Halco
LIGHTING TECHNOLOGIES

LAMP & BALLAST CATALOG

40th Anniversary
1974 - 2014

Halco Lighting Technologies is a leader of lamp and ballast solutions for commercial, industrial, residential and specialty lighting applications. Established in 1974, Halco is headquartered in Atlanta with distribution centers in Carlstadt, Cleveland, Houston, Los Angeles and Phoenix.

where there's light, there's halco®

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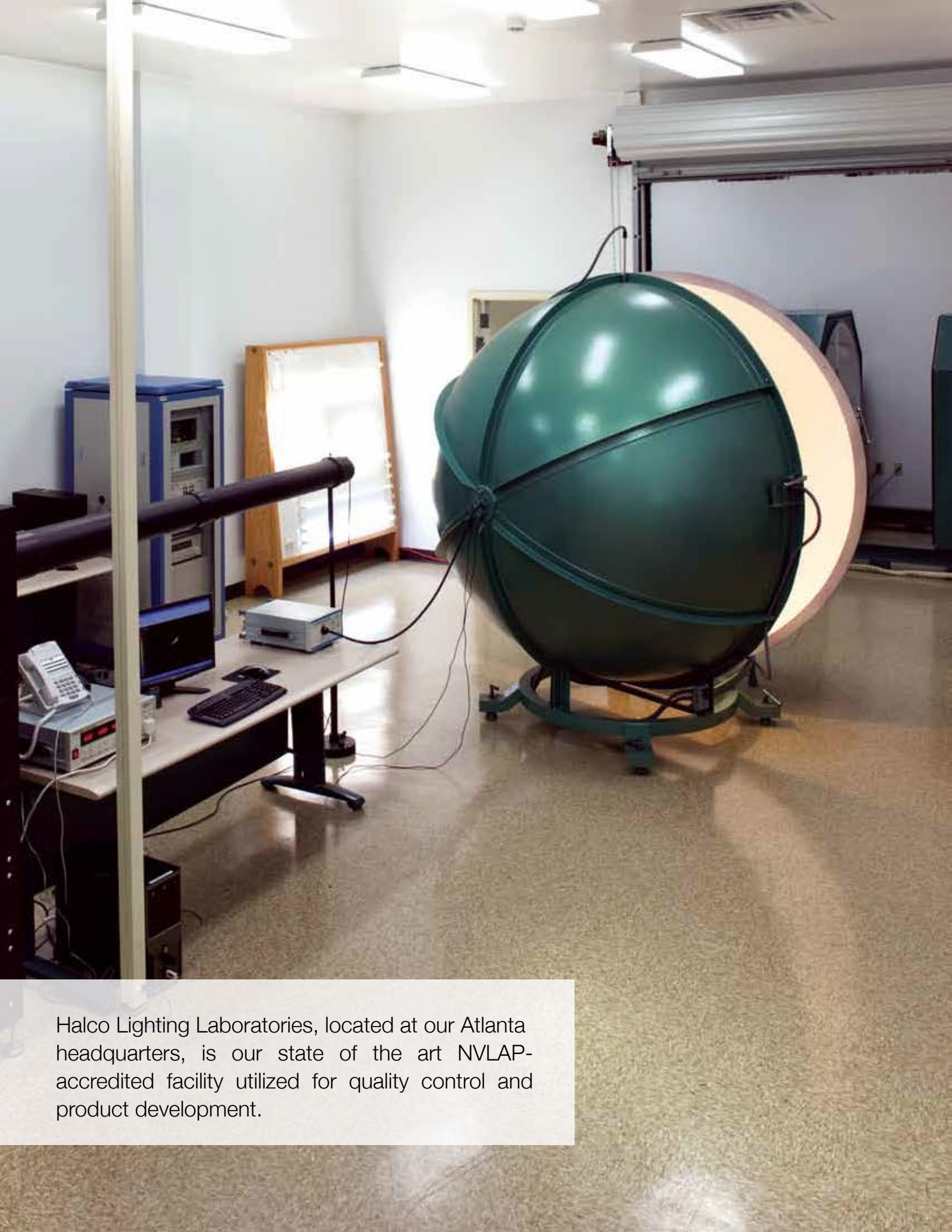


Halco Lighting Laboratories, located at our Atlanta headquarters, is our state of the art NVLAP-accredited facility utilized for quality control and product development.

Halco Lighting Technologies offers one of the most comprehensive product lines in the industry, including the proprietary brands ProLED®, ProLume®, HaloXen®, Prism® and CoverShield®. Our manufacturing expertise is put to the test in our state-of-the-art, in-house NVLAP-accredited laboratory.

In addition to superior quality products, Halco contributes to the vibrant and responsible lighting industry through association membership and knowledge sharing. Together, we focus on key industry issues including legislation, environmental impact, energy-efficiency and process standards.

Halco focuses on being easy to do business with; illustrated by our knowledgeable and empowered customer service representatives and online support tools. As your partner, Halco strives to be your only choice for lamp and ballast products.

SERVICE

Knowledgeable, empowered customer service representatives serve as your dedicated in-house contact. Our representatives receive continuous product and industry training. They are your resource for product availability, pricing, order fulfillment and technical support.

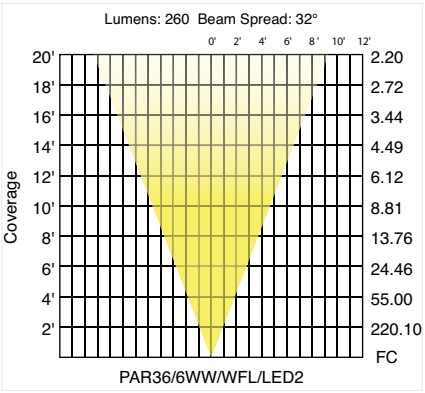
In addition to our personalized service, Halco's offers 24/7 electronic support at halcolighting.com, which is operated by our advanced enterprise software. Halco's full-feature e-commerce website provides access to in stock availability, order entry, delivery status and order history for our distributor partners. You can also locate product information quickly with our online product search or category drill down. For a comprehensive directory of product literature, compatibility and application information as well as white papers, visit our online literature library.

Halco's strategically located, fully stocked regional warehouses provide you maximum service with minimum transportation time and costs. Halco's deep inventory levels of lamp and ballast SKUs increases your ability to service your customers. Every Halco distribution center adheres to our aggressive service policy to ship orders received by 2:00PM local warehouse time the same day. Will-call service is also available for your convenience. With distribution centers in Atlanta, Carlstadt, Cleveland, Houston, Los Angeles and Phoenix, we are able to deliver to over 85% of United States same day or next day.


2:00 PM

Quality Assurance®

QUALITY



As part of our commitment to quality and innovation, we operate our own state-of-the-art NVLAP-accredited testing laboratory at our headquarters in Atlanta. Based on a quality management system outlined in ISO 17025, Halco Lighting Laboratories features a goniophotometer for photometric testing as well as a temperature-controlled integrating sphere that tests environmentally sensitive products. We conduct a number of tests according to IESNA standards, including photometric distribution, light output, color and electrical properties. The Halco Lighting Laboratories product testing facility ensures continuous quality control and outstanding product performance.

At Halco Lighting Technologies, we are committed to quality and service. We measure our success by one standard, customer satisfaction. With this in mind, we offer you the following:

> Should you encounter any product from Halco Lighting Technologies that fails to perform according to specifications, contact your account representative immediately. If our product is found to be defective in either material or workmanship, we will credit your account or replace the product at no charge. In order to better maintain our standard of quality, we reserve the right to inspect any defective product.

We make this assurance to clearly demonstrate our commitment to your satisfaction.

PRODUCT

Throughout the years we've continued to invest in our partnership by growing our product offering, leveraging global manufacturing resources and developing a knowledgeable service team. As we look to the future, Halco remains committed to providing you innovative lamp and ballast products with unparalleled service.

When you think lamps and ballasts, think Halco.

ProLED®
Solid State Lighting

ProLume®
Compact Fluorescent, Linear Fluorescent & HID Lamps and Ballasts

HaloXen®
High Performance, Extended Life and Energy Saving Halogen-Xenon

PRISM®
Halogen and Value Added Incandescents

Halco®
Incandescent and Photo/ Projection Lamps

CoverShield®
Safety Coated Lamps

LED LAMPS

ProLED®

Halco has one of the most comprehensive LED lamp offerings available in the industry, boasting impressive savings of up-to 88% in energy costs. Our award-winning LED product line features an unrivaled combination of efficiency, long life and light output, providing the best overall performance in LED technology. ProLED® products utilize the highest quality components, including USA and Japanese chips, precision manufactured optics, optimally engineered drivers and special heat sinks for superior thermal management.

High Power LED Lamps

All high power ProLED® products are specified at 40,000 hours rated life to L70, meaning the lamp will provide 70% of its initial specified lumens at rated life. Backed by a 5-year warranty, these lamps provide consistent lamp-to-lamp color, precise beam control and reduced maintenance. Our MR, Reflector and PAR lamps are available in multiple beam spreads, wattages and colors.

JC Type Lamps

Halco's ProLED® JC lamps are rated up-to 40,000 hours and backed by a 5-year warranty on IP65 Rated and 2-years on standard JC lamps. Available with bi-pin and bayonet base types, these lamps offer reduced maintenance and do not project heat. ProLED® JC Lamps are available with bi-pin and bayonet base types, in 3000K and multiple colors, 10-18V input voltage range and IP65 rated options for outdoor use.

Energy Efficient Alternatives

Halco's ProLED® offering features a wide variety of energy efficient alternatives to traditional lamp types. Ideal for replacement and retrofit, ProLED® lamps include the award-winning Elevator lamps, Chandelier lamps with cream, chrome and brass base options, Decorative B10 and CA10 lamps, clear and color Sign lamps, colorful C7 & C9 lamps, Decorative Globe and Linear T8 lamps.

Environmentally Responsible

Halco's offering of ProLED® lamps contain no mercury or lead (RoHS compliant) and emit no ultraviolet and infrared radiation.

ENERGY STAR PARTNER

ENERGY STAR® Rating

Halco's ENERGY STAR products deliver exceptional features while generating savings for consumers. For our most current ENERGY STAR products, please visit our literature library at www.halcolighting.com/download.

COMPACT FLUORESCENT LAMPS

ProLume®

Compact Fluorescent lamps are specified for a growing number of applications, especially where the objectives are energy savings and reduced maintenance costs. In fact, they save up-to 80% in energy costs and last up-to ten times longer than standard Incandescent lamps. ProLume® has become a popular choice due to our wide range of high performing, reliable products.

Eco-Shield®

The Eco-Shield mark indicates TCLP compliant lamps, a smart choice for environmental responsibility.

Plug-In Lamps

Halco's TCLP compliant lamps ensure energy efficiency and light levels. These lamps are available in 2700K, 3000K, 3500K, 4100K and 5000K. Common applications include wallwash units, flood lighting, low bays and desk lamps. Our lamps offer up-to 20,000 hours average rated life and are available in 5 to 57 watts.

High-Lumen Long

Flicker-free performance, increased optical control and up-to 85 lumens per watt make these lamps an economical alternative to T8 and T12 U-Bend lamps. Offering up-to 20,000 hours average rated life, our high-lumen lamps are TCLP compliant and are backed by a 1-year warranty.

Self-Ballasted CFLs

Instant-start electronic ballast technology gives these lamps reliable starts even in cold applications. Available in a wide variety of lamp types including dimmable, reflectors, decorative and bare spirals to meet almost any need.

ENERGY STAR PARTNER

ENERGY STAR® Rating

Halco's ENERGY STAR products deliver exceptional features while generating savings for consumers. For our most current ENERGY STAR products, please visit our literature library at www.halcolighting.com/download.

LINEAR FLUORESCENT LAMPS

ProLume®

Advancing technologies and environmental focus have changed the face of Linear Fluorescent lighting. From ultra thin and efficient to specialized applications, Halco has your lighting needs covered with an assortment of reliable ProLume® Linear Fluorescent lamps and ballasts.

Eco-Shield®

The Eco-Shield mark indicates TCLP compliant lamps, a smart choice for environmental responsibility.

CEE

Halco is proud to offer one of the largest listings of CEE lamps in the industry, defining efficiency and high-performance lighting products and encouraging the use of energy-efficient products.

Participating utilities across the U.S. commonly offer significant rebates to commercial and industrial customers that utilize CEE qualified high performance and reduced wattage ballasts and lamps in new construction, replacement and retrofit projects. For an up-to-date list of our CEE listed items, please visit www.halcolighting.com/download.

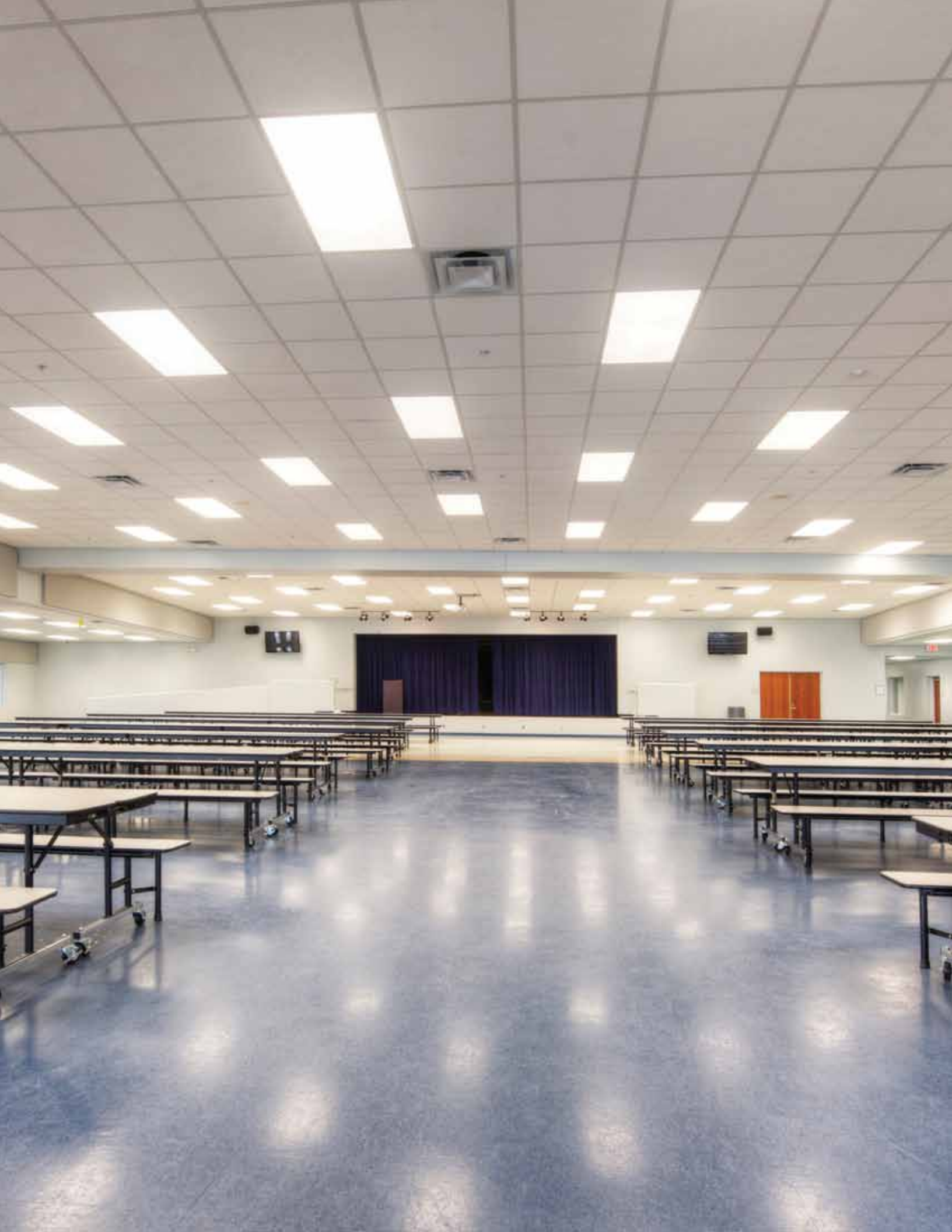
Lamp and Ballast Systems

Imagine increasing lumens per watt performance while reducing total power consumption.

ProLume reduced wattage T8 lamps are perfect in applications that require near equivalent or slightly less light than standard 32W T8 lamps. ProLume lamps feature a performance-enhancing tri-phosphor coating that improves both the light quality (CRI) and efficiency of the lamps.

System Warranty

Halco's Linear Fluorescent lamps are engineered to provide optimum performance when operated by a ProLume ballast. In fact, Halco extends the warranty of its Linear Fluorescent lamps when installed with a new ProLume ballast for a maximum of three years from date of original installation. See warranty for details at www.halcolighting.com/download.



HID LAMPS

ProLume®

Utilizing the latest technologies, Halco offers a broad selection of Metal Halide, High Pressure Sodium and Mercury Vapor lamps that cover a wide range of common and specialty applications.

Ceramic Discharge Metal Halide

Halco's Ceramic Discharge Metal Halide (CDM) lamps offer an array of benefits including excellent color rendering, energy efficiency and long life. They offer up-to 16,000 hours average rated life and feature a single piece arc tube design for a more defined white light.

Pulse Start Metal Halide

Pulse Start lamps provide a quick re-strike, up-to 110 lumens per watt and 20% higher lumen maintenance than standard Metal Halide lamps. ProLume Pulse Start lamps are available in 50 to 1000 watts.

Protected Metal Halide

Designed for operation in open fixtures, these shrouded MP lamps are available in both Pulse Start and Standard Metal Halide. The protective quartz shroud surrounds the arc tube, providing both safety and UV filtering.

Specialty Metal Halide

ProLume aquarium, color and safety coated Metal Halide lamps are available in a variety of lamp types to fit your special application needs.

High Pressure Sodium

ProLume offers a complete line of High Pressure Sodium (HPS) lamps for general lighting applications. These lamps are extremely energy efficient and are a good choice for lighting large areas where color rendering is not crucial and long life is desired.

Mercury Vapor

Mercury Vapor lamps produce an efficient white light and are a cost effective light source for general and security lighting. Prolume Mercury Vapor lamps range from 50 to 1000 watts and are available in traditional HID lamp shapes as well as A23 and R40 shapes.

HALOGEN LAMPS

PRISM® HaloXen® SPAR™ XIR™

Halco offers a broad selection of Halogen lamp types, wattages and bases to meet lighting needs for general, display/accent, and retail applications. HaloXen® lamp technology utilizes a mix of Halogen and Xenon gas that improves efficiency and lamp life over standard Halogen lamps. HaloXen® lamps provide integrated UV protection, elevated color temperature and a crisp, white light throughout the life of the lamp.

Replacements for Legislated Halogen PAR Lamps

Halco has developed three unique options for replacing 45 to 120 watt Halogen PAR lamps affected by DOE energy conservation standards. Our three solutions address various marketplace performance and value considerations so you can match each customer with the right lamp:

1 HaloXen® PAR Reflector Series

An economic and energy efficient alternative to legislated PAR20, PAR30, PAR30L and PAR38 Halogen lamps. HaloXen® PAR Reflector 130V options are available for customers with voltage spike concerns.

2 HaloXen Silver PAR Series

Pair a Xenon burner with a silver reflector to improve efficacy by up-to 30% over standard Halogen. PAR30, PAR30L and PAR38 Silver PAR lamps that offer up to 19.75 lumens per watt.

3 XIR Infrared PAR Series

Utilize an infrared capsule to achieve up-to 30% higher lumens per watt than standard Halogen lamps and have an average rated life of 3,500 hours. XIR Infrared PAR lamps replace standard 75W PAR30, PAR30L and PAR38 lamps.

Replacements for Legislated Incandescent A19 Lamps

PRISM® Halogen A19 lamps are the ideal replacements for Incandescent A19 lamps affected by the standards enacted by the Energy Independence and Security Act (EISA). These lamps deliver the same light quality as Incandescent lamps while using 28% less power. Clear and soft white Incandescent replacements are available.

INCANDESCENT LAMPS

Halco PRISM®

Our General Service and Decorative Incandescent lamp offering is one of the most comprehensive product assortments available from a single source. Halco's extensive global manufacturing capabilities ensure both selection and quality in our Incandescent lamp family.

Halco® and PRISM® brands each represent specific product segments targeted to fit various needs from industrial, commercial, or residential markets. Residential products are identified with the Halco brand and are packaged for retail presentation. PRISM® branded products signify long life, value-added lamps for industrial/commercial applications. With so many options, there is a Halco lamp for every need.

PRISM® Long Life Plus

Constructed using a heavy-duty staggered support C-9M filament, these 5,000 hour 130 Volt lamps provide long life and are suitable for rough service applications. Halco offers a large assortment of lamp types and wattages sure to meet all industrial/commercial applications.

PRISM® Ultralife

Designed using the same heavy-duty filament as our Long Life Plus lamps, these industrial/commercial lamps utilize a krypton gas fill to maximize lamp life up-to 20,000 hours. Ideal for hard-to-reach or high ceiling applications, UltraLife lamps are available in a variety of wattages and lamp types.

SPECIALTY LAMPS

Halco offers a wide variety of Specialty lamp types and lamp accessories to meet diverse application needs, including Photo/Projection/SSTV lamps, Miniature lamps, Safety Coated lamps, Sealed Beam lamps, Socket Adapters and Tube Guards.

Photo/Projection/SSTV

Halco offers an array of ANSI-coded Photo, Projection and SSTV lamps that are precision built to maximize light quality, control and stability in order to meet the needs of various specialty applications.

Miniatures

Miniature lamps are designed for applications which include aircraft, auto, marine, railway indicator and truck, as well as emergency, garden, indicator, instrument, microscope, radio and telephone indicator products.

Sealed Beam

These ANSI-coded PAR lamps are available in a number of wattages that feature beam spreads and sizes to meet an assortment of lighting needs. Halco sealed beam lamps are manufactured to the highest quality standards and comply with strict ANSI specifications.

COVERSHIELD LAMPS

CoverShield®

Shatter Resistant Lighting

CoverShield®, Halco's safety coated product line, features a comprehensive offering of shatter-resistant lamps and coatings designed to meet a variety of application requirements. Types of coatings vary depending on the lamp application. In high heat environments, for example, PFA is used while other industry leading materials are applied elsewhere. The CoverShield product line includes Compact Fluorescent, Linear Fluorescent, Incandescent, Halogen and Metal Halide lamp categories.

ELECTRONIC FLUORESCENT BALLASTS

ProLume®

Halco's ProLume® Electronic Fluorescent ballasts are designed with energy efficiency, reliability, ease-of-use and reduced maintenance costs in mind.

ProFormance® Ballasts

Halco's exclusive ProLume ProFormance Electronic ballasts, identifiable by the "EP" product code prefix, feature high power factor, less than 10% THD, and are available in both multi-volt and dedicated voltage models. ProLume ProFormance ballasts are renowned for their guaranteed versatility, efficiency and minimal power loss.

Multi-Volt

Operating on a universal input voltage between 108 and 305 volts, ProLume ProFormance Multi-Volt ballasts utilize a single power lead that doesn't require special wiring. This feature simplifies ordering, reduces inventory costs and provides peace-of-mind that one ballast can be used in multiple applications.

Electronic Upgrades from Magnetic T12 Ballasts

Halco offers a number of electronic solutions for replacing magnetic T12 ballasts. ProLume Electronic ballasts provide more than 20% energy savings compared to their magnetic counterparts. Furthermore, ProLume Electronic ballasts are quieter, provide flicker-free operation and are easier to handle due to their reduced weight and size. Backed by a 5-year warranty, ProLume Electronic Fluorescent ballasts are an efficient, convenient and long-life upgrade from traditional ballasts.

ProLume® High Efficiency T8 Ballasts

All Halco ProLume High Efficiency ballasts are NEMA Premium designated and CEE qualified high performance or reduced wattage ballasts, signifying that they meet or exceed the stringent performance requirements set by NEMA and CEE. ProLume High Efficiency ballasts are eligible for many utility rebates that often cover a significant portion of the product's upfront costs.

Certification NEMA Premium

All ProLume Electronic ballasts are certified by Underwriters Laboratories for use in the United States and are certified by either Underwriters Laboratories or Canadian Standards Association (CSA) for use in Canada and backed by a 5-year warranty.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ELECTRONIC SIGN BALLASTS

ProLume®

Halco's ProLume® Electronic Sign ballasts are energy efficient, user-friendly alternatives to magnetic sign ballasts.

Energy Efficient

ProLume Electronic Sign ballasts consume up-to 25% less energy than magnetic sign ballasts. Savings are quickly realized, particularly in applications where signs are operated for an extended period of time.

Versatile Replacement For Magnetic Sign Ballasts

Operating cooler and quieter than magnetic sign ballasts, ProLume Electronic Sign ballasts cover all signage applications that require one to six T8/HO and T12/HO lamps that have a total length between 2 and 48 feet. They are much lighter and have fewer wires than their magnetic counterparts, easing installation and maintenance. With their multi-volt capability (120-277V), ProLume Electronic Sign ballasts address more applications with fewer SKUs than standard magnetic sign ballast lines, reducing distributors' inventory costs.

Parallel Lamp Operation

The parallel lamp operation ensures that if a lamp fails, the remaining lamps will continue operating, keeping the sign lit. These instant start ballasts provide reliable starting in temperatures as low as -20°F.

Certifications

ProLume's electronic sign ballasts are UL listed and backed by a 3-year warranty.

COMPACT FLUORESCENT BALLASTS

ProLume®

Halco's ProLume® Compact Fluorescent (CFL) ballasts offer a broad assortment of options for lighting applications that require 4-pin Compact Fluorescent lamps. Look for the ProFormance (EP) mark, which identifies ProLume CFL ballasts that feature high power factor operation and less than 10% THD.

Programmed Start

ProLume ProFormance® CFL ballasts feature programmed start circuitry, which surpasses standard rapid start technology. Programmed start ballasts precisely heat the lamp filament and tightly control the duration of preheating before applying the starting voltage to the lamp. The result is improved performance of both the lamp and ballast and extended life of the lamp.

Quick-Connect

Our Quick-Connect technology simplifies installation and maintenance of ProLume ProFormance CFL ballasts. Under this color-coded system, wire installation is easy and the need to cap off unused leads is eliminated. The wire-removal tool included with the kit allows for quick and easy wire disconnecting.

Distributor Kits

ProLume ProFormance CFL ballasts are ideal for replacement applications due to their multi-volt capability and Dual Connection feature, which provides side and bottom lead exits utilizing Quick-Connect technology. Distributor Kits include everything that is necessary for ballast replacement including a mounting plate, lead-wire set, wire-removal tool and mounting hardware.

End-of-Life Protection

ProLume ProFormance CFL ballasts are equipped with end-of-life protection. This technology safely removes power supplied to the lamp during failure. After a failed lamp has been replaced, the ballast auto-resets and provides power to the new lamp.

Certifications

All ProLume Compact Fluorescent ballasts are certified by Underwriters Laboratories for use in the United States and Canada and backed by a 5-year warranty.

ELECTRONIC HID BALLASTS

ProLume®

Halco's Electronic HID (eHID) ballasts are designed to meet a variety of application needs for low wattage Metal Halide lamps. These eHID ballasts are compact and provide distinct advantages over magnetic versions. Key benefits of Halco eHID ballasts include enhanced light quality, increased versatility, greater savings and improved safety.

Superior Light Output

Halco eHID ballasts are microprocessor controlled, which allows for constant monitoring and regulation of wattage delivered to the lamp. This feature, combined with a virtually flicker-free design, results in greater lumen maintenance, precise beam control and a more uniform light appearance.

Flexible Voltage and Mounting

Our eHID ballasts are compatible with both 120 and 277 voltages and operate metal halide lamp wattages of 20W, 35/39W and 70W. Each ballast and wattage is available with either side or bottom lead exits and mounts for versatility. In addition, Halco's eHID ballasts are lightweight, easy to install and reduce shipping expenses.

Savings

In addition to improved light quality, eHID ballasts provide lamps with higher efficacy and longer life compared to magnetic ballasts. Increased efficacy through reduced ballast losses allows for less power consumption while maintaining light levels, resulting in energy savings. Plus, longer lamp life on eHID ballasts decreases costs associated with frequent lamp replacement.

Safety Features

Our eHID ballasts provide protection against no-lamp and end of life operation. Continuous striking without a lamp, or with a failed lamp present, could damage circuits. Halco's eHID ballasts prevent these scenarios. Additional protection is provided through integrated thermal and over-voltage circuits designed to shut down the ballast if operating conditions exceed those specified for use.

Certifications

ProLume eHID Ballasts are backed with a 3-year warranty.

HID ELECTROMAGNETIC BALLASTS

ProLume®

ProLume® Core and Coil HID ballasts operate a wide variety of Standard and Pulse Start Metal Halide and High Pressure Sodium lamp types.

Multi-Tap

ProLume HID ballasts provide a wide range of multi-tap ballast options. 4-Tap ballasts are offered throughout the line, while 5-Tap ballasts are available for higher wattages. Multi-tap engineering means one ballast for applications with 120V, 208V, 240V, 277V and 480V (5-tap models).

Distributor Kits

ProLume HID ballasts come in complete distributor replacement kits. Kits include an Ignitor when applicable, a Capacitor when required, as well as mounting brackets and hardware.

Capacitors and Ignitors

For your convenience, Capacitors and Ignitors can be purchased individually. ProLume Ignitors are manufactured using only the highest quality components. Replacement Dry Film and Oil-Filled Capacitors are also available for all ProLume ballasts. Oil-Filled Capacitors are provided with ballasts 1000 watts and above.

Certifications

All ProLume Electromagnetic HID ballasts, Ignitors and included Capacitors are certified by Underwriters Laboratories for use in the United States and Canada and backed with a 2-year warranty.

LED LAMPS

CONTENTS

HOW TO READ A LED LAMP TABLE

BULB
Designations indicate shape and size. Illustrations can be found on page 53 and at the top of each page.

BASE
Indicates base type. Full base descriptions and illustrations can be found on page 53.

PRODUCT CODE
Abbreviated product description can also be used for ordering. A key to abbreviations can be found on page 55.

VOLTS
Indicates the product's design voltage of operation.

COLOR TEMP.
A term used to describe the color of a light source and is expressed in degrees "Kelvin" (K).

LIFE
Rated at L70.

PACKAGE QUANTITY
Indicates minimum sell quantity and smallest shipping carton.

MOL
Indicates maximum overall length in inches.

Bulb	Base	Product Number	Footnotes	Product Code	Description	Volts	CRI	Color Temp.	Lumens	Life	Pkg. Qty.	Beam Spread	MOL
ProLED JC Type Lamps													
1.5 WATT													
JC10	**G4**	80693	$ 1,4,5,6	**JC10/1WW/LED**		10-18	82	3000	120	20000	1/40	-	1.21"
		80776	$ 1,4,6,10	**JC10/1WW/LED2**	IP65 Rated	10-18	82	3000	100	40000	1/10	-	1.75"
	BA15s	80692	$ N,1,4,5,6	**JC10/1WW/BA15S/LED**		10-18	82	3000	120	20000	1/40	-	2.01"
		80810	† $ N,1,4,6,10	**JC10/1WW/BA15S/LED2**	IP65 Rated	10-18	82	3000	100	40000	1/10	-	1.93"

WATTS
Indicates the power consumed by the lamp during operation.

PRODUCT NUMBER
Use this number when placing an order.

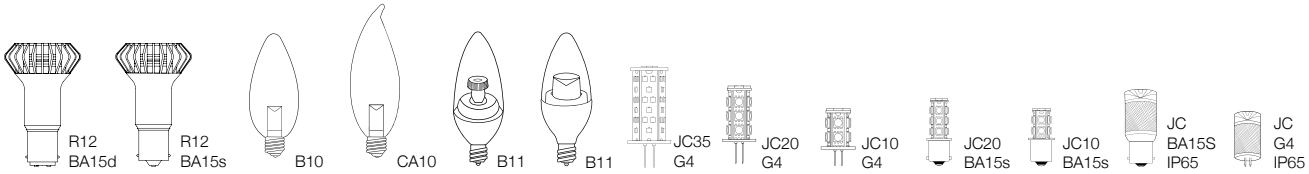
FOOTNOTES & SYMBOLS
Related footnotes can be found on page 54.

DESCRIPTION
Bulb finish and other important information.

CRI
An international scale from 0 to 100 that indicates the relative color rendering value of a light source. The color rendering index expresses the degree to which colors will look "natural" under a given light source.

LUMENS
Represents average light output.

BEAM SPREAD
Indicates the beam angle or beam spread of a bulb, measured in degrees.

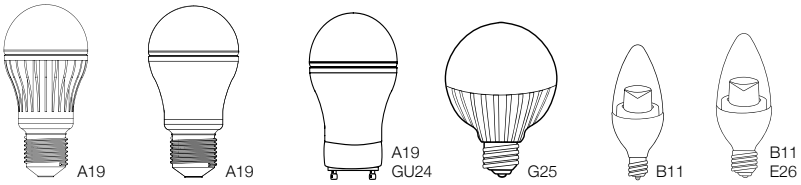


Bulb	Base	Product Number	Footnotes	Product Code	Description	Volts	CRI	Color Temp.	Lumens	Life	Pkg. Qty.	Beam Spread	MOL
ProLED® JC Type Lamps													
1.5 WATT													
JC10	**G4**	80693	$ 1,4,5,6	**JC10/1WW/LED**		10-18	82	3000	120	20000	1/40	-	1.21”
		80776	$ 1,4,6,10	**JC10/1WW/LED2**	IP65 Rated	10-18	82	3000	100	40000	1/10	-	1.75”
	BA15s	80692	$ N,1,4,5,6	**JC10/1WW/BA15S/LED**		10-18	82	3000	120	20000	1/40	-	1.70”
		80810	† $ N,1,4,6,10	**JC10/1WW/BA15S/LED2**	IP65 Rated	10-18	82	3000	100	40000	1/10	-	1.93”
1.8 WATT													
JC20	**G4**	80782	$ 1,4,5,6	**JC20/2AMB/LED**	Amber	10-18	-	-	-	20000	1/40	-	1.81”
		80780	$ 1,4,5,6	**JC20/2BLU/LED**	Blue	10-18	-	-	-	20000	1/40	-	1.81”
		80779	$ 1,4,5,6	**JC20/2GRN/LED**	Green	10-18	-	-	-	20000	1/40	-	1.81”
		80781	$ 1,4,5,6	**JC20/2RED/LED**	Red	10-18	-	-	-	20000	1/40	-	1.81”
2.4 WATT													
JC20	**G4**	80690	$ 1,4,5,6	**JC20/2WW/LED**		10-18	82	3000	200	20000	1/40	-	1.81”
		80815	$ 1,4,5,6	**JC20/2NW/LED**		10-18	72	5000	230	20000	1/40	-	1.81”
	BA15s	80691	$ N,1,4,5,6	**JC20/2WW/BA15S/LED**		10-18	82	3000	200	20000	1/40	-	2.01”
2.5 WATT													
JC20	**G4**	80774	$ 1,4,6,10	**JC20/2WW/LED2**	IP65 Rated	10-18	82	3000	140	40000	1/10	-	1.75”
	BA15s	80775	$ N,1,4,6,10	**JC20/2WW/BA15S/LED2**	IP65 Rated	10-18	82	3000	140	40000	1/10	-	2.25”
4.5 WATT													
JC35	**G4**	80830	† $ 1,4,5,6	**JC35/4WW/LED**		10-18	82	3000	450	20000	1/30	-	2.03”
ProLED® Elevator Lamps													
2.6 WATT													
R12	**BA15d**	80756	$ N,1,4,5,7	**GBF/3WW/LED**		10-18	82	2700	145	40000	1/10	31°	2.52”
	BA15s	80701	$ N,1,4,5,7	**1383/3WW/LED**		10-18	82	2700	145	40000	1/10	31°	2.52”
ProLED® Decorative Lamps													
1 WATT													
B10	**Cand.**	80172	† 3,4,5,7,8	**B10CL1/827/LED**	Clear	120	82	2700	25	25000	1/25	-	3.77”
		80173	† 3,4,5,7,8	**B10CL1/724/LED**	Clear	120	72	2400	20	25000	1/25	-	3.77”
CA10	**Cand.**	80174	† 3,4,5,7,8	**CA10CL1/827/LED**	Clear	120	82	2700	25	25000	1/25	-	4.00”
		80175	† 3,4,5,7,8	**CA10CL1/724/LED**	Clear	120	72	2400	20	25000	1/25	-	4.00”
2 WATT													
B11	**Cand.**	80014	$ N,2,4,5,7,15	**B11/2WW/LED**	Non-Dimmable	120	82	3000	65	40000	1/10	-	3.94”
3 WATT													
B11	**Cand.**	80094	$ N,4,5,7,8,15	**B11CL3/827/LED**	Cream Finish	120	82	2700	180	25000	1/10	-	3.78”
		80789	$ N,4,5,7,8,15	**B11CL3/827/BR/LED**	Brass Finish	120	82	2700	180	25000	1/10	-	3.78”
		80790	$ N,4,5,7,8,15	**B11CL3/827/CHR/LED**	Chrome Finish	120	82	2700	180	25000	1/10	-	3.78”

LED lamp symbols, footnotes and abbreviations are located on page 54-55.

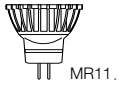
LED LAMPS

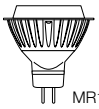
Solid State Lighting

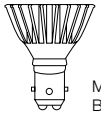


Bulb	Base	Product Number	Footnotes	Product Code	Description	Volts	CRI	Color Temp.	Lumens	Life	Pkg. Qty.	Beam Spread	MOL
ProLED® Decorative Lamps continued													
4 WATT													
A19	**Med.**	80149	† $ N,3,4,5,7,8,15	**A19FR4/827/LED**	A-Shape	120	82	2700	250	40000	1/6	-	4.25”
		80150	† $ N,3,4,5,7,8,15	**A19FR4/830/LED**	A-Shape	120	82	3000	260	40000	1/6	-	4.25”
5 WATT													
B11	**Cand.**	80820	† $ N,3,4,5,7,8,15	**B11CL5/827/LED**	Cream Finish	120	82	2700	300	25000	1/10	-	3.78”
	Med.	80168	† $ N,3,4,5,7,8,15	**B11CL5/827/E26/LED**	Cream Finish	120	82	2700	300	25000	1/10	-	3.78”
A19	**Med.**	80020	† $ N,3,4,5,7,8,15	**A19FR5/830/LED**	A-Shape	120	82	3000	260	25000	1/6	-	4.25”
6 WATT													
A19	**GU24**	80151	† $ N,3,4,5,7,8,15	**A19FR6/827/GU24/LED**	A-Shape	120	82	2700	450	40000	1/6	-	4.25”
	Med.	80152	† $ N,3,4,5,7,8,15	**A19FR6/827/LED**	A-Shape	120	82	2700	450	40000	1/6	-	4.25”
		80153	† $ N,3,4,5,7,8,15	**A19FR6/830/LED**	A-Shape	120	82	3000	470	40000	1/6	-	4.25”
		80817	† $ N,3,4,5,7,8,15	**A19FR6/840/LED**	A-Shape	120	82	4000	490	40000	1/6	-	4.25”
		80816	† $ N,3,4,5,7,8,15	**A19FR6/850/LED**	A-Shape	120	82	5000	510	40000	1/6	-	4.25”
8 WATT													
A19	**Med.**	80022	$ N,3,4,5,7,8,15	**A19FR8/830/LED**	A-Shape	120	82	3000	450	35000	1/6	-	4.25”
G25	**Med.**	80018	$ N,3,4,5,7,8,15	**G25/8WW/LED**	Globe	120	82	3000	430	25000	1/6	-	4.25”
10 WATT													
A19	**Med.**	80146	† $ N,3,4,5,7,8,15	**A19FR10/827/LED**	A-Shape	120	82	2700	800	25000	1/6	-	4.41”
		80132	† $ N,3,4,5,7,8,15	**A19FR10/830/LED**	A-Shape	120	82	3000	830	40000	1/6	-	4.41”

LED lamp symbols, footnotes and abbreviations are located on pages 54-55.





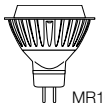


Bulb	Base	Product Number	Footnotes	Product Code	Description	Volts	CRI	Color Temp.	Lumens	CBCP	Life	Pkg. Qty.	Beam Spread	MOL
ProLED® MR11 and MR16 Lamps														
2.2 WATT														
MR11	**GU4**	80703	$ 1,4,5,6,7,8	**MR11/2NW/FL/LED**	Flood	10-18	72	5000	150	420	40000	1/10	30°	1.42”
		80705	$ 1,4,5,6,7,8	**MR11/2WW/FL/LED**	Flood	10-18	82	2700	110	330	40000	1/10	30°	1.42”
		80704	$ 1,4,5,6,7,8	**MR11/2WW/NFL/LED**	Narrow Flood	10-18	82	2700	110	860	40000	1/10	18°	1.42”
3 WATT														
MR16	**GU5.3**	80807	† $ 1,4,5,6,7,8	**MR16SP10/827/LED**	Spot	10-15	82	2700	140	1180	40000	1/10	15°	2.02”
		80806	† $ 1,4,5,6,7,8	**MR16NFL10/827/LED**	Narrow Flood	10-15	82	2700	150	480	40000	1/10	25°	2.02”
		80801	† $ 1,4,5,6,7,8	**MR16FL10/827/LED**	Flood	10-15	82	2700	150	300	40000	1/10	40°	2.02”
		80808	† $ 1,4,5,6,7,8	**MR16WFL/827/LED**	Wide Flood	10-15	82	2700	140	170	40000	1/10	50°	2.02”
		80813	† $ 1,4,5,6,7,8	**MR16FL10/750/LED**	Flood	10-15	72	5000	160	360	40000	1/10	40°	2.02”
		80000	† $ 1,4,5,6,7,8	**MR16/3WW/FL/LED2**	Flood	12	82	3000	150	360	40000	1/10	38°	1.97”
3.3 WATT														
MR16	**GU5.3**	80709	$ 1,4,5,6,7,8	**MR16/3WW/FL/LED**	Flood	10-18	82	2700	150	380	40000	1/10	34°	2.20”
3.5 WATT														
MR11	**BA15d**	80169	† $ 1,4,5,6,7,8	**MR11FTD/827/LED**	Flood	10-15	82	2700	300	1135	40000	1/10	30°	1.89”
MR16	**GU10**	80742	$ 3,4,5,7,8	**MR16/4NW/FL/GU10/LED**	Flood	120	72	5000	190	490	40000	1/10	29°	2.17”
		80743	$ 3,4,5,7,8	**MR16/4WW/FL/GU10/LED**	Flood	120	82	2700	140	370	40000	1/10	30°	2.17”
4 WATT														
MR16	**GU10**	80819	† $ 3,4,5,7,8	**MR16FL4/830/GU10/LED**	Flood	120	82	3000	220	480	40000	1/10	40°	2.17”
	GU5.3	80728	$ 1,4,5,6,7	**MR16/5RGB/FL/LED**	Color Changing Red, Green, Blue	10-18	-	-	-	-	40000	1/10	31°	2.17”
		80649		**RGB/REMOTE**	Remote Control for Color Changing Lamps									
4.5 WATT														
MR16	**GU5.3**	80795	† $ 1,4,5,6,7,8	**MR16ESX/827/LED**	Spot	10-15	82	2700	200	1260	40000	1/10	15°	2.02”
		80793	† $ 1,4,5,6,7,8	**MR16BBF/827/LED**	Narrow Flood	10-15	82	2700	220	750	40000	1/10	25°	2.02”
		80792	† $ 1,4,5,6,7,8	**MR16BAB/827/LED**	Flood	10-15	82	2700	220	400	40000	1/10	40°	2.02”
		80794	† $ 1,4,5,6,7,8	**MR16WFL20/827/LED**	Wide Flood	10-15	82	2700	200	240	40000	1/10	60°	2.02”
		80811	† $ 1,4,5,6,7,8	**MR16BAB/750/LED**	Flood	10-15	72	5000	250	480	40000	1/10	40°	2.02”
		80702	$ 1,4,5,6,7,8	**MR16/3M4WW/FL/LED**	Flood	10-18	82	2700	220	560	40000	1/10	34°	2.20”
		80724	$ 1,4,5,6,7	**MR16/3M4AMB/NFL/LED**	Narrow Flood Amber	10-18	-	-	-	-	40000	1/10	22°	2.20”
		80727	$ 1,4,5,6,7	**MR16/3M4BLU/NFL/LED**	Narrow Flood Blue	10-18	-	-	-	-	40000	1/10	22°	2.20”
		80726	$ 1,4,5,6,7	**MR16/3M4GRN/NFL/LED**	Narrow Flood Green	10-18	-	-	-	-	40000	1/10	22°	2.20”
		80725	$ 1,4,5,6,7	**MR16/3M4RED/NFL/LED**	Narrow Flood Red	10-18	-	-	-	-	40000	1/10	22°	2.20”

LED lamp symbols, footnotes and abbreviations are located on page 54-55.

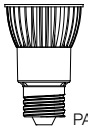
LED LAMPS

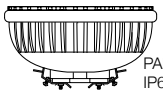
Solid State Lighting


MR16


MR16
GU10


PAR16

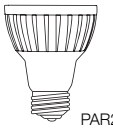

PAR16


PAR36
IP67

Bulb	Base	Product Number	Footnotes	Product Code	Description	Volts	CRI	Color Temp.	Lumens	CBCP	Life	Pkg. Qty.	Beam Spread	MOL
ProLED® MR16 Lamps continued														
6 WATT														
MR16	**GU5.3**	80805	† $ 1,4,5,6,7,8	**MR16FRB/827/LED**	Spot	10-15	82	2700	320	1650	40000	1/10	18°	2.02”
		80804	† $ 1,4,5,6,7,8	**MR16FRA/827/LED**	Narrow Flood	10-15	82	2700	350	1500	40000	1/10	25°	2.02”
		80802	† $ 1,4,5,6,7,8	**MR16FMW/827/LED**	Flood	10-15	82	2700	350	600	40000	1/10	40°	2.02”
		80809	† $ 1,4,5,6,7,8	**MR16WFL35/827/LED**	Wide Flood	10-15	82	2700	320	250	40000	1/10	60°	2.02”
		80814	† $ 1,4,5,6,7,8	**MR16FMW/750/LED**	Flood	10-15	72	5000	410	720	40000	1/10	40°	2.02”
		80016	† $ 1,4,5,6,7,8	**MR16FL6/830/LED**	Flood	10-15	82	3000	370	620	40000	1/10	40°	2.13”
	GU10	80084	† $ 1,4,5,6,7,8	**MR16FL6/830/GU10/LED**	Flood	120	82	3000	370	620	40000	1/10	40°	3.11”
7 WATT														
MR16	**GU10**	80167	† $ 1,4,5,6,7,8	**M16FL7/830/GU10/LED**	Flood	120	82	3000	520	1100	25000	1/10	40°	2.17”
8 WATT														
MR16	**GU5.3**	80799	† $ 1,4,5,6,7,8	**MR16EXT/827/LED**	Spot	10-15	82	2700	450	2000	40000	1/10	18°	2.02”
		80800	† $ 1,4,5,6,7,8	**MR16EXZ/827/LED**	Narrow Flood	10-15	82	2700	500	1700	40000	1/10	25°	2.02”
		80798	† $ 1,4,5,6,7,8	**MR16EXN/827/LED**	Flood	10-15	82	2700	500	850	40000	1/10	40°	2.02”
		80803	† $ 1,4,5,6,7,8	**MR16FNV/827/LED**	Wide Flood	10-15	82	2700	450	390	40000	1/10	60°	2.02”
		80812	† $ 1,4,5,6,7,8	**MR16EXN/750/LED**	Flood	10-15	72	5000	580	1020	40000	1/10	40°	2.02”
ProLED® PAR Lamps														
3.3 WATT														
PAR16	**Med.**	80748	$ N,3,4,5,7,8	**PAR16/3NW/NFL/LED**	Narrow Flood	120	72	5000	160	460	40000	1/6	28°	2.99”
		80749	$ N,3,4,5,7,8	**PAR16/3WW/NFL/LED**	Narrow Flood	120	82	2700	145	370	40000	1/6	27°	2.99”
3.6 WATT														
PAR16	**Med.**	80732	$ N,2,4,5,7	**PAR16/4AMB/NFL/LED**	Narrow Flood Amber	120	-	-	-	-	40000	1/6	22°	2.99”
		80729	$ N,2,4,5,7	**PAR16/4RED/NFL/LED**	Narrow Flood Red	120	-	-	-	-	40000	1/6	22°	2.99”
4.5 WATT														
PAR16	**Med.**	80731	$ N,2,4,5,7	**PAR16/4GRN/NFL/LED**	Narrow Flood Green	120	-	-	-	-	40000	1/6	22°	2.99”
6 WATT														
PAR16	**Med.**	80078	$ 3,4,5,8,14,15	**PAR16FL6/827/LED**	Flood	120	82	2700	360	670	40000	1/10	40°	3.27”
		80080	$ 3,4,5,8,14,15	**PAR16FL6/830/LED**	Flood	120	82	3000	370	690	40000	1/10	40°	3.27”
		80082	$ 3,4,5,8,14,15	**PAR16FL6/850/LED**	Flood	120	82	5000	400	750	40000	1/10	40°	3.27”
		80698	$ N,3,4,5,7,8	**PAR16/6NW/FL/LED2**	Flood	120	72	5000	385	610	40000	1/10	40°	3.35”
		80697	$ N,3,4,5,7,8	**PAR16/6WW/FL/LED2**	Flood	120	82	2700	310	530	40000	1/10	40°	3.35”
		80720	$ N,3,4,5,7,8	**PAR16/6WW/SP/LED2**	Spot	120	82	2700	310	2370	40000	1/10	14°	3.35”
6.5 WATT														
PAR36	**MP Term**	80106	$ 1,4,7,13,16	**PAR36/6WW/SP/LED**	Spot IP67 Rated	10-15	82	2700	260	1820	40000	1/6	15°	2.40”
		80768	$ 1,4,7,13,16	**PAR36/6WW/WFL/LED2**	Wide Flood IP67 Rated	10-15	82	2700	260	680	40000	1/6	32°	2.40”

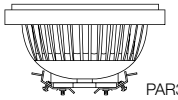

RGB PAR20

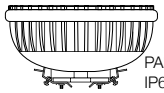

PAR20


PAR20


PAR30 Short Neck


PAR30


PAR36

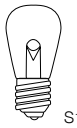

PAR36 IP67

Bulb	Base	Product Number	Footnotes	Product Code	Description	Volts	CRI	Color Temp.	Lumens	CBCP	Life	Pkg. Qty.	Beam Spread	MOL
ProLED PAR Lamps **continued**														
7.2 WATT														
PAR20	**Med.**	80736	$ N,2,4,5,7	**PAR20/7AMB/NFL/LED**	Narrow Flood Amber	120	-	-	-	-	40000	1/6	25°	3.43”
8 WATT														
PAR20	**Med.**	80072	$ 3,4,5,8,14,15	**PAR20FL8/830/LED**	Flood	120	82	3000	380	600	40000	1/6	40°	3.43”
		80070	$ 3,4,5,8,14,15	**PAR20NFL8/827/LED**	Narrow Flood	120	82	2700	365	1250	40000	1/6	25°	3.43”
		80024	$ 3,4,5,8,14,15	**PAR20NFL8/830/LED**	Narrow Flood	120	82	3000	380	1300	25000	1/6	25°	3.43”
		80074	$ 3,4,5,8,14,15	**PAR20NFL8/840/LED**	Narrow Flood	120	82	4000	395	1350	40000	1/6	25°	3.43”
		80076	$ 3,4,5,8,14,15	**PAR20NFL8/850/LED**	Narrow Flood	120	82	5000	410	1400	40000	1/6	25°	3.43”
		80638	$ N,2,4,5,7	**PAR20/8RGB/NFL/LED**	Color Changing Red, Green, Blue	120	-	-	-	-	40000	1/6	25°	3.50”
		80649		**PAR20/8RGB/REMOTE**	Remote Control for Color Changing Lamps									
10 WATT														
PAR36	**MP Term**	80783	$ 1,4,7,13,16	**PAR36/10WW/SP/LED**	Spot IP67 Rated	10-15	82	2700	420	4200	40000	1/6	15°	2.40”
		80769	$ 1,4,7,13,16	**PAR36/10WW/WFL/LED2**	Wide Flood, Amber IP67 Rated	10-15	82	2700	420	920	40000	1/6	32°	2.40”
		80784	$ 1,4,7,13,16	**PAR36/10AMB/WFL/LED**	Wide Flood, Amber IP67 Rated	10-15	-	-	-	-	40000	1/6	32°	2.40”
		80786	$ 1,4,7,13,16	**PAR36/10BLU/WFL/LED**	Wide Flood, Blue IP67 Rated	10-15	-	-	-	-	40000	1/6	32°	2.40”
		80785	$ 1,4,7,13,16	**PAR36/10GRN/WFL/LED**	Wide Flood, Green IP67 Rated	10-15	-	-	-	-	40000	1/6	32°	2.40”
		80787	$ 1,4,7,13,16	**PAR36/10RED/WFL/LED**	Wide Flood, Red IP67 Rated	10-15	-	-	-	-	40000	1/6	32°	2.40”
13 WATT														
PAR30	**Med.**	80066	$ 3,4,5,8,14,15	**PAR30FL13/827/LED**	Flood	120	82	2700	680	1250	40000	1/6	40°	4.49”
		80026	$ 3,4,5,8,14,15	**PAR30FL13/830/LED**	Flood	120	82	3000	700	1280	25000	1/6	40°	4.49”
		80068	$ 3,4,5,8,14,15	**PAR30FL13/840/LED**	Flood	120	82	4000	730	1340	40000	1/6	40°	4.49”
		80030	$ 3,4,5,8,14,15	**PAR30FL13/850/LED**	Flood	120	82	5000	760	1360	40000	1/6	40°	4.49”
		80096	$ 3,4,5,8,14,15	**PAR30NFL13/827/LED**	Narrow Flood	120	82	2700	680	2910	40000	1/6	25°	4.49”
		80028	$ 3,4,5,8,14,15	**PAR30NFL13/830/LED**	Narrow Flood	120	82	3000	700	3000	40000	1/6	25°	4.49”
		80038	$ 3,4,5,8,14,15	**PAR30NFL13/850/LED**	Narrow Flood	120	82	5000	760	3250	40000	1/6	25°	4.49”
		80102	$ 3,4,5,8,14,15	**PAR30SP13/827/LED**	Spot	120	82	2700	680	4900	40000	1/6	15°	4.49”
		80098	$ 3,4,5,8,14,15	**PAR30SP13/830/LED**	Spot	120	82	3000	700	5100	40000	1/6	15°	4.49”
		80100	$ 3,4,5,8,14,15	**PAR30SP13/850/LED**	Spot	120	82	5000	760	5500	40000	1/6	15°	4.49”
14 WATT														
PAR36	**MP Term**	80165	† $ 1,4,5,6,7,8,17	**PAR36FL14/827/LED**	Flood	12	82	2700	870	1830	40000	1/6	32°	2.40”
15 WATT														
PAR30	**Med. Short**	80142	$ 3,4,8,14,15	**PAR30FL15S/827/LED**	Flood	120	82	2700	770	1500	40000	1/6	40°	3.75”
		80138	$ 3,4,8,14,15	**PAR30FL15S/830/LED**	Flood	120	82	3000	800	1600	25000	1/6	40°	3.75”

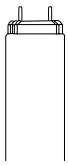
LED lamp symbols, footnotes and abbreviations are located on page 54-55.

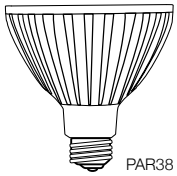
LED LAMPS

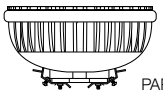
Solid State Lighting


S14 Clear


S14

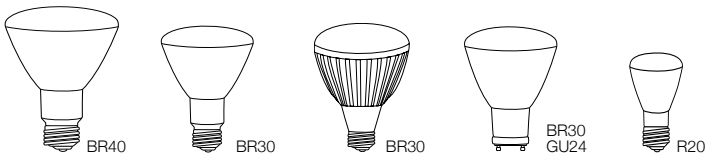

T8 Med Bi-Pin


PAR38


PAR36

Bulb	Base	Product Number	Footnotes	Product Code	Description	Volts	CRI	Color Temp.	Lumens	CBCP	Life	Pkg. Qty.	Beam Spread	MOL
ProLED® PAR Lamps continued														
16 WATT														
PAR38	**Med.**	80040	$ 3,4,5,8,14,15	**PAR38FL16/827/LED**	Flood	120	82	2700	920	1700	40000	1/6	40°	5.00”
		80032	$ 3,4,5,8,14,15	**PAR38FL16/830/LED**	Flood	120	82	3000	950	1770	25000	1/6	40°	5.00”
		80044	$ 3,4,5,8,14,15	**PAR38FL16/840/LED**	Flood	120	82	4000	990	1850	40000	1/6	40°	5.00”
		80036	$ 3,4,5,8,14,15	**PAR38FL16/850/LED**	Flood	120	82	5000	1020	1930	40000	1/6	40°	5.00”
		80034	$ 3,4,5,8,14,15	**PAR38NFL16/830/LED**	Narrow Flood	120	82	3000	950	4000	40000	1/6	25°	5.00”
		80042	$ 3,4,5,8,14,15	**PAR38SP16/830/LED**	Spot	120	82	3000	950	6700	40000	1/6	15°	5.00”
18 WATT														
PAR36	**MP Term**	80788	$ 1,4,7,13,16	**PAR36/18WW/SP/LED2**	Spot IP67 Rated	10-15	82	2700	720	3000	40000	1/6	20°	2.40”
		80770	$ 1,4,7,13,16	**PAR36/18WW/WFL/LED2**	Wide Flood IP67 Rated	10-15	82	2700	720	1800	40000	1/6	32°	2.40”
20 WATT														
PAR38	**Med.**	80050	$ 3,4,5,8,14,15	**PAR38FL20/827/LED**	Flood	120	82	2700	1150	1970	40000	1/6	40°	5.00”
		80056	$ 3,4,5,8,14,15	**PAR38FL20/830/LED**	Flood	120	82	3000	1200	2050	25000	1/6	40°	5.00”
		80058	$ 3,4,5,8,14,15	**PAR38FL20/840/LED**	Flood	120	82	4000	1250	2150	40000	1/6	40°	5.00”
		80064	$ 3,4,5,8,14,15	**PAR38FL20/850/LED**	Flood	120	82	5000	1300	2200	40000	1/6	40°	5.00”
		80048	$ 3,4,5,8,14,15	**PAR38NFL20/827/LED**	Narrow Flood	120	82	2700	1150	4850	40000	1/6	25°	5.00”
		80054	$ 3,4,5,8,14,15	**PAR38NFL20/830/LED**	Narrow Flood	120	82	3000	1200	5000	40000	1/6	25°	5.00”
		80062	$ 3,4,5,8,14,15	**PAR38NFL20/850/LED**	Narrow Flood	120	82	5000	1300	5400	40000	1/6	25°	5.00”
		80046	$ 3,4,5,8,14,15	**PAR38SP20/827/LED**	Spot	120	82	2700	1150	7700	40000	1/6	15°	5.00”
		80052	$ 3,4,5,8,14,15	**PAR38SP20/830/LED**	Spot	120	82	3000	1200	8100	40000	1/6	15°	5.00”
		80060	$ 3,4,5,8,14,15	**PAR38SP20/850/LED**	Spot	120	82	5000	1300	8700	40000	1/6	15°	5.00”
ProLED® Linear Lamps														
18 WATT														
T8	**Bi-Pin**	80170	† $ 2,4,5	**T8FR18/840/LED**	Linear T8 Tube	120-277	82	4000	1800	-	40000	1/12	120°	48”
		80171	† $ 2,4,5	**T8FR18/850/LED**	Linear T8 Tube	120-277	82	5000	1800	-	40000	1/12	120°	48”
ProLED® Sign Lamps														
1.4 WATT														
S14	**Med.**	80517	† 3,4,7,8,10	**S14RED1C/LED**	Red IP65 Rated	120	-	-	-	-	40000	1/25	-	3.35”
		80518	† 3,4,7,8,10	**S14BLU1C/LED**	Blue IP65 Rated	120	-	-	-	-	40000	1/25	-	3.35”
		80519	† 3,4,7,8,10	**S14GRN1C/LED**	Green IP65 Rated	120	-	-	-	-	40000	1/25	-	3.35”
		80520	† 3,4,7,8,10	**S14YEL1C/LED**	Yellow IP65 Rated	120	-	-	-	-	40000	1/25	-	3.35”
		80521	† 3,4,7,8,10	**S14WH1C/LED**	White IP65 Rated	120	-	-	-	-	40000	1/25	-	3.35”
		80522	† 3,4,7,8,10	**S14CL1/827/LED**	Clear IP65 Rated	120	82	2700	35	-	40000	1/25	-	3.35”

LED lamp symbols, footnotes and abbreviations are located on pages 54-55.



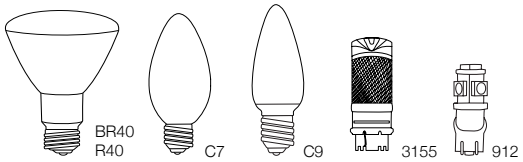
Bulb	Base	Product Number	Footnotes	Product Code	Description	Volts	CRI	Color Temp.	Lumens	Life	Pkg. Qty.	Beam Spread	MOL
ProLED® Reflector Lamps													
5 WATT													
R20	**Med.**	80108	† $ 3,4,5,8,14,15	**R20FL5/830/LED**	Flood	120	82	3000	310	40000	1/6	-	3.94”
		80110	† $ 3,4,5,8,14,15	**R20FL5/850/LED**	Flood	120	82	5000	335	40000	1/6	-	3.94”
8 WATT													
R20	**Med.**	80818	† $ 3,4,5,8,14,15	**R20FL8/827/LED**	Flood	120	82	2700	500	25000	1/6	-	3.94”
		80112	† $ 3,4,5,8,14,15	**R20FL8/830/LED**	Flood	120	82	3000	520	25000	1/6	-	3.94”
		80114	† $ 3,4,5,8,14,15	**R20FL8/850/LED**	Flood	120	82	5000	560	40000	1/6	-	3.94”
9 WATT													
BR30	**GU24**	80158	† $ 3,4,5,8,14,15	**BR30FL9/827/GU24/LED**	Flood	120	82	2700	650	40000	1/6	-	5.12”
	Med.	80159	† $ 3,4,5,8,14,15	**BR30FL9/827/LED**	Flood	120	82	2700	650	25000	1/6	-	5.12”
		80160	† $ 3,4,5,8,14,15	**BR30FL9/830/LED**	Flood	120	82	3000	670	40000	1/6	-	5.12”
		80161	† $ 3,4,5,8,14,15	**BR30FL9/840/LED**	Flood	120	82	4000	700	40000	1/6	-	5.12”
		80162	† $ 3,4,5,8,14,15	**BR30FL9/850/LED**	Flood	120	82	5000	730	40000	1/6	-	5.12”
		80166	† $ 3,4,5,8,14,15	**BR0FL9/PNK/LED**	Flood Pink	120	-	-	-	40000	1/6	-	5.12”
11 WATT													
BR30	**Med.**	80086	† $ 3,4,5,8,14,15	**BR30FL11/827/LED**	Flood	120	82	2700	730	25000	1/6	-	5.12”
		80088	† $ 3,4,5,8,14,15	**BR30FL11/830/LED**	Flood	120	82	3000	750	25000	1/6	-	5.12”
		80090	† $ 3,4,5,8,14,15	**BR30FL11/840/LED**	Flood	120	82	4000	780	40000	1/6	-	5.12”
		80092	† $ 3,4,5,8,14,15	**BR30FL11/850/LED**	Flood	120	82	5000	810	40000	1/6	-	5.12”
13 WATT													
BR40	**Med.**	80116	† $ 3,4,5,8,14,15	**BR40FL13/827/LED**	Flood	120	82	2700	850	25000	1/6	-	6.46”
		80118	† $ 3,4,5,8,14,15	**BR40FL13/830/LED**	Flood	120	82	3000	880	25000	1/6	-	6.46”
		80120	† $ 3,4,5,8,14,15	**BR40FL13/840/LED**	Flood	120	82	4000	920	40000	1/6	-	6.46”
		80122	† $ 3,4,5,8,14,15	**BR40FL13/850/LED**	Flood	120	82	5000	950	40000	1/6	-	6.46”
15 WATT													
BR30	**Med.**	80778	$ 3,4,5,8,14,15	**BR30/15WW/FL/LED**	Flood	120	82	3000	860	25000	1/6	-	5.28”
18 WATT													
BR40	**Med.**	80124	† $ 3,4,5,8,14,15	**BR40FL18/827/LED**	Flood	120	82	2700	1200	40000	1/6	-	6.46”
		80126	† $ 3,4,5,8,14,15	**BR40FL18/830/LED**	Flood	120	82	3000	1230	25000	1/6	-	6.46”
		80128	† $ 3,4,5,8,14,15	**BR40FL18/840/LED**	Flood	120	82	4000	1280	40000	1/6	-	6.46”
		80130	† $ 3,4,5,8,14,15	**BR40FL18/850/LED**	Flood	120	82	5000	1320	40000	1/6	-	6.46”
ProLED® Pool Bright													
8 WATT													
R20	**Med.**	80822	† $ 3,4,5,11	**R20FL8/POOL/12V/LED**	Pool Bright	12	82	6500	1000*	40000	6/24	-	3.94”
		80821	† $ 3,4,5,11	**R20FL8/POOL/LED**	Pool Bright	120	82	6500	1000*	40000	6/24	-	3.94”

*Scotopic Lumens

LED lamp symbols, footnotes and abbreviations are located on page 54-55.

LED LAMPS

Solid State Lighting



Bulb	Base	Product Number	Footnotes	Product Code	Description	Volts	CRI	Color Temp.	Lumens	Life	Pkg. Qty.	Beam Spread	MOL
ProLED® Pool Bright continued													
18 WATT													
R40	**Med.**	80136	† $ 3,4,5,11	**R40FL18/POOL/12V/LED**	Pool Bright	12	82	6500	3150*	40000	6/24	-	6.46”
		80134	† $ 3,4,5,11	**R40FL18/POOL/LED**	Pool Bright	120	82	6500	3150*	40000	6/24	-	6.46”
ProLED® Miniatures													
1 WATT													
	Mini Wedge	80791	† $ 1,4,5,6	**912/1WW/LED**		10-18	82	3000	50	20000	1/50	-	1.18”
2.5 WATT													
	Plastic Wedge	80777	† $ 1,4,5,6,10	**3155/2WW/LED**	IP65 Rated	10-18	82	3000	140	40000	1/10	-	2.40”

Bulb	Base	Product Number	Footnotes	Product Code	Description	Volts	Color Temp.	Life	Pkg. Qty.	MOL
ProLED® C7 and C9 Lamps										
0.96 WATT										
C7	**Cand.**	80510	$ N,2,4,7,10	**C7NW/FC/LED**	Clear Faceted	120	6000	60000	10/200	1.30”
		80516	$ N,2,4,7,10	**C7WW/FC/LED**	Clear Faceted	120	2700	60000	10/200	1.30”
		80508	$ N,2,4,7,10	**C7BLU/FC/LED**	Blue Faceted	120	-	60000	10/200	1.30”
		80509	$ N,2,4,7,10	**C7GRN/FC/LED**	Green Faceted	120	-	60000	10/200	1.30”
		80506	$ N,2,4,7,10	**C7RED/FC/LED**	Red Faceted	120	-	60000	10/200	1.30”
		80507	$ N,2,4,7,10	**C7YEL/FC/LED**	Yellow Faceted	120	-	60000	10/200	1.30”
C9	**Int.**	80515	$ N,2,4,7,10	**C9CL/FC/LED**	Clear Faceted	120	6000	60000	10/200	1.60”
		80513	$ N,2,4,7,10	**C9BLU/FC/LED**	Blue Faceted	120	-	60000	10/200	1.60”
		80514	$ N,2,4,7,10	**C9GRN/FC/LED**	Green Faceted	120	-	60000	10/200	1.60”
		80511	$ N,2,4,7,10	**C9RED/FC/LED**	Red Faceted	120	-	60000	10/200	1.60”
		80512	$ N,2,4,7,10	**C9YEL/FC/LED**	Yellow Faceted	120	-	60000	10/200	1.60”

Watts	Product Number	Footnotes	Product Code	Description	Color Temp.	Pkg. Qty.
ProLED® Headlamp						
0.75	80920	12	**HL/18LED**	18 LED Water Resistant Headlamp - Requires 3 AAA Batteries	6000	50/200

*Scotopic Lumens

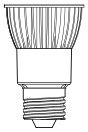
LED lamp symbols, footnotes and abbreviations are located on page 54-55.

LED LAMPS

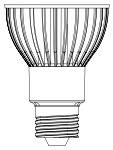
Bulb and Base Identification Guide

Bulb Shapes


PAR16


PAR16
(Colors Only)


PAR20
(RGB Only)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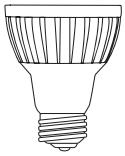
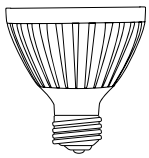
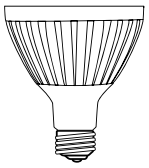

PAR20


PAR30
Short Neck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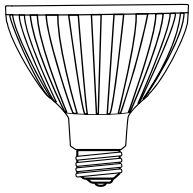
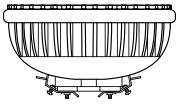
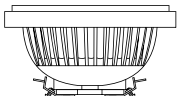
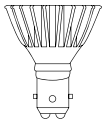
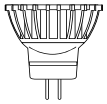

PAR38


PAR36
IP67


PAR36


MR11
BA15d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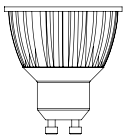
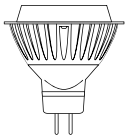
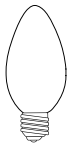
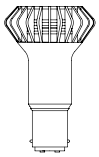
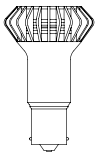

MR16
GU10


MR16

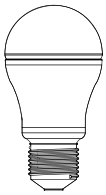

C7


C9


R12
BA15d


R12
BA15s


T8 Medium
Bi-Pin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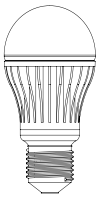
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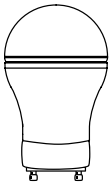
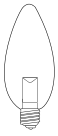

A19
GU24


CA10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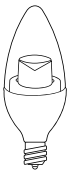
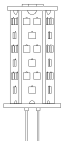
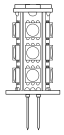
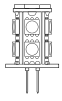
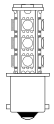

B11

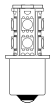

B11

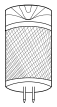

JC35


JC20

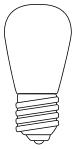

JC10

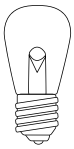

JC20
BA15s

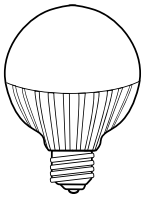

JC10
BA15s

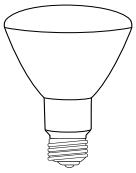

JC G4
IP65

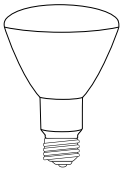

JC
BA15s
IP65

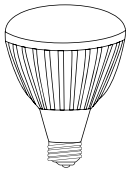

S14

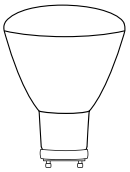

S14 Clear


Globe


BR40/R40

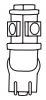

BR30


BR30

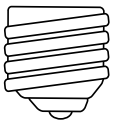

BR30
GU24

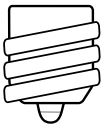

R20

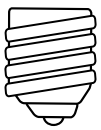

Plastic
Wedge

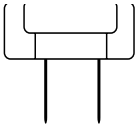

Mini
Wedge

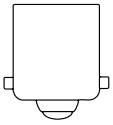
Base Types

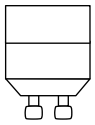

Medium
E26

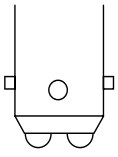

Candelabra
E12

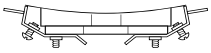

Intermediate
E17

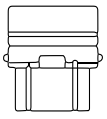

G4

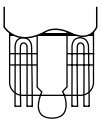

SC Bayonet
BA15s

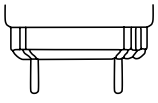

GU10

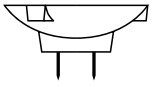

DC Bayonet
BA15d

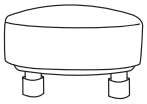

MP-Term


Plastic
Wedge


Wedge


Medium
Bi-Pin
G13


GU5.3


GU24

LED LAMPS

Symbols, Footnotes and Abbreviations

SYMBOLS

†	New product introduced within the past year.
N	Nickel-plated brass base.
$	Energy saving product.
X	Product will be discontinued when inventory is depleted.

FOOTNOTES

1	This device is intended for use on Class 2 circuits only. Use only on low voltage circuits with output ranges identified in specifications. These lamps may be dimmed using analog dimmers and magnetic transformers. May not be compatible with all dimmers and/or transformers and should be tested in application for compatibility prior to full installations on circuits using such devices. Not for use on timing devices, photo sensors or occupancy sensors.
2	Non-Dimmable 120V lamps should only be used on 120V circuits. Not for use on dimmers, timing devices, photo sensors or occupancy sensors.
3	Dimmable 120V lamps should only be used on 120V circuits. Lamps are designed for use with an analog dimmer and these products may not be compatible with all dimming devices. Lamps should be tested in the application prior to full installations on circuits using such devices. Not for use on timing devices, photo-sensors, digital dimmers or occupancy sensors. Ensure minimum dimmer load is met for best performance.
4	Caution: Risk of electric shock. Never disassemble or modify the bulb, no user serviceable parts inside. To avoid burns, do not touch the bulb during operation and allow to cool completely after switching off. This device is not intended for use in emergency exit fixtures. This device complies with Part 18 of the FCC rules. This product may cause interference with other devices. If interference occurs, change the location of the products involved.
5	Do not use where directly exposed to water.
6	Approved for use in sealed metal landscape fixtures.
7	Do not use in totally enclosed fixtures or IC or ICAT rated recessed cans.
8	Dimmable lamps dim down to 5%, but are limited by the dimming device range.
9	Base down operation only.
10	IP65 Rated – this lamp is rated for use outdoors where exposed directly to water from rain or irrigation. The lamp is not submersible, not for enclosed fixtures.
11	This product is designed to allow operation in metal construction pool fixtures and is allowed in this type of enclosed fixture.
12	Batteries not included.
13	IP67 Rated - This lamp is rated for use outdoors where exposed directly to water and protected from the effects of temporary immersion in water to depth between 5.9” (15cm) and 39.37” (1m).
14	Not for use in totally enclosed fixtures. Acceptable for use in insulated contact airtight (ICAT) rated fixtures
15	Lamp is UL approved for damp locations.
16	Rated for outdoor use only.
17	Rated for indoor use only.

ABBREVIATIONS

724	Refers to a color temperature of 2400K and 72CRI.
750	Refers to a color temperature of 5000K and 72CRI.
827	Refers to a color temperature of 2700K and 82CRI.
830	Refers to a color temperature of 3000K and 82CRI.
840	Refers to a color temperature of 4000K and 82CRI.
850	Refers to a color temperature of 5000K and 82CRI.
AMB	Code abbreviation for an Amber lamp.
BA15S	Code abbreviation for a lamp with a BA15s base.
BLU	Code abbreviation for a Blue lamp.
BR	Code abbreviation for a lamp with a Brass base.
C	Code abbreviation for lamp with Ceramic Paint Color.
CHR	Code abbreviation for a lamp with a Chrome base.
CL	Code abbreviation for a Clear lamp.
E26	Code abbreviation for a lamp with a E26 base.
FL	Code abbreviation for Flood lamps.
FR	Code abbreviation for a Frosted lamp.
GRN	Code abbreviation for a Green lamp.
GU10	Code abbreviation for a lamp with a GU10 base.
GU24	Code abbreviation for a lamp with a GU24 base.
NFL	Code abbreviation for Narrow Flood lamps.
NW	Code abbreviation for a lamp with a color temperature of 5000K.
POOL	Code abbreviation for a Pool Bright lamp.
RED	Code abbreviation for a Red lamp.
RGB	Code abbreviation for a Color Changing Red, Green and Blue lamp.
S	Code abbreviation for short neck PAR30 lamp.
SP	Code abbreviation for Spot lamps.
WFL	Code abbreviation for Wide Flood lamps.
WH	Code abbreviation for a White lamp.
WW	Code abbreviation for a lamp with a color temperature of 2700K.
YEL	Code abbreviation for a Yellow lamp.

COMPACT FLUORESCENT LAMPS

CONTENTS

HOW TO READ A COMPACT FLUORESCENT LAMP TABLE

BULB
Designations indicate shape and size. Illustrations can be found on page 69 and at the top of each page.

BASE
Indicates base type. Full base descriptions and illustrations can be found on page 69.

PRODUCT CODE
Abbreviated product description can also be used for ordering. A key to abbreviations can be found on page 74.

PACKAGE QUANTITY
Indicates minimum sell quantity and smallest shipping carton.

COLOR TEMP.
A term used to describe the color of a light source and is expressed in degrees "Kelvin" (K).

AVERAGE LIFE
Average rated life expressed in hours.

MOL
Indicates maximum overall length in inches.

Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Color Temp.	CRI	Lumens	Avg. Life	MOL	MOD
ProLume CFL Reflector												
11 WATT												
PAR20	**Med.**	46005	$ 2,4,8	**CFL11/27/PAR20**	Warm White Flood	6/24	2700	82	380	10000	3.86"	2.48"
		46006	$ 2,4,8	**CFL11/35/PAR20**	White Flood	6/24	3500	82	380	10000	3.86"	2.48"
		46007	$ 2,4,8	**CFL11/41/PAR20**	Cool White Flood	6/24	4100	82	380	10000	3.86"	2.48"
		46008	$ 2,4,8	**CFL11/50/PAR20**	Natural White Flood	6/24	5000	82	380	10000	3.86"	2.48"
R20	**GU24**	46542	$ 2,4,8	**CFL11/27/R20/GU24**	Warm White Flood	6/24	2700	82	340	10000	4.02"	2.50"

WATTS
Indicates the power consumed by the lamp during operation.

PRODUCT NUMBER
Use this number when placing an order.

FOOTNOTES & SYMBOLS
Related footnotes can be found on page 73.

DESCRIPTION
Bulb finish and other important information.

CRI
An international scale from 0 to 100 that indicates the relative color rendering value of a light source. The color rendering index expresses the degree to which colors will look "natural" under a given light source.

LUMENS
Represents average light output.

MOD
Indicates maximum overall diameter in inches.

COMPACT FLUORESCENT LAMPS

Self-Ballasted

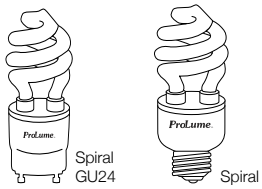
Spiral

Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Color Temp.	CRI	Lumens	Avg. Life	MOL	MOD
ProLume. CFL Bare Spiral												
5 WATT												
T2	**Cand.**	45011	$,1,3,4	**CFL5/27/E12**	Warm White	10/50	2700	82	250	10000	3.50”	1.38”
		45015	X $ 1,3,4	**CFL5/35/E12**	White	10/50	3500	82	250	10000	3.50”	1.38”
		45017	X $ 1,3,4	**CFL5/41/E12**	Cool White	10/50	4100	82	250	10000	3.50”	1.38”
		45019	X $ 1,3,4	**CFL5/50/E12**	Natural White	10/50	5000	82	250	10000	3.50”	1.38”
	Med.	45010	$ 1,3,4	**CFL5/27**	Warm White	10/50	2700	82	250	10000	3.56”	1.38”
		46600	X $ 1,3,4	**CFL5/27/FS**	Warm White Full Spiral	10/50	2700	82	300	12000	2.98”	1.93”
		45014	X $ 1,3,4	**CFL5/35**	White	10/50	3500	82	250	10000	3.56”	1.38”
		45016	$ 1,3,4	**CFL5/41**	Cool White	10/50	4100	82	250	10000	3.56”	1.38”
		45018	$ 1,3,4	**CFL5/50**	Natural White	10/50	5000	82	250	10000	3.56”	1.38”
9 WATT												
T2	**Cand.**	45031	$ 1,3,4	**CFL9/27/E12**	Warm White	10/50	2700	82	500	10000	4.00”	1.57”
		45035	X $ 1,3,4	**CFL9/35/E12**	White	10/50	3500	82	500	10000	4.00”	1.57”
		45037	X $ 1,3,4	**CFL9/41/E12**	Cool White	10/50	4100	82	500	10000	4.00”	1.57”
		45039	X $ 1,3,4	**CFL9/50/E12**	Natural White	10/50	5000	82	500	10000	4.00”	1.57”
	Med.	45030	$ 1,3,4	**CFL9/27**	Warm White	10/50	2700	82	500	10000	4.06”	1.57”
		46605	X $ 1,3,4	**CFL9/27/FS**	Warm White Full Spiral	10/50	2700	82	500	12000	3.41”	1.93”
		45034	$ 1,3,4	**CFL9/35**	White	10/50	3500	82	500	10000	4.06”	1.57”
		45036	$ 1,3,4	**CFL9/41**	Cool White	10/50	4100	82	500	10000	4.06”	1.57”
		45038	X $ 1,3,4	**CFL9/50**	Natural White	10/50	5000	82	500	10000	4.06”	1.57”
11 WATT												
T3	**Med.**	109240	$ 1,3,4	**CFL11/27**	Warm White	10/50	2700	82	700	12000	4.29”	1.85”
		109242	$ 1,3,4	**CFL11/41**	Cool White	10/50	4100	82	700	12000	4.29”	1.85”
		109244	$ 1,3,4	**CFL11/50**	Natural White	10/50	5000	82	700	12000	4.29”	1.85”
		109224	$ 1,3,4	**CFL11/BLU**	Blue	10/50	-	-	-	8000	4.29”	1.85”
		109226	X $ 1,3,4	**CFL11/GRN**	Green	10/50	-	-	-	8000	4.29”	1.85”
		109220	$ 1,3,4	**CFL11/RED**	Red	10/50	-	-	-	8000	4.29”	1.85”
		109222	$ 1,3,4	**CFL11/YEL**	Yellow	10/50	-	-	-	8000	4.29”	1.85”
13 WATT												
T2	**Cand.**	45052	$ 1,3,4	**CFL13/27/T2/E12**	Warm White	10/50	2700	82	900	10000	4.19”	1.81”
		45055	$ 1,3,4	**CFL13/35/T2/E12**	White	10/50	3500	82	900	10000	4.19”	1.81”
		45057	$ 1,3,4	**CFL13/41/T2/E12**	Cool White	10/50	4100	82	850	10000	4.19”	1.81”
		45059	$ 1,3,4	**CFL13/50/T2/E12**	Natural White	10/50	5000	82	900	10000	4.19”	1.81”
	Med.	45049	$ 1,3,4	**CFL13/27/T2**	Warm White	10/50	2700	82	900	12000	4.19”	1.81”
		45071	$ 1,3,4	**CFL13/27/T2/4PK**	Warm White 4-Pack	20/60	2700	82	900	12000	4.19”	1.81”

Compact Fluorescent lamp symbols, footnotes and abbreviations are located on pages 73-74.

COMPACT FLUORESCENT LAMPS

Self-Ballasted



Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Color Temp.	CRI	Lumens	Avg. Life	MOL	MOD
ProLume CFL Bare Spiral continued												
13 WATT continued												
T2	**Med.**	46610	$ 1,3,4	**CFL13/27/FS**	Warm White Full Spiral	10/50	2700	82	840	12000	3.84”	1.93”
		45054	$ 1,3,4	**CFL13/35/T2**	White	10/50	3500	82	900	10000	4.19”	1.81”
		45056	$ 1,3,4	**CFL13/41/T2**	Cool White	10/50	4100	82	850	10000	4.19”	1.81”
		45073	$ 1,3,4	**CFL13/41/T2/4PK**	Cool White 4-Pack	20/60	4100	82	850	10000	4.19”	1.81”
		45058	$ 1,3,4	**CFL13/50/T2**	Natural White	10/50	5000	82	900	10000	4.19”	1.81”
	GU24	46506	$ 1,3,4	**CFL13/27/GU24**	Warm White	10/50	2700	82	800	10000	3.63”	1.81”
		46525	$ 1,3,4	**CFL13/35/GU24**	White	10/50	3500	82	800	10000	3.63”	1.81”
		46526	$ 1,3,4	**CFL13/41/GU24**	Cool White	10/50	4100	82	800	10000	3.63”	1.81”
		46527	$ 1,3,4	**CFL13/50/GU24**	Natural White	10/50	5000	82	800	10000	3.63”	1.81”
T3	**Med.**	45101	$ 1,3,4	**CFL13/27**	Warm White	10/50	2700	82	900	10000	4.41”	1.97”
		45103	$ 1,3,4	**CFL13/35**	White	10/50	3500	82	900	10000	4.41”	1.97”
		45104	$ 1,3,4	**CFL13/41**	Cool White	10/50	4100	82	900	10000	4.41”	1.97”
		45105	$ 1,3,4	**CFL13/50**	Natural White	10/50	5000	82	900	10000	4.41”	1.97”
		45107	$ 1,3,4	**CFL13/65**	Daylight	10/50	6500	82	850	10000	4.41”	1.97”
	GU24	46544	$ 3,5,6	**CFL13/27/GU24/DIM**	Warm White Dimmable	10/50	2700	82	800	10000	4.00”	1.81”
13/20/25 WATT												
T3	**Med.**	45720	$ 4,5,8	**CFL25/27/3WAY**	Warm White 3-Way	10/50	2700	82	900/ 1200/ 1600	8000	6.13”	2.36”
		45721	$ 4,5,8	**CFL25/41/3WAY**	Cool White 3-Way	10/50	4100	82	900/ 1200/ 1600	8000	6.13”	2.36”
15 WATT												
T3	**Med.**	109252	$ 4,5,8	**CFL15/27**	Warm White	10/50	2700	82	950	10000	4.94”	1.85”
		109330	$ 4,5,8	**CFL15/35**	White	10/50	3500	82	950	10000	4.94”	1.85”
		109261	$ 4,5,8	**CFL15/41**	Cool White	10/50	4100	82	950	10000	4.94”	1.85”
		109272	$ 4,5,8	**CFL15/50**	Natural White	10/50	5000	82	950	10000	4.94”	1.85”
		109270	$ 4,5,8	**CFL15/BLB**	Blacklight-Blue	1/20	-	-	-	12000	4.94”	1.85”
		109288	$ 4,5,8	**CFL15/YEL**	Yellow	1/50	-	-	-	12000	4.94”	1.85”
		46330	$ 1,3,6	**CFL15/27/DIM**	Warm White Dimmable	10/50	2700	82	900	10000	4.92”	1.81”
18 WATT												
T2	**Med.**	45062	$ 1,3,4	**CFL18/27/T2**	Warm White	10/50	2700	82	1100	10000	4.56”	2.13”
		45064	$ 1,3,4	**CFL18/35/T2**	White	10/50	3500	82	1100	10000	4.56”	2.13”
		45065	$ 1,3,4	**CFL18/41/T2**	Cool White	10/50	4100	82	1100	10000	4.56”	2.13”
		45066	$ 1,3,4	**CFL18/50/T2**	Natural White	10/50	5000	82	1100	10000	4.56”	2.13”
	GU24	46512	$ 1,3,4	**CFL18/27/GU24**	Warm White	10/50	2700	82	1200	10000	3.90”	2.13”
		46519	$ 1,3,4	**CFL18/35/GU24**	White	10/50	3500	82	1200	10000	3.90”	2.13”
		46520	$ 1,3,4	**CFL18/41/GU24**	Cool White	10/50	4100	82	1200	10000	3.90”	2.13”
		46521	$ 1,3,4	**CFL18/50/GU24**	Natural White	10/50	5000	82	1200	10000	3.90”	2.13”

Compact Fluorescent lamp symbols, footnotes and abbreviations are located on pages 73-74.

