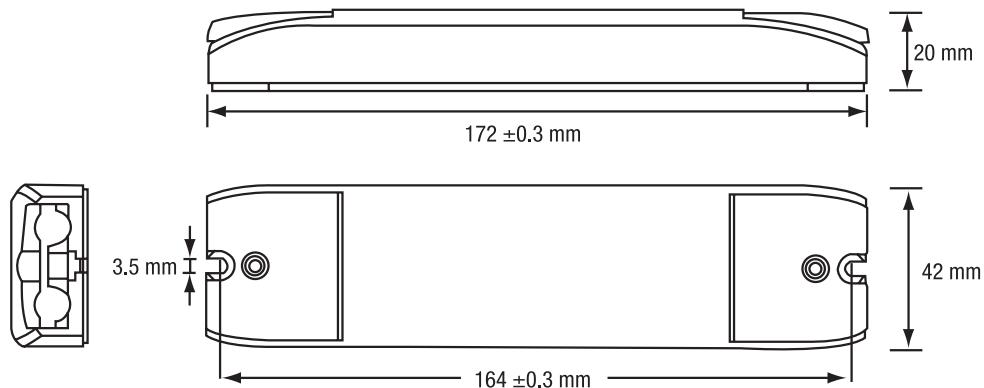
## MARKERLIGHT – RECTANGULAR – LARGE

Product Number	70029	70030	70031	70032	70033
Ordering Abbreviation	ML/110X44/615/OS /ML01C/A	ML/110X44/587/OS /ML01C/Y	ML/110X44/525/OS /ML01C/T	ML/110X44/470/OS /ML01C/B	ML/110X44/OS /ML01C/W
Operating Voltage (V)	10	10	10	10	10
Power (W)	0.80	0.80	1.60	1.60	1.60
Color	Amber Red	Yellow	True Green	Blue	White
Wavelength (nm) / Color Coordinates	615	587	525	470	X = 0.32 Y = 0.31
LEDs/Module	16	16	16	16	16
Operating Temperature (deg C)	-30 to +65	-30 to +65	-30 to +65	-30 to +65	-30 to +65
Dimensions (mm)	140 x 59 x 7	140 x 59 x 7			
Luminance (cd/m <sup>2</sup> )	320	300	330	80	280
Luminous Area	107 x 44	107 x 44	107 x 44	107 x 44	107 x 44



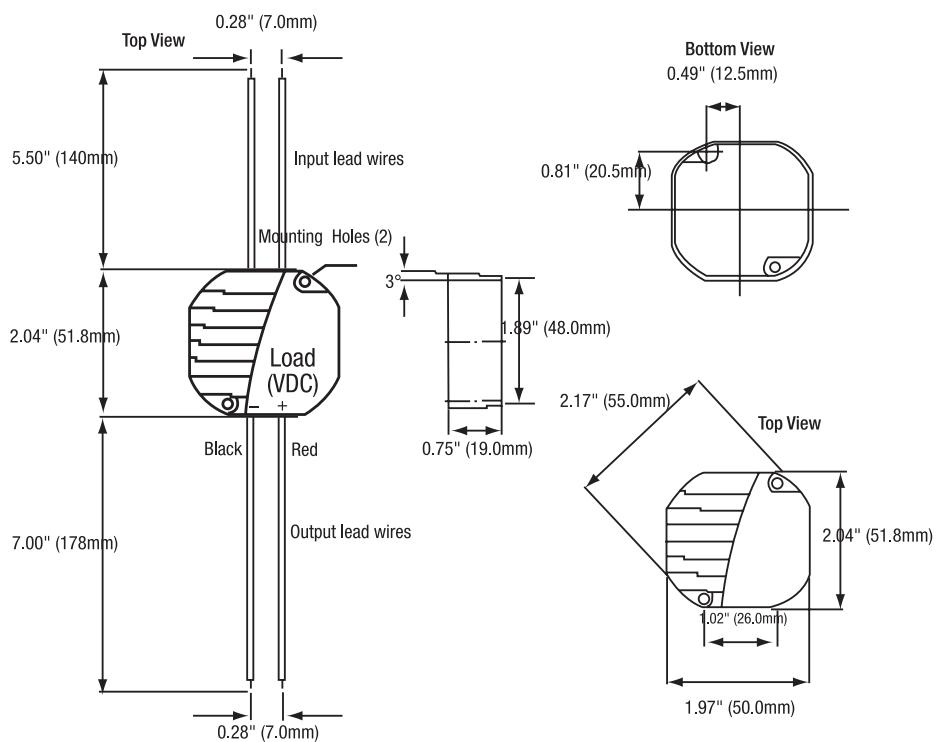
## MARKERLIGHT – SQUARE

Product Number	70034	70035	70036	70037	70038
Ordering Abbreviation	ML/55SQ/615/OS/ML02A/A	ML/55SQ/587/OS/ML02A/Y1	ML/55SQ/525/OS/ML02A/T	ML/55SQ/470/OS/ML02A/B	ML/55SQ/OS/ML02A/W1
Operating Voltage (V)	24	24	24	24	24
Power (W)	1.92	2.88	3.84	3.84	3.84
Color	Amber Red	Yellow	True Green	Blue	White
Wavelength (nm) / Color Coordinates	615	587	528	470	X=0.32 Y=0.31
LEDs/Module	40	40	40	40	40
Operating Temperature (deg C)	-30 to +65	-30 to +65	-30 to +65	-30 to +65	-30 to +65
Dimensions (mm)	85 x 85 x 7	85 x 85 x 7	85 x 85 x 7	85 X 85 X 7	85 x 85 x 7
Luminance (cd/m <sup>2</sup> )	1170	2700	1170	340	3400
Luminous Area (mm)	52 x 52	52 x 52	52 x 52	52 x 52	52 x 52



## OPTOTRONIC DIMMING AND RGB CONTROL MODULES

Product Number	51516	51517	51518
Description	OTDIM	OT RGB 3 CHDIM	OT RGB SEQUENCER
Input Voltage (V)	10.5/24	10.5/24	10.5/24
Max. Input Current (Amps)	5.3	6	6
Output Power (W)	0 - 52.5/0-120	0-20 / 0-48	0-20 / 0-48
Max. Output Power (W)		60/140	60/140
Max. Output Current (Amps)	5	2 A per channel	2 A per channel
Control Voltage (VDC)	0 - 10	0 - 10	0 - 10
Max. Power Loss (W)	3	3	3



## OPTOTRONIC LED POWER SUPPLY

Product Number	51500	51505	51508	51501	51512
Description	OT6/100-240/10COS	OT25/120/10	OT50/120/10	OT6/100 - 240/24COS	OT20/120-240/24S
Input Voltage (VAC)	100 - 240	120	120	100 - 240	120 - 240
Input Current (Amps)	.15@120V , .050@ 240V	.26@120V	.52@120V	.15@120V , .050@ 240V	.35@120V , .23@ 240V
Output Voltage (VDC)	10.5 +/- 0.5	10.5 +/- 1.0	10.5 +/- 1.0	24.0 +/- 0.5	24.0 +/- 0.5
Min. Power (W)	0.2	3	10	0.2	0.9
Max. Power (W)	6	25	50	6	20
Max. Line Ripple (V)	+/- .4V	+/- 1.1V	+/- 1.1V	+/- .4V	+/- .2V
Remote Mounting (ft)	26	10	8	26	32

# SYLVANIA HID SYSTEM LIMITED WARRANTY

## Combination Lamp and Ballast System Limited Warranty

OSRAM SYLVANIA Products Inc. ("OSPI") warrants SYLVANIA lamps installed on SYLVANIA magnetic ballasts to be free from defects in material and workmanship and to operate from the date of installation (or 3 months from date of manufacture if installation date is not known or available) for the lamp and ballast warranty

periods and subject to the Terms and Conditions specified below. If lamps fail to operate for the warranty period, OSPI will provide a free replacement lamp (no labor allowance). If a SYLVANIA magnetic ballast fails to operate within the warranty period, OSPI will provide a free replacement ballast (no labor allowance).

System	Avg. Rated Lamp Life*	Lamp Warranty Period	Ballast Warranty Period
METALARC®	7,000-12,000 hrs	6 months	24 months
METALARC®	15,000-20,000 hrs	12 months	24 months
LUMALUX®	24,000 hrs	12 months	24 months
LUMALUX®	≥ 30,000 hrs	24 months	24 months

### TERMS AND CONDITIONS

SYLVANIA lamps and SYLVANIA ballasts must be installed together as a system and be installed and operated under suitable environmental conditions and in accordance with the latest National Electrical Code, Underwriters Laboratory Bulletins, and ANSI Specifications. This warranty will not apply in the event of conditions demonstrating abnormal use or stress, such as operating temperatures in excess of maximum rated temperatures, under/over voltage conditions, excessive switching cycles or operating hours, dirty or cracked sockets, or improper lamp or ballast installation. Replacement of SYLVANIA lamps with lamps of other manufacturers will void the lamp portion of this warranty. Replacement of the SYLVANIA ballast with any other ballast will void the entire warranty.

### FURTHER CONDITIONS

1. Warranty periods based on a minimum 4,000 hours/year to a maximum 6,000 hours/year operation (minimum 10hr/start for lamp).
2. The lighting system must operate the lamp within current ANSI Specifications.
3. OSRAM SYLVANIA reserves the right to examine all failed lamps to verify cause of failure and shall be the sole judge as to whether the lamps are in fact defective.
4. System warranty valid only for installations of 50 or more lamps and ballasts. Contact OSRAM SYLVANIA for further details.
5. Check with OSRAM SYLVANIA when using occupancy sensors or dimming, as some situations may void the warranty.

### WARRANTY ACTIVATION / SERVICE CLAIMS

The HID System warranty is automatically activated after OSPI receives a completed HID System warranty registration form within 30 days after installation. An acknowledgment will be sent for each registration along with a reference number for future correspondence. Service claims can be made by contacting 1-800-LIGHTBULB to initiate the process for problem resolution.

### LABOR OPTIONS

No labor allowance is made for lamp or ballast replacement.

### RETURN OF DEFECTIVE PRODUCT

After contacting OSRAM SYLVANIA and receiving a RETURN MATERIAL AUTHORIZATION NUMBER, the user shall promptly return the product at the user's expense to OSRAM SYLVANIA after receiving instructions as to if, when and where to ship product. Failure to follow this procedure shall void this warranty.

### REPLACEMENT OF PRODUCT, LIMITS OF LIABILITY

The foregoing shall constitute the sole and exclusive remedy of the purchaser and the sole and exclusive liability of OSPI. NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IS MADE OR IS TO BE IMPLIED. OSPI will not, under any circumstance, whether as a result of breach of contract or warranty, tort, or otherwise, be liable for any incidental, special or consequential damages, including lost profits or revenues or any other costs or damages.

OSPI reserves the right to examine all failed lamps and/or ballasts and reserves the right to be the sole judge as to whether any lamps and/or ballasts are defective and covered under this warranty.

\*Subject to and limited by the lamp warranty period limitations set forth above.

## QUESTIONS?

Please call customer service at 1-800-654-0089  
or contact your local OSRAM SYLVANIA representative.



Photocopy the form below and use it to register any installation featuring SYLVANIA magnetic ballast systems. Also available is our on-line version which you may find by visiting our web site at [www.sylvania.com](http://www.sylvania.com). The warranty coverage begins from the date of installation, but you must register an installation in order to receive warranty service.

## Installation Information

Location Name: \_\_\_\_\_

Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Send Registration To: \_\_\_\_\_

Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Contact Name: \_\_\_\_\_ Phone: \_\_\_\_\_ Email: \_\_\_\_\_

Installation Date: \_\_\_\_\_

Operating Hours: \_\_\_\_\_ starts/day \_\_\_\_\_ hours/day \_\_\_\_\_ days/year

Occupancy Sensors\* \_\_\_\_\_ (Yes/No) Dimming\* \_\_\_\_\_ (Yes/No)  
\* check with OSRAM SYLVANIA when using occupancy sensors or dimming, as some situations may void the warranty.

Comments \_\_\_\_\_

## Type & Quantities (Description and NAED Item # as Shown on Product Packaging)

Ballast Description <small>e.g. M750/MULTI-PS-KIT</small>	NAED Item #	Quantity	Lamp Description	NAED Item #	Quantity	Comments
	47717	1000	MS750/PS/BU-HOR/BT37	64787	1000	

Please Complete and Return To:  
**OSRAM SYLVANIA**

Attn: Warranty Dept.  
18725 N. Union Street, Westfield, IN 46074  
Tel #: 800/654-0089 Email: [warranty.service@sylvania.com](mailto:warranty.service@sylvania.com)

Or Complete and Fax To:  
**OSRAM SYLVANIA**  
**Fax #: 866/632-9674**

**OSRAM SYLVANIA National Customer Service and Sales Center**  
[www.sylvania.com](http://www.sylvania.com)

# QUICK 60+® Limited Warranty

## The Heart of a Comprehensive System Service Program

Compare lighting system warranties – you'll see that our QUICK 60+ warranty offers better coverage, more service options and, more important, peace of mind.

### Combination Lamp and Ballast System Limited Warranty

OSRAM SYLVANIA Products Inc. ("OSPI") warrants SYLVANIA lamps installed on QUICKTRONIC® ballasts to be free from defects in material and workmanship and to operate from the date of installation (or date of manufacture if installation date is not known or available) for the time periods and subject to the Terms and Conditions specified below. If lamps fail to operate for the warranty period, OSPI

will provide a free replacement lamp (but no labor allowance). If a QUICKTRONIC ballast fails to operate within the warranty period, OSPI will provide a free replacement ballast and labor allowance in accordance with the "Labor Options" set forth below.

System <sup>3</sup>	Lamp	Ballast Warranty Period*	Lamp Warranty Period*
QUICKTRONIC® T8 <sup>1</sup>	OCTRON® XP™, XP/SS <sup>2,3</sup>	60 months	36 months
QUICKTRONIC PSX T8 <sup>1</sup>	OCTRON XPS <sup>2,4</sup> , XP & XP/SS <sup>2,3</sup>	60 months	36 months
QUICKTRONIC T8 <sup>1</sup>	OCTRON family	60 months	30 months
QUICKTRONIC 59	OCTRON F096/XP, F096/XP/SS	60 months	30 months
QUICKTRONIC 59	OCTRON F096	60 months	24 months
QUICKTRONIC 86/T8HO	OCTRON F096HO	60 months	30 months
QUICKTRONIC 96IS/96HO & 40T12	N/A	60 months	N/A
QUICKTRONIC T5, T5/HO, DIM <sup>1</sup>	PENTRON® Family	60 months	24 months
QUICKTRONIC DL40	DULUX® FT40DL	60 months	12 months
QUICKTRONIC 54PHO	DULUX FT55DL	60 months	12 months
QUICKTRONIC CF	DULUX D/E, T/E	60 months	12 months
QUICKTRONIC FM	FM	24 months	6 months
QUICKTRONIC ICE <sup>1,5</sup>	ICETRON®	60 months	60 months
QUICKTRONIC MH <sup>6,7</sup>	METALARC® CERAMIC Family <sup>6</sup>	60 months @ <80° C <sup>7</sup>	6 months

\*Note – Fluorescent warranty periods are based on a 3 hour minimum cycle, unless otherwise noted, with a maximum of 4000 hours per year. Other operating cycles may affect warranty period. Lamp warranty can renew when installation is group relamped, contact OSRAM SYLVANIA for details.

<sup>1</sup> Occupancy sensor application, 15 minute/start minimum, allowed with QUICKTRONIC PROStart® and with QUICKTRONIC ICE ballasts.

<sup>2</sup> OCTRON SUPERSAVER® bipin lamps operate on QUICKTRONIC & QUICKTRONIC Professional Instant Start & PROStart (PSN, PSX) models only.

<sup>3</sup> QUICKTRONIC and QUICKTRONIC Professional Series including all IS, RS, PS & DIM models where applicable.

<sup>4</sup> OCTRON XPS lamps on any other suitable QUICKTRONIC ballast have a 30 month Lamp Warranty Period.

<sup>5</sup> ICETRON Lamp Warranty Period allows up to 8760 hrs per year (continuous operation), with a 3 hour per start minimum.

<sup>6</sup> Contact OSRAM SYLVANIA for a list of METALARC CERAMIC lamps approved on the QUICKTRONIC MH HID ballasts.

<sup>7</sup> QUICKTRONIC MH ballasts warranty is 36 months @ tc < 90 C. Electronic HID system warranty period is based on a minimum cycle of 10hr/start up to a maximum operation of 6,000 hours/year.

#### TERMS AND CONDITIONS

SYLVANIA lamps and QUICKTRONIC ballasts must be installed together as a system and be installed and operated under suitable environmental conditions and in accordance with the latest National Electrical Code, Underwriters Laboratory Bulletins, and ANSI Specifications. This warranty will not apply in the event of conditions demonstrating abnormal use or stress, such as operating temperatures in excess of maximum rated temperatures, under/over voltage conditions, excessive switching cycles (see above Note #1) or operating hours, dirty or cracked sockets, or improper lamp or ballast installation. Replacement of SYLVANIA lamps with lamps of other manufacturers will void the lamp portion of this warranty. Replacement of the QUICKTRONIC ballast with any other ballast will void the entire warranty.

#### WARRANTY ACTIVATION / SERVICE CLAIMS

The QUICK 60+ warranty is automatically activated after OSPI receives a completed QUICK 60+ warranty registration form within 30 days after installation. An acknowledgment will be sent for each registration along with a reference number for future correspondence. Service claims can be made by contacting 1-800-LIGHTBULB to initiate the process for problem resolution.

#### LABOR OPTIONS (Ballast and ICETRON lamps only)

No labor allowance is made for any lamp replacement except ICETRON, during the warranty period. OSPI provides for several labor options for service under the QUICK 60+ warranty program.

