



EYE LIGHTING
INTERNATIONAL



Product Catalog

Lighting Solutions

HID & LED Lamps and Systems



True Lighting.™

www.eyelighting.com



HID Lamps and Systems

True Lighting.™

To Our Customers,

EYE Lighting International designs and manufactures high-performance lighting that exceeds the challenging expectations of today's technology-savvy consumers. We call it **True Lighting**.

This catalog has been created for professionals involved in the design, specification, selection and installation of lighting products and systems, and we encourage you to make it a regular tool in your work. The payoff will be superior performance, long life, and the very best light for the task at hand. Here are a few highlights:

New Ceramic Technology Lamps (page CT-7) feature Pure White™ technology which provides superior color rendering in a variety of color temperatures.

Broad line of high performance Metal Halide Pulse Start lamps, including BRUTUS® lamps (page MH-7) for severe applications.

Unique conversion lamps to upgrade Metal Halide, Mercury, and High Pressure Sodium systems. Change to Pure White™ light with just the change of the lamp to our new Ceramic lamp that works on a standard S50 HPS ballast (pages CT-9 and CONV-5)

The EYE Lighting brand means innovative products and systems that build on our 70-year legacy of lighting technology and manufacturing. Our commitment to quality is demonstrated by ISO certifications in Quality and Business Management, Environmental Management, and Occupational Health and Safety. We operate an ISO accredited NVLAP Lab to insure consistency and expertise in everything we design and manufacture.

We are a proud organization and we thank you for your dedication, your support, and the privilege to serve you.

On behalf of the EYE Lighting Team,



Tom Salpietra
President & C.O.O.



OUR PRINCIPLES

1. CUSTOMER CENTRIC

We place the customer at the center-point of our business

2. PROCESS IMPROVEMENT

We strive to continuously improve all our processes

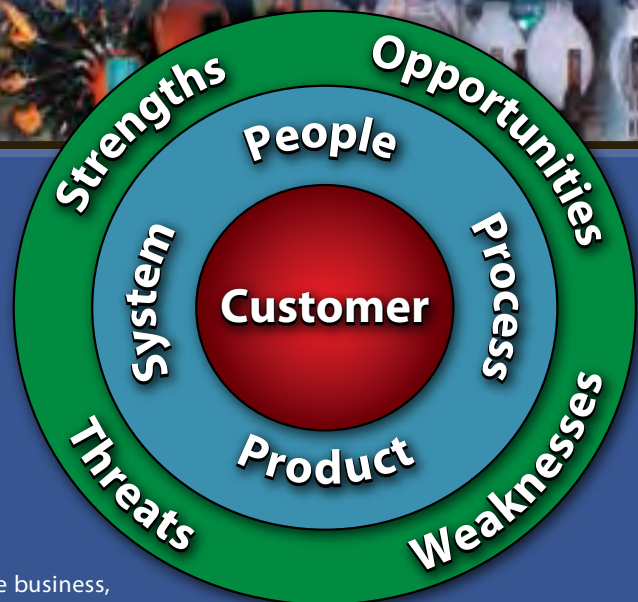
3. FINANCIAL FOCUS

We focus on financial metrics to sustain our company growth

4. TALENT DEVELOPMENT

We develop and enhance the skill-set of our employees

The customer is at the center of EYE, served by the key drivers of the business, which are developed from a strategic analysis of our competitiveness.





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OUR ENVIRONMENTAL COMMITMENT

ENVIRONMENTALLY ENERGIZED

EYE Lighting has adopted the EPA's Guidelines to Reduce, Reuse, and Recycle as outlined by their Division of Solid Waste Management. EYE Lighting EN lamps are Environmental Protection Agency/ TCLP compliant as non-hazardous waste in that they are completely lead-free and contain reduced mercury to further protect and beautify our environment for future generations.

ENERGY REDUCTION EMPHASIS

- High yield manufacturing process to reduce rework and energy usage.
- Office designs with low power density lighting (watts/square foot).

CONSERVATION COMMITMENT

- 93% of EYE Lighting lamps manufactured are high or very high efficiency (lumens per watt) reducing the number of lamps required for any application.
- EYE Lighting long-life lamps reduce the number of replacements over time.
- High efficiency, high light output, high maintained lumen lamps reduce total lamps required and used.

CERTIFICATION EXCELLENCE

- EYE Lighting is the **ONLY** lighting company meeting **FOUR** certification and accreditation standards. These certifications are outlined in more detail below

COUNT ON EYE LIGHTING...

Look for these symbols to assure Energy Saving, ENvironmentally friendly, Made in America, and Assembled in America products



Energy Saving
products



ENvironmentally
friendly products



Made in America
products



Assembled in
America products



EYE LIGHTING CERTIFICATIONS

EYE Lighting's objective is continual improvement, world-class quality and a clear focus on our customers' needs. We achieve this objective through a dedicated focus on industry certifications.

ISO 9001:2008 CERTIFIED

- Disciplined business management system
- Puts processes in place to meet customers needs

ISO 14001:2004 CERTIFIED

- Commitment to meet or exceed Environmental Regulatory requirements
- In-house infrastructure for comprehensive recycling

OHSAS 18001:2007 CERTIFIED

- Commitment to meet or exceed regulatory health and safety requirements

ISO 17025:2005 ACCREDITED

- On-site research and development laboratory to develop and certify innovative products and technologies
- Provide engineering and technical support to assist in evaluation of customer product performance/compliance

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HIGH PERFORMANCE CERAMIC TECHNOLOGY

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Cera Arc® & Pure White™ Mogul Base Open & Enclosed Fixture Rated – Energy Saving White Light	CT-7
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HIGH PERFORMANCE CERAMIC TECHNOLOGY CONVERSION

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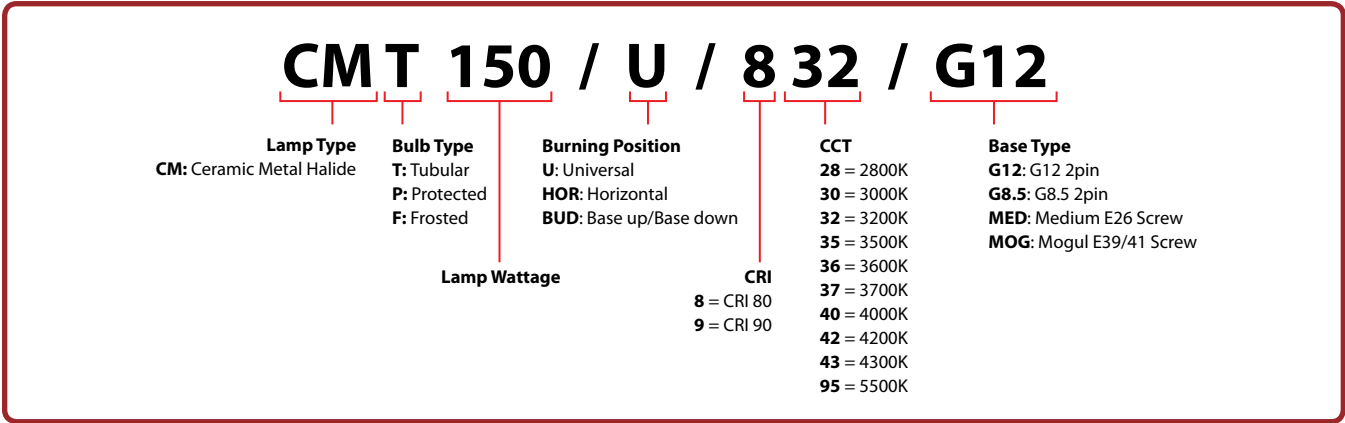


Lamp Family & Application Guide

LAMP FAMILY	LAMP FEATURES	WATTS	APPLICATION	PAGE
CERA ARC®	High-performing Ceramic Technology with large assortment of base designs	39W through 360W	• Retail Stores • Parking Areas • Industrial High Bay • Signs/Billboards • Showrooms • Sports Facilities • Industrial Low Bay • Street	CT-3
CERA TEK™	Ceramic Technology operates on Pulse Start Ballast. Can be used in open fixtures	360W	• Retail • Industrial • Warehouses • Sports Facility • Landscape • Parking Lots	CT-8

Product Description Guide

CERA ARC CERAMIC TECHNOLOGY LAMPS



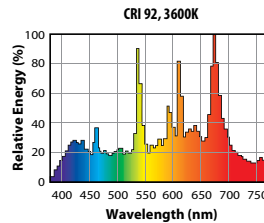
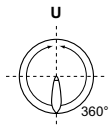
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For Warnings, Caution Notices, & Operating Instructions, see page CT-10 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.

HIGH PERFORMANCE CERAMIC TECHNOLOGY

Cera Arc® Natural Red™ – High R9 Color Rendering

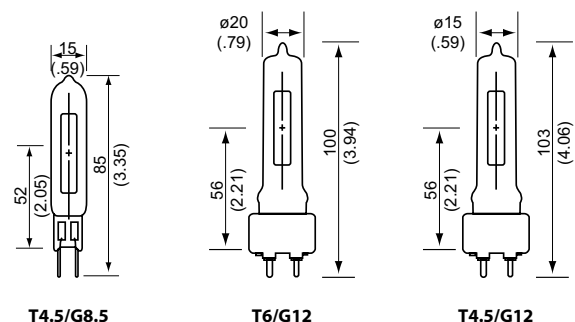
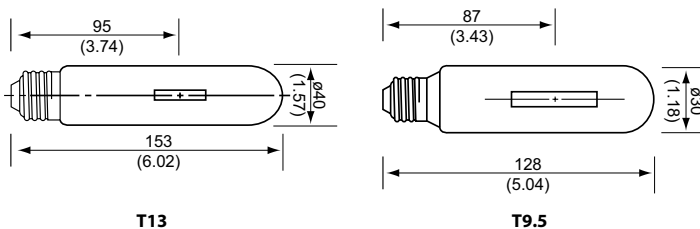
FEATURES

- Highest color rendering of red
- R9[†] up to 90
- Brings out richness of all colors
- High CRI of 92
- UV Cut coating on bulb



Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code/ Ballast Ref.	Case Qty.	Initial Lumens	Mean Lumens	Avg. Life Hours	Color Temp. (K)	CRI	Fix. [†] Req.	Burn Pos.	Red Rendering
High Performance Ceramic Natural Red - Medium Base															
1	70	T9.5	Med	55177	CMT70/U/NR936/MED	M/C98, M/C139	12	5100	3825	9000	3600	92	0	U	70
2	70	T9.5 Coated	Med	55181	CMT70/U/NR936/MED	M/C98	12	4900	3675	9000	3600	92	0	U	70
3	150	T13	Med	55185	CMT150/U/NR936/MED	M102, M107, M142	12	11500	8625	12000	3600	92	0	U	90
4	150	T13 Coated	Med	55189	CMT150/U/NR936/MED	M102, M107, M142	12	11000	8250	12000	3600	92	0	U	90
High Performance Ceramic Natural Red - G8.5 and G12 Base															
5	39	T4.5	G12	56423	CMT35/U/NR936/G12	M/C130	24	3150	2520	12000	3600	90	E	U	80
6	70	T4.5	G8.5	55165	CMT70/U/NR936/G8.5	M/C98, M/C139	24	6600	5610	12000	3600	92	E	U	90
7	70	T6	G12	55144	CMT70/U/NR936/G12	M/C98, M/C139	24	6600	5610	12000	3600	92	E	U	90
8	150	T6	G12	55193	CMT150/U/NR936/G12	M102, M107, M/C142	24	12000	9000	12000	3600	90	E	U	90

[†] E = Enclosed Fixture Required | 0 = Open Fixture Permissible | See page TECH-8 for further information regarding fixture requirements.



APPLICATIONS

- Meat and Fish Displays
- Produce Displays
- Floral Displays
- Fine Clothing Displays
- Jewelry Displays

[†] See page TECH-6 for further information on the significance of R9 Rating.

Notes:

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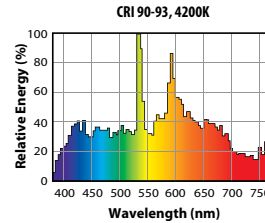
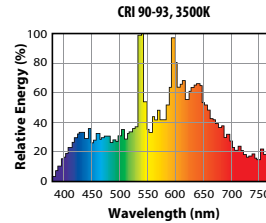
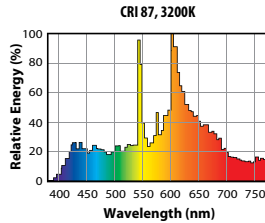
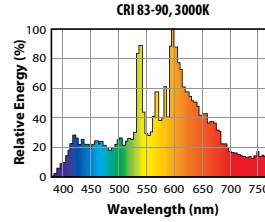
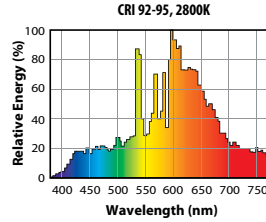
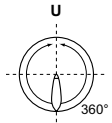
CERAMIC TECHNOLOGY LAMPS

HIGH PERFORMANCE CERAMIC TECHNOLOGY

Cera Arc® Single-Ended G8.5/G12 Base – Universal Burn

FEATURES

- High color rendering, CRI 83 - 94
- Stable in color over lamp life
- Excellent lumen maintenance
- High efficacy, up to 107 LPW
- UV-Cut coating