COMPACT FLUORESCENT LAMPS

Self-Ballasted

Spiral

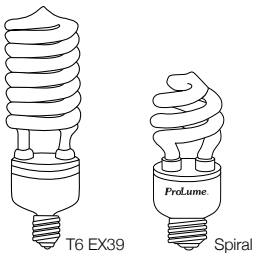
Spiral
GU24

Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Color Temp.	CRI	Lumens	Avg. Life	MOL	MOD
ProLume. CFL Bare Spiral continued												
18 WATT continued												
T3	**Med.**	45120	$ 1,3,4	**CFL18/27**	Warm White	10/50	2700	82	1200	12000	5.24”	2.05”
		45122	$ 1,3,4	**CFL18/35**	White	10/50	3500	82	1200	12000	5.24”	2.05”
		45123	$ 1,3,4	**CFL18/41**	Cool White	10/50	4100	82	1200	12000	5.24”	2.05”
		45124	$ 1,3,4	**CFL18/50**	Natural White	10/50	5000	82	1200	12000	5.24”	2.05”
	GU24	46546	$ 3,5,6	**CFL18/27/GU24/DIM**	Warm White Dimmable	10/50	2700	82	1200	10000	4.40””	2.05”
20 WATT												
T3	**Med.**	109254	$ 1,3,4	**CFL20/27**	Warm White	10/50	2700	82	1250	12000	5.25”	2.05”
		109263	$ 1,3,4	**CFL20/41**	Cool White	10/50	4100	82	1250	12000	5.25”	2.05”
		109274	$ 1,3,4	**CFL20/50**	Natural White	10/50	5000	82	1250	12000	5.25”	2.05”
23 WATT												
T2	**Med.**	45075	$ 1,3,4	**CFL23/27/T2**	Warm White	10/50	2700	82	1600	10000	4.92”	2.13”
		46620	X $ 1,3,4	**CFL23/27/FS**	Warm White	10/50	2700	82	1600	12000	4.65”	2.28”
		45077	$ 1,3,4	**CFL23/41/T2**	Cool White	10/50	4100	82	1600	10000	4.92”	2.13”
		45079	$ 1,3,4	**CFL23/50/T2**	Natural White	10/50	5000	82	1600	10000	4.92”	2.13”
	GU24	46518	$ 1,3,4	**CFL23/27/GU24**	Warm White	10/50	2700	82	1600	10000	4.41”	2.13”
		46522	$ 1,3,4	**CFL23/35/GU24**	White	10/50	3500	82	1600	10000	4.41”	2.13”
		46523	$ 1,3,4	**CFL23/41/GU24**	Cool White	10/50	4100	82	1600	10000	4.41”	2.13”
		46524	$ 1,3,4	**CFL23/50/GU24**	Natural White	10/50	5000	82	1600	10000	4.41”	2.13”
T3	**Med.**	45250	$ 1,3,4	**CFL23/27**	Warm White	10/50	2700	82	1600	10000	5.04”	2.05”
		46334	$ 4.5,6,8	**CFL23/27/DIM**	Warm White Dimmable	10/50	2700	82	1600	10000	5.59”	2.13”
		45252	$ 1,3,4	**CFL23/35**	White	10/50	3500	82	1600	10000	5.04”	2.05”
		45253	$ 1,3,4	**CFL23/41**	Cool White	10/50	4100	82	1600	10000	5.04”	2.05”
		45254	$ 1,3,4	**CFL23/50**	Natural White	10/50	5000	82	1600	10000	5.04”	2.05”
	GU24	46548	$ 3,5,6	**CFL23/27/GU24/DIM**	Warm White Dimmable	10/50	2700	82	1600	10000	4.73”	2.36”
26 WATT												
T3	**GU24**	46528	$ 1,3,4	**CFL26/27/GU24**	Warm White	10/50	2700	82	1750	10000	5.20”	2.13”
		46531	$ 1,3,4	**CFL26/35/GU24**	White	10/50	3500	82	1750	10000	5.20”	2.13”
		46529	$ 1,3,4	**CFL26/41/GU24**	Cool White	10/50	4100	82	1750	10000	5.20”	2.13”
		46530	$ 1,3,4	**CFL26/50/GU24**	Natural White	10/50	5000	82	1750	10000	5.20”	2.13”
27 WATT												
T3	**Med.**	109310	$ 3,4,5	**CFL27/27**	Warm White	10/50	2700	82	1900	10000	5.44”	2.44”
		45255	$ 3,4,5	**CFL27/35**	White	10/50	3500	82	1850	10000	5.44”	2.44”
		109312	$ 3,4,5	**CFL27/41**	Cool White	10/50	4100	82	1850	10000	5.44”	2.44”
		109314	$ 3,4,5	**CFL27/50**	Natural White	10/50	5000	82	1750	10000	5.44”	2.44”

Compact Fluorescent lamp symbols, footnotes and abbreviations are located on pages 73-74.

COMPACT FLUORESCENT LAMPS

Self-Ballasted



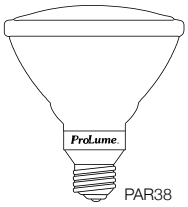
T6 EX39 Spiral

Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Color Temp.	CRI	Lumens	Avg. Life	MOL	MOD
ProLume		**CFL Bare Spiral continued**										
32 WATT												
T3	**Med.**	109316	$ 4,5,8	**CFL32/27**	Warm White	10/50	2700	82	2250	8000	5.56”	2.76”
		109318	$ 4,5,8	**CFL32/41**	Cool White	10/50	4100	82	2200	8000	5.56”	2.76”
		109306	$ 4,5,8	**CFL32/50**	Natural White	10/50	5000	82	2200	8000	5.56”	2.76”
42 WATT												
T3	**Med.**	109328	$ 4,5,8	**CFL42/27**	Warm White	6/24	2700	82	2900	12000	7.06”	2.83”
		109336	$ 4,5,8	**CFL42/41**	Cool White	6/24	4100	82	2800	12000	7.06”	2.83”
		109338	$ 4,5,8	**CFL42/50**	Natural White	6/24	5000	82	2800	12000	7.06”	2.83”
65 WATT												
T5	**Med.**	45600	$ 4,5,7	**CFL65/27**	Warm White	1/6	2700	82	4300	10000	9.50”	3.54”
		45604	$ 4,5,7	**CFL65/50**	Natural White	1/6	5000	82	4300	10000	9.50”	3.54”
85 WATT												
T5	**Med.**	45606	$ 4,5,7	**CFL85/27**	Warm White	1/6	2700	82	5700	10000	10.00”	4.02”
		45610	$ 4,5,7	**CFL85/50**	Natural White	1/6	5000	82	5700	10000	10.00”	4.02”
	Mog.	45500	$ 4,5,7	**CFL85/50/E39**	Natural White	1/6	5000	82	5700	10000	10.50”	4.02”
105 WATT												
T5	**Med.**	45618	$ 4,5,7	**CFL105/50**	Natural White	1/6	5000	82	7000	10000	10.75”	4.02”
		45502	$ 4,5,7,9	**CFL105/50/277V**	Natural White 277V	1/6	5000	82	7000	10000	10.75”	4.02”
	Mog.	45614	$ 4,5,7	**CFL105/50/E39**	Natural White	1/6	5000	82	7000	10000	11.25”	4.02”
		45504	$ 4,5,7,9	**CFL105/50/E39/277V**	Natural White 277V	1/6	5000	82	7000	10000	11.25”	4.02”
150 WATT												
T6	**EX39**	47000	$ 4,5,7	**CFL150/50/EX39**	Natural White	1/6	5000	82	8800	10000	13.03”	4.72”
180 WATT												
T6	**EX39**	47001	$ 4,5,7	**CFL180/50/EX39**	Natural White	1/6	5000	82	11100	10000	14.33”	4.72”

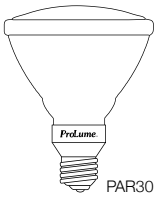
Compact Fluorescent lamp symbols, footnotes and abbreviations are located on pages 73-74.

COMPACT FLUORESCENT LAMPS

Self-Ballasted



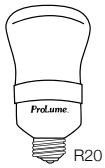
PAR38



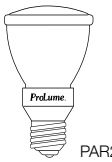
PAR30

BR38

R30
R40



R20



PAR20

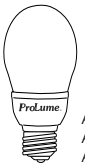
Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Color Temp.	CRI	Lumens	Avg. Life	MOL	MOD
ProLume. CFL Reflector												
11 WATT												
PAR20	**Med.**	46005	$ 2,4,8	**CFL11/27/PAR20**	Warm White Flood	6/24	2700	82	380	10000	3.86”	2.48”
		46006	$ 2,4,8	**CFL11/35/PAR20**	White Flood	6/24	3500	82	380	10000	3.86”	2.48”
		46007	$ 2,4,8	**CFL11/41/PAR20**	Cool White Flood	6/24	4100	82	380	10000	3.86”	2.48”
		46008	$ 2,4,8	**CFL11/50/PAR20**	Natural White Flood	6/24	5000	82	380	10000	3.86”	2.48”
R20	**GU24**	46542	$ 2,4,8	**CFL11/27/R20/GU24**	Warm White Flood	6/24	2700	82	340	10000	4.02”	2.50”
14 WATT												
R20	**Med.**	46011	$ 4,5,8	**CFL14/30/R20**	Soft White Flood	6/24	3000	82	500	8000	4.94”	2.52”
		46014	$ 4,5,8	**CFL14/50/R20**	Natural White Flood	6/24	5000	82	500	8000	4.94”	2.52”
15 WATT												
PAR30	**Med.**	46550	$ 2,6,8	**CFL15/27/PAR30/DIM**	Warm White Dimmable Flood	6/24	2700	82	700	10000	4.60”	3.74”
		46001	$ 2,4,8	**CFL15/27/PAR30**	Warm White Flood	6/24	2700	82	750	10000	4.60”	3.74”
		46002	$ 2,4,8	**CFL15/35/PAR30**	White Flood	6/24	3500	82	750	10000	4.60”	3.74”
		46003	$ 2,4,8	**CFL15/41/PAR30**	Cool White Flood	6/24	4100	82	750	10000	4.60”	3.74”
		46004	$ 2,4,8	**CFL15/50/PAR30**	Natural White Flood	6/24	5000	82	750	10000	4.60”	3.74”
R30	**Med.**	46328	$ 5,6,8	**CFL15/27/R30/DIM**	Warm White Dimmable Flood	6/24	2700	82	680	8000	6.01”	3.74”
		109056	X $ 1,4	**CFL15/BLU/R30**	Blue Flood	6/24	-	82	720	8000	5.10”	3.78”
		109058	X $ 1,4	**CFL15/GRN/R30**	Green Flood	6/24	-	82	720	8000	5.10”	3.78”
		109054	X $ 1,4	**CFL15/PNK/R30**	Pink Flood	6/24	-	82	720	8000	5.10”	3.78”
		109062	X $ 1,4	**CFL15/YEL/R30**	Yellow Flood	6/24	-	82	720	8000	5.10”	3.78”
	GU24	46538	$ 1,4,8	**CFL15/27/R30/GU24**	Warm White	6/24	2700	82	750	10000	4.76”	3.74”
16 WATT												
R30	**Med.**	46101	$ 4,5,8	**CFL16/30/R30/ES**	Soft White, Energy Saver	6/24	3000	82	750	10000	5.60”	3.78”
		46104	$ 4,5,8	**CFL16/41/R30**	Cool White Flood	6/24	4100	82	750	10000	5.60”	3.78”
		46105	$ 4,5,8	**CFL16/50/R30**	Natural White Flood	6/24	5000	82	750	10000	5.60”	3.78”
23 WATT												
BR38	**Med.**	109216	$ 2,4,8	**CFL23/30/BR38**	Soft White Flood	6/24	3000	82	1300	10000	6.40”	4.72”
PAR38	**Med.**	46201	$ 2,4,8	**CFL23/27/PAR38**	Warm White Flood	6/24	2700	82	1100	10000	5.06”	4.76”
		46202	$ 2,4,8	**CFL23/35/PAR38**	White Flood	6/24	3500	82	1100	10000	5.06”	4.76”
		46203	$ 2,4,8	**CFL23/41/PAR38**	Cool White Flood	6/24	4100	82	1100	10000	5.06”	4.76”
		46204	$ 2,4,8	**CFL23/50/PAR38**	Natural White Flood	6/24	5000	82	1100	10000	5.06”	4.76”
R40	**Med.**	46329	$ 5,6,8	**CFL23/27/R40/DIM**	Warm White Dimmable Flood	6/24	2700	82	1090	10000	6.97”	5.00”
		46210	$ 4,5,8	**CFL23/27/R40**	Warm White Flood	6/24	2700	82	1090	10000	6.50”	5.00”
		109286	$ 4,5,8	**CFL23/30/R40**	Soft White Flood	6/24	3000	82	1090	10000	6.50”	5.00”
		46206	$ 4,5,8	**CFL23/50/R40**	Natural White Flood	6/24	5000	82	1090	10000	6.50”	5.00”
		46208	$ 4,5,8	**CFL23/PB/R40**	Pool Bright Flood	6/24	6500	82	1000*	10000	6.50”	5.00”

*Scotopic Lumens

Compact Fluorescent lamp symbols, footnotes and abbreviations are located on pages 73-74.

COMPACT FLUORESCENT LAMPS

Self-Ballasted



Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Color Temp.	CRI	Lumens	Avg. Life	MOL	MOD
ProLume CFL Decorative												
5 WATT												
A16	**Med.**	45730	X $ 1,3,4	**CFL5/27/A16**	Warm White	10/50	2700	82	250	8000	4.07”	2.13”
		45732	X $ 1,3,4	**CFL5/41/A16**	Cool White	10/50	4100	82	250	8000	4.07”	2.13”
B13	**Med.**	45761	X $ 1,4,8	**CFL5/30/B13**	Soft White	10/50	3000	82	200	8000	4.57”	1.57”
	Cand.	45762	X $ 1,4,8	**CFL5/30/B13/E12**	Soft White	10/50	3000	82	200	8000	3.86”	1.57”
9 WATT												
A16	**Med.**	45734	$ 1,3,4	**CFL9/27/A16**	Warm White	10/50	2700	82	470	8000	4.50”	2.20”
B13	**Med.**	45763	$ 1,4,8	**CFL9/30/B13**	Soft White	10/50	3000	82	470	8000	4.92”	1.61”
	Cand.	45764	$ 1,4,8	**CFL9/30/B13/E12**	Soft White	10/50	3000	82	470	8000	4.43”	1.61”
G25	**Med.**	45703	† $ 1,3,4	**CFL9/27/G25/ES**	Warm White	6/24	2700	82	500	10000	4.33”	3.11”
		45705	$ 1,3,4	**CFL9/50/G25**	Natural White	6/24	5000	82	500	10000	4.33”	3.11”
14 WATT												
A19	**Med.**	45738	$ 1,3,4	**CFL14/27/A19**	Warm White	10/50	2700	82	800	10000	4.63”	2.28”
		45739	$ 1,3,4	**CFL14/35/A19**	White	10/50	3500	82	800	10000	4.63”	2.28”
		45740	$ 1,3,4	**CFL14/41/A19**	Cool White	10/50	4100	82	800	10000	4.63”	2.28”
		45741	$ 1,3,4	**CFL14/50/A19**	Natural White	10/50	5000	82	800	10000	4.63”	2.28”
T20	**Med.**	45755	X $ 4,5,8	**CFL14/27/T20**	Warm White	6/24	2700	82	800	8000	5.44”	2.48”
		45758	$ 4,5,8	**CFL14/50/T20**	Natural White	6/24	5000	82	800	8000	5.44”	2.48”
15 WATT												
A19	**GU24**	46540	X $ 4,5,8	**CFL15/27/A19/GU24**	Warm White	6/24	2700	82	800	10000	4.82”	2.64”
G25	**GU24**	46536	X $ 1,4,8	**CFL15/27/G25/GU24**	Warm White	6/24	2700	82	750	10000	4.80”	3.31”
G28	**Med.**	45713	$ 1,3,4	**CFL15/27/G28**	Warm White	6/24	2700	82	850	10000	4.73”	3.73”
		45717	$ 1,3,4	**CFL15/50/G28**	Natural White	6/24	5000	82	850	10000	4.73”	3.73”
16 WATT												
G30	**Med.**	45725	$ 4,5,8	**CFL16/27/G30**	Warm White	6/24	2700	82	900	10000	5.07”	3.70”
		46533	$ 4,5,8	**CFL16/50/G30**	Natural White	6/24	5000	82	900	10000	5.07”	3.70”
20 WATT												
A20	**Med.**	45743	$ 1,4,8	**CFL20/27/A20**	Warm White	6/24	2700	82	1100	8000	5.56”	2.80”

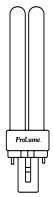
Compact Fluorescent lamp symbols, footnotes and abbreviations are located on pages 73-74.

COMPACT FLUORESCENT LAMPS

Plug-In


Single Tube 2-Pin


Single Tube 4-Pin

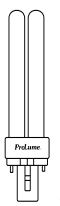

Double Tube 2-Pin

Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Color Temp.	CRI	Lumens	Avg. Life	MOL	MOD
ProLume Single Tube 2-Pin Eco-Shield®												
5 WATT												
T4	G23	109100	$ 10,11	PL5S/27/ECO	Warm White	1/50	2700	82	250	12000	4.25”	-
		109102	$ 10,11	PL5S/41/ECO	Cool White	1/50	4100	82	250	12000	4.25”	-
7 WATT												
T4	G23	109106	$ 11	PL7S/27/ECO	Warm White	1/50	2700	82	400	12000	5.43”	-
		109107	$ 11	PL7S/35/ECO	White	1/50	3500	82	400	12000	5.43”	-
		109108	$ 11	PL7S/41/ECO	Cool White	1/50	4100	82	400	12000	5.43”	-
9 WATT												
T4	G23	109112	$ 11	PL9S/27/ECO	Warm White	1/50	2700	82	600	12000	6.61”	-
		109144	$ 11	PL9S/35/ECO	White	1/50	3500	82	600	12000	6.61”	-
		109116	$ 11	PL9S/41/ECO	Cool White	1/50	4100	82	600	12000	6.61”	-
		109118	$ 11	PL9S/50/ECO	Natural White	1/50	5000	82	600	12000	6.61”	-
13 WATT												
T4	GX23	109126	$ 11	PL13S/27/ECO	Warm White	1/50	2700	82	825	12000	7.20”	-
		109128	$ 11	PL13S/35/ECO	White	1/50	3500	82	825	12000	7.20”	-
		109130	$ 11	PL13S/41/ECO	Cool White	1/50	4100	82	825	12000	7.20”	-
		109132	$ 11	PL13S/50/ECO	Natural White	1/50	5000	82	825	12000	7.20”	-
ProLume Single Tube 4-Pin Eco-Shield®												
13 WATT												
T4	2GX7	109134	$ 12,13	PL13S/E/27/ECO	Warm White	1/50	2700	82	825	12000	6.30”	-
		109136	$ 12,13	PL13S/E/35/ECO	White	1/50	3500	82	825	12000	6.30”	-
		109138	$ 12,13	PL13S/E/41/ECO	Cool White	1/50	4100	82	825	12000	6.30”	-
		109140	$ 12,13	PL13S/E/50/ECO	Natural White	1/50	5000	82	825	12000	6.30”	-
ProLume Double Tube 2-Pin Eco-Shield®												
9 WATT												
T4	G23-2	109110	$ 11	PL9D/27/ECO	Warm White	1/50	2700	82	525	12000	4.25”	-
		109120	$ 11	PL9D/41/ECO	Cool White	1/50	4100	82	525	12000	4.25”	-
13 WATT												
T4	GX23-2	109146	$ 11	PL13D/27/ECO	Warm White	1/50	2700	82	900	12000	4.65”	-
		109148	$ 11	PL13D/35/ECO	White	1/50	3500	82	900	12000	4.65”	-
		109150	$ 11	PL13D/41/ECO	Cool White	1/50	4100	82	900	12000	4.65”	-
		109149	$ 11	PL13D/50/ECO	Natural White	1/50	5000	82	900	12000	4.65”	-
18 WATT												
T4	G24d-2	109152	$ 11	PL18D/27/ECO	Warm White	1/50	2700	82	1200	12000	6.02”	-
		109154	$ 11	PL18D/35/ECO	White	1/50	3500	82	1200	12000	6.02”	-
		109156	$ 11	PL18D/41/ECO	Cool White	1/50	4100	82	1200	12000	6.02”	-
		109159	X $ 11	PL18D/50/ECO	Natural White	1/50	5000	82	1200	12000	6.02”	-

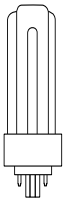
Compact Fluorescent lamp symbols, footnotes and abbreviations are located on pages 73-74.

COMPACT FLUORESCENT LAMPS

Plug-In

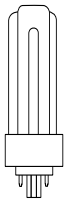


Double Tube
2-Pin/4-Pin


Triple Tube
4-Pin

Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Color Temp.	CRI	Lumens	Avg. Life	MOL	MOD
ProLume Double Tube 2-Pin continued												
22 WATT												
T5	**GX32d-2**	109862	$ 11	**PL22D/28**	Warm White 15mm Cluster	1/50	2800	82	1200	10000	6.15”	-
		109864	$ 11	**PL22D/50**	Natural White 15mm Cluster	1/50	5000	82	1200	10000	6.15”	-
26 WATT												
T5	**G24d-3**	109158	$ 11	**PL26D/27/ECO**	Warm White	1/50	2700	82	1800	12000	6.77”	-
		109160	$ 11	**PL26D/35/ECO**	White	1/50	3500	82	1800	12000	6.77”	-
		109162	$ 11	**PL26D/41/ECO**	Cool White	1/50	4100	82	1800	12000	6.77”	-
		109163	$ 11	**PL26D/50/ECO**	Natural White	1/50	5000	82	1800	12000	6.77”	-
28 WATT												
T5	**GX32d-3**	109870	$ 11	**PL28D/28**	Warm White 15mm Cluster	1/50	2800	82	1800	12000	6.60”	-
		109868	$ 11	**PL28D/50**	Natural White 15mm Cluster	1/50	5000	82	1800	12000	6.60”	-
ProLume Double Tube 4-Pin Electronic Eco-Shield®												
13 WATT												
T4	**G24q-1**	109037	$ 12,13	**PL13D/E/27/ECO**	Warm White	1/50	2700	82	900	15000	5.16”	-
		109035	$ 12,13	**PL13D/E/30/ECO**	Soft White	1/50	3000	82	900	15000	5.16”	-
		109038	$ 12,13	**PL13D/E/35/ECO**	White	1/50	3500	82	900	15000	5.16”	-
		109039	$ 12,13	**PL13D/E/41/ECO**	Cool White	1/50	4100	82	900	15000	5.16”	-
		109122	$ 12,13	**PL13D/E/50/ECO**	Natural White	1/50	5000	82	900	15000	5.16”	-
18 WATT												
T4	**G24q-2**	109010	$ 12,13	**PL18D/E/27/ECO**	Warm White	1/50	2700	82	1200	15000	5.75”	-
		109012	$ 12,13	**PL18D/E/35/ECO**	White	1/50	3500	82	1200	15000	5.75”	-
		109013	$ 12,13	**PL18D/E/41/ECO**	Cool White	1/50	4100	82	1200	15000	5.75”	-
		109074	$ 12,13	**PL18D/E/50/ECO**	Natural White	1/50	5000	82	1200	15000	5.75”	-
26 WATT												
T4	**G24q-3**	109090	$ 12,13	**PL26D/E/27/ECO**	Warm White	1/50	2700	82	1800	15000	6.57”	-
		109092	$ 12,13	**PL26D/E/35/ECO**	White	1/50	3500	82	1800	15000	6.57”	-
		109094	$ 12,13	**PL26D/E/41/ECO**	Cool White	1/50	4100	82	1800	15000	6.57”	-
		109096	$ 12,13	**PL26D/E/50/ECO**	Natural White	1/50	5000	82	1800	15000	6.57”	-
ProLume Triple Tube 4-Pin Electronic Eco-Shield®												
18 WATT												
T4	**GX24q-2**	44800	$ 12,13	**PL18T/E/27/ECO**	Warm White	1/50	2700	82	1200	15000	4.57”	-
		44801	$ 12,13	**PL18T/E/35/ECO**	White	1/50	3500	82	1200	15000	4.57”	-
		44803	$ 12,13	**PL18T/E/41/ECO**	Cool White	1/50	4100	82	1200	15000	4.57”	-
		44804	X $ 12,13	**PL18T/E/50/ECO**	Natural White	1/50	5000	82	1200	15000	4.57”	-

Compact Fluorescent lamp symbols, footnotes and abbreviations are located on pages 73-74.



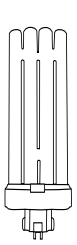
Triple Tube
4-Pin

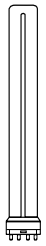
Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Color Temp.	CRI	Lumens	Avg. Life	MOL	MOD
ProLume Triple Tube 4-Pin Electronic Eco-Shield® continued												
26 WATT												
T4	**GX24q-3**	109020	$ 12,13	**PL26T/E/27/ECO**	Warm White	1/50	2700	82	1800	15000	5.28”	-
		109022	$ 12,13	**PL26T/E/35/ECO**	White	1/50	3500	82	1800	15000	5.28”	-
		109024	$ 12,13	**PL26T/E/41/ECO**	Cool White	1/50	4100	82	1800	15000	5.28”	-
		109076	$ 12,13	**PL26T/E/50/ECO**	Natural White	1/50	5000	82	1800	15000	5.28”	-
32 WATT												
T4	**GX24q-3**	109026	$ 12,13	**PL32T/E/27/ECO**	Warm White	1/50	2700	82	2400	15000	5.79”	-
		109028	$ 12,13	**PL32T/E/35/ECO**	White	1/50	3500	82	2400	15000	5.79”	-
		109030	$ 12,13	**PL32T/E/41/ECO**	Cool White	1/50	4100	82	2400	15000	5.79”	-
		109070	$ 12,13	**PL32T/E/50/ECO**	Natural White	1/50	5000	82	2400	15000	5.79”	-
42 WATT												
T4	**GX24q-4**	109032	$ 12,13	**PL42T/E/27/ECO**	Warm White	1/50	2700	82	3200	15000	6.61”	-
		109034	$ 12,13	**PL42T/E/35/ECO**	White	1/50	3500	82	3200	15000	6.61”	-
		109036	$ 12,13	**PL42T/E/41/ECO**	Cool White	1/50	4100	82	3200	15000	6.61”	-
		109072	$ 12,13	**PL42T/E/50/ECO**	Natural White	1/50	5000	82	3200	15000	6.61”	-
57 WATT												
T4	**GX24q-5**	44806	X $ 12,13	**PL57T/E/27/ECO**	Warm White	1/50	2700	82	4200	12000	7.57”	-
		44807	$ 12,13	**PL57T/E/41/ECO**	Cool White	1/50	4100	82	4200	12000	7.57”	-
		44808	$ 12,13	**PL57T/E/50/ECO**	Natural White	1/50	5000	82	4200	12000	7.57”	-

Compact Fluorescent lamp symbols, footnotes and abbreviations are located on pages 73-74.

COMPACT FLUORESCENT LAMPS

Plug-In


Flat Quad


PLL

Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Color Temp.	CRI	Lumens	Avg. Life	MOL	MOD
ProLume High Lumen Long 4-Pin												
18 WATT												
T5	**2G11**	109700	$ 13	**PLL18/835/ECO**	White	10/40	3500	82	1250	12000	8.94”	-
		109702	$ 13	**PLL18/841/ECO**	Cool White	10/40	4100	82	1250	12000	8.94”	-
24 WATT												
T5	**2G11**	109704	$ 13	**PLL24/835/ECO**	White	10/40	3500	82	1800	12000	12.70”	-
		109706	$ 13	**PLL24/841/ECO**	Cool White	10/40	4100	82	1800	12000	12.70”	-
36 WATT												
T5	**2G11**	109708	$ 13	**PLL36/835/ECO**	White	10/40	3500	82	2800	12000	16.45”	-
		109710	$ 13	**PLL36/841/ECO**	Cool White	10/40	4100	82	2800	12000	16.45”	-
40 WATT												
T5	**2G11**	109712	$ 13	**PLL40/830/RS/ECO**	Soft White	10/40	3000	82	3150	20000	22.50”	-
		109714	$ 13	**PLL40/835/RS/ECO**	White	10/40	3500	82	3150	20000	22.50”	-
		109716	$ 13	**PLL40/841/RS/ECO**	Cool White	10/40	4100	82	3150	20000	22.50”	-
		44900	$ 13	**PLL40/850/RS/ECO**	Natural White	10/40	5000	82	3150	20000	22.50”	-
55 WATT												
T5	**2G11**	109718	$ 13	**PLL55/835/ECO**	White	10/40	3500	82	4700	12000	21.20”	-
		109720	$ 13	**PLL55/841/ECO**	Cool White	10/40	4100	82	4700	12000	21.20”	-
ProLume Flat Quad 4-Pin Electronic												
27 WATT												
T5	**GX10q-2**	109238	$ 13	**FML27/NDL**	Natural White	1/50	5000	82	1700	10000	5.90”	3.23”

Compact Fluorescent lamp symbols, footnotes and abbreviations are located on pages 73-74.

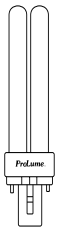
COMPACT FLUORESCENT LAMPS

Bulb and Base Identification Guide

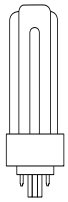
Bulb Shapes

Single Tube
2-Pin

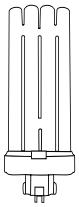
Single Tube
4-Pin



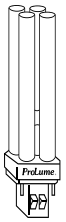
Double Tube
2-Pin/4-Pin



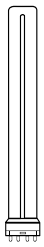
Triple Tube
4-Pin



Flat Quad
4-Pin



Double
15mm



PLL
4-Pin

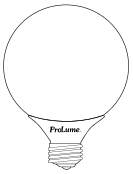
BR38

R20

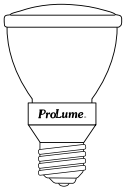
R30/R40

Plug-In R40

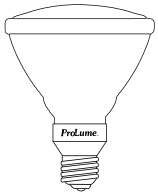
A-Shape



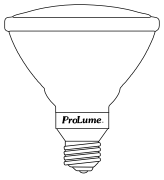
G
Globe



PAR20



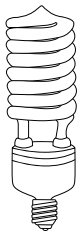
PAR30



PAR38

B13
Torpedo

Spiral
GU24

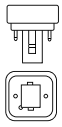


TS EX39

Spiral

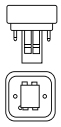
T20
Tubular

Base Types

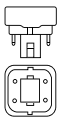


G23

GX23

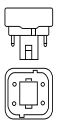


GX23-2

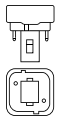


G24q-1

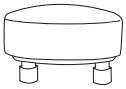
G24q-2



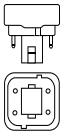
G24q-3



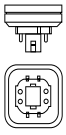
G24d-2



GU24

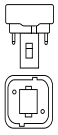


GX24q-3

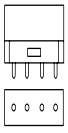


GX24q-4

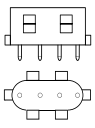
GX24q-5



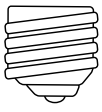
GX24d-3



2G11



2GX7



Medium
E26/27

E12

EX39

COMPACT FLUORESCENT LAMPS

Cross Reference Guide

HALCO	G.E.	PHILIPS	OSRAM/SYLVANIA
Single Tube 2-Pin			
PL5S/27/ECO	F5BX/827/ECO	PL-S 5W/827/2P/ALTO	CF5DS/827
PL5S/41/ECO	F5BX/841/ECO	PL-S 5W/841/2P/ALTO	CF5DS/841
PL7S/27/ECO	F7BX/827/ECO	PL-S 7W/827/2P/ALTO	CF7DS/827
PL7S/35/ECO	F7BX/835/ECO	PL-S 7W/835/2P/ALTO	CF7DS/835
PL7S/41/ECO	F7BX/841/ECO	PL-S 7W/841/2P/ALTO	CF7DS/841
PL9S/27/ECO	F9BX/827/ECO	PL-S 9W/827/2P/ALTO	CF9DS/827
PL9S/35/ECO	F9BX/835/ECO	PL-S 9W/835/2P/ALTO	CF9DS/835
PL9S/41/ECO	F9BX/841/ECO	PL-S 9W/841/2P/ALTO	CF9DS/841
PL9S/50/ECO	-	PL-S 9W/850/2P/ALTO	CF9DS/850
PL13S/27/ECO	F13BX/827/ECO	PL-S 13W/827/2P/ALTO	CF13DS/827
PL13S/35/ECO	F13BX/835/ECO	PL-S 13W/835/2P/ALTO	CF13DS/835
PL13S/41/ECO	F13BX/841/ECO	PL-S 13W/841/2P/ALTO	CF13DS/841
PL13S/50/ECO	F13BX/850/ECO	PL-S 13W/850/2P/ALTO	CF13DS/850
Double Tube 2-Pin			
PL9D/27/ECO	F9DBX23/827/ECO	-	CF9DD/827
PL9D/41/ECO	F9DBX23/841/ECO	-	CF9DD/841
PL13D/27/ECO	F13DBX23/827/ECO	PL-C 13W/827/USA/ALTO	CF13DD/827
PL13D/35/ECO	F13DBX23/835/ECO	PL-C 13W/835/USA/ALTO	CF13DD/835
PL13D/41/ECO	F13DBX23/841/ECO	PL-C 13W/841/USA/ALTO	CF13DD/841
PL13D/50/ECO	-	-	-
PL18D/27/ECO	F18DBX/827/ECO	PL-C 18W/827/ALTO	CF18DD/827
PL18D/35/ECO	F18DBX/835/ECO	PL-C 18W/835/ALTO	CF18DD/835
PL18D/41/ECO	F18DBX/841/ECO	PL-C 18W/841/ALTO	CF18DD/841
PL18D/50/ECO	-	-	-
PL26D/27/ECO	F26DBX/827/ECO	PL-C 26W/827/ALTO	CF26DD/827
PL26D/35/ECO	F26DBX/835/ECO	PL-C 26W/835/ALTO	CF26DD/835
PL26D/41/ECO	F26DBX/841/ECO	PL-C 26W/841/ALTO	CF26DD/841
PL26D/50/ECO	-	-	-
PL22D/28	-	PL-C 15MM/22W/827	-
PL22D/50	-	-	-
PL28D/28	-	PL-C 15MM/28W/827	-
PL28D/50	-	-	-
Single Tube 4-Pin Electronic			
PL13S/E/27/ECO	-	-	CF13DS/E/827
PL13S/E/35/ECO	-	-	-
PL13S/E/41/ECO	-	-	CF13DS/E/841
PL13S/E/50/ECO	-	-	-

COMPACT FLUORESCENT LAMPS

Cross Reference Guide

HALCO	G.E.	PHILIPS	OSRAM/SYLVANIA
Double Tube 4-Pin Electronic			
PL13D/E/27/ECO	F13DBX/827/ECO4P	PL-C 13W/827/4P/ALTO	CF13DD/E/827
PL13D/E/30/ECO	F13DBX/830/ECO4P	PL-C 13W/830/4P/ALTO	CF13DD/E/830
PL13D/E/35/ECO	F13DBX/835/ECO4P	PL-C 13W/835/4P/ALTO	CF13DD/E/835
PL13D/E/41/ECO	F13DBX/841/ECO4P	PL-C 13W/841/4P/ALTO	CF13DD/E/841
PL13D/E/50/ECO	-	-	-
PL18D/E/27/ECO	F18DBX/827/ECO4P	PL-C 18W/827/4P/ALTO	CF18DD/E/827
PL18D/E/35/ECO	F18DBX/835/ECO4P	PL-C 18W/835/4P/ALTO	CF18DD/E/835
PL18D/E/41/ECO	F18DBX/841/ECO4P	PL-C 18W/841/4P/ALTO	CF18DD/E/841
PL18D/E/50/ECO	-	-	-
PL26D/E/27/ECO	F26DBX/827/ECO4P	PL-C 26W/827/4P/ALTO	CF26DD/E/827
PL26D/E/35/ECO	F26DBX/835/ECO4P	PL-C 26W/835/4P/ALTO	CF26DD/E/835
PL26D/E/41/ECO	F26DBX/841/ECO4P	PL-C 26W/841/4P/ALTO	CF26DD/E/841
PL26D/E/50/ECO	-	-	-
Triple Tube 4-Pin Electronic			
PL18T/E/27/ECO	F18TBX/827/A/ECO	PL-T 18W/827/4P/ALTO	CF18DT/E/IN/827
PL18T/E/35/ECO	F18TBX/835/A/ECO	PL-T 18W/835/4P/ALTO	CF18DT/E/IN/835
PL18T/E/41/ECO	F18TBX/841/A/ECO	PL-T 18W/841/4P/ALTO	CF18DT/E/IN/841
PL18T/E/50/ECO	-	-	-
PL26T/E/27/ECO	F26TBX/827/A/ECO	PL-T 26W/827/4P/ALTO	CF26DT/E/IN/827
PL26T/E/35/ECO	F26TBX/835/A/ECO	PL-T 26W/835/4P/ALTO	CF26DT/E/IN/835
PL26T/E/41/ECO	F26TBX/841/A/ECO	FL-T 26W/841/4P/ALTO	CF26DT/E/IN/841
PL26T/E/50/ECO	-	-	-
PL32T/E/27/ECO	F32TBX/827/A/ECO	PL-T 32W/827/4P/ALTO	CF32DT/E/IN/827
PL32T/E/35/ECO	F32TBX/835/A/ECO	PL-T 32W/835/4P/ALTO	CF32DT/E/IN/835
PL32T/E/41/ECO	F32TBX/841/A/ECO	PL-T 32W/841/4P/ALTO	CF32DT/E/IN/841
PL32T/E/50/ECO	-	-	-
PL42T/E/27/ECO	F42TBX/827/A/ECO	PL-T 42W/827/4P/ALTO	CF42DT/E/IN/827
PL42T/E/35/ECO	F42TBX/835/A/ECO	PL-T 42W/835/4P/ALTO	CF42DT/E/IN/835
PL42T/E/41/ECO	F42TBX/841/A/ECO	PL-T 42W/841/4P/ALTO	CF42DT/E/IN/841
PL42T/E/50/ECO	-	-	-
PL57T/E/27/ECO	F57QBX/827/A/ECO	-	CF57DT/E/IN/827
PL57T/E/41/ECO	F57QBX/841/A/ECO	PL-T 57W/841/4P/A	CF57DT/E/IN/841
PL57T/E/50/ECO	F57QBX/850/A/ECO	-	CF57DT/E/IN/850

COMPACT FLUORESCENT LAMPS

Cross Reference Guide

HALCO	G.E.	PHILIPS	OSRAM/SYLVANIA
High Lumen Long 4-Pin			
PLL18/835/ECO	F18BX/SPX35	PL-L 18W/835/4P	FT18DL/835/RS
PLL18/841/ECO	F18BX/SPX41	PL-L 18W/841/4P	FT18DL/841/RS
PLL24/835/ECO	F27BX/SPX35/RS	PL-L 24W/835/4P	FT24DL/835
PLL24/841/ECO	F27BX/SPX41/RS	PL-L 24W/841/4P	FT24DL/841
PLL36/835/ECO	F39BX/SPX35/RS	PL-L 36W/835/4P	FT36DL/835
PLL36/841/ECO	F39BX/SPX41/RS	PL-L 36W/841/4P	FT36DL/841
PLL40/830/RS/ECO	F40/30BX/SPX30	PL-L 40W/830/4P/RS/IS	FT40DL/830/RS
PLL40/835/RS/ECO	F40/30BX/SPX35	PL-L 40W/835/4P/RS/IS	FT40DL/835/RS
PLL40/841/RS/ECO	F40/30BX/SPX41	PL-L 40W/841/4P/RS/IS	FT40DL/841/RS
PLL40/850/RS/ECO	F40/30BX/SPX50	-	FT40DL/850/RS
PLL55/835/ECO	F55BX/835	PL-L 50W/835/4P/RS	FT55DL/835
PLL55/841/ECO	F55BX/840	PL-L 50W/841/4P/RS	FT55DL/841

COMPACT FLUORESCENT LAMPS

Symbols, Footnotes and Abbreviations

SYMBOLS

$	Energy saving product.
	ProLume® Eco-Shield® Low-Mercury Fluorescent lamps pass the Federal TCLP for hazardous wastes.
†	New product introduced within the past year.
X	Product will be discontinued when inventory is depleted.

FOOTNOTES

1	UL approved for damp location in base-up position only. All other base positions must be in a dry environment or in a weatherproof fixture.
2	UL approved for wet location in base-up position only. All other base positions must be in a dry environment or in a weatherproof fixture.
3	UL approved for totally enclosed fixtures with a max ballast case temperature of 90°C for GU24 base, 75°C for medium base lamps.
4	Not intended for use with emergency exit fixtures, dimmers, timing devices, photo sensors or occupancy sensors.
5	Do not use where lamp is exposed to moisture.
6	For use on analog dimmers only - may not be compatible with all dimmers.
7	Do not use in totally enclosed fixtures or in recessed fixtures.
8	Do not use in totally enclosed fixtures or insulated contact air tight (ICAT) rated fixtures.
9	Use only on 277 Volts, 60-hertz frequency.
10	PL 5 watt lamps should not be used in socket or adapters rated for 7 or 9 watt lamps.
11	Total wattage consumption for adapter systems is higher than lamp wattage due to ballast losses. Total system wattage equals lamp wattage plus 2 ballast watts.
12	This 4-Pin Electronic lamp has an internal end-of-life (EOL) mechanism that shuts the lamp down to prevent abnormal end-of-life failure.
13	Operate this lamp on a high-frequency Compact Fluorescent ballast with an end-of-life shut down circuit.

COMPACT FLUORESCENT LAMPS

Symbols, Footnotes and Abbreviations

ABBREVIATIONS

/27	Suffix used to indicate color temperature of 2700K.
/30	Suffix used to indicate color temperature of 3000K.
/35	Suffix used to indicate color temperature of 3500K.
/3WAY	Suffix used to indicate 3-Way lamps.
/41	Suffix used to indicate color temperature of 4100K.
/4PK	Suffix used to indicate a package of (4) Compact Fluorescent lamps.
/50	Suffix used to indicate color temperature of 5000K.
/65	Suffix used to indicate color temperature of 6500K.
BLB	Code abbreviation for Blacklight-Blue lamps.
CFL	Code abbreviation for ProLume® Self-Ballasted Compact Fluorescent lamps.
BLU	Code abbreviation for Blue lamps.
/CS	Suffix used to indicate CoverShield® safety coated lamps.
D	Code abbreviation for Double Tube lamps.
/DIM	Suffix used to indicate Dimmable lamps.
/E	Suffix used to indicate Electronic 4-Pin Plug-In lamps.
/ECO	Suffix used to indicate Eco-Shield® TCLP compliant lamps.
GRN	Code abbreviation for Green lamps.
/PB	Suffix used to indicate Pool Bright pool lamps color temperature of 6450K.
PL	Code abbreviation for ProLume® Plug-In Compact Fluorescent lamps.
PLL	Code abbreviation for ProLume® Plug-In High Lumen long lamps.
PNK	Code abbreviation for Pink lamps.
S	Code abbreviation for Single Tube Plug-In lamps.
SP	Code abbreviation for Spiral Tube Plug-In lamps.
T	Code abbreviation for Triple Tube Plug-In lamps.
YEL	Code abbreviation for Yellow lamps.

LINEAR FLUORESCENT LAMPS

CONTENTS

HOW TO READ A LINEAR FLUORESCENT LAMP TABLE

BULB
Designations indicate shape and size. Illustrations can be found on page 85. and at the top of each page.

WATTS
Indicates the power consumed by the lamp during operation.

PRODUCT CODE
Abbreviated product description can also be used for ordering. A key to abbreviations can be found on page 91.

PACKAGE QUANTITY
Indicates minimum sell quantity and smallest shipping carton.

COLOR TEMP.
A term used to describe the color of a light source and is expressed in degrees "Kelvin"(K).

INITIAL LUMENS
The lamp's average light output after the initial 100 hours of operation.

AVERAGE LIFE
Average rated life expressed in hours.

Bulb	Watts	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Color Temp.	CRI	Initial Lumens	Mean Lumens	Avg. Life	Nom. Length
ProLume Preheat - Medium Bi-Pin												
T8	14	109370	1	**F14T8CW**	Cool White	25	4100	62	650	585	8000	14"
	15	9202	1	**F15T8CW**	Cool White	30	4100	62	770	690	8000	17"
	15	109212	1	**F15T8DL**	Daylight	30	6500	74	770	690	8000	17"
	15	109208	1	**F15T8WW**	Warm White	30	3000	53	845	750	8000	17"
	30	9225	1	**F30T8CW**	Cool White	30	4100	62	2100	1900	9000	35"

PRODUCT NUMBER
Use this number when placing an order.

FOOTNOTES & SYMBOLS
Related footnotes can be found on page 90.

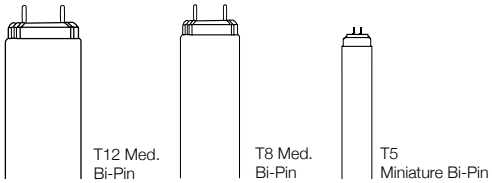
DESCRIPTION
Bulb finish and other important information.

CRI
An international scale from 0 to 100 that indicates the relative color rendering value of a light source. The color rendering index expresses the degree to which colors will look "natural" under a given light source.

MEAN LUMENS
The lamp's average light output at 40% of rated life.

NOM. LENGTH
A measurement for fluorescent lamp length based on the length of the lamp plus an allowance for the luminaire's lamp holders.

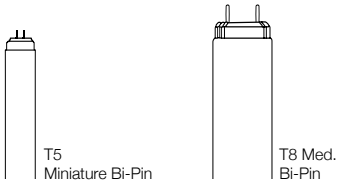
LINEAR FLUORESCENT LAMPS



Bulb	Watts	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Color Temp.	CRI	Initial Lumens	Mean Lumens	Avg. Life	Nom. Length
ProLume. Preheat - Miniature Bi-Pin												
T5	4	9213	1,7	**F4T5CW**	Cool White	10/1000	4100	65	130	117	6000	6”
	6	9200	1,7	**F6T5CW**	Cool White	10/500	4100	65	240	216	6000	9”
	8	9206	1,7	**F8T5BLB**	Blacklight-Blue	10/500	-	-	-	-	6000	12”
	8	9201	1,7	**F8T5CW**	Cool White	10/500	4100	65	350	315	6000	12”
	8	9215	1,7	**F8T5DL**	Daylight	10/500	6500	75	350	279	6000	12”
	8	9210	1,7	**F8T5WW**	Warm White	10/500	3000	53	400	380	6000	12”
	13	9231	1,7	**F13T5CW**	Cool White	10/200	4100	65	740	666	6000	21”
	13	9232	1,7	**F13T5WW**	Warm White	10/200	3000	53	870	825	6000	21”
ProLume. Preheat - Medium Bi-Pin												
T8	14	109370	1	**F14T8CW**	Cool White	25	4100	62	650	585	8000	14”
	15	9202	1	**F15T8CW**	Cool White	30	4100	62	770	690	8000	17”
	15	109212	1	**F15T8DL**	Daylight	30	6500	74	770	690	8000	17”
	15	109208	1	**F15T8WW**	Warm White	30	3000	53	845	750	8000	17”
	30	9225	1	**F30T8CW**	Cool White	30	4100	62	2100	1900	9000	35”
T12	14	9228	1	**F14T12CW**	Cool White	30	4100	62	480	432	9000	14”
	15	9212	1	**F15T12CW**	Cool White	30	4100	62	650	570	9000	17”
	20	9203	1	**F20T12CW**	Cool White	30	4100	62	1150	1000	8000	24”
	20	9235	1	**F20T12DL**	Daylight	30	6500	74	1100	960	8000	24”
	20	9227	1	**F20T12WW**	Warm White	30	3000	52	1200	1080	8000	24”
ProLume. T-5 Programmed Start - Miniature Bi-Pin Eco-Shield®												
T5	14	30117	1,7	**F14T5/830/ECO/IC**	830 Phosphor	25	3000	86	1350	1270	24000	22”
	14	30118	1,7	**F14T5/835/ECO/IC**	835 Phosphor	25	3500	86	1350	1270	24000	22”
	14	30119	1,7	**F14T5/841/ECO/IC**	841 Phosphor	25	4100	86	1350	1270	24000	22”
	21	30125	1,7	**F21T5/830/ECO/IC**	830 Phosphor	25	3000	86	2100	1990	24000	34”
	21	30126	1,7	**F21T5/835/ECO/IC**	835 Phosphor	25	3500	86	2100	1990	24000	34”
	21	30127	1,7	**F21T5/841/ECO/IC**	841 Phosphor	25	4100	86	2100	1990	24000	34”
	24	30134	1,7	**F24T5/835/HO/ECO/IC**	835 Phosphor High Output	25	3500	86	2000	1900	20000	22”
	24	30135	1,7	**F24T5/841/HO/ECO/IC**	841 Phosphor High Output	25	4100	86	2000	1900	20000	22”
	28	35041	Ⓔ 1,7	**F28T5/830/ECO/IC**	830 Phosphor	25	3000	86	2900	2750	24000	46”
	28	35042	Ⓔ 1,7	**F28T5/835/ECO/IC**	835 Phosphor	25	3500	86	2900	2750	24000	46”
	28	35046	Ⓔ X 1,7	**F28T5/835/ECO/XL**	835 Phosphor	25	3500	86	2800	2660	40000	46”
	28	35043	Ⓔ 1,7	**F28T5/841/ECO/IC**	841 Phosphor	25	4100	86	2900	2750	24000	46”
	28	90016	Ⓔ X 1,7	**F28T5/841/ECO/IC/CS**	841 Phosphor, CoverShield®	25	4100	86	2900	2750	24000	46”
	28	35044	Ⓔ 1,7	**F28T5/850/ECO/IC**	850 Phosphor	25	5000	86	2900	2750	24000	46”

Ⓔ Means this lamp meets Federal Minimum Efficiency standards.
Linear Fluorescent lamp symbols, footnotes and abbreviations are located on pages 90-91.

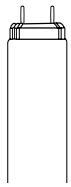
LINEAR FLUORESCENT LAMPS



Bulb	Watts	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Color Temp.	CRI	Initial Lumens	Mean Lumens	Avg. Life	Nom. Length
ProLume® T-5 Programmed Start - Miniature Bi-Pin Eco-Shield® continued												
T5	35	35049	1,7	**F35T5/835/ECO/IC**	835 Phosphor	25	3500	86	3650	3450	24000	58”
	35	35050	1,7	**F35T5/841/ECO/IC**	841 Phosphor	25	4100	86	3650	3450	24000	58”
	39	35060	X 1,7	**F39T5/830/HO/ECO/IC**	830 Phosphor High Output	25	3000	86	3500	3320	24000	34”
	39	35061	1,7	**F39T5/835/HO/ECO/IC**	835 Phosphor High Output	25	3500	86	3500	3320	24000	34”
	39	35062	1,7	**F39T5/841/HO/ECO/IC**	841 Phosphor High Output	25	4100	86	3500	3320	24000	34”
	49	35085	Ⓔ $ 1,7	**F49T5/835/HO/ECO**	835 Phosphor High Output, Energy Saver	25	3500	86	4900	4700	24000	46”
	49	35088	Ⓔ $ 1,7	**F49T5/841/HO/ECO**	841 Phosphor High Output, Energy Saver	25	4100	86	4900	4700	24000	46”
	49	35089	Ⓔ $ 1,7	**F49T5/850/HO/ECO**	850 Phosphor High Output, Energy Saver	25	5000	86	4900	4700	24000	46”
	54	35081	Ⓔ 1,7	**F54T5/830/HO/ECO/IC**	830 Phosphor High Output	25	3000	86	5000	4850	24000	46”
	54	35082	Ⓔ 1,7	**F54T5/835/HO/ECO/IC**	835 Phosphor High Output	25	3500	86	5000	4850	24000	46”
	54	90051	Ⓔ 1,7	**F54T5/835/HO/ECO/IC/CS**	835 Phosphor High Output, CoverShield®	25	3500	86	5000	4850	24000	46”
	54	35070	Ⓔ X 1,7	**F54T5/835/HO/ECO/XL**	835 Phosphor High Output, Extended Life	25	3500	86	5000	4790	40000	46”
	54	105680	Ⓔ 1,7	**F54T5/841/HO/ECO**	841 Phosphor High Output	25	4100	86	5000	4850	24000	46”
	54	35083	Ⓔ 1,7	**F54T5/841/HO/ECO/IC**	841 Phosphor High Output	25	4100	86	5000	4850	24000	46”
	54	90052	Ⓔ 1,7	**F54T5/841/HO/ECO/IC/CS**	841 Phosphor High Output, CoverShield®	25	4100	86	5000	4850	24000	46”
	54	35071	Ⓔ X 1,7	**F54T5/841/HO/ECO/XL**	841 Phosphor High Output, Extended Life	25	4100	86	5000	4790	40000	46”
	54	35084	Ⓔ 1,7	**F54T5/850/HO/ECO/IC**	850 Phosphor High Output	25	5000	86	5000	4850	24000	46”
	54	90053	Ⓔ 1,7	**F54T5/850/HO/ECO/IC/CS**	850 Phosphor High Output, CoverShield®	25	5000	86	5000	4850	24000	46”
	54	35072	Ⓔ X 1,7	**F54T5/850/HO/ECO/XL**	850 Phosphor High Output, Extended Life	25	5000	86	5000	4790	40000	46”
	54	35086	Ⓔ 1,7	**F54T5/865/HO/ECO/IC**	865 Phosphor High Output	25	6500	86	5000	4850	24000	46”
	80	35087	1,7	**F80T5/835/HO/ECO**	835 Phosphor High Output	25	3500	86	7000	6650	24000	57.1”
	80	35090	1,7	**F80T5/841/HO/ECO**	841 Phosphor High Output	25	4100	86	7000	6650	24000	57.1”
ProLume® T-8 Rapid Start - Medium Bi-Pin Eco-Shield®												
T8	17	109320	1	**F17T8/730/ECO**	730 Phosphor	25	3000	78	1350	1280	24000	24”
	17	109322	1	**F17T8/735/ECO**	735 Phosphor	25	3500	78	1350	1280	24000	24”
	17	109324	1	**F17T8/741/ECO**	741 Phosphor	25	4100	78	1350	1280	24000	24”
	17	109326	1	**F17T8/750/ECO**	750 Phosphor	25	5000	78	1350	1280	24000	24”
	17	35170	1	**F17T8/830/ECO**	830 Phosphor	25	3000	86	1400	1330	24000	24”
	17	109802	1	**F17T8/835/ECO**	835 Phosphor	25	3500	86	1400	1330	24000	24”
	17	109804	1	**F17T8/841/ECO**	841 Phosphor	25	4100	86	1400	1330	24000	24”
	17	35180	1	**F17T8/850/ECO**	850 Phosphor	25	5000	86	1400	1330	24000	24”

Ⓔ Means this lamp meets Federal Minimum Efficiency standards.

Linear Fluorescent lamp symbols, footnotes and abbreviations are located on pages 90-91.



T8 Med.
Bi-Pin

Bulb	Watts	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Color Temp.	CRI	Initial Lumens	Mean Lumens	Avg. Life	Nom. Length
ProLume® T-8 Rapid Start - Medium Bi-Pin Eco-Shield® continued												
T8	25	109340	1	**F25T8/730/ECO**	730 Phosphor	25	3000	78	2150	2050	24000	36”
	25	109342	1	**F25T8/735/ECO**	735 Phosphor	25	3500	78	2150	2050	24000	36”
	25	109344	1	**F25T8/741/ECO**	741 Phosphor	25	4100	78	2150	2050	24000	36”
	25	109346	1	**F25T8/750/ECO**	750 Phosphor	25	5000	78	2150	2050	24000	36”
	25	109806	1	**F25T8/830/ECO**	830 Phosphor	25	3000	86	2250	2140	24000	36”
	25	109808	1	**F25T8/835/ECO**	835 Phosphor	25	3500	86	2250	2140	24000	36”
	25	109810	1	**F25T8/841/ECO**	841 Phosphor	25	4100	86	2250	2140	24000	36”
	25	35162	Ⓔ $ 1,8	**F25T8ES/830/ECO**	830 Phosphor, Energy Saver	25	3000	86	2500	2380	24000	48”
	25	35172	Ⓔ $ 1,8	**F25T8ES/835/ECO**	835 Phosphor, Energy Saver	25	3500	86	2500	2380	24000	48”
	25	35173	Ⓔ $ 1,8	**F25T8ES/841/ECO**	841 Phosphor, Energy Saver	25	4100	86	2500	2380	24000	48”
	25	35174	Ⓔ $ 1,8	**F25T8ES/850/ECO**	850 Phosphor, Energy Saver	25	5000	86	2500	2380	24000	48”
	28	35175	Ⓔ $ 1	**F28T8/830/ECO**	830 Phosphor	25	3000	86	2800	2660	24000	48”
	28	109364	Ⓔ $ 1	**F28T8/835/ECO**	835 Phosphor	25	3500	86	2800	2660	24000	48”
	28	90081	Ⓔ X $ 1	**F28T8/835/ECO/IC/CS**	835 Phosphor, CoverShield®	25	3500	86	2800	2660	24000	48”
	28	109366	Ⓔ $ 1	**F28T8/841/ECO**	841 Phosphor	25	4100	86	2800	2660	24000	48”
	28	109368	Ⓔ $ 1	**F28T8/850/ECO**	850 Phosphor	25	5000	86	2800	2660	24000	48”
	32	109412	Ⓔ L,1	**F32T8/730/ECO**	730 Phosphor	25	3000	78	2850	2700	24000	48”
	32	109414	Ⓔ L,1	**F32T8/735/ECO**	735 Phosphor	25	3500	78	2850	2700	24000	48”
	32	90084	Ⓔ 1	**F32T8/735/ECO/CS**	735 Phosphor, CoverShield®	25	3500	78	2850	2700	24000	48”
	32	109416	Ⓔ L,1	**F32T8/741/ECO**	741 Phosphor	25	4100	78	2850	2700	24000	48”
	32	90085	Ⓔ 1	**F32T8/741/ECO/CS**	741 Phosphor, CoverShield®	25	4100	78	2850	2700	24000	48”
	32	109418	Ⓔ L,1	**F32T8/750/ECO**	750 Phosphor	25	5000	78	2850	2700	24000	48”
	32	90089	Ⓔ 1	**F32T8/750/ECO/CS**	750 Phosphor, CoverShield®	25	5000	78	2850	2700	24000	48”
	32	30170	Ⓔ L,1	**F32T8/765/ECO**	765 Phosphor	25	6500	78	2850	2700	24000	48”
	32	109398	Ⓔ 1	**F32T8/830/ECO**	830 Phosphor	25	3000	86	3050	2900	24000	48”
	32	109400	Ⓔ 1	**F32T8/835/ECO**	835 Phosphor	25	3500	86	3050	2900	24000	48”
	32	35176	Ⓔ 1	**F32T8/835/ECO/HL**	835 Phosphor High Lumen	25	3500	86	3150	3000	24000	48”
	32	90094	Ⓔ 1	**F32T8/835/ECO/CS**	835 Phosphor, CoverShield®	25	3500	86	3050	2900	24000	48”
	32	109402	Ⓔ 1	**F32T8/841/ECO**	841 Phosphor	25	4100	86	3050	2900	24000	48”
	32	35177	Ⓔ 1	**F32T8/841/ECO/HL**	841 Phosphor High Lumen	25	4100	86	3150	3000	24000	48”
	32	90095	Ⓔ 1	**F32T8/841/ECO/CS**	841 Phosphor, CoverShield®	25	4100	86	3050	2900	24000	48”
	32	109404	Ⓔ 1	**F32T8/850/ECO**	850 Phosphor	25	5000	86	3050	2900	24000	48”
	32	35178	Ⓔ 1	**F32T8/850/ECO/HL**	850 Phosphor High Lumen	25	5000	86	3150	3000	24000	48”
	32	90096	Ⓔ 1	**F32T8/850/ECO/CS**	850 Phosphor, CoverShield®	25	5000	86	3050	2900	24000	48”
	32	109428	Ⓔ 1	**F32T8/865/ECO**	865 Phosphor	25	6500	86	3050	2900	24000	48”

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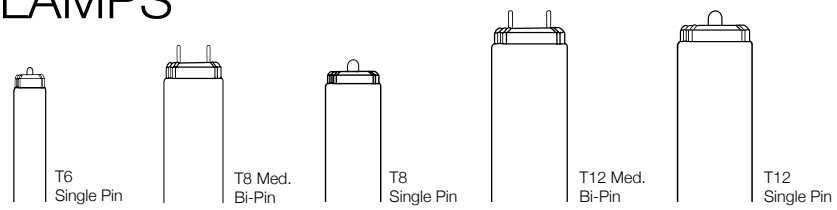
LINEAR FLUORESCENT LAMPS



Bulb	Watts	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Color Temp.	CRI	Initial Lumens	Mean Lumens	Avg. Life	Nom. Length
ProLume® T-8 Rapid Start - Medium Bi-Pin Eco-Shield® continued												
T8	32	37200	1	**F32T8BLB**	Blacklight-Blue	12	-	-	-	-	20000	48”
	40	30171	1	**F40T8/735/ECO**	735 Phosphor	30	3500	78	3600	3450	24000	60”
	40	30172	1	**F40T8/741/ECO**	741 Phosphor	30	4100	78	3600	3450	24000	60”
	58	35179	1	**F58T8/840**	840 Phosphor	25	4000	86	5300	5000	24000	60”
	70	39452	1	**F70T8/840/M**	840 Phosphor Major	25	4000	85	6000	5985	20000	70”
T-8 Rapid Start - Single Pin												
T8	59	23411	Ⓔ $ 1	**F96T8/735/M**	735 Phosphor Major	24	3500	75	5700	5130	15000	96”
	59	23412	Ⓔ $ 1	**F96T8/741/M**	741 Phosphor Major	24	4100	72	5700	5130	15000	96”
	59	205773	Ⓔ $ 1	**F96T8/850/M**	850 Phosphor Major	24	5000	80	5900	5428	15000	96”
ProLume® T-12 Rapid Start - Medium Bi-Pin												
T12	30	9204	1	**F30T12CW**	Cool White	30	4100	62	2100	1830	8000	36”
	30	9236	1	**F30T12DL**	Daylight	30	6500	74	1900	1650	8000	36”
	30	313742	1	**F30T12WW**	Warm White Major	30	3000	53	2300	2000	18000	36”
	34	24588	1	**F34CWX/SS/M**	Cool White Deluxe Major	30	4100	87	1925	1656	20000	48”
	40	423889	1	**F40CWS/ECO/M**	Cool White Supreme Major	30	4100	89	2600	2250	20000	48”
	40	109480	1	**F40/350BL**	Blacklight	6	-	-	-	-	20000	48”
	40	109490	1	**F40BLB**	Blacklight-Blue	6	-	-	-	-	20000	48”
Slimline Instant Start - Single Pin												
T6	25	24266	1	**F42T6CW/M**	Cool White Major	24	4100	60	1750	1540	7500	42”
T12	39	363218	1	**F48CW/M**	Cool White Low Mercury Major	15	4100	62	2950	2600	9000	48”
	39	387019	1	**F48DL/M**	Daylight Low Mercury Major	15	6500	79	2500	2375	9000	48”
	50	26001	1	**F60CW/M**	Cool White Major	30	4100	60	3700	3256	12000	60”
	50	23076	1	**F60DL/M**	Daylight Major	30	6500	76	3000	2640	12000	60”
	50	355768	1	**F64CW/M**	Cool White Major	30	4100	60	3900	3432	12000	64”
	50	355776	1	**F64DL/M**	Daylight Major	30	6500	76	3300	2904	12000	64”
	56	369892	1	**F72CW/M**	Cool White Low Mercury Major	15	4100	59	4450	3900	12000	72”
	56	369850	1	**F72DL/M**	Daylight Low Mercury Major	15	6500	79	3800	3350	12000	72”
	70	13764	1	**F84CW/M**	Cool White Major	15	4100	60	5300	4664	12000	84”
	75	423194	1	**F96CWS/ECO/M**	Cool White Supreme Major	15	4100	89	5000	4250	12000	96”
	75	14067	Ⓔ 1	**F96/735/M**	735 Phosphor Major	15	3500	70	6420	5906	12000	96”

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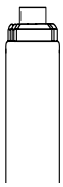
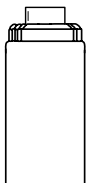

T8
Recessed DC


T12
Recessed DC


T8
U-Bend

Bulb	Watts	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Color Temp.	CRI	Initial Lumens	Mean Lumens	Avg. Life	Nom. Length
High Output (800mA) - Recessed DC Base												
T8	86	12537	Ⓔ 1,4,5	**F96T8/735HO/M**	735 Phosphor High Output Major	24	3500	78	8000	7520	18000	96”
	86	12538	Ⓔ 1,4,5	**F96T8/741HO/M**	741 Phosphor High Output Major	24	4100	78	8000	7520	18000	96”
T12	35	262790	1,4,5	**F24T12CWHO/M**	Cool White High Output Major	30	4100	60	1650	1337	9000	24”
	35	262741	1,4,5	**F24T12DLHO/M**	Daylight High Output Major	30	6500	76	1400	1134	9000	24”
	42	226464	1,4,5	**F30T12CWHO/M**	Cool White High Output Major	30	4100	60	2250	1825	9000	30”
	45	262865	1,4,5	**F36T12CWHO/M**	Cool White High Output Major	30	4100	60	2850	2309	9000	36”
	45	262907	1,4,5	**F36T12DLHO/M**	Daylight High Output Major	30	6500	76	2500	2025	9000	36”
	55	10559	1,4,5	**F42CWHO/M**	Cool White High Output Major	30	4100	60	3400	2754	9000	42”
	55	10560	1,4,5	**F42DLHO/M**	Daylight High Output Major	30	6500	76	3050	2471	9000	42”
	60	369785	1,4,5	**F48CWHO/M**	Cool White High Output Low Mercury Major	15	4100	59	4050	3500	12000	48”
	60	369843	1,4,5	**F48DLHO/M**	Daylight High Output Low Mercury Major	15	6500	73	3400	3000	12000	48”
	75	251260	1,4,5	**F60CWHO/M**	Cool White High Output Major	30	4100	60	5200	4212	12000	60”
	75	25120	1,4,5	**F60DLHO/M**	Daylight High Output Major	30	6500	76	4600	3826	12000	60”
	85	366518	1,4,5	**F72CWHO/M**	Cool White High Output Low Mercury Major	15	4100	62	6350	5500	12000	72”
	85	366534	1,4,5	**F72DLHO/M**	Daylight High Output Low Mercury Major	15	6500	79	5600	4850	12000	72”
	100	13766	1,4,5	**F84CWHO/M**	Cool White High Output Major	15	4100	62	7490	6800	12000	84”
	100	13767	1,4,5	**F84DLHO/M**	Daylight High Output Major	15	6500	76	6700	5427	12000	84”
	110	381774	1,4,5,6	**F96DLHOO/A**	Daylight High Output Low Mercury Major	15	6500	79	7800	6800	12000	96”
Very High Output (1500mA) - Recessed DC Base												
T12	110	25248	1,4,5	**F48CWVHO/M**	Cool White Very High Output Major	24	4100	60	6200	4620	10000	48”
	160	13760	1,4,5	**F72CWVHO/M**	Cool White Very High Output Major	15	4100	60	10600	7420	10000	72”
	215	342345	1,4,5	**F96CWVHO/M**	Cool White Very High Output Major	15	4100	60	14000	9800	10000	96”
***ProLume*® U-Bend Rapid Start - Medium Bi-Pin Base Eco-Shield®**												
T8	28	35307	Ⓔ $,1,3	**FB28/835/6/ECO/IC**	835 Phosphor 6”	20	3500	86	2650	2450	24000	22.6”
	28	35311	Ⓔ $,1,3	**FB28/841/6/ECO/IC**	841 Phosphor 6”	20	4100	86	2650	2450	24000	22.6”
	31	30301	Ⓔ 1,3	**FB31/830/ECO**	830 Phosphor 1-5/8”	12	3000	86	2750	2600	24000	22.6”
	31	30302	Ⓔ 1,3	**FB31/835/ECO**	835 Phosphor 1-5/8”	12	3500	86	2750	2600	24000	22.6”
	31	30303	Ⓔ 1,3	**FB31/841/ECO**	841 Phosphor 1-5/8”	12	4100	86	2750	2600	24000	22.6”
	31	30304	Ⓔ 1,3	**FB31/850/ECO**	850 Phosphor 1-5/8”	12	5000	86	2750	2600	24000	22.6”

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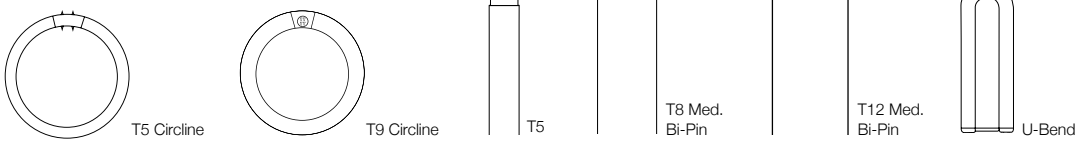
LINEAR FLUORESCENT LAMPS



Bulb	Watts	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Color Temp.	CRI	Initial Lumens	Mean Lumens	Avg. Life	Nom. Length
ProLume® U-Bend Rapid Start - Medium Bi-Pin Base Eco-Shield® continued												
T8	32	109500	Ⓔ L,1,3	**FB32/730/6/ECO**	730 Phosphor 6”	20	3000	78	2750	2400	24000	22.6”
	32	109502	Ⓔ L,1,3	**FB32/735/6/ECO**	735 Phosphor 6”	20	3500	78	2750	2400	24000	22.6”
	32	109504	Ⓔ L,1,3	**FB32/741/6/ECO**	741 Phosphor 6”	20	4100	78	2750	2400	24000	22.6”
	32	109506	Ⓔ L,1,3	**FB32/750/6/ECO**	750 Phosphor 6”	20	5000	78	2750	2400	24000	22.6”
	32	35313	Ⓔ X 1,3	**FB32/830/6/ECO/IC**	830 Phosphor 6”	20	3000	86	2900	2750	24000	22.6”
	32	109814	Ⓔ 1,3	**FB32/835/6/ECO**	835 Phosphor 6”	20	3500	86	2900	2750	24000	22.6”
	32	109816	Ⓔ 1,3	**FB32/841/6/ECO**	841 Phosphor 6”	20	4100	86	2900	2750	24000	22.6”
	32	109818	Ⓔ 1,3	**FB32/850/6/ECO**	850 Phosphor 6”	20	5000	86	2900	2750	24000	22.6”
T12	40	219931	1,3	**FB40DX/6/M**	Daylight 6” Major	12	6500	84	2250	2125	18000	22.5”
	40	24004	1,3	**FB40CWXU6**	Cool White 6” Major	12	4100	87	2100	1806	18000	22.5”
ProLume® Circline T5 Programmed Start - 2GX13 Base												
T5	22	109080	2,7	**FC22T5/835**	835 Phosphor	20	3500	82	1900	1800	10000	9”
	22	109082	2,7	**FC22T5/841**	841 Phosphor	20	4100	82	1900	1800	10000	9”
	40	109084	2,7	**FC40T5/835**	835 Phosphor	20	3500	82	3350	3150	10000	12”
	40	109086	2,7	**FC40T5/841**	841 Phosphor	20	4100	82	3350	3150	10000	12”
ProLume® Circline T9 Rapid Start - G10q Base												
T9	22	37501	1	**FC8T9CW**	Cool White	12	4100	62	1150	1050	10000	8”
	22	37503	1	**FC8T9DL**	Daylight	12	6500	75	1150	1050	10000	8”
	30	37504	1	**FC9T9/830**	830 Phosphor	12	3000	86	1800	1700	10000	9”
	32	37507	1	**FC12T9CW**	Cool White	12	4100	62	2100	2000	10000	12”
	40	37510	1	**FC16T9CW**	Cool White	12	4100	62	2900	2700	10000	16”
ProLume® Appliance - Medium Bi-Pin Base												
T8	18	109234	1	**F18T8CW/K24**	Cool White 24”	25	4100	62	1175	1025	7500	24”
	18	23027	1	**F18T8CW/K26**	Cool White 26” Major	24	4100	62	1280	1080	7500	26”
	18	23028	1	**F18T8CW/K28**	Cool White 28” Major	24	4100	62	1360	1130	7500	28”
	18	23030	1	**F18T8CW/K30**	Cool White 30” Major	24	4100	62	1400	1200	7500	30”
T12	25	22527	1	**F25T12CW/28**	Cool White 28” Major	30	4100	62	1670	1450	7500	28”
	25	22529	1	**F25T12CW/33**	Cool White 33” Major	30	4100	62	1850	1200	7500	33”
ProLume® Blacklight & Blacklight-Blue												
T5	8	9206	1	**F8T5BLB**	Blacklight-Blue	10/500	-	-	-	-	5000	12”
T8	32	37200	1	**F32T8BLB**	Blacklight-Blue	12	-	-	-	-	20000	48”
T12	40	109490	1	**F40BLB**	Blacklight-Blue	6	-	-	-	-	20000	48”
	40	109480	1	**F40/350BL**	Blacklight	6	-	-	-	-	20000	48”

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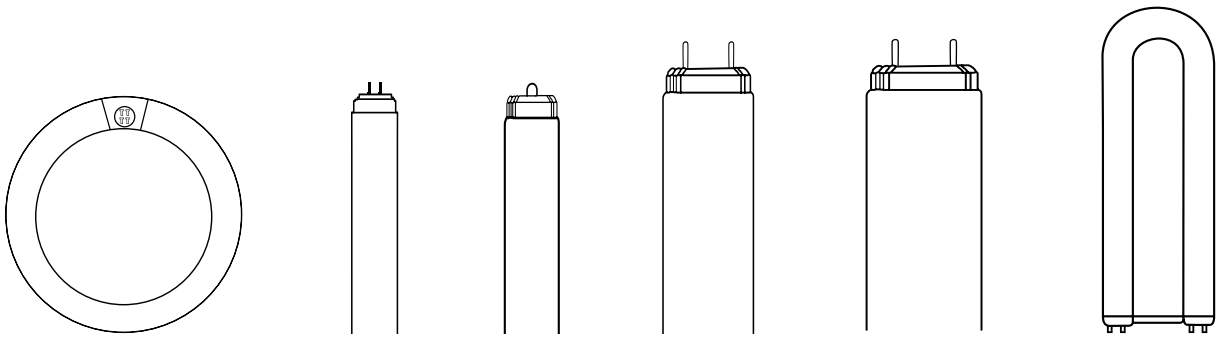
LINEAR FLUORESCENT LAMPS

Bulb and Base Identification Guide

Bulb Shapes



Circline | T5 | T6 | T8 | T12 | U-Bend

Base Types

Miniature Bi-Pin | Medium Bi-Pin | Recessed DC | Single Pin

LINEAR FLUORESCENT LAMPS

Cross Reference Guide

HALCO	G.E.	PHILIPS	OSRAM/SYLVANIA
Preheat Lamps			
F18T8CW/K24	F24”T8CW/4	F18T8/CW/24	F18T8CW/K24
F18T8CW/K26	F26”T8CW/4	F16T8/CW/26	F18T8CW/K26
F18T8CW/K28	F28”T8CW/4	F17T8/CW/28	F18T8CW/K28
F18T8CW/K30	F30”T8CW/4	F18T8/CW/30/ALTO	F18T8CW/K30
F25T12CW/28	F25T12/CW/28	-	F25T12/CW/28
F25T12CW/33	F25T12/CW/33	F25T12/CW	F25T12/CW/33
Ultra Efficient T-5			
F14T5/830/ECO/IC	F14W/T5/830/ECO	F14T5/830/ALTO	FP14/830/ECO
F14T5/835/ECO/IC	F14W/T5/835/ECO	F14T5/835/ALTO	FP14/835/ECO
F14T5/841/ECO/IC	F14W/T5/841/ECO	F14T5/841/ALTO	FP14/841/ECO
F21T5/830/ECO/IC	F21W/T5/830/ECO	F21T5/830/ALTO	FP21/830/ECO
F21T5/835/ECO/IC	F21W/T5/835/ECO	F21T5/835/ALTO	FP21/835/ECO
F21T5/841/ECO/IC	F21W/T5/841/ECO	F21T5/841/ALTO	FP21/841/ECO
F28T5/830/ECO/IC	F28W/T5/830/ECO	F28T5/830/ALTO	FP28/830/ECO
F28T5/835/ECO/IC	F28W/T5/835/ECO	F28T5/835/ALTO	FP28/835/ECO
F28T5/841/ECO/IC	F28W/T5/841/ECO	F28T5/841/ALTO	FP28/841/ECO
F28T5/850/ECO/IC	F28W/T5/850/ECO	-	FP28/850/ECO
F28T5/835/ECO/XL	-	-	-
F28T5/841/ECO/XL	-	-	-
F35T5/835/ECO/IC	F35W/T5/835/ECO	F35T5/835/ALTO	FP35/835/ECO
F35T5/841/ECO/IC	F35W/T5/841/ECO	F35T5/841/ALTO	FP35/841/ECO
Ultra Efficient T-5 High Output			
F24T5/835/HO/ECO/IC	F24W/T5/835/ECO	F24T5/835/HO/ALTO	FP24/835/HO/ECO
F24T5/841/HO/ECO/IC	F24W/T5/841/ECO	F24T5/841/HO/ALTO	FP24/841/HO/ECO
F39T5/830/HO/ECO/IC	F39W/T5/830/ECO	F39T5/830/HO/ALTO	FP39/830/HO/ECO
F39T5/835/HO/ECO/IC	F39W/T5/835/ECO	F39T5/835/HO/ALTO	FP39/835/HO/ECO
F39T5/841/HO/ECO/IC	F39W/T5/841/ECO	F39T5/841/HO/ALTO	FP39/841/HO/ECO
F49T5/835/HO/ECO/IC	F54T5/835/WM/ECO	F54T5/835/HO/EA/ALTO 49W	-
F49T5/841/HO/ECO/IC	F54T5/841/WM/ECO	F54T5/841/HO/EA/ALTO 49W	-
F49T5/850/HO/ECO/IC	F54T5/850/WM/ECO	F54T5/850/HO/EA/ALTO 49W	-
F54T5/830/HO/ECO/IC	F54W/T5/830/ECO	F54T5/830/HO/ALTO	FP54/830/HO/ECO
F54T5/835/HO/ECO/IC	F54W/T5/835/ECO	F54T5/835/HO/ALTO	FP54/835/HO/ECO
F54T5/841/HO/ECO/IC	F54W/T5/841/ECO	F54T5/841/HO/ALTO	FP54/841/HO/ECO
F54T5/850/HO/ECO/IC	F54W/T5/850/ECO	F54T5/850/HO/ALTO	FP54/850/HO/ECO
F54T5/865/HO/ECO/IC	F54W/T5/865/ECO	F54T5/865/HO/ALTO	FP54/865/HO/ECO
F54T5/835/HO/ECO/XL	-	-	-
F54T5/850/HO/ECO/XL	-	-	-
F80T5/835/HO/ECO/IC	F80W/T5/835/ECO	F80T5/835/HO	FP80/835/HO/ECO
F80T5/841/HO/ECO/IC	F80W/T5/841/ECO	F80T5/841/HO	FP80/841/HO/ECO

LINEAR FLUORESCENT LAMPS

Cross Reference Guide

HALCO	G.E.	PHILIPS	OSRAM/SYLVANIA
T-5 Ultra Efficient Circline			
FC22T5/835	-	TL5C 22W/835	FPC22/835
FC22T5/841	-	TL5C 22W/840	FPC22/841
FC40T5/835	-	TL5C 40W/835	FPC40/835
FC40T5/841	-	TL5C 40W/840	FPC40/841
T-8 Rapid Start			
F17T8/730/ECO	F17T8/SP30/ECO	F17T8/TL730/ALTO	FO17/730/ECO
F17T8/735/ECO	F17T8/SP35/ECO	F17T8/TL735/ALTO	FO17/735/ECO
F17T8/741/ECO	F17T8/SP41/ECO	F17T8/TL741/ALTO	FO17/741/ECO
F17T8/750/ECO	-	-	-
F17T8/830/ECO	F17T8/SPX30/ECO	F17T8/TL830/ALTO	FO17/830/ECO
F17T8/835/ECO	F17T8/SPX35/ECO	F17T8/TL835/ALTO	FO17/835/ECO
F17T8/841/ECO	F17T8/SPX41/ECO	F17T8/TL841/ALTO	FO17/841/ECO
F17T8/850/ECO	-	F17T8/TL850/ALTO	-
F25T8/730/ECO	F25T8/SP30/ECO	F25T8/TL730/ALTO	FO25/730/ECO
F25T8/735/ECO	F25T8/SP35/ECO	F25T8/TL735/ALTO	FO25/735/ECO
F25T8/741/ECO	F25T8/SP41/ECO	F25T8/TL741/ALTO	FO25/741/ECO
F25T8/750/ECO	F25T8/SP50/ECO	F25T8/TL750/ALTO	-
F25T8/830/ECO	F25T8/SPX30/ECO	F25T8/TL830/ALTO	FO25/830/ECO
F25T8/835/ECO	F25T8/SPX35/ECO	F25T8/TL835/ALTO	FO25/835/ECO
F25T8/841/ECO	F25T8/SPX41/ECO	F25T8/TL841/ALTO	FO25/841/ECO
F25T8ES/830/ECO	F32T8/25W/SPX30/ECO	F32T8/ADV830/XEW/ALTO 25 WATT	FO32/25W/830/XP/SS/ECO
F25T8ES/835/ECO	F32T8/25W/SPX35/ECO	F32T8/ADV835/XEW/ALTO 25 WATT	FO32/25W/835/XP/SS/ECO
F25T8ES/841/ECO	F32T8/25W/SPX41/ECO	F32T8/ADV841/XEW/ALTO 25 WATT	FO32/25W/841/XP/SS/ECO
F25T8ES/850/ECO	F32T8/25W/SPX50/ECO	F32T8/ADV850/XEW/ALTO 25 WATT	FO32/25W/850/XP/SS/ECO
F28T8/830/ECO	F28T8/XL/SPX30/ECO	F32T8/ADV830/EW/ALTO 28 WATT	FO28/830/XP/SS/ECO
F28T8/835/ECO	F28T8/XL/SPX35/ECO	F32T8/ADV835/EW/ALTO 28 WATT	FO28/835/XP/SS/ECO
F28T8/841/ECO	F28T8/XL/SPX41/ECO	F32T8/ADV841/EW/ALTO 28 WATT	FO28/841/XP/SS/ECO
F28T8/850/ECO	F28T8/XL/SPX50/ECO	F32T8/ADV850/EW/ALTO 28 WATT	-
F32T8/730/ECO	F32T8/SP30/ECO	F32T8/TL730/ALTO	FO32/730/ECO
F32T8/735/ECO	F32T8/SP35/ECO	F32T8/TL735/ALTO	FO32/735/ECO
F32T8/741/ECO	F32T8/SP41/ECO	F32T8/TL741/ALTO	FO32/741/ECO
F32T8/750/ECO	F32T9/SP50/ECO	F32T8/TL750/ALTO	FO32/750/ECO
F32T8/765/ECO	F32T8/SP65/ECO	F32T8/TL765/ALTO	FO32/765/ECO
F32T8/830/ECO	F32T8/SPX30/ECO	F32T8/TL830/ALTO	FO32/830/ECO
F32T8/835/ECO	F32T8/SPX35/ECO	F32T8/TL835/ALTO	FO32/835/ECO
F32T8/841/ECO	F32T8/SPX41/ECO	F32T8/TL841/ALTO	FO32/841/ECO

LINEAR FLUORESCENT LAMPS

Cross Reference Guide

HALCO	G.E.	PHILIPS	OSRAM/SYLVANIA
T-8 Rapid Start continued			
F32T8/841/ECO/HL	F32T8/XL/SPX41/HL/ECO	F32T8/ADV841/ALTO	-
F32T8/850/ECO	F32T8/SPX50/ECO	F32T8/TL850/ALTO	FO32/850/ECO
F32T8/850/ECO/HL	F32T8/XL/SPX50/HL/ECO	F32T8/ADV850/ALTO	-
F32T8/865/ECO	-	-	-
F32T8BLB	-	-	-
F40T8/735/ECO	F40T8/SP35	F40T8/TL735/ALTO	FO40/735/ECO
F40T8/741/ECO	F40T8/SP41	F40T8/TL741/ALTO	FO40/741/ECO
F58T8/840	F58T8/841PLYXLR	-	-
F70T8/840/M	F70T8/840PLYXLR	-	-
T-12 Rapid Start			
F40DX/A	F40/DX/ECO	F40/DX/ALTO	F40/DX
F40/350BL	F40BL	F40T12/Blacklight	F40/350BL
F40BLB	F40BLB	-	F40/BLB/RP
Instant Start - Slimline			
F64DL/M	F64T12/D	F64T12/D	F64T12/D
F96T8/735/M	F96T8/SP35	F96T8/TL735/PLUS/ALTO	FO96/735/ECO
F96T8/741/M	F96T8/SP41	F96T8/TL741/PLUS/ALTO	FO96/741/ECO
F96T8/850/M	F96T8/SPX50	F96T8/TL850/PLUS/ALTO	FO96/850/ECO
F96DX/A	F96T12/DX	F96T12/DX/ALTO	F96T12/DX/SS
Rapid Start High Output & Very High Output			
F96CWHOES/A	F96T12/CW/HO/WM/ECO	F96T12/CW/HO/EW/ALTO	F96T12/CW/HO/SS/ECO
F96CWHOO/A	-	F96T12/CW/HO-O/ALTO	F96T12/CW/HO/CT/ECO
F96CWVHO/M	F96T12/CW/1500	F96T12/CW/VHO-O	F96T12/CW/VHO

LINEAR FLUORESCENT LAMPS

Cross Reference Guide

HALCO	G.E.	PHILIPS	OSRAM/SYLVANIA
U-Bend Fluorescent			
FB28/830/6/ECO	-	-	-
FB28/835/6/ECO	-	-	-
FB28/841/6/ECO	-	-	-
FB32/735/6/ECO	F32T8/SP35/U/6	FB32T8/TL735/6/ALTO	FBO32/735/6/ECO
FB32/741/6/ECO	F32T8/SP41/U/6	FB32T8/TL741/6/ALTO	FBO32/741/6/ECO
FB32/750/6/ECO	-	FB32T8/TL750/6/ALTO	FBO32/750/6/ECO
FB32/830/6/ECO	F32T8/SPX30/U/6	FB32T8/TL830/6/ALTO	FBO32/830/6/ECO
FB32/835/6/ECO	F32T8/SPX35/U/6	FB32T8/TL835/6/ALTO	FBO32/835/6/ECO
FB32/841/6/ECO	F32T8/SPX41/U/6	FB32T8/TL841/6/ALTO	FBO32/841/6/ECO
FB32/850/6/ECO	F32T8/SPX50/U/6	FB32T8/TL850/6/ALTO	-
FB31/830/ECO	F31T8/SPX30/U	-	FBO31/830
FB31/835/ECO	F31T8/SPX35/U	-	FBO31/835
FB31/841/ECO	F31T8/SPX41/U	-	FBO31/841
FB31/850/ECO	-	-	-
FB40DX/6/M	-	FB40/DX/6	-
Brand Name Cross Reference			
T5	T5	Silhouette™	Pentron®
T8	T8	TL70/TL80	Octron®
730	SP30	SPEC30 or 730	D30 or 730
830	SPX30	30U or 830	D830
950	C50	C50	DSGN50
ES (Energy Saver)	WM (Watt-Miser®)	EW (Econo-Watt®)	SS (Supersaver®)
Eco-Shield®	ECOLUX®	ALTO®	ECOLOGIC®
ULTRA50	SPX50	50U	850
U-Bend	Mod-U-Line®	U-Bent	Curvalume®

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LINEAR FLUORESCENT

Symbols, Footnotes and Abbreviations

SYMBOLS

$	Energy saving product.
Ⓔ	This lamp meets Federal Minimum Efficiency standards.
	ProLume® Eco-Shield® Low-Mercury Fluorescent lamps pass the Federal TCLP for hazardous wastes.
X	Product will be discontinued when inventory is depleted.
L	Legislated lamp will not be manufactured after July 14, 2014.

FOOTNOTES

1	Average life under specified test conditions with lamps turned off and restarted every three hours. Lamp life is longer if lamps are started less frequently.
2	Commercial average rated life under specified test conditions with lamps turned off and restarted every twelve hours. Lamp life is longer if lamps are started less frequently.
3	Nominal length is measured from face of base to maximum distant outside point of U-Bend. Leg spacing measured center to center is approximately 6" for /6 product, 3-5/8" for /3 product and 1-5/8" for FB31 product.
4	Initial lumens are based on 800-mA. operation. For 1000mA. operation, lumens are approximately 10% higher and wattage approximately 15% higher.
5	This energy saving lamp is only recommended for use on high power factor lead, indoor ballasts that meet ANSI standards. The lamp is not recommended for use in drafty areas or locations where the ambient temperature drops below 60°F, except as noted. Do not operate on low power factor ballasts, reduced light or reduced current ballasts, dimming ballasts or emergency system inverter ballasts.
6	Meets the National Energy Policy Act (EPACT) of 1992 exemption for outdoor or cold temperature applications only.
7	Lamp designed for use with Programmed Start ballast.
8	This lamp should only be operated on high efficiency or anti-striation type ballasts.