1. OSPI will provide full service coverage through SYLVANIA LIGHTING SERVICES at no cost to the user of the ballast, or

2. OSPI will contact a service provider and coordinate replacement at no cost to the user of the ballast, or

3. OSPI will reimburse the purchaser reasonable, customary and necessary labor charges required to install the ballast replacement.

4. Labor options must be pre-approved by OSPI. Any labor option or cost that is not pre-approved will not be eligible for reimbursement.

#### RETURN OF DEFECTIVE PRODUCT

After contacting OSRAM SYLVANIA and receiving a return AUTHORIZATION NUMBER, the user shall promptly return the product at the user's expense to OSRAM SYLVANIA after receiving instructions as to if, when and where to ship product. Failure to follow this procedure shall void this warranty.

#### REPLACEMENT OF PRODUCT, LIMITS OF LIABILITY

The foregoing shall constitute the sole and exclusive remedy of the purchaser and the sole and exclusive liability of OSPI. NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IS MADE OR IS TO BE IMPLIED. OSPI will not, under any circumstance, whether as a result of breach of contract or warranty, tort, or otherwise, be liable for any incidental, special or consequential damages, including lost profits or revenues or any other costs or damages.

OSPI reserves the right to examine all failed lamps and/or ballasts and reserves the right to be the sole judge as to whether any lamps and/or ballasts are defective and covered under this warranty.

**QUESTIONS?** Please call customer service at 1-800-654-0089 or contact your local OSRAM SYLVANIA representative.



Photocopy the form below and use it to register any installation featuring QUICKTRONIC® ballast systems. Also available, is our on-line version which you may find by visiting our web site at [www.sylvania.com](http://www.sylvania.com). The warranty coverage begins from the date of installation, but you must register an installation in order to receive warranty service.

## Installation Information

Location Name: \_\_\_\_\_

Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Send Registration To: \_\_\_\_\_

Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Contact Name: \_\_\_\_\_ Phone: \_\_\_\_\_ Email: \_\_\_\_\_

Installation Date: \_\_\_\_\_

Operating Hours: \_\_\_\_\_ hours/day \_\_\_\_\_ days/year

Occupancy Sensors:  Yes  No

Comments \_\_\_\_\_

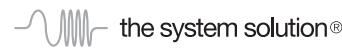
## Type & Quantities (Description and NAED Item # as Shown on label (or packaging))

**Please Complete and Return To:  
OSRAM SYLVANIA**

Attn: Warranty Dept.  
18725 N. Union Street  
Westfield, IN 46074  
Tel #: 800/654-0089 Email: warranty.service@sylvania.com

**Or Complete and Fax To:  
OSRAM SYLVANIA**  
Electronic Control Systems  
**Fax #: 866/632-9674**

OSRAM SYLVANIA National Customer Service and Sales Center



## Magnetic Ballast Limited Warranty

OSRAM SYLVANIA Products Inc. ("OS") warrants SYLVANIA fluorescent magnetic ballasts and high intensity discharge (HID) magnetic ballasts to be free from defects in material and workmanship and to

operate from the date of manufacture for the time periods specified below.

### Magnetic Ballast Type

Fluorescent Magnetic  
High Intensity Discharge (HID) Magnetic  
Magnetic Sign

### Ballast Warranty Period\*

36 months  
24 months  
24 months

\*Note - Warranty periods are based on typical 4000 hr/12 months operation; longer operating cycles may limit warranty period.  
Contact OS for details.

### TERMS AND CONDITIONS

SYLVANIA magnetic fluorescent and HID ballasts must be installed and operated under suitable environmental conditions and in accordance with the latest National Electrical Code, Underwriters Laboratory Bulletins, ANSI Specifications, CSA standards, and in accordance with OS installation instructions, where applicable. This warranty will not apply if conditions demonstrate abnormal use or stress, such as operating temperatures in excess of maximum rated temperatures, under/over voltage conditions, excessive switching cycles or operating hours, dirty or cracked sockets, or improper lamp or ballast installation.

### WARRANTY ACTIVATION / SERVICE CLAIMS

Warranty is activated after installation. Service claims can be made by contacting 1-800-654-0089 (press "2") to initiate the process for problem resolution.

### REPLACEMENT OF PRODUCT

OS shall correct any defects by replacing or repairing, at OS's option, any ballast determined to be defective under the terms of this warranty. Note: Labor costs are not reimbursed by OS.

### RETURN OF DEFECTIVE BALLAST

After contacting OS and receiving a return AUTHORIZATION NUMBER, the purchaser may be requested to promptly return the ballast at the purchaser's expense to OS after receiving instructions as to if, when and where to ship the ballast. Failure to follow this procedure shall void this warranty.

### LIMITS OF LIABILITY

The foregoing shall constitute the sole and exclusive remedy of the purchaser and the sole and exclusive liability of OS. NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IS MADE OR IS TO BE IMPLIED. OS will not, under any circumstance, whether as a result of breach of contract or warranty, tort, or otherwise, be liable for any costs or damages, including lost profits or revenues, incidental, special or consequential damages.

OS reserves the right to examine all failed ballasts and reserves the right to be the sole judge as to whether any ballasts are defective and covered under this warranty. This warranty does not cover lamps operated by the ballast.

## QUESTIONS?

Please call customer service at 1-800-654-0089  
contact your local OSRAM SYLVANIA representative.

# LED SYSTEM WARRANTY

## Limited Warranty

OSRAM SYLVANIA Products, Inc. (OSI) is pleased to provide the following warranty for the periods shown below. This warranty covers OSI's LED Modules and Optotronic® Power supplies or controls when installed as a system.

### OSI LED System Limited Warranty

OSI warrants each OSI LED Module or Optotronic, Power supply or control to be free from defects in materials and workmanship, and to operate from the date of installation (or date of manufacturer if installation date is not known or available, or verifiable) for the time periods and subject to the Terms and Conditions

specified below. If an OSI LED module or an Optotronic, Power supply or control fails to operate for the specified warranty period, OSI will provide a free replacement component in accordance with the Terms and Conditions set forth below (labor not included).

#### OSRAM LED SYSTEMS FOR LIGHTING WARRANTY

System <sup>4</sup>	LED Module Family	Power Supply and Control Warranty Period	LED Module Warranty Period
Optotronic, OT and OSRAM LED Lamp Modules, Power Supply or Controls	BACKlight, LINEARlight, LINEARlight Flex, (Colormix), EFFECTlight, COINlight, MARKERlight	60 months	60 Months

#### TERMS AND CONDITIONS

This warranty only applies when OSI's OSRAM LED Lamp Module is properly wired and installed; is operated on a suitable power supply within the electrical values recommended by OSI; used in lighting equipment designed and approved for the application and in environmental conditions (temperature, humidity) within the normal specified operating range of the system. This warranty does not apply to any abnormal use or use in violation of any applicable standard, code or instructions for use in installations including those contained in the latest National Electrical Code (NEC), the Standards for Safety of Underwriters Laboratory, Inc. (UL), Standards for the American National Standards Institute (ANSI) or, in Canada, the Canadian Standards Association (CSA). This warranty will not apply in the event of conditions demonstrating abnormal use or stress, including under/over voltage/current conditions, excessive switching cycles or operating hours or outside the following recommended operating conditions:

- Warranty Period is based on typical 8,760 hr./yr. operation on a continuous burning cycle of 24 hours.
- Mean operating temperature for LED Module: 25°C
- Maximum operating temperature for LED Module: 65°C
- Operate at rated DC Voltage
- Mean ambient operating temperature for Optotronic, Power supplies and controls is 40°C

Replacement of OSI LED Module components with LED components of other manufacturers will void the entire warranty. Inappropriate use and selection of power supply will void the entire warranty.

#### WARRANTY SERVICE CLAIMS

Warranty claims can be serviced by calling OSI's National Customer Service & Sales Center:

1-800-654-0089  
Fax: 866-632-9674  
Email: [warranty.service@sylvania.com](mailto:warranty.service@sylvania.com)

If you are unsure whether a situation exists that is covered by this warranty, please contact OSI's National Customer Service & Sales Center for assistance.

#### RETURN OF DEFECTIVE PRODUCT

After contacting OSI, the purchaser/user shall promptly return the product after receiving instructions regarding if, when and where to ship product. Failure to follow this procedure shall void this warranty.

#### REPLACEMENT OF PRODUCT, LIMITS OF LIABILITY

The foregoing shall constitute the exclusive remedy of the purchaser and the sole liability of OSI for the OSI LED Lamp Module component and Optotronic, power supply or controls. NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IS MADE OR IS TO BE IMPLIED. In no event shall OSI be liable for any other costs or damages, including lost profits or revenues, incidental, special or consequential damages.

OSI reserves the right to examine all failed OSI Module LED and Optotronic, power supply, controls and components to determine the cause of failure and patterns of usage and reserves the right to be the sole judge as to whether any such controls or components are defective and covered under this warranty.

## QUESTIONS?

Please call customer service at 1-800-654-0089  
or contact your local OSRAM SYLVANIA representative.

SEE THE WORLD IN A NEW LIGHT **OSRAM**

# Manufacturers' Cross Reference Guide

These tables are intended only as guides and may represent another lamp/ballast company's most similar product rather than an identical match. Individual manufacturer's performance values should be consulted. For a complete cross reference guide please consult our electronic catalog at [www.sylvania.com](http://www.sylvania.com).

## INCANDESCENT LAMPS

GE	SYLVANIA	PHILIPS
4C7 CARD 2	4C7/BL/2PK	BC-4C7
4C7/W CD2	4C7/W/BL/2PK	BC-4C7/W
10C7 TRAY	10C7/CL	10C7
10S11N	10S11N/CL	10S11N
10S11N/F	10S11N/IF	10S11N/IF
15CAC/F-CD/2-12	15B10/BL/2PK	BC-15BA9C/LL
---	15B10C/DL/BL	15BA9C/4M
15S14/GR/CL	15S14/CL	15S11/14
15T10	15T10/CL	BC-15T10 12/1PK
20T6½/DC/F	20T6½/DC/IF	20T6½/DC/IF
20T6½/F	20T6½/I	20T6½/IF
25CAC	25B10C/DL/BL	---
---	25B10/DL/BL	BC-25B9½/LL
25CAC-CD/2-120	25B10C/BL/2PK	BC25BA9C/LL
25GC 12PK	25G16½/C	25G16½/C/4M
25G18½/W	25G18½/W	---
25G25	25G25	25G25
25G25/L/24	25G25/DL/RP	---
25G25/W/L/24	25G25/DLSW/RP	---
25G40	25G40	25G40/4M
25G40/W	25G40/W	25G40/4MW
25S11/5C	25S11C/P	25S11/2C
25T10	25T10	BC-25T10
30/100	30/100A21/W/RP	30/100A/W
30A15-130	30A15	30A15
30R20-120	30R20	30R20
40A15/CF CD2	40A15/CL/FAN	BC-40S14/FAN
40A15/CF/STG CD2	40A15/SL	40A/TF
40A 48PK	40A	40A
40A/34WM	40A/34/SS	40A/34/A/EW
40A/34/WMP/99	40A/34/SS/XL	40A/34A/99/EW
40CAM CD/2	40B10/BL/2PK	BC-40BA91/2/LL
40CAC-CD/2-120	40B10C/BL/2PK	BC-40BA9C/LL
---	40B10/DL/BL/2PK	40BA91/2/4M
---	40B10C/DL/BL	40B10½/4M
40CAM/F CD/2	40B10/W/BL/2PK	BC-40BA1/2/FLL
40FM/L	40F/CL	BC-40F15/LL
40GC-12PK-120	40G16½/C	40G16 1/2 C
40GC/W/CD/2	40G16½/C/W/BL	BC-40G161/2/WLL
40G25/L	40G25	40G25
40G25/L/24	40G25/DL/RP	---
40G25/W/L/24	40G25/DLSW/RP	40G25/W
40G25/W/L	40G25/W	40G25/W
40G25/W/L	40G30/W	40G25/W
40G40/CL	40G40	40G40/4M
40G40/W	40G40/W	40G40/4MW
40S11N/1CARD	40S11N/BL	BC40S11/N TP
40S11N/1F	40S11N/CF	40S11N/IF
40T10/F	40T10/IF	BC-40T10/IF
50/150 12PK	50/150A21/W/RP	50/150A/W
50/150 12PK	50/150/PS25	50/150T/DL
50A/RS/CVG 24PK	50A/RS/SL	50A/RS/TF
60A	60A	60A
60A/52WM	60A/52/SS	60A-52A/EW
60A/52WMP/98	60A/52/SS/XL	---
60A21/B	60A/CB	60A19/B
60A21/G	60A/CG	60A19/G
60A/CL 24PK	60A/CL	60A/CL
60A/W/LL-24PK-120	60A/DLSW/2PK/RP	60A/WL

## Manufacturers' Cross Reference (continued)

### INCANDESCENT LAMPS

GE	SYLVANIA	PHILIPS
60A/PL 6PK	60A/GRO	60A/AGRO
60A/CVG 24PK	60A/SL	60A/TF
60A/GD 24PK	60A/RS	---
60A/S	60A/RS/XL	---
60A/W 48PK	60A/W/4RP	60A/W/TP
60A/Y 24PK	60A/Y/RP	60A/Y 120-130V
69A21/60WM/TS	60A19/TS/8M/SS	K60A19/TS/EW
---	60A21/TS	K60A19/TS/EW
60CAM CD/2	60B10/BL/2PK	BC-60BA9/2/LL
60CAC CD/2 6PK	60B10C/BL/2PK	BC-60BA9C/LL
---	60B10/DL/BL/2PK	60BA91/24M
---	60B10C/DL/BL/2PK	60BA9C/4M
---	60B10C/F/BL/2PK	BC-60BA9 1/2/FLL
60CAC/F CD/2	60B10C/W/BL/2PK	---
60CAM/F CD/2	60B10W/BL/2PK	BC-60BA9C/FLL
---	60F/BL	BC-60F15/LL
40FM/AU CD/2 6 PK	60F/IC/BL/2PK	BC60F15/LL
60GC	60G16½C/BL	---
60G25 6PK 120V	60G25/RP	60G25 120V
---	60G25/DL/RP	60G25
---	60G25/DLSW/RP	60G25/W
60G30/W	60G30/W	---
60G40 6PK	60G40/RP	60G40/4M
60G40/W 6PK	60G40/W	60G40/4MW
---	60K19/DR	60K19/DL
60T10/F 24PK	60T10/CF	60T10/64/IF
65R30/FL/LL 6PK	65BR30/DL/FL/RP	65BR30/FL/LL55
---	65BR30/FL	65BR30/FL55
75R30/FL/65WM	65BR30/FL/SS	65BR30/FL55
65R30/SP/LL 6PK	65BR30/SP/RP	65BR30/SP20
75R30/SP/65WM	65BR30/SP/SS	65BR30/SP20
75A	75A	75A
75A/CL 24PK	75A/CL	75A/CL
75A/RS	75A19/RS	75A/RS/VS
75A/RT 6PK	75A21/RS/SL	75A/RH/TF
75A/RS/CVG 24PK	75A21/SL/RP	75A/RH/TF
75A/67WM	75A/67/SS	75A-67A/EW
75A/67WMP/99	75A/67/SS/XL	75A-67A/99/EW 120
75R30/A	75BR30/A/FL/RP	---
75R30/B	75BR30/B/FL/RP	75BR30/PK
75R30/G	75BR30/G/FL/RP	---
75R30/PL/1 6PK	75BR30/GRO/FL/RP	75BR30/AGRO
75R30/PK	75BR30/PK/FL/RP	75BR30/PK
75R30/SP-1 6PK	75BR30/SP/RP	---
75R30/Y	75BR30/Y/FL/RP	---
75R/FL/1-6PK-120	75BR/FL/RP	---
75ER30	75ER30	75ER30
---	75K19/DR	75K19/DL
75R20 6PK	75R20/RP	75R20
---	75R30/FL/SL	75BR30/FL/TF
100A21/90WM/TS 12	90A19/TS/8M/SS	K90A19/TS/EW
100A21/SBIF 60 PK	100A21/1SB/IF	100A/1SBIF
100A	100A	100A
---	100A/DLSW/2PK/RP	100A/W
100A/RS 12PK	100A19/RS	100A/RS/VS
100A21	100A21	100A21
100A/RS/CVG	100A21/RS/SL	100A/RS/TF
100A23/VS 24PK	100A21/VS	100A/RS/VS
100A23/20	100A23/20	100A23/20
100A/90WM	100A/90/SS	100A-90A/EW
100A/90WMP/98	100A/90/SS/XL	100-90A/99EW
100A/CL 24PK	100A/CL	100A/CL
100R/FL-120	100BR/FL	120BR/FL60

## Manufacturers' Cross Reference Guide (continued)

### INCANDESCENT LAMPS

GE	SYLVANIA	PHILIPS
100G40	100G40	100G40/4M
100G40/W/L	100G40/W	100G40/4MW
120R40/FL/MI-6PK	120BR/FL	120BR/FL60
120R40/FL/LL-6PK	120BR/DL/FL/RP	---
120R40/SP/MI-6PK	120BR/SP	120BR/SP20
120ER40	120ER40	120ER40
125R40	125BR40	125R40/1
150A	150A21	150A
150A/135WM	150A21/135/SS	150A-135A/EW
150Q21/99/IF	150A21/99/XL	150A/99
150A/CL 12PK	150A21/CL	150A/CL
150R40/PL-1 6PK	150BR/GRO	150BR/AGRO
150G40/W	150G40/W/RP	150G40/W
200A 12PK	200A21	200A (A23)
200/99	200CL/99/XL	200/99
200/IF	200PS/IF	200/IF
200/99	200PS/CL/99/XL	200/99
200/99IF	200PS/IF/99/XL	200/99IF
250R40/1	250BR40	250R40/1
---	250KBR38/FL	K250PAR38/FL
---	250KR38/SP	K250PAR38/SP
300M/99	300/AX/CL	300/2
300M/99IF	300/AX/IF	300/2IF
300R/FL	300BR/FL	300R/FL
300M/99/IF	300M/99/IF/XL	300M/99IF
300M	300/M/CL	300M
300PAR56/MFL	300PAR56/MFL	300PAR56/MFL
300PAR56/NSP	300PAR56/NSP	300PAR56/NSP
300PAR56/WFL	300PAR56/WFL	300PAR56/WFL
300/99IF	300PS35/99/IF/XL	300/99IF