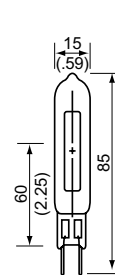


Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code/ Ballast Ref.	Case Qty.	Initial Lumens	Mean Lumens	Avg. Life Hours	Color Temp. (K)	CRI	Fix.† Req.	Burn Pos.
High Performance Ceramic T4.5 Enclosed Fixture Series - G8.5 Base														
1	39	T4.5	G8.5	55128	CMT35/U/942/G8.5	M/C130	24	3300	2475	12000	4200	90	E	U
2	39	T4.5	G8.5	56322	CMT35/U/830/G8.5	M/C130	24	3300	2640	12000	3000	90	E	U
3	70	T4.5	G8.5	55134	CMT70/U/930/G8.5	M/C98, M/C139	24	7500	6375	15000	3000	90	E	U
High Performance Ceramic Enclosed Fixture Series - G12 Base														
4	39	T4.5	G12	55131	CMT35/U/942/G12	M/C130	24	3300	2475	12000	4200	90	E	U
5	39	T4.5	G12	56326	CMT35/U/830/G12	M/C130	24	3300	2640	12000	3000	83	E	U
6	70	T6	G12	55150	CMT70/U/928/G12	M/C98, M/C139	24	6600	5610	12000	2800	92	E	U
7	70	T6	G12	55137	CMT70/U/930/G12	M/C98, M/C139	24	7500	6375	15000	3000	90	E	U
8	70	T6	G12	55141	CMT70/U/935/G12	M/C98, M/C139	24	7700	6545	15000	3500	90	E	U
9	70	T6	G12	55147	CMT70/U/942/G12	M/C98, M/C139	24	7500	6375	15000	4200	94	E	U
10	150	T6	G12	56371	CMT150/U/832/G12	M102, M107, M142	24	15000	11250	12000	3200	87	E	U
11	150	T6	G12	56378	CMT150/U/935/G12	M102, M107, M142	24	14500	10875	12000	3500	93	E	U
12	150	T6	G12	56385	CMT150/U/942/G12	M102, M107, M142	24	14500	10875	12000	4200	93	E	U

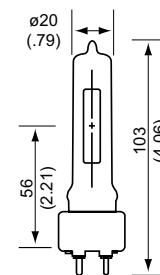
† E = Enclosed Fixture Required | See page TECH-8 for further information regarding fixture requirements

APPLICATIONS

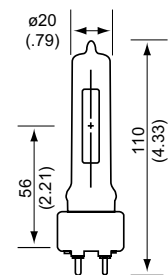
- Retail Stores
- Showrooms



T4.5/G8.5



T6/G12 (70W)



T6/G12 (150W)

Notes:

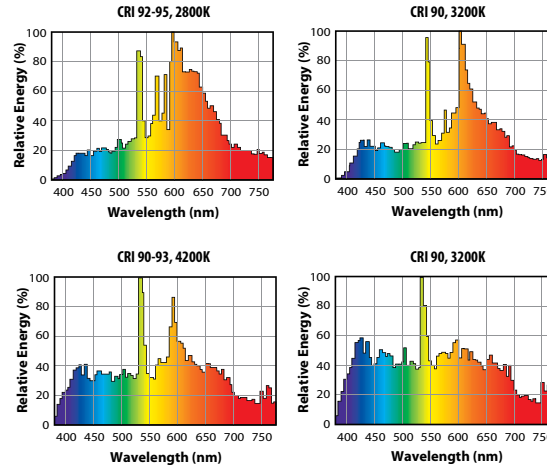
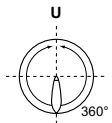
For Warnings, Caution Notices, & Operating Instructions, see page CT-10 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.

HIGH PERFORMANCE CERAMIC TECHNOLOGY

Cera Arc® Medium Base – Universal Burn

FEATURES

- High color rendering, CRI 90 to 95
- Stable in color over lamp life
- Excellent lumen maintenance
- High efficacy, up to 90 LPW
- UV-Cut coating
- Universal Burn Position

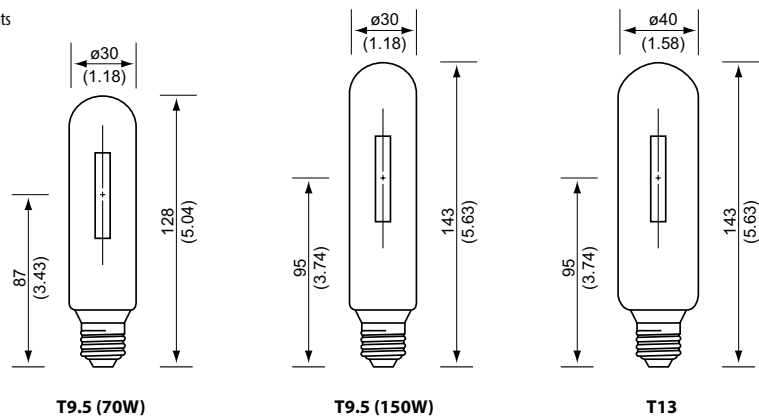


Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code/ Ballast Ref.**	Case Qty.	Initial Lumens	Mean Lumens	Avg. Life Hours	Color Temp. (K)	CRI	Fix.† Req.	Burn Pos.
High Performance Ceramic Tubular														
1	70	T9.5	Med	56392	CMTP70/U/932/MED	M/C98, M/C139	12	6000	4500	12000	3200	90	0	U
2	70	T9.5 Coated	Med	56399	CMTPF70/U/932/MED	M/C98, M/C139	12	5800	4350	12000	3200	90	0	U
3	70	T9.5	Med	56420	CMTP70/U/943/MED	M/C98, M/C139	12	6000	4500	12000	4300	90	0	U
4	70	T9.5 Coated	Med	56427	CMTPF70/U/943/MED	M102, M107, M/C139	12	5800	4350	12000	4300	90	0	U
5	100	T9.5	Med	55187	CMTP100/U/935/MED	M/C90	12	11500	8625	12000	3500	93	0	U
6	100	T9.5 Coated	Med	55178	CMTPF100/U/935/MED	M/C90	12	11000	8250	12000	3500	93	0	U
7	100	T9.5	Med	55183	CMTP100/U/942/MED	M/C90	12	11500	8625	12000	4200	93	0	U
8	100	T9.5 Coated	Med	55162	CMTPF100/U/942/MED	M/C90	12	11000	8250	12000	4200	93	0	U
9	150	T13	Med	56462	CMTP150/U/943/MED	M102, M107, M142	12	13500	10125	12000	4300	95	0	U
10	150	T13 Coated	Med	56469	CMTPF150/U/943/MED	M102, M107, M142	12	13000	9750	12000	4300	95	0	U
High Performance 2800K Ceramic Tubular														
11	150	T9.5	Med	55197	CMTP150/U/928/MED	M102, M107, M142	12	13500	10125	12000	2800	95	0	U
12	150	T9.5 Coated	Med	55201	CMTPF150/U/928/MED	M102, M107, M142	12	13000	9750	12000	2800	95	0	U
High Performance 5500K Ceramic Tubular														
13	150	T9.5	Med	55206	CMTP150/U/955/MED	M102, M107, M142	12	12500	9375	9000	5500	95	0	U
14	150	T9.5 Coated	Med	55210	CMTPF150/U/955/MED	M102, M107, M142	12	12000	9000	9000	5500	95	0	U

0 = Open Fixture Permissible | See page TECH-8 for further information regarding fixture requirements

APPLICATIONS

- Retail Stores
- Industrial High/Low Bay
- Parking Areas
- Sports Facilities
- Showrooms



Notes:

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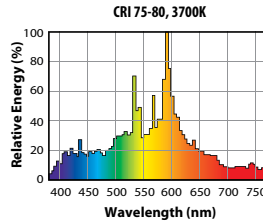
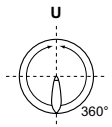


HIGH PERFORMANCE CERAMIC TECHNOLOGY

Cera Arc® Mogul Base ED & T Bulb – Universal Burn

FEATURES

- Lamp efficacy up to 117 LPW
- Long life means reduced maintenance cost
- High color rendering offers improved visual acuity
- Universal burn position
- Excellent horizontal performance



Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code/ Ballast Ref.	Case Qty.	Initial Lumens°		Mean Lumens°		Avg. Life Hours	Color Temp. (K)	CRI	Fix.¹ Req.	Burn Pos.
ED Mogul Base EN																
1	100	ED23.5	Mog	55157	CM100/U/837/MOG/EN	M90, M140	12	11000	11000	8800	8800	24000	3700	80	E	U
2	150	ED23.5	Mog	55154	CM150/U/837/MOG/EN	M102, M142, S56	12	15000	17500	12000	14000	24000	3700	75	E	U
Tubular Mogul Base UV-Reduced																
3	150¹	T15	Mog	55199	CMT150/U/837/MOG	M102, M142, S56	12	15000	17500	12000	14000	24000	3700	75	E	U

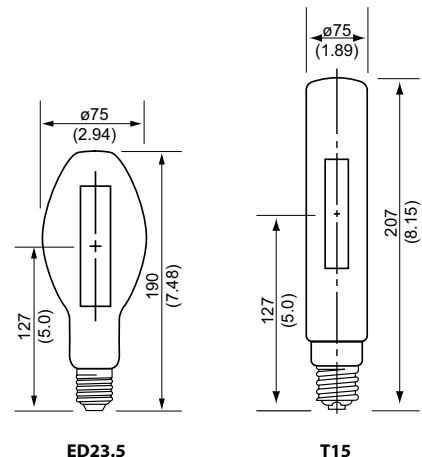
¹ E = Enclosed Fixture Required | See page TECH-8 for further information regarding fixture requirements

² V = Vertical Operation, H = Horizontal Operation

³ Nominal lamp wattage may be lower by up to 15% in vertical operation

APPLICATIONS

- Street
- Landscape
- Parking Lots
- Security
- Industrial/Warehouse



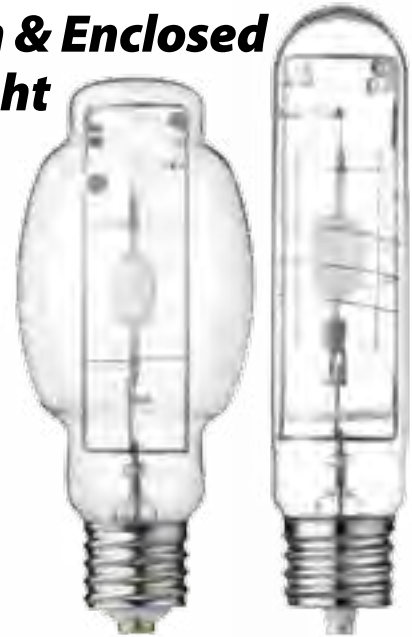
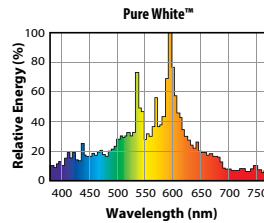
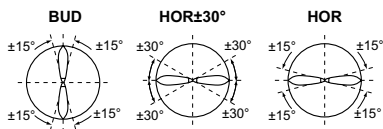
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HIGH PERFORMANCE PULSE START CERAMIC TECHNOLOGY

Cera Arc® & Pure White™ Mogul Base Open & Enclosed Fixture Rated – Energy Saving White Light**FEATURES**

- Lamp efficacy up to 132 LPW
- Up to 10% energy savings
- Open fixture rated
- Excellent initial and maintained lumens up to 95%
- High color rendering up to 92 CRI
- UV Cut coating blocks 90% UV output
- Up to 30,000 hour life reduces maintenance costs
- Dimmable (270W)



Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code/ Ballast Ref.	Case Qty.	Initial Lumens	Mean Lumens	Avg. Life Hours	Color Temp. (K)	CRI	Fix. [†] Req.	Burn Pos.
Protected Pulse Start (EX39) – Open Fixture Rated														
1	220	BT28	EX39	55218	CMP220/BUD/837/PS	M153	12	21000	15000	20000	3700	85	0	BUD
2	250	BT28	EX39	55227	CMP250/BUD/937/PS	M153	12	24000	18400	20000	3700	90	0	BUD
3	360	BT37	EX39	55235	CMP360/BUD/840/PS	M155	12	39000	29250	24000	4000	85	0	BUD
						360W electronic		40000	30000	24000				
Horizontal Burn Position – Enclosed Fixture Rated														
4	220	BT28	Mog	55170	CM220/250/HOR/837/PS	M138/M153 ¹	12	26500	25000	30000	3700	80	E	HOR±30
Pure White Energy Saving White Light														
5	270	T14.5	EX39	55161	CMTP270/BUD/941/PS	270W electronic	12	29000	23200	24000	4100	92	0	BUD
6	360	BT37	Mog	55250	CM360/HOR/840/PS*	M155	12	38000	30400	24000	4000	85	E	HOR
7	375	BT37	Mog	55215	CM375/HOR/840/PS	375W electronic	12	40000	32000	24000	4000	85	E	HOR

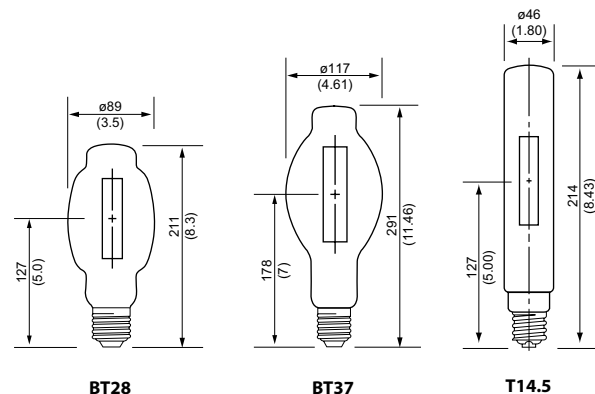
[†] E = Enclosed Fixture Required | 0 = Open Fixture Permissible | See page TECH-8 for further information regarding fixture requirements

¹ Lamps designed to operate/retrofit on 250W pulse start Metal Halide ballast

* Preliminary data. Check website for latest information

APPLICATIONS

- Retail Big Box Stores
- Industrial High and Low Bay
- Warehouses
- Grocery Stores
- Roadway
- Sports Facilities
- Landscape
- Parking Lots
- Area Lighting
- Flood Lighting

**Notes:**

For Warnings, Caution Notices, & Operating Instructions, see page CT-10 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.