ABBREVIATIONS

3	Code abbreviation for 3-5/8" U-Bend lamps.
6	Code abbreviation for 6" U-Bend lamps.
/730	Suffix used to indicate lamps with CRI of 70+ and color temperature of 3000K.
/735	Suffix used to indicate lamps with CRI of 70+ and color temperature of 3500K.
/741	Suffix used to indicate lamps with CRI of 70+ and color temperature of 4100K.
/750	Suffix used to indicate lamps with CRI of 70+ and color temperature of 5000K.
/765	Suffix used to indicate lamps with CRI of 70+ and color temperature of 6500K.
/830	Suffix used to indicate lamps with CRI of 80+ and color temperature of 3000K.
/835	Suffix used to indicate lamps with CRI of 80+ and color temperature of 3500K.
/841	Suffix used to indicate lamps with CRI of 80+ and color temperature of 4100K.
/850	Suffix used to indicate lamps with CRI of 80+ and color temperature of 5000K.
/865	Suffix used to indicate lamps with CRI of 80+ and color temperature of 6500K.
BL	Code abbreviation for Blacklight lamps.
BLB	Code abbreviation for Blacklight-Blue lamps.
/CS	Suffix used to indicate CoverShield® safety coated lamps.
CW	Code abbreviation for Cool White lamps.
CWS	Code abbreviation for Cool White Supreme lamps.
CWX	Code abbreviation for ProLume® Cool White Deluxe lamps.
DL	Code abbreviation for Daylight lamps.
DX	Code abbreviation for Daylight lamps.
/ECO	Suffix used to indicate Eco-Shield® TCLP compliant lamps.
/ES	Suffix used to indicate Energy Saving Fluorescent lamps.
FB	Prefix used to indicate for Fluorescent U-Bend lamps.
FC	Prefix used to indicate for Fluorescent Circline lamps.
/HL	Suffix used to indicate High Lumen lamps.
/HO	Suffix used to indicate High Output lamps.
HOES	Code abbreviation to indicate High Output Energy Saver lamps.
HOO	Code abbreviation to indicate High Output lamps for outdoor or low temperature operation.
/IC	Suffix used to indicate ProLume® Industrial/Commercial service lamps.
/M	Suffix used to indicate Major brand Fluorescent lamps (GE, Philips, Osram/Sylvania).
/VHO	Suffix used to indicate Very High Output lamps.
WW	Code abbreviation for Warm White lamps.
/XL	Suffix used to indicate Extended Life lamps.

HIGH INTENSITY DISCHARGE LAMPS

CONTENTS

HOW TO READ AN HID LAMP TABLE

BULB
Designations indicate shape and size. Illustrations can be found on page 104 and at the top of each page.

BASE
Indicates base type. Full base descriptions and illustrations can be found on page 104.

PRODUCT CODE
Abbreviated product description can also be used for ordering. A key to abbreviations can be found on page 113.

PACKAGE QUANTITY
Indicates minimum sell quantity and smallest shipping carton.

ANSI CODE
The specific electrical characteristics of a lamp.

AVERAGE LIFE
Average rated life expressed in hours.

MOL
Indicates maximum overall length in inches.

Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	ANSI	Initial Lumens	Mean Lumens	Avg. Life	MOL	Color Temp.	CRI
ProLume® Protected Metal Halide													
50 WATT													
ED17	**Med.**	108266	3,13,14,19	**MP50/U/MED/PS**	Clear	1/12	M110/O	3300	2100	10000	5.45”	4000	65
		60505	3,13,14,19	**MP50/C/U/MED/PS**	Coated	1/12	M110/O	3200	2000	10000	5.45”	3700	70
70 WATT													
ED17	**Med.**	108268	3,13,14,19	**MP70/U/MED/PS**	Clear	1/12	M98/O	5300	3400	12000	5.45”	4000	65
		60508	3,13,14,19	**MP70/C/U/MED/PS**	Coated	1/12	M98/O	5000	3300	12000	5.45”	3700	70

WATTS
Indicates the power consumed by the lamp during operation.

PRODUCT NUMBER
Use this number when placing an order.

FOOTNOTES & SYMBOLS
Related footnotes can be found on page 111.

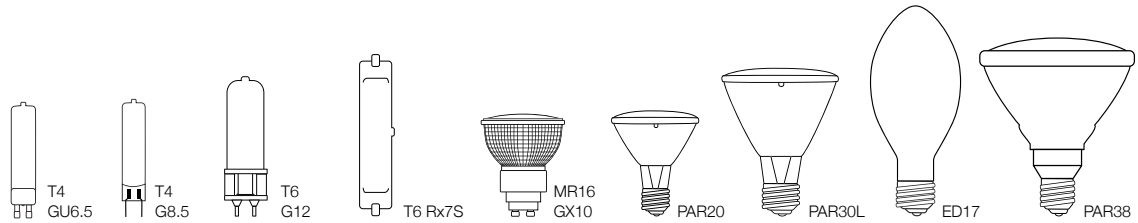
DESCRIPTION
Bulb finish and other important information.

INITIAL LUMENS
The lamp’s average light output after the initial 100 hours of operation.

MEAN LUMENS
The lamp’s average light output at 40% of rated life.

COLOR TEMP.
A term used to describe the color of a light source and is expressed in degrees “Kelvin” (K).

CRI
An international scale from 0 to 100 that indicates the relative color rendering value of a light source. The color rendering index expresses the degree to which colors will look “natural” under a given light source.

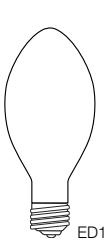


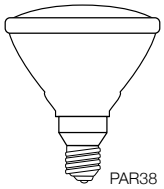
Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	ANSI	Initial Lumens	Mean Lumens	Avg. Life	MOL	Color Temp.	CRI
ProLume® Ceramic Discharge Metal Halide													
20 WATT													
T4	**GU6.5**	67010	1,11,18	**CDM20/TC/830/GU6.5**	Clear	1/24	C156/E	1750	1320	12000	2.44"	3000	85+
	G8.5	67012	1,11,18	**CDM20/TC/830**	Clear	1/24	C156/E	1750	1320	12000	3.35"	3000	85+
T6	**G12**	67013	1,11,18	**CDM20/T6/830**	Clear	1/12	C156/E	1750	1320	12000	3.98"	3000	85+
MR16	**GX10**	67020	3,11,18	**CDM20/MR16NFL/830/GX10**	Narrow Flood	1/12	C156/O	1200	780	12000	2.56"	3000	85+
PAR20	**Med.**	67021	3,11,18	**CDM20/P20/SP/830**	Spot	1/24	C156/O	1200	900	10000	3.74"	3000	85+
		67022	3,11,18	**CDM20/P20/FL /830**	Flood	1/24	C156/O	1200	900	10000	3.74"	3000	85+
39 WATT													
T4	**GU6.5**	67011	1,11,18	**CDM35/TC/830/GU6.5**	Clear	1/24	C130/E M130/E	3100	2325	12000	2.44"	3000	80+
	G8.5	67006	1,11,18	**CDM35/TC/830**	Clear	1/24	C130/E M130/E	3300	2550	12000	3.35"	3000	80+
T6	**G12**	67002	1,11,18	**CDM35/T6/830**	Clear	1/12	C130/E M130/E	3400	2550	12000	3.94"	3000	80+
	Rx7S	67016	X 1,11,18	**CDM35/TD/830**	Clear	1/12	C130/E M130/E	3100	2350	12000	4.69"	3000	80+
PAR20	**Med.**	67023	3,11,18	**CDM35/P20/SP/830**	Spot	1/24	C130/O M130/O	2100	1575	10000	3.74"	3000	80+
		67000	3,11,18	**CDM35/P20/FL/830**	Flood	1/24	C130/O M130/O	2100	1575	10000	3.74"	3000	80+
PAR30L	**Med.**	67001	3,11,18	**CDM35/P30L/FL/830**	Flood	1/6	C130/O M130/O	2200	1650	10000	4.88"	3000	80+
70 WATT													
ED17	**Med.**	281295	X 1,6,11	**MHC70UMED/4K/M**	Clear Major	1/12	M98/E M143/E	5900	4130	20000	5.44"	4000	92
T4	**G8.5**	67007	1,11,18	**CDM70/TC/830**	Clear	1/24	C/M98/E C/M139/E	6700	5200	12000	3.35"	3000	85+
T6	**G12**	67004	1,11,18	**CDM70/T6/830**	Clear	1/12	C/M98/E C/M139/E	6700	5300	12000	3.94"	3000	85+
		67014	1,11,18	**CDM70/T6/942**	Clear	1/12	C/M98/E C/M139/E	6600	5100	12000	3.94"	4200	90+
	Rx7S	67017	1,11,18	**CDM70/TD/830**	Clear	1/12	M85/E C/M139/E	6500	4875	12000	4.33"	3000	85+
PAR30L	**Med.**	67003	1,11,18	**CDM70/P30L/FL/830**	Flood	1/6	C/M98/E C/M139/E	4850	3640	10000	4.88"	3000	85+
		67024	1,11,18	**CDM70/P30L/SP/830**	Spot	1/6	C/M98/E C/M139/E	4850	3640	10000	4.88"	3000	85+
		67026	1,11,18	**CDM70/P30L/FL/942**	Flood	1/6	C/M98/E C/M139/E	4300	3225	10000	4.88"	4200	90+
		67025	X 1,11,18	**CDM70/P30L/SP/942**	Spot	1/6	C/M98/E C/M139/E	4300	3200	10000	4.88"	4200	90+
PAR38	**Med.**	67028	1,11,18	**CDM70/P38/FL/830**	Flood	1/6	C/M98/E C/M139/E	4800	3600	10000	5.64"	3000	85+
		67027	1,11,18	**CDM70/P38/SP/830**	Spot	1/6	C/M98/E C/M139/E	4800	3600	10000	5.64"	3000	85+
		67029	1,11,18	**CDM70/P38/FL/942**	Flood	1/12	C/M98/E C/M139/E	4500	3375	10000	5.64"	4200	90+
ED17	**Med.**	67008	3,11,18	**CDM70/U/830/MED**	Clear	1/12	C/M98/O C/M139/O	6200	4960	16000	5.64"	3000	85+

HID lamp symbols, footnotes and abbreviations are located on pages 111-114.

HID LAMPS

Metal Halide


ED17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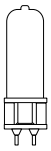
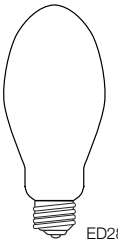
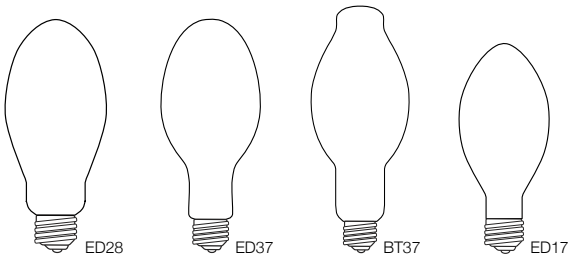

T6
G12


T7 Rx7S


ED28

Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	ANSI	Initial Lumens	Mean Lumens	Avg. Life	MOL	Color Temp.	CRI
ProLume® Ceramic Discharge Metal Halide continued													
100 WATT													
ED17	**Med.**	281352	1,6,11	**MHC100UMED/4K/M**	Clear Major	1/12	M90/E M140/E	9000	6750	20000	5.44”	4000	92
PAR38	**Med.**	45681	3,11	**CDM100/P38/FL/830/M**	Flood Major	1/6	M90/O M140/O	6500	4550	10000	5.31”	3000	81
		45680	3,11	**CDM100/P38/SP/830/M**	Spot Major	1/6	M90/O M140/O	6500	4550	10000	5.31”	3000	81
150 WATT													
ED17	**Med.**	67009	1,11,18	**CDM150/U/830/MED**	Clear	1/12	C/M102/E C/M142/E	14000	11200	16000	5.31”	3000	85+
T6	**G12**	67005	1,11,26,18	**CDM150/T6/830**	Clear	1/60	C/M102/E C/M142/E	14000	10500	12000	3.94”	3000	85+
		67015	1,11,26,18	**CDM150/T6/942**	Clear	1/60	C/M102/E C/M142/E	13000	9750	12000	3.94”	4200	93+
ProLume® Pulse Start Metal Halide													
50 WATT													
ED17	**Med.**	108228	1,12,13,18	**MH50/U/MED/PS**	Clear	1/12	M110/E	3400	2200	10000	5.45”	4000	65
		108232	X 1,12,13,18	**MH50/C/U/MED/PS**	Coated	1/12	M110/E	3300	2100	10000	5.45”	3700	70
70 WATT													
ED17	**Med.**	108246	1,12,13,18	**MH70/U/MED/PS**	Clear	1/12	M98/E	5600	3700	15000	5.45”	4000	65
		108248	1,12,13,18	**MH70/C/U/MED/PS**	Coated	1/12	M98/E	5300	3400	15000	5.45”	3700	70
100 WATT													
ED17	**Med.**	108254	1,12,13,18	**MH100/U/MED/PS**	Clear	1/12	M90/E	9000	5900	15000	5.45”	4000	65
		108256	1,12,13,18	**MH100/C/U/MED/PS**	Coated	1/12	M90/E	8500	5500	15000	5.45”	3700	70
ED28	**Mog.**	60003	1,12,13,18	**MH100/U/MOG/PS**	Clear	1/12	M90/E	9000	5900	15000	8.25”	4000	65
125 WATT													
ED17	**Med.**	60007	1,12,13,14,18	**MH125/HBU/MED/PS**	Horizontal Base Up	1/12	M150/E	12000	8400	15000	5.45”	4000	65
150 WATT													
ED17	**Med.**	108258	1,12,13,18	**MH150/U/MED/PS**	Clear	1/12	M102/E	14000	10500	15000	5.45”	4000	65
ED28	**Mog.**	108305	1,4,12,13,14,18	**MH150/U/PS**	Clear	1/12	M102/E	14000	10500	15000	8.25”	4000	65
175 WATT													
ED17	**Med.**	60002	1,4,12,13,14,18	**MH175/BU/MED/PS**	Clear Base Up	1/12	M152/E M137/E	17500	14000	15000	5.45”	4000	65
ED28	**Mog.**	108274	1,4,12,13,16,18	**MH175/BU/PS**	Clear Base Up	1/12	M152/E M137/E	17500	14000	15000	8.25”	4000	65
		60008	1,12,13,14,18	**MH175/HBU/PS**	Horizontal Base Up	1/12	M152/E M137/E	15000	10700	15000	8.25”	4000	65
200 WATT													
ED28	**Mog.**	108284	1,4,12,13,14,18	**MH200/BU/PS**	Clear Base Up	1/12	M136/E	21000	16800	15000	8.25”	4000	65
		60006	X 1,4,12,13,14,18	**MH200/C/BU/PS**	Coated Base Up	1/12	M136/E	20000	16000	15000	8.25”	3700	70

HID lamp symbols, footnotes and abbreviations are located on pages 111-114.



HID LAMPS

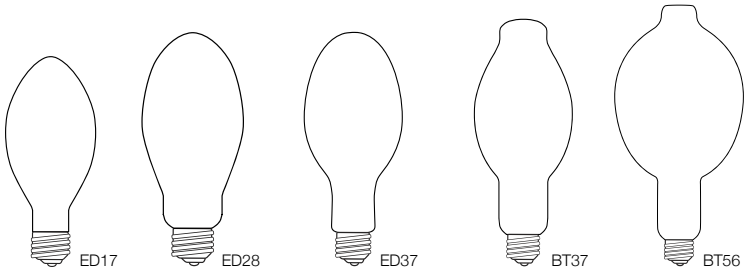
Metal Halide

Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	ANSI	Initial Lumens	Mean Lumens	Avg. Life	MOL	Color Temp.	CRI
ProLume. Pulse Start Metal Halide continued													
250 WATT													
ED28	Mog.	108276	1,4,12,13,14,18	**MH250/BU/PS**	Clear Base Up	1/12	M153/E M138/E	25000	20000	15000	8.25”	4000	65
		60005	1,4,12,13,14,18	**MH250/C/BU/PS**	Coated Base Up	1/12	M153/E M138/E	23800	19000	15000	8.25”	3700	70
		60009	1,12,13,14,18	**MH250/HBU/PS**	Horizontal Base Up	1/12	M153/E M138/E	21000	15000	15000	8.25”	4000	65
320 WATT													
ED28	Mog.	108278	1,4,6,12,13,14,18	**MH320/BU/PS**	Clear Base Up	1/12	M154/E M132/E	33000	26000	20000	8.25”	4000	65
		60004	X 1,4,6,12,13,14,18	**MH320/C/BU/PS**	Coated Base Up	1/12	M154/E M132/E	31000	25000	20000	8.25”	3700	70
		60010	1,12,13,14,18	**MH320/HBU/PS**	Clear Horizontal Base Up	1/12	M154/E M132/E	31000	23000	15000	8.25”	4000	65
350 WATT													
ED37	Mog.	108291	1,4,6,12,13,14,18	**MH350/BU/PS**	Clear Base Up	1/6	M131/E	37000	29000	20000	11.50”	4000	65
400 WATT													
ED28	Mog.	60012	1,6,12,13,18	**MH400/U/ED28/PS**	Clear	1/12	M155/E M135/E	39000	33000	20000	8.25”	4000	65
ED37	Mog.	60011	1,6,12,13,18	**MH400/U/PS**	Clear	1/6	M155/E M135/E	39000	35000	20000	11.50”	4000	65
		108280	1,4,5,6,12,13,14,18	**MH400/BU/PS**	Clear Base Up	1/6	M155/E M135/E	44000	35000	20000	11.50”	4000	65
750 WATT													
ED37	Mog.	60016	1,12,13,18	**MH750/HBU/PS**	Clear Horizonal Base Up	1/6	M149/E	75000	55000	10000	11.50”	4000	65
875 WATT													
BT37	Mog.	60014	1,12,13,18	**MH875/U/PS**	Clear	1/6	M166/E	96000	82500	15000	11.50”	4000	65
1000 WATT													
BT37	Mog.	60015	1,12,13,18	**MH1000/U/PS**	Clear	1/6	M141/E	110000	96000	15000	11.50”	4000	65
ProLume. Protected Metal Halide													
50 WATT													
ED17	Med.	108266	3,12,13,18	**MP50/U/MED/PS**	Clear	1/12	M110/O	3300	2100	10000	5.45”	4000	65
		60505	3,12,13,18	**MP50/C/U/MED/PS**	Coated	1/12	M110/O	3200	2000	10000	5.45”	3700	70
70 WATT													
ED17	Med.	108268	3,12,13,18	**MP70/U/MED/PS**	Clear	1/12	M98/O	5300	3400	12000	5.45”	4000	65
		60508	3,12,13,18	**MP70/C/U/MED/PS**	Coated	1/12	M98/O	5000	3300	12000	5.45”	3700	70
100 WATT													
ED17	Med.	108270	3,12,13,18	**MP100/U/MED/PS**	Clear	1/12	M90/O	8500	5500	15000	5.45”	4000	65
		60507	3,12,13,18	**MP100/C/U/MED/PS**	Coated	1/12	M90/O	8100	5300	15000	5.45”	3700	70
150 WATT													
ED17	Med.	108272	3,12,13,18	**MP150/U/MED/PS**	Clear	1/12	M102/O	13300	10000	15000	5.45”	4000	65
		60503	3,12,13,18	**MP150/C/U/MED/PS**	Coated	1/12	M102/O	12600	9500	15000	5.45”	3700	70

HID lamp symbols, footnotes and abbreviations are located on pages 111-114.

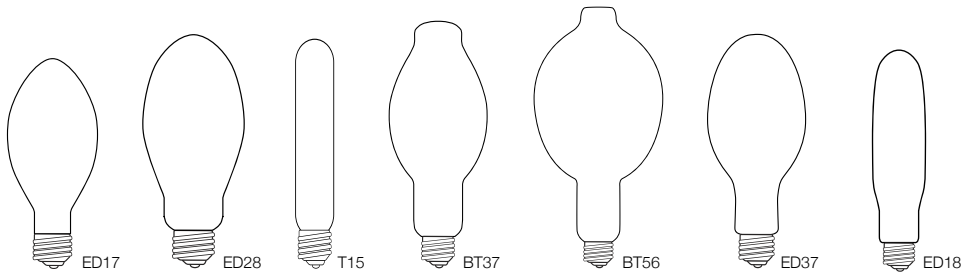
HID LAMPS

Metal Halide



Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	ANSI	Initial Lumens	Mean Lumens	Avg. Life	MOL	Color Temp.	CRI
ProLume® Protected Metal Halide continued													
175 WATT													
ED17	**Med.**	108282	3,12,13	**MP175/U/MED**	Clear	1/12	M57/O	14000	9100	10000	5.45"	4000	65
		90402	X 3,12,13,14,25	**MP175/U/MED/CSTF**	Clear CoverShield®	1/12	M57/O	14000	9100	10000	5.45"	4000	65
ED28	**EX39**	108286	3,12,14,16	**MP175/BU**	Clear Base Up	1/12	M57/O	14000	9100	10000	8.25"	4000	65
		90400	X 3,12,13,14,25	**MP175/BU/CSTF**	Clear Base Up CoverShield®	1/12	M57/O	14000	9100	10000	8.25"	4000	65
200 WATT													
ED28	**EX39**	60511	3,12,13,14,16,18	**MP200/BU/PS**	Clear Base Up	1/12	M136/O	20000	16000	15000	8.25"	4000	65
		60509	X 3,12,13,14,16,18	**MP200/C/BU/PS**	Coated Base Up	1/12	M136/O	19000	15200	15000	8.25"	3700	70
250 WATT													
ED28	**EX39**	108288	3,12,14,16	**MP250/BU**	Clear Base Up	1/12	M58/O	21800	14200	10000	8.25"	4000	65
		60710	3,12,14,16	**MP250/C/BU**	Coated Base Up	1/12	M58/O	20000	13000	10000	8.25"	3700	70
		108298	3,12,13,14,16,18	**MP250/BU/PS**	Clear Base Up	1/12	M153/O M138/O	23800	19000	15000	8.25"	4000	65
		60510	3,12,13,14,16,18	**MP250/C/BU/PS**	Coated Base Up	1/12	M153/O M138/O	22600	17600	15000	8.25"	3700	70
		90401	X 3,12,13,14,25	**MP250/BU/CSTF**	Clear Base Up CoverShield®	1/12	M58/O	21800	14200	10000	8.25"	4000	65
320 WATT													
ED28	**EX39**	108290	3,4,6,12,13,14,18	**MP320/BU/PS**	Clear Base Up	1/12	M154/O M132/O	31000	25000	20000	8.25"	4000	65
360 WATT													
ED37	**EX39**	108292	$ 3,6,7,12,14,16,24	**MP360/BU/ES**	Clear Base Up Energy Saver	1/6	M165/O M59/O	36000	23500	20000	11.50"	4000	65
400 WATT													
ED37	**EX39**	108294	3,6,12,14,16	**MP400/BU**	Clear Base Up	1/6	M59/O	36000	23500	20000	11.50"	4000	65
		60700	3,6,12,14,16	**MP400/C/BU**	Coated Base Up	1/6	M59/O	34000	22000	20000	11.50"	3700	70
		108296	3,4,5,6,12,13,14,18	**MP400/BU/PS**	Clear Base Up	1/6	M155/O M135/O	41000	33000	20000	11.50"	4000	65
		60502	3,6,12,14,16,25	**MP400/BU/CSTF**	Clear Base Up CoverShield®	1/6	M59/O	36000	23500	20000	11.50"	4000	65
450 WATT													
ED37	**EX39**	60512	X 3,6,12,13,14,18	**MP450/BU/PS**	Clear Base Up	1/6	M144/O	47000	35000	20000	11.50"	4000	65
575 WATT													
BT37	**EX39**	60513	X 3,6,12,13,14,18	**MP575/BU/PS**	Clear Base Up	1/6	M178/O	60000	45000	20000	11.50"	4000	65
750 WATT													
BT37	**EX39**	60501	3,4,12,14,18	**MP750/BU/PS**	Clear Base Up	1/6	M149/O	72000	52000	10000	11.50"	4000	65
875 WATT													
BT37	**EX39**	60514	3,6,12,13,14,18	**MP875/BU/PS**	Clear Base Up	1/6	M166/O	95000	72000	20000	11.50"	4000	65
1000 WATT													
BT56	**EX39**	60720	3,12,13,14,18	**MP1000/BU**	Clear Base Up	1/6	M47/O	110000	88000	10000	15.40"	4000	65

HID lamp symbols, footnotes and abbreviations are located on pages 111-114.



HID LAMPS

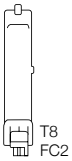
Metal Halide

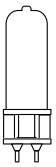
Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	ANSI	Initial Lumens	Mean Lumens	Avg. Life	MOL	Color Temp.	CRI
ProLume Standard Metal Halide													
100 WATT													
ED17	**Med.**	64818	1,12,16,20,21	**MH100UMED/M**	Clear Major	1/20	M90/E	8500	4675	12000	5.43"	4000	65
175 WATT													
ED17	**Med.**	108262	1,12,16,20,21	**MH175/U/MED**	Clear	1/12	M57/E	15000	9100	10000	5.45"	4000	65
		108264	1,12,16,20,21	**MH175/C/U/MED**	Coated	1/12	M57/E	14800	8600	10000	5.45"	3700	70
ED28	**Mog.**	108200	1,12,16,20,21	**MH175/U**	Clear	1/12	M57/E	15200	9100	10000	8.25"	4000	65
		108202	1,12,16,20,21	**MH175/C/U**	Coated	1/12	M57/E	14800	8600	10000	8.25"	3700	70
250 WATT													
ED28	**Mog.**	108204	1,12,16,20,21	**MH250/U**	Clear	1/12	M58/E	21000	13700	10000	8.25"	4000	65
		108206	1,12,16,20,21	**MH250/C/U**	Coated	1/12	M58/E	20000	13000	10000	8.25"	3700	70
ED28	**Mog.**	108604	1,12,16,20,21,25	**MH250/U/CSTF**	Clear CoverShield®	1/12	M58/E	21000	13700	10000	8.25"	4000	65
	POMB	60303	X 1,8,12,16,18	**MH250/HOR**	Clear Horizontal	1/12	M58/E	23000	15000	10000	8.25"	4000	65
		60302	X 1,8,12,16,18	**MH250/C/HOR**	Coated Horizontal	1/12	M58/E	22000	14300	10000	8.25"	3700	70
T15	**Mog.**	108220	1,12,16,20,21	**MH250/HBU/T15**	Clear Horizontal Base Up	1/12	M58/E	21000	14500	10000	8.30"	4000	65
360 WATT													
ED37	**Mog.**	108212	$ 1,6,7,8,12,14,16,24	**MH360/BU/ES**	Clear Base Up Energy Saver	1/6	M165/E M59/E	36000	23000	20000	11.50"	4000	65
400 WATT													
BT37	**Mog.**	64450	1,6,12,15	**MS400/BU**	Clear Base Up Major	1/6	M59/E	42000	27000	20000	11.50"	4000	65
ED18	**Mog.**	108218	1,6,12,15	**MH400/HBU/ED18**	Clear Horizontal Base Up	1/12	M59/E	36000	23000	20000	9.75"	4000	65
ED28	**Mog.**	108216	1,6,12,16,20,21	**MH400/U/ED28**	Clear	1/12	M59/E	36000	23000	20000	8.25"	4000	65
		60201	1,6,12,16,20,21	**MH400/C/U/ED28**	Coated	1/12	M59/E	34000	22000	20000	8.25"	3700	70
ED37	**Mog.**	108208	1,6,12,16,20,21	**MH400/U**	Clear	1/6	M59/E	36000	23000	20000	11.50"	4000	65
		108210	1,6,12,16,20,21	**MH400/C/U**	Coated	1/6	M59/E	34000	22000	20000	11.50"	3700	70
		108600	1,6,12,16,20,21,25	**MH400/U/CSTF**	Clear CoverShield®	1/6	M59/E	36000	23000	20000	11.50"	4000	65
	POMB	60301	X 1,6,8,12,16,18	**MH400/C/HOR**	Coated Horizontal	1/6	M59/E	36800	23900	20000	11.50"	3700	70
1000 WATT													
BT37	**Mog.**	108226	1,12,16,20,21,18	**MH1000/U/BT37**	Clear	1/6	M47/E	110000	71000	12000	11.50"	4000	65
BT56	**Mog.**	108222	1,12,16,20,21,18	**MH1000/U**	Clear	1/6	M47/E	110000	71000	12000	15.40"	4000	65
1500 WATT													
BT56	**Mog.**	837405	1,12,15	**MH1500/HBU**	Clear Base Up/ Horizontal Major	1/6	M48/E	165000	140000	3000	15.40"	3900	65
		108214	1,12,14,18	**MH1500/BU**	Clear Base Up	1/6	M48/E	161000	136000	3000	15.40"	3400	65

HID lamp symbols, footnotes and abbreviations are located on pages 111-114.

HID LAMPS

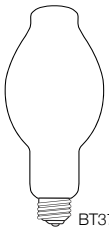
Metal Halide

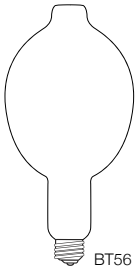

T8
FC2


T6/T7
G12


T6/T7
R7S

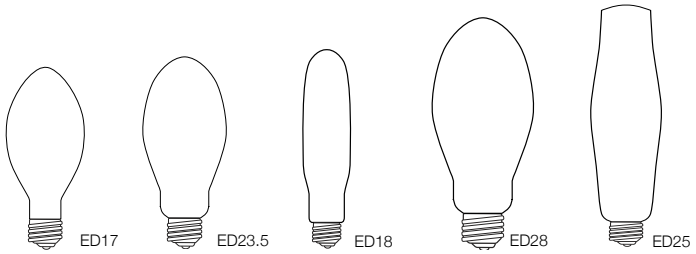

T15/T16


BT37


BT56

Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	ANSI	Initial Lumens	Mean Lumens	Avg. Life	MOL	Color Temp.	CRI
ProLume® Single Ended Metal Halide													
70 WATT													
T6	**G12**	108434	1,2,11,12,18,23	**MH70SE/UVS/3K**	Clear UV-Stop	1/24	M85/E	5600	3600	10000	4.30”	3200	70
		108428	1,2,11,12,18,23	**MH70SE/UVS/4K**	Clear UV-Stop	1/24	M85/E	5600	3600	10000	4.30”	4200	70
150 WATT													
T7	**G12**	108430	1,2,11,12,18,23	**MH150SE/UVS/3K**	Clear UV-Stop	1/24	M81/E	14000	10500	10000	4.30”	3200	65
		108432	1,2,11,12,18,23	**MH150SE/UVS/4K**	Clear UV-Stop	1/24	M81/E	14000	10500	10000	4.30”	4200	65
ProLume® Double Ended Metal Halide													
70 WATT													
T6	**R7S**	108402	1,2,12,18,23	**MH70DE/UVS/3K**	Clear UV-Stop	1/24	M85/E	5600	3400	10000	4.65”	3000	70
		108400	1,2,12,18,23	**MH70DE/UVS/4K**	Clear UV-Stop	1/24	M85/E	5600	3600	10000	4.65”	4000	70
100 WATT													
T7	**R7S**	108408	X 1,2,12,18,23	**MH100DE/UVS/3K**	Clear UV-Stop	1/24	M91/E	8000	4680	10000	4.65”	3000	70
		108406	X 1,2,12,18,23	**MH100DE/UVS/4K**	Clear UV-Stop	1/24	M91/E	8000	5200	10000	4.65”	4000	70
150 WATT													
T7	**R7S**	108412	X 1,2,12,18,23	**MH150DE/UVS/3K**	Clear UV-Stop	1/24	M81/E	12000	8400	10000	5.37”	3000	70
250 WATT													
T8	**FC2**	108414	1,12,18,23	**MH250DE/4K**	Clear	1/24	M80/E	20000	13000	8000	6.42”	4200	70
ProLume® Color Metal Halide													
150 WATT													
T7	**R7S**	108422	X 1,2,12,18,23	**MH150DE/UVS/BDX**	Blue UV-Stop	1/24	M81/E	-	-	8000	3.37”	-	-
		108424	X 1,2,12,18,23	**MH150DE/UVS/GDX**	Green UV-Stop	1/24	M81/E	-	-	8000	3.37”	-	-
		108426	X 1,2,12,18,23	**MH150DE/UVS/MDX**	Magenta UV-Stop	1/24	M81/E	-	-	8000	3.37”	-	-
400 WATT													
BT37	**Mog.**	61001	X 1,13,17,21,19	**MH400/BU/BDX**	Blue	1/6	M59/E	-	-	5000	11.50”	-	-
		61002	X 1,13,17,21,19	**MH400/BU/GDX**	Green	1/6	M59/E	-	-	5000	11.50”	-	-
1000 WATT													
BT56	**Mog.**	61004	X 1,12,16,20,18	**MH1000/BU/BDX**	Blue	1/6	M47/E	-	-	5000	15.37”	-	-
ProLume® Aquarium Metal Halide													
150 WATT													
T7	**R7S**	108420	X 1,2,12,18	**MH150DE/UVS/10K**	Clear UV-Stop	1/24	M81/E	9000	-	8000	5.37”	10000	80
400 WATT													
T15	**Mog.**	108416	1,12,18	**MH400/U/T15/10K**	Clear	1/12	M59/E	25000	-	10000	9.76”	10000	90

HID lamp symbols, footnotes and abbreviations are located on pages 111-114.



HID LAMPS

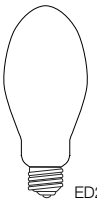
High Pressure Sodium

Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	ANSI	Initial Lumens	Mean Lumens	Avg. Life	MOL	Color Temp.	CRI
ProLume High Pressure Sodium													
35 WATT													
ED17	**Med.**	108102	10,13,15	**LU35/MED/ECO**	Clear	1/12	S76	2200	1980	24000	5.45”	2000	20
		108103	X 10,13,15	**LU35/MED/D**	Diffused	1/12	S76	2000	1800	24000	5.45”	2000	20
50 WATT													
ED17	**Med.**	108104	10,13,15	**LU50/MED/ECO**	Clear	1/12	S68	3800	3420	24000	5.45”	2000	20
		108105	X 10,13,15	**LU50/MED/D**	Diffused	1/12	S68	3400	3060	24000	5.45”	2000	20
ED23.5	**Mog.**	208120	10,13,15	**LU50/ECO**	Clear	1/12	S68	3800	3420	24000	7.75”	2000	20
		208121	X 10,13,15	**LU50/D**	Diffused	1/12	S68	3400	3060	24000	7.75”	2000	20
70 WATT													
ED17	**Med.**	108106	10,13,15	**LU70/MED/ECO**	Clear	1/12	S62	6000	5400	24000	5.45”	2000	20
ED23.5	**Mog.**	208122	10,13,15	**LU70/ECO**	Clear	1/12	S62	6000	5400	24000	7.75”	2000	20
		208123	X 10,13,15	**LU70/D**	Diffused	1/12	S62	5500	4950	24000	7.75”	2000	20
100 WATT													
ED17	**Med.**	108108	10,13,15	**LU100/MED/ECO**	Clear	1/12	S54	9000	8100	24000	5.45”	2000	20
		108109	X 10,13,15	**LU100/MED/D**	Diffused	1/12	S54	8100	7290	24000	5.45”	2000	20
ED23.5	**Mog.**	208124	10,13,15	**LU100/ECO**	Clear	1/12	S54	9000	8100	24000	7.75”	2000	20
		208125	X 10,13,15	**LU100/D**	Diffused	1/12	S54	8100	7290	24000	7.75”	2000	20
150 WATT													
ED17	**Med.**	108110	10,13,15	**LU150/MED/ECO**	Clear	1/12	S55	15000	13500	24000	5.45”	2000	20
		108111	X 10,13,15	**LU150/MED/D**	Diffused	1/12	S55	13500	12150	24000	5.45”	2000	20
ED23.5	**Mog.**	208126	10,13,15	**LU150/ECO**	Clear	1/12	S55	15000	13500	24000	7.75”	2000	20
ED28	**Mog.**	64002	10,13,15	**LU150/100/ECO**	Clear	1/12	S55	15000	13500	24000	8.98”	2000	20
200 WATT													
ED18	**Mog.**	208128	10,13,15	**LU200/S66/ECO**	Clear	1/12	S66	22000	19800	24000	9.75”	2000	20
250 WATT													
ED18	**Mog.**	208130	10,13,15	**LU250/ECO**	Clear	1/12	S50	28000	25200	24000	9.75”	2000	20
400 WATT													
ED18	**Mog.**	208132	10,13,15	**LU400/ECO**	Clear	1/12	S51	48000	43200	24000	9.75”	2000	20
1000 WATT													
ED25	**Mog.**	279547	10,13,15	**LU1000/ECO**	Clear	1/6	S52	130000	117000	24000	15.08”	2000	20

HID lamp symbols, footnotes and abbreviations are located on pages 111-114.

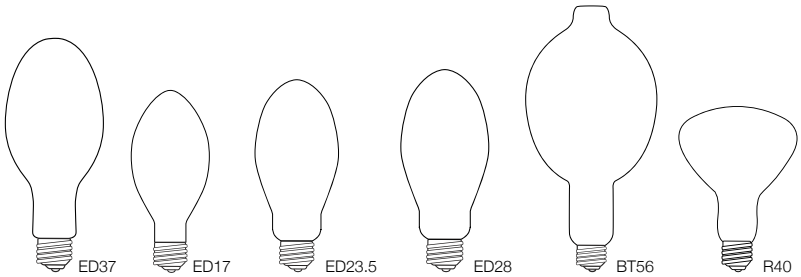
HID LAMPS

High Pressure Sodium


ED23.5

Bulb Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	ANSI	Initial Lumens	Mean Lumens	Avg. Life	MOL	Color Temp.	CRI
ProLume® High Pressure Sodium Non-Cycling												
70 WATT												
ED23.5 Mog.	64500	† 10,13,15	**LU70/NC**	Clear Non-Cycling	1/12	S62	6300	5670	20000	7.75”	2000	>20
100 WATT												
ED23.5 Mog.	64502	† 10,13,15	**LU100/NC**	Clear Non-Cycling	1/12	S54	10500	9500	20000	7.75”	2000	>20
150 WATT												
ED23.5 Mog.	64504	† 10,13,15	**LU150/NC**	Clear Non-Cycling	1/12	S55	16000	14400	20000	7.75”	2000	>20
250 WATT												
ED23.5 Mog.	64506	† 10,13,15	**LU250/NC**	Clear Non-Cycling	1/12	S50	32000	28800	20000	9.75”	2000	>20
ProLume® High Pressure Sodium Stand-By												
70 WATT												
ED23.5 Mog.	64501	† 10,13,15	**LU70/SBY/LL**	Clear Stand-by Twin Arc Tube	1/12	S62	6000	5670	48000	7.75”	2000	>20
100 WATT												
ED23.5 Mog.	64503	† 10,13,15	**LU100/SBY/LL**	Clear Stand-by Twin Arc Tube	1/12	S54	9600	8600	48000	7.75”	2000	>20
150 WATT												
ED23.5 Mog.	208402	† 10,13,15	**LU150/SBY/LL**	Clear Stand-by Twin Arc Tube	1/12	S55	15000	13500	48000	7.75”	2000	20
200 WATT												
ED23.5 Mog.	64505	† 10,13,15	**LU200/SBY/LL**	Clear Stand-by Twin Arc Tube	1/12	S66	22000	19800	48000	9.75”	2100	>20
250 WATT												
ED23.5 Mog.	64507	† 10,13,15	**LU250/SBY/LL**	Clear Stand-by Twin Arc Tube	1/12	S50	28000	25200	48000	9.75”	2000	>20
400 WATT												
ED23.5 Mog	208400	10,13,15	**LU400/SBY/LL**	Clear Stand-by Twin Arc Tube	1/12	S51	48000	43200	48000	9.75”	2000	20
	64508	† 10,13,15	**LU400/NC**	Clear Stand-by Twin Arc Tube	1/12	S51	53500	48000	20000	9.75”	2000	>20

HID lamp symbols, footnotes and abbreviations are located on pages 111-114.



HID LAMPS

Mercury Vapor

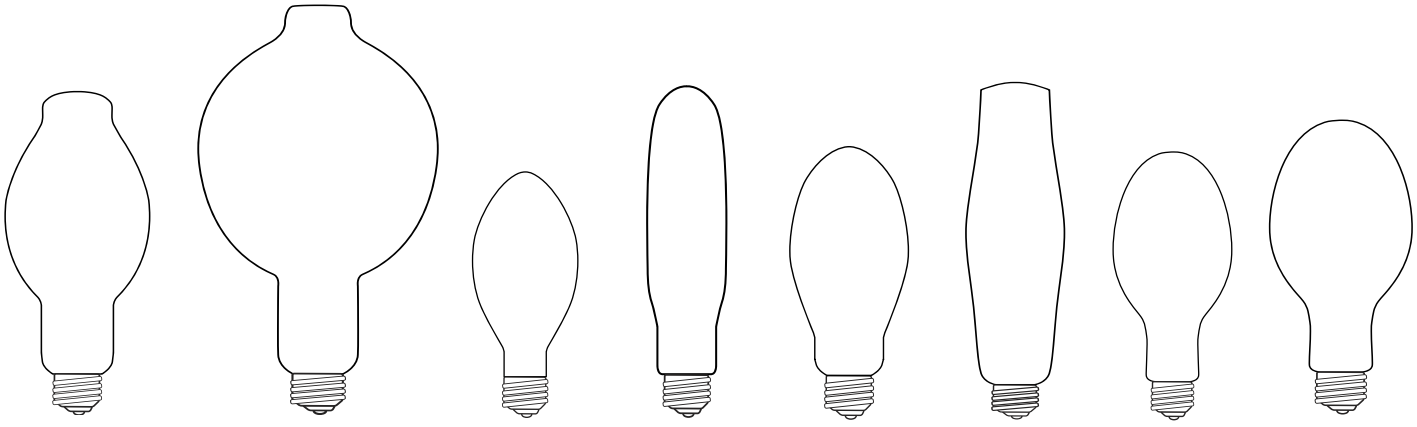
Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	ANSI	Initial Lumens	Mean Lumens	Avg. Life	MOL	Color Temp.	CRI
ProLume. Mercury Vapor													
50 WATT													
ED17	**Med.**	108302	17,19,21	**MV50DX**	Deluxe White	1/12	H46	1600	1280	6000	5.45”	4000	45
75 WATT													
ED17	**Med.**	108304	17,21	**MV75DX**	Deluxe White	1/12	H43	2700	2250	12000	5.45”	4000	45
100 WATT													
ED17	**Med.**	108306	17,21	**MV100DX**	Deluxe White	1/12	H38	4600	3600	24000	5.45”	4000	45
ED23.5	**Mog.**	108308	17,21	**MV100DXMOG**	Deluxe White	1/12	H38	4600	3600	24000	7.50”	4000	45
175 WATT													
ED28	**Mog.**	108332	21	**MV175CL**	Clear	1/12	H39	7800	7250	24000	8.50”	5800	25
		108310	17,21	**MV175DX**	Deluxe White	1/12	H39	8500	6900	24000	8.50”	4000	45
250 WATT													
ED28	**Mog.**	108334	21	**MV250CL**	Clear	1/12	H37	12800	10535	24000	8.50”	5800	25
		108312	17,21	**MV250DX**	Deluxe White	1/12	H37	13500	11100	24000	8.50”	4000	45
400 WATT													
ED37	**Mog.**	108336	21	**MV400CL**	Clear	1/6	H33	22000	18900	24000	10.38”	5800	25
		108314	17,21	**MV400DX**	Deluxe White	1/6	H33	23000	19100	24000	10.38”	4000	45
1000 WATT													
BT56	**Mog.**	869331	9,17,21	**MV1000DX**	Deluxe White Major	1/6	H36	58000	48500	24000	15.38”	4000	45
ProLume. Mercury Vapor Reflector													
100 WATT													
R40	**Med.**	108350	17	**MV100DX/R40**	Deluxe White Reflector	1/12	H38	2450	2000	16000	6.89”	5800	45
175 WATT													
R40	**Med.**	108356	17	**MV175DX/R40**	Deluxe White Reflector	1/12	H39	6200	4900	24000	6.89”	5800	45

HID lamp symbols, footnotes and abbreviations are located on pages 111-114.

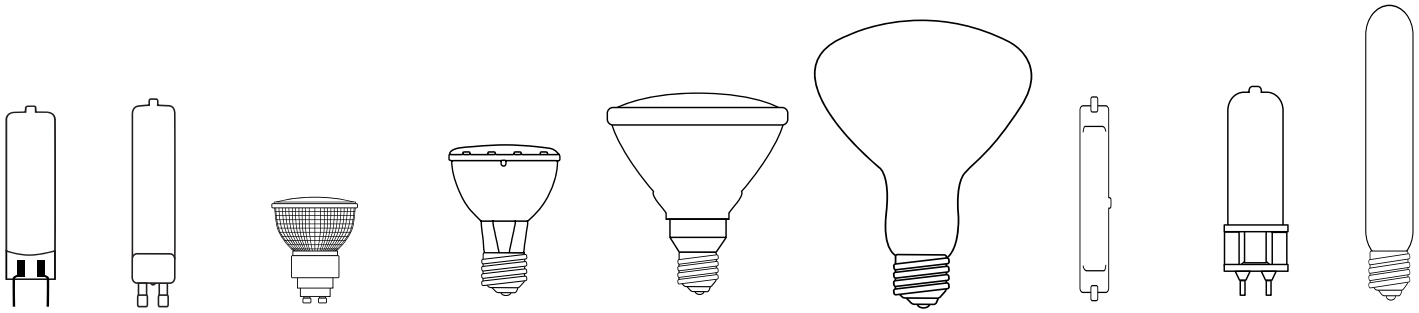
HID LAMPS

Bulb and Base Identification Guide

Bulb Shapes



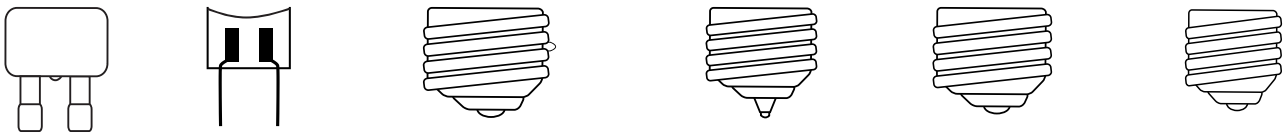
BT37 | BT56 | ED17 | ED18 | ED23.5 | ED25 | ED28 | ED37



T4 G8.5 | T4 GU6.5 | MR16 GX10 | PAR20/PAR30L | PAR38 | R40 | T6/T7/T8 Double Ended Rx7S | T6/T7 Single Ended G12 | T15/ T16

Base Types

GX10 | FC2 | R7S/Rx7s Recessed Single Contact | G12 Medium Bi-Bin



GU6.5 | G8.5 | POMB Position Oriented Mogul Base | EX39 Exclusionary Mogul Base | E39 Mogul | E26/27 Medium

HID LAMPS

Cross Reference Guide

HALCO	G.E.	PHILIPS	OSRAM/SYLVANIA	ANSI
CDM	**CMH®**	**MasterColor®**	**Powerball®**	
CDM20/MR16NFL/830/GX10	CMH20/MR16/830/FL	-	-	C156
CDM20/P20/FL/830	CMH20/PAR20/FL	-	-	C156
CDM20/P20/SP/830	CMH20/PAR20/SP	-	-	C156
CDM20/T6/830	CMH20/T/U/G12	-	-	C156/E
CDM20/TC/830	CMH20/TC/U/830/G8.5	-	MC20TC/U/G8.5/830	C156/E
CDM20/TC/830/GU6.5	CMH20/TC/U/830/GU6.5	-	-	C/M-130/E
CDM35/P20/SP/830	CMH39/PAR20/830/SP10	CDM35/PAR20/M/SP3K	MCP39PAR20/U/830/SP	C/M-130/O
CDM35/P20/FL/830	CMH39/PAR20/830/FL30	CDM35/PAR20/M/FL3K	MCP39PAR20/U/830/FL	C/M-130/O
CDM35/P30L/SP/830/M	CMH39/PAR30L/830/SP10	CDM35/PAR30L/M/SP	MCP39PAR30LN/U/830/SP	C/M-130/O
CDM35/P30L/FL/830	CMH39/PAR30L/830/FL25	CDM35/PAR30L/M/FL	MCP39PAR30LN/U/830/FL	C/M-130/O
CDM35/T6/830	CMH39/T/U/830/G12	CDM35/T6/830	MC39T6/U/G12/830	C/M-130/E
CDM35/TC/830	CMH39/TC/U/830/G8.5	CDM35/TC/830	MC39TC/U/G8.5/830	C/M-130/E
CDM35/TC/830/GU6.5	-	CDM35/TC/830/GU6.5	-	C/M-130/E
CDM35/TD/830	-	CDM70/TD/830	-	C/M-130/E
CDM70/P30L/SP/830	CMH70/PAR30L/830/SP15	CDM70/PAR30L/M/SP	MCP70PAR30LN/U/830/SP	C/M-98/O | C/M-139/O
CDM70/P30L/FL/830	CMH70/PAR30L/830/FL40	CDM70/PAR30L/M/FL	MCP70PAR30LN/U/830/FL	C/M-98/O |C/M-139/O
CDM70/P30L/SP/942	-	CDM70/PAR30L/M/SP/4K	-	C/M-98/O | C/M-139/O
CDM70/P30L/FL/942	-	CDM70/PAR30L/M/FL/4K	-	C/M-98/O | C/M-139/O
CDM70/P38/SP/830	CMH70/PAR38/830/SP15	CDM70/PAR38/M/SP	-	C/M-98/O | C/M-139/O
CDM70/P38/FL/830	CMH70/PAR38/830/FL25	CDM70/PAR38/M/FL	-	C/M-98/O | C/M-139/O
CDM70/P38/FL/942	-	CDM70/PAR38/M/FL/4K	-	C/M-98/O | C/M-139/O
CDM70/T6/830	-	CDM70/T6/830	-	C/M-98/E | C/M-139/E
CDM70/T6/942	-	CDM70/T6/942	-	C/M-98/E | C/M-139/E
CDM70/TC/830	CMH70/TC/U/830/G8.5	CDM70/TC/830	MC70TC/U/G8.5/830	C/M-98/E | C/M-139/E
CDM70/TD/830	CMH70/TD/830/RX7s	CDM70/TD/830	MC70T6/DE/830	M85/E | C/M-139/E
CDM70/U/830/MED	CMH70/C/U/830/MED/O	MHC70/C/U/M/3K/ALTO	MCP70/C/U/MED/830	C/M-98/E | C/M-139/E
CDM100/P38/FL/830/M	CMH100/PAR38/830/FL25	CDM100/PAR38/FL/3K/ALTO	MCP100PAR38/U/FL/830/ECO	M90/O | M140/O
CDM100/P38/SP/830/M	CMH100/PAR38/830/SP15	CDM100/PAR38/SP/3K/ALTO	MCP100PAR38/U/SP/830/ECO	M90/O | M140/O
CDM150/T6/830	CMH150/T/U/830/G12	CDM150/T6/830	MC150T6/U/G12/830	C/M-102/E | C/M-142/E
CDM150/T6/942	CMH150/T/U/942/G12	CDM150/T6/942	MC150T6/U/G12/942	C/M-102/E | C/M-142/E
CDM150/TD/830	CMH150/TD/830/Rs7s	CDM150/TD/830	MC150T6/DE/830	M81/E | C/M-102/E | C/M-142/E
CDM150/U/830/MED	CHM150/U/830/MED/O	MHC150/U/MP/3K/ALTO	MCP150/U/MED/830	C/M-102/E | C/M-142/E

HID LAMPS

Cross Reference Guide

HALCO	G.E.	PHILIPS	OSRAM/SYLVANIA	ANSI
Metal Halide	**Multi-Vapor®**	**Metal Halide**	**Metalarc®**	
MH50/U/MED/PS	MXR50/U/MED/O	MH50/U/M	MP50/U/MED	M110/E
MH50/C/U/MED/PS	MXR50/C/U/MED	MH50/C/U/M	MP50/C/U/MED	M110/E
MH70/U/MED/PS	MXR70/U/MED	-	MP70/U/MED	M98/E
MH70/C/U/MED/PS	MXR70/C/U/MED	-	MP70/C/U/MED	M98/E
MH70DE/UVS/3K	ARC70/TD/UVC/730	CDM70/TD/830	HQI-DE70/WDX	M85/E
MH70DE/UVS/4K	ARC70/TD/UVC/743	MHN70/TD/840	HQI-DE70/NDX	M85/E
MH70SE/UVS/3K	CMH70/T/U/830/G12	CDM70/T6/830	-	M85/E
MH70SE/UVS/4K	CMH70/T/U/943/G12	CDM70/T6/942	-	M85/E
MH100/U/MED/PS	MXR100/U/MED	-	MP100/U/MED	M90/E
MH100/C/U/MED/PS	MXR100/C/U/MED	-	MP100/C/U/MED	M90/E
MH100/U/MOG/PS	-	-	-	M90/E
MH125/HBU/MED/PS	-	-	-	M150/E
MH150/U/MED/PS	MXR150/U/MED	MP150/U/MED	-	M102/E
MH150/U/PS	-	-	-	M102/E
MH150DE/UVS/10K	-	-	-	M81/E
MH150DE/UVS/3K	ARC150/TD/UVC/730	MHN150/TD/840	HQI-DE150/WDX	M81/E
MH150DE/UVS/4K	ARC150/TD/UVC/742	-	HQI-DE150/NDX	M81/E
MH150DE/UVS/BDX	-	-	-	M81/E
MH150DE/UVS/GDX	-	-	-	M81/E
MH150SE/UVS/3K	ARC150T/U/830G12	-	-	M81/E
MH150SE/UVS/4K	ARC150T/U/840G12	-	HQI-SE150/NDX	M81/E
MH175/BU/PS	MVR175/VBU/PA	MS175/BU/PS	MS175/PS/BU-ONLY	M152/E-M137/E
MH175/BU/MED/PS	MVR175/VBU/MED/PA	MS175/BU/PS	MS175/PS/BU	M152/E-M137/E
MH175/HBU/PS	MVR175/VBU/PA	-	-	M152/E-M137/E
MH175/U	MVR175/U	MH175/U	M175/U	M57/E
MH175/U/MED	MVR175/U/MED	MH175/U/M	M175/U/MED	M57/E
MH175/C/U	MVR175/C/U	MH175/C/U	M175/C/U	M57/E
MH175/C/U/MED	MVR175/C/U/MED	MH175/C/U/M	M175/C/U/MED	M57/E
MH200/BU/PS	-	-	MS200/PS/BU-ONLY/BT28	M136/E
MH200/C/BU/PS	-	-	MS200/C/PS/BU/BU-ONLY/BT28	M136/E
MH250/HBU/T15	-	-	-	M58/E
MH250/HBU/PS	MVR250/VBU/PA	MS250/BU/PS	MP250/PS/BU-ONLY	M153/E-M138/E
MH250/BU/PS	MVR250/VBU/PA	MS250/BU/PS	MP250/PS/BU-ONLY	M153/E-M138/E
MH250/C/BU/PS	MVR250/C/VBU/PA	-	MP250/C/PS/BU-ONLY	M153/E-M138/E
MH250/C/U	MVR250/C/U	MS250/C/U	M250/C/U	M58/E
MH250/U	MVR250/U	MH250/U	M250/U	M58/E

HALCO	G.E.	PHILIPS	OSRAM/SYLVANIA	ANSI
Metal Halide	**Multi-Vapor®**	**Metal Halide**	**Metalarc®**	
MH250DE/4K	-	-	-	M80/E
MH320/VBU/PS	MVR320/VBU/HO/PA	MS320/BU/PS	MS320/PS/BU	M154/E-M132/E
MH320/HBU/PS	MVR320/HOR/PA	MS320/PS/U	M320/PS/BU-HOR	M154/E-M132/E
MH320/BU/PS	MVR320/VBU/XHO/PS	MS320/U/PS	MP320/350/PS/BU-ONLY/BT28	M154/E-M132/E
MH320/C/BU/PS	MVR320/C/VBU/XHO/PS	MS320/C/U/PS	MS320/C/PS/BU-HOR	M154/E-M132/E
MH350/BU/PS	MVR350/VBU/XHO/PA	MS350/BU/PS	MP350/400/PS/BU-ONLY	M131/E
MH360/BU/ES	MVR360/VBU/WM/HO	-	-	M165/E-M59/E
MH400/BU/PS	MVR400/VBU/HO/PA	MS400/BU/PS	MS400/PS/BU-ONLY	M155/E-M135/E
MH400/BU/LU	MVR400/VBR/R	-	-	S51/E
MH400/HBU/ED18	-	-	-	M59/E
MH400/U	MVR400/U	MH400/U	M400/U	M59/E
MH400/U/ED28	MVR400/U/ED28	MH400/U/ED28	M400/U/BT28	M59/E
MH400/U/ED28/PS	MVR400/HOR/ED28/PA	-	M400/PS/U/BT28	M155/E-M135/E
MH400/U/PS	MVR400/HOR/PA	MS400/HOR/PS	M400/PS/U	M155/E-M135/E
MH400/U/T15/10K	-	-	-	M59/E
MH400/C/U	MVR400/C/U	MH400/C/U	M400/C/U	M59/E
MH400/C/U/ED28	MVR400/C/U/ED28	MH400/U/ED28	M400/C/U/BT28	M59/E
MH450/BU/PS	-	-	-	M144/E
MH875/U/PS	-	-	-	M166/E
MH1000/U	MVR1000/U	MH1000/U	M1000/U	M47/E
MH1000/U/PS	MVR1000/U/BT37/PA	M1000/PS/U/BT37	MS1000/BU/BT37/PS	M141/E
MH1000/U/BT37	MVR1000/U/BT37	M1000/U/BT37	MH1000/U/BT37	M47/E
MH1500/BU	MVR1500/HBU	MH1500/U	M1500/BU-HOR	M48/E
MP50/C/U/MED/PS	MXR50/C/U/MED/O	-	MP50/C/U/MED	M110/O
MP50/U/MED/PS	MXR50/U/MED/O	-	MP50/U/MED	M110/O
MP70/C/U/MED/PS	MXR70/C/U/MED/O	-	MP70/C/U/MED	M98/O
MP100/U/MED/PS	MXR100/U/MED/O	-	MP100/U/MED	M90/O
MP150/U/MED/PS	MXR150/U/MED/O	-	MP150/U/MED	M102/O
MP150/C/U/MED/PS	MXR150/C/U/MED/O	MP150/C/U/MED	-	M102/O
MP175/BU	MPR175/VBU/O	MP175/BU	MP175/BU-ONLY	M57/O
MP175/BU/PS	MPR175/VBU/O	MP175/BU	MP175/BU-ONLY	M152/O-M137/O
MP175/U/MED	-	-	MP175/BU-ONLY/MED	M57/O
MP200/BU/PS	-	-	-	M136/O
MP200/C/BU/PS	-	-	-	M136/O
MP250/BU	MPR250/VBU/O	MP250/BU	MP250/BU-ONLY	M58/O
MP250/BU/PS	-	-	MP250/PS/BU-ONLY	M153/O-M138/O
MP250/C/BU	MPR250/C/VBU/O	-	MP250/C/BU-ONLY	M58/O
MP250/C/BU/PS	-		MP250/C/PS/BU-ONLY	M153/O-M138/O

HID LAMPS

Cross Reference Guide

HALCO	G.E.	PHILIPS	OSRAM/SYLVANIA	ANSI
Metal Halide	**Multi-Vapor®**	**Metal Halide**	**Metalarc®**	
MP320/BU/PS	MPR320/VBU/XHO/PA	MP320/BU/PS	MP320/350/PS/BU-ONLY/BT28	M154/O-M132/O
MP320/C/BU/PS	MPR320/C/VBU/XHO/PA	MP320/C/BU/PS	MP320/350/C/PS/BU-ONLY/BT28	M154/O-M132/O
MP360/BU/ES	MPR360/VBU/WM/HO/O	MP360/BU/EW	MSP360/SS/BU-ONLY	M59/O or M165/O
MP400/BU	MVT400/VBU	MHT400/U	MPT400/BU	M59/O
MP400/BU/PS	-	-	-	M155/O-M135/O
MP400/C/BU	MVT400/C/VBU	MHT400/C/U	MPT400/C/BU	M155/O-M135/O
MP450/BU/PS	-	-	-	M144/O
MP575/BU/PS	-	-	-	M178/O
MP750/BU/PS	-	-	MP750/BU/PS	M149/O
MP875/BU/PS	-	-	-	M166/O
MP1000/BU	MPR1000/VBU/O	MP1000/BU	MP100/BU-ONLY	M47/O
H.P.S.	**Lucalox™**	**Ceramalux®**	**Lumalux®**	
LU35/MED/ECO	LU35/MED	C35S76/M	LU35/MED	S76
LU50/ECO	LU50	C50S68/ALTO	LU50/ECO	S68
LU50/MED/ECO	LU50/MED	C50S68/M	LU50/MED	S68
LU70/ECO	LU70	C70S62/ALTO	LU70/D	S62
LU70/MED/ECO	LU70/MED	C70S62/M	LU70/MED	S62
LU100/ECO	LU100/D	C100S54/ALTO	LU100/D	S54
LU100/MED/ECO	LU100/MED	C100S54/M	LU100/MED	S54
LU150/ECO	LU150/55/D	C150S55/M	LU150/55/D	S55
LU150/100/ECO	LU150/100	C150S56/ALTO	LU150/100	S56
LU150/MED/ECO	LU150/MED	C150S55/D/M	LU150/55/MED	S55
LU150/SBY/LL	LU150/55/SBY/XL	C150S55/2	LU150/55/SBY	S55
LU200/S66/EC0	LU200	C200S66/ALTO	LU200/ECO	S66
LU250/ECO	LU250/D	C200S50/ALTO	LU250/D	S50
LU400/ECO	LU400/D	C400S51/D/ALTO	LU400/D	S51
LU400/SBY/LL	LU400/SBY/XL	C400S51/2	LU400/SBY	S51
LU1000/ECO	LU1000	C1000S52/ALTO	LU1000	S52
Mercury Vapor				
MV1000DX	HR1000DX36	M36GW-1OOO/DX	H36GW-1000/DX	H36
MV100DX	HM100DX38/MED	H38MP-100/DX	H38AV-100/DX	H38
MV100DX/R40	HR100RDXFL38	H38BP-100/DX	H38BP-100/DX	H38
MV100DXMOG	HR100DX38	H38JA-100/DX	H38JA-100/DX	H38
MV175CL	HR174A39	H39KB-175	H39KB-175	H39

HALCO	G.E.	PHILIPS	OSRAM/SYLVANIA	ANSI
Mercury Vapor				
MV175DX	HR175DX39	H39KC-175/DX	H39KC-175/DX	H39
MV175DX/R40	HR175RDXFL39	H39BP-175/DX	H39BP-175/DX	H39
MV250CL	HR250A37	H37KB-250	H37KB-250	H37
MV250DX	HR250DX37	H37KC250/DX	H37KC-250/DX	H37
MV400CL	HR400A33	H33CD-400	H33CD-400	H33
MV400DX	HR400DX33	H33GL-400/DX	H33GL-400/DX	H33
MV50DX	HR40/50DX45-46	H46DL-40-50/DX	H45/46DL-40/50/DX	H46
MV75DX	HR75DX43	H43AV-75/DX	H43AV-75/DX	H43

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– PowerBall, Metalarc, and Lumalux are registered trademarks of Osram/Sylvania.

HID LAMPS

General Information and Warning Notices

Metal Halide and Mercury Vapor Lamp Warning:

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 envelope is broken or punctured are commercially available.

Fixture Requirements-Lamp Enclosure Type

HID lamps have fixture requirements that have to be followed. The following codes identify the appropriate fixture for a particular lamp.
O = Open or Enclosed Fixtures **E** = Enclosed Fixtures Only

Use in Enclosed Fixtures

"Enclosed" fixture means a fixture properly enclosed and designed to contain fragments of hot glass (up to 1100°C) per UL Standard #1598.
If uncertain, contact the fixture manufacturer for more details.

Use in Open Fixtures

For lamps operated in the vertical position ±15° that are not designed for "Enclosed Fixtures Only" may be used in either open or enclosed fixtures depending on the environment and application. For instance, if the lamp is positioned by flammable material or in an unoccupied area for extended periods, an enclosed fixture which can contain fragments of hot quartz or glass is recommended.

Protection of Bulbs from Moisture

The outer glass envelope of HID lamps are made of heat-resistant glass, designed to have both strength and thermal-shock-resistant characteristics appropriate for standard applications in typical luminaries. Nevertheless, it is necessity to provide shielding for lamps to avoid bulb breakage that may result from direct contact with liquids during operation.

Metal Halide Lamps

Fixture lens/diffuser material must be able to hold fragments of hot glass (up to 1100°C). If you do not know whether or not the fixture can safely withstand an arc tube rupture, contact fixture manufacturer. In continuously operating systems (24/7), turn lamps off once per week for 15 minutes. FAILURE TO DO SO INCREASES THE RISK OF RUPTURE. Fixture should be relamped at or before the lamp's end of rated life. Light output diminishes while energy consumption and risk of rupture increase.

High Pressure Sodium Lamps

This is a vacuum jacket and may implode if broken. As a safety measure, wear safety glasses and gloves when installing or removing lamps.
High Pressure Sodium lamps are not position-sensitive and can be operated in any burning position.

Mercury Lamps

Fixture lens/diffuser material must be capable of containing fragments of hot glass (up to 1100°C). If you do not know whether your fixture can withstand an arc tube rupture, contact your fixture manufacturer. Relamp fixtures at or before the end of rated life; beyond rated life, light output diminishes while energy consumption and risk of rupture increases. Mercury lamps are not position-sensitive and may be operated in any burning position.

Starting Characteristics

When power is applied, full light does not occur instantaneously, there is a time delay for the lamp to reach 90% total light output.
The delay time for Metal Halide is approximately 2-5 minutes, 3-4 minutes for High Pressure Sodium and 5-7 minutes for Mercury Vapor.

Lumens Listed are Reference Lumens

The rated average lamp lumen is obtained under controlled laboratory conditions in a set burning position.Initial Reference Lumens refer to the lamp lumen output after burning for 100 hours. Mean Reference Lumens refer to the lamp lumen output at the mean lumen point during lamp life. The mean lumen point occurs at 50% rated life for HPS and Mercury Vapor lamps, and at 40% rated life for Metal Halide lamps.

Rated Life

Values based on laboratory tests of a large quantity of representative lamps under controlled conditions, including operation at 10 hours per start on ballasts having specific electrical characteristics. Individual or groups of lamps may vary from the Rated Life given. Lamp operating conditions may also influence life. Where Rated Life is less than 24,000 hours, it is a MEDIAN value or life expectancy; the total operating time at which, under normal operating conditions, 50% of any group of originally installed lamps is expected to be still burning. At burning cycles shorter than 10 hours per start, the median life will shorten as follows:

5 hours start- approximate life of 75% of rating
2 ½ hours start - approximate life of 56% of rating
1 ¼ hours start - approximate life of 42% of rating

HID Color

The color temperature and CRI listed in the tables are for reference purposes only. All HID lamps display some amount of lamp-to-lamp color variation and shift over life. These characteristics may increase depending on choice of fixture, ballast, burning position and ambient conditions. Color difference may be greater than normal during the first 100 hours of burning.

Symbols, Footnotes and Abbreviations

SYMBOLS

†	New product introduced within the past year.
$	Energy saving product.
X	Product will be discontinued when inventory is depleted.

FOOTNOTES

1	Lamps classified as E-type are used ONLY in suitably enclosed luminaries. See lamp warning.
2	UV-Stop Quartz filtered design.
3	Lamps classified as O-type comply with ANSI standard C78.387 for containment testing and may be used in open luminaries. See lamp warning.
4	When operated on ballasts having a sustaining voltage less than 270 Volts, lamp life may be significantly reduced.
5	Lamps may be operated on ANSI M135 (400W) compliant ballasts.
6	20,000 average rated life based on 10 hrs/start. 30,000 average rated life based on 12 hrs/start.
7	Operates at 360 watts on 400 watt M59 ballast or M165 ballast.
8	Horizontally oriented lamps require a position oriented mogul (POM) socket to accept position oriented mogul base.
9	H34 and H36 lamps are not interchangeable.
10	Follow fixture manufacturer's recommendations regarding proximity of ballast to lamp.
11	Supply voltage must be held to ±5 volts of rated supply voltage.
12	Color characteristics may vary somewhat from one lamp to another. Time should be allowed for lamp to stabilize in color when it is turned on for the first time or if for any reason its operating position is changed. This may require several hours of operation, with more than one start. Lamp color and output may change temporarily if the lamp is subjected to excess vibration or shock. Lamp color characteristics may change after long accumulated operating time.
13	Use with 4000 Volt pulse-rated sockets only.

FOOTNOTES

14	Performance may not be satisfactory unless operated within specified operating positions.
15	For use in fixtures that do not redirect a substantial portion of the energy toward the arc tube; otherwise very early failure is anticipated.
16	Requires ballast that is designed to operate all popular brands of Metal Halide lamps. 1000W types will operate from H36 conventional lag type ballast for Mercury Vapor lamps at ambient temperatures of 50°F or higher. 1000W types must not be operated at 1500W or higher.
17	It is a characteristic of phosphor-coated vapor lamps to require a few hundred hours of operation to gradually reach normal characteristic color. New lamps may have a slight pink appearance during this initial operation period.
18	This product contains less than 120 nCi of Kr-85.
19	For 40W operation use H45 ballast.
20	Rated average life: vertical ±15°. Other positions 75% of rated life.
21	In general, horizontal lumens will be 5-10% lower than the vertical lumen values.
22	Use electrical ballast, peak lead ballast or system that can shut itself off if ballast overheating occurs.
23	Lamp will operate at 400 watts when used on a linear reactor ballast.
24	Do not operate in aviaries or around fowl or small animals.
25	This lamp meets ANSI specifications for T6 tube size as defined by ANSI C78.43-2007; nominal diameter for this item is 0.75” with a maximum diameter of 1”. Halco 150W lamps have an outer glass diameter of 0.87” to increase arc tube reliability. Please ensure fixture dimensions prior to ordering.

ABBREVIATIONS

/3K	Suffix used to indicate Color Temperature of 3500K.
/4K	Suffix used to indicate Color Temperature of 4000K or 4200K.
/10K	Suffix used to indicate Color Temperature of 10,000K.
/BDX	Suffix used to indicate a Blue ProLume® Metal Halide lamp.
BU	Code abbreviation for Base Up Operating lamps.
C	Code abbreviation for lamps with a Coated finish.
CDM	Code abbreviation for Ceramic Metal Halide.
CL	Code abbreviation for lamps with a Clear finish.
/CS	Suffix used to indicate CoverShield® safety coated lamps.
/CSTF	Suffix used to indicate CoverShield® safety coated lamps.
/D	Suffix used to indicate Diffused lamps.
DE	Code abbreviation for Double Ended Metal Halide lamps.
DX	Code abbreviation for ProLume® Deluxe White Mercury Vapor lamps.
/ES	Suffix used to indicate an Energy Saving Metal Halide lamp.
/FL	Suffix used to indicate Flood lamps.
/GDX	Suffix used to indicate a Green ProLume® Metal Halide lamp.
/HBU	Suffix used to indicate Horizontal to Base Up Metal Halide lamps.
/HOR	Suffix used to indicate Horizontal Metal Halide lamps.
/LL	Suffix used to indicate lamps with a Long Life.
LU	Code abbreviation for High Pressure Sodium lamps.
/LU	Suffix used to indicate High Pressure Sodium to Metal Halide retrofit lamp.

HID LAMPS

Symbols, Footnotes and Abbreviations

ABBREVIATIONS

/M	Suffix used to indicate Major brand HID lamps (GE, Philips, Osram/Sylvania).
/MDX	Suffix used to indicate a Magenta ProLume® Metal Halide lamp.
MED	Code abbreviation for Medium base type (E26/27).
MH	Code abbreviation for Metal Halide lamps.
MHC	Code abbreviation for Ceramic Metal Halide lamps.
MV	Code abbreviation for Mercury Vapor lamps.
/MOG	Suffix used to indicate a Mogul base lamp.
MP	Code abbreviation for Protected Metal Halide lamps suitable for open fixture applications.
NC	Suffix used to indicate Non-Cycling High Pressure Sodium lamps.
NFL	Code abbreviation for Narrow Flood lamps.
/SBY	Suffix used to indicate Stand-By Twin Arc Tube lamps.
SE	Code abbreviation for Single Ended Metal Halide lamps.
/SP	Suffix used to indicate Spot lamps.
TC	Code abbreviation for T4 CDM lamps.
U	Code abbreviation for Universal Metal Halide lamps.
/UVS	Suffix used to indicate UV-Stop lamps.

HALOGEN LAMPS

CONTENTS

HOW TO READ A HALOGEN LAMP TABLE

BULB
Designations indicate shape and size. Illustrations can be found on page 130 and at the top of each page.

BASE
Indicates base type. Full base descriptions and illustrations can be found on page 130.

PRODUCT CODE
Abbreviated product description can also be used for ordering. A key to abbreviations can be found on page 132.

PACKAGE QUANTITY
Indicates minimum sell quantity and smallest shipping carton.

VOLTS
Indicate the product's design voltage of operation.

DESIGN FILAMENT
Filament types are illustrated on page 130.

MOL
Indicates maximum overall length in inches.

Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Volts	Lumens	CBCP	Avg. Life	Design Filament	MOL	Beam Spread
PRISM & HaloXen JC Type													
5 WATT													
T3	G4	107006	3	JC5	Clear	10/1000	12	60	2800	3000	C-8	1.18”	-
10 WATT													
T3	BA15s	147008	3	JC10/BA15S	Clear	10/1000	12	120	2800	3000	C-8	1.50”	-
		107944	2,3	JC10/BA15S/HX	Clear HaloXen®	10/1000	12	120	2850	10000	C-8	1.50”	-
	G4	107008	3	JC10	Clear	10/1000	12	120	2800	3000	C-8	1.18”	-
		107710	2,3	JC10/HX	Clear HaloXen®	10/1000	12	120	2850	10000	C-8	1.18”	-
		90002	3	JC10/X	Clear Xenon	10/500	12	120	2700	20000	C-8	1.18”	-

WATTS
Indicates the power consumed by the lamp during operation.

PRODUCT NUMBER
Use this number when placing an order.

FOOTNOTES & SYMBOLS
Related footnotes can be found on page 131.

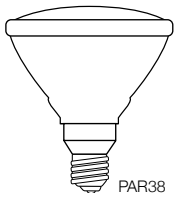
DESCRIPTION
Bulb finish and other important information.

LUMENS
Represents the average light output.

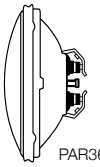
CBCP
The luminous intensity at the center of the beam of a reflector lamp.

AVERAGE LIFE
Average rated life expressed in hours.

BEAM SPREAD
Indicates the beam angle or beam spread of a bulb, measured in degrees.


PAR38


PAR30
PAR30L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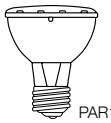
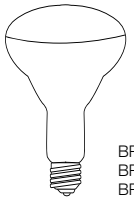
PAR20


PAR16

Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Volts	Lumens	CBCP	Avg. Life	Design Filament	MOL	Beam Spread
PRISM®, XIR, SPAR & HaloXen PAR Lamps													
20 WATT													
PAR36	**MP-Term.**	70304	X $ 1,7	**HP36WFL20/24V**	Wide Flood	1/12	24	240	480	5000	CC-6	2.75"	32°
		107788	$ 1,2,7	**HP36NSP20/HX**	Narrow Spot HaloXen®	1/12	12	260	1900	5000	C-6	2.75"	12°
		107790	$ 1,2,7	**HP36VNSP20/HX**	Very Narrow Spot HaloXen®	1/12	12	260	9000	5000	C-6	2.75"	5°
		107792	$ 1,2,7	**HP36WFL20/HX**	Wide Flood HaloXen®	1/12	12	260	530	5000	C-6	2.75"	32°
35 WATT													
PAR20	**Med.**	107610	N $ 1,7,8	**HP20NFL35**	Narrow Flood	15	130	450	700	3000	CC-8	3.07"	30°
PAR36	**MP-Term.**	107794	$ 1,2,7	**HP36NSP35/HX**	Narrow Spot HaloXen®	1/12	12	540	3500	5000	C-6	2.75"	12°
		107796	$ 1,2,7	**HP36VNSP35/HX**	Very Narrow Spot HaloXen®	1/12	12	540	17000	5000	C-6	2.75"	5°
		107798	$ 1,2,7	**HP36WFL35/HX**	Wide Flood HaloXen®	1/12	12	540	1000	5000	C-6	2.75"	32°
		70306	$ 1,2,7	**HP36WFL35/24V**	Wide Flood	1/12	24	500	960	5000	CC-6	2.75"	32°
39 WATT													
PAR20	**Med.**	70343	$ † 1,2,7	**HP20NFL39/HX**	Narrow Flood HaloXen®	1/15	120	530	900	2000	CC-8	3.23"	30°
		70354	$ † 1,2,7	**HP20NFL39/HX/130**	Narrow Flood HaloXen®	1/15	130	530	900	2000	CC-8	3.23"	30°
PAR30	**Med.**	70347	$ † 1,2,7	**HP30FL39/HX**	Flood HaloXen®	1/15	120	530	1100	2000	CC-8	3.62"	30°
		70353	$ † 1,2,7	**HP30FL39/HX/130**	Flood HaloXen®	1/15	130	530	1100	2000	CC-8	3.62"	30°
PAR30L	**Med.**	70344	$ † 1,2,7	**HP30FL39L/HX**	Flood HaloXen®	1/15	120	530	1000	2000	CC-8	4.75"	36°
		70204	$ † 1,2,7	**HP30WFL39L/HX**	Wide Flood HaloXen®	1/15	120	530	650	2000	CC-8	4.75"	50°
		70203	$ † 1,2,7	**HP30SP39L/HX**	Spot HaloXen®	1/15	120	530	4000	2000	CC-8	4.75"	15°
		70356	$ † 1,2,7	**HP30FL39L/HX/130**	Flood HaloXen®	1/15	130	530	4000	2000	CC-8	4.75"	36°
PAR38	**Med.**	70340	$ † 1,2,7	**HP38FL39/HX**	Flood HaloXen®	1/15	120	530	1000	2000	CC-8	5.31"	30°
		70404	$ † 1,2,7	**HP38SP39/HX**	Spot HaloXen®	1/15	120	530	5000	2000	CC-8	5.31"	10°
		70355	$ † 1,2,7	**HP38FL39/HX/130**	Flood HaloXen®	1/15	130	530	1100	2000	CC-8	5.31"	30°
45 WATT													
PAR16	**Med.**	107502	N $ 1,7,8	**HP16NFL45**	Narrow Flood	15	130	450	850	3000	CC-2V	3.07"	30°
50 WATT													
PAR36	**MP-Term.**	107782	1,2,7	**HP36NSP50/HX**	Narrow Spot HaloXen®	1/12	12	910	5000	5000	C-6	2.75"	12°
		107784	1,2,7	**HP36VNSP50/HX**	Very Narrow Spot HaloXen®	1/12	12	910	25000	5000	C-6	2.75"	5°
		107786	1,2,7	**HP36WFL50/HX**	Wide Flood HaloXen®	1/12	12	910	1500	5000	C-6	2.75"	32°
PAR38	**Med.**	70350	Ⓔ † 1,2,7	**HP38FL50/S/HX**	Silver PAR Flood HaloXen®	1/15	120	920	1300	1500	CC-8	5.31"	30°
53 WATT													
PAR30	**Med.**	70310	Ⓔ $ † 1,2,7	**HP30FL53/XIR**	Flood XIR®	1/15	120	1050	2500	3500	CC-8	3.62"	30°
PAR30L	**Med.**	70311	Ⓔ $ † 1,2,7	**HP30FL53L/XIR**	Flood XIR®	1/15	120	930	2500	3500	CC-8	4.75"	30°
PAR38	**Med.**	70312	Ⓔ $ † 1,2,7	**HP38FL53/XIR**	Flood XIR®	1/15	120	960	4100	3500	CC-8	5.31"	25°

Ⓔ Means this lamp meets Federal Minimum Efficiency standards.
Halogen lamp symbols, footnotes and abbreviations are located on pages 131-133.

HALOGEN LAMPS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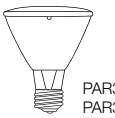
BR38
BR40


PAR16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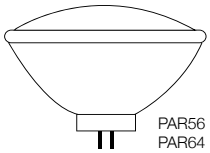
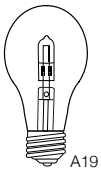
PAR38

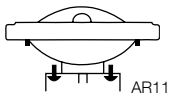

PAR56
PAR64

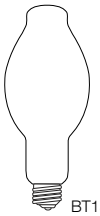
Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Volts	Lumens	CBCP	Avg. Life	Design Filament	MOL	Beam Spread
PRISM®, XIR, SPAR & HaloXen® PAR Lamps continued													
60 WATT													
PAR16	**Med.**	107616	N $1,7,8	**HP16NFL60**	Narrow Flood	15	130	550	1500	3000	CC-8	3.07"	30°
		107850	N $1,7,8	**HP16NFL60/120**	Narrow Flood	15	120	550	1500	3000	CC-8	3.07"	30°
		107504	N $1,7,8	**HP16NSP60**	Narrow Spot	15	130	550	4000	3000	CC-8	3.07"	10°
PAR30	**Med.**	70345	Ⓔ † $ 1,2,7	**HP30FL60/S/HX**	Silver PAR Flood HaloXen®	1/15	120	1090	2300	1500	CC-8	3.62"	30°
PAR30L	**Med.**	70342	Ⓔ † $ 1,2,7	**HP30FL60L/S/HX**	Silver PAR Flood HaloXen®	1/15	120	1090	1900	1500	CC-8	4.75"	36°
		70349	Ⓔ † $ 1,2,7	**HP30WFL60L/S/HX**	Silver PAR Wide Flood HaloXen®	1/15	120	1090	1200	1500	CC-8	4.75"	50°
		70348	Ⓔ † $ 1,2,7	**HP30SP60L/S/HX**	Silver PAR Spot HaloXen®	1/15	120	1090	5800	1500	CC-8	4.75"	15°
PAR38	**Med.**	70341	Ⓔ † $ 1,2,7	**HP38FL60/S/HX**	Silver PAR Flood HaloXen®	1/15	120	1090	2000	1500	CC-8	5.31"	30°
65 WATT													
BR30	**Med.**	75009	† 1,7	**BR30FL65/H**	Flood	24	120	750	-	2500	CC-8	5.37"	-
BR40	**Med.**	75010	† 1,7	**BR40FL65/H**	Flood	24	120	750	-	2500	CC-8	6.56"	-
70 WATT													
PAR38	**Med.**	70346	Ⓔ † $ 1,2,7	**HP38FL70/S/HX**	Silver PAR Flood HaloXen®	1/15	120	1350	2800	1500	CC-8	5.31"	30°
		70352	Ⓔ † $ 1,2,7	**HP38SP70/S/HX**	Silver PAR Spot HaloXen®	1/15	120	1350	7200	1500	CC-8	5.31"	10°
80 WATT													
PAR38	**Med.**	70351	Ⓔ † $ 1,2,7	**HP38FL80/S/HX**	Silver PAR Flood HaloXen®	1/15	120	1580	3000	1500	CC-8	5.31"	30°
250 WATT													
PAR38	**Med.**	15558	N 1,5,7	**Q250PAR/FL**	Flood Major	1/6	120	3600	9000	4500	CC-8	5.32"	30°
		15526	N 1,5,7	**Q250PAR/SP**	Spot Major	1/6	120	3600	40000	4500	CC-8	5.32"	10°
500 WATT													
PAR56	**End Prg.**	65044	1,5,6,7	**PAR56MFL500Q**	Medium Flood	1/12	120	8000	43000	3000	CC-6	5.00"	30x11
		65043	1,5,6,7	**PAR56NSP500Q**	Narrow Spot	1/12	120	8000	73500	3000	CC-6	5.00"	15x8
		65045	1,5,6,7	**PAR56WFL500Q**	Wide Flood	1/12	120	8000	19000	3000	CC-6	5.00"	45x20

Ⓔ Means this lamp meets Federal Minimum Efficiency standards.
Halogen lamp symbols, footnotes and abbreviations are located on pages 131-133.