## Manufacturers' Cross Reference (continued)

### HALOGEN LAMPS

GE	SYLVANIA	PHILIPS	OSRAM
	<b>HALOGEN BT15</b>		
---	60BT15/HAL/CL/BL	BC60BT15/HAL/CL	---
---	60BT15/HAL/W/BL	BC60BT15/HAL/W	---
---	75BT15/HAL/W/BL	BC75BT15/HAL/W	---
---	100BT15/HAL/W/BL	BC100BT15/HAL/W	---
---	150BT15/HAL/W/BL	BC150BT15/HAL/W	---
	<b>CAPSYLITE MIDBREAK</b>		
50A/HAL	52A/CAP	---	---
60A/HAL	60A/HAL/DAY	---	---
60A/HAL/CL	60A/HAL/DAY/CL	---	---
75A/HAL	75A/HAL/DAY	---	---
90A/HAL	100A/HAL/DAY	---	---
	<b>CAPSYLITE PAR</b>		
60PAR16/H/SP10	60PAR16/CAP/NSP10	60PAR16/HAL/NSP10	---
60PAR16/H/FL30	60PAR16/CAP/NFL30	60PAR16/HAL/NFL27	---
75PAR16/H/SP10	75PAR16/CAP/NSP10	---	---
75PAR16/H/FL30	75PAR16/CAP/NFL30	---	---
50PAR20/H/FL25	50PAR20/HAL/SPL/NFL30	50PAR20/HAL/NFL30	---
50PAR20/H/SP10	50PAR20/HAL/SPL/NSP10	50PAR20/HAL/NSP9	---
50PAR30/H/FL25	50PAR30/CAP/SPL/NFL25	50PAR30/HAL/NFL30	---
50PAR30/H/SP10	50PAR30/CAP/SPL/NSP9	50PAR30S/HAL/NSP10	---
50PAR30/H/FL35	50PAR30/HAL/SPL/FL40	50PAR30S/HAL/FL40	---
50PAR30LN/H/FL40	50PAR30LN/CAP/SPL/NFL30	50PAR30LN/HAL/NFL30	---
50PAR30LN/H/SP10	50PAR30LN/CAP/SPL/NSP9	50PAR30LN/HAL/NSP9	---
50PAR30LN/H/WFL	50PAR30LN/CAP/SPL/WFL50	50PAR30LN/HAL/WFL60	---
60PAR30/H/NSP9	60PAR30/CAP/SPL/NSP9	60PAR30S/HAL/NSP10	---
60PAR30/H/FL25	60PAR30/CAP/SPL/NFL25	60PAR30S/HAL/NFL30	---
75PAR30/H/SP10	75PAR30/CAP/SPL/NSP9	75PAR30S/HAL/SP10	---
75PAR30/H/FL25	75PAR30/CAP/SPL/NFL25	75PAR30S/HAL/NFL30	---
75PAR20/H/FL35	75PAR30/CAP/SPL/FL40	75PAR30S/HAL/FL40	---
75PAR30LN/H/SP10	75PAR30LN/CAP/SPL/NSP9	75PAR30LN/HAL/NSP9	---
75PAR30LN/H/FL25	75PAR30LN/CAP/SPL/NFL25	75PAR30LN/HAL/NFL30	---
75PAR30LN/H/WFL	75PAR30LN/CAP/SPL/WFL50	75PAR30LN/HAL/FL40	---
35PAR36/H/SP8	36PAR36CAPNSP13	---	---
35PAR36/H/SP5	36PAR36CAPVNSP5	---	---
35PAR36/H/FL30	36PAR36CAPWFL	---	---
50PAR36/H/SP5	50PAR36CAPNSP6	---	---
45PAR/H/SP10	45PAR/CAP/SPL/SP9	---	---
---	45PAR/CAP/SPL/WSP12	45PAR38/HAL/SP12/LL	---
45PAR/H/FL25	45PAR/CAP/SPL/FL30	45PAR38/HAL/FL28/LL	---
60PAR/H/SP10	60PAR/CAP/SPL/SP9	60PAR38/HAL/NSP10/WLL	---
---	60PAR/CAP/SPL/WSP12	60PAR38/HAL/SP12/WLL	---
60PAR/H/FL25	60PAR/CAP/SPL/NFL25	---	---
---	60PAR/CAP/SPL/FL30	60PAR38/HAL/FL28/WLL	---
75PAR/H/SP9	75PAR/CAP/SPL/SP9	75PAR38/HAL/SP10/WLL	---
75PAR/H/FL25	75PAR/CAP/SPL/FL30	75PAR38/H/FL28/WLL	---
90PAR/H/SP10	90PAR/CAP/SPL/SP9	---	---
---	90PAR/CAP/SPL/WSP12	90PAR38/HAL/SP12/LL	---
90PAR/H/FL25	90PAR/CAP/SPL/FL30	90PAR38/HAL/FL28/LL	---
90PAR/H/WFL	90PAR/CAP/SPL/WFL50	90PAR38/H/WFL60/WLL	---
120PAR/H/SP9	120PAR/CAP/SPL/SP9	---	---
120PAR/H/FL30	120PAR/CAP/SPL/FL30	---	---
Q250PAR/SP10	250PARCAPSPLSP10	---	---
Q250PAR/FL30	250PARCAPSPLFL30	---	---
Q500PAR56MFL	500PAR56QMFL	500PAR56Q/MFL	---
Q500PAR56NSP	500PAR56QNSP	500PAR56Q/NSP	---
Q500PAR56WFL	500PAR56QWFL	500PAR56Q/WFL	---
Q1000PAR64MFL	1000PAR64QMFL	1000PAR64Q/MFL	---
Q1000PAR64NSP	1000PAR64QNSP	1000PAR64Q/NSP	---
Q1000PAR64WFL	1000PAR64QWFL	1000PAR64Q/WFL	---
	<b>CAPSYLITE IR PAR</b>		
45PAR30/HIR/SP9XL	50PAR30/CAP/IR/NSP9 130V	---	---
45PAR30/HIR/FL25XL	50PAR30/CAP/IR/NFL25 130V	---	---

# Manufacturers' Cross Reference Guide (continued)

## HALOGEN LAMPS

GE	SYLVANIA	PHILIPS	OSRAM
	<b>CAPSYLITE IR PAR (continued)</b>		
45PAR30/HIR/FL35XL	50PAR30/CAP/IR/FL40 130V	---	---
50PAR30/HIR/SP9	50PAR30/CAP/IR/NSP9	50PAR30S/IRC/NSP10	---
50PAR30/HIR/FL25	50PAR30/CAP/IR/NFL25	50PAR30S/IRC/NFL30	---
50PAR30/HIR/FL35	50PAR30/CAP/IR/FL40	50PAR30S/IRC/FL40	---
45PAR/HIR/SP12/XL	50PAR/CAP/IR/SP10 130V	---	---
45PAR/HIR/FL40/XL	50PAR/CAP/IR/NFL25 130V	---	---
50PAR/HIR/SP9	50PAR/CAP/IR/SP10	50PAR38/IRC/SP12	---
50PAR/HIR/FL25	50PAR/CAP/IR/NFL25	50PAR38/IRC/FL25	---
55PAR/HIR/SP12/XL	55PAR38/CAP/IR/XP/SP9	---	---
55PAR/HIR/FL40/XL	55PAR38/CAP/IR/XP/FL30	---	---
60PAR/HIR/SP10	60PAR/CAP/IR/SP10	60PAR38/IRC/SP10	---
60PAR/HIR/SP12	60PAR/CAP/IR/WSP12	60PAR38/IRC/WSP12	---
---	60PAR/CAP/IR/NFL25	60PAR38/IRC/FL25	---
60PAR/HIR/FL30	60PAR/CAP/IR/FL30	---	---
80PAR/HIR/SP10	80PAR/CAP/IR/SP10	---	---
80PAR/HIR/FL25	80PAR/CAP/IR/FL25	---	---
100PAR/HIR/SP10	100PAR/CAP/IR/SP10	100PAR38/IRC/SP10	---
100PAR/HIR/FL25	100PAR/CAP/IR/NFL25	100PAR38/IRC/FL25	---
100PAR/HIR/FL40	100PAR/CAP/IR/FL40	---	---
	<b>TRU-AIM MR11</b>		
Q20MR11/SP15(FTC)	20MR11/SP10/FTB	20MRC11/SP10	46890SP
Q20MR11/NFL30(FTD)	20MR11/FL35/FTD	20MRC11/FL30	46890WFL
Q35MR11/NFL30(FTH)	35MR11/FL40/FTH	---	46892WFL
Q35MR11/SP20(FTF)	35MR11/SP10/FTE	---	46892SP
	<b>STANDARD TRU-AIM MR16</b>		
Q20MR16/SP	20MR16/NSP8/ESX	20MRC16/SP10	41860SP
Q20MR16/FL	20MR16/FL40/BAB	20MRC16/FL36	41860WFL
Q35MR16/CG/FL	35MR16/FL40	---	41865WFL
Q50MR16/SP	50MR16/NSP12/EXT	50MRC16/SP10	41870SP
---	50MR16/NFL25/EXZ	50MRC16/NFL24	---
Q50MR16/FL	50MR16/FL40/EXN	50MRC16/FL38	41870WFL
---	65MR16/NSP10/FPA	75MR16/SP10-EYF	---
---	65MR16/FL40/FPB	75MR16/FL36-EYC	---
	<b>TRU-AIM BRILLIANT MR16</b>		
---	20MR16/B/FL35/C	---	41861WFL
---	50MR16/B/NSP11/C/EXT	50MRC16/SP12/A	---
---	50MR16/B/NFL25/EXZ	50MRC16/NFL24/A	---
---	50MR16/B/FL35/C/EXN	50MRC16/FL36	41871WFL
	<b>TRU-AIM TITAN MR16</b>		
Q20MR16/C/VNSP7	20MR16/T/NSP10/ESX	20MRC16/CC/SP10	46860SP
Q20MR16/C/FL40	20MR16/T/FL40/BAB	20MRC16/CC/FL38	46860WFL
---	35MR16/T/NSP10/FRB	---	46865SP
Q35MR16/C/SP20	35MR16/T/NFL25	---	46865FL
Q35MR16/C/FL40	35MR16/T/FL40/FMW	---	46865WFL
Q50MR16/C/NSP15	50MR16/T/NSP10/EXT	50MRC16/CC/SP10	46870SP
Q50MR16/C/NFL25	50MR16/T/NFL25/EXZ	50MRC16/CC/NFL24	46870FL
Q50MR16/C/FL40	50MR16/T/FL40/EXN	50MRC16/CC/FL38	46870WFL
Q50MR16/C/WFL55	50MR16/T/VWFL60/FNV	---	46870VWFL
Q71MR16/C/NSP15	65MR16/T/NSP10/FPA	---	---
Q71MR16/C/NFL25	65MR16/T/NFL25	---	---
Q71MR16/C/FL40	65MR16/T/FL40/FPB	---	---
	<b>TRU-AIM IR MR16</b>		
---	20MR16/IR/SP10/C	20MRC16/IRC/SP8	48860SP
---	20MR16/IR/NFL25/C	---	48860FL
---	20MR16/IR/FL40/C	20MRC16/IRC/FL36	48860WFL
---	20MR16/IR/WFL60/C	---	48860VWFL
Q37MR16/HIR/CG10	37MR16/IR/SP10/C	35MRC16/IRC/SP8	48865SP
Q37MR16/HIR/CG25	37MR16/IR/NFL25/C	35MRC16/IRC/NFL24	48865FL
Q37MR16/HIR/CG40	37MR16/IR/FL40/C	35MRC16/IRC/FL36	48865WFL
---	37MR16/IR/WFL60/C	35MRC16/IRC/WFL60	48865VWFL
Q50MR16/HIR/CG10	50MR16/IR/SP10/C	45MRC16/IRC/SP8	48870SP
Q50MR16/HIR/CG25	50MR16/IR/NFL25/C	45MRC16/IRC/NFL24	48870FL

CROSS REFERENCE

## Manufacturers' Cross Reference (continued)

### HALOGEN LAMPS

GE	SYLVANIA	PHILIPS	OSRAM
<b>TRU-AIM IR MR16 (continued)</b>			
Q50MR16/HIR/CG40	50MR16/IR/FL40/C	45MRC16/IRC/FL36	48870WFL
---	50MR16/IR/WFL60/C	45MRC16/IRC/WFL60	48870VWFL
<b>SINGLE ENDED</b>			
---	100Q/CL/DC/64485	---	64485
Q100CL/DC	100Q/CL/DC/ESR	100Q/CL/DC ESR	---
Q100CL/MC	100Q/CL/MC/ESN	100Q/CL ESN	---
Q100DC	1000/DC/ETD	---	---
Q150CL/DC/2V	150Q/CL/DC/1/ESP	---	---
Q150CL/DC	150Q/CL/DC/ETC	150Q/CL/DC ETC	---
Q150CL/MC	150Q/CL/MC/2/ETG	150Q/CL	---
Q150CL/MC/2V	150Q/CL/MC/ESL	---	---
Q150DC	150Q/DC/ETF	150Q/DC	---
Q150MC	1500/MC/ETH	150Q ETH	---
Q250CL/DC	250Q/CL/DC/ESS	250Q/CL/DC ESS	---
Q250CL/MC	250Q/CL/MC/EHT	250Q/CL EHT	---
Q250DC	250Q/DC/ETB	---	---
Q250MC	2500/MC/ESM	---	---
<b>DOUBLE ENDED</b>			
Q100T3/CL/CD	100T3Q/CL	BC100T3Q/CL/TP	---
Q150T4/CL	150T3Q/S/CL	BC150T3Q/CL/TP	---
Q150T3/117/CL/CD	150T3Q/CL	---	---
Q300T3/CL	300T3Q/CL	300T3Q/P/CL	---
Q500T3/CL	500T3Q/CL	500T3Q/P/CL	---
<b>BIPIN</b>			
Q5T3/CL	5T3Q/CL	5W/12V/CAPSULE	64405S
Q10T3/CL	10T3Q/CL	---	64415
Q20T3/CL/CD	20T3Q/CL	---	64425
Q50T3/CL	50T4Q/CL	50W/12V/CAPSULE	64440
Q75T4/CL/CD	75T4Q/CL/RP	---	---
---	10T3Q/CL/AX	10W/12V/CAPSULE	64415S
---	20T3Q/CL/AX	20W/12V/CAPSULE	64425S
Q35T3/CL	35T4Q/CL/AX	35W/12V/CAPSULE	64432S
---	50T4Q/CL/AX	---	64440S
---	75T4Q/CL/AX	---	64450S
---	90T4Q/CL/AX	---	64458S
<b>AR 70 &amp; AR111</b>			
---	20AR70/SP8	15ALR18/NSP6-GBA	41970 SP USA
---	20AR70/FL25	---	41970 FL USA
---	50AR70/SP8	50ALR18/SP10-GBJ	41990 SP USA
---	50AR70/FL25	50ALR18/NFL22-GBK	41990 FL USA
---	35AR111/SSP4	---	41830 SSP
---	50AR111SSP4	---	41835 NSP 12V 50W
---	50AR111/SP8	---	41835 SP 12V 50W
---	50AR111/FL25	---	41835 FL 12V 50W
---	75AR111/SP8	---	41840 SP 12V 75W
---	75AR111/FL25	---	41840 FL 12V 75W
---	75AR111/WFL45	---	41840 WFL 12V 75W
---	100AR111/SP8	---	41850 SP 12V 100W
---	100AR111/FL25	---	41850 FL 12V 100W
---	100AR111/WFL45	---	41850 WFL 12V 100W