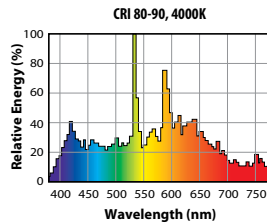
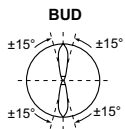
CERAMIC TECHNOLOGY LAMPS

HIGH PERFORMANCE CERAMIC TECHNOLOGY CONVERSION

Cera Arc® High Performance, Mogul Base Ceramic Technology – HPS to Metal Halide Conversion Lamp

FEATURES

- High color rendering, up to CRI 90
- Stable in color over lamp life
- Excellent lumen maintenance
- High efficacy, up to 120 LPW
- UV coating



EYE/Iwasaki Patented FEC Technology



Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code/ Ballast Ref.	Case Qty.	Initial Lumens	Mean Lumens	Avg. Life Hours	Color Temp. (K)	CRI	Fix. [†] Req.	Burn Pos.
High Performance Ceramic Technology - Operates on HPS Ballast														
1	250	T15	Mog	55100	CMP250/BUD/940/LU/MOG	S50	12	22500	18000	20000	4000	90	0	BUD

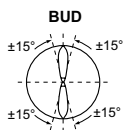
[†] E = Enclosed Fixture Required | O = Open Fixture Permissible | See page TECH-8 for further information regarding fixture requirements

Cera Tek™ Mogul Base – Ceramic Technology on CWA MH/Hg Core & Coil Ballast

Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code/ Ballast Ref.	Case Qty.	Initial Lumens	Mean Lumens	Avg. Life Hours	Color Temp. (K)	CRI	Fix. [†] Req.	Burn Pos.
High Performance Ceramic Technology (EX39) - Operates on CWA MH/Mercury Core & Coil Ballast														
1	360	BT37	Mog	55115	CMP360/BUD/840/I/MOG*	M59, M165	12	43200	35200	15000	4000	80	0	BUD

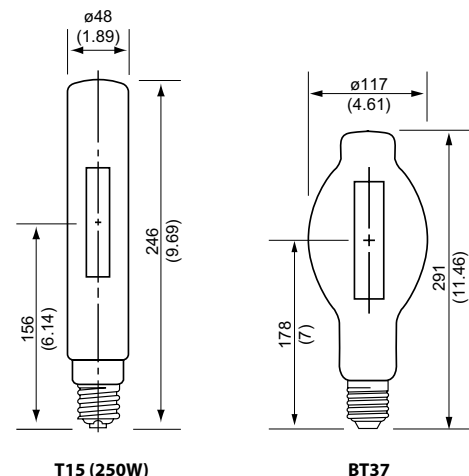
[†] O = Open Fixture Permissible | See page TECH-8 for further information regarding fixture requirements

* Nominal lamp watts may differ by 5% on some ballast models



APPLICATIONS

- Retail Stores
- Industrial High/Low Bay
- Parking Areas
- Sports Facilities
- Showrooms



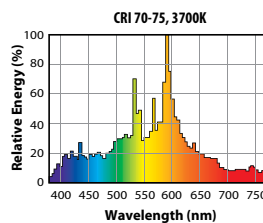
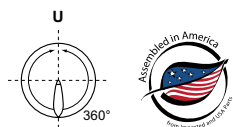
Notes:

For Warnings, Caution Notices, & Operating Instructions, see page CT-10 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.

HIGH PERFORMANCE CERAMIC TECHNOLOGY CONVERSION

Cera Arc® Mogul Base – HPS to Ceramic Technology Conversion Lamp**FEATURES**

- 24,000 hour long life
- Universal burning position
- Direct replacement for HPS
- High initial and maintained lumens
- Superior lamp-to-lamp color uniformity through lamp life
- Nickel-plated base will not seize in the socket
- Operates on standard HPS ballast



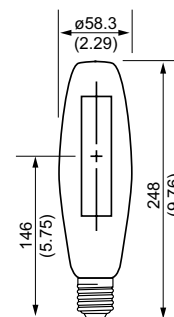
Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code/ Ballast Ref.	Case Qty.	Initial Lumens [†] V H	Mean Lumens [†] V H	Avg. Life Hours	Color Temp. (K)	CRI [‡] V H	Fix. [†] Req.	Burn Pos.
High Performance Ceramic Technology - Operates on HPS Ballast														
1	250	ET18	Mog	55102	CMT250/U/737/LU/MOG	S50	12	28000 33000	23800 28100	24000	3700	70 75	E	U

[†] E = Enclosed Fixture Required | See page TECH-8 for further information regarding fixture requirements

[‡] V = Vertical Operation, H = Horizontal Operation

APPLICATIONS

- Street
- Area
- Parking Lots
- Industrial
- Warehouses
- Security

**ET18****Notes:**

For Warnings, Caution Notices, & Operating Instructions, see page CT-10 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.



Warning and Operating Instructions

WARNING

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

This lamp complies with U.S. Federal Standard 21 CFR 1040.30

1. Ceramic lamps are constructed of an outer glass jacket and an internal arc tube made of Ceramic. The arc tube operates under high pressure and high temperatures. The arc tube and outer jacket may unexpectedly rupture due to internal causes or external factors such as system malfunction or misapplication, creating a risk of personal injury, property damage, burns and fire. To reduce this risk the following instructions must be adhered to.
2. Do not operate lamps in excess of rated voltages of the ballast as this will increase lamp pressure and the possibility of shattering.
3. This lamp must be used only with proper circuit and auxiliary equipment and a suitable ballast.
4. This lamp must be operated with a suitable fixture, ballast and ignitor which has an ANSI designation identical to the ANSI designation in this catalog.
5. Do not use this lamp in a fixture designed for less than the rated lamp wattage.
6. Failure to comply may result in poor lamp performance and possible personal injury or property damages for which the manufacturer will not be held responsible.
7. Do not scratch glass of bulb or subject this lamp to undue pressure as either may cause lamp to break. Replace scratched, cracked, broken or damaged bulbs immediately.
8. The lamp should be screwed firmly, but not forcibly, into the socket to reduce the possibility of loosening due to vibration. Use of excessive force may result in lamp breakage.
9. Do not touch hot lamps with fingers, skin or any flammable material. Lamps may remain hot after being turned OFF.
10. This lamp must be shielded from direct contact with rain, sleet, snow and other liquids to reduce the possibility of breakage. This lamp may implode if broken. Use eye protection and gloves when handling this lamp.
11. The fixture for non-protected Ceramic lamps must be enclosed. Enclosures must be made of suitable materials capable of withstanding the discharge of hot Ceramic, arc tube or glass particles. The manufacturer has identified only tempered glass as suitable lens or diffuser material. End users should contact the fixture manufacturer to determine if a particular enclosure is suitable.
12. In continuously operating systems (24 hours/day, 7 days/week), turn lamps off once per week for at least 1 hour. Failure to comply increases the risk of rupture.
13. When operating this lamp, the base temperature should not exceed 210° C (410° F) for mogul base and 190° C (374° F) for medium base, the outer envelope should not exceed 400° C (752° F). The recommended ambient temperature limit for mogul base lamps is -20° C (-4° F) minimum; 40° C (104° F) maximum. For medium and bi-pin base lamps, the recommended ambient temperature limit is -20° C (-4° F) minimum; 40° C (104° F) maximum.
14. Do not use this lamp in a location subject to vibration or shock, unless an adequate vibration-proof fixture is used.
15. Do not use this lamp in a corrosive atmosphere unless an adequate corrosion resistant-fixture is used.
16. Replace lamp at or before the end of its rated life. Allowing lamps to burn until they fail may increase the risk of inner arc tube rupture.
17. Electrically insulate any metal support in contact with glass to reduce the possibility of decomposition of the glass.
18. Do not look directly at the lamp during operation to avoid eye inflammation from short wave ultraviolet radiation.
19. Do not paint the lamp to prevent its overheating or breakage.
20. Do not use this lamp in an ignitable atmosphere (for example gasoline, inflammable spray, thinner, lacquer, dust, etc.) to prevent a fire or explosion unless an adequate fixture is used.
21. Do not use this lamp in a powdery or dusty atmosphere in order to eliminate the overheating of the lamp unless an adequate fixture is used.
22. The radiation from this lamp may cause colored objects to fade unless an adequate fixture is used.
23. Follow all instructions in the manufacturer's catalog or on the individual box or instruction sheet.

OPERATING INSTRUCTIONS

1. To install or replace bulb, disconnect power to reduce the risk of electrical shock and allow lamp to cool before replacing.
2. Check the operating position of the lamps marked on the outer envelope. Lamps must only be utilized in the correct operating position.
U = Universal burning position
BUD = Base Up or Base Down $\pm 15^\circ$
BUD $\pm 45^\circ$ = Base Up or Base Down $\pm 45^\circ$
HOR $\pm 30^\circ$ = Horizontal $\pm 30^\circ$
3. When the lamp does not operate normally, turn off the power and replace the lamp with a new one.
4. Lamp should operate with appropriate ballast and ignitor for Ceramic lamps.
5. Seasoning Time: The time required for a new operating lamp to reach a state of equilibrium where the electrical, light level and color parameters stabilize. Typically, HID lamps obtain their rated performance after 100 hours of seasoning.

PRODUCT CROSS REFERENCE

EYE LIGHTING				COMPETITOR PRODUCT DESCRIPTIONS			
Page #	Product Code	Product Description	ANSI Code/Ballast Ref.	GE	OSRAM/SYLVANIA	PHILIPS	VENTURE
High Performance Ceramic Natural Red - Medium Base							
CT-3	55177	CMT70/U/NR936/MED	M/C98, M/C139			NO EQUAL	
CT-3	55181	CMT70/U/NR936/MED	M/C98			NO EQUAL	
CT-3	55185	CMT150/U/NR936/MED	M102, M107, M142			NO EQUAL	
CT-3	55189	CMT150/U/NR936/MED	M102, M107, M142			NO EQUAL	
High Performance Ceramic Natural Red - G8.5 and G12 Base							
CT-3	56423	CMT35/U/NR936/G12	M/C130			NO EQUAL	
CT-3	55165	CMT70/U/NR936/G8.5	M/C98, M/C139			NO EQUAL	
CT-3	55144	CMT70/U/NR936/G12	M/C98, M/C139			NO EQUAL	
CT-3	55193	CMT150/U/NR936/G12	M102, M107, M/C142			NO EQUAL	
High Performance Ceramic T4.5 Enclosed Fixture Series - G8.5 Base							
CT-4	55128	CMT35/U/942/G8.5	M/C130	CMH39TCU942/G8.5	MC39TC/U/G8.5/942	CDM35/TC/942	
CT-4	56322	CMT35/U/830/G8.5	M/C130	CMH39TCU830/G8.5	MC39TC/U/G8.5/830	CDM35/TC/830	
CT-4	55134	CMT70/U/930/G8.5	M/C98, MC139	CMH70TCU830/G8.5	MC70TC/U/G8.5/930	CDM70/TC/830	
High Performance Ceramic T6 Enclosed Fixture Series - G12 Base							
CT-4	55131	CMT35/U/942/G12	M/C130	CMH39TCU942/G12	MC39T6/U/G12/940	CDM35/T6/842	
CT-4	56326	CMT35/U/830/G12	M/C130	CMH39TCU830/G12	MC39T6/U/G12/830	CDM35/T6/830	
CT-4	55150	CMT70/U/928/G12	M/C98, M/C139		MC70T6/U/G12/930PB		
CT-4	55137	CMT70/U/930/G12	M/C98, M/C139	CMH70TU/830/G12	MC70T6/U/G12/930	CDM70/T6/830	
CT-4	55141	CMT70/U/935/G12	M/C98, M/C139	CMH70TU/930/G12 ULTRA			
CT-4	55147	CMT70/U/942/G12	M/C98, M/C139	CMH70TU/942/G12	MC70T6/U/G12/940	CDM70/T6/942	
CT-4	56371	CMT150/U/832/G12	M102, M107, M142	CMH150TU/830/G12	MC150T7.5/U/G12/830	CDM150/T6/830	
CT-4	56378	CMT150/U/935/G12	M102, M107, M142	CMH150TU942/G12	MC150T6/U/G12/940	CDM150/T6/942	
CT-4	56385	CMT150/U/942/G12	M102, M107, M142	CMH150TU/942/G12	MC150T7.5/U/G12/940	CDM150/T6/942	
High Performance Ceramic Tubular							
CT-5	56392	CMT70/U/932/MED	M/C98, M/C139	CMH70U830MED/O	MCP70/U/MED/830	MHC70/U/MP/3K/ALTO	
CT-5	56399	CMT70/U/932/MED	M/C98, M/C139	CMH70CU830MED/O	MCP70/C/U/MED/830	MHC70/C/U/MP/3K/ALTO	
CT-5	56420	CMT70/U/943/MED	M/C98, M/C139	CMH70U942MED/O	MCP70/U/MED/940	MHC70/U/MP/4K/ALTO	
CT-5	56427	CMT70/U/943/MED	M102, M107, M/C139	CMH70CU942MED/O	MCP70/C/U/MED/940	MHC70/C/U/MP/4K/ALTO	
CT-5	55187	CMT100/U/935/MED	M/C90			NO EQUAL	
CT-5	55178	CMT100/U/935/MED	M/C90			NO EQUAL	
CT-5	55183	CMT100/U/942/MED	M/C90			NO EQUAL	
CT-5	55162	CMT100/U/942/MED	M/C90			NO EQUAL	
CT-5	56462	CMT150/U/943/MED	M102, M107, M142	CMH150U942MED/O	MCP150/U/MED/830PB	MCH150/U/MP/4K/ALTO	
CT-5	56469	CMT150/U/943/MED	M102, M107, M142	CMH150CU942MED/O	MCP150/C/U/MED/830PB	MCH150/C/U/MP/4K/ALTO	
High Performance 2800K Ceramic Tubular							
CT-5	55197	CMT150/U/928/MED	M102, M107, M142	CMH150/U/830/MED/O	MCP150/U/MED/830PB	MHC150/U/MP/3K/ALTO	
CT-5	55201	CMT150/U/928/MED	M102, M107, M142	CMH150/C/U/830/MED/O	MCP150/C/U/MED/830PB	MHC150/C/U/MP/3K/ALTO	
High Performance 5500K Ceramic Tubular							
CT-5	55206	CMT150/U/955/MED	M102, M107, M142			NO EQUAL	
CT-5	55210	CMT150/U/955/MED	M102, M107, M142			NO EQUAL	
ED Mogul Base EN							
CT-6	55157	CM100/U/837/MOG/EN	M90, M140		MC100/U/ET23.5/942	CDM100/U/PS/4K/ALTO	MH100W/U/ED28/PS
CT-6	55154	CM150/U/837/MOG/EN	M102, M142, S56		MC150/U/ET23.5/942***	CDM150/U/PS/4K/ALTO	MH150W/U/ED28/PS/740
Tubular Mogul Base UV-Reduced							
CT-6	55199	CMT150/U/837/MOG	M102, M142, S56		MC150/U/ET23.5/942***	CDM 150W/940 PS ED23 1/2 ALTO***	
Protected Pulse Start (EX39) - Open Fixture Rated							
CT-7	55218	CMP220/BUD/837/PS	M153			NO EQUAL	
CT-7	55227	CMP250/BUD/937/PS	M153	CMH250/V/PA/O	MCP250/PS/BU-ONLY/940 PB	CDM250/V/O/PS/4K/ALTO	
CT-7	55235	CMP360/BUD/840/PS	M155/360W electronic			NO EQUAL	
Horizontal Burn Position - Enclosed Fixture Rated							
CT-7	55170	CM220/250/HOR/837/PS	M138/M153			NO EQUAL	
Pure White Energy Saving White Light							
CT-7	55161	CMT270/BUD/941/PS	270W electronic			NO EQUAL	
CT-7	55250	CM360/HOR/840/PS	M155			NO EQUAL	
CT-7	55215	CM375/HOR/840/PS	375W electronic			NO EQUAL	
High Performance Ceramic Technology - Operates on HPS Ballast							
CT-8	55100	CMT250/BUD/940/LU/MOG	S50	CMH250/U/830/R**		CDM250S50/V/O/4K ALTO	
High Performance Ceramic Technology (EX39) - Operates on CWA MH/Mercury Core & Coil Ballast							
CT-8	55115	CMP360/BUD/840/L/MOG*	M59, M165				
High Performance Ceramic Technology - Operates on HPS Ballast							
CT-9	55102	CMT250/U/737/LU/MOG	S50			NO EQUAL	