HALOGEN LAMPS


A19


AR111


BT15

Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Volts	Lumens	CBCP	Avg. Life	Design Filament	MOL	Beam Spread
PRISM® A19 Lamps													
29 WATT													
A19	**Med.**	76005	Ⓔ $	**A19CL29/H**	Clear	12/120	120	430	-	1000	CC-8	4.25”	-
		76001	Ⓔ $	**A19SW29/H**	Soft White	12/120	120	430	-	1000	CC-8	4.25”	-
43 WATT													
A19	**Med.**	76006	Ⓔ $	**A19CL43/H**	Clear	12/120	120	750	-	1000	CC-8	4.25”	-
		76004	Ⓔ $	**A19SW43/H**	Soft White	12/120	120	750	-	1000	CC-8	4.25”	-
53 WATT													
A19	**Med.**	76007	Ⓔ $	**A19CL53/H**	Clear	12/120	120	1050	-	1000	CC-8	4.25”	-
		76002	Ⓔ $	**A19SW53/H**	Soft White	12/120	120	1050	-	1000	CC-8	4.25”	-
72 WATT													
A19	**Med.**	76000	Ⓔ $	**A19CL72/H**	Clear	12/120	120	1490	-	1000	CC-8	4.25”	-
		76003	Ⓔ $	**A19SW72/H**	Soft White	12/120	120	1490	-	1000	CC-8	4.25”	-
PRISM® Aluminum Reflector													
50 WATT													
AR111	**G53**	104150	3	**AR111FL50**	Flood	1/6	12	-	4100	3000	C-8	2.64”	24°
		104154	3	**AR111SP50**	Spot	1/6	12	-	23000	3000	C-8	2.64”	8°
		104158	3	**AR111WFL50**	Wide Flood	1/6	12	-	1200	3000	C-8	2.64”	45°
75 WATT													
AR111	**G53**	104152	3	**AR111FL75**	Flood	1/6	12	-	5300	3000	C-8	2.64”	24°
		104156	3	**AR111SP75**	Spot	1/6	12	-	30000	3000	C-8	2.64”	8°
		104160	3	**AR111WFL75**	Wide Flood	1/6	12	-	1700	3000	C-8	2.64”	45°
PRISM® Double Envelope													
60 WATT													
BT15	**Med.**	107052	N, 4	**JTT60/SW**	Soft White	10/200	120	820	-	2500	CC-8	4.61”	-
75 WATT													
BT15	**Med.**	107048	N, 4	**JTT75/SW**	Soft White	10/200	120	1000	-	2500	CC-8	4.61”	-

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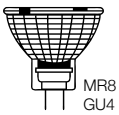
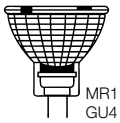
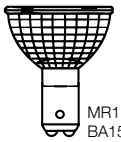
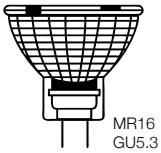
HALOGEN LAMPS


MR11
GU10


MR8
GU4


MR11
GU4


MR11
BA15d


MR16
GU5.3

Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Volts	CBCP	Color Temp	Avg. Life	Design Filament	MOL	Beam Spread
PRISM® & HaloXen® **MR8, MR11 & MR16**													
5 WATT													
MR11	**GU4**	107516	3	**MR11FL5/L**	Flood w/Lens	10/200	12	80	2950	2000	C-6	1.38”	30°
10 WATT													
MR8	**GU4**	107488	3	**MR8W10/L**	Wide Flood w/Lens	10/200	12	300	3000	2000	C-8	1.30”	20°
MR11	**GU4**	107940	3	**MR11FL10/L**	Flood w/Lens	10/200	12	300	2900	2000	C-6	1.38”	30°
		107114	3	**MR11SP10/L**	Spot w/Lens	10/200	12	2500	2900	2000	C-6	1.38”	10°
MR16	**GU5.3**	107098	3	**MR16FL10**	Flood	10/100	12	340	2900	3000	C-6	1.77”	36°
		107097	3	**MR16FL10/L**	Flood w/Lens	10/100	12	200	2900	2000	C-6	1.77”	36°
		107094	3	**MR16SP10/L**	Spot w/Lens	10/100	12	2000	2900	2000	C-6	1.77”	12°
16 WATT													
MR16	**GU5.3**	70754	X $ 2,3	**MR16SP20/L/16HX**	Spot w/Lens HaloXen®	10/100	12	3600	3100	5000	C-8	1.77”	10°
		70753	X $ 2,3	**MR16NFL20/L/16HX**	Narrow Flood w/Lens HaloXen®	10/100	12	1100	3100	5000	C-8	1.77”	25°
		70752	$ 2,3	**MR16FL20/L/16HX**	Flood w/Lens HaloXen®	10/100	12	650	3100	5000	C-8	1.87”	36°
		70755	X $ 2,3	**MR16WFL20/L/16HX**	Wide Flood w/Lens HaloXen®	10/100	12	400	3100	5000	C-8	1.77”	60°
20 WATT													
MR8	**GU4**	107466	3	**MR8N20/L**	Narrow Flood w/Lens	10/200	12	1750	3000	2000	C-8	1.30”	10°
		108610	3	**MR8W20/L**	Wide Flood w/Lens	10/200	12	900	3000	2000	C-8	1.30”	20°
MR11	**BA15d**	107101	3	**MR11FTB/L/TL**	Narrow Spot w/Lens Twist Lock	10/200	12	5500	2900	3000	C-6	1.77”	10°
		107103	3	**MR11FTC/L/TL**	Medium Flood w/Lens Twist Lock	10/200	12	1750	2900	3000	C-6	1.77”	20°
		107105	3	**MR11FTD/L/TL**	Flood w/Lens Twist Lock	10/200	12	700	2900	3000	C-6	1.77”	30°
	GU4	107100	3	**MR11FTB/L**	Narrow Spot w/Lens	10/200	12	5500	2900	3000	C-6	1.38”	10°
		107922	X 2,3	**MR11FTB/L/HX**	Narrow Flood w/Lens HaloXen®	10/200	12	4100	3100	10000	C-8	1.38”	10°
		107472	X 3	**MR11FTB/L/24V**	Narrow Spot w/Lens	10/200	24	2800	2900	3000	CC-6	1.38”	10°
		107102	3	**MR11FTC/L**	Medium Flood w/Lens	10/200	12	1750	2900	3000	C-6	1.38”	20°
		107924	X 2,3	**MR11FTC/L/HX**	Medium Flood w/Lens HaloXen®	10/200	12	1750	3100	10000	C-8	1.38”	20°
		107474	X,3	**MR11FTC/L/24V**	Medium Flood w/Lens	10/200	24	1000	2900	3000	CC-6	1.38”	20°
		107104	3	**MR11FTD/L**	Flood w/Lens	10/200	12	700	2900	3000	C-6	1.38”	30°
		107926	2,3	**MR11FTD/L/HX**	Flood w/Lens HaloXen®	10/200	12	700	3100	10000	C-8	1.38”	30°
	GU10	107544	3	**MR11FL20/L/GU10**	Flood w/Lens	10/200	120	220	3000	2000	CC-2V	1.38”	30°
MR16	**GU5.3**	107480	3	**MR16BAB**	Flood	10/100	12	460	2900	3000	C-8	1.77”	38°
		107120	3	**MR16BAB/SC**	Flood SureColor®	10/100	12	700	2950	5000	C-8	1.77”	38°
		107494	3	**MR16BAB/L**	Flood w/Lens	10/100	12	450	2900	3000	C-8	1.77”	38°
		107121	3	**MR16BAB/L/SC**	Flood w/Lens SureColor®	10/100	12	700	2950	5000	C-8	1.77”	38°
		107526	2,3	**MR16BAB/L/HX**	Flood w/Lens HaloXen®	10/100	12	700	3100	10000	C-8	1.87”	36°

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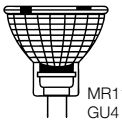
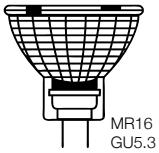
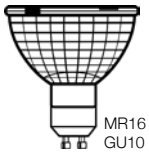

MR11
GU4


MR16
GU5.3


MR16
GU10

Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Volts	CBCP	Color Temp	Avg. Life	Design Filament	MOL	Beam Spread
PRISM® & HaloXen® MR8, MR11 & MR16 continued													
20 WATT continued													
MR16	**GU5.3**	70700	3	**MR16BAB/L/AL**	Flood w/Lens	10/100	12	650	2950	5000	C-8	1.77”	36°
		70710	3	**MR16BAB/L/AL/24V**	Flood w/Lens	10/100	24	650	2950	5000	CC-8	1.77”	38°
		107300	X 3	**MR16BAB/FR/SC**	Frosted Flood w/Lens SureColor®	10/100	12	450	2950	5000	C-8	1.77”	38°
		107350	3	**MR16BAB/BLK/L**	Flood Black Back w/Lens	10/100	12	900	2950	5000	C-8	1.87”	38°
		107115	3	**MR16BAB/BLU**	Blue Flood	10/100	12	850	-	3000	C-6	1.77”	38°
		107116	3	**MR16BAB/GRN**	Green Flood	10/100	12	850	-	3000	C-6	1.77”	38°
		107118	3	**MR16BAB/RED**	Red Flood	10/100	12	850	-	3000	C-6	1.77”	38°
		107440	3	**MR16BBF/L/SC**	Medium Flood w/Lens SureColor®	10/100	12	1500	2950	5000	C-8	1.77”	20°
		107482	3	**MR16ESX**	Narrow Spot	10/100	12	3350	2900	3000	C-8	1.77”	12°
		107122	3	**MR16ESX/SC**	Narrow Spot SureColor®	10/100	12	4000	2950	5000	C-8	1.77”	10°
		107496	3	**MR16ESX/L**	Narrow Spot w/Lens	10/100	12	3280	2900	3000	C-8	1.77”	12°
		107123	3	**MR16ESX/L/SC**	Narrow Spot w/Lens SureColor®	10/100	12	4000	2950	5000	C-8	1.87”	10°
		107932	X 2,3	**MR16ESX/L/HX**	Narrow Spot w/Lens HaloXen®	10/100	12	4100	3100	10000	C-8	1.77”	10°
		107090	3	**MR16WFL20/SC**	Wide Flood SureColor®	10/100	12	450	2950	5000	C-8	1.77”	60°
		107400	3	**MR16WFL20/L/SC**	Wide Flood w/Lens SureColor®	10/100	12	450	2950	5000	C-8	1.77”	60°
		107942	2,3	**MR16WFL20/L/HX**	Wide Flood w/Lens HaloXen®	10/100	12	400	3100	10000	C-8	1.77”	60°
		70702	3	**MR16WFL20/L/AL**	Wide Flood w/Lens	10/100	12	400	2950	5000	C-8	1.77”	60°
		70716	X 3	**MR16WFL20/L/AL/24V**	Wide Flood w/Lens	10/100	24	400	2950	5000	CC-8	1.77”	60°
	GU10	107152	3	**MR16FL20/L/GU10**	Flood w/Lens	10/200	120	170	2800	2000	CC-2V	2.16”	30°
26 WATT													
MR16	**GU5.3**	70758	X $ 2,3	**MR16SP35/L/26HX**	Spot w/Lens HaloXen®	10/100	12	6500	3100	5000	C-8	1.77”	10°
		70757	X $ 2,3	**MR16NFL35/L/26HX**	Narrow Flood w/Lens HaloXen®	10/100	12	3150	3100	5000	C-8	1.77”	25°
		70756	$ 2,3	**MR16FL35/L/26HX**	Flood w/Lens HaloXen®	10/100	12	1250	3100	5000	C-8	1.77”	36°
		70759	X $ 2,3	**MR16WFL35/L/26HX**	Wide Flood w/Lens HaloXen®	10/100	12	800	3100	5000	C-8	1.77”	60°
35 WATT													
MR11	**BA15d**	107454	X 3	**MR11FTE/L/TL**	Narrow Spot w/Lens Twist Lock	10/200	12	4600	2900	3000	C-6	1.77”	10°
		107456	3	**MR11FTF/L/TL**	Medium Flood w/Lens Twist Lock	10/200	12	2400	2900	3000	C-6	1.65”	20°
	GU4	107106	3	**MR11FTE/L**	Narrow Spot w/Lens	10/200	12	4600	2900	3000	C-6	1.38”	10°
		107108	3	**MR11FTF/L**	Medium Flood w/Lens	10/200	12	2400	2900	3000	C-6	1.38”	20°
		107928	X 2,3	**MR11FTF/L/HX**	Medium Flood w/Lens HaloXen®	10/200	12	3000	3100	10000	C-8	1.38”	20°

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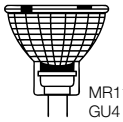
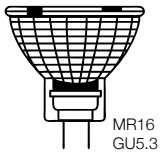
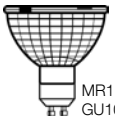
HALOGEN LAMPS

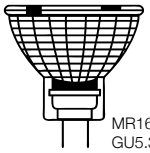

MR11
GU4

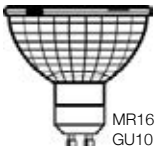

MR16
GU5.3

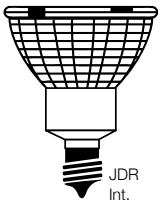

MR11
GU10

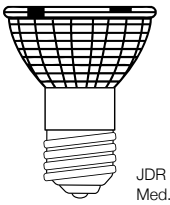
Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Volts	CBCP	Color Temp	Avg. Life	Design Filament	MOL	Beam Spread
PRISM® & HaloXen® MR8, MR11 & MR16 continued													
35 WATT continued													
MR11	**GU4**	107110	3	**MR11FTH/L**	Flood w/Lens	10/200	12	1500	2900	3000	C-6	1.38”	30°
	GU10	107546	3	**MR11FL35/L/GU10**	Flood w/Lens	10/100	120	560	2850	2000	CC-2V	1.38”	30°
MR16	**GU5.3**	107141	3	**MR16FRA/L/SC**	Narrow Flood w/Lens SureColor®	10/100	12	3000	3000	5000	C-8	1.77”	20°
		107938	2,3	**MR16FRA/L/HX**	Narrow Flood w/Lens HaloXen®	10/100	12	3500	3100	10000	C-8	1.87”	20°
		107136	3	**MR16FRB/SC**	Spot SureColor®	10/100	12	8000	3000	5000	C-8	1.77”	10°
		107420	3	**MR16FRB/L/SC**	Spot w/Lens SureColor®	10/100	12	8000	3000	5000	C-8	1.77”	10°
		107446	X 3	**MR16FRB/24V**	Spot	10/100	24	5000	3000	4000	CC-6	1.77”	12°
		107492	3	**MR16FMW**	Flood	10/100	12	950	3000	3000	C-8	1.77”	36°
		107138	3	**MR16FMW/SC**	Flood SureColor®	10/100	12	1500	3000	5000	C-8	1.77”	38°
		107508	3	**MR16FMW/L**	Flood w/Lens	10/100	12	880	3000	3000	C-8	1.77”	36°
		107139	3	**MR16FMW/L/SC**	Flood w/Lens SureColor®	10/100	12	1500	3000	5000	C-8	1.77”	38°
		107518	2,3	**MR16FMW/L/HX**	Flood w/Lens HaloXen®	10/100	12	1250	3100	10000	C-8	1.77”	38°
		70704	3	**MR16FMW/L/AL**	Flood w/Lens	10/100	12	1300	3000	5000	C-8	1.77”	36°
		70714	3	**MR16FMW/L/AL/24V**	Flood w/Lens	10/100	24	1300	3000	5000	CC-8	1.77”	38°
		107362	3	**MR16FMW/BLK/L**	Flood Black Back w/Lens	10/100	12	1700	3000	5000	C-6	1.77”	36°
		107092	3	**MR16WFL35/SC**	Wide Flood SureColor®	10/100	12	800	3000	5000	C-8	1.77”	60°
		107430	3	**MR16WFL35/L/SC**	Wide Flood w/Lens SureColor®	10/100	12	800	3000	5000	C-8	1.77”	60°
		70720	2,3	**MR16WFL35/L/HX**	Wide Flood w/Lens HaloXen®	10/100	12	750	3100	10000	C-8	1.77”	60°
		70706	3	**MR16WFL35/L/AL**	Wide Flood w/Lens	10/100	12	700	3000	5000	C-8	1.77”	60°
		70718	3	**MR16WFL35/L/AL/24V**	Wide Flood w/Lens	10/100	24	700	3000	5000	CC-8	1.77”	60°
	GU10	107154	3	**MR16FL35/L/GU10**	Flood w/Lens	10/100	120	900	2800	2000	CC-2V	2.16”	30°
37 WATT													
MR16	**GU5.3**	70737	$ 2,3	**MR16NFL50/L/37HX**	Narrow Flood w/Lens HaloXen®	10/100	12	4400	3100	5000	C-8	1.87”	25°
		70736	$ 2,3	**MR16FL50/L/37HX**	Flood w/Lens HaloXen®	10/100	12	2200	3100	5000	C-8	1.87”	36°
50 WATT													
MR16	**GU5.3**	107484	3	**MR16EXN**	Flood	10/100	12	1350	2900	3000	C-8	1.77”	36°
		107124	3	**MR16EXN/SC**	Flood SureColor®	10/100	12	2000	3050	5000	C-8	1.77”	38°
		107498	3	**MR16EXN/L**	Flood w/Lens	10/100	12	1350	2900	3000	C-8	1.77”	36°
		107125	3	**MR16EXN/L/SC**	Flood w/Lens SureColor®	10/100	12	2000	3050	5000	C-8	1.77”	38°
		107514	2,3	**MR16EXN/L/HX**	Flood w/Lens HaloXen®	10/100	12	1700	3150	10000	C-8	1.87”	38°
		70708	3	**MR16EXN/L/AL**	Flood w/Lens	10/100	12	1900	2900	5000	C-8	1.77”	36°
		107304	X,3	**MR16EXN/FR/SC**	Flood Frost w/Lens SureColor®	10/100	12	1050	3050	5000	C-8	1.77”	38°
		107452	3	**MR16EXN/24V**	Flood	10/100	24	1600	2900	4000	CC-6	1.77”	36°
		107356	3	**MR16EXN/BLK/L**	Flood Black Back w/Lens	10/100	12	2200	3050	5000	C-8	1.77”	36°
		107358	3	**MR16EXN/SIL/L**	Flood Silver Back w/Lens	10/100	12	2200	3050	5000	C-8	1.77”	36°

Ⓔ Means this lamp meets Federal Minimum Efficiency standards.
Halogen lamp symbols, footnotes and abbreviations are located on pages 131-133.


MR16
GU5.3/G8


MR16
GU10


JDR
Int.


JDR
Med.

Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Volts	CBCP	Color Temp	Avg. Life	Design Filament	MOL	Beam Spread
PRISM & HaloXen MR8, MR11 & MR16 continued													
50 WATT continued													
MR16	**GU5.3**	107172	3	**MR16EXN/BLU**	Blue Flood	10/100	12	1350	-	3000	C-8	1.77”	36°
		107174	3	**MR16EXN/GRN**	Green Flood	10/100	12	1350	-	3000	C-8	1.77”	36°
		107170	3	**MR16EXN/RED**	Red Flood	10/100	12	1350	-	3000	C-8	1.77”	36°
		107176	3	**MR16EXN/YEL**	Yellow Flood	10/100	12	1350	-	3000	C-8	1.77”	36°
		107486	3	**MR16EXT**	Spot	10/100	12	11000	2900	3000	C-8	1.77”	12°
		107126	3	**MR16EXT/SC**	Spot SureColor®	10/100	12	10000	3050	5000	C-8	1.77”	10°
		107500	3	**MR16EXT/L**	Spot w/Lens	10/100	12	10700	2900	3000	C-8	1.77”	12°
		107127	3	**MR16EXT/L/SC**	Spot w/Lens SureColor®	10/100	12	10000	3050	5000	C-8	1.77”	10°
		107934	2,3	**MR16EXT/L/HX**	Spot w/Lens HaloXen®	10/100	12	10000	3150	10000	C-8	1.77”	12°
		107490	3	**MR16EXZ**	Narrow Flood	10/100	12	3000	2900	3000	C-8	1.77”	24°
		107128	3	**MR16EXZ/SC**	Narrow Flood SureColor®	10/100	12	4000	3050	5000	C-8	1.77”	20°
		107464	X,3	**MR16EXZ/U**	Narrow Flood	10/100	12	3500	3150	12000	C-8	1.77”	20°
		107506	3	**MR16EXZ/L**	Narrow Flood w/Lens	10/100	12	2940	2900	3000	C-8	1.77”	24°
		107129	3	**MR16EXZ/L/SC**	Narrow Flood w/Lens SureColor®	10/100	12	4000	3050	5000	C-8	1.77”	20°
		107936	2,3	**MR16EXZ/L/HX**	Narrow Flood w/Lens HaloXen®	10/100	12	4400	3150	10000	C-8	1.87”	24°
		107146	3	**MR16FNV/SC**	Wide Flood SureColor®	10/100	12	1050	3050	5000	C-8	1.77”	60°
		107462	X,3	**MR16FNV/U**	Wide Flood	10/100	12	750	3050	12000	C-8	1.77”	60°
		107410	3	**MR16FNV/L/SC**	Wide Flood w/Lens SureColor®	10/100	12	1050	3050	5000	C-8	1.77”	60°
		107524	2,3	**MR16FNV/L/HX**	Wide Flood w/Lens HaloXen®	10/100	12	1000	3150	10000	C-8	1.87”	60°
	G8	108510	3	**MR16EXN/G8**	Flood	10/100	120	1350	2900	2000	CC-2V	1.77”	36°
	GU10	107180	3	**MR16FL50/L/GU10**	Flood w/Lens	10/100	120	1500	2900	2000	CC-2V	2.16”	30°
57 WATT													
MR16	**GU5.3**	70760	$ 2,3	**MR16FL75/L/57HX**	Flood w/Lens HaloXen®	10/100	12	2400	3100	5000	C-8	1.87”	36°
75 WATT													
MR16	**GU5.3**	107130	3	**MR16EYC/SC**	Flood SureColor®	10/100	12	2750	3100	5000	C-8	1.77”	38°
		107132	3	**MR16EYF/SC**	Spot SureColor®	10/100	12	13000	3100	5000	C-8	1.77”	10°
		107134	3	**MR16EYJ/SC**	Narrow Flood SureColor®	10/100	12	6000	3100	5000	C-8	1.77”	20°
		107312	3	**MR16WFL75/SC**	Wide Flood SureColor®	10/100	12	1400	3100	5000	C-8	1.77”	60°
		107314	3	**MR16WFL75/L/SC**	Wide Flood w/Lens SureColor®	10/100	12	1400	3100	5000	C-8	1.77”	60°
JDR	**Int.**	107056	N,3	**JDR75INT/L**	Wide Flood w/Lens	10/200	130	1600	2950	2000	CC-2V	3.15”	30°
	Med.	107054	N,3	**JDR75/L**	Wide Flood w/Lens	10/200	130	1600	2950	2000	CC-2V	3.15”	30°

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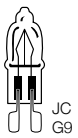
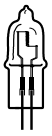
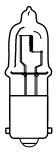
Halogen lamp symbols, footnotes and abbreviations are located on pages 131-133.

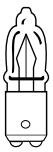
HALOGEN LAMPS


JC
G9


JC/
JCD
G6.35


JC
G4
GY6.35
G8


JC
BA15s


JC
BA15d

Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Volts	Lumens	Color Temp	Avg. Life	Design Filament	MOL	Beam Spread
PRISM® & HaloXen® JC Type													
5 WATT													
T3	**G4**	107006	3	**JC5**	Clear	10/1000	12	60	2800	3000	C-8	1.18”	-
10 WATT													
T3	**BA15s**	147008	3	**JC10/BA15S**	Clear	10/1000	12	120	2800	3000	C-8	1.50”	-
		107944	2,3	**JC10/BA15S/HX**	Clear HaloXen®	10/1000	12	120	2850	10000	C-8	1.50”	-
	G4	107008	3	**JC10**	Clear	10/1000	12	120	2800	3000	C-8	1.18”	-
		107710	2,3	**JC10/HX**	Clear HaloXen®	10/1000	12	120	2850	10000	C-8	1.18”	-
		90002	3	**JC10/X**	Clear Xenon	10/500	12	120	2700	20000	C-8	1.18”	-
20 WATT													
T3	**BA15s**	147010	3	**JC20/BA15S**	Clear	10/1000	12	300	2800	3000	C-8	1.50”	-
		107718	2,3	**JC20/BA15S/HX**	Clear HaloXen®	10/1000	12	350	2900	10000	C-8	1.50”	-
	G4	107010	3	**JC20**	Clear	10/1000	12	300	2800	3000	C-8	1.18”	-
		107712	2,3	**JC20/HX**	Clear HaloXen®	10/1000	12	350	2900	10000	C-8	1.18”	-
		70922	2,3	**JC20/24V/HX**	Clear HaloXen®	10/1000	24	350	4100	5000	CC-6	1.25”	-
		90003	3	**JC20/X**	Clear Xenon	10/500	12	250	2700	10000	C-8	1.18”	-
T4	**G6.35**	107009	3	**JC20/6.35**	Clear	10/1000	12	300	2800	3000	C-8	1.65”	-
	GY6.35	107036	3	**JCD20**	Clear	10/500	130	180	2750	2000	CC-2	1.69”	-
	G8	107076	3	**JCD20/G8**	Clear	10/500	130	180	2750	2000	CC-2	1.69”	-
25 WATT													
T4	**G9**	71001	3	**JCD25/G9**	Clear	10/500	130	280	2650	2000	CC-2V	1.69”	-
		107902	3	**JCD25FR/G9**	Frost	10/500	130	280	2650	2000	CC-2V	1.69”	-
35 WATT													
T4	**BA15d**	147012	3	**JC35/BA15D**	Clear	10/1000	12	600	2850	3000	C-8	1.65”	-
		107720	X 3	**JC35/BA15D/HX**	Clear HaloXen®	10/1000	12	600	2900	10000	C-8	1.50”	-
	G4	107000	3	**JC35/G4**	Clear	10/1000	12	600	2850	3000	C-8	1.58”	-
	G6.35	107012	3	**JC35**	Clear	10/1000	12	600	2850	3000	C-8	1.58”	-
		107714	2,3	**JC35/HX**	Clear HaloXen®	10/1000	12	600	2900	10000	C-8	1.60”	-
	GY6.35	107011	3	**JCD35**	Clear	10/500	130	350	2800	2000	CC-2V	1.81”	-
	G8	107072	3	**JCD35/G8**	Clear	10/500	130	350	2800	2000	CC-2V	1.69”	-
40 WATT													
T4	**G9**	107906	3	**JCD40/G9**	Clear	10/500	130	480	2750	2000	CC-2V	1.69”	-
		107908	3	**JCD40/FR/G9**	Frost	10/500	130	450	2750	2000	CC-2V	1.69”	-
		107310	3	**JCD40/FR/G9/120**	Frost	10/1000	120	450	2800	2000	CC-2V	1.69”	-

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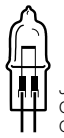
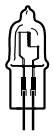
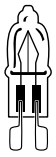

JC
G4
G8


JC/
JCD
G6.35


JC
G9


JC
GY6.35


T3
JD
R7s

Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Volts	Lumens	Color Temp	Avg. Life	Design Filament	MOL	Beam Spread
PRISM® & HaloXen® JC Type continued													
50 WATT													
T4	**G6.35**	107014	3	**JC50**	Clear	10/1000	12	900	2950	3000	C-8	1.65”	-
		107716	2,3	**JC50/HX**	Clear HaloXen®	10/1000	12	900	3000	10000	C-8	1.60”	-
	GY6.35	107015	3	**JCD50**	Clear	10/500	130	600	2900	2000	CC-2	1.69”	-
	G8	107074	3	**JCD50/G8**	Clear	10/500	130	600	2900	2000	CC-2	1.69”	-
60 WATT													
T4	**G9**	71002	3	**JCD60/G9**	Clear	10/500	130	780	2950	2000	CC-2V	1.69”	-
		107904	3	**JCD60FR/G9**	Frost	10/500	130	750	2950	2000	CC-2V	1.69”	-
75 WATT													
T4	**GY6.35**	107002	3	**JC75**	Clear	10/1000	12	1350	3000	3000	C-8	1.69”	-
		107001	3	**JCD75**	Clear	10/500	130	980	2950	2000	CC-2V	1.69”	-
100 WATT													
T4	**GY6.35**	107004	3	**JC100**	Clear	10/1000	12	2100	3100	3000	C-8	1.69”	-
		107003	3	**JCD100**	Clear	10/500	130	1400	3050	2000	CC-2V	1.69”	-
	G8	107070	3	**JCD100/G8**	Clear	10/500	130	1400	3050	2000	CC-2V	1.69”	-

Bulb	Base	Product Number	Footnotes	Product Code	ANSI	Description	Pkg. Qty.	Volts	Lumens	Color Temp	Avg. Life	Design Filament	MOL	Beam Spread
PRISM® J Type Double Ended														
75 WATT														
T3	**R7s**	107210	3,8,9	**Q75T3C/S**	-	Clear 78mm	10/500	130	1250	2850	2000	C-8	3.07”	-
100 WATT														
T3	**R7s**	107182	3,8,9	**Q100T3C**	-	Clear 118mm	10/500	130	1400	2950	2000	C-8	4.68”	-
		107184	3,8,9	**Q100T3C/S**	-	Clear 78mm	10/500	130	1400	2950	2000	C-8	3.11”	-
150 WATT														
T3	**R7s**	107186	3,8,9	**Q150T3C**	-	Clear 118mm	10/500	130	2250	2950	2000	C-8	4.68”	-
		107188	3,8,9	**Q150T3C/S**	-	Clear 78mm	10/500	130	2400	2950	2000	C-8	3.07”	-
		107214	3,8,9	**Q150T3C/12V**	-	Clear 83mm Pool	10/500	12	2500	2950	2000	C-8	3.27”	-
200 WATT														
T3	**R7s**	107190	3,8,9	**Q200T3C**	-	Clear 118mm	10/500	130	3200	2950	2000	C-8	4.68”	-
		107192	3,8,9	**Q200T3C/S**	-	Clear 78mm	10/500	130	3200	2950	2000	C-8	3.11”	-
250 WATT														
T3	**R7s**	107208	3,8,9	**Q250T3C/S**	-	Clear 78mm	10/500	130	4000	2950	2000	C-8	3.11”	-
		107216	3,8,9	**Q250T3C/83MM**	-	Clear 83mm Pool	10/500	130	4000	2950	2000	C-8	3.27”	-
300 WATT														
T3	**R7s**	107194	3,8,9	**Q300T3C**	-	Clear 118mm	10/500	130	5000	2950	2000	C-8	4.68”	-
		127194	3,8,9	**Q300T3C/120**	EHM	Clear 118mm	10/500	120	5000	2950	2000	C-8	4.68”	-

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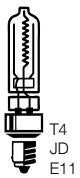
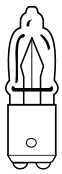
HALOGEN LAMPS





Bulb	Base	Product Number	Footnotes	Product Code	ANSI	Description	Pkg. Qty.	Volts	Lumens	Color Temp	Avg. Life	Design Filament	MOL	Beam Spread
PRISM	**J Type Double Ended continued**													
500 WATT														
T3	**R7s**	107196	3,8,9	**Q500T3C**	DVS	Clear 118mm	10/500	130	9500	3000	2000	C-8	4.65”	-
		127196	3,8,9	**Q500T3C/120**	FCL	Clear 118mm	10/500	120	9500	3000	2000	C-8	4.65”	-
1000 WATT														
T3	**R7s**	107198	3,8,9	**Q1000T3C**	-	Clear 254mm	10/500	240	22000	3050	2000	C-8	10.00”	-
1500 WATT														
T3	**R7s**	107200	3,8,9	**Q1500T3C**	-	Clear 254mm	10/500	240	33000	3050	2000	C-8	10.00”	-
		107202	3,8,9	**Q1500T3C/277**	-	Clear 254mm	10/500	277	33000	3050	2000	C-8	10.00”	-
PRISM	**JD Type Single Ended**													
35 WATT														
T4	**BA15d**	107035	3	**Q35CL/DC**	-	Clear	10/400	130	380	2700	2000	CC-2V	1.97”	-
	E11	107034	3	**Q35CL/MC**	-	Clear	10/400	130	380	2700	2000	CC-2V	1.97”	-
50 WATT														
T4	**BA15d**	107018	3	**Q50CL/DC**	-	Clear	10/400	130	750	2800	2000	CC-2V	1.97”	-
	E11	107019	3	**Q50CL/MC**	-	Clear	10/400	130	750	2800	2000	CC-2V	1.97”	-
75 WATT														
T4	**BA15d**	107021	3	**Q75CL/DC**	-	Clear	10/400	130	1250	2850	2000	CC-8	2.40”	-
	E11	107020	3	**Q75CL/MC**	-	Clear	10/400	130	1250	2850	2000	CC-8	2.68”	-
		127020	3	**Q75CL/MC/120**	-	Clear	10/400	120	1250	2850	2000	CC-8	2.68”	-
100 WATT														
T4	**BA15d**	107025	3	**Q100CL/DC**	-	Clear	10/400	130	1700	2950	2000	CC-8	2.40”	-
		127025	3	**Q100CL/DC/120**	ESR	Clear	10/400	120	1700	2950	2000	CC-8	2.40”	-
	E11	107024	3	**Q100CL/MC**	-	Clear	10/400	130	1700	2950	2000	CC-8	2.68”	-
		127024	3	**Q100CL/MC/120**	ESN	Clear	10/400	120	1700	2950	2000	CC-8	2.68”	-
150 WATT														
T4	**BA15d**	107029	3	**Q150CL/DC**	-	Clear	10/400	130	2400	2950	2000	CC-8	2.40”	-
		71102	3	**Q150CL/DC/120**	ETC	Clear	10/200	120	2400	2950	2000	CC-8	2.40”	-
		107027	X 3	**Q150DC**	-	Frost	10/400	130	2280	2950	2000	CC-8	2.40”	-
	E11	107028	3	**Q150CL/MC**	-	Clear	10/400	130	2400	2950	2000	CC-8	2.72”	-
		127028	X	**Q150CL/MC/120**	-	Clear	10/400	120	2400	2950	2000	CC-8	2.72”	-
		107026	3	**Q150MC**	-	Frost	10/400	130	2280	2950	2000	CC-8	2.72”	-
		71100	3	**Q150MC/120**	ETH	Frost	10/200	120	2280	2950	2000	CC-8	2.72”	-

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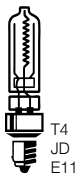
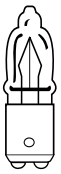




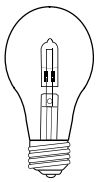
Bulb	Base	Product Number	Footnotes	Product Code	ANSI	Description	Pkg. Qty.	Volts	Lumens	Color Temp	Avg. Life	Design Filament	MOL	Beam Spread
PRISM	**JD Type Single Ended continued**													
250 WATT														
T4	**BA15d**	107033	3	**Q250CL/DC**	-	Clear	10/400	130	4500	2950	2000	CC-8	3.12”	-
		127033	3	**Q250CL/DC/120**	ESS	Clear	10/400	120	4500	2950	2000	CC-8	3.12”	-
		71103	X 3	**Q250DC/120**	ETB	Frost	10/200	120	4200	2950	2000	CC-8	2.76”	-
		107032	3	**Q250CL/MC**	-	Clear	10/400	130	4500	2950	2000	CC-8	3.15”	-
		127032	3	**Q250CL/MC/120**	EHT	Clear	10/400	120	4500	2950	2000	CC-8	3.15”	-
		107030	3	**Q250MC**	-	Frost	10/400	130	4200	2950	2000	CC-8	3.15”	-
400 WATT														
T4	**E11**	107037	3	**Q400CL/MC**	-	Clear	10/400	130	7400	2950	2000	CC-8	3.27”	-
500 WATT														
T4	**BA15d**	107041	X 3	**Q500CL/DC**	-	Clear	10/400	130	8500	3000	2000	CC-8	3.98”	-
	E11	107040	3	**Q500CL/MC**	EYW	Clear	10/400	130	8500	3000	2000	CC-8	3.75”	-
		127040	3	**Q500CL/MC/120**	EVR	Clear	10/400	120	8500	3000	2000	CC-8	3.75”	-
		107038	3	**Q500MC**	EYV	Frost	10/400	130	8075	3000	2000	CC-8	3.75”	-

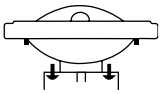
Ⓔ Means this lamp meets Federal Minimum Efficiency standards.
Halogen lamp symbols, footnotes and abbreviations are located on pages 131-133.

HALOGEN LAMPS

Bulb, Base and Filament Identification Guide

Bulb Shapes


A19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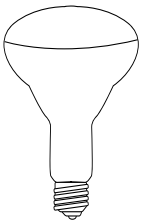
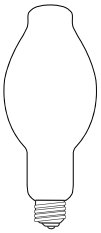
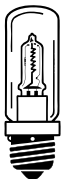

BR

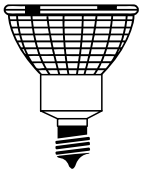

BT15

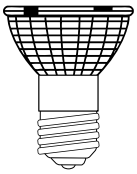

J Type Tubular


JC

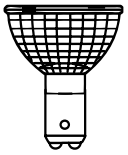

JD


T10


JDR Int.

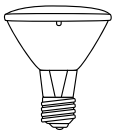

JDR Med.

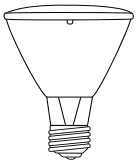

MR

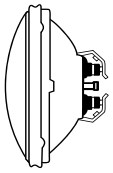

MR-DC

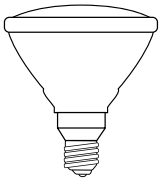

MR-GU10

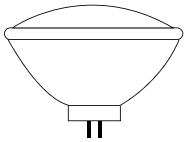

PAR16


PAR20


PAR30 PAR30L


PAR36


PAR38

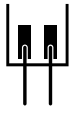

PAR46/56/64

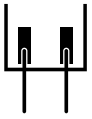
Base Types

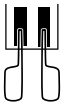

Screw Terminals Up-term

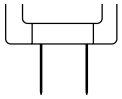

DC Bayonet BA15d


G53


G6.35 or GY6.35

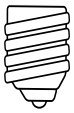

G8

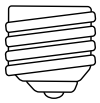

G9


G4 GU4.

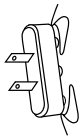

GU5.3

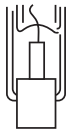

GU10

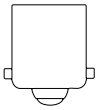

Intermediate E17


Medium E26/27

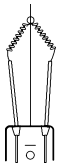

Mini-Can E-11

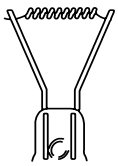

Mogul End Prong GX16d

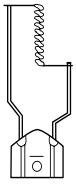

Recessed Single Contact R7S


SC Bayonet BA15s

Filament Types


CC-2


CC-6


CC-8

CC indicates coiled-coil filament.

SYMBOLS

†	New product introduced within the past year.
N	Nickel-plated brass base.
$	Energy saving product.
Ⓔ	This lamp meets Federal Minimum Efficiency standards.
X	Product will be discontinued when inventory is depleted.

FOOTNOTES

1	Halogen PAR Caution: Before using bulb, see operating instructions on package. Adhering to these operating instructions will greatly reduce the risk of personal injury or fire. The halogen capsule contained inside this glass bulb operates under pressure, at high temperatures and could unexpectedly shatter. Should the outer bulb break, particles of extremely hot glass could be discharged into the fixture and/or surrounding area, creating a risk of personal injury or fire. Operating Instructions: Turn power off and let lamp cool before replacing or inspecting to avoid electrical shock or burn. For indoor and outdoor use. A weather-protected fixture is recommended for wet locations. Suitable for use in open fixtures. Do not exceed the fixture maximum wattage rating. Do not use if outer glass is scratched or broken. Lamp may continue to operate if outer glass breaks, however immediately discontinue use. Do not use in close proximity to combustible materials.
2	HaloXen® lamps operate under high temperatures. To avoid personal injury, turn power off and allow bulb to cool before attempting to handle. Do not use if the glass is scratched or broken. Do not use near flammable or combustible materials.
3	Do not touch capsule with bare hands. Oil from the skin may reduce performance unless wiped clean with alcohol and a soft cloth. CAUTION: THIS LAMP OPERATES UNDER PRESSURE AND COULD SHATTER. To avoid injury and to avoid exposure to ultraviolet radiation, this lamp should be used in a fixture with a protective shield or tempered glass. Provide adequate ventilation to avoid overheating and use in only fixtures rated for wattage stated on the package. To avoid risks of burns or other injury, turn power off and allow lamp to cool before replacing. Socket condition may affect lamp life. Inspect and replace socket if deterioration occurs.
4	Socket condition may affect lamp life. Inspect and replace socket if deterioration occurs.
5	This lamp should be shielded from moisture to prevent breakage.
6	Use only with heat-resistant connector and with lamp supported by bulb rim.
7	Use only in heat-resistant lamp holders and fixtures rated for reflector or PAR lamps.
8	Use outdoors only in enclosed fixtures or where lamp is protected from exposure to water. Use only in fixtures rated for this product.
9	Operate in a horizontal position only.

HALOGEN LAMPS

Symbols, Footnotes and Abbreviations

ABBREVIATIONS

/12V	Suffix used to indicate 12 Volt lamps.
/24V	Suffix used to indicate 24 Volt lamps.
/83mm	Suffix used to indicate lamps with MOL of 83mm.
/120	Suffix used to indicate 120 Volt lamps.
/130	Suffix used to indicate 130 Volt lamps.
/277V	Suffix used to indicate 277 Volt lamps.
/AL	Suffix used to indicate lamps with an Aluminum Back reflector.
/BA9s	Suffix used to indicate lamps with a BA9s base.
/BA15d	Suffix used to indicate lamps with a BA15d base.
/BA15s	Suffix used to indicate lamps with a BA15s base.
/BLK	Suffix used to indicate lamps with a Black Back, coated reflector.
/BLU	Suffix used to indicate lamps with a Blue lens.
CL	Code abbreviation for lamps with a Clear finish.
/CS	Suffix used to indicate CoverShield® Safety Coated lamps.
/DC	Suffix used to indicate lamps with a DC (BA15d) base.
FL	Code abbreviation for Flood lamps.
/FR	Suffix used to indicate lamps with a Frost Finish.
/G4	Suffix used to indicate lamps with a G4 base.
/G8	Suffix used to indicate lamps with a G8 base.
/G9	Suffix used to indicate lamps with a G9 base.
/GU10	Suffix used to indicate lamps with a GU10 base.
/GRN	Suffix used to indicate lamps with a Green lens.
/H	Suffix used to indicate Halogen lamps.
HP	Code abbreviation for Halogen PAR lamps.
/HX	Suffix used to indicate HaloXen® lamps.

ABBREVIATIONS

INT	Code abbreviation for Intermediate (E17) base.
L	Code abbreviation for PAR30 lamps with a long neck.
/L	Suffix used to indicate lamps with a lens.
LM	Code abbreviation for lumens.
/MC	Suffix used to indicate lamps Mini-Candelabra (E11) base.
NFL	Code abbreviation for Narrow Flood lamps.
/M	Suffix used to indicate Major brand lamps (GE, Philips, Osram/Sylvania).
MED	Code abbreviation for lamps with a Medium (E26/27) base.
NSP	Code abbreviation for Narrow Spot lamps.
Q	Code abbreviation to indicate Quartz Halogen.
/RED	Suffix used to indicate lamps with a Red lens.
/S	Suffix used to indicate Silver PAR HaloXen® lamps.
/SC	Suffix used to indicate Prism® SureColor® lamps.
/SIL	Suffix used to indicate lamps with a Silver Back, coated reflector.
SP	Code abbreviation for Spot lamps.
/SW	Suffix used to indicate lamps with a Soft White finish.
/TL	Suffix used to indicate lamps with a Twist Lock base (BA15d).
/U	Suffix used to indicate Prism® Ultra Life® 12,000 hour lamps.
VNSP	Code abbreviation fro Very Narrow Spot lamps.
W	Code abbreviation for Wide Flood lamps.
WFL	Code abbreviation for Wide Flood lamps.
/X	Suffix used to indicate Xenon lamps.
/YEL	Suffix used to indicate lamps with a Yellow finish.
/XIR	Suffix used to indicate Halogen Infrared lamps.

INCANDESCENT LAMPS

CONTENTS

HOW TO READ AN INCANDESCENT LAMP TABLE

BULB
Designations indicate shape and size. Illustrations can be found on page 150 and at the top of each page.

BASE
Indicates base type. Full base descriptions and illustrations can be found on page 150.

PRODUCT CODE
Abbreviated product description can also be used for ordering. A key to abbreviations can be found on page 152.

PACKAGE QUANTITY
Indicates minimum sell quantity and smallest shipping carton.

VOLTS
Indicate the product's design voltage of operation.

DESIGN FILAMENT
Filament types are illustrated on page 150.

MOL
Indicates maximum overall length in inches.

Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Volts	Lumens	Avg. Life	Design Filament	MOL	Beam Spread
7.5 WATT												
S11	**Med.**	7017		**S11CL7.5**	Clear	25/500	130	45	1500	C-7A	2.25"	-
		7024		**S11GRN7.5C**	Ceramic Green	25/500	130	-	1500	C-7A	2.25"	-
		7026		**S11ORG7.5C**	Ceramic Orange	25/500	130	-	1500	C-7A	2.25"	-
		7019		**S11RED7.5C**	Ceramic Red	25/500	130	-	1500	C-7A	2.25"	-
		7020		**S11WH7.5C**	Ceramic White	25/500	130	-	1500	C-7A	2.25"	-

WATTS
Indicates the power consumed by the lamp during operation.

PRODUCT NUMBER
Use this number when placing an order.

FOOTNOTES & SYMBOLS
Related footnotes can be found on page 151.

DESCRIPTION
Bulb finish and other important information.

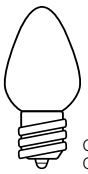
LUMENS
Represents average light output.

AVERAGE LIFE
Average rated life expressed in hours.

BEAM SPREAD
Indicates the beam angle or beam spread of a bulb, measured in degrees.

INCANDESCENT LAMPS

General Service


C7/C9
Cand.

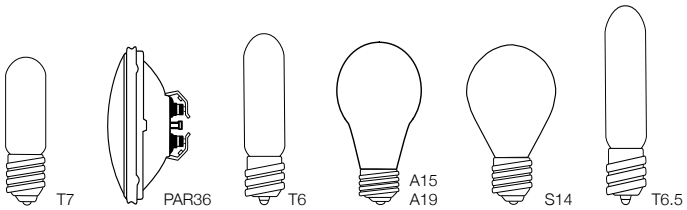

S6
S11
Cand.

Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Volts	Lumens	Avg. Life	Design Filament	MOL	Beam Spread
4 WATT												
C7	**Cand.**	7014		**C7CL4**	Clear	25/1000	130	16	1000	C-3A	2.12”	-
5 WATT												
C7	**Cand.**	7102		**C7AMB5T**	Transparent Amber	25/1000	130	-	1000	C-3A	2.12”	-
		7104		**C7BLU5C**	Ceramic Blue	25/1000	130	-	1000	C-3A	2.12”	-
		7106		**C7BLU5T**	Transparent Blue	25/1000	130	-	1000	C-3A	2.12”	-
		7108		**C7GRN5C**	Ceramic Green	25/1000	130	-	1000	C-3A	2.12”	-
		7110		**C7GRN5T**	Transparent Green	25/1000	130	-	1000	C-3A	2.12”	-
		7112		**C7ORG5C**	Ceramic Orange	25/1000	130	-	1000	C-3A	2.12”	-
		7114		**C7RED5C**	Ceramic Red	25/1000	130	-	1000	C-3A	2.12”	-
		7116		**C7RED5T**	Transparent Red	25/1000	130	-	1000	C-3A	2.12”	-
		7118		**C7WH5C**	Ceramic White	25/1000	130	-	1000	C-3A	2.12”	-
6 WATT												
S6	**Cand.**	9042		**S6CL6**	Clear	25/2000	130	30	1500	C-7A	1.87”	-
		9043		**S6CL6/145V**	Clear	25/2000	145	30	1500	C-7A	1.87”	-
7 WATT												
C7	**Cand.**	7016		**C7CL7**	Clear	25/1000	130	40	1000	C-3A	2.12”	-
		105204		**C7WH7/NL**	White Night Light	25/2000	130	-	1000	C-3A	2.12”	-
C9	**Int.**	7050		**C9CL7**	Clear	25/1000	130	40	3000	C-3A	3.00”	-
		7120		**C9AMB7T**	Transparent Amber	25/1000	130	-	3000	C-3A	3.00”	-
		7122		**C9BLU7C**	Ceramic Blue	25/1000	130	-	3000	C-3A	3.00”	-
		7124		**C9BLU7T**	Transparent Blue	25/1000	130	-	3000	C-3A	3.00”	-
		7126		**C9GRN7C**	Ceramic Green	25/1000	130	-	3000	C-3A	3.00”	-
		7128		**C9GRN7T**	Transparent Green	25/1000	130	-	3000	C-3A	3.00”	-
		7130		**C9ORG7C**	Ceramic Orange	25/1000	130	-	3000	C-3A	3.00”	-
		7132		**C9RED7C**	Ceramic Red	25/1000	130	-	3000	C-3A	3.00”	-
		7134		**C9RED7T**	Transparent Red	25/1000	130	-	3000	C-3A	3.00”	-
7.5 WATT												
S11	**Med.**	7017		**S11CL7.5**	Clear	25/500	130	45	1500	C-7A	2.25”	-
		7024		**S11GRN7.5C**	Ceramic Green	25/500	130	-	1500	C-7A	2.25”	-
		7026		**S11ORG7.5C**	Ceramic Orange	25/500	130	-	1500	C-7A	2.25”	-
		7019		**S11RED7.5C**	Ceramic Red	25/500	130	-	1500	C-7A	2.25”	-
		7020		**S11WH7.5C**	Ceramic White	25/500	130	-	1500	C-7A	2.25”	-
		7028		**S11YEL7.5C**	Ceramic Yellow	25/500	130	-	1500	C-7A	2.25”	-
10 WATT												
S11	**Int.**	9045		**S11CL10**	Clear	25/500	130	80	1500	C-7A	2.48”	-

Ⓔ Means this lamp meets Federal Minimum Efficiency standards.
Incandescent lamps symbols, footnotes and abbreviations are located on pages 151-153.

INCANDESCENT LAMPS

General Service



Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Volts	Lumens	Avg. Life	Design Filament	MOL	Beam Spread
11 WATT												
S14	**Med.**	9051		**S14CL11**	Clear	25/250	130	80	5000	C-9	3.50”	-
		9057		**S14FR11**	Frost	25/250	130	75	3000	C-9	3.50”	-
		9056		**S14AMB11T**	Transparent Amber	25/250	130	-	3000	C-9	3.50”	-
		9076		**S14BLU11C**	Ceramic Blue	25/250	130	-	3000	C-9	3.50”	-
		9055		**S14BLU11T**	Transparent Blue	25/250	130	-	3000	C-9	3.50”	-
		9070		**S14GRN11C**	Ceramic Green	25/250	130	-	3000	C-9	3.50”	-
		9054		**S14GRN11T**	Transparent Green	25/250	130	-	3000	C-9	3.50”	-
		105334		**S14RED11C**	Ceramic Red	25/250	130	-	3000	C-9	3.50”	-
		9052		**S14RED11T**	Transparent Red	25/250	130	-	3000	C-9	3.50”	-
		9058		**S14WH11C**	Ceramic White	25/250	130	-	3000	C-9	3.50”	-
		105336		**S14YEL11C**	Ceramic Yellow	25/250	130	-	3000	C-9	3.50”	-
		9053		**S14YEL11T**	Transparent Yellow	25/250	130	-	3000	C-9	3.50”	-
15 WATT												
A15	**Med.**	6013		**A15CL15**	Clear	20/120	130	95	3000	C-9	3.50”	-
		6014		**A15FR15**	Frost	20/120	130	90	3000	C-9	3.50”	-
T6	**Cand.**	9030		**T6CL15/CAN**	Clear	25/500	130	90	2000	C-5A	3.06”	-
		9021		**T6CL15/145V**	Clear	25/500	145	80	2000	C-5A	3.06”	-
T7	**Cand.**	9039		**T7CL15CAN**	Clear	25/1000	120	100	2000	C-5A	2.25”	-
	BA15d	9038		**T7CL15DC**	Clear	25/1000	120	100	2000	C-5A	2.35”	-
	Int.	9037		**T7CL15INT**	Clear	25/1000	120	100	2000	C-5A	2.35”	-
20 WATT												
PAR36	**Screw Term.**	107788	$,17	**HP36NSP20/HX**	Narrow Spot HaloXen®	12	12	260	5000	C-6	2.75”	12°
		107790	$,17	**HP36VNSP20/HX**	Very Narrow Spot HaloXen®	12	12	260	5000	C-6	2.75”	5°
		107792	$,17	**HP36WFL20/HX**	Wide Flood HaloXen®	12	12	260	5000	C-6	2.75”	32°
T6.5	**BA15d**	9022		**T6.5CL20DC**	Clear	25/500	130	150	2500	C-8	5.56”	-
		9023		**T6.5FR20DC**	Frost	25/500	130	150	2500	C-8	5.56”	-
	Int.	9019		**T6.5CL20INT**	Clear	25/500	130	150	2500	C-8	5.50”	-
		9028		**T6.5FR20INT**	Frost	25/500	130	150	2500	C-8	5.50”	-
25 WATT												
A15	**Med.**	6016		**A15CL25**	Clear	20/120	130	130	3000	C-9	3.50”	-
		6015		**A15FR25**	Frost	20/120	130	120	3000	C-9	3.50”	-
A19	**Med.**	6318		**A19CL25/5**	Clear	120	130	175	5000	C-9	4.25”	-
		103700	AI	**A19FR25**	Frost	120	130	160	1500	C-9	4.25”	-
		6319		**A19FR25/5**	Frost	120	130	150	5000	C-9	4.25”	-
		101159	10	**A19FR25/12V**	Frost	12/240	12	240	2000	C-6	4.25”	-
		101150		**A19BLU25T**	Transparent Blue	12/120	130	-	2000	C-9	4.25”	-

Ⓔ Means this lamp meets Federal Minimum Efficiency standards.
Incandescent lamp symbols, footnotes and abbreviations are located on pages 151-153.

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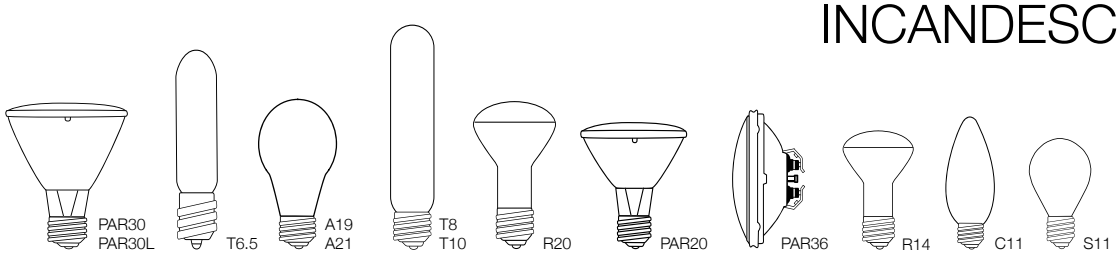

Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Volts	Lumens	Avg. Life	Design Filament	MOL	Beam Spread
25 WATT continued												
A19	**Med.**	101152		**A19GRN25T**	Transparent Green	12/120	130	-	2000	C-9	4.25”	-
		6335		**A19RED25C**	Ceramic Red	12/120	130	-	2000	C-9	4.25”	-
		101154		**A19RED25T**	Transparent Red	12/120	130	-	2000	C-9	4.25”	-
		101124		**A19RS25/CS**	CoverShield®	20/120	130	-	2000	C-9	4.25”	-
		6338		**A19YEL25C**	Ceramic Yellow	12/120	130	-	2000	C-9	4.25”	-
		101156		**A19YEL25T**	Transparent Yellow	12/120	130	-	2000	C-9	4.25”	-
C11	**Cad.**	20003		**C11ANT25**	Antique Oil-Rubbed finish	10/100	120	120	3000	Z-Shape	4.00”	-
PAR36	**Screw Term.**	14554	10	**PAR36NSP25/M**	Narrow Spot Major	1/12	12	150	2000	C-6	2.75”	9°
		14556	10	**PAR36VWFL25/M**	Very Wide Flood Major	1/12	12	150	2000	C-6	2.75”	55°
		65205	10	**PAR36WFL25**	Wide Flood	1/12	12	150	2000	C-6	2.75”	25x37
R14	**Int.**	9104		**R14INT25**	Flood	25/250	130	150	1500	CC-2V	2.64”	-
	Med.	9103		**R14MED25**	Flood	25/250	130	150	1500	CC-2V	2.64”	-
S11	**Int.**	9048		**S11N25**	Clear High-Intensity	25/500	130	200	1500	CC-2V	2.48”	-
T6.5	**BA15d**	9025		**T6.5CL25DC**	Clear	25/500	130	180	2500	C-8	5.56”	-
	Int.	9018		**T6.5CL25INT**	Clear	25/500	130	180	2500	C-8	5.50”	-
T8	**BA15d**	9034		**T8CL25DC**	Clear	25/500	130	180	2500	C-8	2.63”	-
	Int.	9032		**T8CL25INT**	Clear	25/500	130	180	2500	C-8	2.63”	-
T10	**Med.**	9012		**T10CL25**	Clear	25/200	130	180	2500	C-5V	5.00”	-
		9013		**T10FR25**	Frost	25/200	130	180	2500	C-5V	5.00”	-
29 WATT												
A19	**Med.**	76005	Ⓔ $	**A19CL29/H**	Clear	12/120	120	430	1000	CC-8	4.25”	-
		76001	Ⓔ $	**A19SW29/H**	Soft White	12/120	120	430	1000	CC-8	4.25”	-
30 WATT												
R20	**Med.**	9110	6	**R20FL30**	Flood	10/100	130	140	3000	C-9	3.93”	-
		10102		**R20FL30/CS**	Flood CoverShield®	10/100	130	140	3000	C-9	3.93”	-
30/70/100 WATT												
A21	**Med.**	8009	1	**A21SW3W100**	Soft White 3-Way 30/70/100	12/60	130	260/ 650/940	2500	CC-8	5.25”	-
35 WATT												
PAR20	**Med.**	107610	N,$,18	**HP20NFL35**	Narrow Flood Prism®	15	130	450	3000	CC-8	3.07”	30°
PAR36	**Screw Term.**	107794	$,17	**HP36NSP35/HX**	Narrow Spot HaloXen®	1/12	12	540	5000	C-6	2.75”	12°
		107796	$,17	**HP36VNSP35/HX**	Very Narrow Spot HaloXen®	1/12	12	540	5000	C-6	2.75”	5°
		107798	$,17	**HP36WFL35/HX**	Wide Flood HaloXen®	1/12	12	540	5000	C-6	2.75”	32°
		70306	$,17	**HP36WFL35/24V**	Wide Flood	1/12	24	500	5000	CC-6	2.75”	32°

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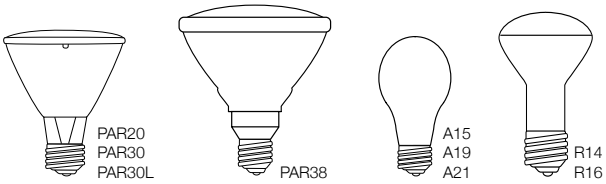

Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Volts	Lumens	Avg. Life	Design Filament	MOL	Beam Spread
39 WATT												
PAR20	**Med.**	70343	$,†,17	**HP20NFL39/HX**	Narrow Flood HaloXen®	1/15	120	530	2000	CC-8	3.23”	30°
		70354	$,†,17	**HP20NFL39/HX/130**	Narrow Flood HaloXen®	1/15	130	530	2000	CC-8	3.23”	30°
PAR30	**Med.**	70347	$,†,17	**HP30FL39/HX**	Flood HaloXen®	1/15	120	530	2000	CC-8	3.62”	30°
		70353	$,†,17	**HP30FL39/HX/130**	Flood HaloXen®	1/15	130	530	2000	CC-8	3.62”	30°
PAR30L	**Med.**	70344	$,†,17	**HP30FL39L/HX**	Flood HaloXen®	1/15	120	530	2000	CC-8	4.75”	36°
		70204	$,†,17	**HP30WFL39L/HX**	Wide Flood HaloXen®	1/15	120	530	2000	CC-8	4.75”	50°
		70203	$,†,17	**HP30SP39L/HX**	Spot HaloXen®	1/15	120	530	2000	CC-8	4.75”	15°
		70356	$,†,17	**HP30FL39L/HX/130**	Flood HaloXen®	1/15	130	530	2000	CC-8	4.75”	36°
PAR38	**Med.**	70340	$,†,17	**HP38FL39/HX**	Flood HaloXen®	1/15	120	530	2000	CC-8	5.31”	30°
		70404	$,†,17	**HP38SP39/HX**	Spot HaloXen®	1/15	120	530	2000	CC-8	5.31”	10°
		70355	$,†,17	**HP38FL39/HX/130**	Flood HaloXen®	1/15	130	530	2000	CC-8	5.31”	30°
40 WATT												
A15	**Cand.**	10005		**A15CL40/E12**	Clear	20/120	120	350	2000	C-9	3.50”	-
		10006	X	**A15WH40/E12**	White	20/120	120	310	2000	C-9	3.50”	-
	Int.	10009	X	**A15CL40/E17**	Clear	20/120	120	350	2000	C-9	3.50”	-
	Med.	6017		**A15CL40**	Clear	20/120	130	300	3000	C-9	3.50”	-
		90300		**A15CL40/CSTF**	Clear CoverShield® PFA	20/120	130	300	3000	C-9	3.50”	-
		6018		**A15FR40**	Frost	20/120	130	290	3000	C-9	3.50”	-
		6146		**A15RS40/CS**	CoverShield®	20/120	130	-	1500	C-9	3.50”	-
A19	**Med.**	103710	L, AI	**A19CL40**	Clear	120	130	340	1500	C-9	4.25”	-
		6324		**A19CL40/5**	Clear	120	130	320	5000	C-9	4.25”	-
		103702	L, AI	**A19FR40**	Frost	120	130	325	1500	C-9	4.25”	-
		6320		**A19FR40/5**	Frost	120	130	275	5000	C-9	4.25”	-
		6220		**A19SW40/120**	Soft White	120	120	300	1500	CC-6	4.25”	-
		8013		**A19BG40**	Yellow Bug	20/120	130	-	2000	C-9	4.25”	-
		101151	X	**A19BLU40T**	Transparent Blue	12/120	130	-	2000	C-9	4.25”	-
		101153	X	**A19GRN40T**	Transparent Green	12/120	130	-	2000	C-9	4.25”	-
		101155		**A19RED40T**	Transparent Red	12/120	130	-	2000	C-9	4.25”	-
		101125		**A19RS40/CS**	CoverShield®	20/120	130	-	2000	C-9	4.25”	-
		6354	X	**A19YEL40C**	Ceramic Yellow	12/120	130	-	2000	C-9	4.25”	-
A21	**Med.**	20002		**A21ANT40**	Antique Oil-Rubbed finish	6/48	120	130	3000	Quad Loop	5.00”	-
R14	**Int.**	9101		**R14INT40**	Flood	25/250	130	260	1500	CC-2V	2.64”	-
	Med.	9100		**R14MED40**	Flood	25/250	130	260	1500	CC-2V	2.64”	-
R16	**Med.**	9127		**R16MED40**	Flood	25/500	130	235	3000	C-9	3.66”	-
		129127		**R16MED40/120**	Flood	25/500	120	235	3000	C-9	3.66”	-
		104106		**R16SP40**	Spot	25/500	130	235	3000	CC-2V	3.66”	-

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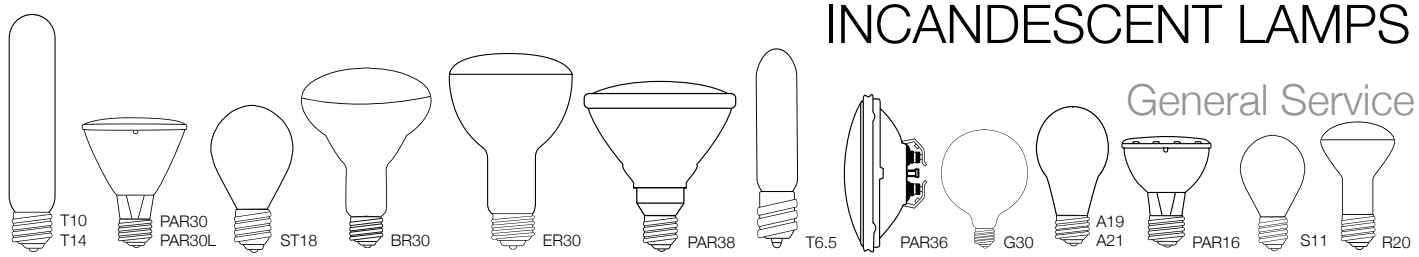

Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Volts	Lumens	Avg. Life	Design Filament	MOL	Beam Spread
40 WATT continued												
T6.5	**Int.**	106111		**T6.5CL40INT**	Clear	25/500	130	350	2500	C-8	5.50”	-
T10	**Med.**	9014		**T10CL40**	Clear	25/200	130	280	2500	C-5V	5.00”	-
		9015		**T10FR40**	Frost	25/200	130	280	2500	C-5V	5.00”	-
		106228		**T10CL40/CS**	CoverShield®	25/200	130	-	-	C-5V	5.00”	-
G30	**Med.**	20004		**G30ANT40**	Antique Oil-Rubbed finish	50	120	140	3000	Squirrel Cage	5.13”	-
G40	**Med.**	20005		**G40ANT40**	Antique Oil-Rubbed finish	12	120	140	3000	Squirrel Cage	6.75”	-
S11	**Int.**	9050		**S11N40**	Clear High-Intensity	25/500	130	370	1500	CC-2V	2.48”	-
ST18	**Med.**	20006		**ST18ANT40**	Antique Oil-Rubbed finish	10/100	120	135	3000	Squirrel Cage	5.16”	-
T14	**Med.**	20007		**T14ANT40**	Antique Oil-Rubbed finish	10/100	120	135	3000	Squirrel Cage	4.25”	-
43 WATT												
A19	**Med.**	76006	Ⓔ $	**A19CL43/H**	Clear	12/120	120	750	1000	CC-8	4.25”	-
		76004	Ⓔ $	**A19SW43/H**	Soft White	12/120	120	750	1000	CC-8	4.25”	-
45 WATT												
PAR16	**Med.**	107502	N, $,18	**HP16NFL45**	Narrow Flood Prism®	15	130	500	3000	CC-2V	3.07”	30°
R20	**Med.**	10100	6	**R20FL45**	Flood	10/100	130	450	3000	C-9	3.93”	-
50 WATT												
A19	**Med.**	101160	10	**A19FR50/12V**	Frost	12/240	12	580	1500	C-6	4.25”	-
		101123		**A19RS50**	Rough Service	20/120	130	580	2500	C-9	4.25”	-
BR30	**Med.**	104058	6	**BR30FL50**	Flood	24	130	300	5000	C-9	5.37”	-
ER30	**Med.**	9113	5,7	**ER30FL50/P5**	Flood Prism® Long Life Plus™	12/60	130	360	5000	C-9M	6.25”	-
PAR36	**Screw Term.**	107782	17	**HP36NSP50/HX**	Narrow Spot HaloXen®	1/12	12	910	5000	C-6	2.75”	12°
		107784	17	**HP36VNSP50/HX**	Very Narrow Spot HaloXen®	1/12	12	910	5000	C-6	2.75”	5°
		107786	17	**HP36WFL50/HX**	Wide Flood HaloXen®	1/12	12	910	5000	C-6	2.75”	32°
		65210	10	**PAR36WFL50**	Wide Flood	1/12	12	330	2000	C-6	2.75”	39x27
PAR38	**Med.**	70350	Ⓔ †,17	**HP38FL50/S/HX**	Silver PAR Flood HaloXen®	1/15	120	920	1500	CC-8	5.31”	30°
R20	**Med.**	104200	6	**R20AMB50**	Amber	10/100	130	-	2500	C-9	3.93”	-
		9146	6	**R20BLU50**	Blue	10/100	130	-	2500	C-9	3.93”	-
		9150	6	**R20DPNK50**	Dawn Pink	10/100	130	-	2500	C-9	3.93”	-
		9141	6	**R20GRN50**	Green	10/100	130	-	2500	C-9	3.93”	-
		9108	6	**R20PNK50**	Pink	10/100	130	-	2500	C-9	3.93”	-
		9142	6	**R20RED50**	Red	10/100	130	-	2500	C-9	3.93”	-
		104016	6	**R20FL50/CS**	CoverShield®	10/100	130	-	2000	C-9	3.93”	-

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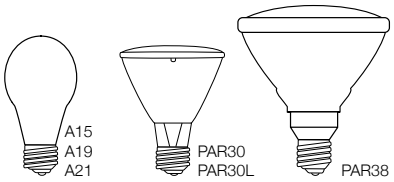

Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Volts	Lumens	Avg. Life	Design Filament	MOL	Beam Spread
50/100/150 WATT												
A21	**Med.**	8010	1	**A21SW3W150**	Soft White 3-Way 50/100/150	12/60	130	560/ 1200/ 1760	2500	CC-8	5.25”	-
		101240	X,N,1	**A21FR50/150/ND**	Frost 3-Way 50/100/150 Neodymium PureLite®	12/60	120	380/ 1000/ 1380	5000	CC-8	5.25”	-
53 WATT												
A19	**Med.**	76007	Ⓔ$	**A19CL53/H**	Clear	12/120	120	1050	1000	CC-8	4.25”	-
		76002	Ⓔ$	**A19SW53/H**	Soft White	12/120	120	1050	1000	CC-8	4.25”	-
PAR30	**Med.**	70310	Ⓔ †,17	**HP30FL53/XIR**	Flood XIR®	1/15	120	1050	3500	CC-8	3.62”	30°
PAR30L	**Med.**	70311	Ⓔ †,17	**HP30FL53L/XIR**	Flood XIR®	1/15	120	930	3500	CC-8	4.75”	30°
PAR38	**Med.**	70312	Ⓔ †,17	**HP38FL53/XIR**	Flood XIR®	1/15	120	960	3500	CC-8	5.31”	25°
54 WATT												
A19	**Med.**	288584	$	**A19FR54/10**	Frost Prism® Ultra Life®	20/120	130	450	10000	C-9M	4.25”	-
60 WATT												
A15	**Cand.**	10007		**A15CL60/E12**	Clear	20/120	120	530	2000	C-9	3.50”	-
		10008		**A15WH60/E12**	White	20/120	120	520	2000	C-9	3.50”	-
	Med.	6117		**A15CL60**	Clear	20/120	130	530	3000	C-9	3.50”	-
		126117		**A15CL60/120**	Clear	20/120	120	620	3000	C-9	3.50”	-
		101234	X, N	**A15CL60/ND**	Clear Neodymium PureLite®	10/50	120	530	5000	CC-9	3.50”	-
		6118		**A15FR60**	Frost	20/120	130	520	3000	C-9	3.50”	-
		6147		**A15RS60/CS**	CoverShield®	20/120	130	-	1500	C-9	3.50”	-
A19	**Med.**	103712	L, Al	**A19CL60**	Clear	120	130	620	1500	C-9	4.25”	-
		6225	L	**A19CL60/120**	Clear	120	120	590	1500	CC-6	4.25”	-
		6325	L	**A19CL60/5**	Clear	120	130	545	5000	C-9	4.25”	-
		103010	L	**A19CL60/P10**	Clear Prism® Ultra Life®	20/120	120	480	10000	C-9M	4.25”	-
		101242	N	**A19CL60/ND**	Clear Neodymium PureLite®	20/120	120	600	5000	CC-6	4.25”	-
		101180	3	**A19CL60/SB**	Clear Silver Bowl Prism®	12/120	130	-	2500	C-9	4.25”	-
		103704	L, Al	**A19FR60**	Frost	120	130	590	1500	C-9	4.25”	-
		6321	L	**A19FR60/5**	Frost	120	130	510	5000	C-9	4.25”	-
		103024	L	**A19FR60/P10**	Frost Prism® Ultra Life®	20/120	120	480	10000	C-9M	4.25”	-
		101194	N	**A19FR60/ND**	Frost Neodymium PureLite®	20/120	120	600	5000	CC-6	4.25”	-
		101184	3	**A19FR60/SB**	Inside Frost Silver Bowl Prism®	12/120	130	-	5000	C-9	4.25”	-
		6221	L	**A19SW60/120**	Soft White	120	120	530	1500	C-9	4.25”	-
		8011		**A19BG60**	Yellow Bug	20/120	130	-	2000	C-9	4.25”	-
		101196	X	**A19GRO60**	Plant Grow	12/120	120	480	2000	C-9	4.25”	-
		6352		**A19RED60C**	Ceramic Red	12/120	130	-	2000	C-9	4.25”	-

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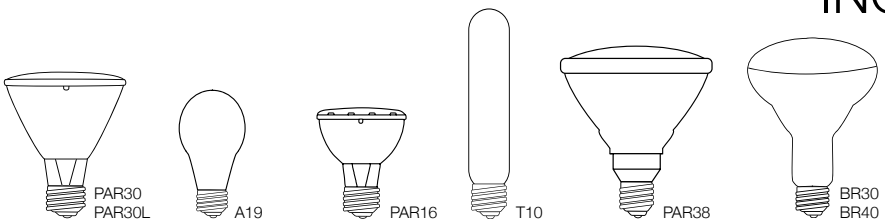

Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Volts	Lumens	Avg. Life	Design Filament	MOL	Beam Spread
60 WATT continued												
A19	**Med.**	6151		**A19RS60**	Rough Service	20/120	130	780	2500	C-9	4.25”	-
		6141		**A19RS60/CS**	CoverShield®	20/120	130	-	2000	C-9	4.25”	-
		6356		**A19YEL60C**	Ceramic Yellow	12/120	130	-	2000	C-9	4.25”	-
PAR16	**Med.**	107616	N,$,18	**HP16NFL60**	Narrow Flood Prism®	15	130	550	3000	CC-8	3.07”	30°
		107850	N,$,18	**HP16NFL60/120**	Narrow Flood Prism®	15	120	550	3000	CC-8	3.07”	30°
		107504	N,$,18	**HP16NSP60**	Narrow Spot Prism®	15	130	550	3000	CC-8	3.07”	10°
T10	**Med.**	9016		**T10CL60**	Clear	25/200	130	420	2500	C-5V	5.00”	-
		9017		**T10FR60**	Frost	25/200	130	420	2500	C-5V	5.00”	-
PAR30	**Med.**	70345	Ⓔ † $,17	**HP30FL60/S/HX**	Silver PAR Flood HaloXen®	1/15	120	1090	1500	CC-8	3.62”	30°
PAR30L	**Med.**	70342	Ⓔ † $,17	**HP30FL60L/S/HX**	Silver PAR Flood HaloXen®	1/15	120	1090	1500	CC-8	4.75”	36°
		70349	Ⓔ † $,17	**HP30WFL60L/S/HX**	Silver PAR Wide Flood HaloXen®	1/15	120	1090	1500	CC-8	4.75”	50°
		70348	Ⓔ † $,17	**HP30SP60L/S/HX**	Silver PAR Spot HaloXen®	1/15	120	1090	1500	CC-8	4.75”	15°
PAR38	**Med.**	70341	Ⓔ † $,17	**HP38FL60/S/HX**	Siver PAR Flood HaloXen®	1/15	120	1090	1500	CC-8	5.31”	30°
65 WATT												
BR30	**Med.**	104070	6	**BR30FL65**	Flood	24	130	580	5000	C-9	5.37”	-
		124070	6	**BR30FL65/120**	Flood	24	120	510	5000	C-9	5.37”	-
		75009	†,19	**BR30FL65/H**	Flood	24	120	750	2500	CC-8	5.37”	-
		103620	6	**BR30FL65/P5**	Flood Prism® Long Life Plus	24	130	480	5000	C-9M	5.37”	-
		103110	6	**BR30FL65/P10**	Flood Prism® Ultra Life®	24	120	420	10000	C-9M	5.37”	-
		103528	N, 6	**BR30FL65/20**	Flood Prism® Ultra Life®	24	120	480	20000	C-9M	5.37”	-
		404014	6	**BR30SP65/5**	Spot	24	130	-	5000	C-9	5.37”	-
		404028	6	**BR30AMB65/5**	Amber Prism®	12/24	130	-	5000	C-9	5.37”	-
		404030	6	**BR30BLU65/5**	Blue Prism®	12/24	130	-	5000	C-9	5.37”	-
		404031	6	**BR30DPNK65/5**	Dawn Pink Prism®	12/24	130	-	5000	C-9	5.37”	-
		404039	6	**BR30GRN65/5**	Green Prism®	12/24	130	-	5000	C-9	5.37”	-
		404046	6	**BR30PNK65/5**	Pink Prism®	12/24	130	-	5000	C-9	5.37”	-
		404049	6	**BR30RED65/5**	Red Prism®	12/24	130	-	5000	C-9	5.37”	-
		404051	6	**BR30FL65/CS**	CoverShield® Prism®	1/24	130	-	5000	C-9	5.37”	-
		404053	6	**BR30YEL65/5**	Yellow Prism®	12/24	130	-	5000	C-9	5.37”	-
BR40	**Med.**	404076	6	**BR40FL65/P5**	Flood Prism® Long Life Plus	24	130	550	5000	C-9M	6.56”	-
		75010	†,19	**BR40FL65/H**	Flood	24	120	750	2500	CC-8	6.56”	-
68 WATT												
A19	**Med.**	288580	11	**A19FR68/10**	Frost Prism® Ultra Life®	20/120	130	630	10000	C-9M	4.25”	-

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Incandescent lamps symbols, footnotes and abbreviations are located on pages 151-153.

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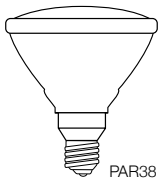
General Service



Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Volts	Lumens	Avg. Life	Design Filament	MOL	Beam Spread
70 WATT												
PAR38	**Med.**	70346	Ⓔ† $,17	**HP38FL70/S/HX**	Silver PAR Flood HaloXen®	1/15	120	1350	1500	CC-8	5.31”	30°
		70352	Ⓔ† $,17	**HP38SP70/S/HX**	Silver PAR Spot HaloXen®	1/15	120	1350	1500	CC-8	5.31”	10°
72 WATT												
A19	**Med.**	76000	Ⓔ$	**A19CL72/H**	Clear	12/120	120	1490	1000	CC-8	4.25”	-
		76003	Ⓔ$	**A19SW72/H**	Soft White	12/120	120	1490	1000	CC-8	4.25”	-
75 WATT												
A19	**Med.**	103714	L, Al	**A19CL75**	Clear	120	130	860	1500	C-9	4.25”	-
		6326	L	**A19CL75/5**	Clear	120	130	700	5000	C-9	4.25”	-
		103706	L, Al	**A19FR75**	Frost	120	130	820	1500	C-9	4.25”	-
		6322	L	**A19FR75/5**	Frost	120	130	680	5000	C-9	4.25”	-
		6222	L	**A19SW75/120**	Soft White	120	120	780	1500	CC-6	4.25”	-
		6152		**A19RS75**	Rough Service	20/120	130	1100	2500	C-9	4.25”	-
		6142		**A19RS75/CS**	CoverShield®	20/120	130	-	2000	C-9	4.25”	-
A21	**Med.**	101248	N	**A21FR75/ND**	Frost Neodymium PureLite®	12/60	120	710	5000	CC-6	5.00”	-
80 WATT												
PAR38	**Med.**	70351	Ⓔ† $,17	**HP38FL80/S/HX**	Silver PAR Flood HaloXen®	1/15	120	1580	1500	CC-8	5.31”	30°
100 WATT												
A19	**Med.**	6327	L	**A19CL100/5**	Clear	120	130	1000	5000	C-9	4.25”	-
		101182	3,8	**A19CL100/SB**	Clear Silver Bowl Prism®	12/120	130	830	5000	C-9	4.25”	-
		6323	L	**A19FR100/5**	Frost	120	130	980	5000	C-9	4.25”	-
		103028	L	**A19FR100/P10**	Frost Prism® Ultra Life®	20/120	120	870	10000	C-9M	4.25”	-
		6223	X	**A19SW100/120**	Soft White	120	120	1050	1500	CC-6	4.25”	-
		6153		**A19RS100**	Rough Service	20/120	130	1150	2500	C-9	4.25”	-
		6143		**A19RS100/CS**	CoverShield®	20/120	130	-	2500	C-9	4.25”	-
A21	**Med.**	101246	N	**A21CL100/ND**	Clear Neodymium PureLite®	12/60	120	1050	5000	CC-6	5.00”	-
		103576	X	**A21FR100/P5**	Frost Prism® Long Life Plus™	12/60	130	1050	5000	C-9M	5.00”	-
		101197	N	**A21FR100/ND**	Frost Neodymium PureLite®	12/60	120	1050	5000	CC-6	5.00”	-
		101190	3,8	**A21FR100/SB**	Inside Frost Silver Bowl Prism®	12/60	130	800	5000	C-9	5.00”	-
		6041		**A21RS100/P5/CS**	CoverShield® Prism®	12/60	130	-	5000	C-9M	5.00”	-

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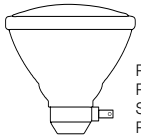
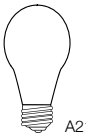
General Service


PAR38
PAR46
Side
Prong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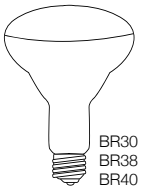
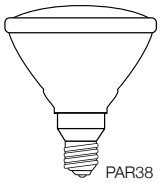
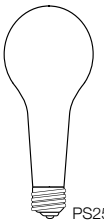
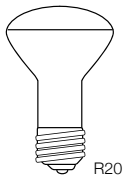

BR30
BR38
BR40


PAR38


PS25


R20

Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Volts	Lumens	Avg. Life	Design Filament	MOL	Beam Spread
100 WATT continued												
BR30	**Med.**	104026	6,10	**BR30CL100/12V**	Clear Pool Lamp	12/24	12	1200	2000	C-6	5.37”	-
BR38	**Med.**	404112	9	**BR38AMB100**	Amber Flood	12/24	130	-	5000	C-9	5.50”	-
		404113	9	**BR38BLU100**	Blue Flood	12/24	130	-	5000	C-9	5.50”	-
		404114	9	**BR38GRN100**	Green Flood	12/24	130	-	5000	C-9	5.50”	-
		404116	9	**BR38RED100**	Red Flood	12/24	130	-	5000	C-9	5.50”	-
		404119	9	**BR38YEL100**	Yellow Flood	12/24	130	-	5000	C-9	5.50”	-
R20	**Med.**	104020	2,6,10	**R20CL100/12V**	Clear Pool Lamp	10/100	12	950	2000	C-6	3.55”	-
100/200/300 WATT												
PS25	**Mog.**	8005	1	**PS25SW3W300**	Soft White 3-Way 100/200/300 Prism®	12/60	120	1200/ 2600/ 3800	1200	CC-6	6.93”	-
120 WATT												
BR40	**Med.**	404065	6	**BR40FL120/5/CS**	CoverShield®	1/24	120	-	5000	C-9	6.56”	-
PAR38	**Side Prong**	65058	X,4,13	**PAR38/3SP120**	Spot	1/12	120	1370	2000	CC-6	4.30”	18°
		65059	X,4,13	**PAR38/3FL120**	Flood	1/12	120	1370	2000	CC-6	4.30”	30°
125 WATT												
BR40	**Med.**	204035	6,11	**BR40CL125/1**	Clear Infrared Prism®	12	120	-	6000	C-9	6.56”	-
150 WATT												
A21	**Med**	6043		**A21RS150/P5/CS**	CoverShield®	1/60	130	-	5000	C-9M	5.00”	-
PS25	**Med.**	401345	3	**PS25CL150/P5/CS**	CoverShield® Prism® Long Life Plus™	1/60	130	-	5000	C-9M	6.93”	-
		104012	X	**R40GRO150**	Plant Grow	12	120	-	5000	C-9	6.56”	-
200 WATT												
PAR46	**Side Prong**	65064	4,13	**PAR46/3MFL200**	Medium Flood	1/12	120	2270	2000	CC-13	4.00”	25x15
		65065	4,13	**PAR46/3NSP200**	Narrow Spot	1/12	120	2270	2000	CC-13	4.00”	12x8
PS25	**Med.**	401347	3	**PS25CL200/P5/CS**	CoverShield® Prism® Long Life Plus™	1/60	130	-	5000	C-9M	6.93”	-
250 WATT												
BR40	**Med.**	404068	6,11	**BR40CL250/1**	Clear Heat Prism®	12	120	-	5000	C-9	6.56”	-
		404066	6,11,16	**BR40CL250/1/CSTF**	Clear CoverShield® PFA Prism®	1/12	120	-	5000	C-9	6.56”	-
PAR38	**Med.**	15558		**Q250PAR/FL**	Flood Major	1/6	120	3600	4200	CC-8	5.31”	30°
		15526		**Q250PAR/SP**	Spot Major	1/6	120	3600	4200	CC-8	5.31”	10°
R40	**Med.**	104044	6,11	**R40RED250/10**	Red Heat Prism®	12	120	-	5000	C-9	6.56”	-
		404071	6,11,16	**R40RED250/10/CSTF**	Red CoverShield® PFA Prism®	1/12	120	-	5000	C-9	6.56”	-

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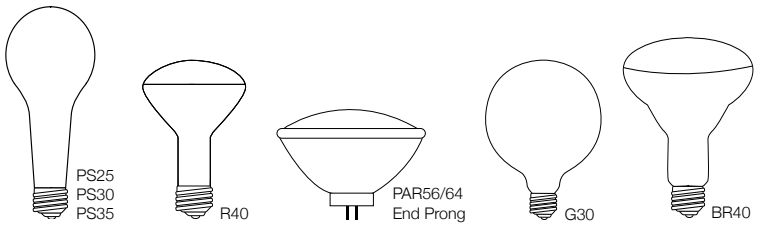
General Service



Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Volts	Lumens	Avg. Life	Design Filament	MOL	Beam Spread
300 WATT												
PAR56	**Mog. End Prong**	65220	4,13	**PAR56MFL300**	Medium Flood	1/12	120	3840	2000	CC-13	5.00”	25x11
		65042	4,13	**PAR56NSP300**	Narrow Spot	1/12	120	3840	2000	CC-13	5.00”	10x8
		65230	4,13	**PAR56WFL300**	Wide Flood	1/12	120	3840	2000	CC-13	5.00”	35x20
	Screw Term.	65225	4,10,13	**PAR56WFL300/12**	Wide Flood	1/12	12	6000	1000	C-6	4.50”	35x20
PS25	**Med.**	401305		**PS25CL300/P5**	Clear Prism® Long Life Plus™	12/60	130	3600	5000	C-9M	6.93”	-
		401306		**PS25FR300/P5**	Frost Prism® Long Life Plus™	12/60	130	3600	5000	C-9M	6.93”	-
PS30	**Med.**	401308		**PS30CL300/P5**	Clear Prism® Long Life Plus™	12/60	130	3600	5000	C-9M	8.06”	-
		401310		**PS30FR300/P5**	Frost Prism® Long Life Plus™	12/60	130	3600	5000	C-9M	8.06”	-
PS35	**Mog.**	401316		**PS35CL300/P5**	Clear Prism® Long Life Plus™	6/24	130	3600	5000	C-9M	9.37”	-
		401318		**PS35FR300/P5**	Frost Prism® Long Life Plus™	6/24	130	3600	5000	C-9M	9.37”	-
R40	**Med.**	104040	5,7,10,12,14	**R40FL300/12V**	Flood Pool Lamp	12/24	12	3000	2000	C-6	6.56”	-
		104035	5,7,12,14	**R40FL300/HG**	Flood Hard Glass	12/24	130	3000	3000	C-6	6.56”	-
375 WATT												
R40	**Med.**	104048	6,7,11,14	**R40CL375**	Clear Infrared Prism®	12/24	120	-	5000	C-9	6.56”	-
		104050	6,7,11,14,16	**R40CL375/CSTF**	CoverShield® PFA Prism®	1/12	120	-	5000	C-9	6.56”	-
400 WATT												
G30	**Med.**	5508	15	**400G/FL**	Clear	1/100	120	6800	800	C-5	5.10”	-
R40	**Med.**	104038	5,12,14	**R40FL400/HG**	Flood Hard Glass	12/24	120	4150	2000	CC-9	6.56”	-
500 WATT												
PAR56	**Mog. End Prong**	843494	X 4,13	**PAR56Q500NSP**	Narrow Spot	1/6	120	8000	4000	CC-6	5.00”	13x8
PAR64	**Mog. End Prong**	839409	13	**PAR64MFL500**	Medium Flood Major	1/12	120	6500	2000	CC-13	6.00”	23x11
		14938	13	**PAR64NSP500**	Narrow Spot Major	1/12	120	6500	2000	CC-13	6.00”	12x7
R40	**Med.**	104042	5,12,14	**R40FL500/HG**	Flood Hard Glass	12/24	120	5400	2000	CC-9	6.56”	-
	Mog.	821734	5,12,14	**R40FL500/3FL**	Flood Major	1/24	120	6500	2000	C-2V	7.25”	-

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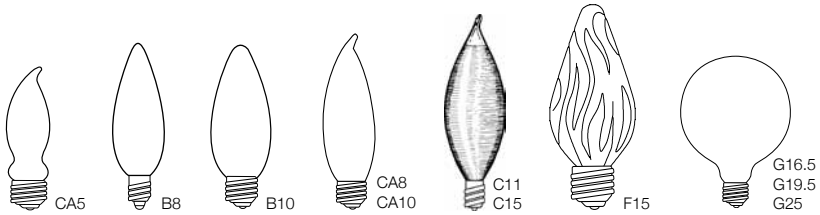
Decorative



Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Volts	Lumens	Avg. Life	Design Filament	MOL	Beam Spread
3 WATT												
CA5	**Cand.**	2502	2	**CFTC3**	Clear Flicker Flame	25/500	130	-	1500	-	2.88”	-
CA10	**Cand.**	2008	2	**CFC3**	Clear Flicker Flame	25/500	130	-	1500	-	4.12”	-
	Med.	2510	2	**EFC3**	Clear Flicker Flame	25/500	130	-	1500	-	4.12”	-
7.5 WATT												
CA5	**Cand.**	2005	2	**CFTC7.5**	Clear	50/1000	130	40	1500	C-7A	2.88”	-
CA8	**Cand.**	2000	2	**CFCP7.5**	Clear 25mm	25/500	130	35	2000	C-7A	3.58”	-
15 WATT												
B8	**Cand.**	1020	2	**CTCP15**	Clear 25mm	25/500	130	95	3000	C-7A	3.15”	-
B10	**Cand.**	1001	2	**CTC15**	Clear 32mm	25/500	130	95	3000	C-7A	3.87”	-
CA8	**Cand.**	2020	2	**CFCP15**	Clear 25mm	25/500	130	95	3000	C-7A	3.58”	-
CA10	**Cand.**	2001	2	**CFC15**	Clear 32mm	25/500	130	95	3000	C-7A	4.12”	-
G16.5	**Cand.**	4001	2	**G16CL15**	Clear	25/500	130	95	3000	C-7A	3.00”	-
		4015	2	**G16WH15**	White	25/500	130	80	3000	C-7A	3.00”	-
25 WATT												
B8	**Cand.**	1021	2	**CTCP25**	Clear 25mm	25/500	130	220	3000	CC-2V	3.15”	-
B10	**Cand.**	1003	2	**CTC25**	Clear 32mm	25/500	130	220	3000	CC-2V	3.87”	-
		101280	X,N,2	**CTC25/ND**	Clear Neodymium PureLite®	10/50	120	140	5000	CC-2V	3.87”	-
		100192	2	**CTF25**	Frost 32mm	25/500	130	220	3000	CC-2V	3.87”	-
	E14	121023		**CTC25/E14**	Clear 32mm	25/500	120	220	3000	CC-2V	3.87”	-
	Med.	1012	2	**ETC25**	Clear 32mm	25/500	130	220	3000	CC-2V	3.87”	-
		1013	2	**ETF25**	Frost 32mm	25/500	130	220	3000	CC-2V	3.87”	-
CA8	**Cand.**	2021	2	**CFCP25**	Clear 25mm	25/500	130	220	3000	CC-2V	3.58”	-
CA10	**Cand.**	2003	2	**CFC25**	Clear 32mm	25/500	130	220	3000	CC-2V	4.12”	-
		2040	2,10	**CFC25/12V**	Clear 32mm	25/500	12	200	2000	C-6	4.12”	-
		2004	2	**CFF25**	Frost 32mm	25/500	130	220	3000	CC-2V	4.12”	-
	Med.	2012	2	**EFC25**	Clear 32mm	25/500	130	220	3000	CC-2V	4.12”	-
		2013	2	**EFF25**	Frost 32mm	25/500	130	220	3000	CC-2V	4.12”	-
C11	**Cand.**	100210	2	**C11SG25**	Clear Spun Glow	25/500	130	-	1500	CC-2V	4.02”	-
C15	**Med.**	100214	2	**C15SG25**	Clear Spun Glow	25/500	130	-	1500	CC-2V	4.49”	-
F15	**Med.**	3001	2	**F15CL25**	Clear	25/250	130	140	3000	C-9	4.50”	-
		3003	2	**F15AMB25**	Amber	25/250	130	-	3000	C-9	4.50”	-
G16.5	**Cand.**	4002	2	**G16CL25**	Clear	25/500	130	220	3000	CC-2V	3.00”	-
		101270	X,N,2	**G16CL25/ND**	Clear Neodymium PureLite®	10/50	120	140	5000	CC-2V	3.00”	-
		4016	2	**G16WH25**	White	25/500	130	170	3000	CC-2V	3.00”	-
G25	**Med.**	5001		**G25CL25**	Clear	10/100	130	150	3500	C-9	4.50”	-
		5002		**G25WH25**	White	10/100	130	140	3500	C-9	4.50”	-

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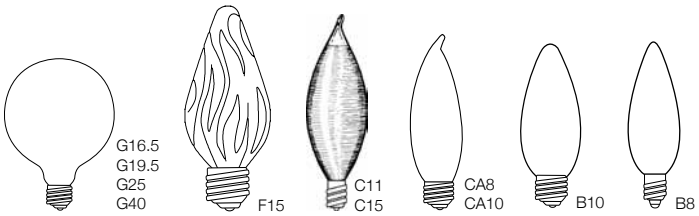
Decorative



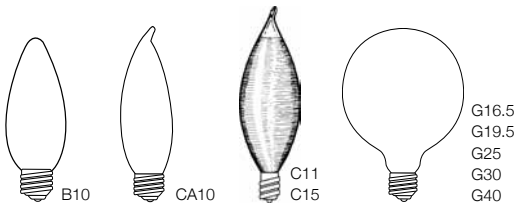
Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Volts	Lumens	Avg. Life	Design Filament	MOL	Beam Spread
40 WATT												
B8	**Cand.**	1023	2	**CTCP40**	Clear 25mm	25/500	130	370	3000	CC-2V	3.15”	-
B10	**Cand.**	1006	2	**CTC40**	Clear 32mm	25/500	130	370	3000	CC-2V	3.87”	-
		1007	2	**CTF40**	Frost 32mm	25/500	130	370	3000	CC-2V	3.87”	-
	E14	121025	X, 2	**CTC40/E14**	Clear 32mm	25/500	130	370	3000	CC-2V	3.87”	-
	Med.	1015	2	**ETC40**	Clear 32mm	25/500	130	370	3000	CC-2V	3.87”	-
		102148	2	**ETC40/CS**	Clear CoverShield®	25/500	130	-	3000	CC-2V	3.87”	-
		1016	2	**ETF40**	Frost 32mm	25/500	130	370	3000	CC-2V	3.87”	-
CA8	**Cand.**	2023	2	**CFCP40**	Clear 25mm	25/500	130	370	3000	CC-2V	3.58”	-
CA10	**Cand.**	2006	2	**CFC40**	Clear 32mm	25/500	130	370	3000	CC-2V	4.12”	-
		2007	2	**CFF40**	Frost 32mm	25/500	130	370	3000	CC-2V	4.12”	-
	Med.	2015	2	**EFC40**	Clear 32mm	25/500	130	370	3000	CC-2V	4.12”	-
		2016	2	**EFF40**	Frost 32mm	25/500	130	370	3000	CC-2V	4.12”	-
C11	**Cand.**	100212	2	**C11SG40**	Clear Spun Glow	25/500	130	-	1500	CC-2V	4.02”	-
C15	**Med.**	100216	2	**C15SG40**	Clear Spun Glow	25/500	130	-	1500	CC-2V	4.49”	-
		100224	X, 2	**C15SG40/AMB**	Amber Spun Glow	25/500	130	-	2000	C-9	4.49”	-
F15	**Med.**	3004	2	**F15CL40**	Clear	25/250	130	300	3000	C-9	4.50”	-
		3006	2	**F15AMB40**	Amber	25/250	130	-	3000	C-9	4.50”	-
G16.5	**Cand.**	4003	2	**G16CL40**	Clear	25/500	130	370	3000	CC-2V	3.00”	-
		4017	2	**G16WH40**	White	25/500	130	320	3000	CC-2V	3.00”	-
G19.5	**Med.**	104504	X, 2	**G19WH40**	White	25/500	130	340	2000	C-9	3.50”	-
G25	**Med.**	5003		**G25CL40**	Clear	10/100	130	300	3500	C-9	4.50”	-
		125003		**G25CL40/120**	Clear	10/100	120	300	3500	C-9	4.50”	-
		102380		**G25CL40/SB**	Clear Silver Bowl Prism®	10/100	130	-	3500	C-9	4.50”	-
		5004		**G25WH40**	White	10/100	130	270	3500	C-9	4.50”	-
		125004	X	**G25WH40/120**	White	10/100	120	280	3500	C-9	4.50”	-
G40	**Med.**	5203		**G40CL40**	Clear	6/24	130	260	5000	C-9	6.93”	-
		5202		**G40WH40**	White	6/24	130	240	5000	C-9	6.93”	-

Ⓔ Means this lamp meets Federal Minimum Efficiency standards.