## Manufacturers' Cross Reference Guide (continued)

### HIGH INTENSITY DISCHARGE LAMPS - METAL HALIDE

GE	SYLVANIA	PHILIPS
	METALAR CERAMIC	
CMH39/TC/U/830/G8.5	MC39TC/U/G8.5/830	CDM35/TC/830
CMH70/TC/U/830/G8.5	MC70TC/U/G8.5/830	CDM70/TC/830
CMH39/T/U/830/G12	MC39T6/U/G12/830	CDM35/T6/830
CMH70UT830G12	MC70T6/U/G12/830	CDM70/T6/830
CMH150TU830G12	MC150T7.5/U/G12/830	CDM150/T6/830
CMH70TU942G12	MC70T6/U/G12/940	CDM70T6942
CMH150TU942G12	MC150T6/U/G12/940	CDM150T6942
CMH70/TD/830/RX7S	MC70T6/DE/830	CDM70/TD/830
CMH150/TD/830/RX7S	MC150T7.5/DE/830	CDM150/TD/830
CMH70/U/830/MED	MCP70/U/MED/830	MHC70/U/MP/3K/ALTO
CMH70/C/U/830/MED	MCP70/C/U/MED/830	MHC70/C/U/MP/3K/ALTO
CMH100/U/830/MED	MCP100/U/MED/830	MHC100/U/MP/3K/ALTO
CMH100/C/U/830/MED	MCP100/C/U/MED/830	MHC100/C/U/MP/3K/ALTO
---	MCP150/U/MED/830	MHC150/U/MP/3K/ALTO
---	MCP150/C/U/MED/830	MHC150/C/U/MP/3K/ALTO
CMH39/PAR20/SP10	MCP39PAR20/U/830/SP	CDM35/PAR20/M/SP
CMH39/PAR20/FL25	MCP39PAR20/U/830/FL	CDM35PAR20MFL
CMH39/PAR30L/830/SP10	MCP39PAR30LN/U/830/SP	CDM35/PAR30L/M/SP
CMH39/PAR30L/830/FL25	MCP39PAR30LN/U/830/FL	CDM35/PAR30L/M/FL
CMH70/U/PAR30L/830SP	MCP70PAR30LN/U/830/SP	CDMP70/PAR30L/M/SP
CMH70/U/PAR30L/830FL	MCP70PAR30LN/U/830/FL	CDM70/PAR30L/M/FL
CMH70/PAR38/830SP15	MCP70PAR38/U/SP/830/ECO	CDM70/PAR38/SP/3K
CMH70/PAR38/830/FL25	MCP70PAR38/U/FL/830/ECO	CDM70/PAR38/FL/3K
CMH70/PAR38/830/WF	MCP70PAR38/U/VWFL/830/ECO	CDM70/PAR38/WFL/3K
CMH100/PAR38/830/S15	MCP100PAR38/U/SP/830/ECO	CDM100/PAR38/SP/3K
CMH100/PAR38/830/F25	MCP100PAR38/U/FL/830/ECO	CDM100/PAR38/FL/3K
CMH100/PAR38/830/W	MCP100PAR38/U/VWFL/830/ECO	CDM100/PAR38/WFL/3K
---	MCP150PAR38/U/SP/830/ECO	---
---	MCP150PAR38/U/FL/830/ECO	---
---	MCP150PAR38/U/VWFL/830/ECO	---
---	MCP250/PS/BU-ONLY/940	---
---	MCP250/C/PS/BU-ONLY/940	---
	METALAR PULSE START	
MXR50/U/MED/O	MP50/U/MED	---
MXR50/C/U/MED/O	MP50/C/U/MED	---
MXR70/U/MED/O	MP70/U/MED	---
MXR70/C/U/MED/O	MP70/C/U/MED	---
MXR100/U/MED/O	MP100/U/MED	---
MXR100/C/U/MED/O	MP100/C/U/MED	---
MXR150/U/MED/O	MP150/U/MED	---
MXR150/C/U/MED/O	MP150/C/U/MED	---
MVR175CVBUMEDPA	MS175/C/PS/BU-ONLY/MED	---
MVR175VBUVBUPA	MS175/PS/BU-ONLY/MED	---
MVR175/VBU/PA	MS175/PS/BU-ONLY	MS175/BU/PS
MVR175/C/VBU/PA	MS175/C/PS/BU-ONLY	---
---	MS200/PS/BU-ONLY	---
---	MS200/C/PS/BU-ONLY	---
MVR250/VBU/PA	MS250/PS/BU-ONLY	MS250/BU/PS
MVR250/C/VBU/PA	MS250/C/PS/BU-ONLY	---
---	MP250/PS/BU-ONLY	---
---	MP250/C/PS/BU-ONLY	---
MVR320VBU/XHO/PA	MS320/PS/BU-HOR	MS320/U/PS
MVR320/VBU/HO/PA	MS320/PS/BU-HOR	MS320/U/PS
MVR320/C/VBU/XHOPA	MS320/C/PS/BU-HOR	MS320/C/U/PS
MVR320/C/VBU/HOPA	MS320/C/PS/BU-HOR	MS320/C/U/PS
MPR320/C/VBUXHOPA	MP320/350/C/PS/BU-ONLY/BT28	---
MPR350/C/VBU/PA	MP320/350/C/PS/BU-ONLY/BT28	---
MPR320/VBU/XHOPA	MP320/350/PS/BU-ONLY/BT28	---
MPR400/VBU/SHO/PA	MP350/400/PS/BU-ONLY	MP400/BU/PS
MPR400/C/VBU/XHOPA	MP350/400/C/PS/BU-ONLY	MP400/C/BU/PS
MPR350C/VBU/PA	MP350/400/C/PS/BU-ONLY	MP400/C/BU/PS

## Manufacturers' Cross Reference (continued)

### HIGH INTENSITY DISCHARGE LAMPS - METAL HALIDE

GE	SYLVANIA	PHILIPS
	<b>METALARC PULSE START (continued)</b>	
MVR400VBUHOPA	MS400/PS/BU-ONLY	MS400/BU/PS
MVR400/C/VBU/PA	MS400/C/PS/BU-ONLY	MS400/C/BU/PS
MVR400CVBUHOPA	MS400/C/PS/BU-ONLY	MS400/C/BU/PS
MVR750/VBU/PA	MS750/PS/BU-HOR/BT37	---
MVR750/C/VBU/PA	MS750/C/PS/BU-HOR/BT37	---
---	M1000/PS/U/BT37	MS1000/BU/BT37/PS
	<b>METALARC SUPER SAVER</b>	
MVR150/U/WM	M150/SS/U/BT-28	---
MVR360/VBU/STB/WM	MS360/SS/BU-HOR	MS360/BU/EW
MVR360/C/VBU/STB/WM	MS360/C/SS/BU-HOR	MS360/C/BU/EW
MPR360/VBU/WM/O	MSP360/SS/BU-ONLY	MP360BU/EW
---	MS360/SS/BU-ONLY/ED28	---
	<b>METALARC SUPER</b>	
MVR175/HOR	MS175/HOR	MS175/HOR
MVR175/C/HOR	MS175/C/HOR	MS175/C/HOR
MVR250/HOR	MS250/HOR	MS250/HOR
MVR250/C/HOR	MS250/C/HOR	MS250/C/HOR
MVR400/VBU	MS400/BU-ONLY	MS400/BU
MVR400/C/VBU	MS400/C/BU-ONLY	MS400/C/BU
MVR400/SP30/VBU	MS400/3K/BU-ONLY	MS400/3K/BU
MVR400/VBU/BT28	MS400/BU-ONLY/BT28	MS400/BU/ED28
MVR400/HOR/BT28	MS400/HOR/BT28	MH400/U/ED28
MVR400/HOR/MOG	MS400/HOR	MS400/HOR
MVR400/C/HOR/MOG	MS400/C/HOR	MS400/C/HOR
MVR1000/VBU	MS1000/BU-ONLY	MS1000/BU
MVR1000/C/VBU	MS1000/C/BU-ONLY	MS1000/C/BU
---	MS1000/BD-ONLY	MS1000/BD
	<b>METALARC STANDARD &amp; METALARC PRO-TECH</b>	
MVR175/U/MED	M175/U/MED	MH175/U/M
MVR175/C/U/MED	M175/C/U/MED	MH175/C/U/M
MVR175/U	M175/U	MH175/U
MVR175/C/U	M175/C/U	MH175/C/U
---	MP175/BU-ONLY	MP175/BU
MVR175/SP30/U	M175/3K/BU-ONLY	MH175/3K/BU
MVR250/U	M250/U	MH250/U
MVR250/C/U	M250/C/U	MH250/C/U
---	M250/U/ET18	MH250/T15
MVR250/SP30/U	M250/3K/BU-ONLY	MH250/3K/BU
---	MP250/BU-ONLY	MP250/BU
MVR400/U	M400/U	MH400/U
MVR400/C/U	M400/C/U	MH400/C/U
MVR400/U/ED28	M400/U/BT28	MH400/U/ED28
MVR400/C/U/ED28	M400/C/U/BT28	---
---	M400/U/ET18	MH400/T15
MPR400/VBU/O	MP400/BU-ONLY	MP400/BU
MPR400/C/VBU/O	MP400/C/BU-ONLY	MP400/C/BU
MVR1000/U	M1000/U	MH1000/U
MVR1000/C/U	M1000/C/U	MH1000/C/U
MVR1000/U/BT37	M1000/U/BT37	MH1000/U/BT37
MPR1000VBUO	MP1000/BU-ONLY	MP1000/BU
MVR1500/HBU	M1500/BU-HOR	MH1500/BU
MVR1500/U/SPORTS	M1500/BD	MH1500/BD
	<b>METALARC BRITELINE</b>	
SPL1500/L/H/652	M1500T7/DE	---
MQI2000/T9/40	M2000T9/DE	---
	<b>METALARC SAFELINE</b>	
MVT400/VBU	MT400/BU-ONLY	MHT400/U
MVT400/C/VBU	MT400/C/BU-ONLY	MHT400/C/U

## Manufacturers' Cross Reference Guide (continued)

### HIGH INTENSITY DISCHARGE LAMPS - HIGH PRESSURE SODIUM

GE	SYLVANIA	PHILIPS
	<b>DOUBLE-ENDED HQI</b>	
ARC70TDUVC730	HQI-DE70/WDX	---
ARC70TDUVC743	HQI-DE70/NDX	MHN70/TD/840
ARC150TDUVC742	HQI-DE150/NDX	MHN150/TD/840
	<b>SINGLE-ENDED HQI</b>	
ARC150/T/U/840/G12	HOI-SE 150/NDX	---
	<b>LUMALUX PLUS / ECO</b>	
---	LU50/PLUS/ECO	---
LU70/ECO/NC	LU70/PLUS/ECO	---
LU100/ECO/NC	LU100/PLUS/ECO	---
LU150/ECO/NC	LU150/55/PLUS/ECO	---
LU200/ECO/NC	LU200/PLUS/ECO	---
LU250/ECO/NC	LU250/PLUS/ECO	---
---	LU310/PLUS/ECO	---
LU400/ECO/NC	LU400/PLUS/ECO	---
	<b>LUMALUX STANDARD &amp; ECOLOGIC</b>	
LU35/MED	LU35/MED	C35S76/M
LU35/D/MED	LU35/D/MED	C35S76/D/M
LU50/MED	LU50/MED	C50S68/M
LU50/D/MED	LU50/D/MED	C50S68/D/M
LU50	LU50/ECO	C50S68/ALTO
LU50/D	LU50/D	C50S68/D/ALTO
LU70/MED	LU70/MED	C70S62/M
LU70/D/MED	LU70/D/MED	C70S62/D/M
LU70ECO	LU70/ECO	C70S62/ALTO
LU70/D	LU70/D	C70S62/D/ALTO
LU100/MED	LU100/MED	C100S54/M
LU100/D/MED	LU100/D/MED	C100S54/D/M
LU100ECO	LU100/ECO	C100S54/ALTO
LU100/D	LU100/D	C100S54/D/ALTO
LU150/MED	LU150/55/MED	C150S55/M
LU150/D/MED	LU150/55/D/MED	C150S55/D/M
LU150/55/ECO	LU150/55/ECO	C150S55/ALTO
LU150/55/D	LU150/55/D	C150S55/D/ALTO
LU150/100	LU150/100	C150S56
LU200/ECO	LU200/ECO	C200S66/ALTO
LU250/ECO	LU250/ECO	C250S50/ALTO
LU250/D	LU250/D	C250S50/D/ALTO
LU310	LU310/ECO	C310S67
LU400/D	LU400/D	C400S51/D/ALTO
LU400/ECO	LU400/ECO	C400S51/ALTO
LU750	LU750	---
LU1000	LU1000	C1000S52/ALTO
	<b>LUMALUX STANDBY</b>	
LU70/SBY/XL	LU70/SBY	C70S62/2
LU100/SBY/XL	LU100/SBY	C100S54/2
LU150/55/SBY/XL	LU150/55/SBY	C150S55/2
LU250/SBY/XL	LU250/SBY	C250S50/2
LU200/SBY/XL	LU200/100/SBY	---
LU400/SBY/XL	LU400/SBY	C400S51/2
LU1000/SBY/XL	LU1000/SBY	C1000S52/2
	<b>UNALUX</b>	
LUH150/EZ	ULX150	C150S63/Retrolux
LUH215/EZ	ULX215	C215S65/Retrolux
LUH360/EZ	ULX360	C360S64/Retrolux

## Manufacturers' Cross Reference (continued)

### HIGH INTENSITY DISCHARGE LAMPS - LOW PRESSURE SODIUM

GE	SYLVANIA	PHILIPS
	SOX LOW PRESSURE SODIUM	
SOX-18	SOX18	SOX-E18
SOX-55	SOX55	SOX55
SOX-90	SOX90	SOX99
---	SOX180	SOX180

### HIGH INTENSITY DISCHARGE LAMPS - MERCURY

GE	SYLVANIA	PHILIPS
	STANDARD MERCURY VAPOR	
HR40/50DX45-46	H45/46DL-40/50/DX	H46DL-40-50/DX
HR75DX43	H43AV-75/DX	H43AV-75/DX
HR100DX38/MED	H38AV-100/DX	H38MP-100/DX
HR100RDXFL38	H38BP-100/DX	H38BP-100/DX
HR100A38	H38HT-100	H38HT-100
HR100DX38	H38JA-100/DX	H38JA-100/DX
HR175RFL39	H39BP-175/DX	H39BM-175
HR175A39	H39KB-175	H39KB-175
HR175DX39	H39KC-175/DX	H39KC-175/DX
HR250A37	H37KB-250	H37KB-250
HR250DX37	H37KC-250/DX	H37KC-250/DX
HR400A33	H33CD-400	H33CD-400
HR400DX33	H33GL-400/DX	H33GL-400/DX
HR1000A36	H36GV-1000	H36GV-1000
HR1000DX36	H36GW-1000/DX	H36GW-1000/DX
HR1000DX34	H34GW-1000/DX	H34GW-1000/DX
	MERCURY VAPOR SAFELINE	
HT400DX33	H33GL-T400/DX	H33GL-T400/DX

## Manufacturers' Cross Reference Guide (continued)

### FLUORESCENT LAMPS

CROSS REFERENCE

GE	SYLVANIA	PHILIPS
	OCTRON	
F17T8/SPX30/ECO	F017/830/ECO	F17T8/TL830
F17T8/SPX35/ECO	F017/835/ECO	F17T8/TL835
F17T8/SPX41/ECO	F017/841/ECO	F17T8/TL841
---	F017/830/XP/ECO	---
---	F017/835/XP/ECO	---
---	F017/841/XP/ECO	---
---	F017/865/XP/ECO	F17T8/TL865 PLUS
---	F017/830XPS/ECO	---
---	F017/835XPS/ECO	---
---	F017/841XPS/ECO	---
F25T8/SPX30/ECO	F025/830/ECO	F25T8/TL830
F25T8/SPX35/ECO	F025/835/ECO	F25T8/TL835
F25T8/SPX41/ECO	F025/841/ECO	F25T8/TL841
---	F025/830/XP/ECO	---
---	F025/835/XP/ECO	---
---	F025/841/XP/ECO	---
---	F025/865/XP/ECO	F25T8/TL865 PLUS
---	F025/830XPS/ECO	---
---	F025/835XPS/ECO	---
---	F025/841XPS/ECO	---
F28T8SP30UMX/ECO	F028/830XP/SS/ECO	---
F28T8SP35UMX/ECO	F028/835XP/SS/ECO	---
F28T8SP41UMX/ECO	F028/841XP/SS/ECO	---
F32T8XL/SP30/IS/WM/ECO	F030/830XP/SS/ECO	F32T8/ADV830/EW/ALTO
F32T8XL/SP35/IS/WM/ECO	F030/835XP/SS/ECO	F32T8/ADV835/EW/ALTO
F32T8XL/SP41/IS/WM/ECO	F030/841XP/SS/ECO	F32T8/ADV841/EW/ALTO
F32T8/SP30/ECO	F032/730/ECO	F32T8/TL730/ALTO
F32T8/SP35/ECO	F032/735/ECO	F32T8/TL735/ALTO
F32T8/SP41/ECO	F032/741/ECO	F32T8/TL741/ALTO
F32T8/SP50/ECO	F032/750/ECO	F32T8/TL750/ALTO
F32T8/SP65/ECO	F032/765/ECO	---
F32T8/XL/SP30/ECO	F032/730/XP/ECO	F32T8/TL730 PLUS/ALTO
F32T8/XL/SP35/ECO	F032/735/XP/ECO	F32T8/TL735 PLUS/ALTO
F32T8/XL/SP41/ECO	F032/741/XP/ECO	F32T8/TL741 PLUS/ALTO
---	F032/750/XP/ECO	F32T8/TL750 PLUS/ALTO
F32T8/SPX30/ECO	F032/830/ECO	F32T8/TL830/ALTO
F32T8/SPX35/ECO	F032/835/ECO	F32T8/TL835/ALTO
F32T8/SPX41/ECO	F032/841/ECO	F32T8/TL841/ALTO
F32T8/SPX50/ECO	F032/850/ECO	F32T8/TL850/ALTO
---	F032/827/XP/ECO	---
F32T8/XL/SPX30/ECO	F032/830/XP/ECO	F32T8/TL830 PLUS/ALTO
F32T8/XL/SPX35/ECO	F032/835/XP/ECO	F32T8/TL835 PLUS/ALTO
F32T8/XL/SPX41/ECO	F032/841/XP/ECO	F32T8/TL841 PLUS/ALTO
F32T8/XL/SPX50/ECO	F032/850/XP/ECO	F32T8/TL850 PLUS/ALTO
F32T8/XL/SPX65/ECO	F032/865/XP/ECO	F32T8/TL865 PLUS/ALTO
F32T8SXL/SPX30/ECO	---	---
F32T8SXL/SPX35/ECO	---	---
F32T8SXL/SPX41/ECO	---	---
F32T8/XL/SPX30/HLEC	F032/830XPS/ECO	F32T8/ADV830/ALTO
F32T8/XL/SPX35/HLEC	F032/835XPS/ECO	F32T8/ADV835/ALTO
F32T8/XL/SPX41/HLEC	F032/841XPS/ECO	F32T8/ADV841/ALTO
F40T8/SPX30	F040/830/ECO	F40T8/TL830/ALTO
F40T8/SPX35	F040/835/ECO	F40T8/TL835/ALTO
F40T8/SPX41	F040/841/ECO	F40T8/TL841/ALTO
---	F040/830/XP/ECO	---
---	F040/835/XP/ECO	---
---	F040/841/XP/ECO	---
F96T8/XL/SP30/WM	F096/830XP/SS/ECO	---
F96T8/XL/SP35/WM	F096/835XP/SS/ECO	---
F96T8/XL/SP41/WM	F096/841XP/SS/ECO	---
F96T8/SPX30	F096/830/ECO	F96T8/TL830