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Universal Burn **MH-4**

Multi-Metal™ Mogul Base –
Position Oriented **MH-5**

MEDIUM BASE METAL HALIDE

Multi-Metal™ Medium Base –
Universal Burn **MH-6**

BRUTUS® FOR SEVERE APPLICATIONS

EYE Multi-Metal™ BRUTUS®
for Severe Applications. **MH-7**

HIGH OUTPUT PROBE START

Multi-Metal Ignitek™ Pulse Start Technology
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Multi-Metal™ Mogul Base X-Line –
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PROBE START

Standard Multi-Metal™ –
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HPS TO METAL HALIDE CONVERSION

Multi-Metal Ace™ Mogul Base –
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HIGH COLOR RENDERING CONVERSION

Clean Ace™ (Daylight) Mogul Base – 6500K CCT/90CRI
Mercury to Metal Halide Conversion Lamp **MH-13**

Clean Arc™ (Daylight) Mogul Base –
6500K CCT/90CRI on Standard
Metal Halide CWA Ballast Conversion Lamp. **MH-14**

HIGH COLOR RENDERING

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Color Arc® Double-Ended Renaissance **MH-16**

Color Arc® Specialty Color –
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PAR36 HIGH COLOR RENDERING

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TUBULAR METAL HALIDE

Mogul Base – Horizontal Burn **MH-19**

WARNING AND OPERATING INSTRUCTIONS

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PRODUCT CROSS REFERENCE

Product Cross Reference. **MH-21**

Lamp Family & Application Guide

LAMP FAMILY	LAMP FEATURES	WATTS	APPLICATION		PAGE
PULSE START	Long-life Metal Halide with improved lumen maintenance and reduced power. Requires a Pulse Start rated ballast.	50W through 1000W	• Architectural • Manufacturing • Roadway	• Industrial • Retail • Sports Lighting	MH-4
BRUTUS®	Designed for severe application available in Pulse Start and Probe Start designs	250W through 1000W	• High Mast • Bridges/Tunnels • Construction Sites	• Mining • Marine • Hazardous & Explosion-proof	MH-7
IGNITEK™	Energy saving, long-life Metal Halide with FEC technology. Excellent lumen maintenance in existing Metal Halide lighting system. Operates on standard Probe Start ballasts.	360W 400W	• Auto Sales • Parking Areas • Sports Lighting	• Industrial • Retail • Warehouses	MH-8
MULTI-METAL™ HIGH OUTPUT POSITION-ORIENTED PROBE START (SUPER X-LINE)	High lumen output, position specific, excellent lamp-to-lamp color uniformity. High Output Horizontal lamps offer high lumen output with long life and do NOT require Position-Oriented mogul lampholder.	400W 1000W 1500W	• Manufacturing • Retail • Sports Lighting	• Industrial • Roadway • Commercial	MH-9
MULTI-METAL HIGH OUTPUT PROBE START (X-LINE)	Higher lumens and improved color consistency compared to standard universal Metal Halide.	175W through 1000W	• Industrial • Parking Areas • Security	• Manufacturing • Retail • Warehouse	MH-10
STANDARD MULTI-METAL UNIVERSAL PROBE START	Basic Metal Halide in all commonly used wattages.	175W through 1000W	• Industrial • Parking Areas • Security	• Manufacturing • Retail • Warehouse	MH-11
MULTI-METAL ACE™	Conversion Metal Halide lamps that operated on High Pressure Sodium ballasts. Convert HPS 20 CRI fixtures to Metal Halide 65 CRI fixtures by changing the lamp.	250W 400W 1000W	• Manufacturing • Roadway	• Parking Areas • Warehouse	MH-12
CLEAN ACE™	Conversion Metal Halide lamps that operate on Mercury Reactor ballasts. Converts Mercury 14-40 CRI fixtures to Metal Halide 90 CRI fixtures by changing the lamp.	250W 400W	• Aquariums • Retail • Building	• Manufacturing • Sports Lighting	MH-13
CLEAN ARC™	Metal Halide lamps that operate on Metal Halide CWA ballasts, providing 6500K color temperature at 90 CRI.	250W 400W	• Aquariums • Manufacturing • Printing Industry • Sports Lighting	• Painting Industry • Retail • Critical Commercial and Industrial Color Applications	MH-14
COLOR ARC®	Metal Halide single-ended, double-ended, and PAR lamps providing up to 6500K color temp at 96 CRI	70W 100W 150W	• Aquariums • Foyers • Retail • Hotel Public Areas	• Display Case • Showrooms • Landscape	MH-15
MULTI-METAL TUBULAR	Tubular type standard Metal Halide lamp.	250W 400W	• Gymnasiums and Pools • Manufacturing • Parks • Sports Lighting		MH-19

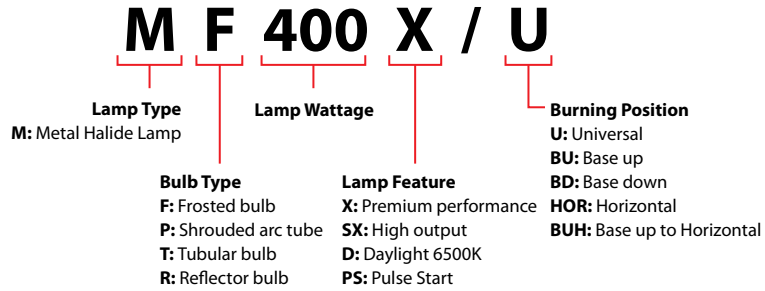
Notes:

For Warnings, Caution Notices, & Operating Instructions, see page MH-20 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.

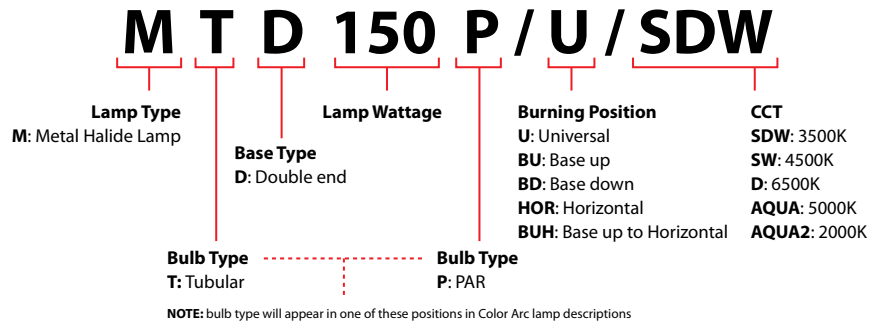


Product Description Guide

METAL HALIDE LAMPS



COLOR ARC LAMPS

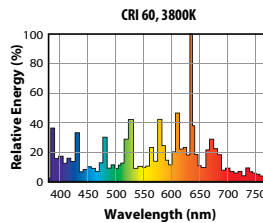
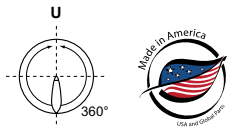


PULSE START METAL HALIDE

Multi-Metal™ Mogul Base – Universal Burn

FEATURES

- Reduced number of lamps in inventory
- Long life
- Eliminates early failures caused by installing wrong burning position
- Available in energy saving designs
- Operates in all positions
- Reduced time for warm-up and hot-restrike
- Up to 43% higher maintained lumens compared to standard universal Metal Halide
- Up to 17% higher initial lumens and higher efficacy compared to standard universal Metal Halide



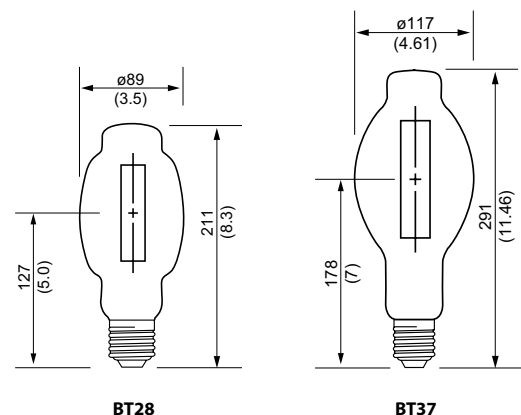
Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code/ Ballast Ref.	Case Qty.	Initial Lumens°		Mean Lumens°		Avg. Life Hours°		Color Temp. (K)°		CRI	Fix.† Req.	Burn Pos.
Universal Pulse Start High Output (Mogul Base)																		
1	250	BT28	Mog	52470	M250X/U/PS	M138, M153	12	21500	19700	17200	15760	15000	12000	4000	4250	65	E	U
2	250	BT28 Coated	Mog	52464	MF250X/U/PS	M138, M153	12	19600	16500	15700	13200	15000	12000	3400	3800	60	E	U
3	320	BT28	Mog	50578	M320X/U/PS	M132, M154	12	31000	29000	23000	20000	20000	15000	4000	4000	65	E	U
4	350	BT37	Mog	50565	M350X/U/PS	M131	12	33000	30000	25600	22500	20000	15000	4300	4300	65	E	U
5	350	BT28	Mog	50570	M350X/U/PS/BT28	M131	12	33000	30000	25600	22500	20000	15000	4250	4250	65	E	U
6	400	BT37	Mog	54232	M400X/U/PS	M135, M155	12	42000	37000	29400	25900	20000	15000	3500	4000	65	E	U
7	400	BT28	Mog	52545	M400X/U/PS/BT28	M135, M155	12	42000	37000	29400	25900	18000	14000	3500	4000	65	E	U
8	750	BT37	Mog	53440	M750X/U/PS/BT37	M149	12	82000	78000	64000	60000	16000	12000	4000	4000	65	E	U
9	1000	BT37	Mog	53650	M1000BX/U/PS/BT37	M141	12	120000	110000	93600	86300	12000	9000	4000	4500	65	E	U

[†] E = Enclosed Fixture Required | See page TECH-8 for further information regarding fixture requirements

^o V = Vertical Operation, H = Horizontal Operation

APPLICATIONS

- Architectural
- Industrial
- Manufacturing
- Retail
- Roadway
- Sports Lighting
- Warehouse
- Gas Station Canopy



Notes:

For Warnings, Caution Notices, & Operating Instructions, see page MH-20 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.



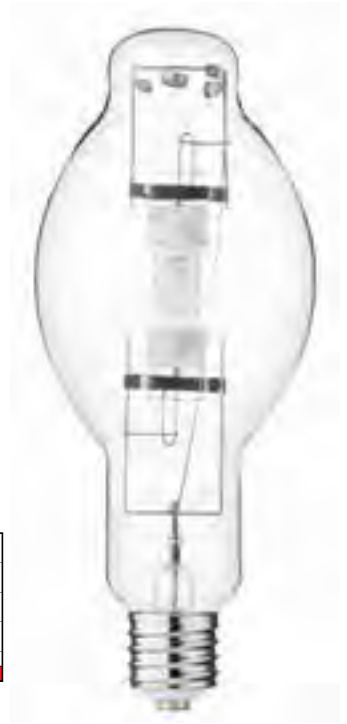
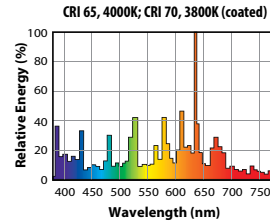
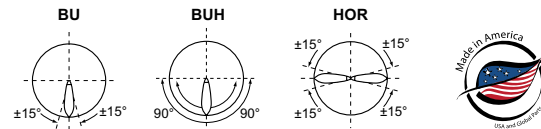
METAL HALIDE LAMPS

PULSE START METAL HALIDE

Multi-Metal™ Mogul Base – Position Oriented

FEATURES

- Up to 43% higher maintained lumens compared to standard universal Metal Halide
- Up to 17% higher initial lumens and higher efficacy compared to standard universal Metal Halide
- Long life
- Superior lamp-to-lamp color uniformity through lamp life
- Available in energy saving designs
- Reduced time for warm-up and hot-restrike



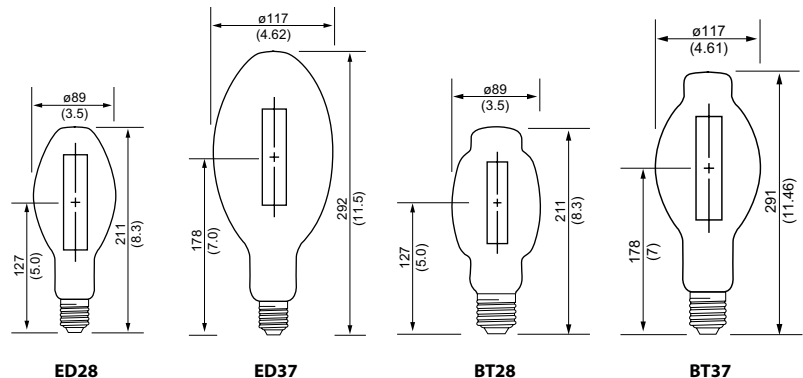
Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code/ Ballast Ref.	Case Qty.	Initial Lumens ^o		Mean Lumens ^o		Avg. Life Hours ^o		Color Temp. (K)	CRI	Fix. [†] Req.	Burn Pos.
Position Oriented Pulse Start High Output																	
1	175	ED28	Mog	54305	M175/BU/PS/ED28	M137, M152	12	17500	n/a	14000	n/a	15000	n/a	4000	68	E	BU
2	175	ED28 Coated	Mog	54309	MF175/BU/PS/ED28	M137, M152	12	16600	n/a	13300	n/a	15000	n/a	3700	70	E	BU
3	250	BT28 Coated	Mog	54312	MF250/BU/PS	M153	12	21500	n/a	15500	n/a	20000	n/a	3600	70	E	BU
4	320	BT28 Coated	Mog	54341	MF320/BU-HOR/PS/BT28	M154	12	30000	28000	19700	18400	20000	15000	3900	70	E	BUH
5	400	BT37	Mog	50330	M400SX/HOR/PS	M135, M155	12	n/a	36000	n/a	28800	n/a	20000	4000	65	E	HOR
6	400	BT37 Coated	Mog	54354	MF400/BU/PS/BT37	M155	6	42000	n/a	29000	n/a	20000	n/a	3600	70	E	BU