Incandescent lamps symbols, footnotes and abbreviations are located on pages 151-153.

INCANDESCENT LAMPS

Decorative



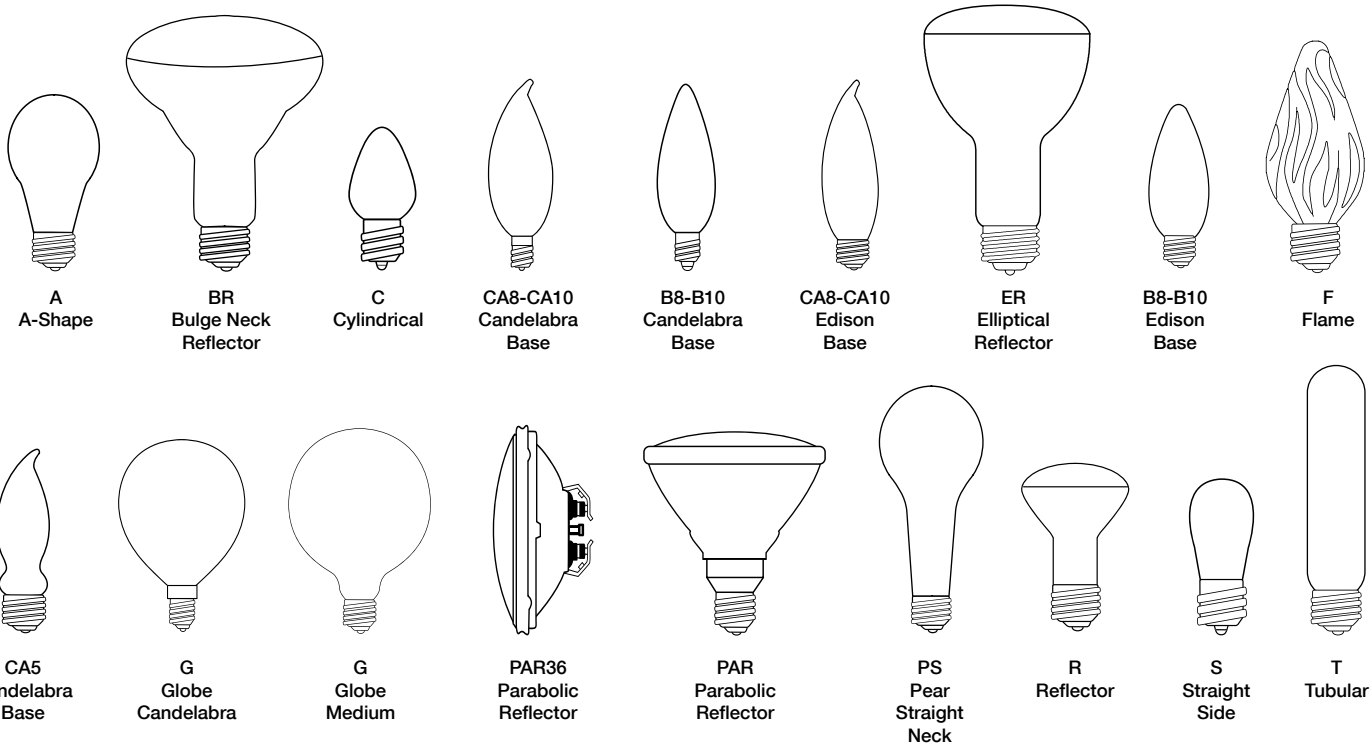
Bulb	Base	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Volts	Lumens	Avg. Life	Design Filament	MOL	Beam Spread
60 WATT												
B10	**Cand.**	1009	2	**CTC60**	Clear 32mm	25/500	130	650	3000	CC-2V	3.87”	-
		101284	X,N,2	**CTC60/ND**	Clear Neodymium PureLite®	10/50	120	500	5000	CC-2V	3.87”	-
		1010	2	**CTF60**	Frost 32mm	25/500	130	640	3000	CC-2V	3.87”	-
	E14	121027	X	**CTC60/E14**	Clear 32mm	25/500	120	650	3000	CC-2V	3.87”	-
	Med.	1018	2	**ETC60**	Clear 32mm	25/500	130	650	3000	CC-2V	3.87”	-
		102146	2	**ETC60/CS**	Clear CoverShield®	25/500	130	-	3000	CC-2V	3.87”	-
		1019	2	**ETF60**	Frost 32mm	25/500	130	640	3000	CC-2V	3.87”	-
CA10	**Cand.**	2009	2	**CFC60**	Clear 32mm	25/500	130	650	3000	CC-2V	4.12”	-
		2010	2	**CFF60**	Frost 32mm	25/500	130	640	3000	CC-2V	4.12”	-
	Med.	2018	2	**EFC60**	Clear 32mm	25/500	130	650	3000	CC-2V	4.12”	-
		2019	2	**EFF60**	Frost 32mm	25/500	130	640	3000	CC-2V	4.12”	-
C11	**Cand.**	100213	2	**C11SG60**	Clear Spun Glow	25/500	130	-	1500	CC-2V	4.02”	-
		100228	X	**C11SG60/AMB**	Amber Spun Glow	25/500	130	-	2000	CC-2V	4.02”	-
C15	**Med.**	100218	2	**C15SG60**	Clear Spun Glow	25/500	130	-	1500	CC-2V	4.49”	-
		100226	X	**C15SG60/AMB**	Amber Spun Glow	25/500	130	-	2000	C-9	4.49”	-
G16.5	**Cand.**	4004	2	**G16CL60**	Clear	25/500	130	650	3000	CC-2V	3.00”	-
		4018	2	**G16WH60**	White	25/500	130	560	3000	CC-2V	3.00”	-
G19.5	**Med.**	104506	2	**G19WH60**	White	25/500	130	550	1500	C-9	3.50”	-
G25	**Med.**	5005		**G25CL60**	Clear	10/100	130	550	3500	C-9	4.50”	-
		102382		**G25CL60/SB**	Clear Silver Bowl	10/100	130	-	3500	C-9	4.50”	-
		5006		**G25WH60**	White	10/100	130	480	3500	C-9	4.50”	-
G30	**Med.**	5506		**G30WH60**	White	10/100	130	480	5000	C-9	5.00”	-
G40	**Med.**	5205		**G40CL60**	Clear	6/24	130	520	5000	C-9	6.93”	-
		5204		**G40WH60**	White	6/24	130	450	5000	C-9	6.93”	-
100 WATT												
G25	**Med.**	5007		**G25CL100**	Clear	10/100	130	1100	3500	C-9	4.50”	-
G40	**Med.**	5207		**G40CL100**	Clear	6/24	130	1100	5000	C-9	6.93”	-
		5206		**G40WH100**	White	6/24	130	950	5000	C-9	6.93”	-

Ⓔ Means this lamp meets Federal Minimum Efficiency standards.
Incandescent lamps symbols, footnotes and abbreviations are located on pages 151-153.

INCANDESCENT LAMPS

Bulb, Base and Filament Identification Guide

Bulb Shapes



A
A-Shape

BR
Bulge Neck
Reflector

C
Cylindrical

CA8-CA10
Candelabra
Base

B8-B10
Candelabra
Base

CA8-CA10
Edison
Base

ER
Elliptical
Reflector

B8-B10
Edison
Base

F
Flame

CA5
Candelabra
Base

G
Globe
Candelabra

G
Globe
Medium

PAR36
Parabolic
Reflector

PAR
Parabolic
Reflector

PS
Pear
Straight
Neck

R
Reflector

S
Straight
Side

T
Tubular

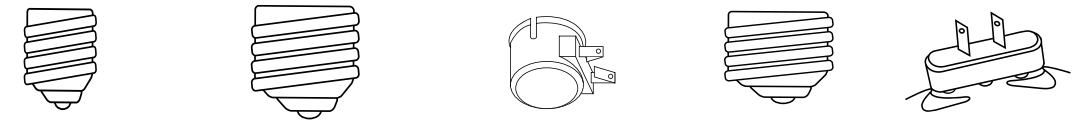
Base Types

Screw
Terminals

DC
Bayonet
BA15d

Candelabra
E12

E14



Intermediate
E17

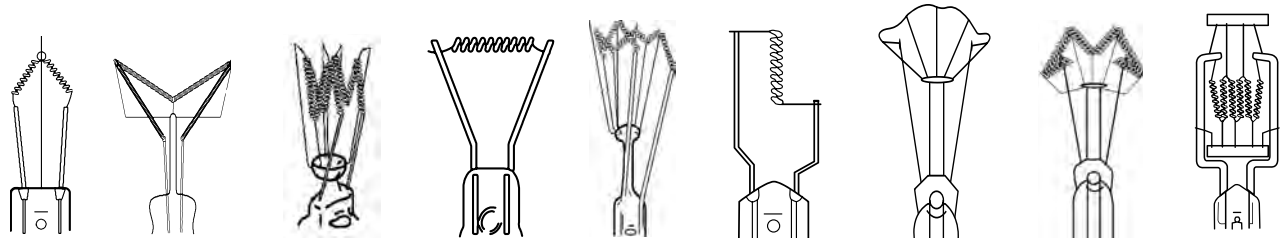
Medium
E26

Medium
Side Prong

Mog.
E39

Mog. End
Prong

Filament Designations



CC-2V

C3-A

C-5

CC-6

C-7A

CC-8

CC-9

C-9M

CC-13

CC indicates coiled-coil filament.

INCANDESCENT LAMPS

Symbols, Footnotes and Abbreviations

SYMBOLS

†	New product introduced within the past year.
Al	Aluminum base.
N	Nickel-plated brass base.
△	Heat-resistant glass.
$	Energy saving product.
Ⓔ	This lamp meets Federal Minimum Efficiency standards.
X	Product will be discontinued when inventory is depleted.
L	Legislated lamp will not be manufactured after January 1, 2014.

FOOTNOTES

1	Operate base down.
2	Operate base down to horizontal.
3	Operate base up.
4	This lamp should be shielded from moisture to prevent breakage.
5	May not give satisfactory performance if accessory equipment is attached to or touches bulb.
6	Do not allow hot bulb to come in contact with liquid or metal parts of the fixture, as glass may shatter. Do not use outdoors or operate near flammable materials. Operate in heat-resistant sockets.
7	Do not use in equipment where base temperature will exceed 500°F.
8	Use only in equipment specially designed to maintain bulb and base temperatures within safe limits.
9	May be used for indoor and outdoor applications.
10	Use only in circuits supplying the voltage indicated on the lamp. Not for use in household sockets.
11	CAUTION: Do not operate near flammable material. Operate only in heat-resistant sockets. WARNING: Use with care. May cause serious burns. The unattended use of infrared heat by children or incapacitated persons is dangerous. Do not place closer than 18" to surface area. Do not use for therapeutic applications unless recommended by a physician. For food warming, use only lamps with heat-resistant glass and/or heat-resistant coating.
12	Although this bulb is made of heat-resistant glass, it may break if moisture falls on it. Not recommended for use in enclosed and/or close-fitting housing.
13	Use only with heat-resistant connector and with lamp supported by bulb rim.
14	Operate only in porcelain sockets.
15	Unsatisfactory operation if operated in positions between horizontal and base up, particularly between 45° from base up and base down.
16	Do not operate in aviaries or around fowl or small animals.
17	See Halogen footnotes 1, 2 and 7 on page 131.
18	See Halogen footnotes 1, 7 and 8 on page 131.
19	See Halogen footnotes 1 and 7 on page 131.

INCANDESCENT LAMPS

Symbols, Footnotes and Abbreviations

ABBREVIATIONS

/1	Suffix used to indicate a Clear Faceted Infrared lamp.
3W	Code abbreviation for Three Way lamps.
/5	Suffix used to indicate 5,000 hour lamps.
/10	Suffix used to indicate Red-Faced Heat lamps.
/12V	Suffix used to indicate 12 Volt lamps.
/20	Suffix used to indicate Prism® UltraLife® 20,000 hour lamps.
/39	Suffix used to indicate 39 Watt HaloXen® PAR lamps.
/120	Suffix used to indicate 120 Volt lamps.
/130	Suffix used to indicate 130 Volt HaloXen® PAR lamps.
/145V	Suffix used to indicate 145 Volt lamps.
/1750	Suffix used to indicate lamps that produce 1750 lumens.
/CAN	Suffix used to indicate lamps with Candelabra (E12) base.
/E12	Suffix used to indicate lamps with an E12 (candleabra) base.
/E14	Suffix used to indicate lamps with an E14 base.
/E17	Suffix used to indicate lamps with an E17 (intermediate) base.
/E26	Suffix used to indicate lamps with an E26 (medium) base.
AMB	Code abbreviation for lamps with an Amber finish.
BG	Code abbreviation for Bug Light lamps.
BLU	Code abbreviation for lamps with a Blue finish.
C	Code abbreviation for lamps with a Ceramic color finish.
CL	Code abbreviation for lamps with a Clear finish.
/CS	Suffix used to indicate CoverShield® safety coated lamps.
/CSTF	Suffix used to indicate CoverShield® PFA safety coated lamps.
DC	Code abbreviation for lamps with a Double Contact Bayonet base (BA15d).
DPNK	Code abbreviation for lamps with a Dawn Pink finish.
FL	Code abbreviation for Flood lamps.
FR	Code abbreviation for lamps with a Frost finish.
GRN	Code abbreviation for lamps with a Green finish.
GRO	Code abbreviation for Plant Grow lamps.
/HG	Suffix used to indicate Hard Glass lamps.
HP	Code abbreviation for Halogen PAR lamps.

ABBREVIATIONS

/HX	Suffix used to indicate HaloXen® lamps.
INT	Code abbreviation for lamps with an Intermediate (E17) base.
L	Code abbreviation for Long Neck Halogen PAR30 lamps.
/M	Suffix used to indicate Major brand lamps (GE, Philips, Osram/Sylvania).
MED	Code abbreviation for lamps with a Medium (E26/27) base.
MFL	Code abbreviation for Medium Flood lamps.
N	Code abbreviation for High-Intensity lamps.
/ND	Suffix used to indicate PureLite® Natural Daylight lamps.
NFL	Code abbreviation for Narrow Flood lamps.
/NL	Suffix used to indicate Night Light.
NSP	Code abbreviation for Narrow Spot lamps.
ORG	Code abbreviation for lamps with an Orange finish.
/P5	Suffix used to indicate Prism® Long Life Plus® 5,000 Hour staggered support C-9M filament lamps.
/P10	Suffix used to indicate Prism® Ultra Life® 10,000 Hour staggered support C-9M filament lamps.
PNK	Code abbreviation for lamps with a Pink finish.
PUR	Code abbreviation for lamps with a Purple finish.
Q	Code abbreviation for Quartz Halogen lamps.
RED	Code abbreviation for lamps with a Red finish.
RS	Code abbreviation for Rough Service lamps.
/S	Code abbreviation for HaloXen® Silver PAR lamps.
/SB	Suffix used to indicate Silver Bowl.
SG	Code abbreviation for Spun Glow decorative lamps.
SP	Code abbreviation for Spot lamps.
SW	Code abbreviation for lamps with a Soft White finish.
/T	Suffix used for colored Incandescent lamps with a Transparent finish.
VNSP	Code abbreviation for Very Narrow Spot lamps.
VWFL	Code abbreviation for Very Wide Flood lamps.
WFL	Code abbreviation for Wide Flood lamps.
WH	Code abbreviation for lamps with a White finish.
XIR	Suffix used to indicate Halogen Infrared lamps.
YEL	Code abbreviation for lamps with a Yellow finish.


C
I
R

SPECIALTY LAMPS

CONTENTS

HOW TO READ A SPECIALTY LAMP TABLE

BULB
Designations indicate shape and size. Illustrations can be found on page 166 and at the top of each page.

PRODUCT NUMBER
Use this product number when placing an order.

FOOTNOTES & SYMBOLS
Related footnotes can be found on page 167.

PRODUCT CODE
Abbreviated product description can also be used for ordering. A key to abbreviations can be found on page 168.

DESCRIPTION
Bulb finish and other important information.

PACKAGE QUANTITY
Indicates minimum sell quantity and smallest shipping carton.

COLOR TEMP.
A term used to describe the color of a light source and is expressed in degrees "Kelvin" (K).

AVERAGE LIFE
Average rated life expressed in hours.

MOL
Indicates maximum overall length in inches.

Bulb	Base	Watts	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	ANSI	Color Temp.	Lumens	Avg. Life	MOL
CoverShield Metal Halide												
ED28	**Mog.**	250	108604	6,9,12,13,14,15	**MH250/U/CSTF**	Clear PFA	1/12	M58/E	4000	21800	10000	8.25"
ED37	**Mog.**	400	108600	6,8,9,12,13,14,15	**MH400/U/CSTF**	Clear PFA	1/6	M59/E	4000	36000	20000	11.50"
	EX39	400	60502	7,8,9,10,11,15	**MP400/BU/CSTF**	Clear Base Up PFA	1/6	M59/O	4000	36000	20000	11.50"

ANSI Code	Bulb	Base	Watts	Volts	Pkg. Qty.	Avg. Life	Filament	Lumens	Color Temp.	Operating Position
Halco Photo/Projection/SSTV										
ETH	Frosted/T4	E11	150	120	1/10	2000	CC-8	2700	2900	U
***EVW**	MR16	GY5.3	250	82	1/10	50	CC-8	-	3300	BDTH
***EXR**	MR13	GX5.3	300	82	1/10	35	CC-8	-	3350	BDTH

ANSI CODE
The specific electrical characteristics of a lamp.

BASE
Indicates base type. Full base descriptions and illustrations can be found on page 166.

VOLTS
Indicates the product's design voltage of operation.

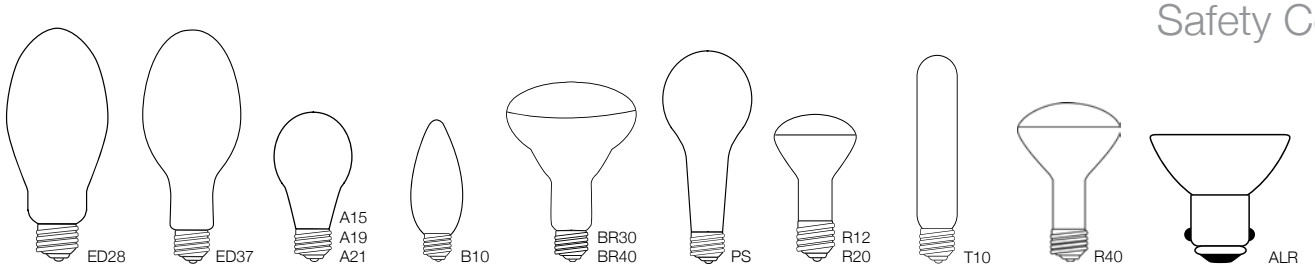
FILAMENT
Filament types are illustrated on page 166.

LUMENS
The lamp's average light output at 40% of rated life.

OPERATING POSITION
Indicates the approved operating positon of a lamp.

SPECIALTY LAMPS

Safety Coated



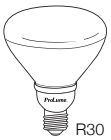
Bulb	Base	Watts	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	ANSI	Color Temp.	Lumens	Avg. Life	MOL
CoverShield Metal Halide												
ED28	**Mog.**	250	108604	6,9,12,13,14,15	**MH250/U/CSTF**	Clear PFA	1/12	M58/E	4000	21800	10000	8.25”
ED37	**Mog.**	400	108600	6,8,9,12,13,14,15	**MH400/U/CSTF**	Clear PFA	1/6	M59/E	4000	36000	20000	11.50”
	EX39	400	60502	7,8,9,10,11,15	**MP400/BU/CSTF**	Clear Base Up PFA	1/6	M59/O	4000	36000	20000	11.50”

Bulb	Base	Watts	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	Lumens	Avg. Life	MOL
CoverShield Incandescent										
A15	**Med.**	40	90300		**A15CL40/CSTF**	Clear PFA	20/120	300	3000	3.50”
		40	6146		**A15RS40/CS**	Clear	20/120	300	1500	3.50”
		60	6147		**A15RS60/CS**	Clear	20/120	500	1500	3.50”
A19	**Med.**	25	101124		**A19RS25/CS**	Clear	20/120	160	2000	4.25”
		40	101125		**A19RS40/CS**	Clear	20/120	300	2000	4.25”
		60	6141		**A19RS60/CS**	Clear	20/120	500	2500	4.25”
		75	6142		**A19RS75/CS**	Clear	20/120	680	2000	4.25”
		100	6143		**A19RS100/CS**	Clear	20/120	960	2500	4.25”
A21	**Med.**	100	6041		**A21RS100/P5/CS**	Clear	12/60	800	5000	5.00”
		150	6043		**A21RS150/P5/CS**	Clear	1/60	1300	5000	5.00”
B10	**Med.**	40	102148	16	**ETC40/CS**	Clear	25/500	370	3000	3.87”
		60	102146	16	**ETC60/CS**	Clear	25/500	650	3000	3.87”
BR30	**Med.**	65	404051	18	**BR30FL65/CS**	Flood	1/24	580	5000	5.37”
BR40	**Med.**	120	404065	18	**BR40FL120/5/CS**	Flood	1/24	1200	5000	6.56”
		125	90320		**BR40CL125/1/CSTF**	Clear Heat PFA	1/12	-	6000	6.56”
		250	404066	18,20,22	**BR40CL250/1/CSTF**	Clear Heat PFA	1/12	-	5000	6.56”
PS25	**Med.**	150	401345	17	**PS25CL150/P5/CS**	Clear	1/60	1300	5000	6.93”
		200	401347	17	**PS25CL200/P5/CS**	Clear	1/60	2000	5000	6.93”
R12	**BA15s**	20	1383/CS		**1383/CS**	S.C. Bayonet 13V	10/1000	-	300	2.60”
R20	**Med.**	30	10102		**R20FL30/CS**	Flood	10/100	140	3000	3.93”
		50	104016		**R20FL50/CS**	Flood	10/100	210	2000	4.80”
R40	**Med.**	250	404071	18,20,21	**R40RED250/10/CSTF**	Red Heat PFA	1/12	-	5000	6.56”
		375	104050	15,18,19,20,21	**R40CL375/CSTF**	Clear Heat PFA	1/12	-	5000	6.56”
T10	**Med.**	40	106228		**T10CL40/CS**	Clear	25/200	280	2500	5.00”
CoverShield Halogen										
ALR	**BA15d**	20	90351		**GBF/CS**	Flood Frosted 12V	1/50	750cp	2000	1.46”

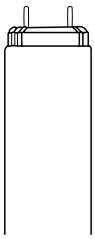
Specialty lamp symbols, footnotes and abbreviations are located on pages 167-168.

SPECIALTY LAMPS

Safety Coated


R30


T5
Miniature Bi-Pin

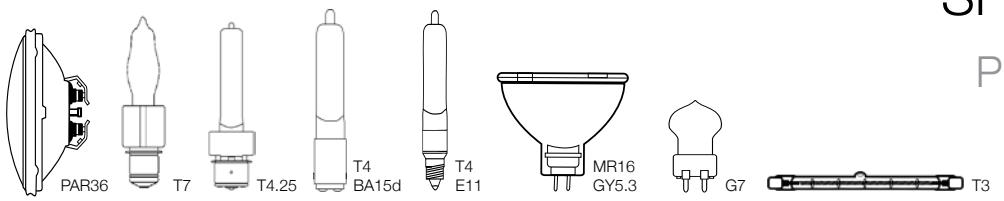

T8/T12
Medium Bi-Pin

Bulb	Base	Watts	Product Number	Footnotes	Product Code	Description	Pkg. Qty.	ANSI	Color Temp.	Lumens	Avg. Life	MOL
CoverShield Compact Fluorescent												
R30	**Med.**	16	46106	X 1,2,4	**CFL16/50/R30/CS**	Natural White Flood	6/24	5000	82	750	8000	5.56”
CoverShield Linear Fluorescent												
T5	**Min. Bi-Pin**	28	90015	X E 4,5	**F28T5/835/ECO/IC/CS**	835 Phosphor	25	3500	86	2900	24000	46”
		28	90016	X E 4,5	**F28T5/841/ECO/IC/CS**	841 Phosphor	25	4100	86	2900	24000	46”
		54	90051	E 4,5	**F54T5/835/HO/ECO/IC/CS**	835 Phosphor High Output	25	3500	86	5000	24000	46”
		54	90052	E 4,5	**F54T5/841/HO/ECO/IC/CS**	841 Phosphor High Output	25	4100	86	5000	24000	46”
		54	90053	E 4,5	**F54T5/850/HO/ECO/IC/CS**	850 Phosphor High Output	25	5000	86	5000	24000	46”
T8	**Med. Bi-Pin**	28	90081	X E 4	**F28T8/835/ECO/IC/CS**	835 Phosphor	25	3500	86	2800	24000	48”
		32	90084	E 4	**F32T8/735/ECO/CS**	735 Phosphor	25	3500	78	2850	24000	48”
		32	90085	E 4	**F32T8/741/ECO/CS**	741 Phosphor	25	4100	78	2850	24000	48”
		32	90089	E 4	**F32T8/750/ECO/CS**	750 Phosphor	25	5000	78	2850	24000	48”
		32	90094	E 4	**F32T8/835/ECO/CS**	835 Phosphor	25	3500	86	3050	24000	48”
		32	90095	E 4	**F32T8/841/ECO/CS**	841 Phosphor	25	4100	86	3050	24000	48”
		32	90096	E 4	**F32T8/850/ECO/CS**	850 Phosphor	25	5000	86	3050	24000	48”

Specialty lamp symbols, footnotes and abbreviations are located on pages 167-168.

SPECIALTY LAMPS

Photo/Projection/SSTV



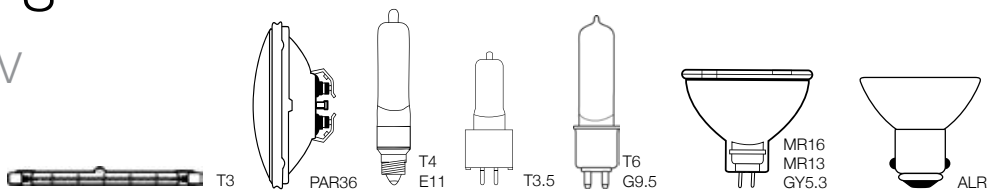
ANSI Code	Bulb	Base	Watts	Volts	Pkg. Qty.	Avg. Life	Filament	Lumens	Color Temp.	Operating Position
Halco Photo/Projection/SSTV										
DVS	T3	R7s	500	130	1/10	2000	C-8	9500	3000	HOR
***DWE**	PAR36	Screw Terminals	650	120	1/12	100	C-6	24000	3200	U
***DYS/DYV/BHC/5**	G7	GZ9.5	600	125	1/10	150	CC-6	17000	3200	HOR
***EGE**	T4.25	P28s	500	120	1/10	2000	CC-8	10450	2950	U
EHM	T3	R7s	300	120	1/10	2000	C-8	5000	2950	HOR
EHT	T4	E11	250	120	1/10	2000	CC-8	4500	2950	U
***EHV**	T4	E11	325	120	1/10	500	CC-8	7800	3000	U
EJA	MR16	GX5.3	150	21	1/10	40	CC-6	-	3400	BDTH
***EJL**	MR16	GX5.3	200	24	1/10	50	CC-6	-	3400	BDTH
***EJM**	MR16	GX5.3	150	21	1/10	40	CC-6	-	3350	BDTH
EJV	MR16	GX5.3	150	21	1/10	40	CC-8	-	3350	BDTH
EKE	MR16	GX5.3	150	21	1/10	200	CC-6	-	3250	BDTH
ELC	MR16	GX5.3	250	24	1/10	50	CC-6	-	3400	BDTH
***ENH**	MR16	GY5.3	250	120	1/10	175	CC-8	-	3250	BDTH
***ENX**	MR16	GY5.3	360	82	1/10	75	CC-8	-	3300	BDTH
***ENX/5**	MR16	GY5.3	360	86	1/10	100	CC-8	-	3300	BDTH
***ESD**	MR16	GY5.3	150	120	1/10	12	CC-8	-	3350	BDTH
***ESL**	T4	E11	150	120	1/10	1000	CC-2V	2800	2900	U
***ESM**	Frosted/T4	E11	250	120	1/10	2000	CC-8	4850	2950	U
***ESN**	T4	E11	100	120	1/10	750	CC-2V	1900	2850	U
***ESP**	T4	BA15d	150	120	1/10	1000	CC-2V	2400	2950	U
***ESR**	T4	BA15d	100	120	1/10	1000	CC-2V	1900	3000	U
***ESS**	T4	BA15d	250	120	1/10	2000	CC-8	5000	3000	U
***ETB**	Frosted/T4	BA15d	250	120	1/10	2000	CC-8	4700	2950	U
ETC	T4	BA15d	150	20	1/10	2000	CC-8	2800	2900	U
***ETD**	Frosted/T4	BA15d	100	120	1/10	750	CC-2V	1750	2900	U
***ETE**	Frosted/T4	E11	100	120	1/10	750	CC-2V	1750	2900	U
ETF	Frosted/T4	BA15d	150	120	1/10	2000	CC-8	2700	2900	U
***ETG**	T4	E11	150	120	1/10	2000	CC-8	2400	2950	U

* Item will be discontinued when inventory is depleted.

Specialty lamp symbols, footnotes and abbreviations are located on pages 167-168.

SPECIALTY LAMPS

Photo/Projection/SSTV

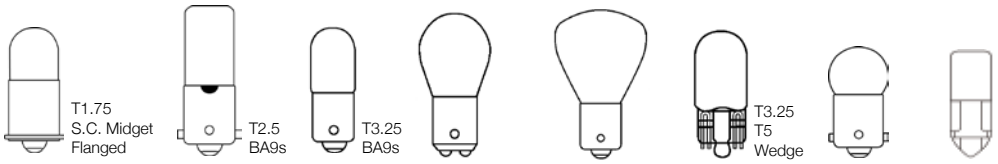


ANSI Code	Bulb	Base	Watts	Volts	Pkg. Qty.	Avg. Life	Filament	Lumens	Color Temp.	Operating Position
Halco Photo/Projection/SSTV continued										
ETH	Frosted/T4	E11	150	120	1/10	2000	CC-8	2700	2900	U
***EVW**	MR16	GY5.3	250	82	1/10	50	CC-8	-	3300	BDTH
***EXR**	MR13	GX5.3	300	82	1/10	35	CC-8	-	3350	BDTH
***EXR/5**	MR13	GX5.3	300	86	1/10	70	CC-8	-	3350	BDTH
***EXY**	MR13	GX5.3	250	82	1/10	200	CC-8	-	3200	BDTH
***EYA**	MR16	GY5.3	200	82	1/10	50	CC-8	-	3300	BDTH
***EYB**	T3.5	G5.3	360	82	1/10	75	CC-8	10000	3300	BDTH
***EYB/5**	T3.5	G5.3	360	86	1/10	150	CC-8	10000	3300	BDTH
EYV	Frosted/T4	E11	500	130	1/10	2000	CC-8	8075	3000	U
EYW	T4	E11	500	130	1/10	2000	CC-8	8500	3000	U
***FAL**	T4	R7s	420	120	1/10	90	CC-8	11000	3200	U
***FBO**	PAR36	Screw Terminals	650	120	1/12	100	C-6	38000	3400	U
***FCL**	T3	R7s	500	120	1/10	2000	C-8	9500	3000	HOR
***FCM**	T3	R7s	1000	120	1/10	300	C-8	27000	3200	HOR
***FCR**	T3.5	GY6.35	100	12	1/10	50	C-6F	2900	3250	BDTH
FCS	T4	G6.35	150	24	1/10	50	C-6F	4500	3400	ANY
***FEL**	T6	G9.5	1000	120	1/10	300	CC-8	27000	3200	BDTH
***FHM**	Frosted/T3	R7s	1000	120	1/10	300	C-8	26000	3200	HOR
***FHS**	MR13	GX5.3	300	82	1/10	70	CC-8	-	3300	BDTH
***FHS/5**	MR13	GX5.3	300	86	1/10	140	CC-8	-	3300	BDTH
FLK	T6	G9.5	575	115	1/10	300	CC-8	16000	3200	U
***GBE**	ALR12	BA15d	20	12	1/10	2000	CC-8	1500cp	3000	U
GBF	ALR12	BA15d	20	12	1/10	2000	CC-8	750cp	3000	U
GBF/CS	ALR12	BA15d	20	12	1/10	2000	CC-8	750cp	3000	U
H111	MR16	GX5.3	200	19.7	1/100	500	CC-8	-	3000	BDTH

* Item will be discontinued when inventory is depleted.

Specialty lamp symbols, footnotes and abbreviations are located on pages 167-168.

Miniatures



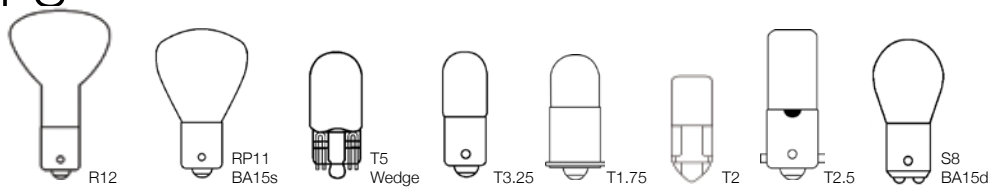
Product Code	Bulb	Base	Primary Application	Volts	Amps or Watts	Pkg. Qty.	MSCP	Avg. Life	Design Filament	MOL
Miniatures										
55	G4.5	BA9s	Indicator	7	0.41	10/2000	2	500	C-2R	1.07”
***57**	G4.5	BA9s	Auto, Instrument	14	0.24	10/2000	2	500	C-2V	1.07”
73	T1.75	Wedge	Indicator	14	0.08	10/2000	0.3	15000	C-2V	0.80”
***74**	T1.75	Wedge	Auto	14	0.10	10/2000	0.7	1000	C-2V	0.80”
85	T1.75	Wedge	Indicator	28	0.04	10/2000	0.3	7000	C-2F	0.80”
***86**	T1.75	Wedge	Indicator	6.3	0.20	10/2000	0.4	20000	C-2V	0.80”
***89**	G6	BA15s	Auto	13	0.58	10/2000	6	750	C-2R	1.40”
93	S8	BA15s	Auto	12.8	1.04	10/2000	15	700	C-6	2.00”
94	S8	BA15d	Auto, Marine	12.8	1.04	10/2000	15	700	C-6	2.00”
120MB/M	T2.5	BA9s	Tel. Indicator	120	0.025	10/100	0.36	10000	CC-3A	1.20”
130MB	T2.5	BA9s	Indicator	130	0.025	10/2000	0.36	10000	CC-3A	1.19”
***159**	T3.25	Wedge	Indicator	6.3	0.15	10/2000	0.34	5000	C-2R	1.06”
161	T3.25	Wedge	Auto, Instrument	14	0.19	10/2000	1	4000	C-2F	1.06”
194	T3.25	Wedge	Auto	14	0.27	10/2000	2	2500	C-2F	1.10”
***259**	T3.25	Wedge	Radio	6.3	0.25	10/2000	0.65	5000	C-2R	1.06”
***313**	T3.25	BA9s	Aircraft	28	0.17	10/2000	3.5	500	C-2F	1.19”
***316**	T3.25	BA9s	Aircraft	6	0.70	10/2000	3.4	500	C-2R	1.19”
***400**	T3.25	Wedge	Aircraft	28	0.10	10/2000	1.6	1000	C-2F	1.06”
***456**	G4.5	BA9s	Instrument	28	0.17	10/2000	2	5000	C-2F	1.07”
464	T3.25	Wedge	Aircraft	28	0.17	10/2000	3	1500	C-2F	1.06”
555	T3.25	Wedge	Pinball	6.3	0.25	10/2000	0.9	3000	C-2R	1.06”
590	T3.25	Wedge	Strip Lighting	13.5	0.37	10/2000	4	300	C-2V	1.06”
656	T3.25	Wedge	Indicator	28	0.06	10/2000	0.62	2500	C-2F	1.06”
657	T3.25	Wedge	Indicator	28	0.08	10/2000	0.62	15000	C-2F	1.06”
658	T3.25	Wedge	Indicator	14	0.08	10/2000	0.31	15000	C-2F	1.06”
755	T3.25	BA9s	Indicator	6.3	0.15	10/2000	0.33	20000	C-2R	1.20”
756	T3.25	BA9s	Indicator	14	0.08	10/2000	0.31	15000	C-2F	1.19”
757	T3.25	BA9s	Indicator	28	0.08	10/2000	0.62	15000	C-2F	1.19”
904	T5	Wedge	Auto	13.5	0.69	10/2000	4	5000	C-2F	1.50”
906	T5	Wedge	Auto	13.0	0.69	10/2000	6	1000	C-2F	1.50”
909	T5	Wedge	Emergency Lighting	6.0	0.62	10/2000	3	50	C-2R	1.50”
912	T5	Wedge	Auto	12.8	1.00	10/2000	12	1000	C-2R	1.50”

* Item will be discontinued when inventory is depleted.

Specialty lamp symbols, footnotes and abbreviations are located on pages 167-168.

SPECIALTY LAMPS

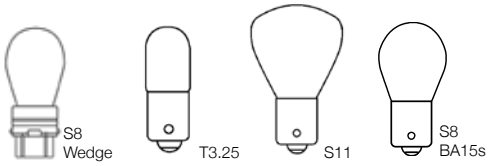
Miniatures



Product Code	Bulb	Base	Primary Application	Volts	Amps or Watts	Pkg. Qty.	MSCP	Avg. Life	Design Filament	MOL
Miniatures continued										
912x Xenon	T3.25	Wedge	Garden	12.8	1.00	10/600	12	10000	C-2R	1.50”
918	T5	Wedge	Garden	12.8	0.56	10/2000	6.5	500	C-2R	1.50”
918x Xenon	T3.25	Wedge	Garden	12.8	0.56	10/600	6.5	10000	C-2R	1.50”
921	T5	Wedge	Auto	12.8	1.40	10/2000	21	500	C-2R	1.50”
921x Xenon	T3.25	Wedge	Auto	12.8	1.4	10/600	21	10000	C-2R	1.50”
1141	S8	BA15s	Auto	12.8	1.44	10/2000	21	1000	C-6	2.00”
1142	S8	BA15d	Auto	12.8	1.44	10/2000	21	1000	C-6	2.00”
1156	S8	BA15s	Auto, Stop	12.8	2.10	10/2000	32	1200	C-6	2.00”
1195	RP11	BA15s	Auto	12.5	3.00	10/500	50	300	C-2V	2.30”
***1196**	RP11	BA15d	Auto	12.5	3	10/500	50	300	C-2R	2.25”
***1229**	S8	BA15d	Emergency Lighting	40	0.38	10/1000	15	400	C-2V	2.00”
***1317**	B6	BA15s	Aircraft, Emergency	6	0.51	10/1000	3.4	100	C-6	1.75”
1383	R12	BA15s	Aircraft, Reading	13	20	10/1000	-	300	C-8	2.60”
1383/CS	R12	BA15s	Aircraft, Reading	13	20	10/1000	-	-	C-8	2.60”
***1460X**	S8	D.C. Pre-Focus	Microscope	6.5	2.75	10/500	23	100	C-6	2.00”
***1493**	S8	BA15d	Microscope	6.5	2.75	10/1000	23	100	C-6	2.00”
***1495**	T4.5	BA9s	Aircraft	28	0.30	10/1000	6	500	C-2F	1.38”
***1591**	S8	BA15s	Aircraft	25	0.61	10/1000	15	1000	C-2V	2.00”
1612	S8	BA15d	Instrument	5.4	1.9	10/1000	10	1000	C-6	2.00”
***1619**	S8	BA15s	Instrument	6.7	1.90	10/1000	15	500	C-6	2.00”
1630	S8	D.C. Pre-Focus	Instrument	6.5	2.75	10/500	23	100	C-6	2.00”
***1638**	S8	BA15d	Marine	28	1.02	10/1000	32	500	2C-6	2.00”
***1680**	S8	BA15s	Aircraft	6	4.10	10/1000	32	300	C-6	2.00”
***1680X**	S8	BA15s	Aircraft	6	4.10	10/1000	32	300	C-6	2.00”
***1691AF**	S8	BA15s	Aircraft, Frosted	28	0.61	10/1000	-	1000	2C-2R	2.00”
***1777**	S8	BA15s	Aircraft	12.8	1.52	10/1000	26	400	C-2R	2.00”
***1813**	T3.25	BA9s	Radio	14.4	0.10	10/2000	0.86	1000	C-2V	1.20”
1818	T3.25	BA9s	Aircraft	24	0.17	10/2000	3.3	250	C-2F	1.20”
1819	T3.25	BA9s	Indicator	28	0.04	10/2000	0.34	2500	C-2F	1.20”
1820	T3.25	BA9s	Indicator	28	0.10	10/2000	1.6	1000	C-2F	1.20”
***1822**	T3.25	BA9s	Inidcator	36	0.10	10/2000	2.1	1000	C-2F	1.20”
***1828**	T3.25	BA9s	Indicator	37.5	0.05	10/2000	0.65	3000	C-2F	1.20”

* Item will be discontinued when inventory is depleted.

Specialty lamp symbols, footnotes and abbreviations are located on pages 167-168.

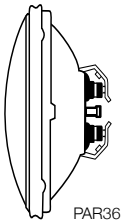


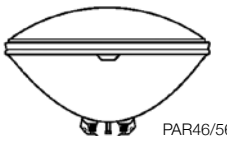
Product Code	Bulb	Base	Primary Application	Volts	Amps or Watts	Pkg. Qty.	MSCP	Avg. Life	Design Filament	MOL
Miniatures continued										
1829	T3.25	BA9s	Indicator	28	0.07	10/2000	1	1000	C-2F	1.20”
1835	T3.25	BA9s	Indicator	55	0.05	10/2000	1.1	5000	C-2F	1.20”
***1864**	T3.25	BA9s	Aircraft	28	0.17	10/2000	3	1500	C-2F	1.20”
***1866**	T3.25	BA9s	Radio	6.3	0.25	10/2000	0.65	5000	C-2R	1.20”
***2232**	S8	BA15s	Aircraft	28	0.64	10/1000	18	2000	CC-8	2.00”
***2233**	S8	BA15s	Aircraft	28	0.77	10/1000	21	2000	CC-8	2.00”
***3011**	S11	BA15s	Aircraft	28	1.29	10/500	44	1000	C-2V	2.38”
3156	S8	Plastic Wedge	Auto, Stop	12.8	2.10	10/2000	32	1200	C-6	2.10”
3155K	S8	Plastic Wedge	Auto, Signal	12.8	1.60	10/2000	21	5000	C-6	2.10”
3156K	S8	Plastic Wedge	Auto, Stop	12.8	2.10	10/2000	32	5000	C-6	2.10”
***18S11/1SC**	S11	BA15s	Railway Signal	10	18W	10/500	360lm	2000	CC-6	2.37”
***25S11/4SC**	S11	BA15s	Railway Signal	10	25W	10/500	200lm	1000	CC-6	2.37”

* Item will be discontinued when inventory is depleted.
Specialty lamp symbols, footnotes and abbreviations are located on pages 167-168.

SPECIALTY LAMPS

Sealed Beam


PAR36


PAR46/56/64

Product Code	Bulb	Base	Volts	Watts	Pkg. Qty.	CBCP	Avg. Life	Design Filament	Beam Spread	MOL
Sealed Beam										
***4405**	PAR36	Screw Terminals	12.8	30	1/12	50000	100	C-6	6	2.75”
4406	PAR36	Screw Terminals	12.8	35	1/12	600	300	C-6	80	2.75”
4411	PAR36	Screw Terminals	12.8	35	1/12	3000	300	C-6	-	2.75”
4414	PAR36	Screw Terminals	12.8	18	1/12	1500	300	C-6	50	2.75”
4415	PAR36	Screw Terminals	12.8	35	1/12	9000	300	C-6	40	2.75”
4446	PAR36	Screw Terminals	12.8	25	1/12	400	300	C-6	80	2.75”
4505	PAR36	Screw Terminals	28	50	1/12	45000	400	C-6	5	2.75”
***4509**	PAR36	Screw Terminals	13	100	1/12	110000	25	C-6	12x6	2.75”
4515	PAR36	Screw Terminals	6.4	30	1/12	55000	100	C-6	7x6	2.75”
H4515	PAR36	Screw Terminals	6.4	30	1/12	65000	100	C-6	7x6	2.75”
***4535**	PAR46	Screw Terminals	6.4	30	1/12	95000	100	C-6	5.5	4.00”
4545	PAR56	Screw Terminals	12	100	1/12	225000	100	C-6	9	5.00”
***4552**	PAR64	Screw Terminals	28	250	1/6	500000	25	CC-8	7x8	6.00”
***4553**	PAR46	Screw Terminals	28	250	1/12	300000	25	CC-8	11x12	4.00”
***4559**	PAR64	Screw Terminals	28	600	1/6	600000	25	C-6	11x12	6.00”
***4587**	PAR36	Screw Terminals	28	250	1/12	40000	25	CC-8	40	2.75”
***4596**	PAR36	Screw Terminals	28	250	1/12	150000	25	CC-8	11x12	2.75”
7613	PAR36	Screw Terminals	6	8	1/12	400	50	C-6	30	2.75”
7613-1	PAR36	Slip-on Terminals	6	8	1/6	400	50	C-6	30	2.75”

* Item will be discontinued when inventory is depleted.

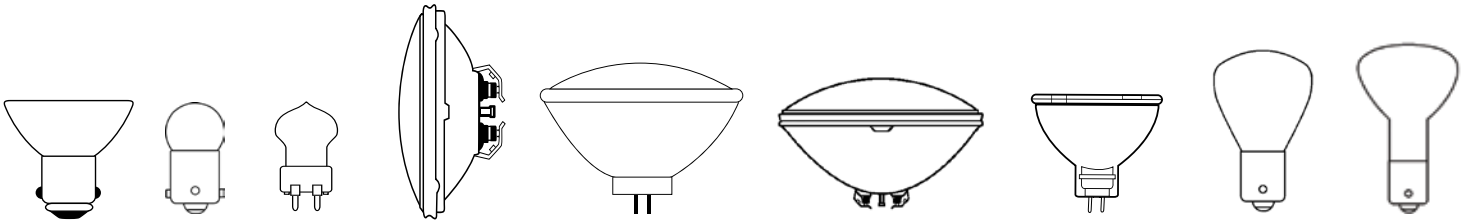
Specialty lamp symbols, footnotes and abbreviations are located on pages 167-168.

Product Number	Product Code	Description	Terminal	Pkg. Qty.	Lead Length
Tube Guards					
91020	**TG32T8CL**	4’ T8 Clear Tube Guard with Endcap	-	48	-
91021	**TG40T12CL**	4’ T12 Clear Tube Guard with Endcap	-	24	-
91022	**TG96T8CL**	8’ T8 Clear Tube Guard with Endcap	-	48	-
91023	**TG96T12CL**	8’ T12 Clear Tube Guard with Endcap	-	24	
Adapters					
91001	**ADP/E26/GU24**	Locking Adapter E26 to GU24	-	1/200	-
91002	**ADP/E39/E26**	Porcelain Adapter E39 to E26	-	1/200	-
Extenders					
91000	**ADP/E26/E26**	Porcelain Extender E26	-	1/200	-
Sockets					
91010	**SKT/E39/4KV**	Mog. Base Porcelain Pulse Rated HID Socket 4KV	Screw	1/100	10”
91011	**SKT/E26/4KV**	Medium Base Porcelain Pulse Rated HID Socket 4KV	Screw	25/200	18”

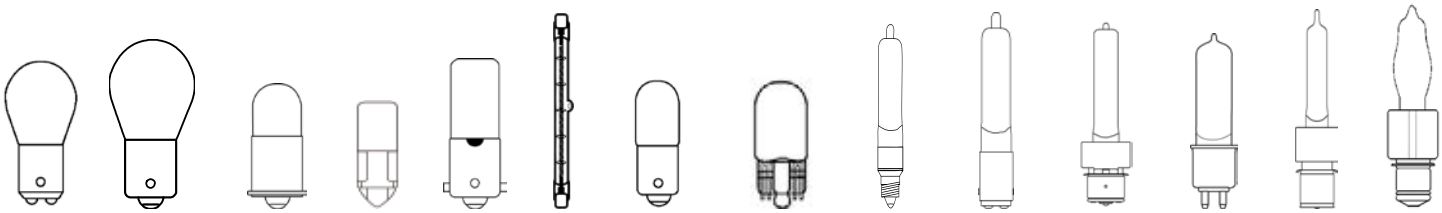
SPECIALTY LAMPS

Bulb, Base and Filament Identification Guide

Bulb Shapes



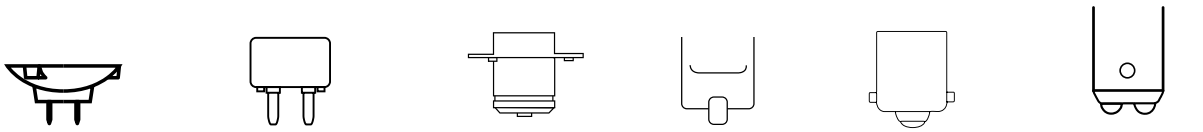
ALR | G6 | G7 | PAR36 | PAR64 | PAR46/56/64 | MR16 | RP11 | R12



S8 BA15d | S8 BA15s | T1.75 | T2 | T2.5 | T3 | T3.25 | T3.25/T5 | T4 E11 | T4 | T4.25 | T5/T6 | T6 | T7

Base Types

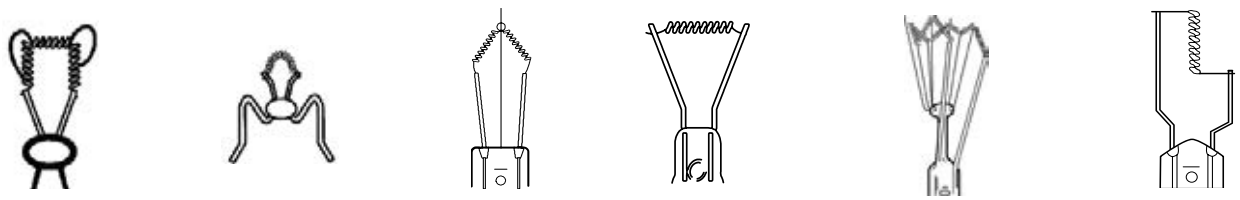
E11 Mini-Can | E12 | E17 | E26 Medium | G4 | G6.35



G5.3/GX5.3 | G9.5/GZ9.5 | P28s Medium Prefocus | R7s | SC Bayonet BA15s | DC Bayonet BA15d

SC Midget Flanged | SC Miniature Bayonet BA9s | Screw Terminals | Slip Terminals | Slide #5 | Plastic Wedge | Wedge

Filament Designations



C-2F | C-2R | C-2V CC-2V | C-6 CC-6 | CC-7A | C-8 CC-8

CC indicates coiled-coil filament.

SPECIALTY LAMPS

Symbols, Footnotes and Abbreviations

SYMBOLS

Ⓔ	This lamp meets Federal Minimum Efficiency standards.
	ProLume® Eco-Shield® Low-Mercury Fluorescent lamps pass the Federal TCLP for hazardous wastes.
X	Product will be discontinued when inventory is depleted.

FOOTNOTES

1	Indoor use only. Outdoor use requires weather-protected fixture. All self-ballasted lamps meet part 18 of the FCC rules. These products may cause interference with AM radios, cordless telephones and remote control devices. If interference continues, move the lamp away from the device or plug into a different outlet.
2	ProLume® lamps with an integrated electronic ballast designed for 120-volt operation. Lamps operated at a higher voltage or in recessed or enclosed fixtures will have reduced life. Do not use with dimmers. Before using with photocell or electronic timing devices, check device for compatibility with compact fluorescent lamps. Use with incompatible devices will result in premature lamp failure. These products are UL listed.
3	UL approved for totally enclosed fixtures with a maximum ballast case temperature of 90°C for GU24 base lamps, 75°C for medium base lamps.
4	Average life under specified test conditions with lamps turned off and restarted every three hours. Lamp life is longer if lamps are started less frequently.
5	Lamp designed for use with Programmed Start ballast. Lamp operates at 170mA. Minimum starting temperature is -15°F, with peak operating temperature at 95°F.
6	Lamps classified as E-type are used ONLY in suitably enclosed luminaries. See lamp warning.
7	Lamps classified as O-type comply with ANSI standard C78.387 for containment testing and may be used in open luminaries. See lamp warning.
8	20,000 average rated life based on 10hrs/start. 30,000 average rated life based on 120 hrs/start.
9	Color characteristics may vary somewhat from one lamp to another. Time should be allowed for lamp to stabilize in color when it is turned on for the first time or if for any reason its operating position is changed. This may require several hours of operation, with more than one start. Lamp color and output may change temporarily if the lamp is subjected to excess vibration or shock. Lamp color characteristics may change after long accumulated operating time.
10	Use with 4000 Volt pulse-rated sockets only.
11	Performance may not be satisfactory unless operated within specified operating positions.
12	Requires ballast that is designed to operate all popular brands of metal halide lamps. 1000W types will operate from H36 conventional lag type ballast for Mercury Vapor lamps at ambient temperatures of 50°F or higher. 1000W types must not be operated at 1500W or higher.
13	Rated average life: vertical ±15°. Other positions 75% of rated life.
14	In general, horizontal lumens will be 5-10% lower than the vertical lumen values.
15	Do not operate in aviaries or around fowl or small animals.

SPECIALTY LAMPS

Symbols, Footnotes and Abbreviations

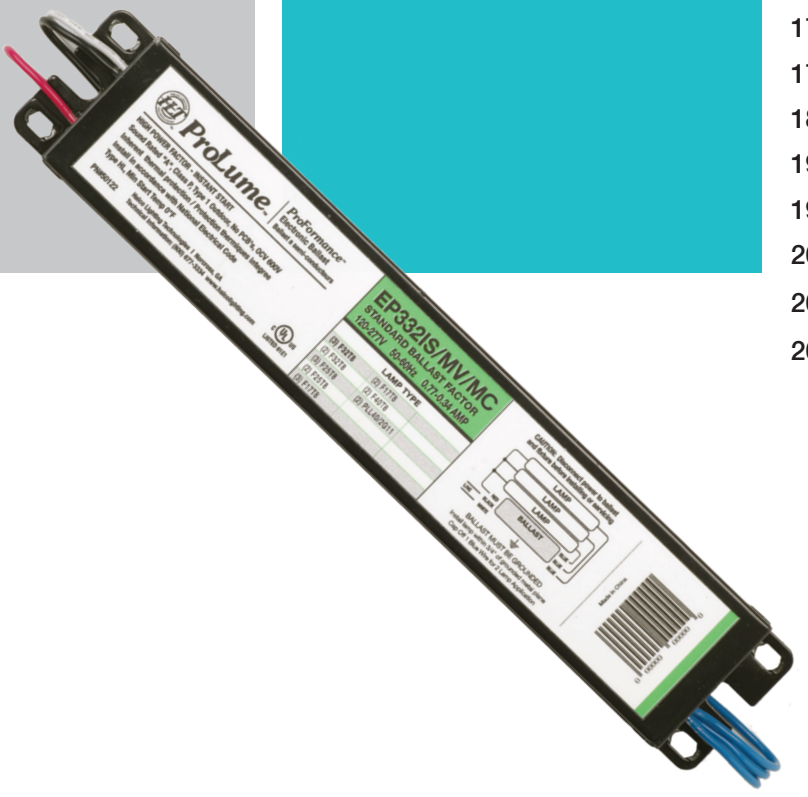
FOOTNOTES

16	Operate base down to horizontal.
17	Operate base up.
18	Do not allow hot bulb to come in contact with liquid or metal parts of the fixture, as glass may shatter. Do not use outdoors or operate near flammable materials. Operate in heat-resistant sockets.
19	Do not use in equipment where base temperature will exceed 500°F.
20	CAUTION: Do not operate near flammable material. Operate only in heat-resistant sockets. WARNING: Use with care. May cause serious burns. The unattended use of infrared heat by children or incapacitated persons is dangerous. Do not place closer than 18" to surface area. Do not use for therapeutic applications unless recommended by a physician. For food warming, use only lamps with heat-resistant glass and/or heat-resistant coating.
22	Operate only in porcelain sockets.

ABBREVIATIONS

/735	Suffix used to indicate lamps with CRI of 70+ and color temperature of 3500K.
/741	Suffix used to indicate lamps with CRI of 70+ and color temperature of 4100K.
/750	Suffix used to indicate lamps with CRI of 70+ and color temperature of 5000K.
/835	Suffix used to indicate lamps with CRI of 80+ and color temperature of 3500K.
/841	Suffix used to indicate lamps with CRI of 80+ and color temperature of 4100K.
/850	Suffix used to indicate lamps with CRI of 80+ and color temperature of 5000K.
/BA15s	Suffix used to indicate lamps with a BA15s (Single Contact) base.
BU	Code abbreviation for Base Up Operating lamps.
CL	Code abbreviation for a Clear lamp.
/CS	Suffix used to indicate CoverShield® safety coated lamps.
/CSTF	Suffix used to indicate CoverShield® PFA safety coated lamps.
CW	Code abbreviation for Cool White lamps.
DX	Code abbreviation for Daylight lamps.
/ECO	Suffix used to indicate Eco-Shield® TCLP compliant lamps.
/ES	Suffix used to indicate Energy Saving Fluorescent lamps.
/FL	Suffix used to indicate Flood lamps.
/HO	Suffix used to indicate High Output lamps.
/IC	Suffix used to indicate ProLume® Industrial/Commercial service lamps.
/P5	Suffix used to indicate Prism® Long Life Plus® 5,000 Hour staggered support C-9M filament lamps.
RED	Code abbreviation for a Red Heat lamp.
U	Code abbreviation for Universal Metal Halide lamps.

ELECTRONIC FLUORESCENT BALLASTS



CONTENTS

HOW TO READ AN ELECTRONIC FLUORESCENT BALLAST TABLE

INPUT VOLTS
Voltage required from a power supply for proper ballast operation.

PRODUCT CODE
Abbreviated product description can also be used for ordering.

INPUT POWER
Total power input to the ballast which includes lamp watts and ballast losses.

BALLAST FACTOR
Ratio of the lamp's lumen output on the specified ballast to the lamp's lumen output when operated by a reference ballast.

WIRING DIAGRAM
References the wiring diagram to use.

CASE DIMENSIONS
Specifies ballast overall length, mounting length, width, and height.

Lamp Type			Input Volts	Product Number	Product Code	Line Current (Amps)	Input Power (Watts)	Power Factor	Ballast Factor	THD %	Min. Start Temp.	Wire Diag.	Case	Case Dimensions			
Qty.	Watts	Start Type												Length	Mounting	Width	Height
F28T5																	
1	28	PS	120	50166	**EP228PS/MV**	0.28	33	0.98	1.05	<10	0°F	1-10	J	16.90"	16.00"	1.20"	1.00"
	28	PS	277	50166	**EP228PS/MV**	0.13	33	0.98	1.05	<10	0°F	1-24	J	16.90"	16.00"	1.20"	1.00"
	28	PS	120	52112	**EP228PS/MV/MC**	0.29	31	0.98	1.05	<10	0°F	1-24	F	9.50"	8.90"	1.30"	1.10"
	28	PS	277	52112	**EP228PS/MV/MC**	0.12	31	0.98	1.05	<10	0°F	1-10	F	9.50"	8.90"	1.30"	1.10"

LAMP TYPE
Indicates the type of lamp that the ballast will operate.

PRODUCT NUMBER
Use this number when placing an order.

LINE CURRENT
The current that results when the line voltage is applied to a load.

POWER FACTOR
Watts to volt amps ratio, which measures efficiency of a ballast's power usage.

THD%
Indicates percentage of Total Harmonic Distortion.

MIN. START TEMP.
References minimum ambient temperature that the ballast will reliably start a lamp.

CASE
References the ballast's case shape.

Lamp Type			Input Volts	Product Number	Product Code	Line Current (Amps)	Input Power (Watts)	Power Factor	Ballast Factor	THD %	Min. Start Temp	Wire Diag.	Case	Case Dimensions			
Qty.	Watts	Start Type												Length	Mounting	Width	Height
F6T5																	
2	6	RS	120	50104	**E114RS/120**	0.23	14	0.53	1.00	<150	0°F	2-7	K	5.90”	5.60”	0.91”	0.76”
F8T5																	
2	8	RS	120	50104	**E114RS/120**	0.25	16	0.53	0.95	<150	0°F	2-7	K	5.90”	5.60”	0.91”	0.76”
F13T5																	
1	13	RS	120	50104	**E114RS/120**	0.22	14	0.53	0.95	<130	0°F	1-7	K	5.90”	5.60”	0.91”	0.76”
F14T5																	
	14	RS	120	50104	**E114RS/120**	0.23	15	0.54	0.95	<130	0°F	1-7	K	5.90”	5.60”	0.91”	0.76”
1	14	PS	120	52112	**EP228PS/MV/MC**	0.14	17	0.98	1.07	<10	0°F	1-24	F	9.50”	8.90”	1.30”	1.00”
	14	PS	277	52112	**EP228PS/MV/MC**	0.07	17	0.98	1.07	<10	0°F	1-24	F	9.50”	8.90”	1.30”	1.00”
2	14	PS	120	52112	**EP228PS/MV/MC**	0.28	33	0.98	1.04	<10	0°F	2-9	F	9.50”	8.90”	1.30”	1.00”
	14	PS	277	52112	**EP228PS/MV/MC**	0.13	33	0.98	1.04	<10	0°F	2-9	F	9.50”	8.90”	1.30”	1.00”
F21T5																	
	21	RS	120	50104	**E114RS/120**	0.30	21	0.57	0.80	<150	0°F	1-7	K	5.90”	5.60”	0.91”	0.76”
1	21	PS	120	52112	**EP228PS/MV/MC**	0.22	25	0.98	1.06	<10	0°F	1-24	F	9.50”	8.90”	1.30”	1.00”
	21	PS	277	52112	**EP228PS/MV/MC**	0.10	25	0.98	1.06	<10	0°F	1-24	F	9.50”	8.90”	1.30”	1.00”
2	21	PS	120	52112	**EP228PS/MV/MC**	0.39	49	0.98	1.02	<10	0°F	2-9	F	9.50”	8.90”	1.30”	1.00”
	21	PS	277	52112	**EP228PS/MV/MC**	0.17	49	0.98	1.02	<10	0°F	2-9	F	9.50”	8.90”	1.30”	1.10”
F24T5/HO																	
1	24	PS	120	50142	**EP239HO/PS/MV**	0.24	29	0.98	1.10	<12	0°F	1-10	J	16.90”	16.00”	1.20”	1.00”
	24	PS	277	50142	**EP239HO/PS/MV**	0.12	29	0.98	1.12	<12	0°F	1-10	J	16.90”	16.00”	1.20”	1.00”
2	24	PS	120	50142	**EP239HO/PS/MV**	0.44	52	0.98	1.00	<12	0°F	2-8	J	16.90”	16.00”	1.20”	1.00”
	24	PS	277	50142	**EP239HO/PS/MV**	0.20	52	0.98	1.00	<12	0°F	2-8	J	16.90”	16.00”	1.20”	1.00”
F28T5																	
1	28	PS	120	52112	**EP228PS/MV/MC**	0.29	31	0.98	1.05	<10	0°F	1-24	F	9.50”	8.90”	1.30”	1.00”
	28	PS	277	52112	**EP228PS/MV/MC**	0.12	31	0.98	1.05	<10	0°F	1-24	F	9.50”	8.90”	1.30”	1.00”
2	28	PS	120	52112	**EP228PS/MV/MC**	0.53	62	0.98	1.00	<10	0°F	2-9	F	9.50”	8.90”	1.30”	1.00”
	28	PS	277	52112	**EP228PS/MV/MC**	0.23	61	0.98	1.00	<10	0°F	2-9	F	9.50”	8.90”	1.30”	1.10”
F35T5																	
1	35	PS	120	52112	**EP228PS/MV/MC**	0.34	40	0.98	1.01	<10	0°F	1-24	F	9.50”	8.90”	1.30”	1.00”
	35	PS	277	52112	**EP228PS/MV/MC**	0.15	40	0.98	1.01	<10	0°F	1-24	F	9.50”	8.90”	1.30”	1.00”
F39T5/HO																	
1	39	PS	120	50142	**EP239HO/PS/MV**	0.40	48	0.98	1.15	<12	0°F	1-10	J	16.90”	16.00”	1.20”	1.00”
	39	PS	277	50142	**EP239HO/PS/MV**	0.18	48	0.98	1.15	<12	0°F	1-10	J	16.90”	16.00”	1.20”	1.00”
2	39	PS	120	50142	**EP239HO/PS/MV**	0.78	94	0.98	1.12	<10	0°F	2-8	J	16.90”	16.00”	1.20”	1.00”
	39	PS	277	50142	**EP239HO/PS/MV**	0.34	94	0.98	1.12	<10	0°F	2-8	J	16.90”	16.00”	1.20”	1.00”

Case diagrams and wiring diagrams can be found on pages 175-177.

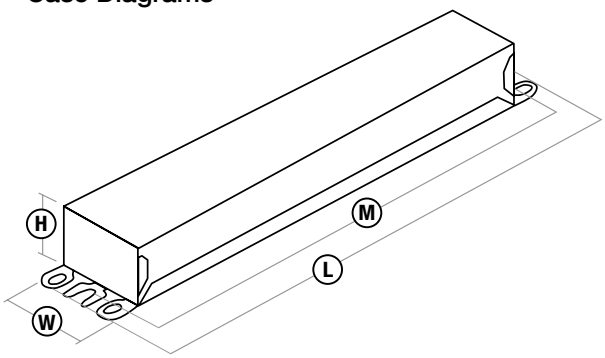
ELECTRONIC FLUORESCENT BALLASTS

T5

Lamp Type			Input Volts	Product Number	Product Code	Line Current (Amps)	Input Power (Watts)	Power Factor	Ballast Factor	THD %	Min. Start Temp	Wire Diag.	Case	Case Dimensions			
Qty.	Watts	Start Type												Length	Mounting	Width	Height
F49T5/HO																	
1	49	PS	120	50144	**EP254HO/PS/MV**	0.50	59	0.99	1.00	<10	0°F	1-10	J	16.90”	16.00”	1.20”	1.00”
	49	PS	277	50144	**EP254HO/PS/MV**	0.22	57	0.92	1.00	<10	0°F	1-10	J	16.90”	16.00”	1.20”	1.00”
	49	PS	120	52114	**EP254HO/PS/MV/MC**	0.44	53	0.99	0.90	<10	0°F	1-24	F	9.50”	8.90”	1.30”	1.00”
	49	PS	277	52114	**EP254HO/PS/MV/MC**	0.21	58	0.90	1.04	<10	0°F	1-24	F	9.50”	8.90”	1.30”	1.00”
2	49	PS	120	50144	**EP254HO/PS/MV**	0.94	112	0.99	0.96	<10	0°F	2-8	J	16.90”	16.00”	1.20”	1.00”
	49	PS	277	50144	**EP254HO/PS/MV**	0.41	111	0.98	0.96	<10	0°F	2-8	J	16.90”	16.00”	1.20”	1.00”
	49	PS	120	52114	**EP254HO/PS/MV/MC**	0.88	106	0.98	0.99	<10	0°F	2-9	F	9.50”	8.90”	1.30”	1.00”
	49	PS	277	52114	**EP254HO/PS/MV/MC**	0.38	105	0.97	0.98	<10	0°F	2-9	F	9.50”	8.90”	1.30”	1.00”
	49	PS	120	50186	**EP454HO/PS/MV**	0.88	106	0.98	0.97	<10	-20°F	2-22	J	16.90”	16.30”	1.80”	1.20”
	49	PS	277	50186	**EP454HO/PS/MV**	0.39	104	0.96	0.97	<10	-20°F	2-22	J	16.90”	16.30”	1.80”	1.20”
3	49	PS	120	50186	**EP454HO/PS/MV**	1.34	162	0.98	0.97	<10	-20°F	3-10	J	16.90”	16.30”	1.80”	1.20”
	49	PS	277	50186	**EP454HO/PS/MV**	0.61	159	0.93	0.97	<10	-20°F	3-10	J	16.90”	16.30”	1.80”	1.20”
4	49	PS	120	50186	**EP454HO/PS/MV**	1.78	214	0.98	0.97	<10	-20°F	4-7	J	16.90”	16.30”	1.80”	1.20”
	49	PS	277	50186	**EP454HO/PS/MV**	0.78	209	0.96	0.97	<10	-20°F	4-7	J	16.90”	16.30”	1.80”	1.20”
F54T5/HO																	
1	54	RS	120	50140	**E154HO/RS/120**	0.75	51	0.50	0.95	<140	0°F	1-7	G	9.10”	8.75”	0.95”	0.95”
	54	PS	120	50144	**EP254HO/PS/MV**	0.51	61	0.98	1.02	<10	0°F	1-10	J	16.90”	16.00”	1.20”	1.00”
	54	PS	277	50144	**EP254HO/PS/MV**	0.23	61	0.98	1.02	<10	0°F	1-10	J	16.90”	16.00”	1.20”	1.00”
	54	PS	120	52114	**EP254HO/PS/MV/MC**	0.52	62	0.98	1.03	<10	0°F	1-24	F	9.50”	8.90”	1.30”	1.00”
	54	PS	277	52114	**EP254HO/PS/MV/MC**	0.23	62	0.90	1.03	<20	0°F	1-24	F	9.50”	8.90”	1.30”	1.00”
2	54	PS	120	52114	**EP254HO/PS/MV/MC**	1.00	120	0.98	1.00	<10	0°F	2-9	F	9.50”	8.90”	1.30”	1.00”
	54	PS	277	52114	**EP254HO/PS/MV/MC**	0.43	117	0.97	1.00	<10	0°F	2-9	F	9.50”	8.90”	1.30”	1.00”
	54	PS	120	50144	**EP254HO/PS/MV**	0.98	117	0.98	1.00	<10	0°F	2-8	J	16.90”	16.00”	1.20”	1.00”
	54	PS	277	50144	**EP254HO/PS/MV**	0.42	117	0.98	1.00	<10	0°F	2-8	J	16.90”	16.00”	1.20”	1.00”
	54	PS	120	50186	**EP454HO/PS/MV**	1.00	120	0.98	1.00	<10	-20°F	2-22	J	16.75”	16.30”	1.80”	1.20”
	54	PS	277	50186	**EP454HO/PS/MV**	0.43	117	0.98	1.00	<10	-20°F	2-22	J	16.75”	16.30”	1.80”	1.20”
3	54	PS	120	50186	**EP454HO/PS/MV**	1.50	176	0.98	1.03	<10	-20°F	3-10	J	16.75”	16.30”	1.80”	1.20”
	54	PS	277	50186	**EP454HO/PS/MV**	0.65	173	0.92	1.03	<10	-20°F	3-10	J	16.75”	16.30”	1.80”	1.20”
4	54	PS	120	50186	**EP454HO/PS/MV**	2.00	231	0.98	1.00	<10	-20°F	4-7	J	16.75”	16.30”	1.80”	1.20”
	54	PS	277	50186	**EP454HO/PS/MV**	0.86	228	0.98	1.00	<10	-20°F	4-7	J	16.75”	16.30”	1.80”	1.20”

Case diagrams and wiring diagrams can be found on pages 175-177.

Case Diagrams



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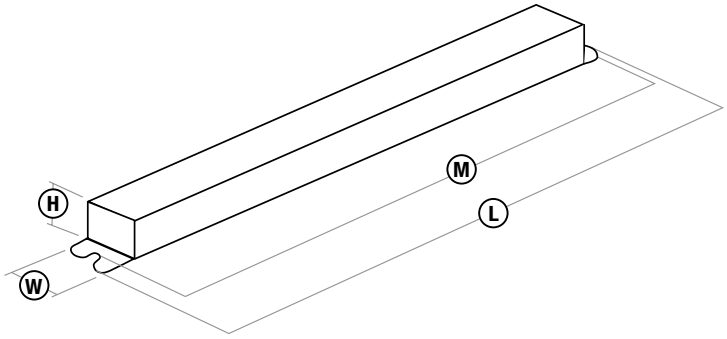

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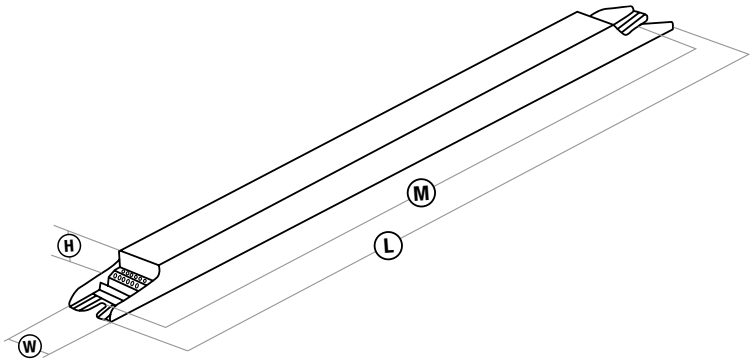

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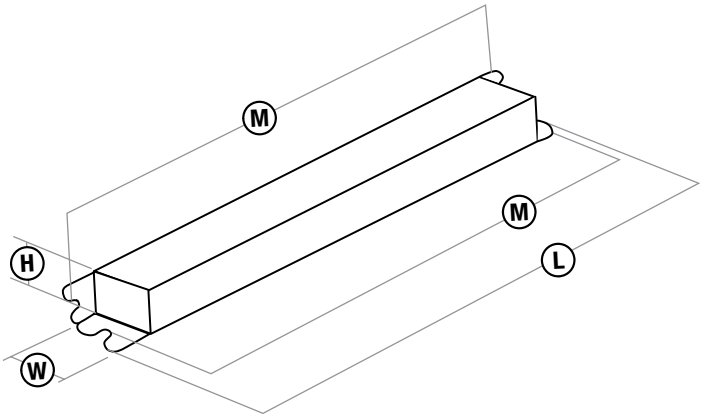

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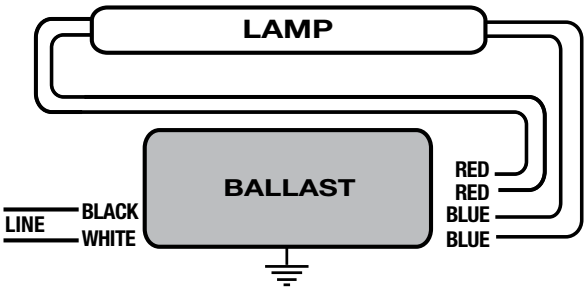
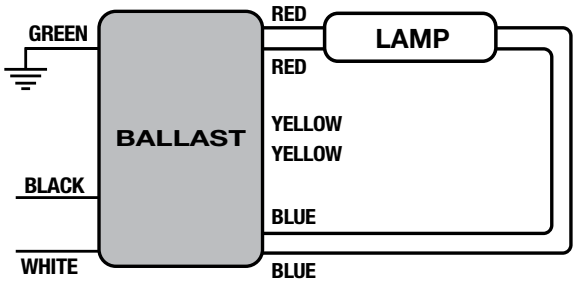
ELECTRONIC FLUORESCENT BALLASTS

T5

Wiring Diagrams



1-7



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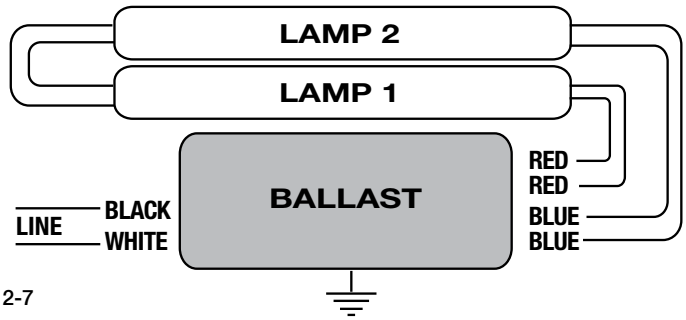

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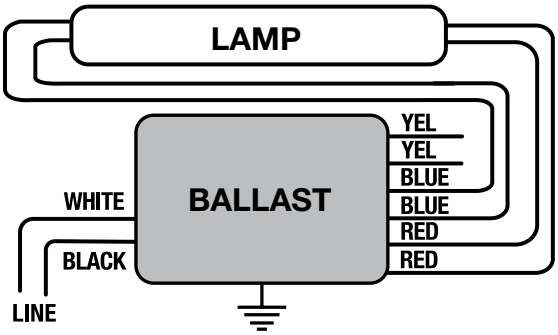
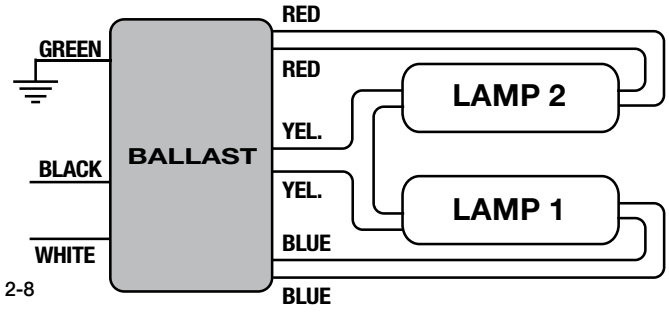
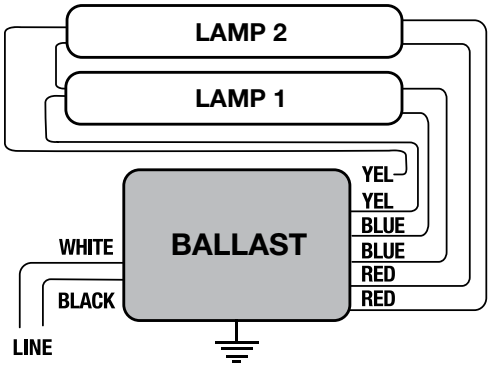


1-24

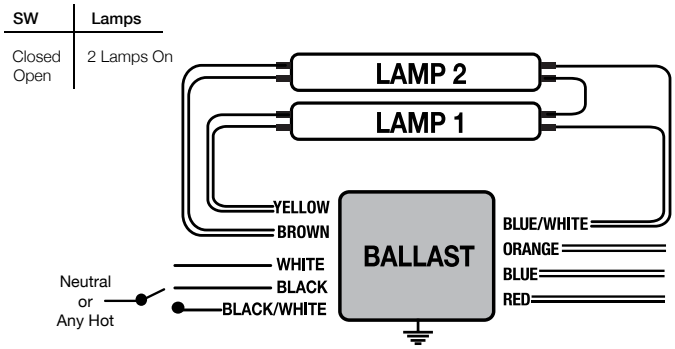


2-8

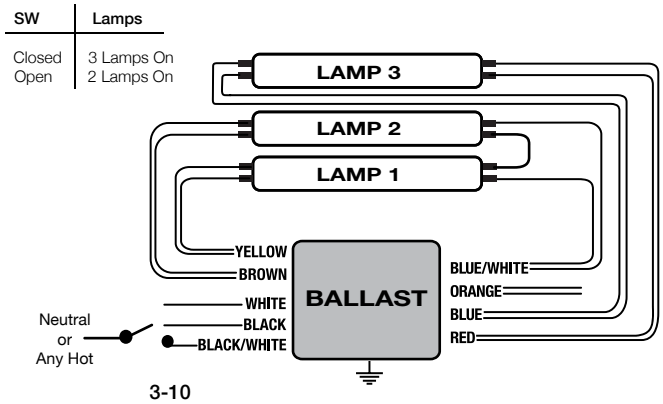
Wiring Diagrams



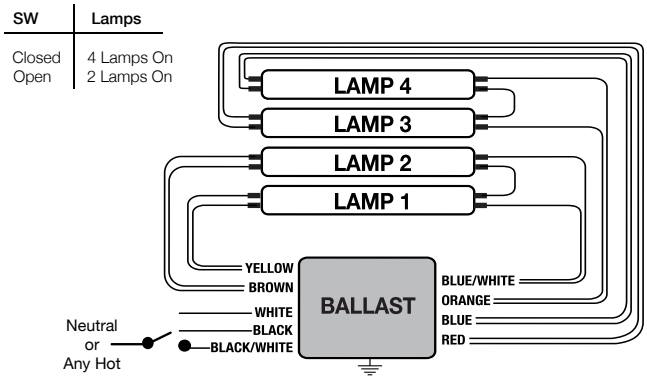
2-9



2-22



3-10



4-7

ELECTRONIC FLUORESCENT BALLASTS

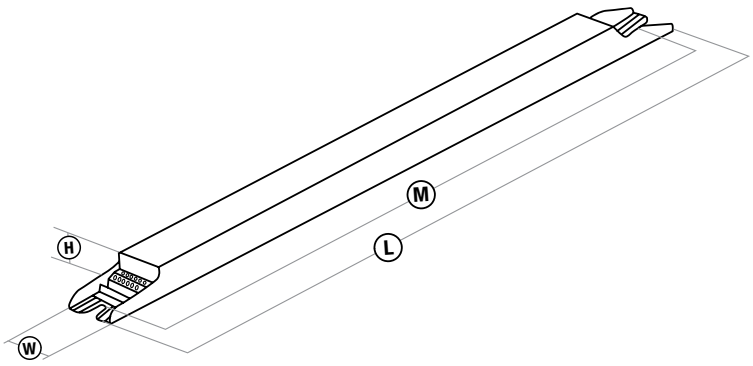
T5 Circline

Lamp Type			Input Volts	Product Number	Product Code	Line Current (Amps)	Input Power (Watts)	Power Factor	Ballast Factor	THD %	Min. Start Temp	Wire Diag.	Case	Case Dimensions			
Qty.	Watts	Start Type												Length	Mounting	Width	Height
FC22T5																	
1	22	PS	120	50142	**EP239HO/PS/MV**	0.27	33	0.98	1.12	<15	0°F	1-13	J	16.90”	16.00”	1.20”	1.00”
	22	PS	277	50142	**EP239HO/PS/MV**	0.12	33	0.95	1.12	<15	0°F	1-13	J	16.90”	16.00”	1.20”	1.00”
	22	PS	120	52108	**EP2CF42PS/MV/DC/K**	0.27	31	0.93	1.20	<15	0°F	1-13	L	5.00”	4.63”	3.00”	1.38”
	22	PS	277	52108	**EP2CF42PS/MV/DC/K**	0.13	31	0.93	1.20	<15	0°F	1-13	L	5.00”	4.63”	3.00”	1.38”
2	22	PS	120	50142	**EP239HO/PS/MV**	0.52	63	0.99	1.10	<10	0°F	2-13	J	16.90”	16.00”	1.20”	1.00”
	22	PS	277	50142	**EP239HO/PS/MV**	0.23	63	0.99	1.10	<10	0°F	2-13	J	16.90”	16.00”	1.20”	1.00”
	22	PS	120	52108	**EP2CF42PS/MV/DC/K**	0.49	59	0.97	1.10	<12	0°F	2-13	L	5.00”	4.63”	3.00”	1.38”
	22	PS	277	52108	**EP2CF42PS/MV/DC/K**	0.22	52	0.97	1.10	<12	0°F	2-13	L	5.00”	4.63”	3.00”	1.38”
FC22T5 + FC40T5																	
2	22+40	PS	120	50142	***EP239HO/PS/MV**	0.58	68	0.98	1.00	<12	0°F	2-13	J	16.90”	16.00”	1.20”	1.00”
	22+40	PS	277	50142	***EP239HO/PS/MV**	0.25	68	0.98	1.00	<12	0°F	2-13	J	16.90”	16.00”	1.20”	1.00”
	22+40	PS	120	52108	***EP2CF42PS/MV/DC/K**	0.55	67	0.99	0.90	<10	0°F	2-13	L	5.00”	4.63”	3.00”	1.38”
	22+40	PS	277	52108	***EP2CF42PS/MV/DC/K**	0.25	67	0.98	0.90	<10	0°F	2-13	L	5.00”	4.63”	3.00”	1.38”
FC40T5																	
1	40	PS	120	50142	**EP239HO/PS/MV**	0.40	48	0.98	0.92	<12	0°F	1-13	J	16.90”	16.00”	1.20”	1.00”
	40	PS	277	50142	**EP239HO/PS/MV**	0.18	48	0.98	0.92	<12	0°F	1-13	J	16.90”	16.00”	1.20”	1.00”
	40	PS	120	52106	**EP2CF26PS/MV/DC/K**	0.36	42	0.99	1.00	<12	0°F	1-13	L	5.00”	4.63”	2.40”	1.00”
	40	PS	277	52106	**EP2CF26PS/MV/DC/K**	0.16	42	0.99	1.00	<12	0°F	1-13	L	5.00”	4.63”	2.40”	1.00”
	40	PS	120	52108	**EP2CF42PS/MV/DC/K**	0.37	45	0.99	1.00	<15	0°F	1-13	L	5.00”	4.63”	3.00”	1.38”
	40	PS	277	52108	**EP2CF42PS/MV/DC/K**	0.17	45	0.99	1.00	<15	0°F	1-13	L	5.00”	4.63”	3.00”	1.38”
2	40	PS	120	50142	**EP239HO/PS/MV**	0.77	92	0.98	0.90	<12	0°F	2-13	J	16.90”	16.00”	1.20”	1.00”
	40	PS	277	50142	**EP239HO/PS/MV**	0.33	92	0.98	0.90	<12	0°F	2-13	J	16.90”	16.00”	1.20”	1.00”
	40	PS	120	52108	**EP2CF42PS/MV/DC/K**	0.69	82	0.99	0.95	<12	0°F	2-13	L	5.00”	4.63”	3.00”	1.38”
	40	PS	277	52108	**EP2CF42PS/MV/DC/K**	0.30	82	0.99	0.95	<12	0°F	2-13	L	5.00”	4.63”	3.00”	1.38”
FC55T5/HO																	
1	55	PS	120	50144	**EP254HO/PS/MV**	0.46	55	0.96	0.81	<15	0°F	1-13	J	16.90”	16.00”	1.20”	1.00”
	55	PS	277	50144	**EP254HO/PS/MV**	0.21	55	0.96	0.81	<15	0°F	1-13	J	16.90”	16.00”	1.20”	1.00”
2	55	PS	120	50144	**EP254HO/PS/MV**	0.89	106	0.98	0.85	<10	0°F	2-13	J	16.90”	16.00”	1.20”	1.00”
	55	PS	277	50144	**EP254HO/PS/MV**	0.38	103	0.98	0.85	<10	0°F	2-13	J	16.90”	16.00”	1.20”	1.00”

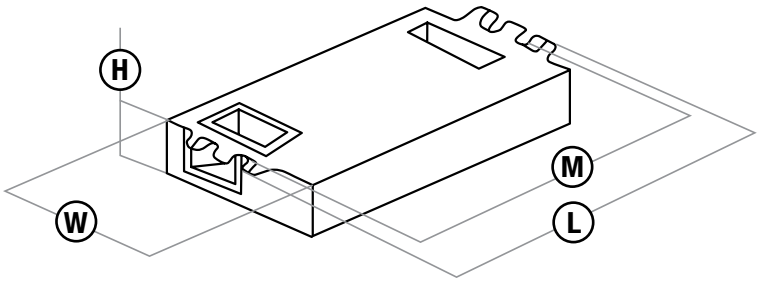
*Ballast operates two different lamps together.