## Manufacturers' Cross Reference (continued)

### FLUORESCENT LAMPS

GE	SYLVANIA	PHILIPS
	OCTRON (continued)	
F96T8/SPX35	FO96/835/ECO	F96T8/TL835
F96T8/SPX41	FO96/841/ECO	F96T8/TL841
F96T8/SPX50	FO96/850/ECO	F96T8/TL850
F96T8/XL/SPX30	FO96/830/XP/ECO	F96T8/TL830PLUS/ALTO
F96T8/XL/SPX35	FO96/835/XP/ECO	F96T8/TL835PLUS/ALTO
F96T8/XL/SPX41	FO96/841/XP/ECO	F96T8/TL841PLUS/ALTO
F96T8/XL/SPX50	FO96/850/XP/ECO	F96T8/TL850PLUS/ALTO
F96T8/SPX30/HO	---	F96T8/TL830/HO
F96T8/SPX35/HO	FO96/835/HO	F96T8/TL835/HO
F96T8/SPX41/HO	FO96/841/HO	F96T8/TL841/HO
	OCTRON CURVALUME	
---	FBO16/830	---
---	FBO16/835	---
---	FBO16/841	---
---	FBO16/865/XP	---
---	FBO24/830	---
---	FBO24/835	---
---	FBO24/841	---
F31T8/SPX30/U	FBO31/830	---
F31T8/SPX35/U	FBO31/835	---
F31T8/SPX41/U	FBO31/841	---
---	FBO31/830/XP/ECO	---
---	FBO31/835/XP/ECO	---
---	FBO31/841/XP/ECO	---
---	FBO30/830/XP/SS/ECO	---
---	FBO30/835/XP/SS/ECO	---
---	FBO30/841/XP/SS/ECO	---
F32T8/SPX30/U/6	FBO32/830/6/ECO	FB32T8/830/6/ALTO
F32T8/SPX35/U/6	FBO32/835/6/ECO	FB32T8/835/6/ALTO
F32T8/SPX41/U/6	FBO32/841/6/ECO	FB32T8/841/6/ALTO
---	FBO32/830/6/XP/ECO	---
---	FBO32/835/6/XP/ECO	---
---	FBO32/841/6/XP/ECO	---
	PENTRON & PENTRON HO	
F14/T5/830	FP14/830/ECO	F14T5/830
F14/T5/835	FP14/835/ECO	F14T5/835
F14/T5/841	FP14/841/ECO	F14T5/841
F21/T5/830	FP21/830/ECO	F21T5/830
F21/T5/835	FP21/835/ECO	F21T5/835
F21/T5/841	FP21/841/ECO	F21T5/841
F28/T5/830	FP28/830/ECO	F28T5/830
F28/T5/835	FP28/835/ECO	F28T5/835
F28/T5/841	FP28/841/ECO	F28T5/841
F35/T5/830	FP35/830/ECO	F35T5/830
F35/T5/835	FP35/835/ECO	F35T5/835
F35/T5/841	FP35/841/ECO	F35T5/841
F24/T5/830/HO	FP24/830/HO/ECO	F24T5/830/HO/ALTO
F24/T5/835/HO	FP24/835/HO/ECO	F24T5/835/HO
F24/T5/841/HO	FP24/841/HO/ECO	F24T5/841/HO
F39/T5/830/HO	FP39/830/HO/ECO	F39T5/830/HO
F39/T5/835/HO	FP39/835/HO/ECO	F39T5/835/HO
F39/T5/841/HO	FP39/841/HO/ECO	F39T5/841/HO
F54/T5/830/HO	FP54/830/HO/ECO	F54T5/830/HO/ALTO
F54/T5/835/HO	FP54/835/HO/ECO	F54T5/835/HO/ALTO
F54/T5/841/HO	FP54/841/HO/ECO	F54T5/841/HO/ALTO
F80/T5/830/HO	FP80/830/HO/ECO	F80T5/830/HO
F80/T5/835/HO	FP80/835/HO/ECO	---
F80/T5/841/HO	FP80/841/HO/ECO	F80T5/841/HO
	PENTRON CIRCLINE	
---	FPC22/830	FC9T5/830
---	FPC22/835	FC9T5/835

## Manufacturers' Cross Reference Guide (continued)

### FLUORESCENT LAMPS

GE	SYLVANIA	PHILIPS
	PENTRON CIRCLINE (continued)	
---	FPC22/841	FC9T5/841
---	FPC40/830	FC12T5/830
---	FPC40/835	FC12T5/835
---	FPC40/841	FC12T5/841
---	FPC55/830/HO	---
---	FPC55/835/HO	---
---	FPC55/841/HO	---
	F40 TYPES (STD & SS)	
F34/SP30/RS/WM/ECO	F34/D30/SS/ECO	F34/SPEC30/RS/EW/ALTO
F34/SP35/RS/WM/ECO	F34/D35/SS/ECO	F34/SPEC35/RS/EW/ALTO
F34/SP41/RS/WM/ECO	F34/D41/SS/ECO	F34/SPEC41/RS/EW/ALTO
F34/SPX30/RS/WM/ECO	F34/D830/SS/ECO	F34/30U/RS/EW/ALTO
F34/SPX35/RS/WM/ECO	F34/D835/SS/ECO	F34/35URS/EW/ALTO
F34/SPX41/RS/WM/ECO	F34/D841/SS/ECO	F34/41U/RS/EW/ALTO
F40/SP30/RS/ECO	F40/D30/ECO	F40/SPEC30/RS/ALTO
F40/SP35/RS/ECO	F40/D35/ECO	F40/SPEC35/RS/ALTO
F40/SP41/RS/ECO	F40/D41/ECO	F40/SPEC41/RS/ALTO
F40/SPX30/RS/ECO	F40/D830/ECO	F40/30U/RS/ALTO
F40/SPX35/RS/ECO	F40/D835/ECO	F40/35URS/ALTO
F40/SPX41/RS/ECO	F40/D841/ECO	F40/41U/RS/ALTO
F40/XL/SP30, 35, 41	---	---
F40/XL/SPX30, 35, 41	---	---
	CURVALUME® 3"	
F40/SP30/U/3	---	---
F40/SP41/U/3	---	---
	CURVALUME® 6"	
---	FB34/D30/6/SS	FB34/SPEC30/6/EW/ALTO
---	FB34/D35/6/SS	FB34/SPEC35/6/EW/ALTO
---	FB34/D41/6/SS	FB34/SPEC41/6/EW/ALTO
F40/SP30/U/6	FB40/D30/6	FB40/SPEC30/6/ALTO
F40/SP35/U/6	FB40/D30/6	FB40/SPEC35/6/ALTO
F40/SP41/U/6	FB40/D41/6	FB40/SPEC41/6/ALTO
F40/SPX30/U/6	FB40/D830/6	FB40/30U/6/ALTO
F40/SPX35/U/6	---	FB40/35U/6/ALTO
---	---	FB40/41U/6/ALTO
	SLIMLINE	
F96T12/SP35/WMP	---	---
F96T12/SP30/WM/ECO	F96T12/D30/SS/ECO	F96T12/SPEC30/EW/ALTO
F96T12/SP35/WM/ECO	F96T12/D35/SS/ECO	F96T12/SPEC35/EW/ALTO
F96T12/SP41/WM/ECO	F96T12/D41/SS/ECO	F96T12/SPEC41/EW/ALTO
F96T12/SPX30/WM/ECO	F96T12/D830/SS/ECO	F96T12/30U/EW/ALTO
F96T12/SPX35/WM/ECO	F96T12/D835/SS/ECO	F96T12/35U/EW/ALTO
F96T12/SPX41/WM/ECO	F96T12/D841/SS/ECO	F96T12/41U/EW/ALTO
F96T12/XL/SP35/WM	---	---
F96T12/XL/SP41/WM	---	---
F96T12/SP30/ECO	F96T12/D30/ECO	F96T12/SPEC30/ALTO
F96T12/SP35/ECO	F96T12/D35/ECO	F96T12/SPEC35/ALTO
F96T12/SP41/ECO	F96T12/D41/ECO	F96T12/SPEC41/ALTO
F96T12/SPX30/ECO	F96T12/D830/ECO	F96T12/30U/ALTO
F96T12/SPX35/ECO	F96T12/D835/ECO	F96T12/35U/ALTO
F96T12/SPX41/ECO	F96T12/D841/ECO	F96T12/41U/ALTO
F96T12/XL/SP35, 41	---	----
F96T12/XL/SPX35, 41, 50	---	---
	HIGH OUTPUT	
F72T12/SPX30/HO	F72T12/D830/HO	F72T12/30U/HO
---	---	F96T12/SPEC30/HO/EW
F96T12/SP35/HO/WM	F96T12/D35/HO/SS	F96T12/SPEC35/HO/EW
F96T12/SP41/HO/WM	F96T12/D41/HO/SS	F96T12/SPEC41/HO/EW
F96T12/SPX30/HO/WM	F96T12/D830/HO/SS	F96T12/30U/HO/EW
F96T12/SPX35/HO/WM	F96T12/D835/HO/SS	F96T12/35U/HO/EW
F96T12/SPX41/HO/WM	F96T12/D841/HO/SS	F96T12/41U/HO/EW

## Manufacturers' Cross Reference (continued)

### FLUORESCENT LAMPS

GE	SYLVANIA	PHILIPS
	<b>HIGH OUTPUT (continued)</b>	
F96T12/SP30/HO	F96T12/D30/HO	F96T12/SPEC30/HO
F96T12/SP35/HO	F96T12/D35/HO	F96T12/SPEC35/HO
F96T12/SP41/HO	F96T12/D41/HO	F96T12/SPEC41/HO
F96T12/SPX830/HO	F96T12/D830/HO	F96T12/30U/HO
F96T12/SPX35/HO	F96T12/D835/HO	F96T12/35U/HO
F96T12/SPX41/HO	F96T12/D841/HO	F96T12/41U/HO
	<b>APPLIANCE</b>	
F24T8/CW/4	F18T8CW/K24	F15T8/CW/24
F26T8/CW/4	F18T8CW/K26	F16T8/CW/26
F28T8/CW/4	F18T8CW/K28	F17T8/CW/28
F30T8/CW/4	F18T8CW/K30	F18T8/CW/30
---	F18T8/D/K26	---
	<b>OTHER RAPID START</b>	
F25T12/SP30/RS/WM	F25T12/D30/RS/SS	---
F25T12/SP35/RS/WM	F25T12/D35/RS/SS	---
F30T12/SP35/RS	F30T12/D35/RS	F30T12/SPEC35/RS
F30T12/SP41/RS	F30T12/D41/RS	F30T12/SPEC41/RS
F30T12/SPX30/RS	F30T12/D830/RS	F30T12/30U/RS
F30T12/SPX35/RS	F30T12/D835/RS	F30T12/35U/RS

## Manufacturers' Cross Reference Guide (continued)

### COMPACT FLUORESCENT LAMPS

GE	SYLVANIA	PHILIPS
F5BX/SPX27/827	DULUX S - 2 PIN CF5DS/827 (ECO)	PL-S 5W/827
F5BX/SPX41/840	CF5DS/841 (ECO)	---
F7BX/SPX27/827	CF7DS/827 (ECO)	PL-S 7W/827
F7BX/SPX35/835	CF7DS/835 (ECO)	PL-S 7W/835
F7BX/SPX41/840	CF7DS/841 (ECO)	PL-S 7W/841
F7BX/SPX50/850	CF7DS/850 (ECO)	PL-S 7W/850
F9BX/SPX27/827	CF9DS/827 (ECO)	PL-S 9W/827
F9BX/SPX35/835	CF9DS/835 (ECO)	PL-S 9W/835
F9BX/SPX41/840	CF9DS/841 (ECO)	PL-S 9W/841
F9BX/SPX50	CF9DS/850 (ECO)	PL-S 9W/850
---	CF9DS/BLUE	---
---	CF9DS/GREEN	---
---	CF9DS/RED	---
F13BX/SPX27/827	CF13DS/827 (ECO)	PL-S 13W/827
F13BX/SPX30/830	CF13DS/830 (ECO)	PL-S 13W/830
F13BX/SPX35/835	CF13DS/835 (ECO)	PL-S 13W/835
F13BX/SPX41/84	CF13DS/841 (ECO)	PL-S 13W/841
F13BX/SPX50	CF13DS/850 (ECO)	PL-S 13W/850
F13BX/E/830, 835, 841, 850	CFT13/DS/EC/827, 835, 841	---
F13BX/BLUE	---	---
F13BX/GREEN	CF13DS/GREEN	---
---	DULUX S/E - 4 PIN CF5DS/E/827	---
---	CF5DS/E/841	---
---	CF7DS/E/827	---
---	CF7DS/E/841	---
---	CF9DS/E/827	---
---	CF9DS/E/841	---
---	CF13DS/E/827	---
---	CF13DS/E/830	---
---	CF13DS/E/841	---
---	DULUX D - 2 PIN CF9DD/827 (ECO)	---
---	CF9DD/830 (ECO)	---
---	CF9DD/835 (ECO)	---
F9DBX23T4/SPX27/827	---	---
---	CF13DD/827 (ECO)	PL-C 13W/827/USA/ALTO
---	CF13DD/830 (ECO)	PL-C 13W/827/ALTO (G24d-1)
F9DBX23T4/SPX41	---	PL-C 13W/830/USA/ALTO
F13DBX23T4/SPX27	CF13DD/827 (ECO)	PL-C 13W/830/ALTO (G24d-1)
F13DBXT4/SPX27 (G24d-1)	---	PL-C 13W/835/USA/ALTO
F13DBX23T4/SPX30	CF13DD/830 (ECO)	PL-C 13W/835/ALTO
F13DBXT4/SPX30 (G24d-1)	---	PL-C 13W/841/USA/ALTO
F13DBX23T4/SPX35	CF13DD/835 (ECO)	PL-C 13W/841/ALTO
F13DBXT4/SPX35 (G24d-1)	---	PL-C 15mm/22W/827
F13DBX23T4/SPX41	CF13DD/841 (ECO)	PL-C 18W/827/ALTO
F13DBXT4/SPX41 (G24d-1)	---	PL-C 18W/830/ALTO
F18DBXT4/SPX27	CF18DD/827 (ECO)	PL-C 18W/835/ALTO
F18DBXT4/SPX30	CF18DD/830 (ECO)	PL-C 18W/841/ALTO
F18DBXT4/SPX35	CF18DD/835 (ECO)	PL-C 26W/827/ALTO
F18DBXT4/SPX41	CF18DD/841 (ECO)	PL-C 26W/830/ALTO
---	---	PL-C 26W/835/ALTO
F26DBXT4/SPX27	CF26DD/827 (ECO)	PL-C 26W/841/ALTO
F26DBXT4/SPX30	CF26DD/830 (ECO)	PL-C 26W/827/ALTO
F26DBXT4/SPX35	CF26DD/835 (ECO)	PL-C 26W/830/ALTO
F26DBXT4/SPX41	CF26DD/841 (ECO)	PL-C 26W/835/ALTO
F26DBXT4/E/827	---	PL-C 26W/841/ALTO
F26DBXT4/E/830	---	PL-C 15mm/28W/827
F26DBXT4/E/835	---	PL-C 13W/827/4P/ALTO
F26DBXT4/E/841	---	PL-C 13W/830/4P/ALTO
---	DULUX D/E - 4 PIN CF13DD/E/827	PL-C 13W/830/4P/ALTO
F13DBX/SPX27/4P	CF13DD/E/830 (ECO)	PL-C 15mm/28W/827
F13DBX/SPX30/4P	CF13DD/E/830 (ECO)	PL-C 13W/830/4P/ALTO