Position Oriented Pulse Start High Output - Open Fixture																	
7	250	ED28	EX39	54319	MP250/BU/PS	M138, M153	12	23800	n/a	19000	n/a	15000	n/a	4000	65	0	BU
8	250	ED28 Coated	EX39	54326	MPF250/BU/PS	M138, M153	12	22600	n/a	17600	n/a	15000	n/a	3700	70	0	BU
9	320	BT28	EX39	54348	MP320/BU/PS/BT28	M154	6	28600	n/a	21000	n/a	20000	n/a	3800	65	0	BU
10	320	BT28 Coated	EX39	54355	MPF320/BU/PS/BT28	M154	6	27700	n/a	19000	n/a	20000	n/a	3600	70	0	BU
11	350	BT37 Coated	EX39	54369	MPF350/BU/PS	M131	6	32000	n/a	23000	n/a	20000	n/a	3500	70	0	BU
12	400	ED37	EX39	54374	MP400/BU/PS	M135, M155	6	41000	n/a	33000	n/a	20000	n/a	4000	68	0	BU
13	400	ED37 Coated	EX39	54379	MPF400/BU/PS	M135, M155	6	39000	n/a	31000	n/a	20000	n/a	3700	70	0	BU

[†] E = Enclosed Fixture Required | 0 = Open Fixture Permissible
See page TECH-8 for further information regarding fixture requirements
^o V = Vertical Operation, H = Horizontal Operation | " Made in America

APPLICATIONS

- Architectural
- Industrial
- Manufacturing
- Retail
- Roadway
- Sports Lighting
- Warehouse
- Gas Station Canopy



Notes:

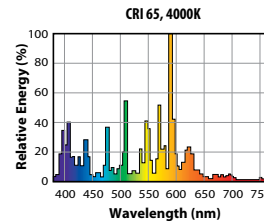
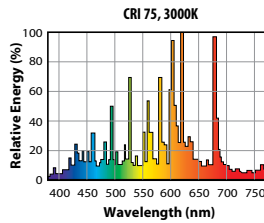
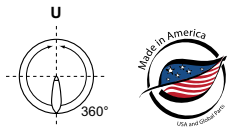
For Warnings, Caution Notices, & Operating Instructions, see page MH-20 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.

MEDIUM BASE METAL HALIDE

Multi-Metal™ Medium Base – Universal Burn

FEATURES

- Compact ED17 or E17 bulb
- Available in 70W - 175W
- Types for open or enclosed fixture applications



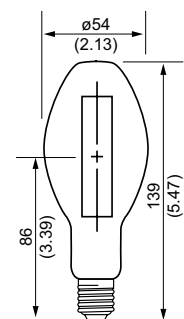
Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code/ Ballast Ref.	Case Qty.	Initial Lumens ^o		Mean Lumens ^o		Avg. Life Hours ^o		Color Temp. (K)	CRI	Fix. ² Req.	Burn Pos.
Pulse Start Enclosed Fixture																	
1	100	ED17	Med	54768	M100X/U/MED	M90	12	9000	8100	6800	5900	15000	11250	4000	65	E	U
Pulse Start Open Fixture (Shrouded Arc Tube)																	
2	70	E17	Med	56797	MP70/U/3K	M98	20	5200	5200	3400	3400	15000	10000	3000	75	0	U
3	100	E17	Med	56650	MP100/U/3K	M90	20	8500	8500	5600	5600	15000	10000	3000	75	0	U
4	150	E17	Med	56699	MP150/U/3K	M102	20	12900	12900	10000	10000	15000	10000	3000	75	0	U
5	150	E17 Coated	Med	56895	MPF150/U/3K	M102	20	12000	12000	9000	9000	15000	10000	2900	75	0	U
Probe Start Enclosed Fixture																	
6	175	ED17	Med	54866	M175X/U/MED	M57	12	14400	12800	10800	9500	10000	7500	4000	65	E	U

¹ E = Enclosed Fixture Required | 0 = Open Fixture Permissible | See page TECH-8 for further information regarding fixture requirements

² V = Vertical Operation, H = Horizontal Operation

APPLICATIONS

- Retail
- Low Bay Manufacturing
- Schools/Universities
- General Lighting
- Landscape Lighting



ED17, E17

Notes:

For Warnings, Caution Notices, & Operating Instructions, see page MH-20 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.



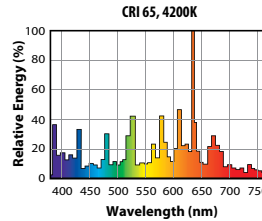
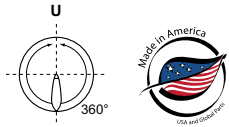
METAL HALIDE LAMPS

BRUTUS® FOR SEVERE APPLICATIONS

EYE Multi-Metal™ BRUTUS® for Severe Applications

FEATURES

- Available in pulse start and probe start
- Concept tested up to 7Gs
- Extra reinforcing braces
- Reduced maintenance costs
- Bright, white light



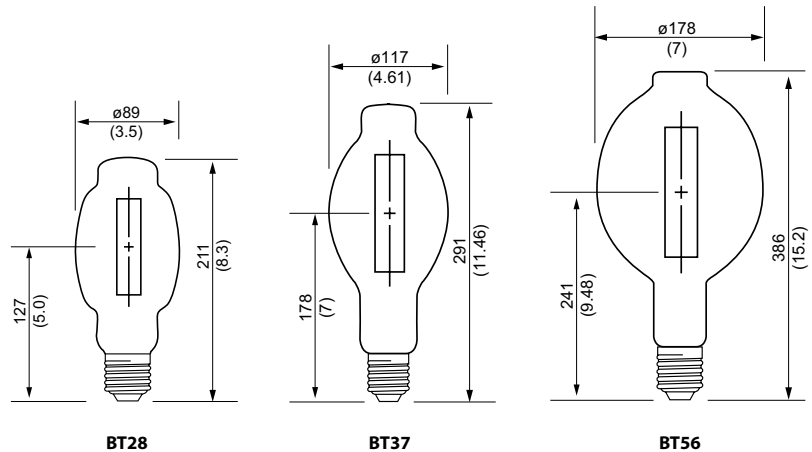
Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code/ Ballast Ref.	Case Qty.	Initial Lumens ¹		Mean Lumens ¹		Avg. Life Hours ¹		Color Temp. (K) ¹		CRI	Fix. ¹ Req.	Burn Pos.
Pulse Start Metal Halide (EX39)																		
1	250	BT28	Mog	52461	M250X/U/PS BRUTUS	M138, M153	12	21500	19700	17200	15760	15000	12000	4000	4250	60	E	U
2	350	BT37	Mog	52495	M350X/U/PS BRUTUS	M131	12	33000	30000	25600	22500	20000	15000	4300	4300	60	E	U
3	400	BT37	Mog	50390	M400X/U/PS BRUTUS	M135, M155	12	42000	37000	29400	25900	20000	15000	3500	4000	65	E	U
4	400	BT28	Mog	52549	M400X/U/PS/BT28 BRUTUS	M135, M155	12	42000	37000	29400	25900	18000	14000	3500	4000	65	E	U
5	1000	BT37	Mog	50083	M1000BX/U/PS/BT37 BRUTUS	M141	12	120000	110000	93600	86300	12000	9000	4000	4500	65	E	U
Probe Start Metal Halide (E39)																		
6	250	BT28	Mog	50207	M250X/U BRUTUS	M58	12	21500	19700	17250	15850	10000	6000	4200	4200	65	E	U
7	400	BT28	Mog	50309	M400X/U/BT28 BRUTUS	M59	12	38000	34000	30000	26800	20000	15000	4200	4200	65	E	U
8	400	BT37	Mog	52536	M400X/U BRUTUS	M59	12	38000	34000	30000	26800	20000	15000	4200	4200	65	E	U
9	1000	BT37	Mog	50074	M1000BX/U/BT37 BRUTUS	M47	12	115000	110000	90000	86300	12000	9000	4200	4200	65	E	U
10	1000	BT56	Mog	50065	M1000BX/U BRUTUS	M47	6	115000	110000	90000	86300	12000	9000	4200	4200	65	E	U

¹ E = Enclosed Fixture Required | See page TECH-8 for further information regarding fixture requirements

¹ V = Vertical Operation, H = Horizontal Operation

APPLICATIONS

- High Mast
- Bridges/Tunnels
- Roadway Construction
- Heavy Industrial
- Mining
- Marine
- Amusement Parks
- Ski Lifts
- Gymnasiums



Notes:

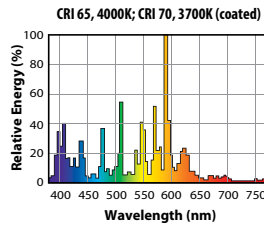
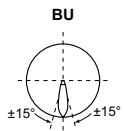
For Warnings, Caution Notices, & Operating Instructions, see page MH-20 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.

HIGH OUTPUT PROBE START

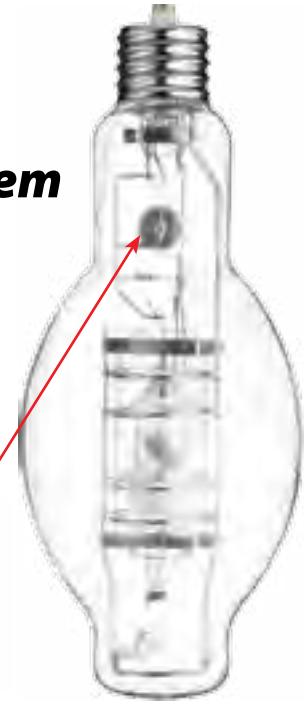
Multi-Metal Ignitek™ Pulse Start Technology on M59/M165 Probe Start Metal Halide System

FEATURES

- Extra high lumen output Metal Halide lamp operating on standard Probe Start ballast
- 50% higher maintained lumens compared to standard universal Metal Halide
- Shrouded and energy saving types available
- EYE/Iwasaki patented FEC ignitor
- Long Life (up to 30,000 hours)
- Operates on standard M59/M165 Metal Halide systems
- Pulse Start technology



EYE/Iwasaki Patented
FEC Technology



Line	Watts (W)	Bulb	Base	Product Code	Product Description	Converts From	ANSI Code/ Ballast Ref.	Case Qty.	Initial Lumens	Mean Lumens	Avg. Life Hours ¹ V	Color Temp. (K)	CRI	Fix. ² Req.	Burn Pos.	
High Output, Energy Saving																
1	360	BT37 Coated	Mog	52527	M360SX/BU/I	400 Watt	M59, M165	12	35000	28000	20000	30000 ¹	4000	65	E	BU
2	360		Mog	52520	MF360SX/BU/I	400 Watt	M59, M165	12	33200	26560	20000	30000 ¹	3700	70	E	BU
Super High Output																
3	400	BT37	Mog	52529	M400SX/BU/I	-	M59	12	44000	35200	20000	30000 ¹	4000	65	E	BU
4	400	BT37 Coated	Mog	52525	MF400SX/BU/I	-	M59	12	41800	33400	20000	30000 ¹	3700	70	E	BU
High Output Open Fixture Series																
5	360	BT37	EX39	52712	MP360SX/BU/I	400 Watt	M59, M165	12	33200	26560	20000	30000 ¹	3600	65	O	BU
6	400	BT37	EX39	57974	MP400SX/BU/I	-	M59	12	41800	33400	20000	30000 ¹	3600	65	O	BU

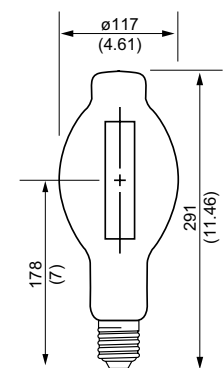
¹ E = Enclosed Fixture Required | O = Open Fixture Permissible | See page TECH-8 for further information regarding fixture requirements

² V = Vertical Operation

³ Rated average life at 120 hrs. per start

APPLICATIONS

- Auto Sales
- Industrial
- Parking Areas
- Retail
- Sports Lighting
- Warehouses



BT37

Notes:

For Warnings, Caution Notices, & Operating Instructions, see page MH-20 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.