Case diagrams and wiring diagrams can be found on page 179.

Case Diagrams

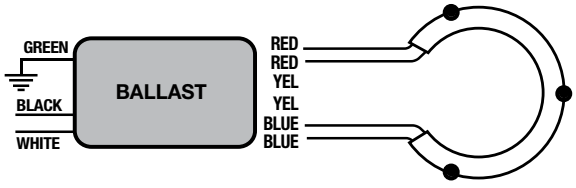


J

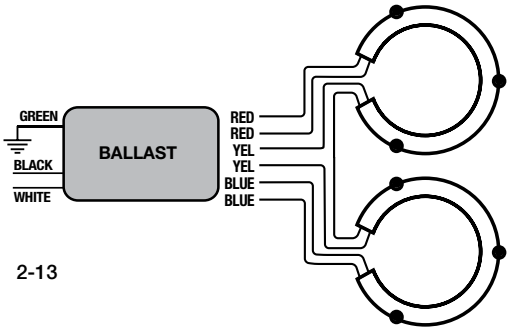


L

Wiring Diagrams



1-13



2-13

ELECTRONIC FLUORESCENT BALLASTS

T8

Lamp Type			Input Volts	Product Number	Product Code	Line Current (Amps)	Input Power (Watts)	Power Factor	Ballast Factor	THD %	Min. Start Temp	Wire Diag.	Case	Case Dimensions			
Qty.	Watts	Start Type												Length	Mounting	Width	Height
F14T8																	
1	14	RS	120	50108	⊗**E120RS/120**	0.24	15.5	0.54	1.00	<150	0°F	1-18	F	6.46”	6.00”	1.37”	1.00”
2	14	RS	120	50110	**E220RS/120**	0.44	29	0.54	0.88	<130	0°F	2-12	F	6.46”	6.00”	1.37”	1.00”
F15T8																	
1	15	RS	120	50108	⊗**E120RS/120**	0.25	16	0.55	1.00	<140	0°F	1-18	F	6.46”	6.00”	1.37”	1.00”
2	15	RS	120	50110	**E220RS/120**	0.49	32	0.56	1.00	<130	0°F	2-12	F	6.46”	6.00”	1.37”	1.00”
F17T8, FB16																	
1	17	RS	120	50108	⊗**E120RS/120**	0.27	18.5	0.56	1.00	<140	0°F	1-18	F	6.46”	6.00”	1.37”	1.00”
	17	IS	120	50118	**E232IS/120/R/MC**	0.35	20	0.45	1.05	<150	0°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	17	IS	120	50112	**EP132IS/MV/MC**	0.15	17	0.99	0.91	<10	0°F	1-3	F	9.50”	8.90”	1.30”	1.00”
	17	IS	277	50112	**EP132IS/MV/MC**	0.07	17	0.95	0.91	<15	0°F	1-3	F	9.50”	8.90”	1.30”	1.00”
	17	IS	120	50115	**EP232IS/H/MV/HE**	0.22	25	0.95	1.42	<10	0°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	17	IS	277	50115	**EP232IS/H/MV/HE**	0.11	25	0.95	1.42	<15	0°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	17	IS	120	50119	**EP232IS/L/MV/HE**	0.14	17	0.98	0.96	<10	0°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	17	IS	277	50119	**EP232IS/L/MV/HE**	0.08	16	0.80	0.96	<20	0°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	17	IS	120	50123	**EP232IS/MV/HE**	0.16	21	0.98	1.10	<10	0°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	17	IS	277	50123	**EP232IS/MV/HE**	0.09	21	0.95	1.10	<15	0°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	17	IS	120	50116	**EP232IS/MV/MC**	0.18	22	0.98	1.10	<10	0°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	17	IS	277	50116	**EP232IS/MV/MC**	0.08	21	0.95	1.10	<15	0°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	17	PS	120	50180	**EP232PS/MV/HE**	0.20	23	0.98	1.03	<10	0°F	1-11	F	9.50”	8.90”	1.38”	1.18”
	17	PS	277	50180	**EP232PS/MV/HE**	0.09	24	0.93	1.03	<12	0°F	1-11	F	9.50”	8.90”	1.38”	1.18”
	17	PS	120	50178	**EP232PS/L/MV/HE**	0.28	33	0.99	0.86	<10	0°F	1-11	F	9.50”	8.90”	1.38”	1.18”
	17	PS	277	50178	**EP232PS/L/MV/HE**	0.12	33	0.98	0.86	<10	0°F	1-11	F	9.50”	8.90”	1.38”	1.18”
2	17	RS	120	50110	**E220RS/120**	0.54	36	0.58	1.00	<130	0°F	2-12	F	6.46”	6.00”	1.37”	1.00”
	17	IS	120	50118	**E232IS/120/R/MC**	0.52	31	0.52	0.86	<160	0°F	2-17	F	9.50”	8.90”	1.30”	1.00”
	17	IS	120	50176	**EP232IS/120/MC**	0.31	33	0.90	0.86	<35	0°F	2-17	F	9.50”	8.90”	1.30”	1.00”
	17	IS	120	50115	**EP232IS/H/MV/HE**	0.33	39	0.98	1.23	<10	0°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	17	IS	277	50115	**EP232IS/H/MV/HE**	0.15	39	0.96	1.23	<10	0°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	17	IS	120	50119	**EP232IS/L/MV/HE**	0.21	25	0.98	0.80	<10	0°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	17	IS	277	50119	**EP232IS/L/MV/HE**	0.09	23	0.85	0.80	<20	0°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	17	IS	120	50123	**EP232IS/MV/HE**	0.25	28	0.98	0.91	<10	0°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	17	IS	277	50123	**EP232IS/MV/HE**	0.11	28	0.97	0.91	<15	0°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	17	IS	120	50116	**EP232IS/MV/MC**	0.26	31	0.98	0.91	<10	0°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	17	IS	277	50116	**EP232IS/MV/MC**	0.12	31	0.97	0.91	<15	0°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	17	PS	120	50180	**EP232PS/MV/HE**	0.30	34	0.98	0.90	<10	0°F	2-24	F	9.50”	8.90”	1.38”	1.18”
	17	PS	277	50180	**EP232PS/MV/HE**	0.13	35	0.96	0.90	<10	0°F	2-24	F	9.50”	8.90”	1.38”	1.18”
	17	PS	120	50178	**EP232PS/L/MV/HE**	0.44	52	0.99	0.77	<10	0°F	2-24	F	9.50”	8.90”	1.38”	1.18”
	17	PS	277	50178	**EP232PS/L/MV/HE**	0.19	52	0.98	0.77	<10	0°F	2-24	F	9.50”	8.90”	1.38”	1.18”

⊗ Item will be discontinued when inventory is depleted.

Case diagrams and wiring diagrams can be found on pages 190-192.

Lamp Type			Input Volts	Product Number	Product Code	Line Current (Amps)	Input Power (Watts)	Power Factor	Ballast Factor	THD %	Min. Start Temp	Wire Diag.	Case	Case Dimensions			
Qty.	Watts	Start Type												Length	Mounting	Width	Height
F17T8, FB16 continued																	
	17	IS	120	50121	**EP332IS/H/MV/HE**	0.49	58	0.99	1.23	<10	0°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	17	IS	277	50121	**EP332IS/H/MV/HE**	0.22	57	0.96	1.23	<10	0°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	17	IS	120	50168	**EP332IS/L/MV/HE**	0.37	43	0.98	0.86	<10	0°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	17	IS	277	50168	**EP332IS/L/MV/HE**	0.16	43	0.95	0.86	<15	0°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	17	IS	120	50170	**EP332IS/MV/HE**	0.38	45	0.98	0.92	<10	0°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	17	IS	277	50170	**EP332IS/MV/HE**	0.17	45	0.96	0.92	<15	0°F	3-7	F	9.50”	8.90”	1.30”	1.10”
3	17	IS	120	50122	**EP332IS/MV/MC**	0.38	45	0.98	0.90	<10	0°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	17	IS	277	50122	**EP332IS/MV/MC**	0.17	45	0.96	0.90	<15	0°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	17	PS	120	50184	**EP432PS/MV/HE**	0.45	53	0.98	0.94	<10	0°F	3-8	F	9.50”	8.90”	1.65”	1.18”
	17	PS	277	50184	**EP432PS/MV/HE**	0.21	53	0.95	0.94	<15	0°F	3-8	F	9.50”	8.90”	1.65”	1.18”
	17	PS	120	50182	**EP432PS/L/MV/HE**	0.40	48	0.99	0.81	<10	0°F	3-8	F	9.50”	8.90”	1.65”	1.18”
	17	PS	277	50182	**EP432PS/L/MV/HE**	0.18	49	0.96	0.82	<12	0°F	3-8	F	9.50”	8.90”	1.65”	1.18”
	17	IS	120	50158	**E432IS/120/R/MC**	0.97	67	0.50	0.95	<175	0°F	4-6	F	9.50”	8.90”	1.30”	1.10”
	17	IS	120	50124	**EP432IS/120/MC**	0.51	61	0.98	0.96	<20	0°F	4-6	F	9.50”	8.90”	1.30”	1.10”
	17	IS	120	50172	**EP432IS/L/MV/HE**	0.46	54	0.98	0.79	<10	0°F	4-6	F	9.50”	8.90”	1.30”	1.18”
	17	IS	277	50172	**EP432IS/L/MV/HE**	0.19	52	0.98	0.79	<10	0°F	4-6	F	9.50”	8.90”	1.30”	1.18”
	17	IS	120	50174	**EP432IS/MV/HE**	0.49	59	0.98	0.93	<10	0°F	4-6	F	9.50”	8.90”	1.30”	1.10”
	17	IS	277	50174	**EP432IS/MV/HE**	0.22	58	0.98	0.93	<10	0°F	4-6	F	9.50”	8.90”	1.30”	1.10”
4	17	IS	120	50126	**EP432IS/MV/MC**	0.49	59	0.98	0.90	<10	0°F	4-6	F	9.50”	8.90”	1.30”	1.10”
	17	IS	277	50126	**EP432IS/MV/MC**	0.22	58	0.98	0.90	<10	0°F	4-6	F	9.50”	8.90”	1.30”	1.10”
	17	PS	120	50184	**EP432PS/MV/HE**	0.52	63	0.98	0.87	<10	0°F	4-5	F	9.50”	8.90”	1.65”	1.18”
	17	PS	277	50184	**EP432PS/MV/HE**	0.24	63	0.97	0.89	<12	0°F	4-5	F	9.50”	8.90”	1.65”	1.18”
	17	PS	120	50182	**EP432PS/L/MV/HE**	0.46	55	0.99	0.73	<10	0°F	4-5	F	9.50”	8.90”	1.65”	1.18”
	17	PS	277	50182	**EP432PS/L/MV/HE**	0.21	56	0.97	0.74	<12	0°F	4-5	F	9.50”	8.90”	1.65”	1.18”
F18T8 24”																	
1	18	RS	120	50108	**E120RS/120**	0.26	17.5	0.55	0.95	<140	0°F	1-18	F	6.46”	6.00”	1.37”	1.00”
2	18	RS	120	50110	**E220RS/120**	0.50	34	0.57	0.92	<150	0°F	2-12	F	6.46”	6.00”	1.37”	1.00”
F20T8																	
1	20	RS	120	50108	**E120RS/120**	0.26	18	0.56	0.90	<130	0°F	1-18	F	6.46”	6.00”	1.37”	1.00”

Case diagrams and wiring diagrams can be found on pages 190-192.

ELECTRONIC FLUORESCENT BALLASTS

T8

Lamp Type			Input Volts	Product Number	Product Code	Line Current (Amps)	Input Power (Watts)	Power Factor	Ballast Factor	THD %	Min. Start Temp	Wire Diag.	Case	Case Dimensions			
Qty.	Watts	Start Type												Length	Mounting	Width	Height
F25T8/ES (F32T8 25W)																	
1	25	IS	120	50119	**EP232IS/L/MV/HE**	0.21	25	0.98	0.93	<10	60°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	25	IS	277	50119	**EP232IS/L/MV/HE**	0.10	23	0.80	0.93	<20	60°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	25	IS	120	50123	**EP232IS/MV/HE**	0.24	29	0.98	1.08	<10	60°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	25	IS	277	50123	**EP232IS/MV/HE**	0.11	29	0.97	1.08	<15	60°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	25	PS	120	50180	**EP232PS/MV/HE**	0.27	33	0.99	1.05	<10	60°F	1-11	F	9.50”	8.90”	1.38”	1.18”
	25	PS	277	50180	**EP232PS/MV/HE**	0.12	33	0.95	1.05	<12	60°F	1-11	F	9.50”	8.90”	1.38”	1.18”
	25	PS	120	50178	**EP232PS/L/MV/HE**	0.24	28	0.99	0.92	<10	60°F	1-11	F	9.50”	8.90”	1.38”	1.18”
	25	PS	277	50178	**EP232PS/L/MV/HE**	0.11	29	0.97	0.92	<12	60°F	1-11	F	9.50”	8.90”	1.38”	1.18”
2	25	IS	120	50119	**EP232IS/L/MV/HE**	0.31	37	0.98	0.79	<10	60°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	25	IS	277	50119	**EP232IS/L/MV/HE**	0.13	35	0.95	0.79	<15	60°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	25	IS	120	50123	**EP232IS/MV/HE**	0.39	46	0.98	0.89	<10	60°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	25	IS	277	50123	**EP232IS/MV/HE**	0.17	45	0.97	0.89	<15	60°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	25	PS	120	50178	**EP232PS/L/MV/HE**	0.37	44	0.99	0.79	<10	60°F	2-24	F	9.50”	8.90”	1.38”	1.18”
	25	PS	277	50178	**EP232PS/L/MV/HE**	0.16	44	0.98	0.79	<10	60°F	2-24	F	9.50”	8.90”	1.38”	1.18”
	25	PS	120	50180	**EP232PS/MV/HE**	0.42	50	0.99	0.92	<10	60°F	2-24	F	9.50”	8.90”	1.38”	1.18”
	25	PS	277	50180	**EP232PS/MV/HE**	0.19	50	0.97	0.92	<10	60°F	2-24	F	9.50”	8.90”	1.38”	1.18”
	25	IS	120	50168	**EP332IS/L/MV/HE**	0.41	48	0.98	0.95	<10	60°F	2-11	F	9.50”	8.90”	1.30”	1.10”
	25	IS	277	50168	**EP332IS/L/MV/HE**	0.18	47	0.95	0.92	<15	60°F	2-11	F	9.50”	8.90”	1.30”	1.10”
	25	IS	120	50170	**EP332IS/MV/HE**	0.43	51	0.98	1.00	<10	60°F	2-11	F	9.50”	8.90”	1.30”	1.10”
	25	IS	277	50170	**EP332IS/MV/HE**	0.19	51	0.97	1.00	<15	60°F	2-11	F	9.50”	8.90”	1.30”	1.10”
3	25	IS	120	50168	**EP332IS/L/MV/HE**	0.53	63	0.98	0.85	<10	60°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	25	IS	277	50168	**EP332IS/L/MV/HE**	0.23	61	0.95	0.85	<15	60°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	25	IS	120	50170	**EP332IS/MV/HE**	0.56	68	0.98	0.90	<10	60°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	25	IS	277	50170	**EP332IS/MV/HE**	0.25	68	0.97	0.90	<15	60°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	25	IS	120	50172	**EP432IS/L/MV/HE**	0.57	68	0.98	0.84	<10	60°F	3-9	F	9.50”	8.90”	1.30”	1.18”
	25	IS	277	50172	**EP432IS/L/MV/HE**	0.25	68	0.95	0.84	<15	60°F	3-9	F	9.50”	8.90”	1.30”	1.18”
	25	IS	120	50174	**EP432IS/MV/HE**	0.62	74	0.98	0.96	<10	60°F	3-9	F	9.50”	8.90”	1.30”	1.18”
	25	IS	277	50174	**EP432IS/MV/HE**	0.27	73	0.98	0.96	<10	60°F	3-9	F	9.50”	8.90”	1.30”	1.18”
	25	PS	120	50184	**EP432PS/MV/HE**	0.64	76	0.99	0.94	<10	60°F	3-8	F	9.50”	8.90”	1.65”	1.18”
	25	PS	277	50184	**EP432PS/MV/HE**	0.28	76	0.98	0.94	<10	60°F	3-8	F	9.50”	8.90”	1.65”	1.18”
	25	PS	120	50182	**EP432PS/L/MV/HE**	0.56	67	0.99	0.81	<10	60°F	3-8	F	9.50”	8.90”	1.65”	1.18”
	25	PS	277	50182	**EP432PS/L/MV/HE**	0.25	68	0.98	0.82	<10	60°F	3-8	F	9.50”	8.90”	1.65”	1.18”

Case diagrams and wiring diagrams can be found on pages 190-192.

Lamp Type			Input Volts	Product Number	Product Code	Line Current (Amps)	Input Power (Watts)	Power Factor	Ballast Factor	THD %	Min. Start Temp	Wire Diag.	Case	Case Dimensions			
Qty.	Watts	Start Type												Length	Mounting	Width	Height
F25T8/ES (F32T8 25W) continued																	
4	25	IS	120	50172	**EP432IS/L/MV/HE**	0.69	82	0.98	0.78	<10	60°F	4-6	F	9.50”	8.90”	1.30”	1.18”
	25	IS	277	50172	**EP432IS/L/MV/HE**	0.30	81	0.98	0.78	<10	60°F	4-6	F	9.50”	8.90”	1.30”	1.18”
	25	IS	120	50174	**EP432IS/MV/HE**	0.74	88	0.98	0.88	<10	60°F	4-6	F	9.50”	8.90”	1.30”	1.18”
	25	IS	277	50174	**EP432IS/MV/HE**	0.32	88	0.98	0.88	<10	60°F	4-6	F	9.50”	8.90”	1.30”	1.18”
	25	PS	120	50184	**EP432PS/MV/HE**	0.77	93	0.99	0.89	<10	60°F	4-5	F	9.50”	8.90”	1.65”	1.18”
	25	PS	277	50184	**EP432PS/MV/HE**	0.34	93	0.98	0.89	<10	60°F	4-5	F	9.50”	8.90”	1.65”	1.18”
	25	PS	120	50182	**EP432PS/L/MV/HE**	0.67	80	0.99	0.75	<10	60°F	4-5	F	9.50”	8.90”	1.65”	1.18”
	25	PS	277	50182	**EP432PS/L/MV/HE**	0.30	81	0.98	0.76	<10	60°F	4-5	F	9.50”	8.90”	1.65”	1.18”
F25T8, FB24																	
1	25	IS	120	50118	**E232IS/120/R/MC**	0.46	27	0.50	1.01	<170	0°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	25	IS	120	50112	**EP132IS/MV/MC**	0.21	24	0.99	0.92	<10	0°F	1-23	F	9.50”	8.90”	1.30”	1.00”
	25	IS	277	50112	**EP132IS/MV/MC**	0.10	24	0.97	0.92	<10	0°F	1-23	F	9.50”	8.90”	1.30”	1.00”
	25	IS	120	50115	**EP232IS/H/MV/HE**	0.28	33	0.98	1.40	<10	0°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	25	IS	277	50115	**EP232IS/H/MV/HE**	0.13	33	0.96	1.40	<15	0°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	25	IS	120	50119	**EP232IS/L/MV/HE**	0.20	24	0.98	0.95	<10	0°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	25	IS	277	50119	**EP232IS/L/MV/HE**	0.09	22	0.80	0.95	<20	0°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	25	IS	120	50123	**EP232IS/MV/HE**	0.23	26	0.98	1.08	<10	0°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	25	IS	277	50123	**EP232IS/MV/HE**	0.10	26	0.96	1.08	<15	0°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	25	IS	120	50116	**EP232IS/MV/MC**	0.24	29	0.98	1.08	<10	0°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	25	IS	277	50116	**EP232IS/MV/MC**	0.11	28	0.96	1.08	<15	0°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	25	PS	120	50180	**EP232PS/MV/HE**	0.26	31	0.98	1.01	<10	0°F	1-11	F	9.50”	8.90”	1.38”	1.18”
	25	PS	277	50180	**EP232PS/MV/HE**	0.12	32	0.95	1.01	<12	0°F	1-11	F	9.50”	8.90”	1.38”	1.18”
	25	PS	120	50178	**EP232PS/L/MV/HE**	0.23	27	0.99	0.88	<10	0°F	1-11	F	9.50”	8.90”	1.38”	1.18”
	25	PS	277	50178	**EP232PS/L/MV/HE**	0.10	28	0.97	0.88	<12	0°F	1-11	F	9.50”	8.90”	1.38”	1.18”
2	25	IS	120	50118	**E232IS/120/R/MC**	0.65	43	0.54	0.84	<140	0°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	25	IS	120	50176	**EP232IS/120/MC**	0.41	47	0.96	0.85	<30	0°F	2-17	F	9.50”	8.90”	1.30”	1.00”
	25	IS	120	50115	**EP232IS/H/MV/ME**	0.45	54	0.98	1.20	<10	0°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	25	IS	277	50115	**EP232IS/H/MV/ME**	0.20	54	0.97	1.20	<15	0°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	25	IS	120	50119	**EP232IS/L/MV/HE**	0.31	37	0.98	0.79	<10	0°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	25	IS	277	50119	**EP232IS/L/MV/HE**	0.13	35	0.95	0.79	<15	0°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	25	IS	120	50123	**EP232IS/MV/HE**	0.36	42	0.98	0.89	<10	0°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	25	IS	277	50123	**EP232IS/MV/HE**	0.16	41	0.98	0.89	<15	0°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	25	IS	120	50116	**EP232IS/MV/MC**	0.38	46	0.98	0.89	<10	0°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	25	IS	277	50116	**EP232IS/MV/MC**	0.17	46	0.97	0.89	<15	0°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	25	PS	120	50180	**EP232PS/MV/HE**	0.40	47	0.99	0.83	<10	0°F	2-24	F	9.50”	8.90”	1.38”	1.18”

Case diagrams and wiring diagrams can be found on pages 190-192.

ELECTRONIC FLUORESCENT BALLASTS

T8

Lamp Type			Input Volts	Product Number	Product Code	Line Current (Amps)	Input Power (Watts)	Power Factor	Ballast Factor	THD %	Min. Start Temp	Wire Diag.	Case	Case Dimensions			
Qty.	Watts	Start Type												Length	Mounting	Width	Height
F25T8, FB24 continued																	
	25	PS	277	50180	**EP232PS/MV/HE**	0.18	47	0.95	0.88	<10	0°F	2-24	F	9.50”	8.90”	1.38”	1.18”
	25	PS	120	50178	**EP232PS/L/MV/HE**	0.35	41	0.99	0.74	<10	0°F	2-24	F	9.50”	8.90”	1.38”	1.18”
	25	PS	277	50178	**EP232PS/L/MV/HE**	0.15	41	0.98	0.74	<10	0°F	2-24	F	9.50”	8.90”	1.38”	1.18”
	25	IS	120	50121	**EP332IS/H/MV/HE**	0.55	65	0.98	1.28	<10	0°F	2-11	F	9.50”	8.90”	1.30”	1.10”
2	25	IS	277	50121	**EP332IS/H/MV/HE**	0.25	65	0.97	1.28	<15	0°F	2-11	F	9.50”	8.90”	1.30”	1.10”
	25	IS	120	50170	**EP332IS/MV/HE**	0.42	50	0.98	1.00	<10	0°F	2-11	F	9.50”	8.90”	1.30”	1.10”
	25	IS	277	50170	**EP332IS/MV/HE**	0.18	50	0.96	1.00	<15	0°F	2-11	F	9.50”	8.90”	1.30”	1.10”
	25	IS	120	50122	**EP332IS/MV/MC**	0.42	50	0.98	0.98	<10	0°F	2-11	F	9.50”	8.90”	1.30”	1.10”
	25	IS	277	50122	**EP332IS/MV/MC**	0.18	50	0.96	0.98	<15	0°F	2-11	F	9.50”	8.90”	1.30”	1.10”
	25	IS	120	50121	**EP332IS/H/MV/HE**	0.39	81	0.98	1.20	<10	0°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	25	IS	277	50121	**EP332IS/H/MV/HE**	0.30	81	0.98	1.20	<10	0°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	25	IS	120	50168	**EP332IS/L/MV/HE**	0.51	60	0.98	0.82	<10	0°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	25	IS	277	50168	**EP332IS/L/MV/HE**	0.22	58	0.95	0.82	<15	0°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	25	IS	120	50170	**EP332IS/MV/HE**	0.56	68	0.98	0.90	<10	0°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	25	IS	277	50170	**EP332IS/MV/HE**	0.24	68	0.97	0.90	<15	0°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	25	IS	120	50122	**EP332IS/MV/MC**	0.56	68	0.98	0.88	<10	0°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	25	IS	277	50122	**EP332IS/MV/MC**	0.24	66	0.97	0.88	<15	0°F	3-7	F	9.50”	8.90”	1.30”	1.10”
3	25	IS	120	50158	**E432IS/120/R/MC**	1.12	77	0.50	1.00	<175	0°F	3-9	F	9.50”	8.90”	1.30”	1.10”
	25	IS	120	50124	**EP432IS/120/MC**	0.62	74	0.98	1.04	<20	0°F	3-9	F	9.50”	8.90”	1.30”	1.10”
	25	IS	120	50172	**EP432IS/L/MV/HE**	0.53	62	0.98	0.84	<10	0°F	3-9	F	9.50”	8.90”	1.30”	1.10”
	25	IS	277	50172	**EP432IS/L/MV/HE**	0.23	61	0.95	0.84	<15	0°F	3-9	F	9.50”	8.90”	1.30”	1.10”
	25	PS	120	50184	**EP432PS/MV/HE**	0.62	74	0.98	0.90	<10	0°F	3-8	F	9.50”	8.90”	1.65”	1.18”
	25	PS	277	50184	**EP432PS/MV/HE**	0.28	74	0.97	0.90	<12	0°F	3-8	F	9.50”	8.90”	1.65”	1.18”
	25	PS	120	50182	**EP432PS/L/MV/HE**	0.55	65	0.99	0.80	<10	0°F	3-8	F	9.50”	8.90”	1.65”	1.18”
	25	PS	277	50182	**EP432PS/L/MV/HE**	0.24	66	0.98	0.80	<10	0°F	3-8	F	9.50”	8.90”	1.65”	1.18”
	25	IS	120	50158	**E432IS/R/120/MC**	1.25	86	0.50	0.86	<170	0°F	4-6	F	9.50”	8.90”	1.30”	1.10”
	25	IS	120	50124	**EP432IS/120/MC**	0.74	89	0.98	0.94	<20	0°F	4-6	F	9.50”	8.90”	1.30”	1.10”
	25	IS	120	50172	**EP432IS/L/MV/HE**	0.64	76	0.98	0.78	<10	0°F	4-6	F	9.50”	8.90”	1.30”	1.10”
	25	IS	277	50172	**EP432IS/L/MV/HE**	0.27	74	0.98	0.78	<10	0°F	4-6	F	9.50”	8.90”	1.30”	1.10”
	25	IS	120	50174	**EP432IS/MV/HE**	0.73	87	0.98	0.89	<10	0°F	4-6	F	9.50”	8.90”	1.30”	1.10”
	25	IS	277	50174	**EP432IS/MV/HE**	0.32	85	0.98	0.89	<10	0°F	4-6	F	9.50”	8.90”	1.30”	1.10”
4	25	IS	120	50126	**EP432IS/MV/MC**	0.72	87	0.98	0.86	<10	0°F	4-6	F	9.50”	8.90”	1.30”	1.10”
	25	IS	277	50126	**EP432IS/MV/MC**	0.32	85	0.98	0.86	<10	0°F	4-6	F	9.50”	8.90”	1.30”	1.10”
	25	PS	120	50184	**EP432PS/MV/HE**	0.74	88	0.99	0.84	<10	0°F	4-5	F	9.50”	8.90”	1.65”	1.18”
	25	PS	277	50184	**EP432PS/MV/HE**	0.33	88	0.98	0.85	<10	0°F	4-5	F	9.50”	8.90”	1.65”	1.18”
	25	PS	120	50182	**EP432PS/L/MV/HE**	0.65	77	0.99	0.73	<10	0°F	4-5	F	9.50”	8.90”	1.65”	1.18”
	25	PS	277	50182	**EP432PS/L/MV/HE**	0.29	78	0.98	0.73	<10	0°F	4-5	F	9.50”	8.90”	1.65”	1.18”

Case diagrams and wiring diagrams can be found on pages 190-192.

Lamp Type			Input Volts	Product Number	Product Code	Line Current (Amps)	Input Power (Watts)	Power Factor	Ballast Factor	THD %	Min. Start Temp	Wire Diag.	Case	Case Dimensions			
Qty.	Watts	Start Type												Length	Mounting	Width	Height
F28T8																	
1	28	IS	120	50115	**EP232IS/H/MV/HE**	0.33	39	0.98	1.38	<10	60°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	28	IS	277	50115	**EP232IS/H/MV/HE**	0.15	39	0.97	1.38	<15	60°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	28	IS	120	50119	**EP232IS/L/MV/HE**	0.22	26	0.98	0.93	<10	60°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	28	IS	277	50119	**EP232IS/L/MV/HE**	0.10	24	0.85	0.93	<20	60°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	28	IS	120	50123	**EP232IS/MV/HE**	0.25	30	0.98	1.08	<10	60°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	28	IS	277	50123	**EP232IS/MV/HE**	0.11	29	0.97	1.08	<15	60°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	28	IS	120	50116	**EP232IS/MV/MC**	0.26	31	0.98	1.08	<10	60°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	28	IS	277	50116	**EP232IS/MV/MC**	0.12	31	0.97	1.08	<10	60°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	28	PS	120	50180	**EP232PS/MV/HE**	0.29	35	0.99	1.06	<10	60°F	1-11	F	9.50”	8.90”	1.38”	1.18”
	28	PS	277	50180	**EP232PS/MV/HE**	0.13	35	0.96	1.06	<10	60°F	1-11	F	9.50”	8.90”	1.38”	1.18”
	28	PS	120	50178	**EP232PS/L/MV/HE**	0.25	30	0.99	0.86	<10	60°F	1-11	F	9.50”	8.90”	1.38”	1.18”
	28	PS	277	50178	**EP232PS/L/MV/HE**	0.11	30	0.97	0.86	<12	60°F	1-11	F	9.50”	8.90”	1.38”	1.18”
2	28	IS	120	50115	**EP232IS/H/MV/HE**	0.54	64	0.98	1.18	<10	60°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	28	IS	277	50115	**EP232IS/H/MV/HE**	0.24	63	0.98	1.18	<15	60°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	28	IS	120	50119	**EP232IS/L/MV/HE**	0.35	41	0.98	0.78	<10	60°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	28	IS	277	50119	**EP232IS/L/MV/HE**	0.15	41	0.97	0.78	<15	60°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	28	IS	120	50123	**EP232IS/MV/HE**	0.41	49	0.98	0.89	<10	60°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	28	IS	277	50123	**EP232IS/MV/HE**	0.18	47	0.97	0.89	<15	60°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	28	IS	120	50116	**EP232IS/MV/MC**	0.41	49	0.98	0.89	<10	60°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	28	IS	277	50116	**EP232IS/MV/MC**	0.18	48	0.97	0.89	<15	60°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	28	PS	120	50180	**EP232PS/MV/HE**	0.45	54	0.99	0.90	<10	60°F	2-24	F	9.50”	8.90”	1.38”	1.18”
	28	PS	277	50180	**EP232PS/MV/HE**	0.20	54	0.98	0.90	<10	60°F	2-24	F	9.50”	8.90”	1.38”	1.18”
	28	PS	120	50178	**EP232PS/L/MV/HE**	0.39	46	0.99	0.75	<10	60°F	2-24	F	9.50”	8.90”	1.38”	1.18”
	28	PS	277	50178	**EP232PS/L/MV/HE**	0.17	47	0.98	0.75	<10	60°F	2-24	F	9.50”	8.90”	1.38”	1.18”
	28	IS	120	50121	**EP332IS/H/MV/HE**	0.59	70	0.98	1.27	<10	60°F	2-11	F	9.50”	8.90”	1.30”	1.10”
	28	IS	277	50121	**EP332IS/H/MVHE**	0.26	69	0.97	1.27	<15	60°F	2-11	F	9.50”	8.90”	1.30”	1.10”
	28	IS	120	50168	**EP332IS/L/MV/HE**	0.42	49	0.98	0.92	<10	60°F	2-11	F	9.50”	8.90”	1.30”	1.10”
	28	IS	277	50168	**EP332IS/L/MV/HE**	0.19	48	0.95	0.92	<15	60°F	2-11	F	9.50”	8.90”	1.30”	1.10”
	28	IS	120	50170	**EP332IS/MV/HE**	0.45	54	0.98	0.99	<10	60°F	2-11	F	9.50”	8.90”	1.30”	1.10”
	28	IS	277	50170	**EP332IS/MV/HE**	0.20	53	0.97	0.99	<15	60°F	2-11	F	9.50”	8.90”	1.30”	1.10”
	28	IS	120	50122	**EP332IS/MV/MC**	0.45	54	0.98	0.97	<10	60°F	2-11	F	9.50”	8.90”	1.30”	1.10”
	28	IS	277	50122	**EP332IS/MV/MC**	0.20	53	0.97	0.97	<15	60°F	2-11	F	9.50”	8.90”	1.30”	1.10”

Case diagrams and wiring diagrams can be found on pages 190-192.

ELECTRONIC FLUORESCENT BALLASTS

T8

Lamp Type			Input Volts	Product Number	Product Code	Line Current (Amps)	Input Power (Watts)	Power Factor	Ballast Factor	THD %	Min. Start Temp	Wire Diag.	Case	Case Dimensions			
Qty.	Watts	Start Type												Length	Mounting	Width	Height
F28T8 continued																	
	28	IS	120	50121	**EP332IS/H/MV/HE**	0.78	93	0.98	1.18	<10	60°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	28	IS	277	50121	**EP332IS/H/MV/HE**	0.34	92	0.98	1.18	<10	60°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	28	IS	120	50168	**EP332IS/L/MV/HE**	0.55	64	0.98	0.81	<10	60°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	28	IS	277	50168	**EP332IS/L/MV/HE**	0.24	63	0.95	0.81	<15	60°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	28	IS	120	50170	**EP332IS/MV/HE**	0.60	72	0.98	0.88	<10	60°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	28	IS	277	50170	**EP332IS/MV/HE**	0.26	70	0.98	0.88	<15	60°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	28	IS	120	50122	**EP332IS/MV/MC**	0.60	72	0.98	0.86	<10	60°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	28	IS	277	50122	**EP332IS/MV/MC**	0.26	70	0.98	0.86	<15	60°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	28	IS	120	50172	**EP432IS/L/MV/HE**	0.59	70	0.98	0.82	<10	60°F	3-9	F	9.50”	8.90”	1.30”	1.10”
3	28	IS	277	50172	**EP432IS/L/MV/HE**	0.26	70	0.97	0.82	<10	60°F	3-9	F	9.50”	8.90”	1.30”	1.10”
	28	IS	120	50174	**EP432IS/MV/HE**	0.65	77	0.96	0.98	<10	60°F	3-9	F	9.50”	8.90”	1.30”	1.10”
	28	IS	277	50174	**EP432IS/MV/HE**	0.29	77	0.96	0.98	<10	60°F	3-9	F	9.50”	8.90”	1.30”	1.10”
	28	IS	120	50126	**EP432IS/MV/MC**	0.65	77	0.98	0.92	<10	60°F	3-9	F	9.50”	8.90”	1.30”	1.10”
	28	IS	277	50126	**EP432IS/MV/MC**	0.29	77	0.97	0.92	<10	60°F	3-9	F	9.50”	8.90”	1.30”	1.10”
	28	PS	120	50184	**EP432PS/MV/HE**	0.70	83	0.99	0.92	<10	60°F	3-8	F	9.50”	8.90”	1.65”	1.18”
	28	PS	277	50184	**EP432PS/MV/HE**	0.31	83	0.97	0.93	<12	60°F	3-8	F	9.50”	8.90”	1.65”	1.18”
	28	PS	120	50182	**⊗EP432PS/L/MV/HE**	0.61	72	0.99	0.80	<10	60°F	3-8	F	9.50”	8.90”	1.65”	1.18”
	28	PS	277	50182	**⊗EP432PS/L/MV/HE**	0.27	73	0.98	0.82	<10	60°F	3-8	F	9.50”	8.90”	1.65”	1.18”
	28	IS	120	50172	**EP432IS/L/MV/HE**	0.71	84	0.98	0.77	<10	60°F	4-6	F	9.50”	8.90”	1.30”	1.10”
	28	IS	277	50172	**EP432IS/L/MV/HE**	0.31	84	0.98	0.77	<10	60°F	4-6	F	9.50”	8.90”	1.30”	1.10”
	28	IS	120	50174	**EP432IS/MV/HE**	0.79	94	0.98	0.88	<10	60°F	4-6	F	9.50”	8.90”	1.30”	1.10”
	28	IS	277	50174	**EP432IS/MV/HE**	0.35	94	0.98	0.88	<10	60°F	4-6	F	9.50”	8.90”	1.30”	1.10”
	28	IS	120	50126	**EP432IS/MV/MC**	0.79	94	0.98	0.85	<10	60°F	4-6	F	9.50”	8.90”	1.30”	1.10”
4	28	IS	277	50126	**EP432IS/MV/MC**	0.35	94	0.98	0.85	<10	60°F	4-6	F	9.50”	8.90”	1.30”	1.10”
	28	PS	120	50184	**EP432PS/MV/HE**	0.84	100	0.99	0.85	<10	60°F	4-5	F	9.50”	8.90”	1.65”	1.18”
	28	PS	277	50184	**EP432PS/MV/HE**	0.37	100	0.98	0.86	<10	60°F	4-5	F	9.50”	8.90”	1.65”	1.18”
	28	PS	120	50182	**⊗EP432PS/L/MV/HE**	0.73	87	0.99	0.73	<10	60°F	4-5	F	9.50”	8.90”	1.65”	1.18”
	28	PS	277	50182	**⊗EP432PS/L/MV/HE**	0.32	88	0.98	0.75	<10	60°F	4-5	F	9.50”	8.90”	1.65”	1.18”

⊗ Item will be discontinued when inventory is depleted.

Case diagrams and wiring diagrams can be found on pages 190-192.

Lamp Type			Input Volts	Product Number	Product Code	Line Current (Amps)	Input Power (Watts)	Power Factor	Ballast Factor	THD %	Min. Start Temp	Wire Diag.	Case	Case Dimensions			
Qty.	Watts	Start Type												Length	Mounting	Width	Height
F32T8, FB32, FB31																	
1	32	IS	120	50118	**E232IS/120/R/MC**	0.55	34	0.52	1.03	<155	0°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	32	IS	120	50112	**EP132IS/MV/MC**	0.26	31	0.99	0.88	<10	0°F	1-23	F	9.50”	8.90”	1.30”	1.00”
	32	IS	277	50112	**EP132IS/MV/MC**	0.12	31	0.98	0.88	<10	0°F	1-23	F	9.50”	8.90”	1.30”	1.00”
	32	IS	120	50176	**EP232IS/120/MC**	0.34	38	0.94	1.01	<32	0°F	1-3	F	9.50”	8.90”	1.30”	1.00”
	32	IS	120	50115	**EP232IS/H/MV/HE**	0.37	45	0.98	1.38	<10	0°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	32	IS	277	50115	**EP232IS/H/MV/HE**	0.17	45	0.97	1.38	<15	0°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	32	IS	120	50119	**EP232IS/L/MV/HE**	0.26	31	0.98	0.93	<10	0°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	32	IS	277	50119	**EP232IS/L/MV/HE**	0.12	30	0.95	0.93	<15	0°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	32	IS	120	50123	**EP232IS/MV/HE**	0.29	35	0.98	1.08	<10	0°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	32	IS	277	50123	**EP232IS/MV/HE**	0.13	34	0.97	1.08	<15	0°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	32	IS	120	50116	**EP232IS/MV/MC**	0.32	39	0.98	1.08	<12	0°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	32	IS	277	50116	**EP232IS/MV/MC**	0.14	38	0.97	1.08	<15	0°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	32	PS	120	50180	**EP232PS/MV/HE**	0.31	37	0.98	0.99	<10	0°F	1-11	F	9.50”	8.90”	1.38”	1.18”
	32	PS	277	50180	**EP232PS/MV/HE**	0.14	37	0.93	0.99	<10	0°F	1-11	F	9.50”	8.90”	1.38”	1.18”
	32	PS	120	50178	**EP232PS/L/MV/HE**	0.28	33	0.99	0.86	<10	0°F	1-11	F	9.50”	8.90”	1.38”	1.18”
	32	PS	277	50178	**EP232PS/L/MV/HE**	0.12	33	0.98	0.86	<10	0°F	1-11	F	9.50”	8.90”	1.38”	1.18”
2	32	IS	120	50118	**E232IS/120/R/MC**	0.80	54	0.56	0.85	<130	0°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	32	IS	120	50176	**EP232IS/120/MC**	0.49	59	0.97	0.87	<30	0°F	2-17	F	9.50”	8.90”	1.30”	1.00”
	32	IS	120	50115	**EP232IS/H/MV/HE**	0.62	74	0.98	1.18	<10	0°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	32	IS	277	50115	**EP232IS/H/MV/HE**	0.27	73	0.98	1.18	<10	0°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	32	IS	120	50119	**EP232IS/L/MV/HE**	0.40	49	0.98	0.78	<10	0°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	32	IS	277	50119	**EP232IS/L/MV/HE**	0.18	48	0.97	0.78	<15	0°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	32	IS	120	50123	**EP232IS/MV/HE**	0.46	56	0.98	0.89	<10	0°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	32	IS	277	50123	**EP232IS/MV/HE**	0.20	55	0.97	0.89	<10	0°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	32	IS	120	50116	**EP232IS/MV/MC**	0.50	59	0.98	0.89	<10	0°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	32	IS	277	50116	**EP232IS/MV/MC**	0.21	57	0.98	0.89	<10	0°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	32	PS	120	50180	**EP232PS/MV/HE**	0.50	60	0.99	0.88	<10	0°F	2-24	F	9.50”	8.90”	1.38”	1.18”
	32	PS	277	50180	**EP232PS/MV/HE**	0.22	60	0.98	0.88	<10	0°F	2-24	F	9.50”	8.90”	1.38”	1.18”
	32	PS	120	50178	**EP232PS/L/MV/HE**	0.44	52	0.99	0.77	<10	0°F	2-24	F	9.50”	8.90”	1.38”	1.18”
	32	PS	277	50178	**EP232PS/L/MV/HE**	0.19	52	0.98	0.77	<10	0°F	2-24	F	9.50”	8.90”	1.38”	1.18”
	32	IS	120	50121	**EP332IS/H/MV/HE**	0.69	81	0.98	1.27	<10	0°F	2-11	F	9.50”	8.90”	1.30”	1.10”
	32	IS	277	50121	**EP332IS/H/MV/HE**	0.30	80	0.98	1.27	<10	0°F	2-11	F	9.50”	8.90”	1.30”	1.10”
	32	IS	120	50168	**EP332IS/L/MV/HE**	0.49	58	0.98	0.92	<10	0°F	2-11	F	9.50”	8.90”	1.30”	1.10”
	32	IS	277	50168	**EP332IS/L/MV/HE**	0.21	57	0.95	0.92	<15	0°F	2-11	F	9.50”	8.90”	1.30”	1.10”
	32	IS	120	50170	**EP332IS/MV/HE**	0.53	63	0.98	0.99	<10	0°F	2-11	F	9.50”	8.90”	1.30”	1.10”
	32	IS	277	50170	**EP332IS/MV/HE**	0.24	63	0.97	0.99	<15	0°F	2-11	F	9.50”	8.90”	1.30”	1.10”
	32	IS	120	50122	**EP332IS/MV/MC**	0.53	63	0.98	0.97	<10	0°F	2-11	F	9.50”	8.90”	1.30”	1.10”
	32	IS	277	50122	**EP332IS/MV/MC**	0.24	63	0.97	0.97	<15	0°F	2-11	F	9.50”	8.90”	1.30”	1.10”

Case diagrams and wiring diagrams can be found on pages 190-192.

ELECTRONIC FLUORESCENT BALLASTS

T8

Lamp Type			Input Volts	Product Number	Product Code	Line Current (Amps)	Input Power (Watts)	Power Factor	Ballast Factor	THD %	Min. Start Temp	Wire Diag.	Case	Case Dimensions			
Qty.	Watts	Start Type												Length	Mounting	Width	Height
F32T8, FB32, FB31 continued																	
	32	IS	120	50158	**E432IS/R/120/MC**	1.35	86	0.50	0.90	<170	0°F	3-9	F	9.50”	8.90”	1.30”	1.10”
	32	IS	120	50121	**EP332IS/H/MV/HE**	0.91	108	0.98	1.18	<10	0°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	32	IS	277	50121	**EP332IS/H/MV/HE**	0.39	106	0.98	1.18	<10	0°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	32	IS	120	50168	**EP332IS/L/MV/HE**	0.64	76	0.98	0.78	<10	0°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	32	IS	277	50168	**EP332IS/L/MV/HE**	0.27	74	0.98	0.78	<10	0°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	32	IS	120	50170	**EP332IS/MV/HE**	0.71	84	0.98	0.88	<10	0°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	32	IS	277	50170	**EP332IS/MV/HE**	0.31	83	0.98	0.88	<10	0°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	32	IS	120	50122	**EP332IS/MV/MC**	0.71	84	0.98	0.86	<10	0°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	32	IS	277	50122	**EP332IS/MV/MC**	0.31	83	0.98	0.86	<10	0°F	3-7	F	9.50”	8.90”	1.30”	1.10”
	32	IS	120	50124	**EP432IS/120/MC**	0.79	94	0.98	1.00	<20	0°F	3-9	F	9.50”	8.90”	1.30”	1.10”
3	32	IS	120	50172	**EP432IS/L/MV/HE**	0.68	81	0.98	0.82	<10	0°F	3-9	F	9.50”	8.90”	1.30”	1.10”
	32	IS	277	50172	**EP432IS/L/MV/HE**	0.29	80	0.98	0.82	<10	0°F	3-9	F	9.50”	8.90”	1.30”	1.10”
	32	IS	120	50174	**EP432IS/MV/HE**	0.77	92	0.98	0.96	<10	0°F	3-9	F	9.50”	8.90”	1.30”	1.10”
	32	IS	277	50174	**EP432IS/MV/HE**	0.34	89	0.98	0.96	<10	0°F	3-9	F	9.50”	8.90”	1.30”	1.10”
	32	IS	120	50126	**EP432IS/MV/MC**	0.77	92	0.98	0.92	<10	0°F	3-9	F	9.50”	8.90”	1.30”	1.10”
	32	IS	277	50126	**EP432IS/MV/MC**	0.34	89	0.98	0.92	<10	0°F	3-9	F	9.50”	8.90”	1.30”	1.10”
	32	PS	120	50184	**EP432PS/MV/HE**	0.79	95	0.99	0.92	<10	0°F	3-8	F	9.50”	8.90”	1.65”	1.18”
	32	PS	277	50184	**EP432PS/MV/HE**	0.35	95	0.98	0.93	<10	0°F	3-8	F	9.50”	8.90”	1.65”	1.18”
	32	PS	120	50182	**⊗EP432PS/L/MV/HE**	0.66	78	0.99	0.78	<10	0°F	3-8	F	9.50”	8.90”	1.65”	1.18”
	32	PS	277	50182	**⊗EP432PS/L/MV/HE**	0.29	78	0.98	0.79	<10	0°F	3-8	F	9.50”	8.90”	1.65”	1.18”
	32	IS	120	50158	**E432IS/120/R/MC**	1.62	103	0.50	0.82	<165	0°F	4-6	F	9.50”	8.90”	1.30”	1.10”
	32	IS	120	50124	**EP432IS/120/MC**	0.93	110	0.98	0.88	<20	0°F	4-6	F	9.50”	8.90”	1.30”	1.10”
	32	IS	120	50172	**EP432IS/L/MV/HE**	0.82	98	0.98	0.77	<10	0°F	4-6	F	9.50”	8.90”	1.30”	1.10”
	32	IS	277	50172	**EP432IS/L/MV/HE**	0.35	96	0.98	0.77	<10	0°F	4-6	F	9.50”	8.90”	1.30”	1.10”
	32	IS	120	50174	**EP432IS/MV/HE**	0.93	112	0.99	0.88	<10	0°F	4-6	F	9.50”	8.90”	1.30”	1.10”
4	32	IS	277	50174	**EP432IS/MV/HE**	0.40	109	0.99	0.88	<10	0°F	4-6	F	9.50”	8.90”	1.30”	1.10”
	32	IS	120	50126	**EP432IS/MV/MC**	0.93	112	0.98	0.85	<10	0°F	4-6	F	9.50”	8.90”	1.30”	1.10”
	32	IS	277	50126	**EP432IS/MV/MC**	0.40	108	0.98	0.85	<10	0°F	4-6	F	9.50”	8.90”	1.30”	1.10”
	32	PS	120	50184	**EP432PS/MV/HE**	0.95	114	0.99	0.86	<10	0°F	4-5	F	9.50”	8.90”	1.65”	1.18”
	32	PS	277	50184	**EP432PS/MV/HE**	0.42	114	0.98	0.86	<10	0°F	4-5	F	9.50”	8.90”	1.65”	1.18”
	32	PS	120	50182	**⊗EP432PS/L/MV/HE**	0.82	97	0.99	0.74	<10	0°F	4-5	F	9.50”	8.90”	1.65”	1.18”
	32	PS	277	50182	**⊗EP432PS/L/MV/HE**	0.35	97	0.99	0.74	<10	0°F	4-5	F	9.50”	8.90”	1.65”	1.18”

⊗ Item will be discontinued when inventory is depleted.

Case diagrams and wiring diagrams can be found on pages 190-192.

Lamp Type			Input Volts	Product Number	Product Code	Line Current (Amps)	Input Power (Watts)	Power Factor	Ballast Factor	THD %	Min. Start Temp	Wire Diag.	Case	Case Dimensions			
Qty.	Watts	Start Type												Length	Mounting	Width	Height
F40T8																	
	40	IS	120	50176	**EP232IS/120/MC**	0.39	45	0.96	1.00	<30	32°F	1-3	F	9.50”	8.90”	1.30”	1.00”
	40	IS	120	50115	**EP232IS/H/MV/HE**	0.45	54	0.98	1.35	<10	32°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	40	IS	277	50115	**EP232IS/H/MV/HE**	0.20	54	0.97	1.35	<15	32°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	40	IS	120	50119	**EP232IS/L/MV/HE**	0.30	35	0.98	0.90	<10	32°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	40	IS	277	50119	**EP232IS/L/MV/HE**	0.13	35	0.95	0.90	<15	32°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	40	IS	120	50123	**EP232IS/MV/HE**	0.35	44	0.98	1.00	<10	32°F	1-3	F	9.50”	8.90”	1.30”	1.10”
1	40	IS	277	50123	**EP232IS/MV/HE**	0.16	43	0.97	1.00	<15	32°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	40	IS	120	50116	**EP232IS/MV/MC**	0.38	46	0.98	1.00	<10	32°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	40	IS	277	50116	**EP232IS/MV/MC**	0.16	45	0.97	1.00	<15	32°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	40	PS	120	50180	**EP232PS/MV/HE**	0.38	45	0.98	0.99	<10	0°F	1-11	F	9.50”	8.90”	1.38”	1.18”
	40	PS	277	50180	**EP232PS/MV/HE**	0.17	45	0.97	1.01	<10	0°F	1-11	F	9.50”	8.90”	1.38”	1.18”
	40	PS	120	50178	**EP232PS/L/MV/HE**	0.32	38	0.99	0.82	<10	0°F	1-11	F	9.50”	8.90”	1.38”	1.18”
	40	PS	277	50178	**EP232PS/L/MV/HE**	0.14	39	0.98	0.82	<10	0°F	1-11	F	9.50”	8.90”	1.38”	1.18”
	40	IS	120	50121	**EP332IS/H/MV/HE**	0.84	100	0.98	1.26	<10	0°F	2-11	F	9.50”	8.90”	1.30”	1.10”
	40	IS	277	50121	**EP332IS/H/MV/HE**	0.37	98	0.98	1.26	<10	0°F	2-11	F	9.50”	8.90”	1.30”	1.10”
2	40	IS	120	50168	**EP332IS/L/MV/HE**	0.60	71	0.98	0.87	<10	32°F	2-11	F	9.50”	8.90”	1.30”	1.10”
	40	IS	277	50168	**EP332IS/L/MV/HE**	0.26	70	0.98	0.87	<15	32°F	2-11	F	9.50”	8.90”	1.30”	1.10”
	40	IS	120	50170	**EP332IS/MV/HE**	0.65	78	0.98	0.95	<10	32°F	2-11	F	9.50”	8.90”	1.30”	1.10”
	40	IS	277	50170	**EP332IS/MV/HE**	0.29	77	0.97	0.95	<15	32°F	2-11	F	9.50”	8.90”	1.30”	1.10”
	40	IS	120	50124	**EP432IS/120/MC**	0.93	112	0.98	0.88	<20	32°F	3-9	F	9.50”	8.90”	1.30”	1.10”
	40	IS	120	50172	**EP432IS/L/MV/HE**	0.82	98	0.98	0.82	<10	32°F	3-9	F	9.50”	8.90”	1.30”	1.10”
	40	IS	277	50172	**EP432IS/L/MV/HE**	0.35	96	0.98	0.82	<10	32°F	3-9	F	9.50”	8.90”	1.30”	1.10”
	40	IS	120	50174	**EP432IS/MV/HE**	0.95	114	0.98	0.96	<10	32°F	3-9	F	9.50”	8.90”	1.30”	1.10”
	40	IS	277	50174	**EP432IS/MV/HE**	0.41	109	0.98	0.96	<10	32°F	3-9	F	9.50”	8.90”	1.30”	1.10”
3	40	IS	120	50126	**EP432IS/MV/MC**	0.95	114	0.98	0.92	<10	32°F	3-9	F	9.50”	8.90”	1.30”	1.10”
	40	IS	277	50126	**EP432IS/MV/MC**	0.41	109	0.98	0.92	<10	32°F	3-9	F	9.50”	8.90”	1.30”	1.10”
	40	PS	120	50184	**EP432PS/MV/HE**	0.93	111	0.99	0.88	<10	0°F	3-8	F	9.50”	8.90”	1.65”	1.18”
	40	PS	277	50184	**EP432PS/MV/HE**	0.41	111	0.98	0.89	<10	0°F	3-8	F	9.50”	8.90”	1.65”	1.18”
	40	PS	120	50182	⊗**EP432PS/L/MV/HE**	0.83	99	0.99	0.77	<10	0°F	3-8	F	9.50”	8.90”	1.65”	1.18”
	40	PS	277	50182	⊗**EP432PS/L/MV/HE**	0.36	99	0.99	0.79	<10	0°F	3-8	F	9.50”	8.90”	1.65”	1.18”
F96T8																	
1	59	IS	120	50136	**EP259IS/MV**	0.57	68	0.98	1.04	<10	32°F	1-3	F	9.50”	8.90”	1.30”	1.10”
	59	IS	277	50136	**EP259IS/MV**	0.25	67	0.98	1.04	<10	32°F	1-3	F	9.50”	8.90”	1.30”	1.10”
2	59	IS	120	50136	**EP259IS/MV**	0.92	108	0.98	0.83	<10	32°F	2-17	F	9.50”	8.90”	1.30”	1.10”
	59	IS	277	50136	**EP259IS/MV**	0.40	106	0.98	0.83	<10	32°F	2-17	F	9.50”	8.90”	1.30”	1.10”

⊗ Item will be discontinued when inventory is depleted.

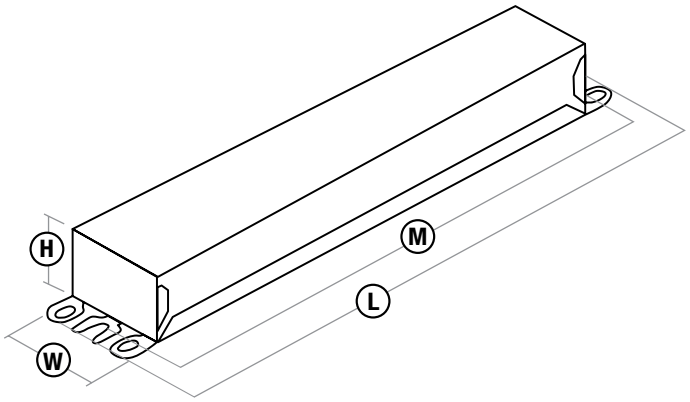
Case diagrams and wiring diagrams can be found on pages 190-192.

ELECTRONIC FLUORESCENT BALLASTS

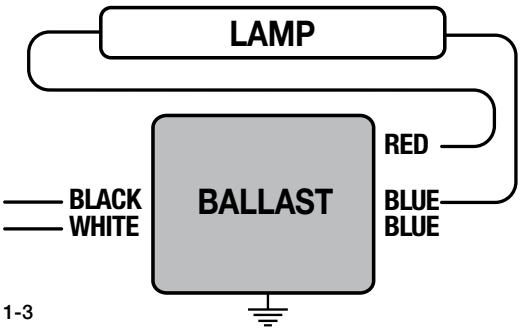
T8

Case Diagram

F



Wiring Diagrams



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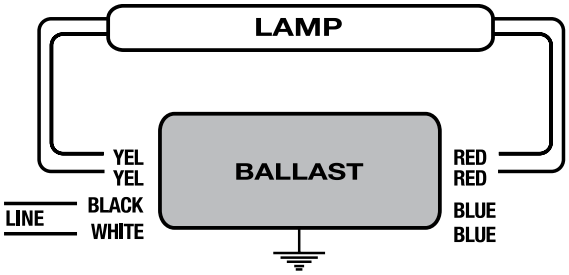

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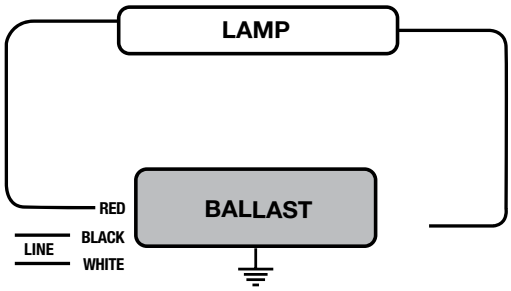

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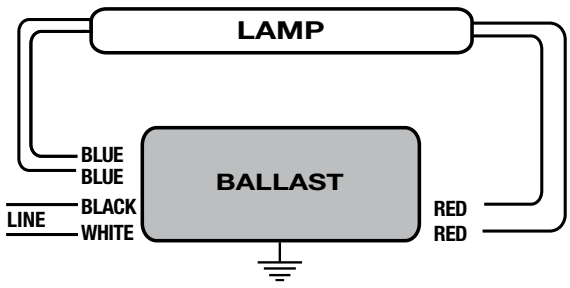
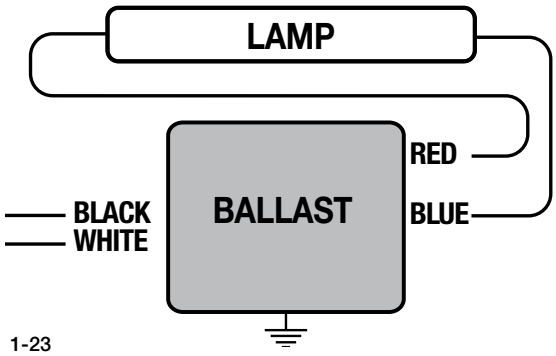


1-18

Wiring Diagrams



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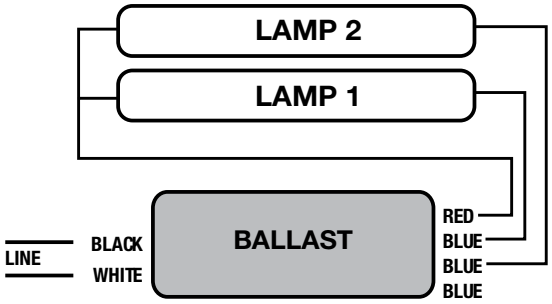
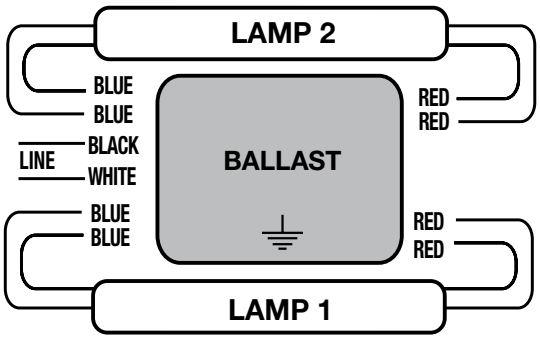


2-11



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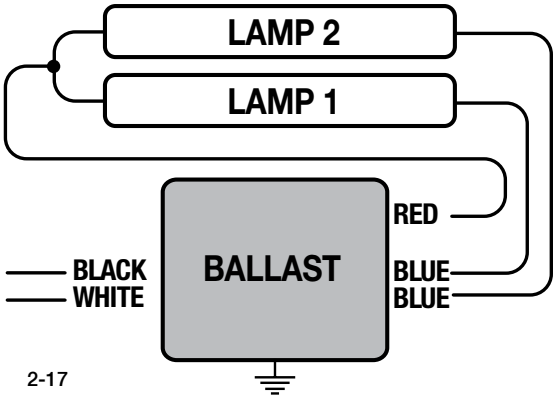

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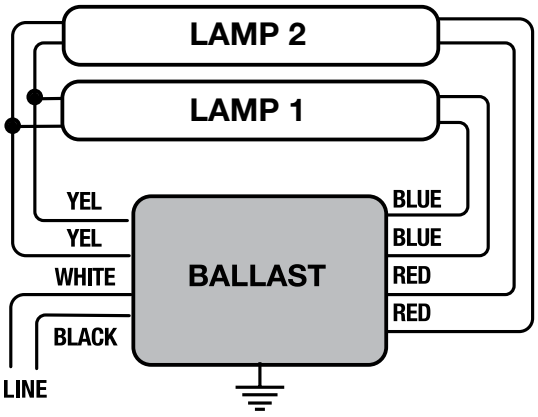

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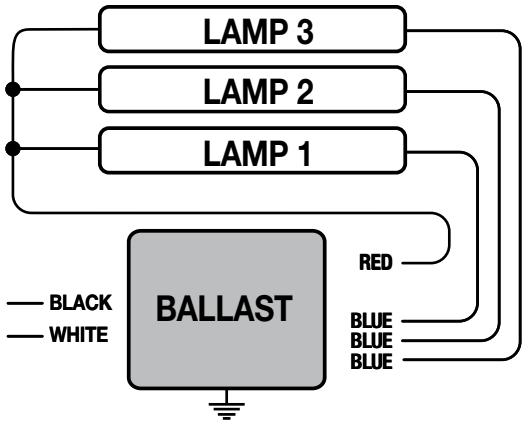
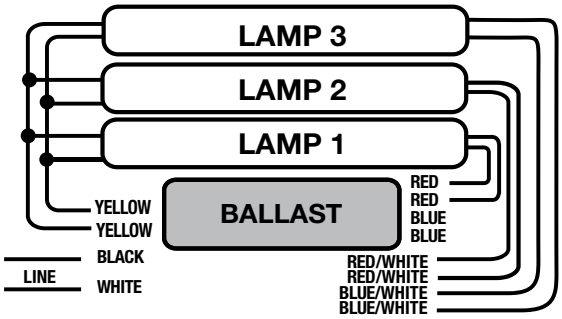


3-7

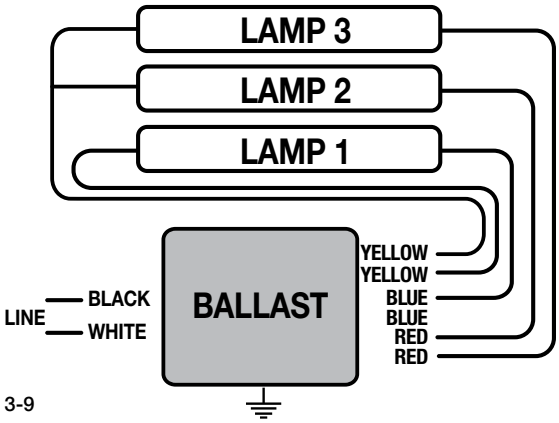
ELECTRONIC FLUORESCENT BALLASTS

T8

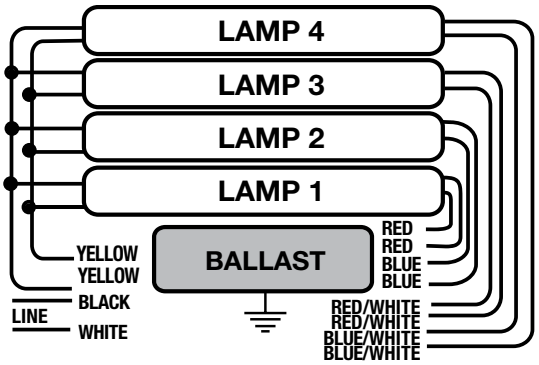
Wiring Diagrams



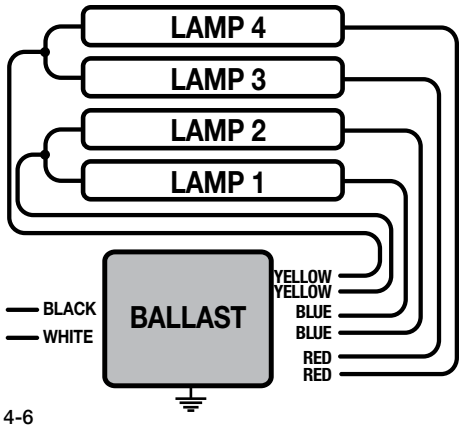
3-8



3-9



4-5



4-6

ELECTRONIC FLUORESCENT BALLASTS

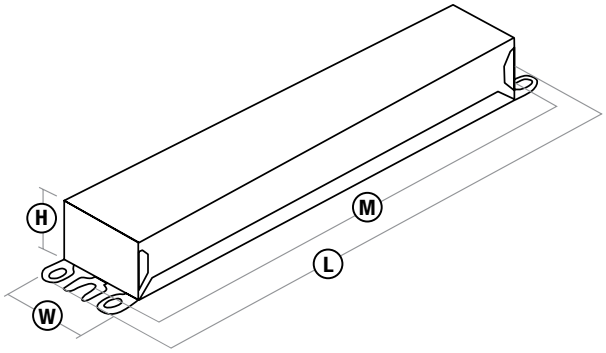
T9 Circline

Lamp Type			Input Volts	Product Number	Product Code	Line Current (Amps)	Input Power (Watts)	Power Factor	Ballast Factor	THD %	Min. Start Temp	Wire Diag.	Case	Case Dimensions			
Qty.	Watts	Start Type												Length	Mounting	Width	Height
FC8T9																	
1	22	RS	120	50150	**E1CR22RS/120/PT**	0.33	21	0.52	0.90	<150	0°F	1-4	H	3.45”	3.12”	1.81”	1.21”
FC16T9																	
1	40	PS	120	52106	**EP2CF26PS/MV/DC/K**	0.34	43	0.99	1.00	<10	0°F	1-13	L	5.00”	4.63”	2.40”	1.00”
	40	PS	277	52106	**EP2CF26PS/MV/DC/K**	0.15	43	0.99	1.00	<10	0°F	1-13	L	5.00”	4.63”	2.40”	1.00”
FC8T9 + FC12T9																	
2	22+32	RS	120	50148	***E2CR72RS/120/PT**	0.60	40	0.54	0.76	<150	0°F	2-3	F	6.46”	6.00”	1.89”	1.00”
FC12T9 + FC16T9																	
2	32+40	RS	120	50148	***E2CR72RS/120/PT**	0.75	50	0.53	0.70	<150	0°F	2-3	F	6.46”	6.00”	1.89”	1.00”

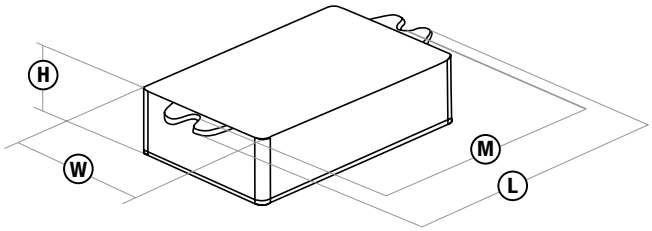
*Ballast operates two different lamps together.

Case diagrams and wiring diagrams can be found on pages 193-194.

Case Diagrams



F



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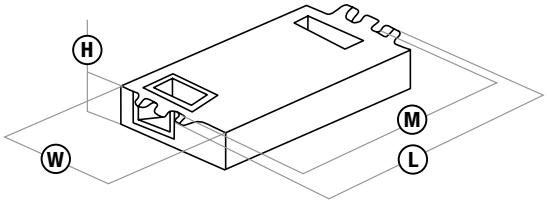
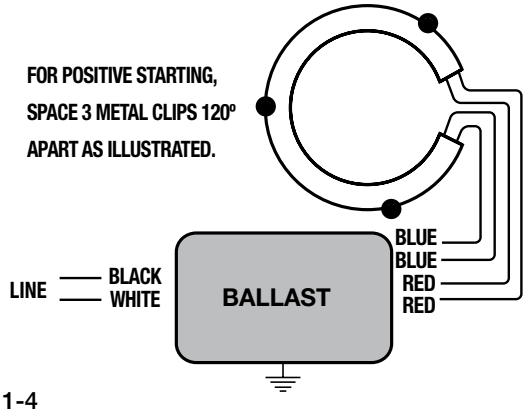


L

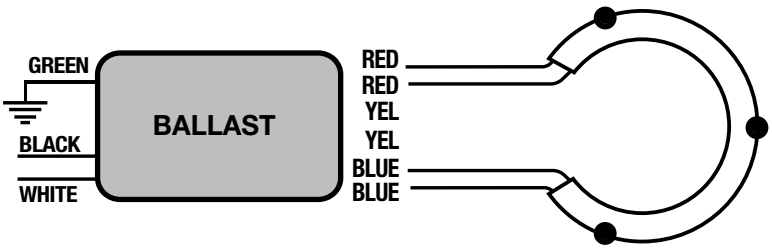
ELECTRONIC FLUORESCENT BALLASTS

T9 Circline

Wiring Diagrams



1-4



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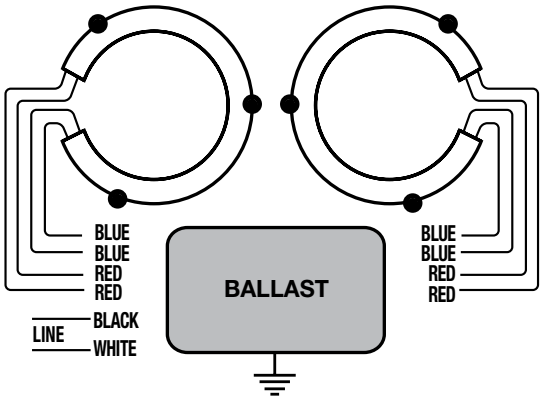


2-3

FOR POSITIVE STARTING,
SPACE 3 METAL CLIPS 120º
APART AS ILLUSTRATED.

ELECTRONIC FLUORESCENT BALLASTS

T12

Lamp Type			Input Volts	Product Number	Product Code	Line Current (Amps)	Input Power (Watts)	Power Factor	Ballast Factor	THD %	Min. Start Temp	Wire Diag.	Case	Case Dimensions			
Qty.	Watts	Start Type												Length	Mounting	Width	Height
F14T12																	
1	14	RS	120	50108	⊗**E120RS/120**	0.24	15.5	0.54	1.00	<150	0°F	1-18	F	6.46”	6.00”	1.37”	1.00”
2	14	RS	120	50110	**E220RS/120**	0.42	27	0.54	0.85	<150	0°F	2-12	F	6.46”	6.00”	1.37”	1.00”
F15T12																	
1	15	RS	120	50108	⊗**E120RS/120**	0.25	16	0.54	1.00	<140	0°F	1-18	F	6.46”	6.00”	1.37”	1.00”
2	15	RS	120	50110	**E220RS/120**	0.48	32	0.56	1.02	<150	0°F	2-12	F	6.46”	6.00”	1.37”	1.00”
F20T12																	
1	20	RS	120	50108	⊗**E120RS/120**	0.26	18	0.56	0.90	<130	0°F	1-18	F	6.46”	6.00”	1.37”	1.00”
2	20	RS	120	50110	**E220RS/120**	0.52	36	0.57	0.87	<130	0°F	2-12	F	6.46”	6.00”	1.37”	1.00”
F25T12/48”																	
	25	RS	120	50128	**EP240RS/120**	0.43	51	0.99	1.70	<10	0°F	1-11	F	9.50”	8.90”	1.70”	1.15”
1	25	RS	120	50160	**EP240RS/MV**	0.43	51	0.99	1.70	<10	0°F	1-11	F	9.50”	8.90”	1.70”	1.15”
	25	RS	277	50160	**EP240RS/MV**	0.19	51	0.99	1.70	<10	0°F	1-11	F	9.50”	8.90”	1.70”	1.15”
	25	RS	120	50128	**EP240RS/120**	0.66	78	0.99	1.40	<10	0°F	2-1	F	9.50”	8.90”	1.70”	1.15”
2	25	RS	120	50160	**EP240RS/MV**	0.66	78	0.99	1.40	<10	0°F	2-1	F	9.50”	8.90”	1.70”	1.15”
	25	RS	277	50160	**EP240RS/MV**	0.28	78	0.98	1.40	<10	0°F	2-1	F	9.50”	8.90”	1.70”	1.15”
F30T12																	
	30	RS	120	50128	**EP240RS/120**	0.32	38	0.98	1.00	<10	0°F	1-11	F	9.50”	8.90”	1.70”	1.15”
1	30	RS	120	50160	**EP240RS/MV**	0.32	38	0.99	1.00	<10	0°F	1-11	F	9.50”	8.90”	1.70”	1.15”
	30	RS	277	50160	**EP240RS/MV**	0.14	38	0.99	1.00	<10	0°F	1-11	F	9.50”	8.90”	1.70”	1.15”
	30	RS	120	50128	**EP240RS/120**	0.49	58	0.99	0.88	<10	0°F	2-1	F	9.50”	8.90”	1.70”	1.15”
2	30	RS	120	50160	**EP240RS/MV**	0.49	58	0.99	0.88	<10	0°F	2-1	F	9.50”	8.90”	1.70”	1.15”
	30	RS	277	50160	**EP240RS/MV**	0.22	58	0.97	0.88	<10	0°F	2-1	F	9.50”	8.90”	1.70”	1.15”
F34T12, FB34																	
	34	RS	120	50128	**EP240RS/120**	0.34	40	0.98	1.10	<10	0°F	1-11	F	9.50”	8.90”	1.70”	1.15”
1	34	RS	120	50160	**EP240RS/MV**	0.34	40	0.98	1.10	<10	0°F	1-11	F	9.50”	8.90”	1.70”	1.15”
	34	RS	277	50160	**EP240RS/MV**	0.15	40	0.98	1.10	<10	0°F	1-11	F	9.50”	8.90”	1.70”	1.15”
	34	RS	120	50128	**EP240RS/120**	0.53	63	0.98	0.85	<10	0°F	2-1	F	9.50”	8.90”	1.70”	1.15”
2	34	RS	120	50160	**EP240RS/MV**	0.53	63	0.98	0.85	<10	0°F	2-1	F	9.50”	8.90”	1.70”	1.15”
	34	RS	277	50160	**EP240RS/MV**	0.23	63	0.98	0.85	<10	0°F	2-1	F	9.50”	8.90”	1.70”	1.15”
F40T12, FB40																	
	40	RS	120	50128	**EP240RS/120**	0.40	47	0.99	1.10	<10	0°F	1-11	F	9.50”	8.90”	1.70”	1.15”
1	40	RS	120	50160	**EP240RS/MV**	0.40	47	0.99	1.10	<10	0°F	1-11	F	9.50”	8.90”	1.70”	1.15”
	40	RS	277	50160	**EP240RS/MV**	0.17	47	0.99	1.10	<10	0°F	1-11	F	9.50”	8.90”	1.70”	1.15”
	40	RS	120	50128	**EP240RS/120**	0.62	74	0.99	0.88	<10	0°F	2-1	F	9.50”	8.90”	1.70”	1.15”
2	40	RS	120	50160	**EP240RS/MV**	0.62	74	0.99	0.88	<10	0°F	2-1	F	9.50”	8.90”	1.70”	1.15”
	40	RS	277	50160	**EP240RS/MV**	0.27	74	0.99	0.88	<10	0°F	2-1	F	9.50”	8.90”	1.70”	1.15”

⊗ Item will be discontinued when inventory is depleted.
Case diagrams and wiring diagrams can be found on pages 197-199.

ELECTRONIC FLUORESCENT BALLASTS

T12

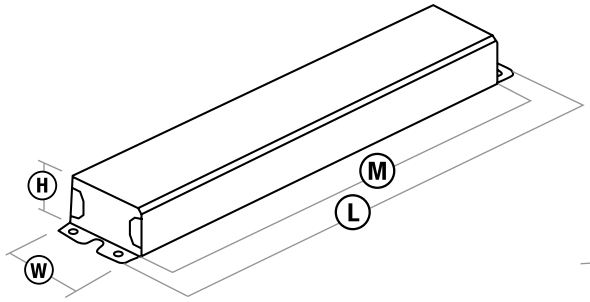
Lamp Type			Input Volts	Product Number	Product Code	Line Current (Amps)	Input Power (Watts)	Power Factor	Ballast Factor	THD %	Min. Start Temp	Wire Diag.	Case	Case Dimensions			
Qty.	Watts	Start Type												Length	Mounting	Width	Height
F48T12/ES																	
2	30	IS	120	50130	**EP275IS/MV**	0.60	64	0.95	0.92	<12	60°F	2-4	D	11.70”	11.00”	3.15”	1.85”
	30	IS	277	50130	**EP275IS/MV**	0.26	64	0.95	0.92	<12	60°F	2-4	D	11.70”	11.00”	3.15”	1.85”
F48T12																	
2	40	IS	120	50132	**EP260IS/120**	0.62	74	0.98	0.92	<12	0°F	2-4	F	9.50”	8.90”	1.70”	1.15”
	40	IS	277	50134	**EP260IS/277**	0.27	74	0.98	0.92	<12	0°F	2-4	F	9.50”	8.90”	1.70”	1.15”
	40	IS	120	50130	**EP275IS/MV**	0.68	76	0.95	0.92	<10	0°F	2-4	D	11.70”	11.00”	3.15”	1.85”
	40	IS	277	50130	**EP275IS/MV**	0.30	76	0.95	0.92	<10	0°F	2-4	D	11.70”	11.00”	3.15”	1.85”
F48T12/HO																	
2	60	RS	120	50162	**EP2110RS/120**	0.88	104	0.99	0.90	<10	-20°F	2-1	A	11.80”	11.00”	2.15”	1.61”
	60	RS	120	50164	**EP2110RS/MV**	0.88	104	0.99	0.90	<20	-20°F	2-1	A	11.80”	11.00”	2.15”	1.61”
	60	RS	277	50164	**EP2110RS/MV**	0.38	104	0.95	0.90	<20	-20°F	2-1	A	11.80”	11.00”	2.15”	1.61”
F60T12/HO																	
2	75	RS	120	50162	**EP2110RS/120**	1.10	132	0.99	0.90	<10	-20°F	2-1	A	11.80”	11.00”	2.15”	1.61”
	75	RS	120	50164	**EP2110RS/MV**	1.10	132	0.99	0.90	<10	-20°F	2-1	A	11.80”	11.00”	2.15”	1.61”
	75	RS	277	50164	**EP2110RS/MV**	0.48	132	0.96	0.90	<10	-20°F	2-1	A	11.80”	11.00”	2.15”	1.61”
F72T12																	
1	57	IS	120	50130	**EP275IS/MV**	0.60	67	0.95	1.05	<12	0°F	1-12	D	11.70”	11.00”	3.15”	1.85”
	57	IS	277	50130	**EP275IS/MV**	0.26	67	0.95	1.05	<12	0°F	1-12	D	11.70”	11.00”	3.15”	1.85”
2	57	IS	120	50132	**EP260IS/120**	0.90	106	0.98	0.95	<12	0°F	2-4	F	9.50”	8.90”	1.70”	1.15”
	57	IS	277	50134	**EP260IS/277**	0.39	106	0.98	0.95	<12	0°F	2-4	F	9.50”	8.90”	1.70”	1.15”
	57	IS	120	50130	**EP275IS/MV**	0.92	107	0.95	0.95	<12	0°F	2-4	D	11.70”	11.00”	3.15”	1.85”
	57	IS	277	50130	**EP275IS/MV**	0.40	107	0.95	0.95	<12	0°F	2-4	D	11.70”	11.00”	3.15”	1.85”
F72T12/HO																	
2	85	RS	120	50162	**EP2110RS/120**	1.30	154	0.99	0.90	<10	-20°F	2-1	A	11.80”	11.00”	2.15”	1.61”
	85	RS	120	50164	**EP2110RS/MV**	1.30	154	0.99	0.90	<20	-20°F	2-1	A	11.80”	11.00”	2.15”	1.61”
	85	RS	277	50164	**EP2110RS/MV**	0.56	154	0.97	0.90	<20	-20°F	2-1	A	11.80”	11.00”	2.15”	1.61”
F96T12/ES																	
1	60	IS	120	50130	**EP275IS/MV**	0.60	71	0.98	1.12	<12	60°F	1-12	D	11.70”	11.00”	3.15”	1.85”
	60	IS	277	50130	**EP275IS/MV**	0.27	72	0.98	1.12	<12	60°F	1-12	D	11.70”	11.00”	3.15”	1.85”
2	60	IS	120	50132	**EP260IS/120**	0.97	115	0.98	0.95	<12	60°F	2-4	F	9.50”	8.90”	1.70”	1.15”
	60	IS	277	50134	**EP260IS/277**	0.42	115	0.98	0.95	<12	60°F	2-4	F	9.50”	8.90”	1.70”	1.15”
	60	IS	120	50130	**EP275IS/MV**	0.97	115	0.99	0.95	<10	60°F	2-4	D	11.70”	11.00”	3.15”	1.85”
	60	IS	277	50130	**EP275IS/MV**	0.42	115	0.98	0.95	<10	60°F	2-4	D	11.70”	11.00”	3.15”	1.85”

Case diagrams and wiring diagrams can be found on pages 197-199.

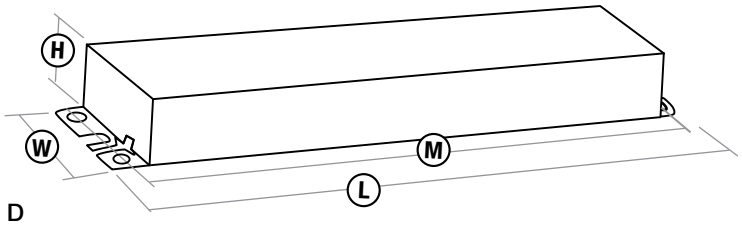
Lamp Type			Input Volts	Product Number	Product Code	Line Current (Amps)	Input Power (Watts)	Power Factor	Ballast Factor	THD %	Min. Start Temp	Wire Diag.	Case	Case Dimensions			
Qty.	Watts	Start Type												Length	Mounting	Width	Height
F96T12																	
1	75	IS	120	50130	**EP275IS/MV**	0.69	83	0.99	1.05	<12	0°F	1-12	D	11.70”	11.00”	3.11”	1.85”
	75	IS	277	50130	**EP275IS/MV**	0.31	83	0.98	1.05	<12	0°F	1-12	D	11.70”	11.00”	3.11”	1.85”
2	75	IS	120	50130	**EP275IS/MV**	1.15	133	0.99	0.86	<12	0°F	2-4	D	11.70”	11.00”	3.11”	1.85”
	75	IS	277	50130	**EP275IS/MV**	0.49	133	0.99	0.86	<12	0°F	2-4	D	11.70”	11.00”	3.11”	1.85”
F96T12/HO/ES																	
2	95	RS	120	50162	**EP2110RS/120**	1.38	164	0.99	0.90	<10	60°F	2-1	A	11.80”	11.00”	2.15”	1.61”
	95	RS	120	50164	**EP2110RS/MV**	1.38	164	0.98	0.90	<20	60°F	2-1	A	11.80”	11.00”	2.15”	1.61”
	95	RS	277	50164	**EP2110RS/MV**	0.60	164	0.97	0.90	<20	60°F	2-1	A	11.80”	11.00”	2.15”	1.61”
F96T12/HO																	
1	110	RS	120	50162	**EP2110RS/120**	0.88	104	0.99	0.92	<15	-20°F	1-7	A	11.80”	11.00”	2.15”	1.61”
	110	RS	120	50164	**EP2110RS/MV**	0.88	104	0.99	0.92	<20	-20°F	1-7	A	11.80”	11.00”	2.15”	1.61”
	110	RS	277	50164	**EP2110RS/MV**	0.38	104	0.95	0.92	<20	-20°F	1-7	A	11.80”	11.00”	2.15”	1.61”
2	110	RS	120	50162	**EP2110RS/120**	1.65	196	0.99	0.90	<10	-20°F	2-1	A	11.80”	11.00”	2.15”	1.61”
	110	RS	120	50164	**EP2110RS/MV**	1.65	196	0.99	0.90	<10	-20°F	2-1	A	11.80”	11.00”	2.15”	1.61”
	110	RS	277	50164	**EP2110RS/MV**	0.71	196	0.98	0.90	<10	-20°F	2-1	A	11.80”	11.00”	2.15”	1.61”

Case diagrams and wiring diagrams can be found on pages 197-199.