## Manufacturers' Cross Reference (continued)

### COMPACT FLUORESCENT LAMPS

GE	SYLVANIA	PHILIPS
	DULUX D/E - 4 PIN (continued)	
F13DBX/SPX35/4P	CF13DD/E/835 (ECO)	PL-C 13W/835/4P/ALTO
F13DBX/SPX41/4P	CF13DD/E/841 (ECO)	PL-C 13W/841/4P/ALTO
F18DBX/SPX27/4P	CF18DD/E/827 (ECO)	PL-C 18W/827/4P/ALTO
F18DBX/SPX30/4PL	CF18DD/E/830 (ECO)	PL-C 18W/830/4P/ALTO
F18DBX/SPX35/4PL	CF18DD/E/835 (ECO)	PL-C 18W/835/4P/ALTO
F18DBX/SPX41/4PL	CF18DD/E/841 (ECO)	PL-C 18W/841/4P/ALTO
F26DBXT4/SPX27/4P	CF26DD/E/827 (ECO)	PL-C 26W/827/4P/ALTO
F26DBXT4/SPX30/4P	CF26DD/E/830 (ECO)	PL-C 26W/830/4P/ALTO
F26DBX/SPX35/4P	CF26DD/E/835 (ECO)	PL-C 26W/835/4P/ALTO
F26DBX/SPX41/4P	CF26DD/E/841 (ECO)	PL-C 26W/841/4P/ALTO
	DULUX T - 2 PIN	
---	CF18DT/827 (ECO)	---
---	CF26DT/827 (ECO)	---
	DULUX T/E - 4 PIN (NON-AMALGAM)	
---	CF13DT/E/827 (ECO)	---
---	CF13DT/E/830 (ECO)	---
---	CF13DT/E/835 (ECO)	---
---	CF13DT/E/841 (ECO)	---
---	CF26DT/E/827 (ECO)	---
---	CF32DT/E/827 (ECO)	---
	DULUX T/E/IN - 4 PIN (AMALGAM)	
F13TBX/SPX27/A/4P	---	---
F13TBX/SPX30/A/4P	---	---
F13TBX/SPX35/A/4P	---	---
F13TBX/SPX41/A/4P	---	---
F18TBX/SPX27/A/4P	CF18DT/E/IN/827 (ECO)	PL-T 18W/827/4P/ALTO
F18TBX/SPX30/A/4P	CF18DT/E/IN/830 (ECO)	PL-T 18W/830/4P/ALTO
F18TBX/SPX35/A/4P	CF18DT/E/IN/835 (ECO)	PL-T 18W/835/4P/ALTO
F18TBX/SPX41/A/4P	CF18DT/E/IN/841 (ECO)	PL-T 18W/841/4P/ALTO
F26TBX/SPX27/A/4P	CF26DT/E/IN/827 (ECO)	PL-T 26W/827/4P/ALTO
F26TBX/SPX30/A/4P	CF26DT/E/IN/830 (ECO)	PL-T 26W/830/4P/ALTO
F26TBX/SPX35/A/4P	CF26DT/E/IN/835 (ECO)	PL-T 26W/835/4P/ALTO
F26TBX/SPX41/A/4P	CF26DT/E/IN/841 (ECO)	PL-T 26W/841/4P/ALTO
F32TBX/SPX27/A/4P	CF32DT/E/IN/827 (ECO)	PL-T 32W/827/4P/ALTO
F32TBX/SPX30/A/4P	CF32DT/E/IN/830 (ECO)	PL-T 32W/830/4P/ALTO
F32TBX/SPX35/A/4P	CF32DT/E/IN/835 (ECO)	PL-T 32W/835/4P/ALTO
F32TBX/SPX41/A/4P	CF32DT/E/IN/841 (ECO)	PL-T 32W/841/4P/ALTO
F42TBX/827/A/4P/EOL	CF42DT/E/IN/827 (ECO)	PL-T 42W/827/4P/ALTO
F42QBX/SPX27/A/4P	---	F42QBX/SPX27/A/4P
F42TBX/830/A/4P/EOL	CF42DT/E/IN/830 (ECO)	PL-T 42W/830/4P/ALTO
F42QBX/SPX30/A/4P	---	---
F42TBX/835/A/4P/EOL	CF42DT/E/IN/835 (ECO)	PL-T 42W/835/4P/ALTO
F42QBX/SPX35/A/4P	---	---
F42TBX/841/A/4P/EOL	CF42DT/E/IN/841 (ECO)	PL-T 42W/841/4P/ALTO
F42QBX/SPX41/A/4P	---	---
---	CF57DT/E/IN/827 (ECO)	---
---	CF57DT/E/IN/830 (ECO)	---
F57QBX/830/A/4P/EOL	---	---
---	CF57DT/E/IN/835 (ECO)	---
F57QBX/835/A/4P/EOL	---	---
---	CF57DT/E/IN/841 (ECO)	---
F57QBX/841/A/4P/EOL	---	---
F57QBX/850/A/4P/EOL	---	---
	DULUX L - 4 PIN	
F18BX/SPX30	FT18DL/830	PL-L 18W/830
F18BX/SPX30/RS	FT18DL/830/RS	---
F18BX/SPX35	FT18DL/835	PL-L 18W/835
F18BX/SPX35/RS	FT18DL/835/RS	---
F18BX/SPX41	FT18DL/841	PL-L 18W/841
F18BX/SPX41/RS	FT18DL/841/RS	---
F27BX/SPX30/RS	FT24DL/830	PL-L 24W/830

## Manufacturers' Cross Reference Guide (continued)

### COMPACT FLUORESCENT LAMPS

GE	SYLVANIA	PHILIPS
F27BX/SPX35/RS	DULUX L - 4 PIN (continued)	PL-L 24W/835
F27BX/SPX41/RS	FT24DL/835	PL-L 24W/841
F39BX/SPX30/RS	FT24DL/841	PL-L 36W/830
F39BX/SPX35/RS	FT36DL/830	PL-L 36W/835
F39BX/SPX41/RS	FT36DL/835	PL-L 36W/841
F40/30BX/SPX30	FT36DL/841	PL-L 40W/830/RS
F40/30BX/SPX35	FT40DL/830/RS	PL-L 40W/835/RS
F40/30BX/SPX41	FT40DL/835/RS	PL-L 40W/841/RS
F50BX/SPX30/RS	FT40DL/841/RS	PL-L 50W/830/RS
F50BX/SPX35/RS	---	PL-L 50W/835/RS
F50BX/SPX41/RS	---	PL-L 50W/841/RS
F55BX/830	FT55DL/830	---
F55BX/835	FT55DL/835	---
F55BX/841	FT55DL/841	---
---	FT80DL/830	PL-L 80W/830
---	FT80DL/835	PL-L 80W/835
---	FT80DL/841	PL-L 80W/841
	<b>DULUX F - 4 PIN</b>	
---	CF18DF/830	---
---	CF18DF/841	---
---	CF24DF/830	---
---	CF24DF/841	---
---	CF36DF/830	---
---	CF36DF/841	---

## Manufacturers' Cross Reference (continued)

### ELECTRONIC FLUORESCENT LAMP BALLASTS

ADVANCE	SYLVANIA	UNIVERSAL LIGHTING TECHNOLOGIES (formerly Magnetek)*	HOWARD INDUSTRIES
<b>QUICKTRONIC® 32 T8 INSTANT START</b>			
32 T8 Instant Start - Normal Ballast Factor - Small Can - <20% THD			
REL-1P32-SC	QT1x32T8/120ISN-SC	B132I120RH-A	E1/32IS-120SC
VEL-1P32-SC	QT1x32T8/277ISN-SC	B132I277RH-A	E1/32IS-277SC
REL-2P32-SC	QT2x32T8/120ISN-SC	B232I120RH-A	E2/32IS-120SC
VEL-2P32-SC	QT2x32T8/277ISN-SC	B232I277RH-A	E2/32IS-277SC
REL-3P32-SC	QT3x32T8/120ISN-SC	B332I120RH-A	E3/32IS-120SC
VEL-3P32-SC	QT3x32T8/277ISN-SC	B332I277RH-A	E3/32IS-277SC
REL-4P32-SC	QT4x32T8/120ISN-SC	B432I120RH-A	E4/32IS-120SC
VEL-4P32-SC	QT4x32T8/277ISN-SC	B432I277RH-A	E4/32IS-277SC
GEL-2P32-SC	QT2x32T8/347ISN-SC	B232I347RH (F-Can)	E2/32IS-347 (F-Can)
GEL-4P32-RH-TP (F-Can)	QT4x32T8/347ISN-SC	B432I347RH (F-Can)	E4/32IS-347 (F-Can)
32 T8 Instant Start - Normal Ballast Factor - Standard "F" Can - <20% THD			
REL-3P32-RH-TP	QT3x32/120IS	B332I120RH	E3/32IS-120
VEL-3P32-RH-TP	QT3x32/277IS	B332I277RH	E3/32IS-277
REL-4P32-RH-TP	QT4x32/120IS	B432I120RH	E4/32IS-120
VEL-4P32-RH-TP	QT4x32/277IS	B432I277RH	E4/32IS-277
GEL-3P32-RH-TP	QT3x32/347IS	B332I347RH	E3/32IS-347
GEL-4P32-RH-TP	QT4x32/347IS	B432I347RH	E4/32IS-347
32 T8 Instant Start - High Ballast Factor - "PLUS" High Light Output Systems - Small Can/Standard "F" Can - <20% THD (High Ballast Factor ballasts may vary greatly in ballast factor between manufacturers/models - please refer to actual specs for details)			
REL-2P32-HL-SC	QT2x32T8/120ISH-SC	B232I120RHH	EH2/32IS-120
VEL-2P32-HL-SC	QT2x32T8/277ISH-SC	B232I277RHH	EH2/32IS-277
REL-3P32-HL	QT3x32/120PLUS	B332I120RHH	EH3/32IS-120
VEL-3P32-HL	QT3x32/277PLUS	B332I277RHH	EH3/32IS-277
32 T8 Instant Start - Low Ballast Factor - Low Power(LP/ISL)Systems - Small Can/Standard "F" Can - <20%THD			
REL-1P32-LW-SC	QT1x32T8/120ISL-SC	N/A	EL1/32IS-120
VEL-1P32-LW-SC	QT1x32T8/277ISL-SC	N/A	EL1/32IS-277
REL-2P32-LW-SC	QT2x32T8/120ISL-SC	B232I120L-A	EL2/32IS-120
VEL-2P32-LW-SC	QT2x32T8/277ISL-SC	B232I277L-A	EL2/32IS-277
REL-3P32-LW-SC	QT3x32T8/120ISL-SC	B332I120L-A	EL3/32IS-120
VEL-3P32-LW-SC	QT3x32T8/277ISL-SC	B332I277L-A	EL3/32IS-277
REL-4P32-LW-RH-TP	QT4x32/120LP	B432I120L	EL4/32IS-120
VEL-4P32-LW-RH-TP	QT4x32/277LP	B432I277L	EL4/32IS-277
GEL-2P32-LW-RH-TP	QT2x32T8/347ISL-SC	B232I347L	N/A
GEL-4P32-LW-RH-TP	QT4x32/347LP	B432I347L	N/A
<b>QUICKTRONIC® PROFESSIONAL 32 T8 INSTANT START UNIVERSAL VOLTAGE SYSTEMS</b>			
32 T8 Instant Start - Normal Ballast Factor - Small Can - <10%THD			
ICN-1P32-SC	QTP1x32T8/UNVISN-SC	B132IUNVHP-B	EP1/32IS/120-277
ICN-2P32-SC	QTP2x32T8/UNVISN-SC	B232IUNVHP-B	EP2/32IS/120-277
ICN-3P32-SC	QTP3x32T8/UNVISN-SC	B332IUNVHP-A	EP3/32IS/120-277
ICN-4P32-SC	QTP4x32T8/UNVISN-SC	B432IUNVHP-A	EP4/32IS/120-277
ADVANCE	SYLVANIA	UNIVERSAL LIGHTING TECHNOLOGIES (formerly Magnetek)*	GE GENERAL ELECTRIC
32 T8 High Efficiency Instant Start - Normal Ballast Factor - Small Can - <10%THD			
N/A	QHE 1X32T8/UNV ISN-SC	N/A	GE-132-MAX-N/ULTRA
N/A	QHE 2X32T8/UNV ISN-SC	B232IUNVHE-A	GE-232-MAX-N/ULTRA
N/A	QHE 3X32T8/UNV ISN-SC	B332IUNVHE-A	GE-332-MAX-N/ULTRA
N/A	QHE 4X32T8/UNV ISN-SC	B432IUNVHE-A	GE-432-MAX-N/ULTRA
32 T8 High Efficiency Instant Start - Low Ballast Factor - Small Can - <10%THD			
N/A	QHE 1X32T8/UNV ISL-SC	N/A	GE-132-MAX-L/ULTRA
N/A	QHE 2X32T8/UNV ISL-SC	B232IUNVEL-A	GE-232-MAX-L/ULTRA
N/A	QHE 3X32T8/UNV ISL-SC	B332IUNVEL-A	GE-332-MAX-L/ULTRA
N/A	QHE 4X32T8/UNV ISL-SC	B432IUNVEL-A	GE-432-MAX-L/ULTRA
ADVANCE	SYLVANIA	UNIVERSAL LIGHTING TECHNOLOGIES (formerly Magnetek)*	HOWARD INDUSTRIES
<b>QUICKTRONIC® PROFESSIONAL 32 T8 PROStart® UNIVERSAL VOLTAGE SYSTEMS</b>			
32 T8 Programmed Rapid Start - Normal Ballast Factor - <10%THD			
N/A	QTP1x32T8/UNVPSN-TC	B132PUNVHP-A	N/A
N/A	QTP2x32T8/UNVPSN-TC	B232PUNVHP-A	N/A

For more complete product information visit [www.sylvania.com](http://www.sylvania.com)

## Manufacturers' Cross Reference Guide (continued)

### ELECTRONIC FLUORESCENT LAMP BALLASTS

ADVANCE	SYLVANIA	UNIVERSAL LIGHTING TECHNOLOGIES (formerly Magnetek)*	HOWARD INDUSTRIES
32 T8 Programmed Rapid Start - Normal Ballast Factor - <10% THD			
N/A QTP3x32T8/UNVPSN-SC		B332PUNVHP-A	N/A
N/A QTP4x32T8/UNVPSN-SC		B432PUNVHP-A	N/A
<b>QUICKTRONIC® PROFESSIONAL 32 T8 PROStart® DEDICATED VOLTAGE SYSTEMS</b>			
32 T8 Programmed Rapid Start - Normal Ballast Factor - <10% THD			
NOTE: UNV PSN models above replace Dedicated Voltage PSN models below. (Programmed RS, Program RS)			
RIC-132, RCN-1S32-SC	OTP1x32T8/120PSN-TC	B132P120RH	N/A
VIC-132, VCN-1S32-SC	OTP1x32T8/277PSN-TC	B132P277RH	N/A
RIC-2S32, RCN-2S32-SC	OTP2x32T8/120PSN-SC	B232P120RH	N/A
VIC-2S32, VCN-2S32-SC	OTP2x32T8/277PSN-SC	B232P277RH	N/A
RIC-3S32, RCN-3S32-SC	OTP3x32T8/120PSN-SC	B332P120RH	N/A
VIC-3S32, VCN-3S32-SC	OTP3x32T8/277PSN-SC	B332P277RH	N/A
RCN-4S32-SC	OTP4x32T8/120PSN-SC	B432P120RH	N/A
VCN-4S32-SC	OTP4x32T8/277PSN-SC	B432P277RH	N/A
<b>QUICKTRONIC® 59 T8, 59 PLUS, and QUICKTRONIC® PROFESSIONAL 8 foot Systems</b>			
59W F96 T8 Instant Start - Normal Ballast Factor - <20% THD			
REL-2P59-S-RH-TP	OT2x59/120IS	B259I120RH	E2/59IS-120
VEL-2P59-S-RH-TP	OT2x59/277IS	B259I277RH	E2/59IS-277
GEL-2P59	OT2x59/347IS	N/A	N/A
59W F96 T8 Instant Start - High Ballast Factor (PLUS) Systems - <20% THD			
REL-2P59-HL	QT2x59/120PLUS	B259I120RHH	N/A
VEL-2P59-HL	QT2x59/277PLUS	B259I277RHH	N/A
59W F96 T8 Instant Start - Normal Ballast Factor - <10% THD			
RCN-2P59	OTP2x59T8/120ISN-A	B259I120HE	N/A
VCN-2P59	OTP2x59T8/277ISN-A	B259I277HE	N/A
<b>QUICKTRONIC® PROFESSIONAL T5 HO PROStart® UNIVERSAL VOLTAGE SYSTEMS</b>			
T5 HO - Normal Ballast Factor - <10% THD			
(Ballast Can Size varies between manufacturers - please refer to specifications for details)			
ICN-2S39 (1 Lamp)	OTP1x39-24T5HO/UNVPSN (FP39T5HO)	B239PUNV-D (1 Lamp)	N/A
ICN-2S39	OTP2x39-24T5HO/UNVPSN (FP39T5HO)	B239PUNV-D	N/A
ICN-2S24 (1 Lamp)	OTP1x39-24T5HO/UNVPSN (FP24T5HO)	B224PUNV-C (1 Lamp)	N/A
ICN-2S24	OTP2x39-24T5HO/UNVPSN (FP24T5HO)	B224PUNV-C	N/A
ICN-2S54 (1 Lamp)	OTP1x54T5HO/UNVPSN	B254PUNV-D (1 Lamp)	N/A
ICN-2S54	OTP2x54T5HO/UNVPSN	B254PUNV-D	N/A
ICN-1S80	OTP1x80T5HO/UNVPSN	N/A	N/A
<b>QUICKTRONIC® PROFESSIONAL T5 PROStart® UNIVERSAL VOLTAGE SYSTEMS</b>			
28W T5 - Normal Ballast Factor - <10% THD			
(Ballast Can Size varies between manufacturers - please refer to specifications for details)			
ICN-2S28 (1 Lamp)	QTP1x28T5/UNVPSN	B228PUNV-C (1 Lamp)	N/A
ICN-2S28	QTP2x28T5/UNVPSN	B228PUNV-C	N/A
<b>QUICKTRONIC® Instant Start DL40</b>			
40W TT5 Instant Start, Normal Ballast Factor - <20% THD			
N/A	QT1x40/120DL	C240I120RH, C240SI120RH (1 LAMP)	E1/40IS-TT-120
N/A	QT1x40/277DL	C240I277RH, C240SI277RH (1 LAMP)	E1/40IS-TT-277
N/A	QT2x40/120DL	C240I120RH, C240SI120RH	E2/40IS-TT-120
N/A	QT2x40/277DL	C240I277RH, C240SI277RH	E2/40IS-TT-277
N/A	QT3x40/120DL	C340I120RH, C340SI120RH	E3/40IS-TT-120
N/A	QT3x40/277DL	C340I277RH, C340SI277RH	E3/40IS-TT-277
<b>QUICKTRONIC® PROFESSIONAL PROStart® DL40</b>			
40W TT5 Programmed Rapid Start, Normal Ballast Factor - <10% THD			
REL-1TT540	QTP1x40TT5/120PSN-F	N/A	N/A
VEL-1TT540	QTP1x40TT5/277PSN-F	N/A	N/A
REL-2TT540	QTP2x40TT5/120PSN-F	N/A	N/A
VEL-2TT540	QTP2x40TT5/277PSN-F	N/A	N/A
N/A	OTP3x40TT5/120PSN-B	N/A	N/A
N/A	OTP3x40TT5/277PSN-B	N/A	N/A
<b>QUICKTRONIC® PROFESSIONAL 32 T8 HELIOS™ DIMMING</b> - A list of 0-10V controllers is available from OSRAM SYLVANIA			
32 T8 Dimming Systems (0-10Vdc control) - 100-5% and 100-10% Dimming Range - <10% THD at full output, <20% THD at full dim			
RZT-132	OTP1x32T8/120DIM5-B	B132R120V5	N/A
VZT-132	OTP1x32T8/277DIM5-B	B132R277V5	N/A
RZT-2S32	OTP2x32T8/120DIM5-B	B232SR120V5	N/A