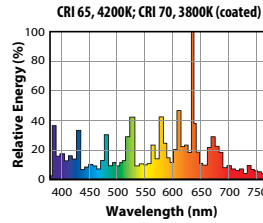
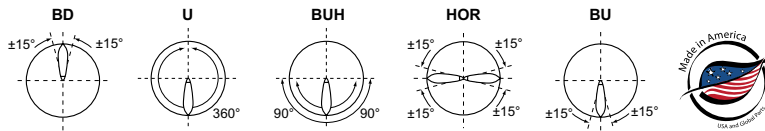
METAL HALIDE LAMPS

HIGH OUTPUT PROBE START

Multi-Metal™ Mogul Base Super X-Line – Probe Start, Position Oriented

FEATURES

- Up to 32% higher maintained lumens compared to standard universal Metal Halide
- Superior lamp-to-lamp color uniformity through lamp life
- Protected types available for open fixture operation
- UV-Cut available
- Higher maintained lumens extends usable lamp life
- Nickel-plated base will not seize in the socket
- Heavy duty construction, superior quality
- Does not require Position-Oriented mogul lamp holder



Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code/ Ballast Ref.	Case Qty.	Initial Lumens ^o V H	Mean Lumens ^o V H	Avg. Life Hours ^o V H	Color Temp. (K)	CRI	Fix. [†] Req.	Burn Pos.
High Output, Position-Oriented SX														
1	400	BT28	Mog	52680	M400SX/HOR/BT28	M59	12	n/a 39000	n/a 30800	n/a 20000	4200	65	E	HOR
2	400	BT28	Mog	52582	M400SX/BU/BT28	M59	12	42000 n/a	33000 n/a	20000 n/a	4200	65	E	BU
3	400	BT37	Mog	52631	M400SX/HOR	M59	12	n/a 39000	n/a 30800	n/a 20000	4200	65	E	HOR
4	400	BT37	Mog	52533	M400SX/BU	M59	12	42000 n/a	33000 n/a	20000 n/a	4200	65	E	BU
5	1000	BT56	Mog	53925	M1000BSX/BU	M47	6	120000 n/a	96000 n/a	12000 n/a	4200	65	E	BU
6	1500	BT56	Mog	54025	M1500BSX/HOR	M48	6	n/a 180000	n/a 144000	n/a 3000	4000	65	E	HOR
7	1500	BT56	Mog	53974	M1500B/BD	M48	6	155000 n/a	140000 n/a	3000 n/a	4000	65	E	BD
8	1500	BT56	Mog	54023	M1500B/BUH	M48	6	155000 155000	140000 140000	3000 3000	4000	65	E	BUH

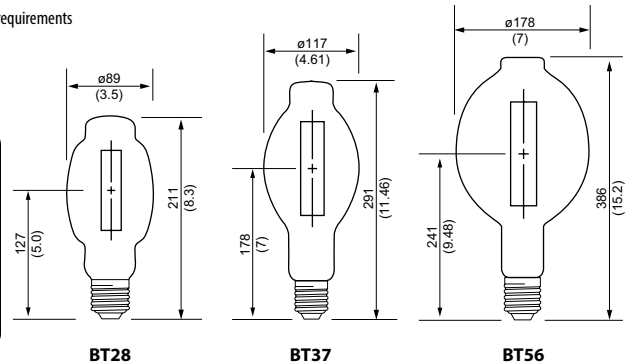
High Output, Position-Oriented SX (Coated)														
9	400	BT28	Mog	52876	MF400SX/HOR/BT28	M59	12	n/a 37000	n/a 28800	n/a 20000	3800	70	E	HOR
10	400	BT28	Mog	52778	MF400SX/BU/BT28	M59	12	40000 n/a	31000 n/a	20000 n/a	3800	70	E	BU
11	400	BT37	Mog	52827	MF400SX/HOR	M59	12	n/a 37000	n/a 28800	n/a 20000	3800	70	E	HOR
12	400	BT37	Mog	52729	MF400SX/BU	M59	12	40000 n/a	31000 n/a	20000 n/a	3800	70	E	BU
13	1000	BT56	Mog	54121	MF1000BSX/BU	M47	6	118000 n/a	94800 n/a	12000 n/a	3800	70	E	BU

High Output, Position-Oriented Open Fixture Series SX														
14	400	BT37	EX39	52540	MP400SX/BU	M59	12	40000 n/a	26400 n/a	20000 n/a	3800	65	0	BU
15	1000	BT56	EX39	53625	MP1000BSX/BU	M47	6	110000 n/a	88000 n/a	12000 n/a	3500	65	0	BU
16	1000	BT56	EX39	53916	MP1000BSX/BU/UVC	M47	6	110000 n/a	88000 n/a	12000 n/a	3500	65	0	BU
17	1000	BT37	EX39	53634	MP1000BX/U/BT37	M47	6	112000 90000	89600 72000	12000 9000	3500	65	0	U

[†] E = Enclosed Fixture Required | 0 = Open Fixture Permissible | See page TECH-8 for further information regarding fixture requirements
^o V = Vertical Operation, H = Horizontal Operation

APPLICATIONS

- Manufacturing
- Industrial
- Retail
- Roadway
- Sports Lighting
- Commercial
- Warehouses
- Grocery



Notes:

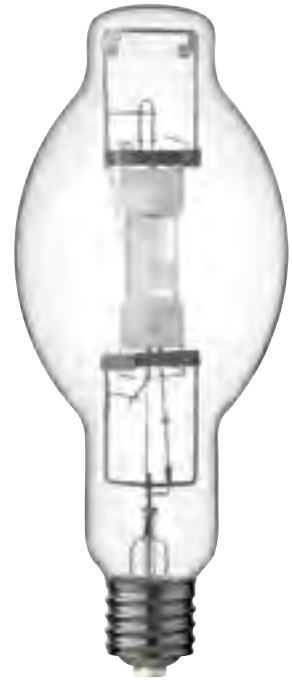
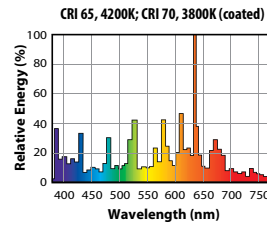
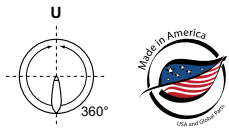
For Warnings, Caution Notices, & Operating Instructions, see page MH-20 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.
 Rated values based on 5 or more burning hours per start

HIGH OUTPUT PROBE START

**Multi-Metal™ Mogul Base X-Line –
Probe Start, Universal Burn**

FEATURES

- Operates in all positions
- Higher initial and maintained lumens compared to standard universal Metal Halide
- Superior lamp-to-lamp color uniformity through lamp life
- Available in reduced outer jacket



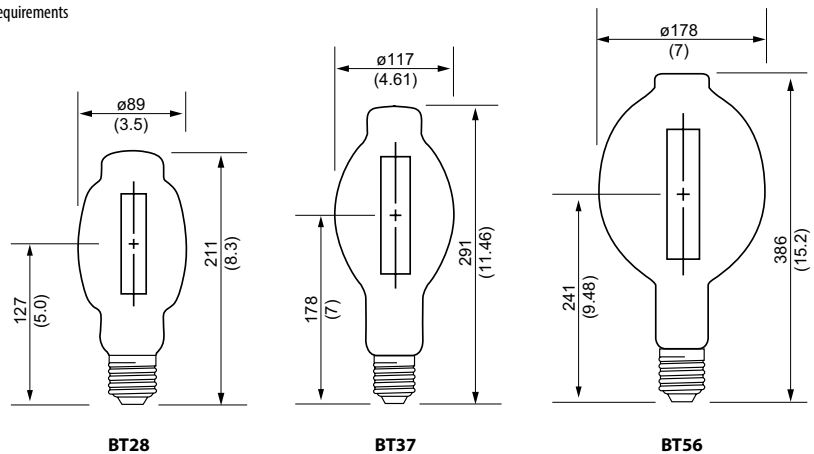
Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code/ Ballast Ref.	Case Qty.	Initial Lumens ¹ V H		Mean Lumens ¹ V H		Avg. Life Hours ¹ V H		Color Temp. (K)	CRI	Fix. [†] Req.	Burn Pos.
Premium Universal Probe Start - XU																	
1	175	BT28	Mog	50151	M175X/U	M57	12	15000	12000	12000	9400	10000	6000	4200	65	E	U
2	175	BT28 Coated	Mog	50494	MF175X/U	M57	12	14000	11000	10500	9000	10000	6000	3800	70	E	U
3	250	BT28	Mog	50200	M250X/U	M58	12	21500	19700	17250	15850	10000	6000	4200	65	E	U
4	250	BT28 Coated	Mog	50543	MF250X/U	M58	12	20750	19650	17200	13800	10000	6000	3800	70	E	U
5	400	BT28	Mog	50298	M400X/U/BT28	M59	12	38000	34000	30000	26800	20000	15000	4200	65	E	U
6	400	BT28 Coated	Mog	50641	MF400X/U/BT28	M59	12	36000	32000	28000	24800	20000	15000	3800	70	E	U
7	400	BT37	Mog	50249	M400X/U	M59	12	38000	34000	30000	26800	20000	15000	4200	65	E	U
8	400	BT37 Coated	Mog	50592	MF400X/U	M59	12	36000	32000	28000	24800	20000	15000	3800	70	E	U
9	1000	BT37	Mog	50102	M1000BX/U/BT37	M47	12	115000	110000	90000	86300	12000	9000	4200	65	E	U
10	1000	BT37 Coated	Mog	50445	MF1000BX/U/BT37	M47	12	110000	105000	86000	82000	12000	9000	3800	70	E	U
11	1000	BT56	Mog	50053	M1000BX/U	M47	6	115000	110000	90000	86300	12000	9000	4200	65	E	U
12	1000	BT56 Coated	Mog	50396	MF1000BX/U	M47	6	110000	105000	86000	82000	12000	9000	3800	70	E	U

¹ E = Enclosed Fixture Required | See page TECH-8 for further information regarding fixture requirements

² V = Vertical Operation, H = Horizontal Operation

APPLICATIONS

- Industrial
- Manufacturing
- Security
- Parking Areas
- Retail
- Warehouse



Notes:

For Warnings, Caution Notices, & Operating Instructions, see page MH-20 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.

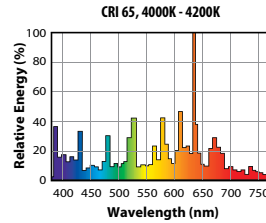
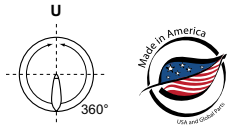


PROBE START

Standard Multi-Metal™ – Universal Burn

FEATURES

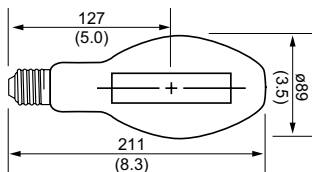
- Operates in all positions
- Economical general lighting replacement lamp



Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code/ Ballast Ref.	Case Qty.	Initial Lumens [°]		Mean Lumens [°]		Avg. Life Hours [°]		Color Temp. (K)	CRI	Fix. [†] Req.	Burn Pos.
Standard Universal Metal Halide (Mogul Base)																	
1	175	BT28	Mog	58100	M175/U	M57	12	13600	11700	8800	7400	10000	6000	4200	65	E	U
2	250	ED28	Mog	58105	M250/U	M58	12	20800	19100	13500	12400	10000	6000	4200	65	E	U
3	400	BT37	Mog	58110	M400/U	M59	6	36000	33100	23500	22100	20000	15000	4000	65	E	U
4	1000	BT56	Mog	58115	M1000/U	M47	6	108000	100280	86000	79000	15000	11000	4000	65	E	U

[†] E = Enclosed Fixture Required | See page TECH-8 for further information regarding fixture requirements

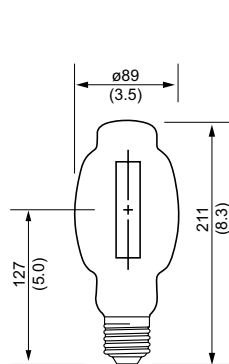
[°] V = Vertical Operation, H = Horizontal Operation



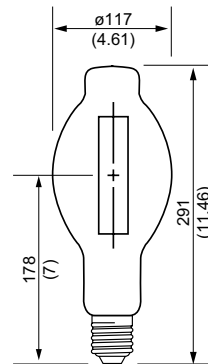
ED28

APPLICATIONS

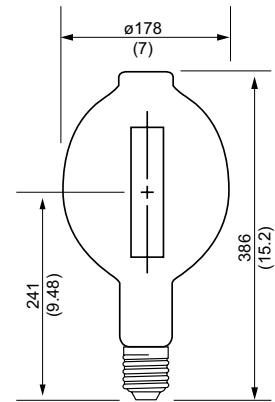
- Industrial
- Retail
- Manufacturing
- Security
- Parking Areas
- Warehouse



BT28



BT37



BT56

Notes:

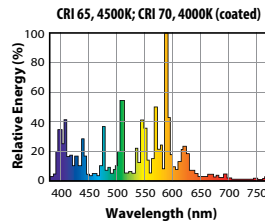
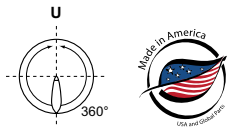
For Warnings, Caution Notices, & Operating Instructions, see page MH-20 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.

HPS TO METAL HALIDE CONVERSION

Multi-Metal Ace™ Mogul Base – HPS to Metal Halide Conversion Lamp

FEATURES

- Metal Halide conversion in High Pressure Sodium lighting systems
- Works in High Pressure Sodium lighting systems with an ignitor
- Improves color rendering index from 20 CRI to 65 CRI
- Nickel-plated base will not seize in the socket



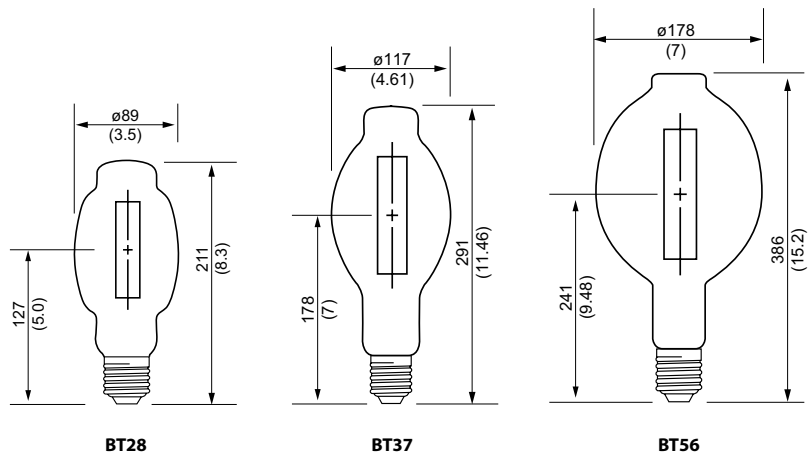
Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code/ Ballast Ref.	Case Qty.	Initial Lumens ^o V H		Mean Lumens ^o V H		Avg. Life Hours ^o V H		Color Temp. (K)	CRI	Fix. [†] Req.	Burn Pos.
Metal Halide Conversion from High Pressure Sodium (Mogul Base)																	
1	250	BT28	Mog	51788	M250X/U/LU	S50	12	19100	16700	14300	12400	10000	7500	4500	65	E	U
2	250	BT28 Coated	Mog	51935	MF250X/U/LU	S50	12	18100	16600	13600	11800	10000	7500	4000	70	E	U
3	400	BT28	Mog	51886	M400X/U/LU/BT28	S51	12	36600	32700	27300	24400	20000	15000	4500	65	E	U
4	400	BT28 Coated	Mog	52033	MF400X/U/LU/BT28	S51	12	34800	31800	25900	25200	20000	15000	4000	70	E	U
5	400	BT37	Mog	51837	M400X/U/LU	S51	12	36600	32700	27300	24400	20000	15000	4500	65	E	U
6	400	BT37 Coated	Mog	51984	MF400X/U/LU	S51	12	34800	31800	25900	23200	20000	15000	4000	70	E	U
7	1000	BT56	Mog	51605	M1000BX/U/LU	S52	6	110200	105500	85500	81700	12000	9000	4200	65	E	U

¹ E = Enclosed Fixture Required | See page TECH-8 for further information regarding fixture requirements

^o V = Vertical Operation, H = Horizontal Operation

APPLICATIONS

- Manufacturing
- Roadway
- Parking Areas
- Warehouse



Notes:

For Warnings, Caution Notices, & Operating Instructions, see page MH-20 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.