Case Diagrams



A



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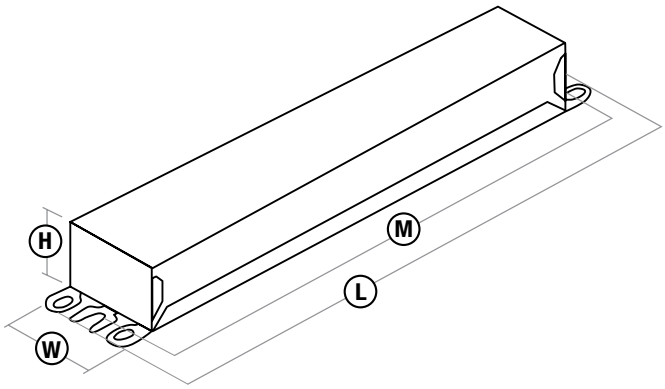
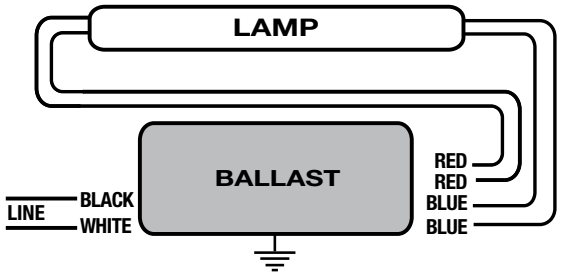


F

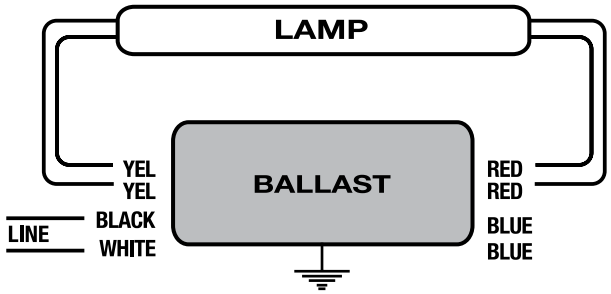
ELECTRONIC FLUORESCENT BALLASTS

T12

Wiring Diagrams



1-7



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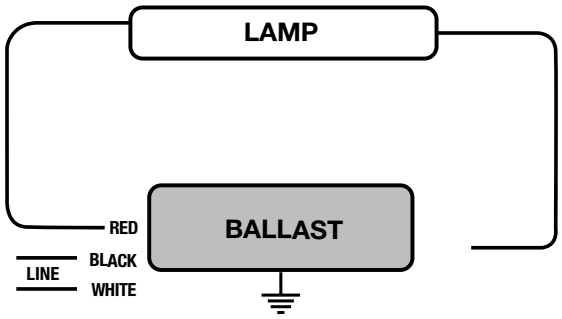
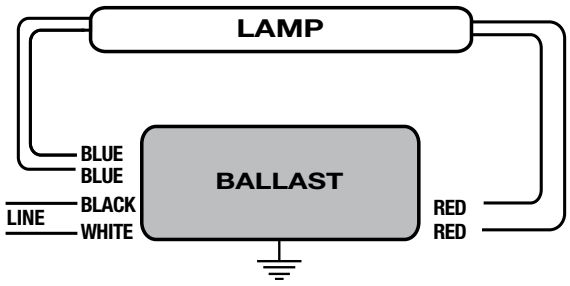
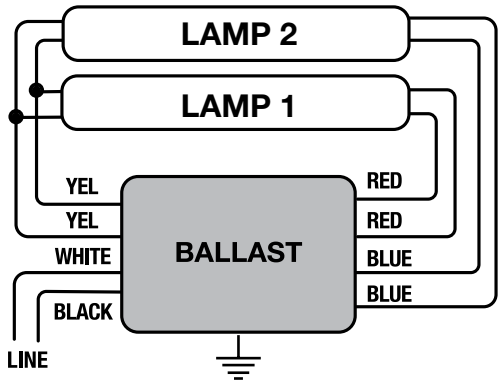


1-12

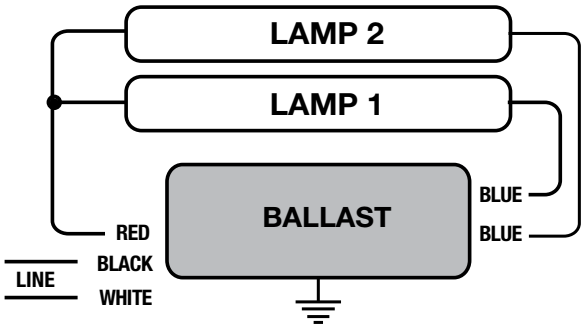


1-18

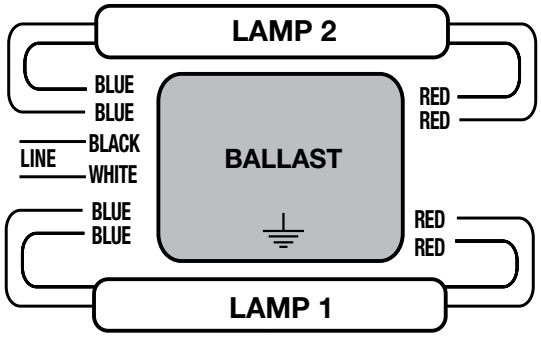
Wiring Diagrams



2-1



2-4



2-12

ELECTRONIC FLUORESCENT BALLASTS

Cross Reference Guide

HALCO	ADVANCE	UNIVERSAL/ MAGNETEK	HOWARD
E114RS/120	-	-	-
E120RS/120	-	-	-
E220RS/120	-	-	-
EP2110RS/120	-	B295SR120HP	E2/110RS-120
EP2110RS/MV	ICN-2S110-SC	B295SRUNVHP	EP2/110RS-MV
EP228PS/MV/MC	ICN-2S28-N	B228PUNV-N	EP2/28T5/PRS/MV
EP132IS/MV/MC	ICN-1P32-N	B132IUNVHP-N	-
E232IS/120/R/MC	REB-2P32-SC	B232I120RES-G	E2/32IS-120MC
EP232IS/120/MC	-	B232I120RH-A	EP2/32IS-120MC
EP232IS/MV/MC	ICN-2P32-N	B232IUNVHP-N	EP2/32IS/MV/MC
EP232IS/H/MV/HE	IOPA-2P32-HL-N	B232IUNVHEH-A	EPH2/32IS/MV/MC/HE
EP232IS/L/MV/HE	IOPA-2P32-LW-N	B232IUNVEL-A	EPL2/32IS/MV/MC/HE
EP232IS/MV/HE	IOPA-2P32-N	B232IUNVHE-A	EP2/32IS/MV/MC/HE
EP232PS/MV/HE	IOP-2PSP32-SC	B232PUNVHE-B	EP2/PRS/MV/MC/HE
EP232PS/L/MV/HE	IOP-2PSP32-LW-SC	B232PUNVEL-B	-
EP239HO/PS/MV	ICN-2S39	B239PUNV-D	EP2/39HO/PRS/MV
EP240RS/120	RELB-2S40-N	B240R120HP	E2/40RS-120MC
EP240RS/MV	ICN-2S40-N	-	EP2/40RS/MV/MC
EP254HO/PS/MV	ICN-2S54	B254PUNV-D	EP2/54HO/PRS/MV/90CW
EP254HO/PS/MV/MC	ICN-2S54-N	-	EP2/54HO/PRS/MV/W/MC
EP259IS/MV	IOP-2P59-SC	B259IUNVHP-A	EP2/59IS/MV/MC
EP260IS/120	-	B260I120M-A	-
EP260IS/277	-	-	-
EP275IS/MV	ICN-2P60-SC	B260IUNVHP	EP2/75IS/MV/SC
EP332IS/MV/MC	ICN-3P32-N	B332IUNVHP-A	-
EP332IS/H/MV/HE	IOPA-3P32-HL-N	B332IUNVHEH-A	-
EP332IS/L/MV/HE	IOPA-3P32-LW-N	B332IUNVEL-A	EPL3/32IS/MV/SC/HE
EP332IS/MV/HE	IOPA-3P32-N	B332IUNVHE-A	EP3/32IS/MV/MC/HE
E432IS/120/R/SL	REB-4P32-SC	B432I120RES-A	-
EP432IS/120/SL	-	B432I120RH-A	-
EP432IS/MV/MC	ICN-4P32-N	B432IUNVHP-A	-
EP432IS/L/MV/HE	IOPA-4P32-LW-N	B432IUNVEL-A	EPL4/32IS/MV/MC/HE
EP432IS/MV/HE	IOPA-4P32-N	B432IUNVHE-A	EP4/32IS/MV/MC/HE
EP432PS/MV/HE	IOP-4PSP32-SC	B432PUNVHE-A	EP4/32PPRS/MV/SC/HE
EP432PS/L/MV/HE	IOP-4PSP32LW-SC	B432PUNVEL-A	-
EP454HO/PS/MV	IOP-4PSP54-2LS-G	B454PUNV-E	-
E1CR22RS/120/PT	-	-	-
E2CR72RS/120/PT	-	-	-

SPECIFICATIONS

	Ballast shall have a Lamp Current Crest Factor of <1.7 in accordance with ANSI C82.1.
	Ballast shall withstand line voltage transients and surges as specified in ANSI standard C62.41-1991.
	Ballast shall have an Underwriters Laboratories certification for operation in the US and either an Underwriters Laboratories or Canadian Standards Association certification for operation in Canada.
	Ballast shall comply with the EMI and RFI limits of the code of Federal Regulations, Title 47, Part 18C for Non-Consumer equipment.
	Ballast shall operate in the range of 50-60Hz input frequency.
	Ballast shall operate at a maximum of 18 feet remote mounting distance for primary lamp. For energy saving reduced wattages lamps, remote mounting distances will be shorter.
	Ballast shall operate at a frequency of 20-40 kHz.
	Ballast shall contain potting compound in order to protect from moisture, dissipate heat and provide stability.
	All ProFormance ballasts shall have a power factor of 0.98 or better on the primary lamp configuration.
	Ballast shall be sound rated Class A.
	Ballast shall have a minimum starting temperature of 0°F standard lamps and 60°F on Energy Saving lamps.
	Ballast shall tolerate sustained variations of +/-10% of supply voltage with no damage to the ballast.
	Ballast shall not contain PCBs.
	Manufacturer shall provide written warranty against defects in material or workmanship for 5 years from date of manufacture.

ELECTRONIC FLUORESCENT BALLAST

Lamp Compatibility Specifications

E114RS/120
50104

Lamp Type	# of Lamps
F14T5	1
F6T5	2
F8T5	2
F13T5	1
F21T5	1
PL13D/E/G24q	1
PL13T/E/G24q	1

E120RS/120
50108

Lamp Type	# of Lamps
F20T12	1
F20T8	1
F18T8 24"	1
F17T8	1
F15T12	1
F15T8	1
F14T12	1
F14T8	1

E154HO/RS/120
50140

Lamp Type	# of Lamps
F54T5/HO	1
PLL55/RS/2G11	1

E220RS/120
50110

Lamp Type	# of Lamps
F20T12	2
F20T8	2
F18T8 24"	2
F17T8	2
F15T12	2
F15T8	2
F14T12	2
F14T8	2

E232IS/120/R/MC
50118

Lamp Type	# of Lamps
F32T8	1, 2
F25T8	1, 2
F17T8	1, 2
F40T8	1

E432IS/120/R/SL
50158

Lamp Type	# of Lamps
F32T8	3, 4
F28T8	3, 4
F25T8	3, 4
F17T8	3, 4

EP132IS/MV/MC
50112

Lamp Type	# of Lamps
F32T8	1
F28T8	1
F25T8	1
F17T8	1
F40T8	1

EP2110RS/120
50162

Lamp Type	# of Lamps
F96T12/HO	1, 2
F96T12/HO/ES	2
F72T12/HO	2
F60T12/HO	2
F48T12/HO	2

EP2110RS/MV
50164

Lamp Type	# of Lamps
F96T12/HO	1, 2
F96T12/HO/ES	2
F72T12/HO	2
F60T12/HO	2
F48T12/HO	2

EP228PS/MV/MC
52112

Lamp Type	# of Lamps
F35T5	1, 2
F28T5	1, 2
F21T5	1, 2
F14T5	1, 2

EP232IS/120/MC
50176

Lamp Type	# of Lamps
F32T8	1, 2
F25T8	1, 2
F17T8	1, 2
F40T8	1

Lamp Compatibility Specifications

EP232IS/H/MV/HE 50115

Lamp Type	# of Lamps
F32T8	1, 2
F28T8	1, 2
F28T8/ES	1,2
F25T8	1, 2
F17T8	1, 2
F40T8	1

EP232IS/L/MV/HE 50119

Lamp Type	# of Lamps
F32T8	1, 2
F28T8	1, 2
F25T8/ES	1, 2
F25T8	1, 2
F17T8	1, 2
F40T8	1

EP232IS/MV/HE 50123

Lamp Type	# of Lamps
F32T8	1, 2
F28T8	1, 2
F25T8/ES	1, 2
F25T8	1, 2
F17T8	1, 2
F40T8	1

EP232IS/MV/MC 50116

Lamp Type	# of Lamps
F32T8	1, 2
F28T8	1, 2
F25T8	1, 2
F17T8	1, 2
F40T8	1

EP232PS/L/MV/HE 50178

Lamp Type	# of Lamps
F32T8	1, 2
F28T8	1, 2
F25T8/ES	1, 2
F25T8	1, 2
F17T8	1, 2
F40T8	1

EP232PS/MV/HE 50180

Lamp Type	# of Lamps
F32T8	1, 2
F28T8	1, 2
F25T8/ES	1, 2
F25T8	1, 2
F17T8	1, 2
F40T8	1

EP239HO/PS/MV 50142

Lamp Type	# of Lamps
F39T5/HO	1, 2
F24T5/HO	1, 2
PLL40/2G11	1, 2
PLL36/2G11	1, 2
PLL24/2G11	1, 2
FC40T5	1, 2
FC22T5	1, 2
FC22T5 + FC40T5	2

EP240RS/120 50128

Lamp Type	# of Lamps
F40T12	1, 2
F34T12	1, 2
F25T12/48"	1, 2
F30T12	1, 2

EP240RS/MV 50160

Lamp Type	# of Lamps
F40T12	1, 2
F34T12	1, 2
F25T12/48”	1, 2
F30T12	1, 2

EP254HO/PS/MV 50144

Lamp Type	# of Lamps
F54T5/HO	1, 2
PLL55/2G11	1, 2
PLL50/2G11	1, 2
FC55T5/HO	1, 2

EP254HO/PS/MV/MC 52114

Lamp Type	# of Lamps
F54T5/HO	1, 2
F49T5/HO	1, 2
PLL55/2611	1, 2
PLL50/2611	1, 2

EP259IS/MV 50136

Lamp Type	# of Lamps
F96T8	1, 2

ELECTRONIC FLUORESCENT BALLAST

Lamp Compatibility Specifications

EP260IS/120
50132

Lamp Type	# of Lamps
F96T12/ES	2
F72T12	2
F48T12	2
F96T12/HO	1

EP260IS/277
50134

Lamp Type	# of Lamps
F96T12/ES	2
F72T12	2
F48T12	2
F96T12/HO	1

EP275IS/MV
50130

Lamp Type	# of Lamps
F96T12	1, 2
F96T12/ES	1, 2
F72T12	1, 2
F48T12	1, 2
F48T12/ES	1, 2

EP332IS/H/MV/SL
50121

Lamp Type	# of Lamps
F32T8	2, 3
F28T8	2, 3
F25T8/ES	2, 3
F25T8	2, 3
F17T8	2, 3
F40T8	2

EP332IS/L/MV/HE
50168

Lamp Type	# of Lamps
F32T8	2, 3
F28T8	2, 3
F25T8/ES	2, 3
F25T8	2, 3
F17T8	2, 3
F40T8	2

EP332IS/MV/HE
50170

Lamp Type	# of Lamps
F32T8	2, 3
F28T8	2, 3
F25T8/ES	2, 3
F25T8	2, 3
F17T8	2, 3
F40T8	2

EP332IS/MV/MC
50122

Lamp Type	# of Lamps
F32T8	2, 3
F28T8	2, 3
F25T8	2, 3
F17T8	2, 3
F40T8	2, 3

Lamp Compatibility Specifications

EP432IS/120/SL 50124

Lamp Type	# of Lamps
F32T8	3, 4
F28T8	3, 4
F25T8	3, 4
F17T8	3, 4
F40T8	3
PLL40/2G11	3

EP432IS/L/MV/HE 50172

Lamp Type	# of Lamps
F32T8	3, 4
F28T8	3, 4
F25T8/ES	3, 4
F25T8	3, 4
F17T8	3, 4
F40T8	3

EP432IS/MV/HE 50174

Lamp Type	# of Lamps
F32T8	3, 4
F28T8	3, 4
F25T8/ES	3, 4
F25T8	3, 4
F17T8	3, 4
F40T8	3

EP432IS/MV/MC 50126

Lamp Type	# of Lamps
F32T8	3, 4
F28T8	3, 4
F25T8	3, 4
F17T8	3, 4
F40T8	3
PLL40/2G11	3

EP432PS/L/MV/HE 50182

Lamp Type	# of Lamps
F32T8	3, 4
F28T8	3, 4
F25T8/ES	3, 4
F25T8	3, 4
F17T8	3, 4
F40T8	3

EP432PS/MV/HE 50184

Lamp Type	# of Lamps
F32T8	3, 4
F28T8	3, 4
F25T8/ES	3, 4
F25T8	3, 4
F17T8	3, 4
F40T8	3

EP454HO/PS/MV 50186

Lamp Type	# of Lamps
F54T5/HO	1, 2, 3, 4
F49T5/HO	2, 3, 4
PLL50/2G11	3, 4

E1CR22RS/120/PT 50150

Lamp Type	# of Lamps
FC8T9	1

E1CR32RS/120/PT 50146

Lamp Type	# of Lamps
FC12T9	1
FC9T9/30W	1

E2CR72RS/120/PT 50148

Lamp Type	# of Lamps
FC12T9 + FC16T9	2
FC8T9 + FC12T9	2


Main Entrance
EMERGENCY
Medical Office Bl

ELECTRONIC SIGN BALLASTS

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HOW TO READ AN ELECTRONIC SIGN BALLAST TABLE

NUMBER OF LAMPS
Specifies the number of lamps the ballast will operate.

INPUT VOLTS
Voltage required from a power supply for proper ballast operation.

PRODUCT CODE
Abbreviated product description can also be used for ordering.

MAX LINE CURRENT
The current that results when the line voltage is applied to a load.

OPEN CIRCUIT VOLTS
The voltage required to start a lamp, which is provided by a ballast to the lamp's electrodes.

WIRING DIAGRAM
References the wiring diagram to use.

CASE DIAGRAM
Representation of the ballast's case.

Lamp Data												
Number of lamps	Lamp Footage		Input Volts	Product Number	Product Code	Max Line Current (Amps)	Max Input Power (Watts)	Open Circuit Volts	Min Starting Temp	Wiring Diag.	Case Diagram	Weight (lbs.)
	Min	Max										
T8/HO												
1, 2	4'	12'	120	57114	**ESB/0216/12**	1.10	122	800	-20°F	1-3, 2-17	D2	2.88
1, 2	4'	12'	277	57114	**ESB/0216/12**	0.45	121	800	-20°F	1-3, 2-17	D2	2.88
1, 2, 3, 4	4'	24'	120	57116	**ESB/0432/14**	2.20	244	800	-20°F	1-17, 2-19, 3-6, 4-3	D3	4.46
1, 2, 3, 4	4'	24'	277	57116	**ESB/0432/14**	0.90	242	800	-20°F	1-17, 2-19, 3-6, 4-3	D3	4.46

LAMP TYPE
Indicates the type of lamp that the ballast will operate.

LAMP FOOTAGE (Min/Max)
Specifies the minimum and maximum total lamp length per ballast.

PRODUCT NUMBER
Use this number when placing an order.

MAX INPUT POWER
Total power input to the ballast which includes lamp watts and ballast losses.

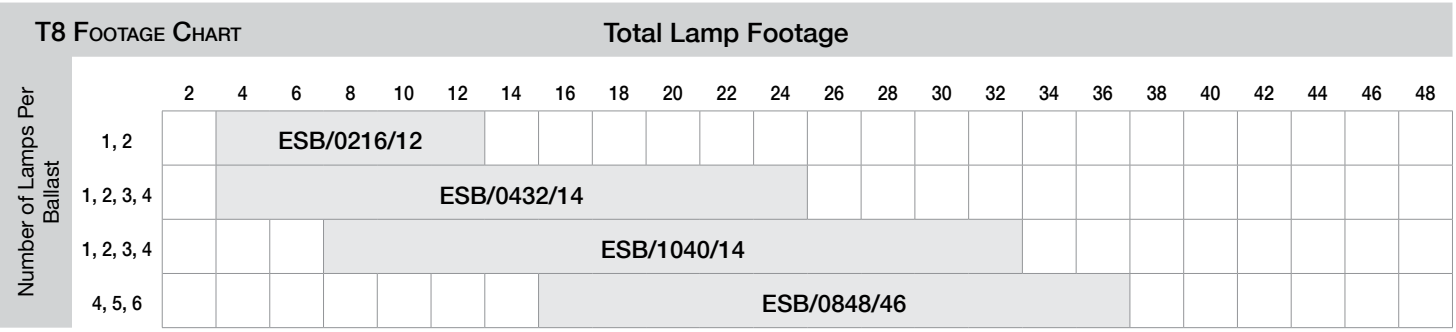
MIN STARTING TEMP.
References minimum ambient temperature that the ballast will reliably start a lamp.

WEIGHT (lbs.)
Indicates the ballast's weight.

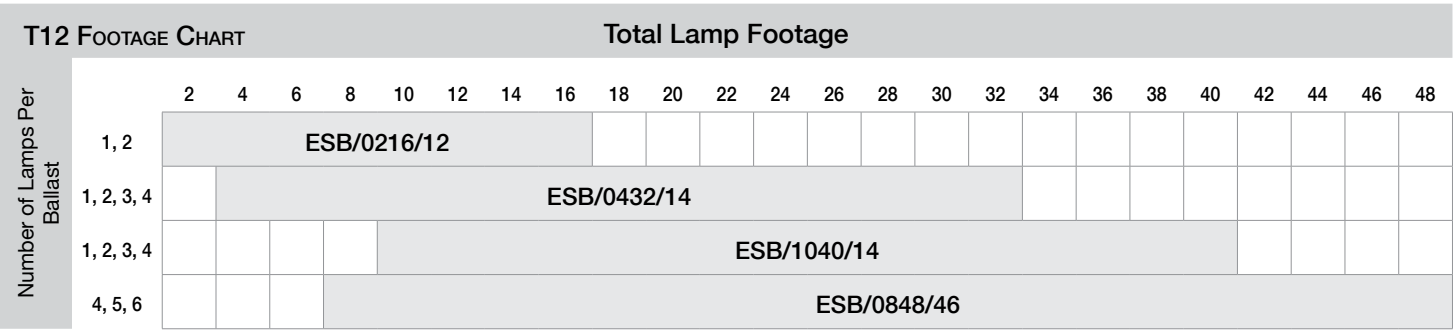
ELECTRONIC SIGN BALLASTS

T8/T12 High Output

T8 Footage Chart



T12 Footage Chart



Lamp Data			Input Volts	Product Number	Product Code	Max Line Current (Amps)	Max Input Power (Watts)	Open Circuit Volts	Min Starting Temp	Wiring Diagrams	Case Diagram	Weight (lbs.)
Number of lamps	Lamp Footage Min	Lamp Footage Max										
T8/HO												
1, 2	4’	12’	120	57114	**ESB/0216/12**	1.10	122	800	-20°F	1-3, 2-17	D2	2.88
1, 2	4’	12’	277	57114	**ESB/0216/12**	0.45	121	800	-20°F	1-3, 2-17	D2	2.88
1, 2, 3, 4	4’	24’	120	57116	**ESB/0432/14**	2.20	244	800	-20°F	1-17, 2-19, 3-6, 4-3	D3	4.46
1, 2, 3, 4	4’	24’	277	57116	**ESB/0432/14**	0.90	242	800	-20°F	1-17, 2-19, 3-6, 4-3	D3	4.46
1, 2, 3, 4	8’	32’	120	57118	**ESB/1040/14**	2.80	330	1000	-20°F	1-16, 2-18, 3-5, 4-2	D4	7.00
1, 2, 3, 4	8’	32’	277	57118	**ESB/1040/14**	1.25	325	1000	-20°F	1-16, 2-18, 3-5, 4-2	D4	7.00
4, 5, 6	16’	36’	120	57120	**ESB/0848/46**	3.30	370	860	-20°F	4-4, 5-1, 6-1	D4	7.02
4, 5, 6	16’	36’	277	57120	**ESB/0848/46**	1.36	365	860	-20°F	4-4, 5-1, 6-1	D4	7.02
T12/HO												
1, 2	2’	16’	120	57114	**ESB/0216/12**	1.20	131	800	-20°F	1-3, 2-17	D2	2.88
1, 2	2’	16’	277	57114	**ESB/0216/12**	0.50	132	800	-20°F	1-3, 2-17	D2	2.88
1, 2, 3, 4	4’	32’	120	57116	**ESB/0432/14**	2.40	267	800	-20°F	1-17, 2-19, 3-6, 4-3	D3	4.46
1, 2, 3, 4	4’	32’	277	57116	**ESB/0432/14**	1.00	267	800	-20°F	1-17, 2-19, 3-6, 4-3	D3	4.46
1, 2, 3, 4	10’	40’	120	57118	**ESB/1040/14**	3.00	352	1000	-20°F	1-16, 2-18, 3-5, 4-2	D4	7.00
1, 2, 3, 4	10’	40’	277	57118	**ESB/1040/14**	1.30	349	1000	-20°F	1-16, 2-18, 3-5, 4-2	D4	7.00
4, 5, 6	8’	48’	120	57120	**ESB/0848/46**	3.50	410	860	-20°F	4-4, 5-1, 6-1	D4	7.02
4, 5, 6	8’	48’	277	57120	**ESB/0848/46**	1.50	405	860	-20°F	4-4, 5-1, 6-1	D4	7.02

See following page for case dimensions and wiring diagrams.

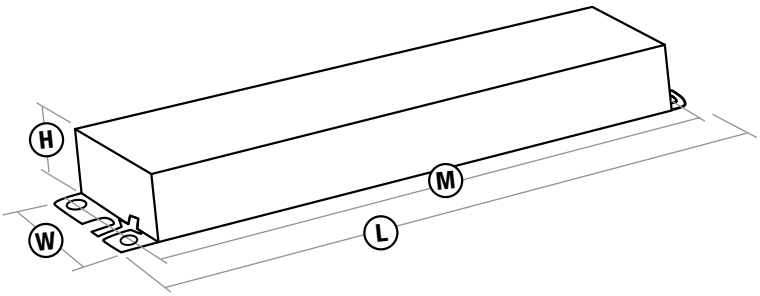
ELECTRONIC SIGN BALLASTS

T8/T12 High Output

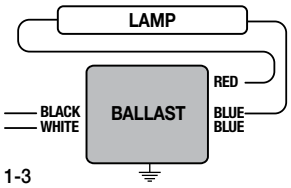
Case Dimensions

Drawing #	Overall (L)	Width (W)	Height (H)	Mounting (M)
D2	9.50”	2.36”	1.70”	8.90”
D3	11.65”	3.15”	1.85”	11.00”
D4	14.45”	3.23”	2.20”	13.75”

Case Diagram



Wiring Diagrams



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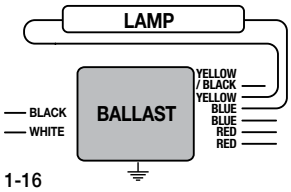

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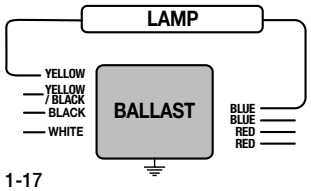

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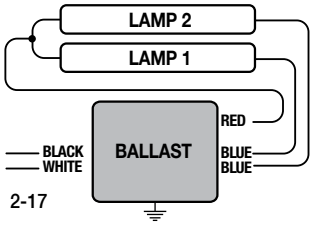

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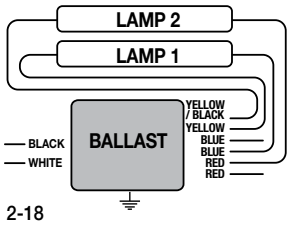

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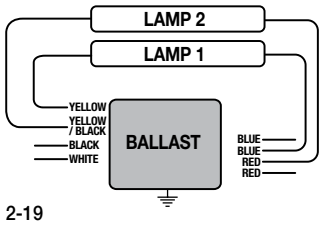

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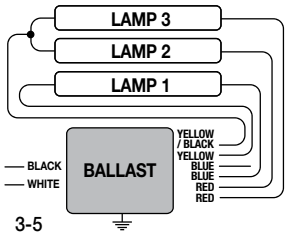

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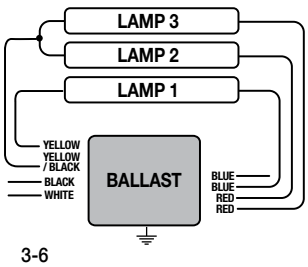

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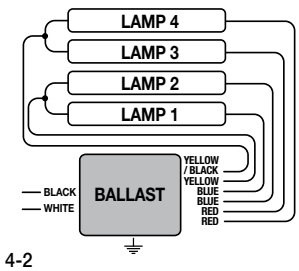
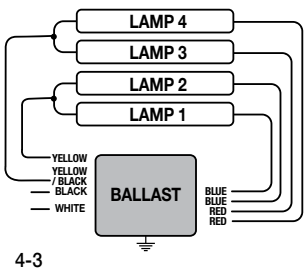


4-2



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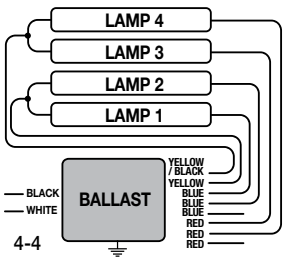

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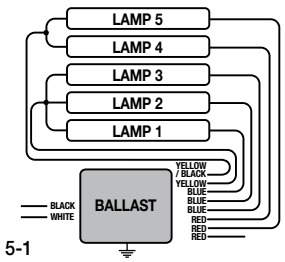
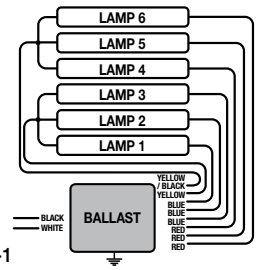


5-1



6-1

ELECTRONIC SIGN BALLASTS

Cross Reference Guide and Lamp Compatibility Specifications

HALCO	ADVANCE	UNIVERSAL/ MAGNETEK	HOWARD
ESB/0216/12	ASB-0412-12-E	ESB216-12	-
ESB/0432/14	ASB-1232-24-E	ESB432-14	-
ESB/0848/46	ASB-2048-46-E	ESB848-46	EBO-6-8-48
ESB/1040/14	-	ESB1040-14	EBO-4-10-40

ESB/0216/12
57114

Lamp Type	# of Lamps		Lamp Footage	
	Min	Max	Min	Max
T12/HO	1	2	2'	16'
T8/HO	1	2	2'	12'

ESB/0432/14
57116

Lamp Type	# of Lamps		Lamp Footage	
	Min	Max	Min	Max
T12/HO	1	4	4'	32'
T8/HO	1	4	4'	24'

ESB/0848/46
57120

Lamp Type	# of Lamps		Lamp Footage	
	Min	Max	Min	Max
T12/HO	4	6	8'	48'
T8/HO	4	6	16'	36'

ESB/1040/14
57118

Lamp Type	# of Lamps		Lamp Footage	
	Min	Max	Min	Max
T12HO	1	4	10'	40'
T8HO	1	4	8'	32'

COMPACT FLUORESCENT BALLASTS

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HOW TO READ A COMPACT FLUORESCENT BALLAST TABLE

INPUT VOLTS
Voltage required from a power supply for proper ballast operation.

PRODUCT CODE
Abbreviated product description can also be used for ordering.

INPUT POWER
Total power input to the ballast which includes lamp watts and ballast losses.

BALLAST FACTOR
Ratio of the lamp's lumen output on the specified ballast to the lamp's lumen output when operated by a reference ballast.

WIRING DIAGRAM
References the wiring diagram to use.

CASE DIMENSIONS
Specifies ballast overall length, mounting length, width, and height.

Lamp Type			Input Volts	Product Number	Product Code	Line Current (Amps)	Input Power (Watts)	Power Factor	Ballast Factor	THD %	Min. Start Temp	Wire Diag.	Case	Case Dimensions			
Qty.	Watts	Start Type												Length	Mounting	Width	Height
PL5S/E/2G7																	
1	5	PS	120	52102	**EP2CF13PS/MV/DC/K**	0.06	8	0.98	1.10	<10	0°F	1-9	L	5.00"	4.63"	2.40"	1.00"
	5	PS	277	52102	**EP2CF13PS/MV/DC/K**	0.03	9	0.89	1.10	<15	0°F	1-9	L	5.00"	4.63"	2.40"	1.00"
2	5	PS	120	52102	**EP2CF13PS/MV/DC/K**	0.11	14	0.99	1.05	<10	0°F	2-6	L	5.00"	4.63"	2.40"	1.00"
	5	PS	277	52102	**EP2CF13PS/MV/DC/K**	0.05	14	0.99	1.05	<10	0°F	2-6	L	5.00"	4.63"	2.40"	1.00"

LAMP TYPE
Indicates the type of lamp that the ballast will operate.

PRODUCT NUMBER
Use this number when placing an order.

LINE CURRENT
The current that results when the line voltage is applied to a load.

POWER FACTOR
Watts to volt amps ratio, which measures efficiency of a ballast's power usage.

THD%
Indicates percentage of Total Harmonic Distortion.

MIN STARTING TEMP.
References minimum ambient temperature that the ballast will reliably start a lamp.

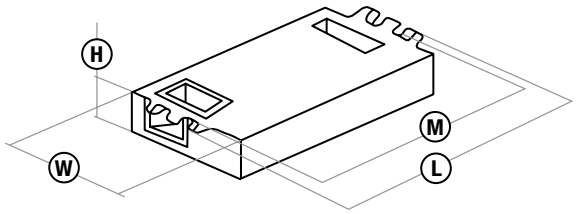
CASE
References the ballast's case shape.

COMPACT FLUORESCENT BALLASTS

PL Single Tube

Lamp Type			Input Volts	Product Number	Product Code	Line Current (Amps)	Input Power (Watts)	Power Factor	Ballast Factor	THD %	Min. Start Temp	Wire Diag.	Case	Case Dimensions			
Qty.	Watts	Start Type												Length	Mounting	Width	Height
PL5S/E/2G7																	
1	5	PS	120	52102	**EP2CF13PS/MV/DC/K**	0.06	8	0.98	1.10	<10	0°F	1-9	L	5.00”	4.63”	2.40”	1.00”
	5	PS	277	52102	**EP2CF13PS/MV/DC/K**	0.03	9	0.89	1.10	<15	0°F	1-9	L	5.00”	4.63”	2.40”	1.00”
2	5	PS	120	52102	**EP2CF13PS/MV/DC/K**	0.11	14	0.99	1.05	<10	0°F	2-6	L	5.00”	4.63”	2.40”	1.00”
	5	PS	277	52102	**EP2CF13PS/MV/DC/K**	0.05	14	0.99	1.05	<10	0°F	2-6	L	5.00”	4.63”	2.40”	1.00”
PL7S/E/2G7																	
1	7	PS	120	52102	**EP2CF13PS/MV/DC/K**	0.08	11	0.98	1.07	<10	0°F	1-9	L	5.00”	4.63”	2.40”	1.00”
	7	PS	277	52102	**EP2CF13PS/MV/DC/K**	0.04	11	0.91	1.07	<15	0°F	1-9	L	5.00”	4.63”	2.40”	1.00”
2	7	PS	120	52102	**EP2CF13PS/MV/DC/K**	0.14	20	0.99	1.03	<10	0°F	2-6	L	5.00”	4.63”	2.40”	1.00”
	7	PS	277	52102	**EP2CF13PS/MV/DC/K**	0.06	16	0.97	1.03	<12	0°F	2-6	L	5.00”	4.63”	2.40”	1.00”
PL9S/E/2G7																	
1	9	PS	120	52102	**EP2CF13PS/MV/DC/K**	0.10	12	0.99	1.05	<10	0°F	1-9	L	5.00”	4.63”	2.40”	1.00”
	9	PS	277	52102	**EP2CF13PS/MV/DC/K**	0.05	13	0.94	1.05	<15	0°F	1-9	L	5.00”	4.63”	2.40”	1.00”
2	9	PS	120	52102	**EP2CF13PS/MV/DC/K**	0.18	22	0.99	1.02	<10	0°F	2-6	L	5.00”	4.63”	2.40”	1.00”
	9	PS	277	52102	**EP2CF13PS/MV/DC/K**	0.08	21	0.97	1.02	<12	0°F	2-6	L	5.00”	4.63”	2.40”	1.00”

Case Diagram



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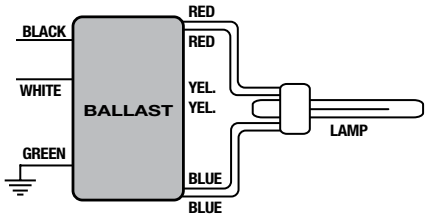
Wiring Diagrams



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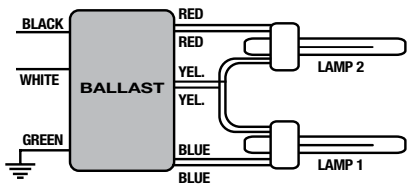

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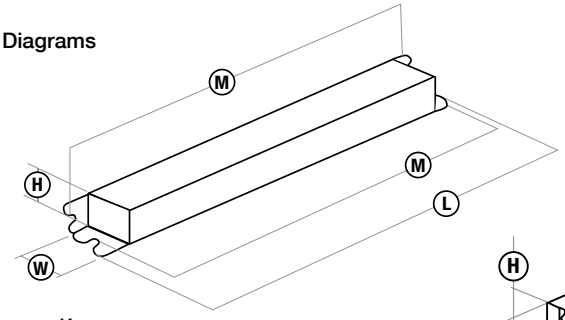
COMPACT FLUORESCENT BALLASTS

PL Double Tube

Lamp Type			Input Volts	Product Number	Product Code	Line Current (Amps)	Input Power (Watts)	Power Factor	Ballast Factor	THD %	Min. Start Temp	Wire Diag.	Case	Case Dimensions			
Qty.	Watts	Start Type												Length	Mounting	Width	Height
PL13D/E/G24q																	
1	13	RS	120	50104	**E114RS/120**	0.22	14	0.53	0.95	<130	0°F	1-5	K	5.90”	5.60”	0.91”	0.76”
	13	PS	120	52102	**EP2CF13PS/MV/DC/K**	0.16	16	0.96	1.00	<10	0°F	1-9	L	5.00”	4.63”	2.41”	1.00”
	13	PS	277	52102	**EP2CF13PS/MV/DC/K**	0.07	16	0.96	1.00	<10	0°F	1-9	L	5.00”	4.63”	2.41”	1.00”
	13	RS	120	52200	**E1CF13RS/120/GU24**	0.22	14	0.54	1.02	<150	0°F	-	C	2.32”	1.54”	0.90”	1.97”
2	13	PS	120	52102	**EP2CF13PS/MV/DC/K**	0.27	29	0.99	1.00	<10	0°F	2-6	L	5.00”	4.63”	2.41”	1.00”
	13	PS	277	52102	**EP2CF13PS/MV/DC/K**	0.12	29	0.99	1.00	<10	0°F	2-6	L	5.00”	4.63”	2.41”	1.00”
PL18D/E/G24q																	
1	18	PS	120	52102	**EP2CF13PS/MV/DC/K**	0.17	20	0.99	1.00	<12	0°F	1-9	L	5.00”	4.63”	2.41”	1.00”
	18	PS	277	52102	**EP2CF13PS/MV/DC/K**	0.07	20	0.99	1.00	<12	0°F	1-9	L	5.00”	4.63”	2.41”	1.00”
	18	PS	120	52104	**EP2CF18PS/MV/DC/K**	0.16	19	0.97	1.00	<10	0°F	1-9	L	5.00”	4.63”	2.41”	1.00”
	18	PS	277	52104	**EP2CF18PS/MV/DC/K**	0.07	19	0.97	1.00	<10	0°F	1-9	L	5.00”	4.63”	2.41”	1.00”
2	18	PS	120	52104	**EP2CF18PS/MV/DC/K**	0.30	35	0.99	0.95	<10	0°F	2-6	L	5.00”	4.63”	2.41”	1.00”
	18	PS	277	52104	**EP2CF18PS/MV/DC/K**	0.13	35	0.99	0.95	<10	0°F	2-6	L	5.00”	4.63”	2.41”	1.00”

Case Diagrams



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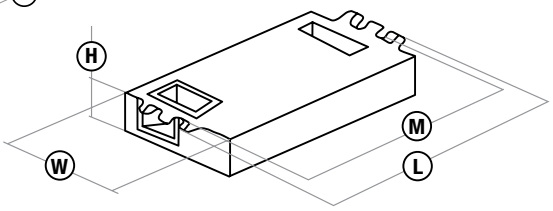

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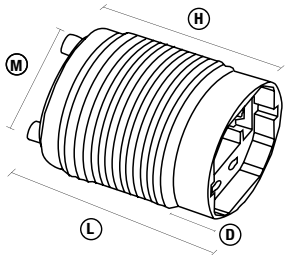

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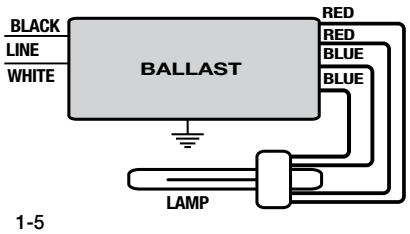
Wiring Diagrams



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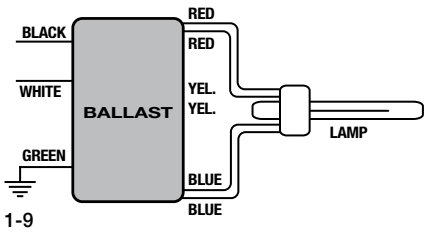

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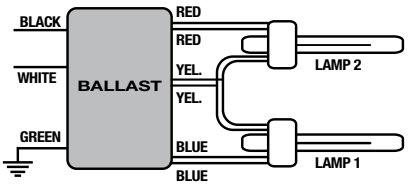


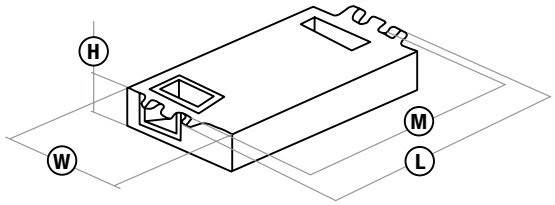
2-6

COMPACT FLUORESCENT BALLASTS

PL Double Tube

Lamp Type			Input Volts	Product Number	Product Code	Line Current (Amps)	Input Power (Watts)	Power Factor	Ballast Factor	THD %	Min. Start Temp	Wire Diag.	Case	Case Dimensions			
Qty.	Watts	Start Type												Length	Mounting	Width	Height
PL26D/E/G24q																	
1	26	PS	120	52104	**EP2CF18PS/MV/DC/K**	0.24	28	0.99	1.00	<12	0°F	1-9	L	5.00”	4.63”	2.41”	1.00”
	26	PS	277	52104	**EP2CF18PS/MV/DC/K**	0.10	28	0.99	1.00	<12	0°F	1-9	L	5.00”	4.63”	2.41”	1.00”
	26	PS	120	52106	**EP2CF26PS/MV/DC/K**	0.24	27	0.98	1.00	<10	0°F	1-9	L	5.00”	4.63”	2.41”	1.00”
	26	PS	277	52106	**EP2CF26PS/MV/DC/K**	0.11	27	0.98	1.00	<10	0°F	1-9	L	5.00”	4.63”	2.41”	1.00”
	26	PS	120	52108	**EP2CF42PS/MV/DC/K**	0.27	32	0.99	1.00	<10	0°F	1-9	L	5.00”	4.63”	3.00”	1.38”
	26	PS	277	52108	**EP2CF42PS/MV/DC/K**	0.13	32	0.95	1.00	<12	0°F	1-9	L	5.00”	4.63”	3.00”	1.38”
	26	RS	120	52202	**E1CF26RS/120/GU24**	0.32	22	0.57	0.80	<150	0°F	-	C	2.32”	0.95”	1.54”	1.97”
2	26	PS	120	52106	**EP2CF26PS/MV/DC/K**	0.45	51	0.99	1.00	<10	0°F	2-6	L	5.00”	4.63”	2.41”	1.00”
	26	PS	277	52106	**EP2CF26PS/MV/DC/K**	0.19	51	0.99	1.00	<10	0°F	2-6	L	5.00”	4.63”	2.41”	1.00”
	26	PS	120	52108	**EP2CF42PS/MV/DC/K**	0.45	54	0.99	0.90	<10	0°F	2-6	L	5.00”	4.63”	3.00”	1.38”
	26	PS	277	52108	**EP2CF42PS/MV/DC/K**	0.21	54	0.97	0.90	<12	0°F	2-6	L	5.00”	4.63”	3.00”	1.38”

Case Diagrams



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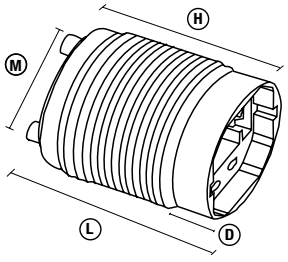

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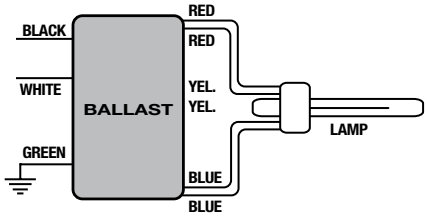
Wiring Diagrams



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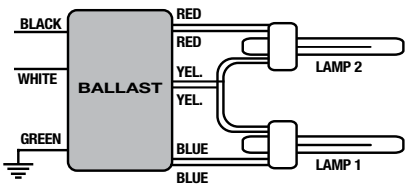


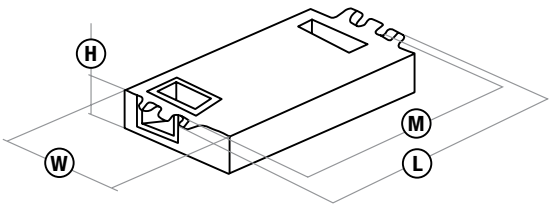
2-6

COMPACT FLUORESCENT BALLASTS

PL Triple Tube

Lamp Type			Input Volts	Product Number	Product Code	Line Current (Amps)	Input Power (Watts)	Power Factor	Ballast Factor	THD %	Min. Start Temp	Wire Diag.	Case	Case Dimensions			
Qty.	Watts	Start Type												Length	Mounting	Width	Height
PL18T/E/GX24q																	
1	18	PS	120	52102	**EP2CF13PS/MV/DC/K**	0.17	17	0.99	1.00	<12	0°F	1-9	L	5.00”	4.63”	2.41”	1.00”
	18	PS	277	52102	**EP2CF13PS/MV/DC/K**	0.07	17	0.99	1.00	<12	0°F	1-9	L	5.00”	4.63”	2.41”	1.00”
	18	PS	120	52104	**EP2CF18PS/MV/DC/K**	0.17	20	0.97	1.05	<10	0°F	1-9	L	5.00”	4.63”	2.41”	1.00”
	18	PS	277	52104	**EP2CF18PS/MV/DC/K**	0.08	20	0.97	1.05	<10	0°F	1-9	L	5.00”	4.63”	2.41”	1.00”
2	18	PS	120	52104	**EP2CF18PS/MV/DC/K**	0.33	39	0.99	1.00	<10	0°F	2-6	L	5.00”	4.63”	2.41”	1.00”
	18	PS	277	52104	**EP2CF18PS/MV/DC/K**	0.14	39	0.99	1.00	<10	0°F	2-6	L	5.00”	4.63”	2.41”	1.00”
PL26T/E/GX24q																	
1	26	PS	120	52104	**EP2CF18PS/MV/DC/K**	0.24	28	0.99	1.00	< 12	0°F	1-9	L	5.00”	4.63”	2.41”	1.00”
	26	PS	277	52104	**EP2CF18PS/MV/DC/K**	0.10	28	0.99	1.00	<12	0°F	1-9	L	5.00”	4.63”	2.41”	1.00”
	26	PS	120	52106	**EP2CF26PS/MV/DC/K**	0.23	29	0.98	1.00	<10	0°F	1-9	L	5.00”	4.63”	2.41”	1.00”
	26	PS	277	52106	**EP2CF26PS/MV/DC/K**	0.10	29	0.98	1.00	<10	0°F	1-9	L	5.00”	4.63”	2.41”	1.00”
	26	PS	120	52108	**EP2CF42PS/MV/DC/K**	0.27	32	0.99	1.00	<10	0°F	1-9	L	5.00”	4.63”	3.00”	1.38”
	26	PS	277	52108	**EP2CF42PS/MV/DC/K**	0.13	32	0.95	1.00	<12	0°F	1-9	L	5.00”	4.63”	3.00”	1.38”
	26	RS	120	52202	**E1CF26RS/120/GU24**	0.32	22	0.57	0.80	<150	0°F	-	C	2.32”	0.95”	1.54”	1.97”
2	26	PS	120	52106	**EP2CF26PS/MV/DC/K**	0.45	54	0.99	1.00	<10	0°F	2-6	L	5.00”	4.63”	2.41”	1.00”
	26	PS	277	52106	**EP2CF26PS/MV/DC/K**	0.19	54	0.99	1.00	<10	0°F	2-6	L	5.00”	4.63”	2.41”	1.00”
	26	PS	120	52108	**EP2CF42PS/MV/DC/K**	0.45	54	0.99	0.90	<10	0°F	2-6	L	5.00”	4.63”	3.00”	1.38”
	26	PS	277	52108	**EP2CF42PS/MV/DC/K**	0.21	54	0.97	0.90	<12	0°F	2-6	L	5.00”	4.63”	3.00”	1.38”

Case Diagrams



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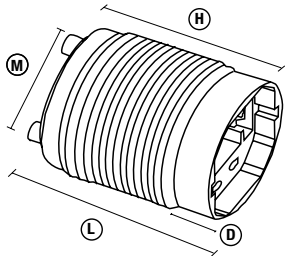
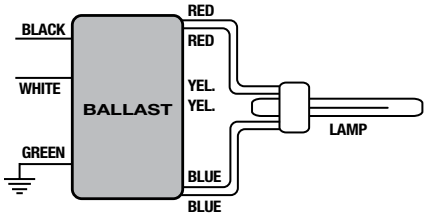


C

Wiring Diagrams



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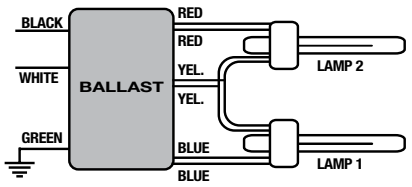


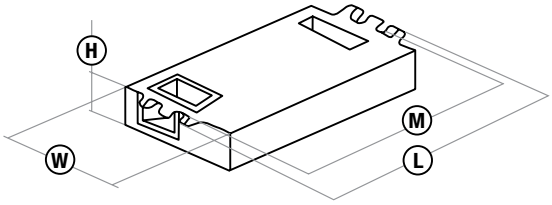
2-6

COMPACT FLUORESCENT BALLASTS

PL Triple Tube

Lamp Type			Input Volts	Product Number	Product Code	Line Current (Amps)	Input Power (Watts)	Power Factor	Ballast Factor	THD %	Min. Start Temp	Wire Diag.	Case	Case Dimensions			
Qty.	Watts	Start Type												Length	Mounting	Width	Height
PL32T/E/GX24q																	
1	32	PS	120	52106	**EP2CF26PS/MV/DC/K**	0.26	36	0.98	0.98	<10	0°F	1-9	L	5.00”	4.63”	2.41”	1.00”
	32	PS	277	52106	**EP2CF26PS/MV/DC/K**	0.13	36	0.98	0.98	<10	0°F	1-9	L	5.00”	4.63”	2.41”	1.00”
	32	PS	120	52108	**EP2CF42PS/MV/DC/K**	0.35	42	0.99	0.96	<10	0°F	1-9	L	5.00”	4.63”	3.00”	1.38”
	32	PS	277	52108	**EP2CF42PS/MV/DC/K**	0.13	42	0.96	0.96	<12	0°F	1-9	L	5.00”	4.63”	3.00”	1.38”
2	32	PS	120	52108	**EP2CF42PS/MV/DC/K**	0.53	63	0.99	0.95	<10	0°F	2-6	L	5.00”	4.63”	3.00”	1.38”
	32	PS	277	52108	**EP2CF42PS/MV/DC/K**	0.23	63	0.98	0.95	<12	0°F	2-6	L	5.00”	4.63”	3.00”	1.38”
PL42T/E/GX24q																	
1	42	PS	120	52106	**EP2CF26PS/MV/DC/K**	0.38	46	0.98	0.98	<10	0°F	1-9	L	5.00”	4.63”	2.41”	1.00”
	42	PS	277	52106	**EP2CF26PS/MV/DC/K**	0.17	46	0.98	0.98	<10	0°F	1-9	L	5.00”	4.63”	2.41”	1.00”
	42	PS	120	52108	**EP2CF42PS/MV/DC/K**	0.40	47	0.99	1.00	<10	0°F	1-9	L	5.00”	4.63”	3.00”	1.38”
	42	PS	277	52108	**EP2CF42PS/MV/DC/K**	0.18	47	0.96	1.00	<10	0°F	1-9	L	5.00”	4.63”	3.00”	1.38”
2	42	PS	120	52108	**EP2CF42PS/MV/DC/K**	0.77	94	0.99	1.00	<10	0°F	2-6	L	5.00”	4.63”	3.00”	1.38”
	42	PS	277	52108	**EP2CF42PS/MV/DC/K**	0.38	93	0.98	1.00	<10	0°F	2-6	L	5.00”	4.63”	3.00”	1.38”
PL57T/E/GX24q																	
1	57	PS	120	52106	**EP2CF26PS/MV/DC/K**	0.43	56	0.99	0.85	<10	0°F	1-9	L	5.00”	4.63”	2.41”	1.00”
	57	PS	277	52106	**EP2CF26PS/MV/DC/K**	0.19	56	0.99	0.85	<10	0°F	1-9	L	5.00”	4.63”	2.41”	1.00”
	57	PS	120	52108	**EP2CF42PS/MV/DC/K**	0.49	58	0.99	1.00	<10	0°F	1-9	L	5.00”	4.63”	3.00”	1.38”
	57	PS	277	52108	**EP2CF42PS/MV/DC/K**	0.22	58	0.97	1.00	<12	0°F	1-9	L	5.00”	4.63”	3.00”	1.38”

Case Diagram



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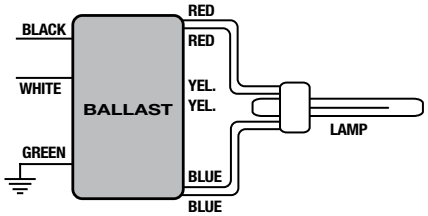
Wiring Diagrams



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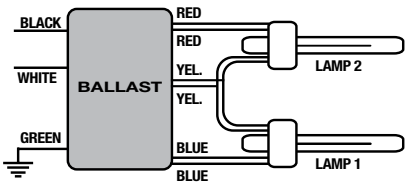


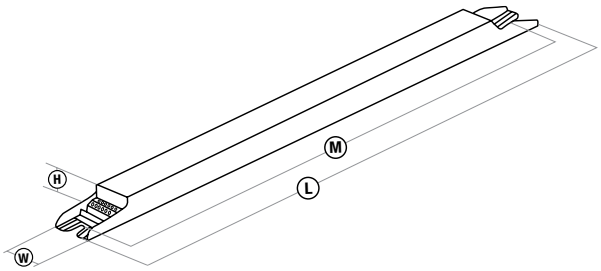
2-6

COMPACT FLUORESCENT BALLASTS

PLL High Lumen

Lamp Type			Input Volts	Product Number	Product Code	Line Current (Amps)	Input Power (Watts)	Power Factor	Ballast Factor	THD %	Min. Start Temp	Wire Diag.	Case	Case Dimensions			
Qty.	Watts	Start Type												Length	Mounting	Width	Height
PLL18/2G11																	
2	18	PS	120	52106	**EP2CF26PS/MV/DC/K**	0.31	35	0.99	0.92	<10	0°F	2-6	L	5.00”	4.63”	2.41”	1.00”
	18	PS	277	52106	**EP2CF26PS/MV/DC/K**	0.14	35	0.99	0.92	<10	0°F	2-6	L	5.00”	4.63”	2.41”	1.00”
PLL24/2G11																	
1	24	PS	120	50142	**EP239HO/PS/MV**	0.24	29	0.98	1.12	<20	0°F	1-9	J	16.90”	16.00”	1.20”	1.00”
	24	PS	277	50142	**EP239HO/PS/MV**	0.12	29	0.98	1.12	<20	0°F	1-9	J	16.90”	16.00”	1.20”	1.00”
	24	PS	120	52108	**EP2CF42PS/MV/DC/K**	0.22	27	0.99	1.00	<10	0°F	1-9	L	5.00”	4.63”	3.00”	1.38”
	24	PS	277	52108	**EP2CF42PS/MV/DC/K**	0.11	28	0.92	1.00	<15	0°F	1-9	L	5.00”	4.63”	3.00”	1.38”
2	24	PS	120	50142	**EP239HO/PS/MV**	0.46	54	0.98	1.10	<10	0°F	2-6	J	16.90”	16.00”	1.20”	1.00”
	24	PS	277	50142	**EP239HO/PS/MV**	0.20	54	0.98	1.10	<10	0°F	2-6	J	16.90”	16.00”	1.20”	1.00”
	24	PS	120	52106	**EP2CF26PS/MV/DC/K**	0.43	48	0.99	0.93	<10	0°F	2-6	L	5.00”	4.63”	2.41”	1.00”
	24	PS	277	52106	**EP2CF26PS/MV/DC/K**	0.18	48	0.99	0.93	<10	0°F	2-6	L	5.00”	4.63”	2.41”	1.00”
	24	PS	120	52108	**EP2CF42PS/MV/DC/K**	0.45	54	0.99	1.00	<10	0°F	2-6	L	5.00”	4.63”	3.00”	1.38”
	24	PS	277	52108	**EP2CF42PS/MV/DC/K**	0.20	54	0.97	1.00	<10	0°F	2-6	L	5.00”	4.63”	3.00”	1.38”

Case Diagrams



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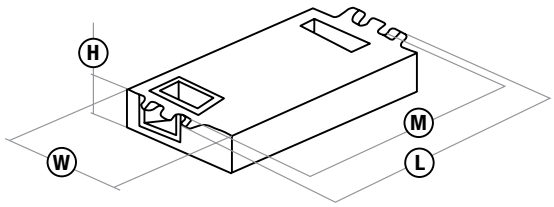

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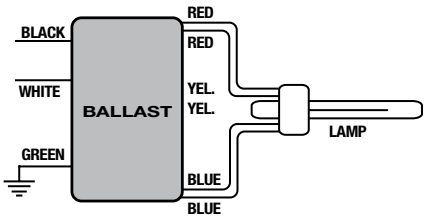
Wiring Diagrams



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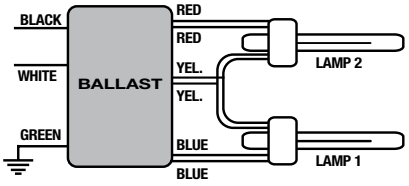


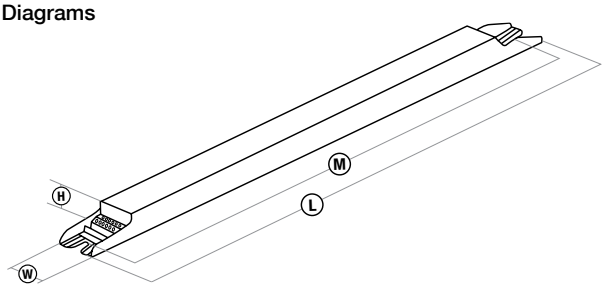
2-6

COMPACT FLUORESCENT BALLASTS

PLL High Lumen

Lamp Type			Input Volts	Product Number	Product Code	Line Current (Amps)	Input Power (Watts)	Power Factor	Ballast Factor	THD %	Min. Start Temp	Wire Diag.	Case	Case Dimensions			
Qty.	Watts	Start Type												Length	Mounting	Width	Height
PLL36/2G11																	
1	36	PS	120	50142	**EP239HO/PS/MV**	0.30	36	0.98	0.96	<15	0°F	1-9	J	16.90”	16.00”	1.20”	1.00”
	36	PS	277	50142	**EP239HO/PS/MV**	0.20	36	0.98	0.96	<15	0°F	1-9	J	16.90”	16.00”	1.20”	1.00”
	36	PS	120	52108	**EP2CF42PS/MV/DC/K**	0.31	37	0.99	0.88	<10	0°F	1-9	L	5.00”	4.63”	3.00”	1.38”
	36	PS	277	52108	**EP2CF42PS/MV/DC/K**	0.14	37	0.95	0.88	<12	0°F	1-9	L	5.00”	4.63”	3.00”	1.38”
2	36	PS	120	50142	**EP239HO/PS/MV**	0.59	69	0.94	0.94	<10	0°F	2-6	J	16.90”	16.00”	1.20”	1.00”
	36	PS	277	50142	**EP239HO/PS/MV**	0.25	69	0.98	0.94	<10	0°F	2-6	J	16.90”	16.00”	1.20”	1.00”
	36	PS	120	52108	**EP2CF42PS/MV/DC/K**	0.55	66	0.99	0.80	<10	0°F	2-6	L	5.00”	4.63”	3.00”	1.38”
	36	PS	277	52108	**EP2CF42PS/MV/DC/K**	0.24	65	0.98	0.80	<10	0°F	2-6	L	5.00”	4.63”	3.00”	1.38”

Case Diagrams



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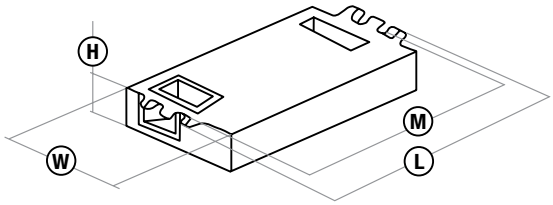

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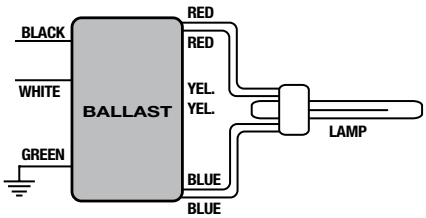
Wiring Diagrams



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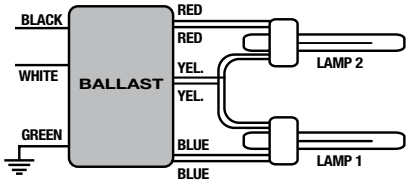

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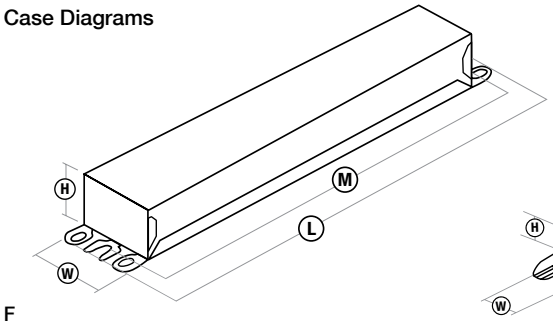
COMPACT FLUORESCENT BALLASTS

PLL High Lumen

Lamp Type			Input Volts	Product Number	Product Code	Line Current (Amps)	Input Power (Watts)	Power Factor	Ballast Factor	THD %	Min. Start Temp	Wire Diag.	Case	Case Dimensions			
Qty.	Watts	Start Type												Length	Mounting	Width	Height
PLL40/2G11																	
1	40	PS	120	50142	**EP239HO/PS/MV**	0.42	50	0.98	1.10	<10	0°F	1-9	J	16.90”	16.00”	1.20”	1.00”
	40	PS	277	50142	**EP239HO/PS/MV**	0.19	50	0.98	1.10	<10	0°F	1-9	J	16.90”	16.00”	1.20”	1.00”
	40	PS	120	52108	**EP2CF42PS/MV/DC/K**	0.37	45	0.99	1.00	<10	0°F	1-9	L	5.00”	4.63”	3.00”	1.38”
	40	PS	277	52108	**EP2CF42PS/MV/DC/K**	0.17	45	0.96	1.00	<12	0°F	1-9	L	5.00”	4.63”	3.00”	1.38”
2	40	PS	120	52108	**EP2CF42PS/MV/DC/K**	0.69	82	0.99	0.95	<10	0°F	2-6	L	5.00”	4.63”	3.00”	1.38”
	40	PS	277	52108	**EP2CF42PS/MV/DC/K**	0.30	82	0.98	0.95	<10	0°F	2-6	L	5.00”	4.63”	3.00”	1.38”
3	40	IS	120	50124	**EP432IS/120/SL**	0.82	107	0.99	0.88	<10	0°F	3-4	F	9.50”	8.82”	1.70”	1.15”
PLL55/2G11																	
1	55	PS	120	50144	**EP254HO/PS/MV**	0.49	58	0.96	0.92	<15	0°F	1-9	J	16.90”	16.00”	1.20”	1.00”
	55	PS	277	50144	**EP254HO/PS/MV**	0.22	58	0.96	0.92	<15	0°F	1-9	J	16.90”	16.00”	1.20”	1.00”
	55	PS	120	52108	**EP2CF42PS/MV/DC/K**	0.37	44	0.99	0.70	<10	0°F	1-9	L	5.00”	4.63”	3.00”	1.38”
	55	PS	277	52108	**EP2CF42PS/MV/DC/K**	0.17	44	0.96	0.70	<12	0°F	1-9	L	5.00”	4.63”	3.00”	1.38”
2	55	PS	120	50144	**EP254HO/PS/MV**	0.94	112	0.98	0.90	<10	0°F	2-6	J	16.90”	16.00”	1.20”	1.00”
	55	PS	277	50144	**EP254HO/PS/MV**	0.41	112	0.98	0.90	<10	0°F	2-6	J	16.90”	16.00”	1.20”	1.00”

Case Diagrams



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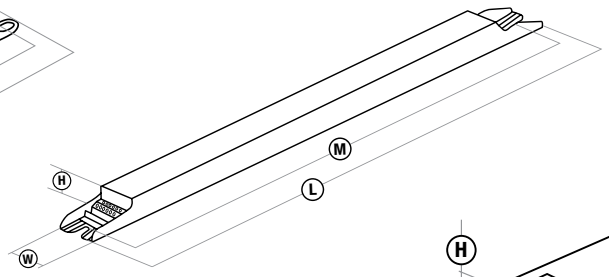

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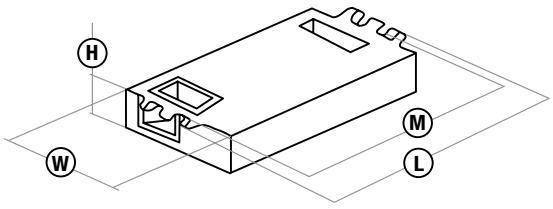

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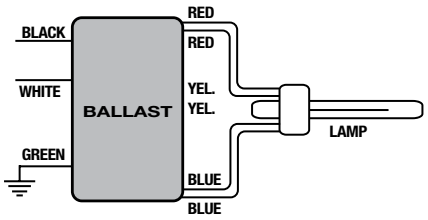
Wiring Diagrams



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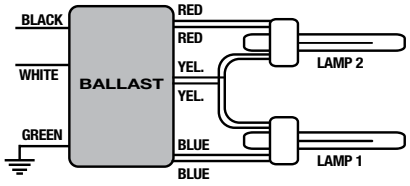

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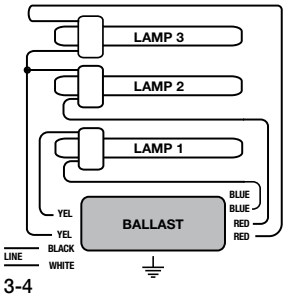

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COMPACT FLUORESCENT BALLASTS

Cross Reference Guide and Specifications

HALCO	ADVANCE	UNIVERSAL/ MAGNETEK	HOWARD
EP2CF13PS/MV/DC/K	ICF-2S13-H1-LD	C213UNV	EP2/13CF/MV/K
EP2CF18PS/MV/DC/K	ICF-2S18-H1-LD	C218UNV	EP2/18CF/MV/K
EP2CF26PS/MV/DC/K	ICF-2S26-H1-LD	C2642UNV	EP2/26CF/MV/K2
EP2CF42PS/MV/DC/K	ICF-2S42-M2-LD	C242UNV	EP2/42CF/MV/K2

SPECIFICATIONS

	Ballast shall have a Lamp Current Crest Factor of <1.7 in accordance with ANSI C82.1.
	Ballast shall withstand line voltage transients and surges as specified in ANSI standard C62.41-1991.
	Ballast shall have an Underwriters Laboratories certification for operation in the US and either an Underwriters Laboratories or Canadian Standards Association certification for operation in Canada.
	Ballast shall comply with the EMI and RFI limits of the code of Federal Regulations, Title 47, Part 18C for Non-Consumer equipment.
	Ballast shall operate in the range of 50-60Hz input frequency.
	Ballast shall operate at a maximum of 18 feet remote mounting distance for primary lamp. For energy saving reduced wattages lamps, remote mounting distances will be shorter.
	Ballast shall operate at a frequency of 20-40 kHz.
	Ballast shall contain potting compound in order to protect from moisture, dissipate heat and provide stability.
	All ProFormance ballasts shall have a power factor of 0.98 or better on the primary lamp configuration.
	Ballast shall be sound rated Class A.
	Ballast shall have a minimum starting temperature of 0°F standard lamps and 60°F on Energy Saving lamps.
	Ballast shall tolerate sustained variations of +/-10% of supply voltage with no damage to the ballast.
	Ballast shall not contain PCBs.
	Manufacturer shall provide written warranty against defects in material or workmanship for 5 years from date of manufacture.

COMPACT FLUORESCENT BALLASTS

Lamp Compatibility Specifications

EP2CF13PS/MV/DC/K 52102

Lamp Type	# of Lamps
PL13D/E/G24q	1, 2
PL13T/E/GX24q	1, 2
PL18T/E/GX24q	1, 2
PL10/2D/GR10q	1, 2
PL16/2D/GR10q	1, 2
F14T5	1, 2
F13T5	1, 2
PL5/S/E/2G7	1, 2
PL7/S/E/2G7	1, 2
PL9/S/E/2G7	1, 2

EP2CF18PS/MV/DC/K 52104

Lamp Type	# of Lamps
PL18D/E/G24q	1, 2
PL18T/E/GX24q	1, 2
PL26D/E/G24q	1, 2
PL16/2D/GR10q	1, 2
PL21/2D/GR10q	1, 2
PL28/2D/GR10q	1

EP2CF26PS/MV/DC/K 52106

Lamp Type	# of Lamps
PL26D/E/G24q	1, 2
PL57D/E/G24q	1
PL26T/E/GX24q	1, 2
PL32T/E/GX24q	1
PL42T/E/GX24q	1
PL57T/E/GX24q	1
PLL18/2G11	2
PLL24/2G11	1, 2
PLL36/2G11	1
PLL40/2G11	1
PL21/2D/GR10q	2
PL28/2D/GR10q	1
FC40T5	1
FC22T5	1
FC16T9	1

EP2CF42PS/MV/DC/K 52108

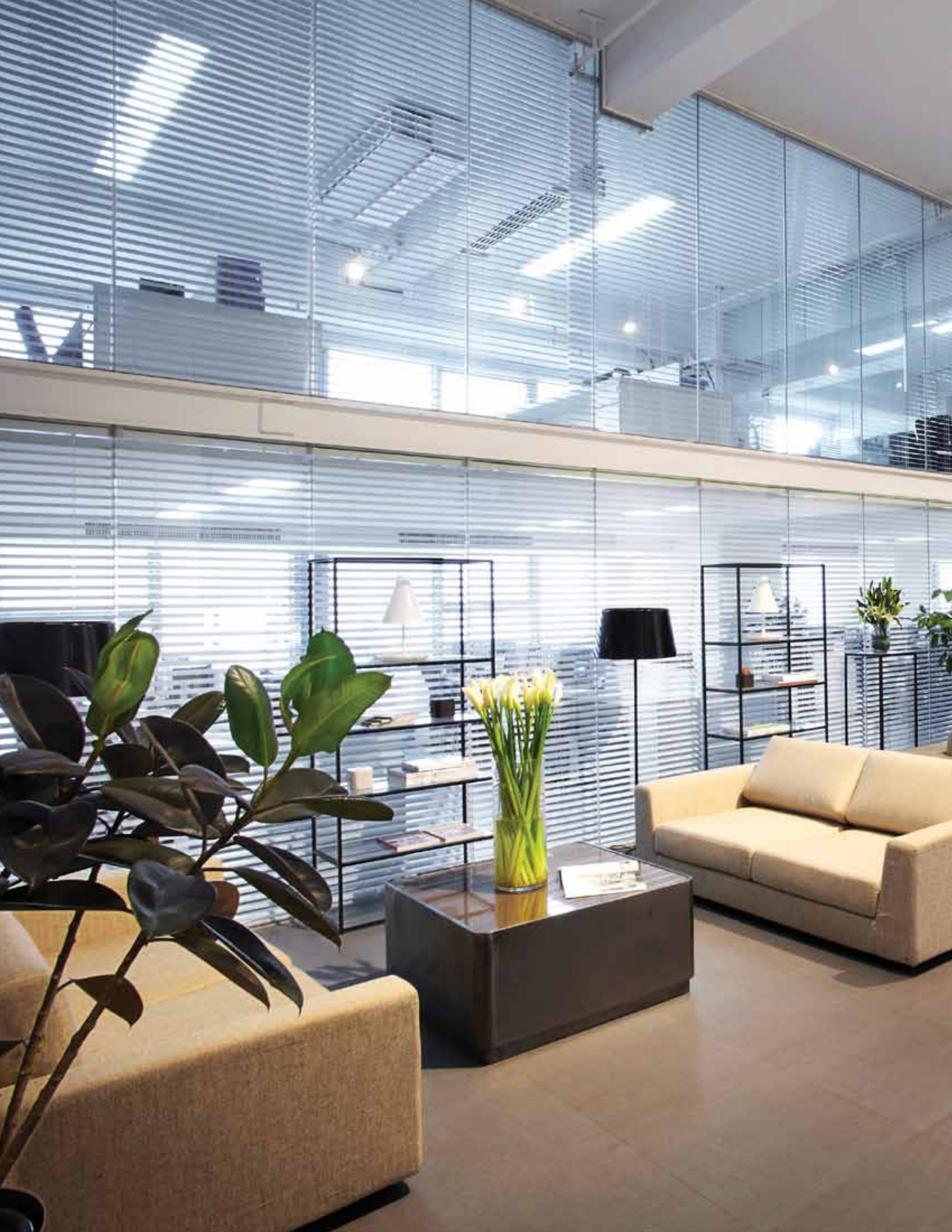
Lamp Type	# of Lamps
PL42T/E/GX24q	1, 2
PL32T/E/GX24q	1, 2
PL26D/E/G24q	1, 2
PL26T/E/GX24q	1, 2
PLL39/2G11	1, 2
PLL40/2G11	1, 2
PLL36/2G11	1, 2
PLL24/2G11	1, 2
PL57T/E/GX24q	1
PL28/2D/GR10q	2
PL28/2D/GR10q	1
FC22T5 + FC40T5	2
FC22T5	2
FC22T5	1
FC40T5	2
FC40T5	1

E1CF13RS/120/GU24 52200

Lamp Type	# of Lamps
PL13D/E/G24q	1
PL13T/E/GX24q	1

E1CF26RS/120/GU24 52202

Lamp Type	# of Lamps
PL26D/E/G24q	1
PL26T/E/GX24q	1



ELECTRONIC HID BALLASTS

CONTENTS

HOW TO READ AN ELECTRONIC HID BALLAST TABLE

NUMBER OF LAMPS
Indicates the number of lamps the ballast will operate.

INPUT VOLTS
Voltage required from a power supply for proper ballast operation.

PRODUCT CODE
Abbreviated product description can also be used for ordering.

INPUT POWER
Total power input to the ballast which includes lamp watts and ballast losses.

MAX IGNITION PULSE
Maximum voltage pulse provided by the ignitor to initiate an electrical discharge in a gas filled tube.

BALLAST FACTOR
Ratio of the lamp's lumen output on the specified ballast to the lamp's lumen output when operated by a reference ballast.

BALLAST DIMENSIONS
Specifies ballast overall length, width, and height.

WIRING DIAGRAM
References the wiring diagram to use.

No. of Lamps	Input Volts	Product Number	Product Code	Input Power (Watts)	Nominal Line Amps	Max Ignition Pulse	Power Factor	Ballast Factor	Fig	Ballast Dimensions			Total Ballast Case Weight (lbs)	Wiring Diagram
										Overall Length	Width	Height		
20 Watt CDM Lamp, ANSI Code C156 or M156														
1	120 277	55504	**C156/20E/MV/BE**	23	0.19 0.09	3.5 kV	0.96	1.00	N1	3.69"	2.59"	1.18"	0.57	1-22
1	120 277	55502	**C156/20E/MV/SE**	23	0.19 0.09	3.5 kV	0.96	1.00	E1	4.43"	2.59"	1.18"	0.57	1-22

LAMP TYPE
Indicates the type of lamp that the ballast will operate.

PRODUCT NUMBER
Use this number when placing an order.

NOMINAL LINE AMPS
Ballast's rated line current. Typically the middle of an acceptable range.

POWER FACTOR
Watts to volt amps ratio, which measures efficiency of a ballast's power usage.

FIGURE
Representation of the ballast.

TOTAL BALLAST CASE WEIGHT
Total weight of ballast to include case.

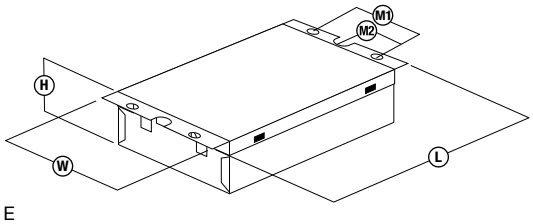
ELECTRONIC HID BALLASTS

Ceramic Discharge Metal Halide

No. of Lamps	Input Volts	Product Number	Product Code	Input Power (Watts)	Nominal Line Amps	Max Ignition Pulse	Power Factor	Ballast Factor	Fig	Ballast Dimensions			Total Ballast Case Weight (lbs)	Wiring Diagram
										Overall Length	Width	Height		
20 Watt CDM Lamp, ANSI Code C156 or M156														
1	120 277	55504	**C156/20E/MV/BE**	23	0.19 0.09	3.5 kV	0.96	1.00	N1	3.69”	2.59”	1.18”	0.57	1-22
1	120 277	55502	**C156/20E/MV/SE**	23	0.19 0.09	3.5 kV	0.96	1.00	E1	4.43”	2.59”	1.18”	0.57	1-22
39 Watt CDM Lamp, ANSI Code C130 or M130														
1	120 277	55508	**C130/35E/MV/BE**	43	0.32 0.14	3.8 kV	0.96	1.00	N1	3.69”	2.59”	1.18”	0.57	1-22
1	120 277	55506	**C130/35E/MV/SE**	43	0.32 0.14	3.8 kV	0.96	1.00	E1	4.43”	2.59”	1.18”	0.57	1-22
70 Watt CDM Lamp, ANSI Code C143 or M143; C139 or M139; C98 or M98														
1	120 277	55512	**C139/70E/MV/BE**	77	0.65 0.29	4.0 kV	0.98	1.00	N2	4.15”	3.10”	1.16”	1.06	1-22
1	120 277	55510	**C139/70E/MV/SE**	77	0.65 0.29	4.0 kV	0.98	1.00	E2	4.83”	3.10”	1.15”	1.06	1-22

Ballast Dimensions

Drawing #	Overall Length	Case Length (L)	Case Width (W)	Case Height(H)	Mounting Length (M1)	Mounting Length (M2)
E1	4.43”	3.69”	2.59”	1.18”	4.13”	1.89"
E2	4.83”	4.15”	3.10”	1.15”	4.52”	2.45”
N1	3.69”	3.69”	2.59”	1.18”	2.00”	0.26"
N2	4.15"	4.15"	3.10"	1.16"	2.00"	0.26"



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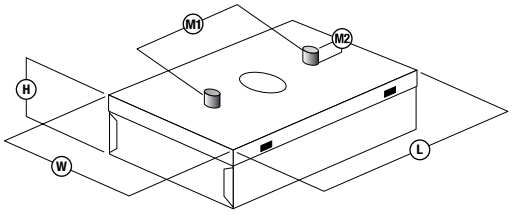

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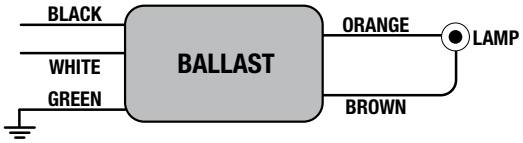
Wiring Diagram



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ELECTRONIC HID BALLASTS

Cross Reference Guide

HALCO	ADVANCE	UNIVERSAL/ MAGNETEK	HOWARD
M102/150HX/4T/K	71A5492-001D	M150MLTLC3M500K	M0150-71C-512-K
M110/50HX/4T/K	71A5191-001D	M50MLTLC3M500K	M0050-23C-511-K
M141/1000CWA/4T/K	71A6593-001	P1000MLTAC5M500K	M1000-71C-612-K
M141/1000CWA/5T/K	71A6552-001D	P1000ML5AC5M500K	M1000-81C-611-K
M149/750CWA/4T/K	71A64F2-001D	P750MLTAC5M500K	M0750-71C-612-K
M149/750CWA/5T/K	71A6452-001D	P750ML5AC5M500K	M0750-81C-612-K
M131/350CWA/4T/K	71A5993-001D	P350MLTAC4M500K	M0350-71C-6E4-K
M131/350CWA/5T/K	71A5953-001D	P350ML5AC4M500K	-
M132/320CWA/4T/K	71A5892-001D	P320MLTAC4O500K	M0320-71C-6E4-K
M132/320CWA/5T/K	71A5852-001D	P320ML5AC4L500K	-
M135/400CWA/4T/K	71A6092-001D	P400MLTAC4L500K	M0400-71C-6E3-K
M135/400CWA/5T/K	-	P400ML5AC4M500K	-
M138/250CWA/4T/K	71A5792-001D	P250MLTAC4L500K	M0250-71C-611-K
M138/250CWA/5T/K	-	P250ML5AC4M500K	-
M150/125CWA/4T/K	-	-	-
M90/100HX/4T/K	71A5390-001D	M100MLTLC3M500K	M0100-71C-512-K
M98/70HX/4T/K	71A5292-001D	M70MLTLC3M500K	M0070-71C-511-K

SPECIFICATIONS

	Ballast shall be furnished with integral, color-coded leads.
	Ballast shall tolerate sustained variations of +/- 10% of supply voltage with no damage to the ballast.
	Ballast shall operate in the range of 50-60Hz input frequency.
	Ballast shall operate at a maximum of 6 feet remote mounting distance.
	Ballast shall be microprocessor controlled.
	Ballast shall have integrated thermal, transient and end-of-life protection.
	Ballast shall be thermally protected to shut off when operating temperatures reach unacceptable levels.
	Ballast shall have an Underwriters Laboratories certification for operation in the US and either an Underwriters Laboratories or Canadian Standards Association certification for operation in Canada.
	Ballast shall comply with EMI and RFI limits of the code of Federal Regulations, Title 47, Part 18C for Non-Consumer equipment.
	Ballast shall have a Lamp Current Crest Factor of <1.7.
	Ballast shall provide the lamp with a low frequency square wave form to minimize visible flicker and increase lamp life.
	Ballast shall be Sound Rated Class A.
	Ballast input current shall have a Total Harmonic Distortion of <15%.
	Ballast shall have a Power Factor greater than 90%.
	Ballast shall have a lamp end-of-life detection and shut down circuit.
	Ballast shall not contain PCBs.
	Manufacturer shall provide written warranty against defects in material or workmanship for 3 years from date of manufacture.

ELECTROMAGNETIC HID BALLASTS

CONTENTS

HOW TO READ AN ELECTROMAGNETIC HID BALLAST TABLE

INPUT VOLTS
Voltage required from a power supply for proper ballast operation.

PRODUCT CODE
Abbreviated product description can also be used for ordering.

INPUT POWER
Total power input to the ballast which includes lamp watts and ballast losses.

FUSE RATING
Ballast's maximum fuse rating.

CAPACITOR (Mfd, volts)
Specifies the electrical characteristics of the capacitor.

UL BENCH TOP RISE
To facilitate UL inspection, the UL Bench Top Rise Temperature Code is shown on the Halco Core & Coil Ballast label as 1029X.

Input Volts	Product Number	Product Code	Circuit Type	Input Power (Watts)	Max Input Current (Amps)	Nom. Open Circuit Volts	Fuse Rating (Amps)	Dimensions			Capacitor		Ignitor (IGN/)	Kit Weight (lbs)		UL Bench Top Rise
								Fig	A Max	B Max	Mfd	Volts		Total Weight	Ballast Weight	
50 Watt Pulse Start MH Lamp, ANSI Code M110																
120	55192	**M110/50HX/4T/K**	HX-HPF	65	0.60	258	5	E	1.05	2.48	6	280	MH1	4.92	3.10	A
208					0.40		3									A
240					0.30		3									A
277					0.30		2									A

LAMP TYPE
Indicates the type of lamp that the ballast will operate.

PRODUCT NUMBER
Use this number when placing an order.

CIRCUIT TYPE
Indicates the ballast circuit type.

MAX INPUT CURRENT (Amps)
For HX and R circuits, value is the highest of starting operating or open circuit current. For CWA or Super CWA circuits, value is the operating current.

NOMINAL OPEN CIRCUIT VOLTS
Typically the middle of a ballast's acceptable Open Circuit Voltage range.

BALLAST DIMENSIONS
Indicates ballast's size.

IGNITOR
Identifies the Halco ignitor product code to be used with the ballast.

KIT WEIGHT
Total weight of ballast to include case.