## Manufacturers' Cross Reference (continued)

### ELECTRONIC FLUORESCENT LAMP BALLASTS

ADVANCE	SYLVANIA	UNIVERSAL LIGHTING TECHNOLOGIES (formerly MagneTek)*	HOWARD INDUSTRIES
32 T8 Dimming Systems (0-10Vdc control) - 100-5% and 100-10% Dimming Range - <10% THD at full output, <20% THD at full dim (continued)			
VZT-2S32	QTP2x32T8/277DIM5-B	B232SR277V5	N/A
RZT-3S32	QTP3x32T8/120DIM5-Q	B332SR120V5	N/A
VZT-3S32	QTP3x32T8/277DIM5-Q	B332SR277V5	N/A
N/A	QTP4x32T8/120DIM10-Q	N/A	N/A
VZT-4S32	QTP4x32T8/277DIM10-Q	N/A	N/A
QUICKTRONIC® PROFESSIONAL 54 T5 HO HELIOS™ DIMMING - A list of 0-10V controllers is available from OSRAM SYLVANIA			
54 T5 HO Dimming Systems (0-10Vdc control) - 100-1% Dimming Range -<10% THD at full output, <20% THD at full dim			
RZT-154	QT1x54/120PHO-DIM	N/A	N/A
VZT-154	QT1x54/277PHO-DIM	N/A	N/A
RZT-2S54	QT2x54/120PHO-DIM	N/A	N/A
VZT-2S54	QT2x54/277PHO-DIM	N/A	N/A
QUICKTRONIC® 8 foot T12 Systems			
96 T12 Instant Start - Normal Ballast Factor - Large Can (11.75"long) - <20% THD			
REL-2P60-S	QT2x96/120IS	B260I120RH	N/A
VEL-2P75-S	QT2x96/277IS	B260I277RH	N/A
96 T12/HO Rapid Start - Normal Ballast Factor - Large Can (11.75"long) - <20% THD			
REL-2S110	QT2x96/120HO	B295SR120HP	N/A
VEL-2S110	QT2x96/277HO	B295SR277HP	N/A
QUICKTRONIC® PROFESSIONAL 40 T12			
40 T12 Rapid Start - Normal Ballast Factor - <10% THD			
REL-1S40-RH-TP	QTP1x40T12/120RSN-B	B140R120HP	N/A
VEL-1S40-RH-TP	QTP1x40T12/277RSN-B	B140R277HP	N/A
RCN-2S40, REL-2S40-RH-TP	QTP2x40T12/120RSN-B	B240R120HP	N/A
VCN-2S40, VEL-2S40-RH-TP	QTP2x40T12/277RSN-B	B240R277HP	N/A
REL-3S40-RH-TP	QTP3x40T12/120RSN-B	B340R120HP	N/A
VEL-3S40-RH-TP	QTP3x40T12/277RSN-B	B340R277HP	N/A
QUICKTRONIC® PROFESSIONAL CF - UNIVERSAL VOLTAGE			
CF T4 PROStart® - Programmed RapidStart - Normal Ballast Factor - <10% THD			
CFL Products run multiple lamp combinations and have various mounting/case sizes. (refer to actual product specs)			

ADVANCE	SYLVANIA	UNIVERSAL LIGHTING TECHNOLOGIES (formerly MagneTek)*	HOWARD INDUSTRIES	ESI (Energy Savings Inc is no longer in business)
ICF-2S13-H1-LD	QTP1/2x13CF/UNVBS	C213UNV-BE	PSM213CQMV	ES-2/1-CFO-13/10-UNV-C
ICF-2S13-H1-LD	QTP1/2x13CF/UNVTS	C213UNV-SE	PSM213CQMV	ES-2/1-CFO-13/10-UNV-D
ICF-2S18-H1-LD	QTP1/2x18CF/UNVBS	C218UNV-BE	PSM218CQMV	ES-2/1-CFO-18-UNV-C
ICF-2S18-H1-LD	QTP1/2x18CF/UNVTS	C218UNV-SE	PSM218CQMV	ES-2/1-CFO-18-UNV-D
ICF-2S26-H1-LD	QTP2x26CF/UNVBS	C2642UNV-BE	PSG242TRMV	ES-2/1-CFO-26-UNV-C
ICF-2S26-H1-LD	QTP2x26CF/UNVTS	C2642UNV-SE	PSG242TRMV	ES-2/1-CFO-26-UNV-D
ICF-2S42-M2-LS	QTP2x26/32/42CF/UNVBM	C242UNV-BE	PSG242TRMV	ES-2-CFH-42/32/26-UNV-H
ICF-2S42-M2-BS	QTP2x26/32/42CF/UNVPM	C242UNV-BES	PSG242TRMV	N/A
ICF-2S42-M2-LD	QTP2x26/32/42CF/UNVTM	C242UNV-SE	PSG242TRMV	ES-2-CFH-42/32/26-UNV-G
ICF-2S42-M2-LS	QTP1x57CF/UNVBM (1X57)	C242UNV-BE	N/A	N/A
ICF-1070-M3-LD	QTP1x57CF/UNVBM (1X70)	C242UNV-BE	N/A	N/A
ICF-2S42-M2-BS	QTP1x57CF/UNVPM (1X57)	C242UNV-BES	N/A	N/A
ICF-1Q70-M3-BS	QTP1x57CF/UNVPM (1X70)	C242UNV-BES	N/A	N/A

\*MagneTek Lighting has changed it's name to Universal Lighting Technologies.

## Manufacturers' Cross Reference Guide (continued)

### MAGNETIC FLUORESCENT LAMP BALLASTS

ADVANCE	SYLVANIA	UNIVERSAL LIGHTING TECHNOLOGIES (formerly Magnetek)*	VALMONT
<b>T12 RAPID START</b>			
F30T12 Rapid Start - High Power Factor			
R2SP30TP Mark III	MB2x30/120RS-SRNK	573LTCP	8G3971W
V2SP30TP Mark III	MB2x30/277RS-SRNK	588LTCP	8G3972W
<b>F40T12 Rapid Start - High Power Factor</b>			
R140TP Mark III	MB1x40/120RS-SRNK	412LSLHTCP	8G1074W
V140TP Mark III	MB1x40/277RS-SRNK	458LSLHTCP	8G1084W
R2S40TP Mark III	MB2x40/120RS-SRNK	446LSLHTCP	8G1024W
V2S40TP Mark III	MB2x40/277RS-SRNK	443LSLHTCP	8G1034W
<b>F40T12 Rapid Start - Normal Power Factor</b>			
RL140TP	MB1x40/120RES-SRNK	413TCP	8G1075
<b>T12 INSTANT START SLIMLINE</b>			
F48T12 Instant Start - High Power Factor			
SM2E40STP	MB2x48/120IS-SRNK	213TCP	8G1600W
VSM2E40STP	MB2x48/277IS-SRNK	532BRTCP	8G1710W
<b>F96T12 Instant Start - High Power Factor</b>			
RSM175STP	MB1x96/120IS-SRNK	822BRTCP	8G1762W
VSM175STP	MB1x96/277IS-SRNK	828BRTCP	8G1764W
R2E75STP Mark III	MB2x96/120IS-SRNK	806SLHTCP	8G1004W
V2E75STP Mark III	MB2x96/277IS-SRNK	827SLHTCP	8G1014W
<b>T12/HO RAPID START</b>			
F96T12/HO Rapid Start - High Power Factor			
RS110TP	MB1x96/HO/120RS-SRNK	481LHTCP	---
VS110TP	MB1x96/HO/277RS-SRNK	479LHTCP	---
R2S110TP Mark III	MB2x96/HO/120RS-SRNK	480SLHTCP	---
V2S110TP Mark III	MB2x96/HO/277RS-SRNK	487SLHTCP	---
RS110TP	MB1/2x48/96/HO/120RS-SRNK	490XLHTCP	---
<b>T12/VHO RAPID START</b>			
F96T12/VHO Rapid Start - High Power Factor			
RC2S102TP	MB1x96/VHO/120RS-SRNK	951STCP	---
VC2S102TP	MB1x96/VHO/277RS-SRNK	957STCP	---
RS2S200TP	MB2x96/VHO/120RS-SRNK	930KTCP	8G1201W
VS2S200TP	MB2x96/VHO/277RS-SRNK	937KTCP	8G1211W
<b>T12/HO SIGN BALLASTS</b>			
<b>T12/HO Rapid Start</b>			
ASB-0412-12-BL-TP	MSB-12-0412-TP	USB-0412-12	---
ASB-0620-24-BL-TP	MSB-24-0620-TP	USB-0816-14	---
ASB-1224-24-BL-TP	MSB-24-1224-TP	USB-1024-14	---
ASB-2040-24-BL-TP	MSB-24-2040-TP	USB-1632-24	---
ASB-1240-46-BL-TP	MSB-46-1240-TP	USB-2036-46	---
ASB-2448-46-BL-TP	MSB-46-2448-TP	USB-2048-46	---
<b>T5, T8 AND T12 PREHEAT/TRIGGER START</b>			
F8T5 Preheat Start - Normal Power Factor			
LSX113TP	MB1x8/120PH/TP/S	---	---
F15T12 Trigger Start - Normal Power Factor			
RLQ120TP	MB1x15/120PH/TP	546BTCP	8G3560
F20T12 Preheat Start - Normal Power Factor			
LC1420CTP	MB1x20/120PH/TP	200H2P	---
LC1420C	MB1x20/120PH	200H2	89G457
F20T12 Trigger Start - Normal Power Factor			
RL2SP20TP	MB2x20/120PH/TP	447LRTCP	8G3912
<b>T8 RAPID START</b>			
F01T8 Rapid Start - Normal Power Factor			
---	MB1x17/120RS	707TCP	---
F025T8 or F032T8 Rapid Start - High Power Factor			
---	MB1x25/32/120RS-LW	M132R120	---
R1P825TP & R1P32TP Mark III	MB1x25/32/120RS-SRNK	727LTCP & M132R120	---
V1P825TP & V1P32TP Mark III	MB1x25/32/277RS-SRNK	728LTCP & M132R277C	---
R2P825TP & R2P32TP Mark III	MB2x25/32/120RS-SRNK	731LTCP & M232SR120C	---
V2P825TP & V2P32TP Mark III	MB2x25/32/277RS-SRNK	732LTCP & M232SR277C	---

## Manufacturers' Cross Reference (continued)

### MAGNETIC FLUORESCENT LAMP BALLASTS

ADVANCE	SYLVANIA	UNIVERSAL LIGHTING TECHNOLOGIES (formerly Magnetek)*	VALMONT
<b>T9 CIRCLINE RAPID START</b>			
FC8T9 Circline Rapid Start - Normal Power Factor	RLQS122TPW MB1x22/120CIRC	547RSWSTCP	8G1091G11
FC12T9 or FC16T9 Circline Rapid Start - Normal Power Factor	RLCS140TPW MB1x32/120CIRC	445RSWSTCP	8G1085G11

\*MagneTek Lighting has changed it's name to Universal Lighting Technologies.

### MAGNETIC HID LAMP BALLASTS

ADVANCE	SYLVANIA	UNIVERSAL LIGHTING TECHNOLOGIES (formerly Magnetek)*	VENTURE LIGHTING	HOWARD INDUSTRIES
<b>METALARC® METAL HALIDE CORE &amp; COIL BALLAST KITS</b>				
35W Metal Halide Lamp - ANSI Code M130	M35/MULTI-HO/CI-KIT	---	---	---
71A5081	M35/120/277-KIT	---	---	---
50W Metal Halide Lamp - ANSI Code M110 or M148	M50/MULTI-KIT	--	M50MLTLC3M & M50MLTLC3M-500K	V90D5731K
71A5181	M50/120/277-KIT	11310-236-500K	---	V90H5731K
70W Metal Halide Lamp - ANSI Code M98 or M143	M70/MULTI-KIT	11310-510-500K	M70MLTLC3M & M70MLTLC3M-500K	V90D5832K
71A5292 & 71A5292-001D	M70/MULTI-KIT	11310-510-500K	---	---
71A5282	M70/120/277-KIT	---	---	V90H5832K
70W Metal Halide Lamp - ANSI Code M98 or M143 or M85	M70/MULTI-HO/CI-KIT	---	---	V90D5810K
100W Metal Halide Lamp - ANSI Code M90 or M140	M100/MULTI-KIT	11310-90-500K	M100MLTLC3M & M100MLTLC3M-500K	V90D5932K
71A5390 & 71A5390-001D	M100/MULTI-KIT	11310-90-500K	---	M010071C511K
71A5380	M100/120/277-KIT	---	---	V90H5932K
150W Metal Halide Lamp, Medium Base - ANSI Code M102 or M142	M150/MULTI-PS-KIT	11310-543-500K	M150MLTLC3M & M150MLTLC3M-500K	V90D7130K
71A5492	M150/MULTI-PS-KIT	11310-543-500K	---	---
71A5482	M150/120/277-PS-KIT	---	---	V90D7110K
150W Metal Halide Lamp, Double-Ended - ANSI Code M81	M150/MULTI-KIT	11310-177-500K	M150MLTLC3D & M150MLTLC3D-500K	---
71A5490	M150/MULTI-KIT	11310-177-500K	---	---
175W Metal Halide Lamp - ANSI Code M57 or Mercury Lamp - ANSI Code H39	M175/SUPER5-KIT	---	M175ML5AC3M & M175ML5AC3M-500K	---
71A5590 & 71A5570-001D	M175/MULTI-KIT	1130-91R-500K	M175MLTAC3M & M175MLTAC3M-500K	V90D6111K
71A5540 & 71A5540-001D	M175/480-KIT	1130-31-500K	---	---
71A5540T	M175/480/120T-KIT	---	M17548TAC3M & M17548TAC3M-500K	---
71A5580	M175/120/277-KIT	1130-245R-500K	---	---
175W Metal Halide Pulse Start Lamp - ANSI Code M137	M175/MULTI-PS-KIT	---	P175MLTAC3M & P175MLTAC3M-500K	V90D7210K
71A5593 & 71A5593-001D	M175/480-PS-KIT	---	---	---
200W Metal Halide Pulse Start Lamp - ANSI Code M136	M200/MULTI-PS-KIT	---	P200MLTAC3M & P200MLTAC3M-500K	V90D7310K
71A5692 & 71A5692-001D	M200/480/-PS-KIT	---	---	---
71A5642T	M200/480/120T-PS-KIT	---	P20048TAC3M & P20048TAC3M-500K	V90Y7310TK