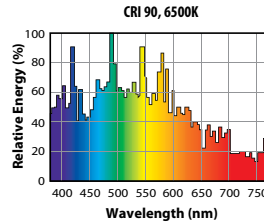
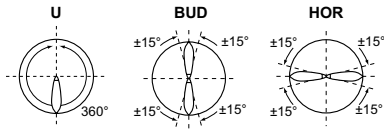


HIGH COLOR RENDERING CONVERSION

Clean Ace™ (Daylight) Mogul Base – 6500K CCT/90CRI Mercury to Metal Halide Conversion Lamp

FEATURES

- Metal Halide conversion in Mercury lighting system
- High color temperature 6500K
- High color rendering, CRI 90
- Appearance of natural sunlight
- Brightness approximately 1.5 times that of a Mercury lamp of equal wattage (400W)
- Operates on Mercury reactor ballast only



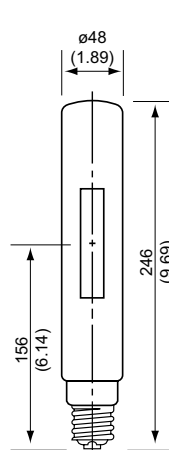
Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code/ Ballast Ref.	Case Qty.	Initial Lumens	Mean Lumens	Avg. Life Hours	Color Temp. (K)	CRI	Fix.† Req.	Burn Pos.
High Color Rendering Tubular Metal Halide (Mogul Base) - Metal Halide Conversion from Mercury														
1	250	T15	Mog	57787	MT250DL	H37*	12	18000	13500	10000	6500	90	E	U
2	400	T15	Mog	57934	MT400DL/BUD	H33*	12	32000	24000	12000	6500	90	E	BUD
3	400	T17	Mog	57885	MT400DL/BH	H33*	12	29000	22000	12000	6500	90	E	HOR

† E = Enclosed Fixture Required | See page TECH-8 for further information regarding fixture requirements

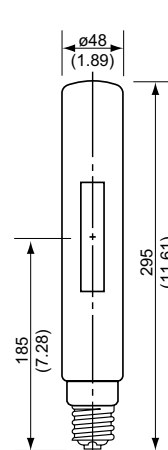
* Reactor type ballast only

APPLICATIONS

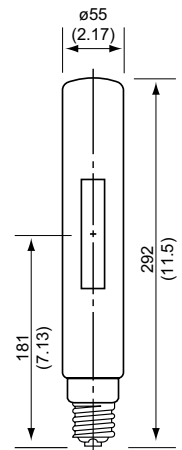
- Aquariums
- Retail
- Building
- Sports Lighting
- Manufacturing



T15 (250W)



T15 (400W)



T17 (400W)

Notes:

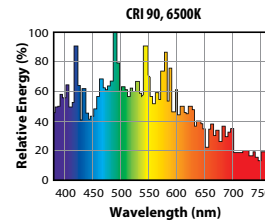
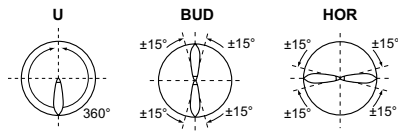
For Warnings, Caution Notices, & Operating Instructions, see page MH-20 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.

HIGH COLOR RENDERING CONVERSION

Clean Arc™ (Daylight) Mogul Base – 6500K CCT/90CRI on Standard Metal Halide CWA Ballast Conversion Lamp

FEATURES

- High color temperature 6500K
- High color rendering, CRI 90
- Appearance of natural sunlight
- Operates on standard Metal Halide CWA ballast

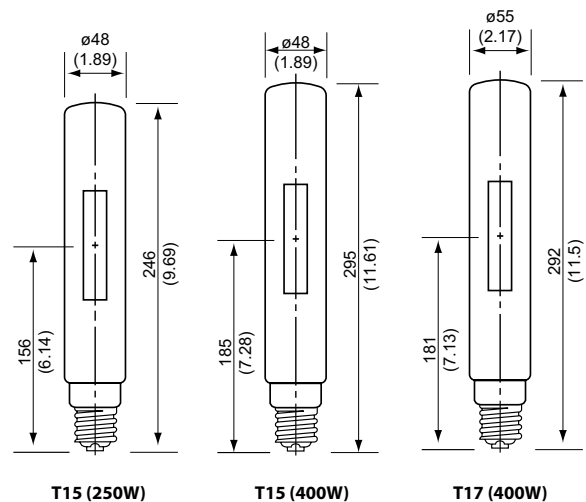


Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code/ Ballast Ref.	Case Qty.	Initial Lumens	Mean Lumens	Avg. Life Hours	Color Temp. (K)	CRI	Fix.† Req.	Burn Pos.
High Color Rendering Tubular Metal Halide (Mogul Base)														
1	250	T15	Mog	57791	MT250D	M58	12	18000	13500	10000	6500	90	E	U
2	400	T15	Mog	57875	MT400D/BUD	M59	12	32000	24000	12000	6500	90	E	BUD
3	400	T17	Mog	57881	MT400D/HOR	M59	12	29000	22000	12000	6500	90	E	HOR

† E = Enclosed Fixture Required | See page TECH-8 for further information regarding fixture requirements

APPLICATIONS

- Aquariums
- Manufacturing
- Painting Industry
- Printing Industry
- Retail
- Sports Lighting
- Critical Commercial and Industrial Color Applications



Notes:

For Warnings, Caution Notices, & Operating Instructions, see page MH-20 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.

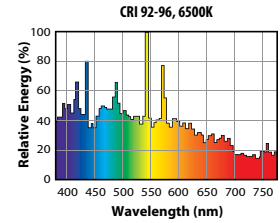
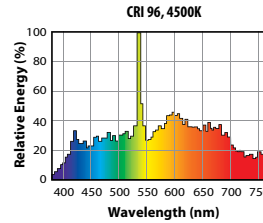
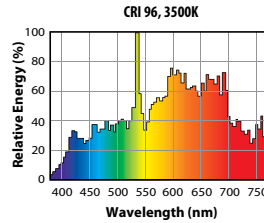
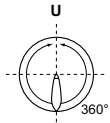


HIGH COLOR RENDERING

Color Arc® Single-Ended G12 Base – Universal Burn

FEATURES

- Very high color rendering, up to CRI 96
- Wide color temperature offering: 3500K, 4500K and 6500K
- Compact Single-Ended design
- UV-Block coating on the outer bulb

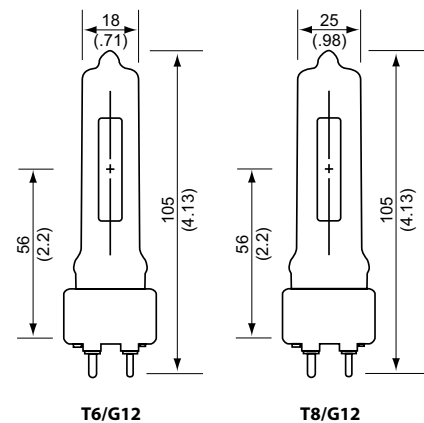


Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code/ Ballast Ref.	Case Qty.	Initial Lumens	Mean Lumens	Avg. Life Hours	Color Temp. (K)	CRI	Fix. [†] Req.	Burn Pos.
Single-Ended High Color Rendering T6/T8 Enclosed Fixture Series Metal Halide (G12 Base)														
1	70	T6	G12	56108	MT70/SDW/G12	M139	24	4500	3600	6000	3500	96	E	U
2	70	T6	G12	56162	MT70/SW/G12	M139	24	5000	4000	6000	4500	96	E	U
3	70	T6	G12	55930	MT70/D/G12	M139	24	5000	4000	6000	6500	92	E	U
4	150	T8	G12	55645	MT150/D/G12	M142	24	11000	9000	6000	6500	96	E	U

[†] E = Enclosed Fixture Required | See page TECH-8 for further information regarding fixture requirements

APPLICATIONS

- Shopping Malls
- Commercial Entrance Foyers
- Department Stores
- Hotel Public Areas
- Merchandise Displays
- Paint Booths
- Landscape
- Showrooms
- Aquariums



Notes:

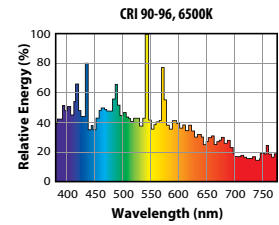
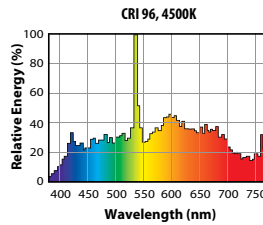
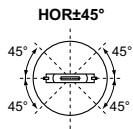
For Warnings, Caution Notices, & Operating Instructions, see page MH-20 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.

HIGH COLOR RENDERING

Color Arc® Double-Ended Renaissance

FEATURES

- Very high color rendering, CRI 96
- Wide color temperature offering: 4500K, 6500K
- Operates on common Metal Halide and HQI ballast and ignitor
- UV-Cut coating
- Operates in HQI applications

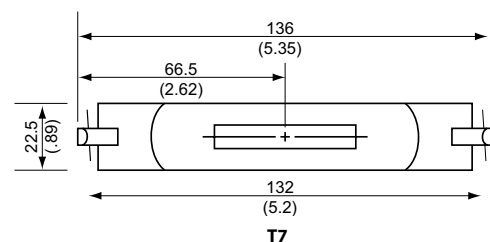


Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code/ Ballast Ref.	Case Qty.	Initial Lumens	Mean Lumens	Avg. Life Hours	Color Temp. (K)	CRI	Fix. [†] Req.	Burn Pos.
Double-Ended High Color Rendering Enclosed Fixture Series Metal Halide (Rx7s Base)														
1	150	T7	Rx7s	55335	MTD150/SW	M81/E, M160	24	11000	9000	12000	4500	96	E	HOR±45°
2	150	T7	Rx7s	55345	MTD150/D	M81/E, M160	24	11000	9000	12000	6500	96	E	HOR±45°

[†] E = Enclosed Fixture Required | See page TECH-8 for further information regarding fixture requirements

APPLICATIONS

- Aquariums
- Office
- Architectural
- Landscape
- Retail
- Critical Commercial and Industrial Color Applications



Notes:

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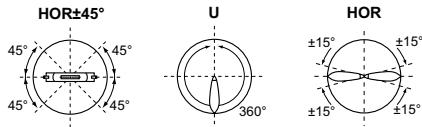
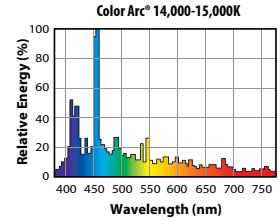
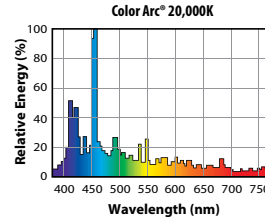
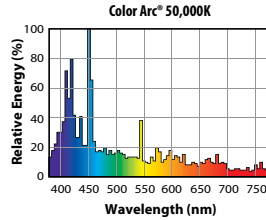
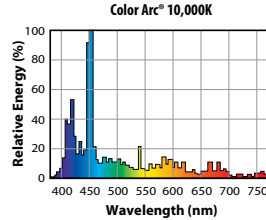
METAL HALIDE LAMPS

HIGH COLOR RENDERING

Color Arc® Specialty Color – 15,000K, 20,000K, & 50,000K CCT

FEATURES

- Double-Ended and Tubular
- Color temperatures from 10000K to 50000K
- UV-Block coating on the outer bulb

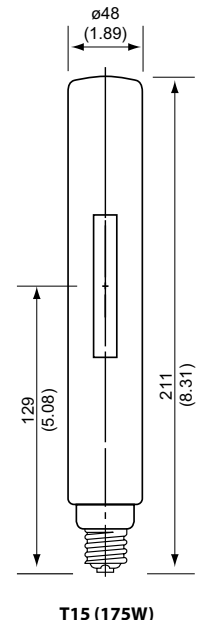
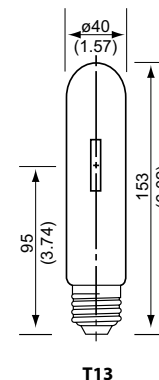
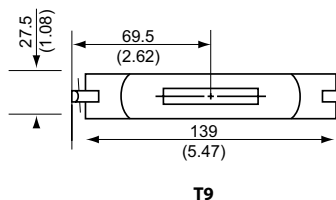
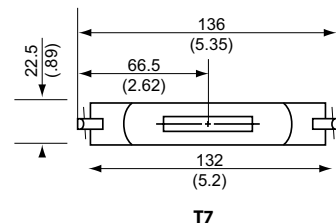


Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code/ Ballast Ref.	Case Qty.	Initial Lumens	Mean Lumens	Avg. Life Hours	Color Temp. (K)	CRI	Fix.† Req.	Burn Pos.
Specialty Color Double-Ended Enclosed Fixture Series Metal Halide (Rx7s Base)														
1	150	T7	Rx7s	56267	MTD150AQUA/10K	M142	24	8000	6400	6000	10000*	N/A	E	HOR±45°
2	150	T7	Rx7s	56241	MTD150AQUA	M142	24	6000	NA	6000	50000*	N/A	E	HOR±45°
3	150	T7	Rx7s	56260	MTD150AQUA2	M142	24	8000	NA	6000	20000*	N/A	E	HOR±45°
4	250	T9	FC2	57753	MTD250AQUA/14K	M80	12	15000	12000	6000	14000*	N/A	E	HOR±45°
Specialty Color Tubular Open/Enclosed Fixture Series Metal Halide (Medium Base)														
5	150	T13	Med	55803	MT150AQUA	M142	12	6000	NA	6000	50000*	N/A	O	U
Specialty Color Tubular Enclosed Fixture Series Metal Halide (Mogul Base)														
6	175	T15	Mog	57713	MT175AQUA2/HOR	M57	12	8500	6400	6000	15000*	N/A	E	HOR

† E = Enclosed Fixture Required | O = Open Fixture Permissible | See page TECH-8 for further information regarding fixture requirements
* Reference value only

APPLICATIONS

- Landscape
- Aquarium
- Display



Notes:

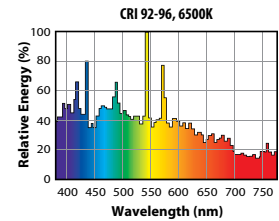
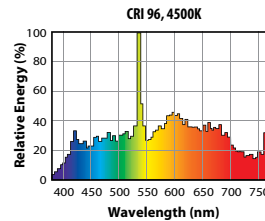
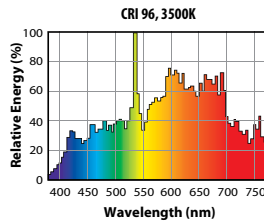
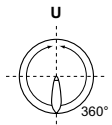
For Warnings, Caution Notices, & Operating Instructions, see page MH-20 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.