Pulse Start Metal Halide

Input Volts	Product Number	Product Code	Circuit Type	Input Power (Watts)	Max Input Current (Amps)	Nom. Open Circuit Volts	Fuse Rating (Amps)	Dimensions			Capacitor		Ignitor (IGN/)	Kit Weight (lbs)		UL Bench Top Rise
								Fig	A Max	B Max	Mfd	Volts		Total Weight	Ballast Weight	
50 Watt Pulse Start MH Lamp, ANSI Code M110																
120	55192	**M110/50HX/4T/K**	HX-HPF	65	0.60	258	5	E	1.05	2.48	6	280	MH1	4.92	3.10	A
208					0.40		3									A
240					0.30		3									A
277					0.30		2									A
70 Watt Pulse Start MH Lamp, ANSI Code M98																
120	55134	**M98/70HX/4T/K**	HX-HPF	85	1.60	252	4	E	1.47	2.90	8	280	MH1	6.75	4.50	A
208					0.90		3									A
240					0.80		3									A
277					0.70		2									A
100 Watt Pulse Start MH Lamp, ANSI Code M90																
120	55136	**M90/100HX/4T/K**	HX-HPF	120	2.40	276	8	E	1.58	2.96	12	280	MH1	6.28	4.80	A
208					1.40		6									A
240					1.20		4									A
277					1.10		4									A
125 Watt Pulse Start MH Lamp, ANSI Code M150																
120	55170	**M150/125CWA/4T/K**	Super CWA	150	1.25	228	4	E	1.70	3.10	12	280	MH1	6.00	5.80	A
208					0.75		3									A
240					0.65		2									A
277					0.55		2									A
150 Watt Pulse Start MH Lamp, ANSI Code M102																
120	55138	**M102/150HX/4T/K**	HX-HPF	182	1.60	255	10	E	2.28	3.80	16	280	MH1	9.06	6.80	A
208					1.00		5									A
240					0.90		5									A
277					0.80		4									A

Ballast Dimensions

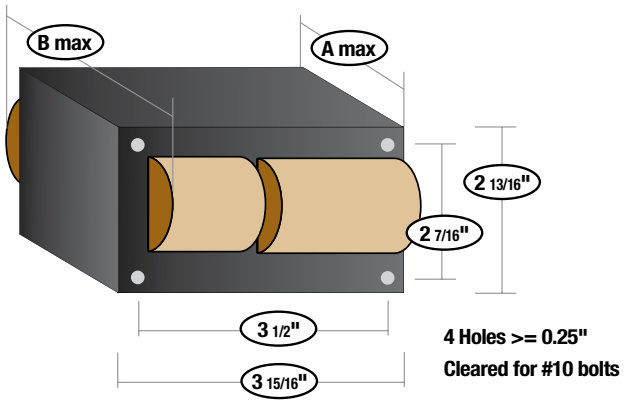


Figure E

ELECTROMAGNETIC HID BALLASTS

Pulse Start Metal Halide

Input Volts	Product Number	Product Code	Circuit Type	Input Power (Watts)	Max Input Current (Amps)	Nom. Open Circuit Volts	Fuse Rating (Amps)	Dimensions			Capacitor		Ignitor (IGN/)	Kit Weight (lbs)		UL Bench Top Rise
								Fig	A Max	B Max	Mfd	Volts		Total Weight	Ballast Weight	
250 Watt Pulse Start MH Lamp, ANSI Code M138 or M153																
120	55160	**M138/250CWA/4T/K**	Super CWA	278	2.45	274	10	I	1.85	3.78	15	400	MH2	11.79	9.80	A
208					1.40		6									A
240					1.25		6									A
277					1.10		5									A
120	55174	**M138/250CWA/5T/K**	Super CWA	282	2.45	286	12	I	1.99	3.90	15	400	MH2	10.30	11.50	A
208					1.40		6									A
240					1.25		6									A
277					1.10		5									A
480					0.65		3									A
320 Watt Pulse Start MH Lamp, ANSI Code M132 or M154																
120	55148	**M132/320CWA/4T/K**	Super CWA	361	3.10	279	10	I	2.18	4.40	21	360	MH2	12.20	11.00	B
208					1.80		6									B
240					1.55		6									B
277					1.35		5									B
120	55176	**M132/320CWA/5T/K**	Super CWA	355	3.10	276	12	I	2.18	4.40	21	345	MH2	11.88	11.50	C
208					1.80		8									C
240					1.55		6									C
277					1.35		5									C
480					0.78		3									C
350 Watt Pulse Start MH Lamp, ANSI Code M131																
120	55150	**M131/350CWA/4T/K**	Super CWA	400	3.30	257	12	I	2.32	4.40	24	400	MH2	12.50	11.80	A
208					1.90		6									A
240					1.60		6									A
277					1.40		5									A
120	55172	**M131/350CWA/5T/K**	Super CWA	410	3.40	265	10	I	2.32	4.40	24	330	MH2	12.80	12.20	A
208					2.00		7									A
240					1.70		5									A
277					1.50		5									A
480					0.90		3									A

Ballast Dimensions

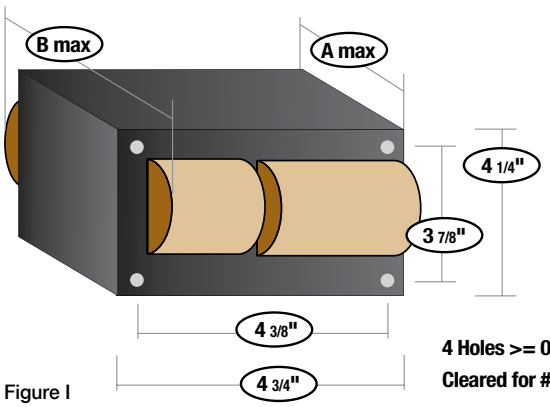


Figure I

Pulse Start Metal Halide

Input Volts	Product Number	Product Code	Circuit Type	Input Power (Watts)	Max Input Current (Amps)	Nom. Open Circuit Volts	Fuse Rating (Amps)	Dimensions			Capacitor		Ignitor (IGN/)	Kit Weight (lbs)		UL Bench Top Rise
								Fig	A Max	B Max	Mfd	Volts		Total Weight	Ballast Weight	
400 Watt Pulse Start MH Lamp, ANSI Code M135 or M155																
120	55162	**M135/400CWA/4T/K**	Super CWA	460	4.00	282	12	I	2.32	4.30	26	400	MH2	11.50	11.20	B
208					2.30		6									C
240					2.00		6									D
277					1.75		5									D
120	55178	**M135/400CWA/5T/K**	Super CWA	458	3.81	268	12	I	2.32	4.25	26	400	MH2	16.98	12.20	A
208					2.15		6									A
240					1.92		6									A
277					1.67		5									A
480					0.93		3									A
750 Watt Pulse Start MH Lamp, ANSI Code M149 or M181																
120	55188	**M149/750CWA/4T/K**	Super CWA	842	7.23	370	20	O	2.62	4.80	24	480	-	20.28	17.00	A
208					4.05		10									A
240					3.64		10									A
277					3.13		8									A
120	55190	**M149/750CWA/5T/K**	Super CWA	810	7.20	371	20	O	2.84	4.80	24	480	-	20.28	18.80	A
208					4.10		10									A
240					3.60		10									A
277					3.13		8									A
480					1.80		6									A

Ballast Dimensions

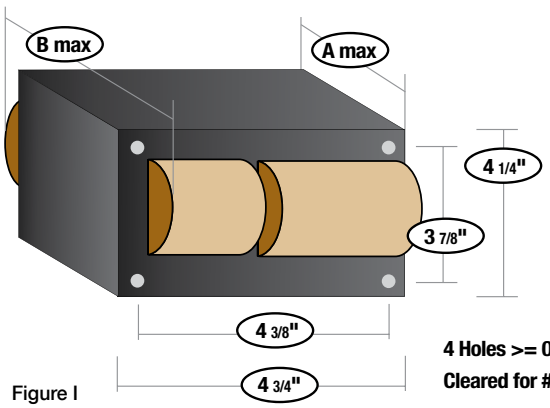


Figure I

4 Holes >= 0.25"
Cleared for #10 bolts

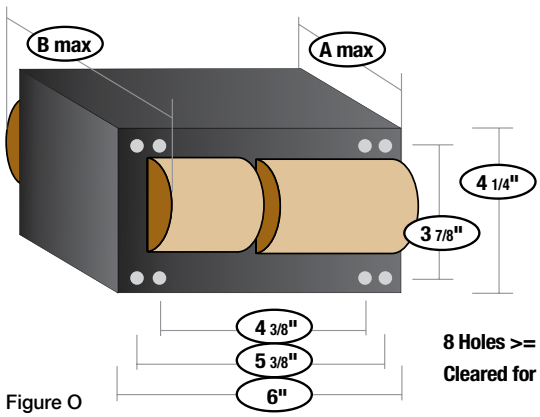


Figure O

8 Holes >= 0.25"
Cleared for #10 bolts

ELECTROMAGNETIC HID BALLASTS

Pulse Start Metal Halide

Input Volts	Product Number	Product Code	Circuit Type	Input Power (Watts)	Max Input Current (Amps)	Nom. Open Circuit Volts	Fuse Rating (Amps)	Dimensions			Capacitor		Ignitor (IGN/)	Kit Weight (lbs)		UL Bench Top Rise
								Fig	A Max	B Max	Mfd	Volts		Total Weight	Ballast Weight	
875 Watt Pulse Start MH Lamp, ANSI Code M166																
120	55194	**M166/875CWA/4T/K**	Super CWA	930	8.10	400	20	O	3.01	4.92	22	480	-	23.39	19.40	A
208					4.70		15									A
240					4.10		10									A
277					3.60		10									A
120	55196	**M166/875CWA/5T/K**	Super CWA	930	8.20	400	20	O	3.01	4.92	22	480	-	22.68	19.40	A
208					4.80		12									A
240					4.30		10									A
277					3.60		10									A
480					2.10		8									A
1000 Watt Pulse Start MH Lamp, ANSI Code M141																
120	55184	**M141/1000CWA/4T/K**	Super CWA	1090	9.20	404	20	O	3.01	5.05	24	480	-	20.24	20.10	A
208					5.30		15									A
240					4.60		10									A
277					4.00		10									A
120	55186	**M141/100CWA/5T/K**	Super CWA	1070	8.80	413	20	O	3.25	5.22	21.4	480	-	21.40	21.40	A
208					5.10		15									A
240					4.50		10									A
277					3.90		10									A
480					2.30		8									A

Ballast Dimensions

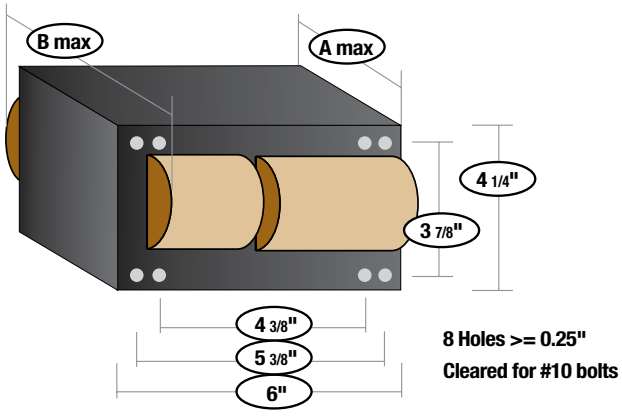


Figure O

Standard Metal Halide

Input Volts	Product Number	Product Code	Circuit Type	Input Power (Watts)	Max Input Current (Amps)	Nom. Open Circuit Volts	Fuse Rating (Amps)	Dimensions			Capacitor		Ignitor (IGN/)	Kit Weight (lbs)		UL Bench Top Rise
								Fig	A Max	B Max	Mfd	Volts		Total Weight	Ballast Weight	
175 Watt MH Lamp, ANSI Code M57																
120	55140	**M57/175CWA/4T/K**	CWA	202	1.80	282	10	E	2.60	4.02	10	400	-	8.90	6.90	A
208					1.00		5									A
240					0.90		4									A
277					0.80		3									A
120	55142	**M57/175CWA/5T/K**	CWA	210	1.90	302	10	E	2.44	4.10	10	400	-	8.90	6.90	A
208					1.10		5									A
240					0.90		5									A
277					0.80		3									A
480					0.50		2									A
250 Watt MH Lamp, ANSI Code M58																
120	55144	**M58/250CWA/4T/K**	CWA	295	2.60	304	10	I	1.61	3.54	15	400	-	10.20	8.00	A
208					1.50		6									A
240					1.30		5									A
277					1.15		5									A
120	55146	**M58/250CWA/5T/K**	CWA	289	2.50	307	10	I	1.85	3.70	15	400	-	12.60	10.40	A
208					1.45		6									A
240					1.25		5									A
277					1.50		5									A
480					0.65		3									A

Ballast Dimensions

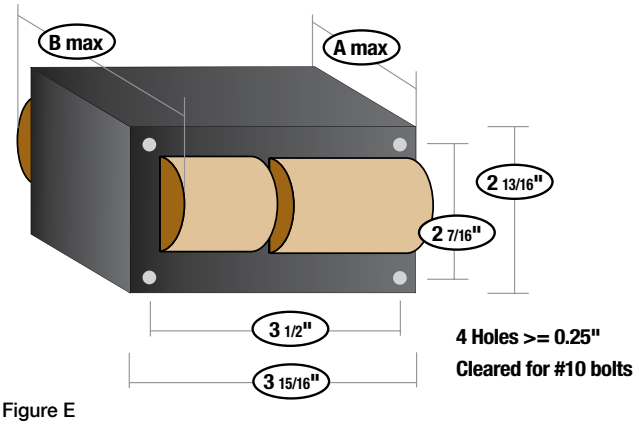


Figure E

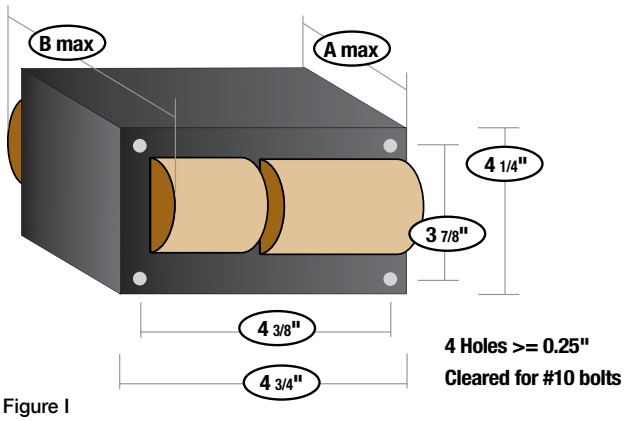


Figure I

ELECTROMAGNETIC HID BALLASTS

Standard Metal Halide

Input Volts	Product Number	Product Code	Circuit Type	Input Power (Watts)	Max Input Current (Amps)	Nom. Open Circuit Volts	Fuse Rating (Amps)	Dimensions			Capacitor		Ignitor (IGN/)	Kit Weight (lbs)		UL Bench Top Rise
								Fig	A Max	B Max	Mfd	Volts		Total Weight	Ballast Weight	
400 Watt MH Lamp, ANSI Code M59																
120	55152	**M59/400CWA/4T/K**	CWA	458	4.00	300	12	I	2.16	4.30	24	360	-	13.32	11.04	B
208					2.30		8									C
240					2.00		6									C
277					1.80		6									D
120	55154	**M59/400CWA/5T/K**	CWA	452	4.00	300	12	I	2.32	4.34	24	400	-	14.64	11.40	B
208					2.30		8									B
240					2.00		6									C
277					1.80		6									C
480					1.00		4									C
1000 Watt MH Lamp, ANSI Code M47																
120	55156	**M47/1000CWA/4T/K**	CWA	1076	9.20	411	20	O	3.01	4.92	24	480	-	22.52	18.90	A
208					5.30		15									A
240					4.60		10									A
277					4.00		10									A
120	55158	**M47/1000CWA/5T/K**	CWA	1087	9.20	420	20	O	3.25	5.20	24	480	-	24.06	19.90	A
208					5.30		15									A
240					4.60		10									A
277					4.00		10									A
480					2.30		6									A

Ballast Dimensions

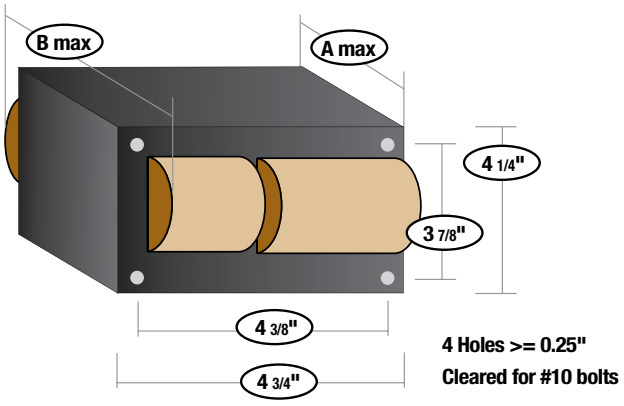


Figure I

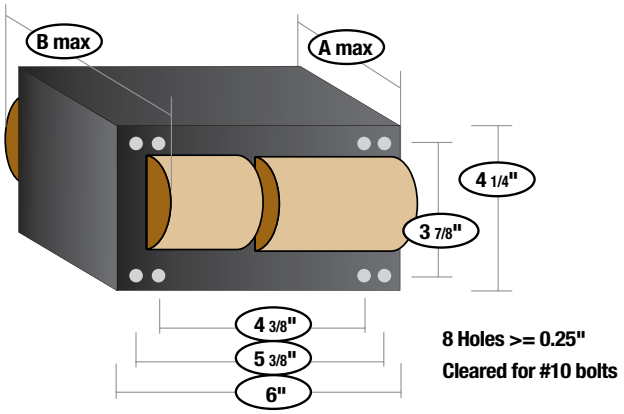


Figure O

Standard Metal Halide

Input Volts	Product Number	Product Code	Circuit Type	Input Power (Watts)	Max Input Current (Amps)	Nom. Open Circuit Volts	Fuse Rating (Amps)	Dimensions			Capacitor		Ignitor (IGN/)	Kit Weight (lbs)		UL Bench Top Rise
								Fig	A Max	B Max	Mfd	Volts		Total Weight	Ballast Weight	
1500 Watt MH Lamp, ANSI Code M48																
120	55180	**M48/1500CWA/4T/K**	CWA	1542	13.20	430	30	O	4.49	6.85	32	525	-	32.34	28.00	B
208					7.60		25									A
240					6.70		20									A
277					5.80		15									A
120	55182	**M48/1500CWA/5T/K**	CWA	1550	13.00	430	44	O	4.49	6.90	32	525	-	32.34	29.00	C
208					7.50		22									C
240					6.50		20									B
277					5.70		17									B
480					3.30		10									A

Ballast Dimensions

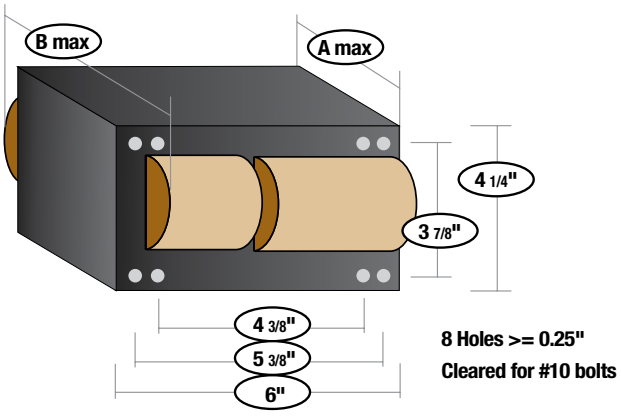


Figure O

ELECTROMAGNETIC HID BALLASTS

High Pressure Sodium

Input Volts	Product Number	Product Code	Circuit Type	Input Power (Watts)	Max Input Current (Amps)	Nom. Open Circuit Volts	Fuse Rating (Amps)	Dimensions			Capacitor		Ignitor (IGN/)	Kit Weight (lbs)		UL Bench Top Rise
								Fig	A Max	B Max	Mfd	Volts		Total Weight	Ballast Weight	
35 Watt HPS Lamp, ANSI Code S76																
120	55102	**S76/35R/120/K**	*R-HPF	54	0.80	120	3	A	0.61	1.80	14	120	HPS1	1.97	1.10	A
50 Watt HPS Lamp, ANSI Code S68																
120	55104	**S68/50R/120/K**	*R-HPF	61	1.20	120	4	A	0.83	2.00	20	120	HPS1	2.40	1.70	A
70 Watt HPS Lamp, ANSI Code S62																
120	55106	**S62/70R/120/K**	*R-HPF	83	1.65	120	4	A	1.30	2.50	28	120	HPS1	3.22	2.00	A
120	55108	**S62/70HX/4T/K**	HX-HPF	95	1.40	125	3	E	1.54	2.95	7	280	HPS1	6.79	4.60	A
208					0.80		2									A
240					0.70		2									A
277					0.60		2									A
100 Watt HPS Lamp, ANSI Code S54																
120	55110	**S54/100R/120/K**	*R-HPF	116	2.10	120	5	A	1.77	2.95	36	120	HPS1	3.63	2.50	A
120	55112	**S54/100HX/4T/K**	HX-HPF	130	2.20	118	4	E	1.97	3.35	10	280	HPS1	8.26	6.00	A
208					1.30		3									A
240					1.10		2									A
277					1.00		2									A
150 Watt HPS Lamp, ANSI Code S55																
120	55114	**S55/150R/120/K**	*R-HPF	168	3.10	120	6	A	2.36	3.54	55	120	HPS1	5.46	3.25	A
120	55116	**S55/150HX/4T/K**	HX-HPF	182	3.00	121	5	E	2.56	4.05	14	280	HPS1	8.73	7.40	A
208					1.70		3									A
240					1.50		3									A
277					1.30		3									A

*Ballast operates at High Power Factor when capacitor (not included with kit) is installed. If the capacitor is omitted, ballast will operate at Normal Power Factor.

Ballast Dimensions

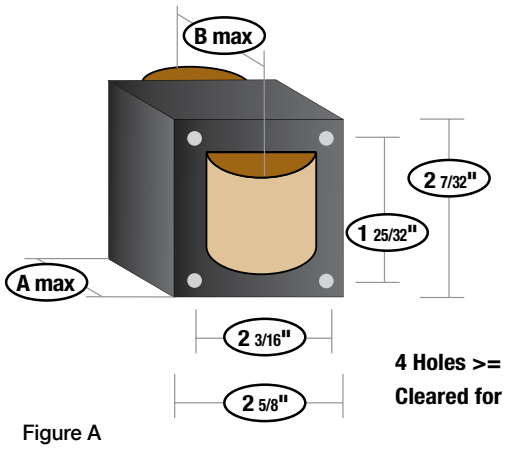


Figure A

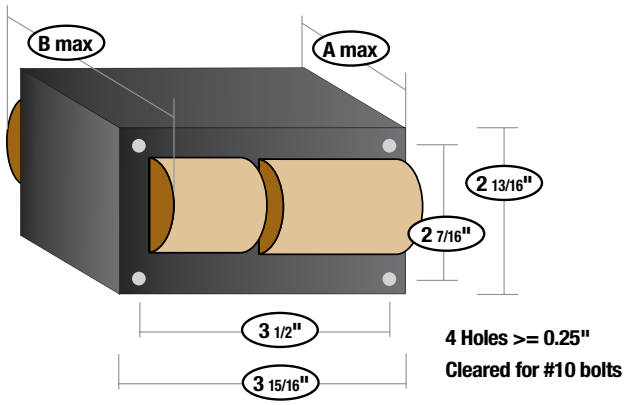


Figure E

High Pressure Sodium

Input Volts	Product Number	Product Code	Circuit Type	Input Power (Watts)	Max Input Current (Amps)	Nom. Open Circuit Volts	Fuse Rating (Amps)	Dimensions			Capacitor		Ignitor (IGN/)	Kit Weight (lbs)		UL Bench Top Rise
								Fig	A Max	B Max	Mfd	Volts		Total Weight	Ballast Weight	
200 Watt HPS Lamp, ANSI Code S66																
120	55118	**S66/200CWA/4T/K**	CWA	240	2.10	178	6	I	1.22	3.05	28	250	HPS2	9.21	7.60	A
208					1.20		4									A
240					1.10		3									A
277					0.90		3									A
250 Watt HPS Lamp, ANSI Code S50																
120	55120	**S50/250CWA/4T/K**	CWA	300	2.50	185	7	I	1.85	3.50	35	240	HPS2	12.62	9.93	A
208					1.50		4									A
240					1.30		4									A
277					1.10		3									A
120	55122	**S50/250CWA/5T/K**	CWA	298	2.60	185	7	I	1.97	3.90	35	240	HPS2	13.60	10.70	A
208					1.50		4									A
240					1.30		4									A
277					1.10		3									A
480					0.60		2									A
400 Watt HPS Lamp, ANSI Code S51																
120	55124	**S51/400CWA/4T/K**	CWA	453	3.80	182	10	I	2.32	4.18	55	240	HPS2	14.82	12.60	A
208					2.20		7									A
240					1.90		5									A
277					1.70		5									A
120	55126	**S51/400CWA/5T/K**	CWA	450	3.80	185	10	I	2.56	4.70	55	240	HPS2	17.37	13.70	A
208					2.20		7									A
240					1.90		5									A
277					1.60		5									A
480					0.90		3									A

Ballast Dimensions

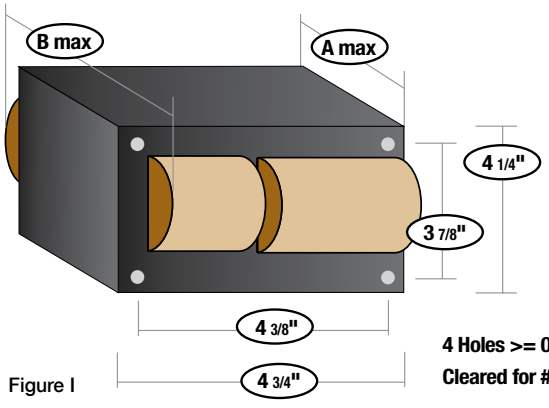


Figure I

ELECTROMAGNETIC HID BALLASTS

High Pressure Sodium

Input Volts	Product Number	Product Code	Circuit Type	Input Power (Watts)	Max Input Current (Amps)	Nom. Open Circuit Volts	Fuse Rating (Amps)	Dimensions			Capacitor		Ignitor (IGN/)	Kit Weight (lbs)		UL Bench Top Rise
								Fig	A Max	B Max	Mfd	Volts		Total Weight	Ballast Weight	
1000 Watt HPS Lamp, ANSI Code S52																
120	55128	**S52/1000CWA/4T/K**	CWA	1030	8.80	430	25	O	4.33	6.40	26	525	HPS3	30.50	26.00	A
208					5.10		15									A
240					4.40		10									A
277					3.90		10									A
120	55130	**S52/1000CWA/5T/K**	CWA	1070	9.70	430	25	O	4.1	6.10	26	525	HPS3	32.00	26.00	A
208					5.60		15									A
240					4.90		12									A
277					4.20		10									A
480					2.40		6									A

Ballast Dimensions

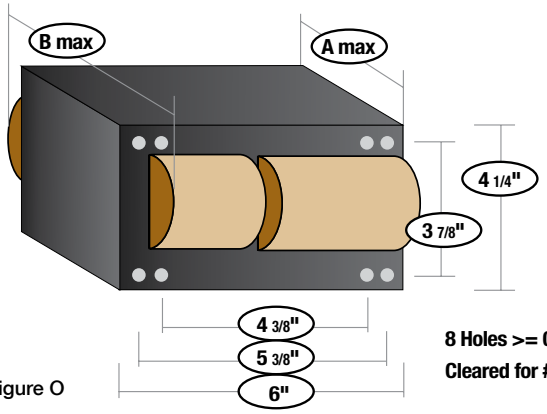


Figure O

ELECTROMAGNETIC HID BALLASTS

Capacitor Guide

Product Number	Product Code	Halco Ballast Code	Mfd	Volts	Diam. (mm)	Diam. (in)	Height (mm)	Height (in)
DRY FILM								
55851	***CAP/MH50**	M110/50HX/2T/K	6	280	35	1.38	48	1.89
55853	**CAP/MH70**	M98/70HX/4T/K	8	280	30	1.19	68	2.68
55855	**CAP/MH100**	M90/100HX/4T/K	12	280	30	1.19	78	3.08
55857	**CAP/MH150**	M102/150HX/4T/K	16	280	35	1.38	78	3.08
55859	**CAP/MH175**	M57/175CWA/4T/K	10	400	35	1.38	78	3.08
		M57/175CWA/5T/K						
55861	**CAP/MH250**	M58/250CWA/4T/K	15	400	40	1.58	78	3.08
		M58/250CWA/5T/K						
55871	**CAP/MH250PS**	M138/250CWA/4T/K	18.5	330	35	1.38	78	3.08
55863	**CAP/MH320PS**	M132/320CWA/4T/K	21	345	40	1.58	79	3.08
		M132/320CWA/5T/K						
55865	**CAP/MH350PS**	M131/350CWA/4T/K	22.5	345	40	1.58	78	3.08
		M131/350CWA/5T/K						
55873	**CAP/MH400PS**	M135/400CWA/4T/K	26	330	40	1.58	93	3.66
		M135/400CWA/5T/K						
55868	**CAP/MH400/DRY**	M59/400/CWA/4T/K	24	400	45	1.77	93	3.66
55801	***CAP/HPS50/120**	S76/35R/120/K	20	120	30	1.19	68	2.68
		S68/50R/120/K						
55803	**CAP/HPS70/120**	S62/70R/120/K	28	120	30	1.19	78	3.08
55805	***CAP/HPS70**	S62/70HX/4T/K	7	300	30	1.19	68	2.68
55807	***CAP/HPS100/120**	S54/100R/120/K	46	120	40	1.58	68	2.68
55809	**CAP/HPS100**	S54/100HX/4T/K	10	280	30	1.19	78	3.08
55811	**CAP/HPS150/120**	S55/150R/120/K	55	120	40	1.58	78	3.08
55813	**CAP/HPS150**	S55/150HX/4T/K	14	280	35	1.38	78	3.08
55815	***CAP/HPS200**	S66/200CWA/4T/K	28	240	40	1.58	68	2.68
55817	**CAP/HPS250**	S50/250CWA/4T/K	35	280	40	1.58	78	3.08
		S50/250CWA/5T/K						
OIL-FILLED								
55867	**CAP/MH400/OIL**	M59/400CWA/4T/K	24	400	45	1.78	83	3.27
		M59/400CWA/5T/K						
55869	**CAP/MH1000**	M47/1000CWA/4T/K	24	480	50	1.97	103	4.06
		M47/1000CWA/5T/K						
55819	**CAP/HPS400**	S51/400CWA/4T/K	55	240	50	1.97	103	4.06
		S51/400CWA/5T/K						
55821	**CAP/HPS1000**	S52/1000CWA/4T/K	26	525	50	1.97	104	5.63
		S52/1000CWA/5T/K						

* Product will be discontinued when inventory is depleted

ELECTROMAGNETIC HID BALLASTS

Ignitor Guide

Product Number	Product Code	Ballast	Diam. (mm)	Diam. (in)	Height (mm)	Height (in)
55907	**IGN/MH1**	35W - 150W PS MH	35.6	1.4	66.0	2.6
55909	**IGN/MH2**	175W-450W PS MH				
55901	**IGN/HPS1**	35W - 150W HPS				
55903	**IGN/HPS2**	200W - 400W HPS				
55905	**IGN/HPS3**	1000W HPS				

ELECTROMAGNETIC HID BALLASTS

Cross Reference Guide

HALCO	ADVANCE	UNIVERSAL/ MAGNETEK	HOWARD
Pulse Start Metal Halide			
M102/150HX/4T/K	71A5492-001D	M150MLTLC3M500K	M0150-71C-512-K
M110/50HX/4T/K	71A5191-001D	M50MLTLC3M500K	M0050-23C-511-K
M141/1000CWA/4T/K	71A6593-001	P1000MLTAC5M500K	M1000-71C-612-K
M141/1000CWA/5T/K	71A6552-001D	P1000ML5AC5M500K	M1000-81C-611-K
M149/750CWA/4T/K	71A64F2-001D	P750MLTAC5M500K	M0750-71C-612-K
M149/750CWA/5T/K	71A6452-001D	P750ML5AC5M500K	M0750-81C-612-K
M131/350CWA/4T/K	71A5993-001D	P350MLTAC4M500K	M0350-71C-6E4-K
M131/350CWA/5T/K	71A5953-001D	P350ML5AC4M500K	-
M132/320CWA/4T/K	71A5892-001D	P320MLTAC4O500K	M0320-71C-6E4-K
M132/320CWA/5T/K	71A5852-001D	P320ML5AC4L500K	-
M135/400CWA/4T/K	71A6092-001D	P400MLTAC4L500K	M0400-71C-6E3-K
M135/400CWA/5T/K	-	P400ML5AC4M500K	-
M138/250CWA/4T/K	71A5792-001D	P250MLTAC4L500K	M0250-71C-611-K
M138/250CWA/5T/K	-	P250ML5AC4M500K	-
M150/125CWA/4T/K	-	-	-
M90/100HX/4T/K	71A5390-001D	M100MLTLC3M500K	M0100-71C-512-K
M98/70HX/4T/K	71A5292-001D	M70MLTLC3M500K	M0070-71C-511-K
Standard Metal Halide			
M48/1500CWA/4T/K	71A6772-001D	M1500MLTAC5M500K	M1500-71C-214-K
M48/1500CWA/5T/K	-	-	-
M47/1000CWA/4T/K	71A6572-001	M1000MLTAC5M500K	M1000-71C-214-K
M47/1000CWA/5T/K	71A6552-001	M1000ML5AC5M500K	M1000-81C-213-K
M57/175CWA/4T/K	71A5570-001D	M175MLTAC3M500K	M0175-71C-214-K
M57/175CWA/5T/K	-	M175ML5AC3M500K	M0175-81C-214-K
M58/250CWA/4T/K	71A5771-001D	M250MLTAC3M500K	M0250-71C-215-K
M58/250CWA/5T/K	71A5750-001D	M250ML5AC3M500K	M0250-81C-215-K
M59/400CWA/4T/K	71A6071-001D	M400MLTAC4M500K	M0400-71C-213-K
M59/400CWA/5T/K	71A6051-001D	M400ML5AC4M500K	M0400-81C-212-K

ELECTROMAGNETIC HID BALLASTS

Cross Reference Guide

HALCO	ADVANCE	UNIVERSAL/ MAGNETEK	HOWARD
High Pressure Sodium			
S50/250CWA/4T/K	71A8271-001D	S250MLTAC4M500K	S0250-71C-214-K
S50/250CWA/5T/K	71A8251-001D	S250ML5AC4M500K	S0250-81C-212-K
S51/400CWA/4T/K	71A8473-001D	S400MLTAC5M500K	S0400-71C-212-K
S51/400CWA/5T/K	71A8453-001D	S400ML5AC5M500K	S0400-81C-212-K
S52/1000CWA/4T/K	71A8773-001	S1000MLTAC5M500K	S1000-71C-212-K
S52/1000CWA/5T/K	71A8753-001	S1000ML5AC5M500K	S1000-81C-212-K
S54/100HX/4T/K	71A8071-001D	S100MLTLC3M500K	S0100-71C-512-K
S54/100R/120/K	71A8007-001DB	-	S0100-02C-111-K
S55/150HX/4T/K	71A8172-001D	S150MLTLC3M500K	S0150-71C-512-K
S55/150R/120/K	71A8107-001DB	-	S0150-02C-111-K
S62/70HX/4T/K	71A7971-001D	S70MLTLC3M500K	S0070-71C-512-K
S62/70R/120/K	71A7907-001DB	-	S0070-02C-111-K
S66/200CWA/4T/K	71A8970-001D	S200MLTAC4M500K	S0200-71U-211-K
S68/50R/120/K	71A7807-001DB	-	S0050-02C-111-K
S76/35R/120/K	71A7707-001DB	-	S0035-02C-111-K

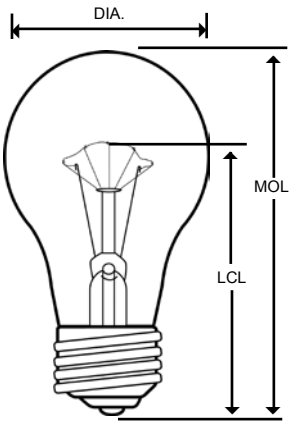
SPECIFICATIONS

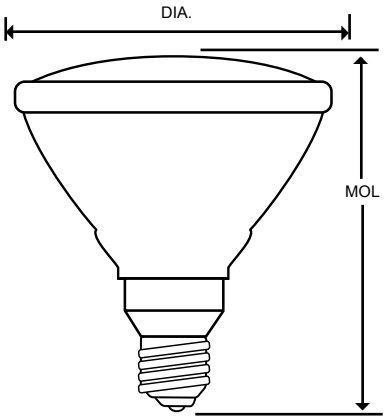
	Ballast shall be designed in accordance with all applicable ANSI specifications including ANSI C82.4.
	Ballast shall be designed with Class “H” (180°C) or higher insulation system.
	All coils shall be precision wound.
	Ballast shall operate for at least 180 cycles of 12 hours on and 12 hours off, when the lamp circuit is in a short-circuited or open condition. This operation should cause no reduction in ballast life.
	Ballast and starter combinations shall operate reliably at starting temperatures of -40°C for High Pressure Sodium ballasts and -30°C for Metal Halide ballasts.
	Ballast shall not contain PCBs.
	Manufacturer shall provide written warranty against defects in material or workmanship for 2 years from date of manufacture.
	Capacitors
	All capacitors provided shall have a self-contained internal bleeder resistor.
	All oil-filled capacitors shall have 0.25” quick disconnect terminals and be housed in corrosion-resistant steel cans.
	All required capacitors will be provided by the ballast manufacturer.
	Ignitors
	All ignitors will be epoxy-filled with a plastic external housing.
	All ignitors shall be designed to provide six months of open circuit operation without failure.
	Ballast shall have a lamp end-of-life detection and shut down circuit.
	Ballast shall not contain PCBs.
	Manufacturer shall provide written warranty against defects in material or workmanship for 3 years from date of manufacture.

APPENDIX

CONTENTS

How To Measure A Lamp



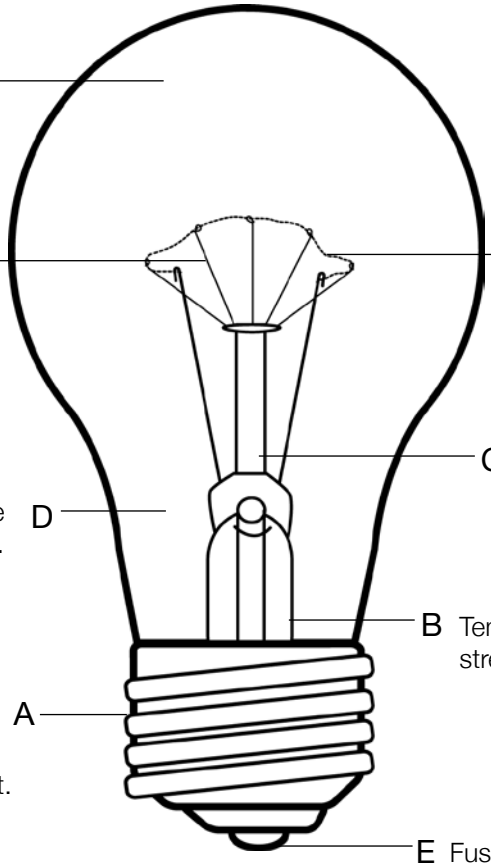


DIA: The diameter of a bulb at its widest point, measured in eighths of an inch.

MOL: Maximum Overall Length from the top of the bulb to the bottom of the base, measured in inches.

LCL: Distance from the center of the light source to the bottom of the base, measured in inches.

Filament Lamp Construction



H — Special chemicals are applied inside lamp and on the filament to protect against premature failure.

F — Long life lamps utilize five filament supports to enhance longevity and guard against filament sagging and breakage.

G — Long life lamps utilize long, thick coiled filaments.

C — Stem type is matched to lamp type to enable exact positioning of filament.

D — Argon and Nitrogen gases are used for washing and filling lamps.

B — Tempered glass stem provides strength and durability.

A — Lamp bases made with brass or nickel-plated brass do not freeze or corrode in the socket.

E — Fused lead - wire carries electricity from the base to the filament and guards against potential fire hazards.

APPENDIX

Glossary of Terms

2-Tap: HID ballast that operates at two input voltages: 120, 277.

4-Tap: HID ballast that operates at four input voltages: 120, 208, 240, 277.

5-Tap: HID ballast that operates at five input voltages: 120, 208, 240, 277, 480.

Accent Lighting: Directional lighting used to highlight a particular object or area.

Acoustic Resonance: A phenomenon that can occur when using electronic ballast that operates at a high frequency with a high intensity discharge lamp. What can happen is the frequency of the ballast creates a harmonic in the lamp, causing distortion of the arc and subsequent vibration of the arc tube. This is most common in metal halide and ceramic discharge metal halide lamps, and is less of a problem for high pressure sodium. It is for this reason most electronic metal halide ballasts are low frequency square wave ballasts as the lower frequency avoids this problem.

Alternating Current (AC): Electron flow that periodically reverses polarity and direction of travel through a circuit.

Ambient Lighting: The overall general lighting in an area or room.

Ambient Temperature: Refers to the temperature of the air around the device specified.

Ampere (amp): A standard unit of measurement of electrical current. Amps = Watts / Voltage

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

ANSI Ballast Type: A reference to the ANSI document which describes the lamp and lists the characteristics of the ballast required to operate the lamp. For HID lamps this is a code with a letter prefix followed by numbers. The following naming system is used:
H – mercury lamps; **M –** metal halide lamps; **S –** high pressure sodium lamps; **L –** low pressure sodium lamps. ANSI codes must match for a lamp and ballast to be compatible.

ANSI Lamp Codes: These are 3-letter codes assigned by the American National Standards Institute. They provide a system of assuring mechanical and electrical interchangeability among similarly coded lamps from various manufacturers. Often found in halogen lamps.

Arc: Intense luminous discharge formed by the passage of electric current across a distance between electrodes.

Arc Tube: A completely sealed quartz or ceramic tube where an electrical arc occurs and generates light.

Argon: Inert gas used in incandescent and fluorescent lamp types. In incandescent light sources, argon retards evaporation of the filament.

Auto-Transformer: A type of transformer that electrically connects the primary and secondary coils. This type of circuit is used to make many ballasts smaller and more efficient.

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.

Ballast: A device used to obtain the necessary circuit conditions (voltage, current and waveform) for starting and operating an electric-discharge lamp. All fluorescent and HID light sources require a ballast for proper operation.

Ballast Case Temperature: Used as a reference point in design, temperature of ballast in situation when measured at the ballast hot spot. See Maximum Case Temperature.

Ballast Cycling: Intermittent operation due to high temperature condition of the ballast or ambient temperature, which causes the thermal protector to open and turn off the ballast. After cooling down, the thermal protector closes, turning on the ballast and starts the heating cycle over again. This is different from lamp cycling, which is caused by voltage rise in a lamp-reaching end of life.

Ballast Efficacy Factor (BEF): The ratio of a ballasts' light output to input power. Useful for comparing the efficiency of two different ballasts on a light output to power consumption basis. **BEF** =% Ballast Factor/Input Power (Watts)

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 Hot Spot: The measurement point on a ballast that is the highest temperature point during normal operation, and is used in design when referencing the ballast case temperature and maximum case temperature.

Ballast Kit: A kit developed to include all necessary parts for the installation of a new ballast. For HID ballast kits this includes: ballast, capacitor, ignitor (if used) and all necessary mounting hardware. For CFL kits this includes: ballast, mounting plate, lead wire set, wire-removal tool and mounting hardware.

APPENDIX

Glossary of Terms

Ballast Loss: The total power lost in the operation of the ballast measured in watts. This power is given off as heat energy. It is equivalent to the difference between the input power and the lamp wattage.

Base: The base holds the lamp in place in the fixture and conducts electricity from the circuit to the lamp. It can be designed to dissipate heat.

Beam Angle: The angle of the cone of light emitted from a light source or luminaire. This is often used to describe the light distribution of a reflectorized lamp (such as R and PAR types) or an LED replacement product and encompasses the central part of the beam out to the angle where the intensity is 50% of the maximum. This is referred to in degrees. The beam angle (sometimes called "beam spread") is often part of the ordering code for reflectorized lamps. See also field angle.

Beam Spread: See Beam Angle.

Binning: A systematic process of dividing LEDs into smaller subgroups with a similar brightness and chromaticity distributions. Halco minimizes color variation by utilizing binning for LEDs used in ProLED lamps at +/- 200K.

Bi-Pin – Fluorescent: A lamp design utilizing two pins on each end of a fluorescent lamp tube. This is crucial to provide cathode heating voltage between the two pins for rapid start and programmed start operations. These lamp can also be used on instant start ballasts that are rated to run them.

Bi-Pin-Halogen or Incandescent: A lamp design using two pins rather than a screw in or twist lock base to provide power to heat the filament. Most often used in low voltage lighting for JC halogen capsules and MR-type lamps, there are line voltage versions.

Black Body (Planckian radiator): A theoretical ideal thermal radiator whose SPD curve is defined by its temperature in Kelvin and whose color coordinates lie exactly on the Planckian curve. Tungsten lamps (both incandescent and halogen) are close enough to be considered blackbodies for the purpose of SPD.

Bottom Exit: A configuration with leads or a wire-trap on the bottom or base of the ballast.

BR Lamp: BR is a term for Bulged Reflector, and refers to a shape of blown glass reflector lamps with a "stepped" reflector for better light extraction.

Canadian Energy Standards: Note on label that indicates that the ballast complies with the Canadian Energy Standards and meets the requirements of CAN/CSA-C654-M91.

Canadian Standards Association (CSA): An association that generates product performance and safety standards for many Canadian industries.

Candela: The measure of luminous intensity of a source in a given direction. The term has been retained from early lighting sciences when a standard candle of a fixed size and composition was defined as producing one candela in every direction. A plot of intensity versus direction is called a candela distribution curve and is often provided for directional lamps and luminaires with a lamp operating in them.

Candelabra base: Small screw base for lamps, also known as an E12 base.

Candlepower: Obsolete term for luminous intensity, see Candela.

Candlepower Distribution: The candlepower at various angles from a light source show in a numerical table and in a graph known as the luminous intensity distribution curve. This data can be found in photometric reports and is used to understand how the light source will illuminate the area being lit.

Capacitor: A device that can be used to store energy in an electric circuit. This is done via an electric field between two closely spaced conductors.

Cathode: Tungsten filaments that emit electrons in a fluorescent lamp, and are often coated in an emissive material to assist in starting. Negatively charged free electrons emitted by the cathode are attracted to the positive electrode (anode), creating an electric current between the two electrodes, generating the UV that is converted into visible light by the phosphor.

Cathode Guard: Metal band encircling the cathode of a fluorescent lamp, used to collect the evaporating particles from the cathode, greatly reducing end-blackening.

CDM: See Ceramic Discharge Metal Halide.

CDMH: See Ceramic Discharge Metal Halide.

Center Beam Candlepower (CBCP): Refers to the luminous intensity at the center of the beam of a reflector lamp; measured in candelas.

Ceramic Discharge Metal Halide: A type of metal halide discharge lamp that uses a translucent alumina (ceramic) material for the arc tube instead of glass quartz. This material is stronger and has higher heat and chemical tolerances than quartz, allowing a different chemical mix to be used which results in better color rendering (>80 CRI) and improved lumen maintenance without sacrificing efficacy. Halco ceramic discharge metal halide lamps feature a 1-piece arc tube design that delivers excellent color consistency and lamp reliability. Also known as Ceramic Metal Halide, CDM, CMH or CDMH.

APPENDIX

Glossary of Terms

Ceramic Metal Halide: See Ceramic Discharge Metal Halide.

Chip: A very small square of semi-conducting material that is the active light-emitting component of an LED. Also known as a die.

Chromaticity: The aspect of color that includes consideration of its dominant wavelength and purity and is typically described as a pair of coordinates on a color space.

CIE: Commission Internationale De L'Eclairage (International Commission on Illumination): abbreviated as CIE from its French title, is an organization devoted to international all matters relating to the science and art of lighting.

Class H: An operating temperature classification for electrical components established by Underwriters Laboratories. Allows operation up to 180°C.

Class P: A classification for thermally protected ballasts established by Underwriters Laboratories. In Class P ballasts, internal thermal cutoff removes the input power when the specified temperature limits are exceeded.

CMH: See Ceramic Discharge Metal Halide.

Coefficient of Utilization (CU): The fraction of initial lamp lumens that reach the work plane. It is a function of luminaire efficiency, room surface reflectance, and room shape.

Coil: Windings of copper or aluminum wire around the core in electromagnetic ballast that transforms the voltage from input to output.

Color Corrected: Refers to a lamp with a special phosphor or coating to give it a color rendering profile similar to natural daylight.

Color Rendering Index (CRI): A measurement to rate a lamp's ability to render an object's color on a scale of 0-100, the higher the CRI, the more true to life colors appear, as they would in natural daylight.

Color Spectrum: The visible light spectrum, ranging between 380 (violet) and 770 (red) nanometers in the electromagnetic spectrum.

Color Temperature: The actual color of a light source, also referred to as Correlated Color Temperature (CCT), measured in degrees Kelvin (K). Typical color temperature is:

2700K Incandescent/Fluorescent - Warm White
3000K Halogen/Fluorescent - Soft White
3500K Fluorescent - White
4100K Fluorescent - Cool White
5000K Fluorescent - Natural White
6500K Fluorescent - Daylight

Compact Fluorescent Lamp: A small, fluorescent lamp, often used as an alternative to incandescent lighting, that utilizes small diameter tubes that are bent so that they begin and end in a single base. The lamp life is about 10 times longer than incandescent lamps and is 3-4 times more efficacious.

Consortium for Energy Efficiency (CEE): An organization that qualifies and promotes energy efficiency products including high performance and reduced wattage linear fluorescent lamps and ballasts. A growing number of utility programs across the U.S. offer rebates for commercial and industrial customers that purchase and install CEE listed T8 lamps and ballasts in new construction, replacement and retrofit projects.

Constant Current Driver: A current and voltage regulating power supply often used to power LEDs. This methodology produces more consistent color and helps maintain the life and light of LEDs when used in a lighting device.

Constant Voltage Driver: A power supply that provides a constant voltage (usually DC) to a device, and is often used to power LED devices. This is more commonly used in LED string or strip type devices.

Constant Wattage Auto-Transformer (CWA): A type of HID ballast reactor that applies a constant wattage to the lamp and uses an auto-transformer to step-up the voltage.

Cool White: A term commercially used to describe a color temperature of around 4100K generated by a halophosphor type fluorescent lamp. The Cool White(CW) designation is used most often for T12 lamps but also for other fluorescent lamps using halophosphors and having a CRI of approximately 62. These types of lamp are falling out of favor for more efficient Tri-Phosphor lamps. Cool White is also used to describe self-ballasted CFLs with a color temperature of 4100K.

Core: A component of an electromagnetic ballast, which is surrounded by the coil. Core is composed of steel laminations or a solid ferrite material.

Core and Coil Ballast: Another term for an electromagnetic ballast.

Cove Lighting: Refers to light sources mounted above a ledge or in a recess that distribute light upward for ambient lighting.

CoverShield: A safety coated Halco lamp that is protected against rupture if it is dropped, struck or experiences thermal shock. Often used for food service, daycare and medical facilities.

Crest Factor (Lamp Current Crest Factor): The ratio of the peak lamp current to RMS or average lamp operating current. High current crest factors are detrimental to lamp life and performance. ANSI standard for lamp current crest factor is <1.7.

CSA: Canadian Standards Association. An association that generates product performance and safety standards for many Canadian industries.

cUL: Approval from Underwriters Laboratories for use in Canada.

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

Cycling: This is used to describe a condition where a lamp will turn on for a short period, then turn off for a period of time, and then restart (starting the cycle over again). This is a common end-of-life occurrence in High Pressure Sodium lamps, but can be present in other types of HID lamps. For HID lamps this occurs when the operating voltage of the lamp rises beyond the ballast's ability during warm-up, which causes the lamp to shut down, and restart after it has cooled. In other situations, it can be caused by an overheating situation where a temperature sensor in either a lamp or fixture shuts off power when the ambient temperature gets too hot.

Daylight: A term used to describe a high correlated color temperature light that has an appearance roughly equal to that of midday sun, having a CCT of approximately 6500K. This type of light typically provides very good contrast, but is considered to have a "cold" and sometimes "harsh" feel.

Dedicated Voltage: A ballast designed to work on one specific input voltage.

Design Amperes: The approximate current that the lamp will draw at design voltage.

Design Lumens: Lumen value at 40% of rated average life. Also called Mean Lumens.

Dichroic: A type of reflector that is designed to allow infrared waves to pass but reflect the visible spectrum of light. Often used on MR lamps, this is designed to provide a "cooler" beam and have less direct infrared hitting the illuminated surface.

Die: See Chip.

Diffusion: The even redirection or spreading of light by a lens or diffuser.

Diode: Typically a semiconductor that is a two-electrode device with an anode and a cathode that passes current in only one direction. It may be designed as an electron tube.

Directional Lighting: Illumination on the workplane or on an object predominantly from a single direction.

Discharge Lamp: A light source that produces light by passing a current between electrodes through a vapor or gas. Includes fluorescent and high intensity discharge lamps.

Double-Ended Lamp: Lamps that have two bases or points of electrical connection that provide extra stability in rough service applications.

Down Lighting: A direct lighting unit, usually small, that aims the light downward. Can be recessed, surface mounted or suspended.

Driver: A power supply that is used to power LEDs in a device. Essentially serves the same purpose as a ballast, but for LEDs.

Dual Connection: A CFL ballast with both side and bottom exits for the lead wires, allowing use for multiple applications
.

Dual Inline Package: Also known as DIP, this is a packaging method for LEDs that the LED is located in a small reflector, and then totally encased in a transparent or colored plastic. The heat is dissipated through the electrical pins, but is far less effective at heat dissipation than an SMD package, limiting total power dissipation potential and increasing lumen depreciation rates significantly.

Eco-Shield: Halco brand linear fluorescent lamps that are TCLP compliant due to their low mercury content and other design features intended to prevent mercury from escaping disposed of lamps.

Efficacy: The measure of lumen output per unit power supplied to the product. Useful as a measurement of how effective the light source is in converting electrical energy to lumens of visible light. Expressed in lumens-per-watt (LPW), this measure gives more weight to the yellow region of the spectrum and less weight to the blue and red regions where the eye is not as sensitive (also known as the photopic response curve).

Efficiency: The efficiency of a light source is simply the fraction of electrical energy converted to light, i.e. watts of visible light produced for each watt of electrical power with no concern about the wavelength where the energy is being radiated. For example, a 100-watt incandescent lamp converts 7% of the electrical energy into light; discharge lamps convert 25% to 40% into light. The efficiency of a luminaire or fixture is the percentage of the lamp lumens that actually comes out of the fixture. Efficiency can also refer to a ballast or driver, and refers to the ratio of power supplied to the lamp or LED to the input power of the ballast or driver.

Electrical Discharge: A gas electrically conducting and transmitting current, usually accompanied by the emission of visible and other radiation. This is a principle behind many energy saving technologies.

Electrode: An electrical conductor through which current enters or leaves a medium such as an arc tube or gas filled lamp.

Electromagnetic Ballast: A low-frequency ballast that operates through the use of current carrying coils assembled on a magnetic core.

APPENDIX

Glossary of Terms

Electromagnetic Spectrum: A continuum of electric and magnetic radiation that can be characterized by wavelength or frequency, encompassing a wide range of energies from infrared to visible to gamma rays. Visible light encompasses a small part of the electromagnetic spectrum in the region from about 380 nanometers (violet) to 770 nanometers (red) by wavelength.

Electronic Ballast: A ballast that uses semiconductor components to increase the frequency of fluorescent lamp operation (typically in the 20-40 kHz range). Smaller inductive components provide the lamp current control. Fluorescent system efficiency is increased due to high frequency lamp operation. Results are increased lamp efficacy, reduced ballast losses and lighter, smaller ballasts compared to electromagnetic ballasts. Electronic ballasts may also be used with HID (high intensity discharge) lamps.

Electronic Component: A device or part employed in an electronic circuit to obtain some desired electronic action.

Electronic Transformer: A device for converting electricity from one voltage to another voltage that is comprised of electrical components. This type of transformer changes the frequency of power to the lamp, and often operates at over 20kHz. These devices tend to be smaller and more efficient than magnetic transformers but often have minimum load ratings that must be met for use. These can have compatibility issues with other electrical devices such as LED lamps.

Elliptical Reflector: Incandescent lamp with a reflector shell that is elliptically shaped. Focuses light immediately in front of the lamp, which reduces absorption and increases efficiency.

EMI/RFI: Electromagnetic Interference or Radio Frequency Interference. Unintentionally generated power during the operation of a ballast that is capable of interfering with other electrical devices operating at high frequencies.

End Blackening: Darkening around the ends of a fluorescent tube caused by particles evaporating from the cathode and adhering to the glass. Lamps made with cathode guards greatly reduce this occurrence.

End-of-Life (EOL) Protection: Circuit in a compact fluorescent ballast that removes power supply to the lamp during abnormal lamp end-of-life. Ballast will reset when a new lamp is installed.

Energy: A measure of work done by an electrical system over a given period of time; measured in kilowatt-hours (kWh).

Energy Policy Act (EPACT): Energy legislation originally passed by Congress in 1992, and updated periodically, mandating labeling and minimum energy efficiency requirements for many commonly used incandescent and fluorescent lamps.

Energy Star®: U.S. Department of Energy (DOE) and Environmental Protection Agency (EPA) administered program that provides designation for certain products meeting energy efficiency and performance standards.

Energy Survey: Systematic cost comparison of an existing system to a proposed system, accounting for electrical, material, maintenance and labor costs.

EOL Protection Circuit: For all T5 and smaller lamps, there is a circuit that monitors the operating parameters within the ballast that, when normal operations are exceeded, will shutdown the ballast.

Etch: Markings on the glass envelope or shell of a lamp designating product description, logo and/or brand name.

Exclusionary Mogul Base: A variant of a mogul base designed to prevent enclosed rated lamps from being used in an open rated fixture, which is also known as an EX39 base. This base is only used in open-rated metal halide lamps and has the bottom electrical contact protruding that allows the lamp to make contact with the recessed electrical contact within the exclusionary socket. The socket is pink in color to denote the difference and help prevent confusion, as enclosed rated metal halide lamps will not operate in this socket.

Exitance: The total light that comes off of a surface. Exitance is dependent upon the illuminance on and reflectance off the surface.

Extended Life (XL): Suffix for ProLume T5 and T8 lamps with special cathode design and phosphors that provide 40,000 hours average rated life when operated with an instant start ballast and up-to 46,000 hours when operated with a programmed start ballast.

Eyeball: Fixture, usually recessed, which can be rotated to point in a desired direction.

Field Angle: The light distribution cone from directional light sources encompassing the central part of the beam out to the angle where the intensity is 10% of maximum. See also Beam Angle.

Filament: Wire used in incandescent lamps, usually made of tungsten and often coiled, that emits light when heated by an electrical current.

Fixture: Luminaire without lamps.

Floodlight: A reflector lamp designed to produce a broad, relatively diffused beam of light.

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Fluorescence: The emission of electromagnetic radiation light by a substance that has absorbed radiation of a different wavelength. In most cases, absorption of light of a certain wavelength induces the emission of light with a larger wavelength (and lower energy). Fluorescence can be either wide-band (emitting a wide range of wavelengths such as halophosphors or LED phosphors) or very narrow (such as those used in a tri-phosphor lamp).

Fluorescent Lamp: A glass tube coated on the inside with a fluorescent substance that gives off light when a stream of electrons from the cathode excites mercury vapor in the tube.

Flux: The basic measure of light flow that includes only visible light and is weighted to match the response of the human eye; measured in lumens.

Footcandle (fc): A unit measurement of direct illumination. One footcandle is equal to one lumen per square foot.

Frequency: A measurement of the number of cycles per second; the SI base unit is Hertz (Hz).

Full Spectrum: Broad spectrum light source capable of producing colors throughout the entire range of the visible spectrum, simulating actual sunlight.

General Lighting: Uniform light throughout an area, with no special provisions for task lighting or accent lighting.

Glare: An interference with visual perception caused by an uncomfortably bright light source or reflection within one's field of view.

Grounded Plane: Linear fluorescent lamps must be within a certain distance of a grounded metal plane with a width at least the diameter of the lamp or 1 inch, whichever is greater. This plane acts as a starting aid to the lamps and is important to starting operations. The maximum distance between the bulb wall and the starting aid (grounded plane) is as follows per ANSI C78.81-2010:

Type of Fluorescent Lamp	Maximum Distance	
	Inch	***mm***
T5 Linear Lamps	¼ (0.25)	6
T8 Linear Lamps	¾ (0.75)	19
Other 500mA or less	½ (0.5)	13
Other greater than 500mA	1	25

Grounding: The connection of an electrical component that is a conductor to "ground" or earth so that the electrical current can pass off to it. A ballast or power supply with a ground input or a metal housing should always be grounded. The grounding helps assure safety and acceptable EMI/RFI performance.

Halogen Cycle: A regenerative cycle of tungsten and halogen atoms, which prevents blackening of the lamp envelope during the life of the lamp.

Halogen Lamp: An incandescent lamp with a filament that is surrounded by halogen gases. Halogen gases allow the filaments to be operated at higher temperatures and higher efficacies.

HaloXen: A Halco product line utilizing a halogen/xenon gas mixture and specially designed filaments that produces a higher degree of energy efficiency than standard incandescent and halogen lamps. The heavier xenon gas reduces filament evaporation and increases light output, while the halogen gas maintains a clear glass wall and redeposits evaporated tungsten back onto the filament, extending the lamp life and allowing greater energy efficiency.

Harmonic Distortion: Distortion of an AC waveform caused by multiples of the fundamental frequency.

Head: Luminaire for a track-lighting system.

Hertz: A unit of frequency denoted as Hz. One Hz is equivalent to one cycle per second. Can also be measured in kHz, or one thousand cycles per second.

High Ballast Factor: Ballast with a nominal ballast factor of above 1.0, and typically ends up approximately 1.18 for T8 lamps.

High Intensity Discharge (HID) Lamp: Metal Halide, High Pressure Sodium, Low Pressure Sodium and Mercury Vapor lamp types.

High Lumen (HL): Suffix for ProLume F32T8 lamps that produce more light than standard lamps without consuming additional power through the use of special phosphors. Often used in conjunction with a low ballast factor ballast to provide energy savings with minimal light loss.

High Output Fluorescent (HO): Fluorescent lamps designed to be used with an 800 milliampere ballast. Able to operate at low temperatures (down to 0°F) and still produce high light levels.

High Power Factor: A power factor above 0.90 or 90%.

High Power LED: Generally defined as a packaged light emitting diode that consumes 1W or greater. See Light Emitting Diode.

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High Pressure Sodium (HPS) Lamp: High intensity discharge light sources which produce light by an electrical discharge through sodium vapor operating at relatively high pressures and temperatures.

High Voltage: Voltages of 208 or higher.

High Wattage CFLs (or Spirals): Higher power compact fluorescent lamps (65, 85, 105, 150 and 180 watts are common power levels) which are used to replace high wattage incandescent lamps or low wattage metal halide lamps (by removing the ballast). These lamps are found in mogul and medium base and typically have a long life.

HO (High Output): A lamp or ballast that operates at 800mA is considered high output.

Hot Restrike Time: If there is a momentary power interruption or the lights are turned off causing the HID lamp goes out, there will be a delay of 3 to 15 minutes (depending on lamp type) before the lamp has cooled down sufficiently to start again.

HX-HPF: A high reactance auto-transformer that operates at a high power factor. A type of circuit used in HID ballasts.

HX-NPF: A high reactance auto-transformer that operates at a normal power factor. A type of circuit used in HID ballasts.

Ignitor: An electronic device providing a high voltage pulse from 3000V to 6000V (depending on the ballast) to initiate an electrical discharge in a gas filled tube. Typically, the ignitor is paired with or is a part of the ballast. See also starter.

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.

Illumination: The result of the use of light.

Incandescent Lamp: A light source that produces light by the heating of a filament by an electric current.

Inches to Millimeters Conversion: To calculate the metric equivalent of inches in millimeters (mm), multiply inches by 25.4.

Indirect Lighting: Luminaires that distribute 90 - 100 percent of their light upward to be reflected by the ceiling.

Induction Lighting: A means of lighting, which uses RF induction of radio waves or microwaves to produce luminescence. Induction lamps have no electrodes inside the chamber and generally, therefore, have longer life than standard incandescent lamps.

Infrared: Radiant energy in the wavelength range of about 770 to 1100 nanometers (nm). Energy in this range is not visible to the naked eye, but can be sensed by the skin. Applications include heat lamps, photography, medical therapy and industry.

InGaN: The main LED semiconductor technology containing Indium, Gallium and Nitrogen to produce green, blue and white-colored (with the help of phosphors) LED light sources.

Initial Lumens: The measured luminous output of a new light source.

Input Voltage: Voltage required from a power supply for proper operation of a ballast.

Input Watts: The total power input to the ballast which includes lamp watts and ballast losses.

Instant Start: A type of fluorescent lamp-ballast circuit designed to start fluorescent lamps as soon as the power is applied. Originally, instant-start circuits were developed to eliminate separate mechanical starter devices. Slimline fluorescent lamps operate only on instant start circuits.

Integrated Lamp: Generally refers to a non-incandescent lamp with the ballast or driver integrated into the lamp shape and capable of running on line or low voltage. A screw-based compact fluorescent lamp is an example of this.

Intensity: The light emitted from a source. Intensity varies given the direction at which one views the source. Intensity does not vary with distance.

Intermediate Base: Small screw base for lamps, also known as an E17 base.

Kelvin Temperature: See Color Temperature.

Kelvins: Base unit for measuring color temperature, used in lighting to describe appearance of light. See Color Temperature.

Kilowatt (kw): A measure of electrical power equal to 1000 watts.

Kilowatt Hour (kwh): The standard measurement of electrical energy consumption. One kilowatt hour is equal to one kilowatt of electricity used over the period of one hour. Also the typical billing unit used by electrical utilities.

Krypton: A heavy inert gas used in incandescent lamps which allows the filament to glow hotter and brighter and last longer.

L70 rating: The point at which a light source has depreciated to 70% of the initial light output. This is commonly used as a lifetime reference in LED lamps and fixtures.

Lamp: Lighting industry term used for a light bulb.

Lamp Dimensions: Bulb designations consist of a letter(s) to indicate shape and a number to indicate the diameter in eighths of an inch.

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Luminaire: A complete lighting unit including lamps, housing, lens and ballast if required. All the necessary components to make what we commonly refer to as a "fixture".
Luminaire Efficiency: The ratio of total lumens exiting a luminaire to those emitted by the lamp (or lamps) used in that luminaire.

Luminaire Efficiency: The ratio of total lumens exiting a luminaire to those emitted by the lamp (or lamps) used in that luminaire.

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).

Luminous Efficacy: The light output of a light source divided by total input power of the source. See Lumens per Watt.

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

Magnetic Ballast: A ballast used with discharge lamps consisting of conductive windings of copper or aluminum around a steel or iron core. This type of ballast is similar in construction to magnetic transformers, and does not have any impact on the frequency of the lamp. In general these ballasts are less efficient but more tolerant of temperatures than electronic ballasts. See also Electromagnetic Ballasts.

Magnetic Transformer: A device for converting electricity from one voltage to another voltage that is comprised of conductive windings of copper or aluminum around a steel or iron core. This type of transformer does not change the frequency of power to the lamp. In general these transformers are less efficient but more tolerant of temperatures than electronic transformers.

Maximum Case Temperature: This is the maximum temperature when measured at the ballast "hot spot" that can be maintained and not impact the life or performance of a ballast negatively. Beyond this point the ballast will be significantly impacted and can have a short life and impact lamp performance.

Maximum Overall Diameter (MOD): Maximum width or diameter of a lamp taken on a plant perpendicular to the base of the lamp. For most lamps this is referred to in a lamp's shape in 1/8" increments (ex. An A19 lamp is 19/8 inches in diameter, or 2.375" diameter, and a T8 lamp is 8/8 inches in diameter, or 1" in diameter). This measure becomes helpful in determining fit for CFL spirals, which do not typically follow this naming convention.

Maximum Overall Length (MOL): The overall length of a lamp, from the top of the shell to the bottom of the base.

Mean Lumens: The measured output of a light source at 40% of lamp life. Also called design lumens.

Mean Spherical Candlepower (MSCP): The method of rating the total light output of miniature lamps and the average luminous intensity of an incandescent lamp in all directions. MSCP can be converted to lumens by multiplying the MSCP x 12.57.

Medium Base: The common term for an E26 screw base for a lamp.

Mercury Vapor Lamp: A high intensity discharge light source operating at a relatively high pressure (about 1 atmosphere) and temperature in which most of the light is produced by radiation from excited mercury vapor. Phosphor coatings on some lamp types add additional light and improve color rendering.

Metal Halide Lamp: A high intensity light source in which the light is produced by the radiation from mercury, plus halides or metals such as sodium, scandium, indium and dysprosium. Some lamp types may also utilize phosphor coatings.

Miniature Candelabra Base: Small screw base for lamps also known as an E11 base.

Mini-Can: Usually refers to a line voltage halogen lamp with a miniature candelabra base. See Miniature Candelabra Base.

Minimum Starting Temperature: References the minimum ambient temperature that the ballast will reliably start a lamp.

Mogul Base: Large lamp base typically used for high power incandescent, compact fluorescent, and high intensity discharge type lights, also known as an E39 base.

Multi-Volt: A fluorescent electronic ballast that has a universal input voltage; typically these ballasts have an acceptable input voltage range of 108V to 305V.

Nanometer: A unit of length equal to 10^{-9} meters; commonly used as a unit of wavelength.

National Electric Code (NEC): A nationally accepted electrical installation code to reduce the risk of fire, developed by the National Fire Protection Association.

National Electrical Manufacturers Association (NEMA): Trade organization represented by around 450 manufacturers of electrical supplies. NEMA develops product design, manufacturing and performance standards that are designed to benefit manufacturers and consumers alike.

Natural White: A term to describe fluorescent lamp that has a high correlated color temperature, typically around 5000K. This color temperature tends to be perceived as brighter but somewhat harsher.

NEMA Premium Ballast: Designation that recognizes the lighting industry's most energy efficient T8 ballasts available. Qualifying ballasts carry the NEMA Premium mark on the label.

Neodymium: A rare earth element used to produce full spectrum incandescent lamps; also know as daylight or natural light. They use a colored glass shell to filter out the yellow light produced by standard incandescent lamps.

Nominal Input Voltage: The input voltage at which the ballast is designed to operate. The nominal voltage allows for normal levels of variation without affecting ballast operation.

Nominal Length: A measurement for Fluorescent lamp length based on the length of the lamp plus an allowance for the luminaire's lamp holders.

Nominal Open Circuit Voltage (OCV): The rated open circuit voltage for a ballast, typically at the center of an acceptable range for this ballast.

Normal Ballast Factor: Ballast with a nominal ballast factor of between 0.80 and 1.00, and typically ends up approximately 0.88 for T8 lamps.

Normal Power Factor: A power factor below 0.90 or 90%. Typically low power factor ballasts operate at <0.50 or <50%.

Ohm's Law: A scientific law which states that current (amperes) in a circuit depends on resistance (ohms) and applied electromotive force (volts). Current (I) = Voltage (E) / Resistance (R)

Open Circuit Voltage (OCV): Open Circuit Voltage measured across the socket the lamp screws into, with the ballast powered on. This can be difficult to measure in modern products with end of life protection, and is often dangerous to measure without appropriate knowledge of the ballast. Exceedingly high voltages could be present in certain types of lighting products.

Operating Position: Lamps may be operated in any position unless otherwise noted.

Operating Voltage: For electrical discharge lamps, this is the voltage measured across the discharge when the lamp is operating. It is governed by the contents of the chamber and is somewhat independent of the ballast and other external factors but still must fall within predetermined characteristics in order to be compatible with the ballast.

PAR Lamp: PAR is an acronym for parabolic aluminized reflector. A PAR lamp, which may utilize either an incandescent filament, a halogen filament tube or an HID arc tube, is a precision pressed-glass reflector lamp. PAR lamps rely on both the internal reflector and prisms in the lens for the control of the light beam.

Parallel: A type of circuit in which the electrical pathway splits and flows to each lamp simultaneously. In this type of circuit each lamp is operated independently and therefore will continue to operate even if the other lamp fails.

PCB (Polychlorinated Biphenyls): Chemical pollutant formerly used in ballast capacitors that were part of ballasts. It is now illegal to use PCBs and most such ballasts have been replaced over time. No Halco ballasts have ever been produced with PCBs.

Phosphor: A chemical compound typically found as a powder that is deposited inside of the glass of a lamp, into the encapsulent of a white LED, or applied over the emitting surface of an LED. Phosphors are designed to absorb a specific type of light (UV for discharge lamps, or blue light for LEDs) and re-emit it as a longer wavelength with the purpose of providing visible light or altering the characteristics of a visible light.

Photometry: The science of measuring visible light in units that are weighted according to the sensitivity of the human eye to certain wavelengths of light.

Photopic Vision: Refers to vision involving the cones of the eye; used in reference to the adaptation of the eye to illuminance of more than 3.4 candelas per square meter.

Pigtail: An adaptation to a fluorescent ballast that connects multiple wires together into one convenient socket. Most often used for Circline lamps.

POMB: See Position Oriented Mogul Base.

Position Oriented Mogul Base: Mogul base lamp that has two pins near the base of the threads. These pins follow a groove in a Position Oriented Mogul Base Socket that ensures that a horizontal-operation lamp is used in the correct position within a fixture. This base type is also referred to as a POMB.

Potting: A compound, typically made of asphalt and silica, that is used to fill the inside of a ballast.

Power Factor: A measurement indicating how efficiently a lighting system is using the power it is drawing. The ratio between power used (watts) and power being drawn from the line (volts-amperes). Expressed as a percent or a range from 0 to 1.0. The higher the percent the more efficiently the power is being used. High power factors are ratings of 0.9 (90%) or higher. Incandescent lamps are close to 1.0, magnetic ballasts can be as low as 0.5.

Power Factor Corrected: Ballasts that incorporate a means of Power Factor Correction but whose power factor is <90% and >50%.

Preheat Start: A fluorescent lamp-ballast circuit where the electrodes are heated or warmed by an auxiliary switch or starter before the lamps light up.

Probe Start: A starting method for HID lamps that involves the use of a probe to start the lamp. A large surge of voltage is applied to the probe in order to assist in starting the lamp.

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Programmed Rapid Start: See Programmed Start.

Programmed Start: A fluorescent lamp-ballast circuit that uses a custom integrated circuit (IC), which monitors lamp and ballast conditions to ensure optimal system lighting performance. PS ballasts heat the lamp cathodes to 700°C prior to lamp ignition. This puts the least amount of stress on the lamp electrodes, resulting in maximum lamp life regardless of the number of lamp starts. Programmed-start ballasts are typically wired in series.

ProLED: Halco's high performance, energy efficient LED line, which features lamps designed to provide long life, precise beam control, solid state construction and tightly controlled color temperatures.

Pulse Start: A fluorescent lamp-ballast circuit that is designed with an ignitor to ignite the arc tube. Due to this, bulbs have no need for the starter electrode. Pulse start lamps are typically more efficient than standard counterparts.

Quartz: The commonly used name for fused silica which is used to make high strength and high temperature tubes and lamps in the lighting industry. Commonly used in Halogen capsules, Metal Halide arc tubes, mercury vapor arc tubes and the protective shroud in open-rated metal halide lamps.

Quartz-Halogen Lamp: See Halogen Lamp.

Radiation: A general term for energy released as a wave or ray. Includes all forms of visible light, UV, IR, radio, heat waves, etc.

Radiometry: The science of measuring radiant energy, especially radiant energy in that portion of the total electromagnetic spectrum lying adjacent to the visible region.

Rapid Start: A fluorescent lamp-ballast circuit which utilizes continuous cathode heating, while the system is energized, to start and maintain lamp light output at efficient levels. Rapid start ballasts may be either electromagnetic, electronic or of hybrid designs. Full-range fluorescent lamp dimming is only possible with rapid start systems.

Rated Lamp Life: See Average Rated Life.

Reactor: The most basic circuit type for an HID ballast, made of a single coil, which acts as an inductor.

Reference Ballast: Laboratory device used to provide ANSI-specified measurements of initial and mean lamp lumens.

Reflector Lamp: An incandescent, halogen compact fluorescent or HID lamp with a built-in reflecting surface. Incandescent and HID versions are made from a single piece of blow-molded soft or hard glass.

Reflector Optic: A reflective secondary optic that is used to convert wide-emitted light into a different shape and light ray distribution pattern.

Refraction: The bending of light rays.

Refractor: A translucent fixture covering, such as a lens or diffuser that refracts or bends light rays.

Resistance: A measure of resistance to flow of electrical current, expressed in ohms.

RFI: See EMI/RFI.

RGB – also Colormixing: Red, green and blue colors can be added and mixed to generate a wide range of colors. RGB control schemes typically employ pulse width modulation to dim one or more of the primary colors to generate the desired effect.

Scotopic/Photopic (S/P) Ratio: This measurement is a reference to account for the fact that of the two light sensors in the retina, rods are more sensitive to blue light (scotopic vision) and cones to yellow-green light (photopic vision). S/P is calculated as the ratio of scotopic lumens to photopic lumens for the light source on an ANSI reference ballast (if applicable). Higher-color temperature lamps tend to have higher values of the S/P Ratio compared to lower CCT sources. It is important to note that many situations will not fall purely into either photopic or scotopic vision.

Scotopic Vision: Sight involving the eye's rods, which respond to low levels of lighting, below .034 candelas per square meter.

Secondary Optic: A glass, metal or plastic element used in LEDs and luminaires to change the direction and control the distribution of light rays.

Self-Ballasted Lamps: See Integrated Lamp.

Series: A type of circuit in which the current flows through the lamps in sequence. The failure of one lamp results in the stoppage of current flow.

Shimmer: Changes to the intensity of a lamp that are not visible from looking directly at the lamp or lit area, but are noticeable in the peripheral vision.

Shroud: A glass cylinder surrounding the arc tube in metal halide lamps to protect against the hot arc tube from breaking the glass bulb if an arc tube rupture occurs. It reduces the risk of using metal halide lamps in open fixtures.

Single-Ended Lamp: Lamps that have one base or point of electrical connection.

SI: International System of Units. Most widely used standards for measurement.

Slim Case: A reduced size case for fluorescent ballasts to allow for more versatile applications.

SMD: See Surface Mount Diode.

Soft White (fluorescent): A term to describe a fluorescent lamp that has a low correlated color temperature, typically around 3000K.

Soft White (incandescent): A lamp with a silica coating on the inside of the bulb to provide very diffuse light and completely conceal the filament.

Solid State Lighting: Lighting based on the use of semiconductors, see Light Emitting Diode.

Sound Rating: A rating of the amount of sound produced in the normal operation of a ballast. "A" is the normal favorable rating, producing the lowest amount of sound, while "E" is the least favorable rating, producing the greatest amount of audible noise.

SOX: Low Pressure Sodium abbreviation term.

Spectral Power Distribution: Distribution of spectral emissions from a lamp, in either relative terms or absolute terms, used to determine CCT and chromaticity of a light source. Often accompanied by a visual representation of the radiant energy emitted by a light source as a function of wavelength. SPDs provide a visual profile or "fingerprint" of the color characteristics of the source throughout the visible part of the spectrum. Also called "spectral curve" or "spectrum".

Spiral Lamp: A helical-shaped long life compact fluorescent lamp.

Spotlight: A lamp designed to produce a narrow beam angle to illuminate a specifically defined area.

SSL: See Solid State Lighting.

Starter (Ignitor): A device used in conjunction with a ballast to start preheat fluorescent lamps.

Striation: Describes a condition in a fluorescent lamp where a series of bright and dim areas are exhibited, and sometimes move down the length of the lamp. These are common in reduced wattage lamps, which use heavy fill gasses such as Krypton. It is not an indication of a ballast or lamp problem and will not impact the lamp or ballast, and are most often seen during lamp warm-up or when the temperature on the outside wall of the lamp is too low.

Super CWA: Constant wattage, Auto-Transformer for use with Pulse Start Metal Halide Lamps.

SureColor: Prism MR16 lamps that feature a UV-stop quartz capsule, titanium coated dichroic reflector for consistent color, and an axial filament for precise beam control.

Surface Mount Diode: A type of LED package for mounting to the surface of a circuit board. This format allows for better thermal dissipation for the diodes and helps maintain the long life of LEDs. See LED Package.

Task Lighting: Lighting directed to a specific surface or area that provides illumination for specific tasks.

TCLP Test: The Toxicity Characteristic Leaching Procedure (TCLP) test, specified in the Resource Conservation and Recovery Act (RCRA) of 1990, is used to characterize fluorescent lamp waste as hazardous or non-hazardous waste. The TCLP test measures the ability of the mercury in a lamp to leach from a landfill into ground water under very aggressive and reactive conditions.

Thermal Protector: A device used in a ballast to detect when the maximum temperature of the ballast has been exceeded and when to remove input power. Thermally protected ballasts that meet UL certifications are classified as "Class P."

Total Internal Reflection Optic: A glass or transparent plastic secondary optic that uses the principle of Total Internal Reflection (TIR) to efficiently direct the light rays of an LED from the wide emitting pattern into a different beam distribution. Most commonly composed of PMMA plastic.

Total Harmonic Distortion (THD): A measure of the distortion of an electrical wave form. Excessive THD may cause adverse effects to the electrical system.

Transient Protection: See TVSS.

Transients: High voltage surge through an electrical system that can lead to premature ballast or integrated lamp failure. A transient may be caused by lightning strikes to nearby transformers, lines or ground, or by switching of motors or compressors (via inductive kick), as well as by circuit shorts.

Tri-Phosphor: Term used to describe fluorescent lamps, including most compact fluorescent lamps, which use a combination of at three phosphors (red, green and blue) to generate white light efficiently and with good color rendering.

Trigger Start: A circuit that eliminates the starter and allows for instant starting of preheat lamps.

Troffer: A long recessed lighting fixture, usually installed flush with the ceiling.

Tungsten Halogen Lamp: See Halogen Lamp.

TVSS: Transient Voltage Surge Suppressors. These are devices that are installed to protect ballasts and other electronic equipment from transients that may occur in the power line.

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Two-Pin Compact Fluorescent Lamps: Type of lamps that have a starter integrated into the base of the lamp. Traditionally 2-pin lamps are designed to work with magnetic ballasts.

UL: Underwriters Laboratories. Laboratory that sets safety standards for building materials, electrical appliances and other products.

Ultraviolet: Radiant energy in the wavelength range of about 100 to 380 nanometers (nm). This light is invisible to the naked eye and is also known as black light. Applications include:

Blacklight 320-400 nm
Germicidal 220-300 nm
Ozone-producing 180-220 nm

Very High Output (VHO) Lamps: Fluorescent lamps designed to be used with a 1500 milliampere ballast.

Visible Spectrum: Radiant energy in the wavelength range of about 380 to 770 nanometers (nm). The light that can be seen by the human eye and produces what we also call the "color spectrum."

Volt: The unit of electromotive force (emf). The difference in electrical potential that will cause a current of one ampere to flow through a resistance of one ohm.

Voltage Rating: The recommended operating voltage for a lamp.

Voltage Sag: Drop in voltage levels of electrical distribution system or electrical circuit that interferes with the operation of electrical and electronic equipment. Commonly called a "Brownout". Results when demand for electricity exceeds capacity of the distribution system, and is more common in some areas of the country.

Voltage Surge: See Transient.

Warm-Up Time: The time it takes a lamp to get to full brightness. Incandescent, Halogen and LED lamps have effectively no warm up time. Discharge lamps do not come on at full brightness upon startup and:

- Most fluorescent lamps come on at 80% or greater brightness and warm up the rest of the way very quickly.
- Covered compact fluorescent and amalgam fluorescent lamps start at a lower brightness and can take up to 3 minutes to reach full brightness.
- HID lamps take 3-10 minutes to warm up to full brightness after starting and typically start at a very low proportion of brightness.

Warm White: Refers to a low color temperature of light, nominally refers to light with a correlated color temperature of 3000K or 2700K, resulting in a yellow-white light. Typically refers to discharge or LED products, as halogen and incandescent light tend to fall in this category naturally.

Watt: A unit of electrical power. One watt is equal to one ampere of current flowing through one ohm of resistance.

Wavelength: Distance between two successive points of a periodic wave; the wavelengths of light are expressed in nanometers (nm).

HALCO LIGHTING TECHNOLOGIES LAMP LIMITED WARRANTY

Halco Lighting Technologies (hereinafter called "Halco"), 2940 Pacific Drive, Norcross, GA 30071, warrants to the purchaser that Halco lamps will be free from defect in the material and workmanship from the date of manufacture for the following time periods:

Lamp Category	Warranty
Self-Ballasted CFL 42 watts or less:	2 years
Self-Ballasted CFL greater than 42 watts:	1 years
Plug-in Compact Fluorescent:	1 years
High Power LED:	5 years
IP65 Rated JC LED (40,000 hour rated life):	5 years
Standard JC LED (20,000 hour rated life), C7 and C9 LED:	2 years
Linear Fluorescent, non-pre-heat > 14 watts:	2 years
ProLume Linear Fluorescent, non-pre-heat > 14 watts operated on a *ProLume Ballast*:	3 years

All other lamps are covered under our Quality Assurance noted below.

Explicit Operating Conditions:

Self-Ballasted and Plug-In Compact Fluorescent Lamps: Based on maximum of 10 hours use per day.

Should any product fail to meet the warranty specified above, Halco, at its option, shall correct any defect by issuing a credit for the product or providing a free replacement lamp. This warranty is conditioned upon proper storage, installation, use and maintenance. Remedy is expressly limited to credit or replacement only.

This warranty is not applicable to any lamp, which is not installed and operated in accordance with the current edition of the National Electric Code (NEC), the Standards for Safety of Underwriters Laboratory, Inc. (UL), the Standards for the American National Standards Institute (ANSI), and with Halco instructions and guidelines for the lamp. This warranty is not applicable to any lamp subjected to abnormal stresses and operating conditions. Use of occupancy sensors, dimmers or programmable systems with some lamp types may void the warranty.

Halco reserves the right to examine all lamps prior to the determination of warranty status. All lamps must be retained for warranty claims. The warranty period starts on the date of installation. If the date of installation cannot be determined or is unknown, the warranty period will start with the date of the original purchase from Halco.

Warranty Exclusion Clause for Products Exported:
This warranty shall be void for products that are exported outside of the U.S. and its territories. The distributor, private labeler or OEM assumes all responsibility imposed by statue, regulation or law on products sold into these markets.

NO IMPLIED STATUTORY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL APPLY BEYOND THE AFOREMENTIONED WARRANTY PERIOD.
The foregoing warranty is exclusive of all other statutory, written or oral warranties, and no other warranties of any kind, statutory or otherwise, are given or herein expressed. The warranty sets forth Halco's responsibilities regarding the ballast and claimant's exclusive remedy.

Warranty claims are to be made in accordance with Halco's published Warranty Program, made available upon request.

LIMITATION OF LIABILITY. Halco will not under any circumstances, whether as a result of breach of contract, breach of warranty, tort, strict liability or otherwise, be liable for consequential, incidental, special or exemplary damages including, but not limited to, loss of profits or revenues, loss of use of lamp or any other goods or associated equipment or damage to any associated equipment, cost of capital, cost of substitute products, facilities of service, down time cost, or claims of claimant's customers. Halco's liability on any claim of any kind for any loss of damages arising out of, resulting from or concerning any aspect of this agreement from the products or services furnished hereunder shall not exceed the price of the specific lamp or lamps which gives rise to the claim.

Some states do not allow the exclusion of limitation of damages or the length of time for an implied warranty. Therefore, the limitations or exclusions of consequential or incidental damages and implied warranties may not apply to certain claimants. This warranty gives the claimant specific legal rights. The claimant may also have other rights, which vary from state to state.

Quality Assurance Guarantee
At Halco Lighting Technologies, we are committed to quality and service. We measure our success by one standard, customer satisfaction. With this in mind, we offer you the following: Should you encounter any product from Halco Lighting Technologies that fails to perform according to specifications, contact your account representative immediately. If our product is found to be defective in either material or workmanship, we will credit your account or replace the product at no charge. In order to better maintain our standard of quality, we reserve the right to inspect any defective products. We make this assurance to clearly demonstrate our commitment to your satisfaction.

APPENDIX

Ballast Warranty

HALCO LIGHTING TECHNOLOGIES LAMP BALLAST LIMITED WARRANTY

Halco Lighting Technologies (hereinafter called "Halco"), 2940 Pacific Drive, Norcross, GA 30071, warrants to the purchaser that its ballasts will be free from defect in the material and workmanship from the date of manufacture for the following time periods:

Ballast Category	Warranty
Electronic Fluorescent:	5 years
ProFormance Electronic Fluorescent:	5 years
ProFormance Electronic Compact Fluorescent:	5 years
Electronic Residential:	5 years
Electromagnetic Compact Fluorescent:	3 years
Electronic Sign:	3 years
Electronic HID:	3 years
Core & Coil HID:	2 years

Should any product not meet the warranty specified above, Halco, at its option, shall correct any defect, by either repairing any defective part of parts or by replacing any defective part or parts or by making available a new replacement ballast. This warranty is conditioned upon proper storage, installation, use and maintenance.

This warranty is not applicable to any ballast, which is not installed and operated in accordance with the current edition of the National Electric Code (NEC), the Standards for Safety of Underwriters Laboratory, Inc. (UL), the Standards for the American National Standards Institute (ANSI), and with Halco instructions and guidelines for the ballast. This warranty is not applicable to any ballast subjected to abnormal stresses and operating conditions.

The conditions of any tests [to be] performed on Ballast Products, which are claimed to have not performed in accordance with the terms of this warranty, shall be mutually agreed upon in writing and Halco shall be notified of, and may be represented at such tests. Halco extends this express limited warranty to the original purchaser.

NO IMPLIED STATUTORY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL APPLY BEYOND THE AFOREMENTIONED WARRANTY PERIOD.

The foregoing warranty is exclusive of all other statutory, written or oral warranties, and no other warranties of any kind, statutory or otherwise, are given or herein expressed. The warranty sets forth Halco's responsibilities regarding the ballast and claimant's exclusive remedy.

Warranty claims are to be made in accordance with Halco's published Warranty Program, made available upon request.

LIMITATION OF LIABILITY. Halco will not under any circumstances, whether as a result of breach of contract, breach of warranty, tort, strict liability or otherwise, be liable for consequential, incidental, special or exemplary damagees including, but not limited to, loss of profits or revenues, loss of use of ballast or any other goods or associated equipment or damage to any associated equipment, cost of capital, cost of substitute products, facilities of service, down time cost, or claims of claimant's customers. Halco's liabitlity on any claim of any kind for any loss of damages arising out of, resulting from or concerning any aspect of this agreement from the products or services furnished hereunder shall not exceed the price of the specific ballast or ballasts which gives rise to the claim. Per the Halco Warranty Service Program, Halco will provide a maximum labor allowance of ten dollars ($10.00) per ballast for Electronic Ballasts only.

Some states do not allow the exclusion of limitation of damages or the length of time for an implied warranty. Therefore, the limitations or exclusions of consequential or incidental damages and implied warranties may not apply to certain claimants. This warranty gives the claimant specific legal rights. The claimant may also have other rights, which vary from state to state.

Warranty Exclusion Clause for Products Exported:
This warranty shall be void for products that are exported outside of the U.S. and its territories. The distributor, private labeler or OEM assumes all responsibility imposed by statue, regulation or law on products sold into these markets.