## Manufacturers' Cross Reference Guide (continued)

### MAGNETIC HID LAMP BALLASTS

ADVANCE	SYLVANIA	UNIVERSAL LIGHTING TECHNOLOGIES (formerly Magnetek)*	VENTURE LIGHTING	HOWARD INDUSTRIES
	OLD PART NUMBER	NEW PART NUMBER		
<b>250W Metal Halide Lamp - ANSI Code M58 or Mercury Lamp - ANSI Code H37</b>				
71A5750 & 71A5750-001D	M250/SUPER5-KIT	---	M250ML5AC4M & M250ML5AC4M-500K	---
71A5790 & 71A5770-001D	M250/MULTI-KIT	1130-92R-500K	M250MLTAC4M & M250MLTAC4M-500K	V90D6212K M025071C211K
71A5740 & 71A5740-001D 71A5740T	M250/480-KIT M250/480/120T-KIT	1130-32R-500K ---	M25048TAC4M & M25048TAC4M-500K	V90Y6212TK ---
71A5791 & 71A5771-001D	M250/MULTI 3X4-KIT	1130-92-500K	M250MLTAC3M & M250MLTAC3M-500K	V90D6211K ---
71A5741 & 71A5741-001D	M250/480-3X4-KIT	1130-32-500K	---	V90Y6211K ---
<b>250W Metal Halide Lamp - ANSI Code M80</b>				
71A5880	M250/120/277-KIT	---	---	---
<b>250W Metal Halide Pulse Start Lamp - ANSI Code M138</b>				
---	M250/SUPER5-PS-KIT	---	---	---
71A5792 & 71A5792-001D	M250/MULTI-PS-KIT	---	P250MLTAC4M & P250MLTAC4M-500K	V90D8410K M025071C611K
---	M250/480-PS-KIT	---	---	---
---	M250/480/120T-PS-KIT	---	P25048TAC4M & P25048TAC4M-500K	---
<b>320W Metal Halide Pulse Start Lamp - ANSI Code M132</b>				
71A5892 & 71A5892-001D	M320/MULTI-PS-KIT	---	P320MLTAC4M & P320MLTAC4M-500K	V90D7411K M032071C611K
---	M320/480-PS-KIT	---	---	---
71A5842T	M320/480/120T-PS-KIT	---	P32048TAC4M & P32048TAC4M-500K	V90Y7411TK ---
<b>350W Metal Halide Pulse Start Lamp - ANSI Code M131</b>				
71A5993 & 71A5993-001D	M350/MULTI-PS-KIT	---	P350MLTAC4M & P350MLTAC4M-500K	V90D7512K M035071C611K
---	M350/480-PS-KIT	---	---	---
71A5943T	M350/480/120T-PS-KIT	---	P35048TAC4M & P35048TAC4M-500K	V90Y7512TK ---
<b>400W Metal Halide Lamp - ANSI Code M59 or Mercury Lamp - ANSI Code H33</b>				
71A6051 & 71A6051-001D	M400/SUPER5-KIT	---	M400ML5AC4M & M400ML5AC4M-500K	---
71A6091 & 71A6071-001D	M400/MULTI-KIT	1130-93R-500K	M400MLTAC4M & M400MLTAC4M-500K	V90D6413K M040071C211K
71A6041 & 71A6041-001D 71A6041T	M400/480-KIT M400/480/120T-KIT	1130-33R-500K ---	M40048TAC4M & M40048TAC4M-500K	V90Y6413TK ---
<b>400W Metal Halide Pulse Start Lamp - ANSI Code M135</b>				
---	M2x400/120/240-KIT	---	---	---
---	M400/SUPER5-PS-KIT	---	---	---
71A6092 & 71A6092-001D	M400/MULTI-PS-KIT	---	P400MLTAC4M & P400MLTAC4M-500K	V90D7612K M040071C611K
---	M400/480-PS-KIT	---	---	---
71A6042T	M400/480/120T-PS-KIT	---	P40048TAC4M & P40048TAC4M-500K	V90Y7612TK ---
<b>450W Metal Halide Pulse Start Lamp - ANSI Code M144</b>				
71A6393	M450/MULTI-PS-KIT	---	P450MLTAC4M & P450MLTAC4M-500K	V90D8512K ---
---	M450/480-PS-KIT	---	---	---
71A6343T	M450/480/120T-PS-KIT	---	---	V90Y8511TK ---
<b>750W Metal Halide Pulse Start Lamp - ANSI Code M149</b>				
71A64E2	M750/MULTI-PS-KIT	---	P750MLTAC5M & P750MLTAC5M-500K	V90D7910K ---
71A64F2T	M750/120/277/347/480-PS-KIT M750/480-PS-KIT	---	---	V90J7910K ---
---	---	---	---	---
<b>1000W Metal Halide Lamp - ANSI Code M47 or Mercury Lamp - ANSI Code H36</b>				
71A6552 & 71A6552-001	M1000/SUPER5-KIT	---	M1000ML5AC5M & M1000ML5AC5M-500K	V90AM6514K ---

CROSS  
REFERENCE

## Manufacturers' Cross Reference (continued)

### MAGNETIC HID LAMP BALLASTS

ADVANCE	SYLVANIA	UNIVERSAL LIGHTING TECHNOLOGIES (formerly Magnetek)*	VENTURE LIGHTING	HOWARD INDUSTRIES	
	OLD PART NUMBER	NEW PART NUMBER			
<b>1000W Metal Halide Lamp - ANSI Code M47 or Mercury Lamp - ANSI Code H36 (continued)</b>					
71A6592 & 71A6572-001	M1000/MULTI-KIT	1130-97-500K	M1000MLTAC5M & M1000MLTAC5M-500K	V90D6514K	M0100071C212K
71A6542 & 71A6542-001	M1000/480-KIT	1130-57-500K	M1000480AC5M & M1000480AC5M-500K	---	M0100011C212K
71A6542T	M1000/480/120T-KIT	---	M100048TAC5M & M100048TAC5M-500K	V90Y6514TK	---
<b>1000W HQI Metal Halide Lamp</b>					
---	M1000/MULTI-HQI-KIT	---	---	---	---
<b>1000W Metal Halide Pulse Start Lamp - ANSI Code M141</b>					
71A6593	M1000/MULTI-PS-KIT	---	P1000MLTAC5M & P1000MLTAC5M-500K	V90D7810K	---
71A65F3T	M1000/120/277/347/480-PS-KIT	---	---	V90J7810K	---
---	M1000/480-PS-KIT	---	---	---	---
<b>1500W Metal Halide Lamp - ANSI Code M48</b>					
71A6792 & 71A6772-001	M1500/MULTI-KIT	1130-99R-500K	M1500MLTAC5M & M1500MLTAC5M-500K	V90D6612K	M0150071C212K
71A6742 & 71A6742-001	M1500/480-KIT	1130-69R-500K	M1500480AC5M & M1500480AC5M-500K	---	M0150011C212K
---	M1500/480/120T-KIT	---	M150048TAC5M & M150048TAC5M-500K	V90Y6612TK	---
<b>2000W HQI Metal Halide Lamp</b>					
---	M2000/277/347/480-HQI-RL-KIT	---	---	---	---
<b>METALARC® METAL HALIDE F-CAN HID BALLASTS</b>					
<b>35W Metal Halide Lamp - ANSI Code M130</b>					
72C5081-NP	M35/120/277/F-CAN	---	---	---	---
<b>50W Metal Halide Lamp - ANSI Code M110</b>					
72C5181-NP&72C5181-NP-001	M50/120/277/F-CAN	---	11210-236C-TC	---	---
<b>70W Metal Halide Lamp - ANSI Code M139</b>					
72C5281-NP	M70/120/277/F-CAN	---	---	---	---
<b>70W Metal Halide Lamp - ANSI Code M98 or M143</b>					
72C5282-NP&72C5282-NP-001	M70/120/277/F-CAN	---	11210-506C-TC	---	---
<b>100W Metal Halide Lamp - ANSI Code M90 or M140</b>					
72C5381-NP&72C5381-NP-001	M100/120/277/F-CAN	---	11210-239C-TC	---	---
<b>150W Metal Halide Lamp, Medium Base - ANSI Code M102 or M142</b>					
---	M150-PS/120/277/F-CAN	---	---	---	---
<b>175W Metal Halide Lamp - ANSI Code M57 or Mercury Lamp - ANSI Code H39</b>					
72C5581-NP&72C5581-NP-001	M175/120/277/F-CAN	---	1110-245SC-TC	---	---
<b>175W Metal Halide Pulse Start Lamp - ANSI Code M137</b>					
72C5582-NP&72C5582-NP-001	M175-PS/120/277/F-CAN	---	---	---	---
<b>200W Metal Halide Pulse Start Lamp - ANSI Code M136</b>					
---	M200-PS/120/277/F-CAN	---	---	---	---
<b>250W Metal Halide Lamp - ANSI Code M58 or Mercury Lamp ANSI Code H37</b>					
72C5782-NP&72C5782-NP-001	M250/120/277/F-CAN	---	1110-246C-TC	---	---
<b>250W Metal Halide Pulse Start Lamp - ANSI Code M138</b>					
72C5783-NP&72C5783-NP-001	M250-PS/120/277/F-CAN	---	---	---	---
<b>320W Metal Halide Pulse Start Lamp - ANSI Code M132</b>					
72C5882-NP&72C5882-NP-001	M320-PS/120/277/F-CAN	---	P320277AFXM	---	---
<b>400W Metal Halide Lamp - ANSI Code M59 or Mercury Lamp - ANSI Code H33</b>					
72C6082-NP&72C6082-NP-001	M400/120/277/F-CAN	---	1110-247SC-TC	---	---
<b>400W Metal Halide Pulse Start Lamp - ANSI Code M135</b>					
72C6182-NP&72C6182-NP-001	M400-PS/120/277/F-CAN	---	---	---	---
<b>METALARC® METAL HALIDE INDOOR ENCLOSED HID BALLASTS</b>					
<b>175W Metal Halide Lamp - ANSI Code M57 or Mercury Lamp - ANSI Code H39</b>					
78E5590-001	M175/MULTI-I/D	---	337-1770	---	---
<b>250W Metal Halide Lamp - ANSI Code M58 or Mercury Lamp - ANSI Code H37</b>					
78E5790-001	M250/MULTI-I/D	---	337-1750	---	---
<b>400W Metal Halide Lamp - ANSI Code M59 or Mercury Lamp - ANSI Code H33</b>					
78E6091-001	M400/MULTI-I/D	---	337-1780	---	---
<b>1000W Metal Halide Lamp - ANSI Code M47 or Mercury Lamp - ANSI Code H36</b>					
78E6592-001	M1000/MULTI-I/D	---	337-1790	---	---

## Manufacturers' Cross Reference Guide (continued)

### MAGNETIC HID LAMP BALLASTS

ADVANCE	SYLVANIA	UNIVERSAL LIGHTING TECHNOLOGIES (formerly Magnetek)*	VENTURE LIGHTING	HOWARD INDUSTRIES
	OLD PART NUMBER	NEW PART NUMBER		
<b>LUMALUX® HIGH PRESSURE SODIUM CORE &amp; COIL REACTOR BALLASTS</b>				
35W High Pressure Sodium Lamp - ANSI Code S76				
71A7707	LU35/120R	1233-251U	---	---
71A7707B	LU35/120R-INT	---	---	---
50W High Pressure Sodium Lamp - ANSI Code S68				
71A7807	LU50/120R	1233-35U	---	---
71A7807B	LU50/120R-INT	---	---	---
70W High Pressure Sodium Lamp - ANSI Code S62				
71A7907	LU70/120R	1233-142U	---	---
71A7907B	LU70/120R-INT	---	---	---
100W High Pressure Sodium Lamp - ANSI Code S54				
71A8007	LU100/120R	1233-10U	---	---
71A8007B	LU100/120R-INT	---	---	---
150W High Pressure Sodium Lamp - ANSI Code S55				
71A8107	LU150/120R	1233-154U	---	---
71A8107B	LU150/120R-INT	---	---	---
<b>LUMALUX® HIGH PRESSURE SODIUM CORE &amp; COIL BALLAST KITS</b>				
35W High Pressure Sodium Lamp - ANSI Code S76				
---	LU35/120/240-KIT	---	---	---
50W High Pressure Sodium Lamp - ANSI Code S68				
71A7801 & 71A7801-001D	LU50/120/277-KIT	12310-236-500K	---	V90H1132K
70W High Pressure Sodium Lamp - ANSI Code S62				
71A7991 & 71A7971-001D	LU70/MULTI-KIT	12310-153-500K	S70MLTLC3M & S70MLTLC3M-500K	V90D1233K
71A7941	LU70/480-KIT	12310-148R-500K	---	---
71A7901	LU70/120/277-KIT	12310-237-500K	---	---
100W High Pressure Sodium Lamp - ANSI Code S54				
71A8091 & 71A8071-001D	LU100/MULTI-KIT	12310-90-500K	S100MLTLC3M & S100MLTLC3M-500K	V90D1333K
71A8041 & 71A8041-001D	LU100/480-KIT	12310-30R-500K	---	---
71A8001	LU100/120/277-KIT	12310-239-500K	---	---
150W High Pressure Sodium Lamp - ANSI Code S55				
71A8192 & 71A8172-001D	LU150/MULTI-KIT	12310-165-500K	S150MLTLC3M & S150MLTLC3M-500K	V90D1435K
71A8142 & 71A8142-001D	LU150/480-KIT	12310-160S-500K	---	---
71A8142T	LU150/480/120T-KIT		S15048TLC3M & S15048TLC3M-500K	---
71A8102	LU150/120/277-KIT	12310-241-500K	---	---
71A8148	LU150/480-CWA-KIT	---	---	---
200W High Pressure Sodium Lamp - ANSI Code S66				
71A8990 & 71A8970-001D	LU200/MULTI-KIT	1230-190-500K	S200MLTAC4M & S200MLTAC4M-500K	V90D1610K
71A8940 & 71A8940-001D	LU200/480-KIT	1230-186-500K	---	---
250W High Pressure Sodium Lamp - ANSI Code S50				
71A8251 & 71A8251-001D	LU250/SUPER5-KIT	---	S250ML5AC4M & S250ML5AC4M-500K	---
71A8291 & 71A8271-001D	LU250/MULTI-KIT	1230-92S-500K	S250MLTAC4M & S250MLTAC4M-500K	V90D1711K
71A8241 & 71A8241-001D	LU250/480-KIT	1230-32S-500K	---	---
71A8241T	LU250/480/120T-KIT		S25048TAC4M & S25048TAC4M-500K	---
71A8281	LU250/120/277-KIT	1230-246S-500K	---	---
310W High Pressure Sodium Lamp - ANSI Code S67				
71A8391 & 71A8371-001D	LU310/MULTI-KIT	---	---	V90D1810K
71A8341	LU310/480-KIT	---	---	---
400W High Pressure Sodium Lamp - ANSI Code S51				
71A8453 & 71A8453-001D	LU400/SUPER5-KIT	---	S400ML5AC4M & S400ML5AC4M-500K	---
71A8493 & 71A8473-001D	LU400/MULTI-KIT	1230-93U-500K	S400MLTAC4M & S400MLTAC4M-500K	V90D1911K / V90D1912K
71A8443 & 71A8443-001D	LU400/480-KIT	1230-33U-500K	---	S040011C211K

## Manufacturers' Cross Reference (continued)

### MAGNETIC HID LAMP BALLASTS

ADVANCE	SYLVANIA		UNIVERSAL LIGHTING TECHNOLOGIES (formerly MagneTek)*	VENTURE LIGHTING	HOWARD INDUSTRIES
		OLD PART NUMBER	NEW PART NUMBER		
400W High Pressure Sodium Lamp - ANSI Code S51 (continued)					
71A8443T	LU400/480/120T-KIT	---	S40048TAC4M & S40048TAC4M-500K	---	---
---	LU400/120/277-KIT	---	---	---	---
750W High Pressure Sodium Lamp - ANSI Code S111					
71A86E5	LU750/MULTI-KIT	---	---	---	---
---	LU750/480-KIT	---	---	---	---
1000W High Pressure Sodium Lamp - ANSI Code S52					
71A8753 & 71A8753-001	LU1000/SUPER5-KIT	---	S1000ML5AC5M & S1000ML5AC5M-500K	---	---
71A8793 & 71A8773-001	LU1000/MULTI-KIT	1230-97S-500K	S1000MLTAC5M & S1000MLTAC5M-500K	V90D2311K	S100071C211K
71A8743 & 71A8743-001	LU1000/480-KIT	1230-57S-500K	---	---	S100011C211K
LUMALUX® HIGH PRESSURE SODIUM F-CAN HID BALLASTS					
35W High Pressure Sodium Lamp - ANSI Code S76					
---	LU35/120/277/F-CAN	---	12210-261C-TC	---	---
50W High Pressure Sodium Lamp - ANSI Code S68					
72C7884-NP & 72C7884-NP-001	LU50/120/277/F-CAN	---	12210-236C-TC	---	---
70W High Pressure Sodium Lamp - ANSI Code S62					
72C7984-NP & 72C7984-NP-001	LU70/120/277/F-CAN	---	12210-237C-TC	---	---
100W High Pressure Sodium Lamp - ANSI Code S54					
72C8084-NP & 72C8084-NP-001	LU100/120/277/F-CAN	---	12210-239C-TC	---	---
150W High Pressure Sodium Lamp - ANSI Code S55					
---	LU150/120/277/F-CAN	---	---	---	---
250W High Pressure Sodium Lamp - ANSI Code S50					
---	LU250/120/277/F-CAN	---	1220-246C-TC	---	---
400W High Pressure Sodium Lamp - ANSI Code S51					
---	LU400/120/277/F-CAN	---	---	---	---
MERCURY CORE & COIL BALLAST KITS					
50W Mercury Lamp - ANSI Code H46					
---	H50/MULTI-KIT	---	---	---	---
75W Mercury Lamp - ANSI Code H43					
71A2080	H75/MULTI-KIT	---	---	---	---
100W Mercury Lamp - ANSI Code H38 or H44					
71A2591 & 71A2571-001D	H100/MULTI-KIT	1030-90R-500K	H100MLTAC3M & H100MLTAC3M-500K	---	---
---	H100/277-KIT	---	---	---	---
71A2501	H100/DUAL-KIT	---	---	---	---
175W Mercury Lamp - ANSI Code H39					
71A3092 & 71A3072-001D	H175/MULTI-KIT	1030-91-500K	H175MLTAC3M & H175MLTAC3M-500K	---	---
71A3042 & 71A3042-001D	H175/480-KIT	1030-31-500K	---	---	---
250W Mercury Lamp - ANSI Code H37					
71A3592 & 71A3572-001D	H250/MULTI-KIT	1030-92-500K	H250MLTAC3M & H250MLTAC3M-500K	---	---
71A3542 & 71A3542-001D	H250/480-KIT	1030-32-500K	---	---	---
71A3542T	H250/480/120T-KIT	---	H25048TAC3M & H25048TAC3M-500K	---	---
400W Mercury Lamp - ANSI Code H33					
71A4091 & 71A4071-001D	H400/MULTI-KIT	1030-93-500K	H400MLTAC4M & H400MLTAC4M-500K	---	---
71A4041 & 71A4041-001D	H400/480-KIT	1030-33-500K	---	---	---
71A4041T	H400/480/120T-KIT	---	H40048TAC4M & H40048TAC4M-500K	---	---
---	H2X400/120-KIT	---	---	---	---
---	H2X400/277-KIT	---	---	---	---
1000W Mercury Lamp - ANSI Code H36					
71A5070-001	H1000/MULTI-KIT	1030-97-500K	H1000MLTAC5M & H1000MLTAC5M-500K	---	---
71A5040-001	H1000/480-KIT	1030-57-500K	---	---	---

\*MagneTek Lighting has changed its name to Universal Lighting Technologies.

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