PAR36 HIGH COLOR RENDERING

Color Arc® PAR36

FEATURES

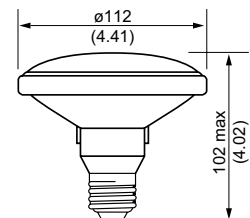
- Open fixture rated
- Wide color temperature offering; 3500K, 4500K, 6500K
- Higher luminous flux and the same high color rendition compared to the PAR Halogen lamps
- Medium and wide beam patterns are available
- Excellent beam control offers a high luminous efficacy and related energy savings
- Indoor use only. For outdoor use, specific fixtures are required
- UV-Cut coating
- Very high color rendering, up to CRI 96



Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code / Ballast Ref.	Case Qty.	Initial Lumens	Beam Lumens	Avg. Life Hours	Color Temp. (K)	CRI	Fix. ¹ Req.	Burn Pos.	Beam Angle (°)	Peak Intensity (cd)
PAR36 Aluminum Coated Reflector Open/Enclosed Fixture Series Metal Halide (Medium Base)																
1	70	PAR36 Coated	Med Skirt	55452	M70P36S/SDW	M139	10	3000	720	6000	3500	96	0	U	26	7020
2	70	PAR36 Coated	Med Skirt	55459	M70P36S/SW	M139	10	3300	800	6000	4500	96	0	U	26	7800
3	70	PAR36 Coated	Med Skirt	55438	M70P36S/D	M139	10	3300	800	6000	6500	92	0	U	26	7800

¹ 0 = Open Fixture Permissible | See page TECH-8 for further information regarding fixture requirements

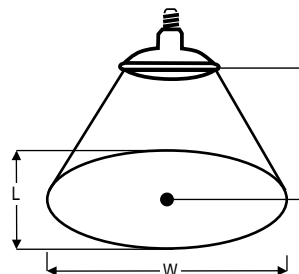
70W PAR36															
M70P36S/SDW (55452)				Beam Angle 26°		M70P36S/SW (55459)				Beam Angle 26°		M70P36S/D (55438)		Beam Angle 26°	
H	fc	Beam Diameter L	Beam Diameter W	H	fc	Beam Diameter L	Beam Diameter W	H	fc	Beam Diameter L	Beam Diameter W				
6	195	2.77	2.77	6	217	2.77	2.77	6	217	2.77	2.77				
8	110	3.69	3.69	8	122	3.69	3.69	8	122	3.69	3.69				
10	70	4.62	4.62	10	78	4.62	4.62	10	78	4.62	4.62				
12	49	5.54	5.54	12	54	5.54	5.54	12	54	5.54	5.54				
14	36	6.46	6.46	14	40	6.46	6.46	14	40	6.46	6.46				



PAR36

APPLICATIONS

- Shopping Malls
- Commercial Entrance Foyers
- Department Stores
- Hotel Public Areas
- Merchandise Displays
- Paint Booths
- Landscape
- Showrooms
- Aquariums



H: Distance from the lamp to the lit surface (in feet)

fc: Footcandles at the center of the beam

Beam Diameter L: Length of the beam (in feet)

Beam Diameter W: Width of the beam (in feet)

Notes:

For Warnings, Caution Notices, & Operating Instructions, see page MH-20 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.



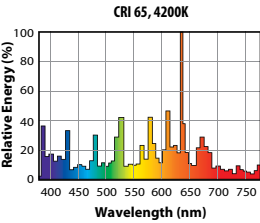
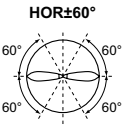
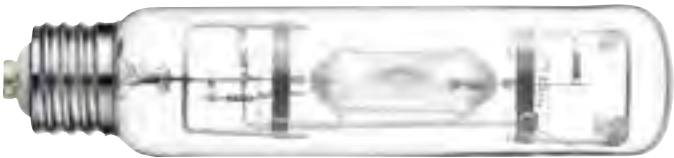
METAL HALIDE LAMPS

TUBULAR METAL HALIDE

Mogul Base – Horizontal Burn

FEATURES

- Tubular type Metal Halide lamps
- High efficacy
- Good color rendition
- Clear type bulb only
- Horizontal operation

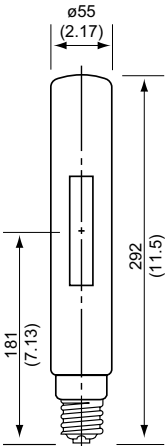


Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code/ Ballast Ref.	Case Qty.	Initial Lumens	Mean Lumens	Avg. Life Hours	Color Temp. (K)	CRI	Fix.† Req.	Burn Pos.
Tubular Metal Halide (Mogul Base)														
1	250	T17	Mog	57738	MT250/BH	M58	12	18000	14000	10000	4200	65	E	HOR ±60°
2	400	T17	Mog	57836	MT400/BH	M59	12	32000	25000	10000	4200	65	E	HOR ±60°

† E = Enclosed Fixture Required | See page TECH-8 for further information regarding fixture requirements

APPLICATIONS

- Gymnasiums and Pools
- Manufacturing
- Parks
- Sports Lighting



T17 (400W)

Notes:
For Warnings, Caution Notices, & Operating Instructions, see page MH-20 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.

Warning and Operating Instructions

⚠ WARNING

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

This lamp complies with U.S. Federal Standard 21 CFR 1040.30

1. Metal Halide lamps are constructed of an outer glass jacket and an internal arc tube made of quartz. The arc tube operates under high pressure and high temperatures. The arc tube and outer jacket may unexpectedly rupture due to internal causes or external factors such as system malfunction or misapplication, creating a risk of personal injury, property damage, burns and fire. To reduce this risk the following instructions must be adhered to.
2. Do not operate lamps in excess of rated voltages of the ballast as this will increase lamp pressure and the possibility of shattering.
3. This lamp must be used only with proper circuit and auxiliary equipment and a suitable ballast.
4. This lamp must be operated with a suitable fixture, ballast and ignitor which has an ANSI designation identical to the ANSI designation in this catalog.
5. Do not use this lamp in a fixture designed for less than the rated lamp wattage.
6. Failure to comply may result in poor lamp performance and possible personal injury or property damages for which the manufacturer will not be held responsible.
7. Do not scratch glass of bulb or subject this lamp to undue pressure as either may cause lamp to break. Replace scratched, cracked, broken or damaged bulbs immediately.
8. The lamp should be screwed firmly, but not forcibly, into the socket to reduce the possibility of loosening due to vibration. Use of excessive force may result in lamp breakage.
9. Do not touch hot lamps with fingers, skin or any flammable material. Lamps may remain hot after being turned OFF.
10. This lamp must be shielded from direct contact with rain, sleet, snow and other liquids to reduce the possibility of breakage. This lamp may implode if broken. Use eye protection and gloves when handling this lamp.
11. The fixture for Metal Halide lamps must be enclosed. Enclosures must be made of suitable materials capable of withstanding the discharge of hot quartz, arc tube or glass particles up to 1000° C (1832° F). The manufacturer has identified only tempered glass as suitable lens or diffuser material. End users should contact the fixture manufacturer to determine if a particular enclosure is suitable.
12. In continuously operating systems (24 hours/day, 7 days/week), turn lamps off once per week for at least 1 hour. Failure to comply increases the risk of rupture.
13. When operating this lamp, the base temperature should not exceed 210° C (410° F) for mogul base and 190° C (374° F) for medium base, the outer envelope should not exceed 400° C (752° F). The recommended ambient temperature limit for mogul base lamps is -20° C (-4° F) minimum; 40° C (104° F) maximum. For medium and bi-pin base lamps, the recommended ambient temperature limit is -10° C (14° F) minimum; 40° C (104° F) maximum.
14. Do not use this lamp in a location subject to vibration or shock, unless an adequate vibration-proof fixture is used.
15. Do not use this lamp in a corrosive atmosphere unless an adequate corrosion resistant-fixture is used.
16. Replace lamp at or before the end of its rated life. Allowing lamps to burn until they fail may increase the risk of inner arc tube rupture.
17. Electrically insulate any metal support in contact with glass to reduce the possibility of decomposition of the glass.
18. Do not look directly at the lamp during operation to avoid eye inflammation from short wave ultraviolet radiation.
19. Do not paint the lamp to prevent its overheating or breakage.
20. Do not use this lamp in an ignitable atmosphere (for example gasoline, inflammable spray, thinner, lacquer, dust, etc.) to prevent a fire or explosion unless an adequate fixture is used.
21. Do not use this lamp in a powdery or dusty atmosphere in order to eliminate the overheating of the lamp unless an adequate fixture is used.
22. The radiation from this lamp may cause colored objects to fade unless an adequate fixture is used.
23. Follow all instructions in the manufacturer's catalog or on the individual box or instruction sheet.

OPERATING INSTRUCTIONS

1. To install or replace bulb, disconnect power to reduce the risk of electrical shock and allow lamp to cool before replacing.
2. Check the operating position of the lamps marked on the outer envelope. Lamps must only be utilized in the correct operating position.
 U = Universal burning position
 BU = Base Up $\pm 15^\circ$
 HOR = Horizontal
 BUH = Base Up to Horizontal
 BUD = Base Up or Base Down $\pm 15^\circ$
 HOR $\pm 30^\circ$ = Horizontal $\pm 30^\circ$
 HOR $\pm 45^\circ$ = Horizontal $\pm 45^\circ$
 HOR $\pm 60^\circ$ = Horizontal $\pm 60^\circ$
 See positions on each page in this catalog.
 For EYE Color Arc®, EYE Color Arc PAR™, see each lamp page in this catalog.
3. When the lamp does not operate normally, turn off the power and replace the lamp with a new one.
4. Lamp should operate with appropriate ballast and ignitor for Metal Halide lamps.
5. Seasoning Time: The time required for a new operating lamp to reach a state of equilibrium where the electrical, light level and color parameters stabilize. Typically, HID lamps obtain their rated performance after 100 hours of seasoning.

FOR EYE MULTI-METAL ACE™ LAMPS

If a power interruption should occur and the lamp extinguishes, turn off the power for at least 15 minutes. Turn the power back on to restart the lamp.

EYE LIGHTING INTERNATIONAL OF NORTH AMERICA INC. will not be responsible for property damage, personal injury or poor lamp performance due to failure to follow the above instructions. The statements contained herein do not create, and shall not be construed as creating, any warranties.

For more information regarding instructions or the above warnings, contact EYE LIGHTING INTERNATIONAL OF NORTH AMERICA INC. at 9150 Hendricks Rd., Mentor, Ohio 44060, 888-665-2677.

Note: Unless otherwise noted in this catalog, EYE Metal Halide lamps can be operated with ballasts made in accordance with I.E.C. recommendations allowing for voltage fluctuations of $\pm 10\%$.



METAL HALIDE LAMPS

PRODUCT CROSS REFERENCE

EYE LIGHTING				COMPETITOR PRODUCT DESCRIPTIONS			
Page #	Product Code	Product Description	ANSI Code/ Ballast Ref.	GE	OSRAM/SYLVANIA	PHILIPS	VENTURE
Universal Pulse Start High Output (Mogul Base)							
MH-4	52470	M250X/U/PS	M138, M153	MVR250/U/PA	M250/PS/U	MS250/U/PS	
MH-4	52464	MF250X/U/PS	M138, M153	NO EQUAL			
MH-4	50578	M320X/U/PS	M132, M154			MS320/U/PS	
MH-4	50565	M350X/U/PS	M131	NO EQUAL			
MH-4	50570	M350X/U/PS/BT28	M131	NO EQUAL			
MH-4	54232	M400X/U/PS	M135, M155	MVR400/U/PA	M400/PS/U	MS400/U/PS	
MH-4	52545	M400X/U/PS/BT28	M135, M155		M400/PS/U/BT28		
MH-4	53440	M750X/U/PS/BT37	M149	NO EQUAL			
MH-4	53650	M1000BX/U/PS/BT37	M141	MVR1000/U/BT37/PA	M1000/PS/U/BT37		
Position Oriented Pulse Start High Output							
MH-5	54305	M175/BU/PS/ED28	M137, M152	MVR175/VBU/PA	MS175/PS/BU-ONLY		MS175W/BU/PS
MH-5	54309	MF175/BU/PS/ED28	M137, M152	MVR175/C/VBU/PA	MS175/C/PS/BU-ONLY		MS175W/C/BU/PS
MH-5	54312	MF250/BU/PS	M153	MVR250/VBU/PA	MS250/PS/BU-ONLY		MS250W/V/PS
MH-5	54341	MF320/BU-HOR/PS/BT28	M154	MVR320/C/VBU/HO/PA	MS320/C/PS/BU-HOR	MS320/C/U/PS	MS320/C/BU/ED28/PS
MH-5	50330	M400SX/HOR/PS	M135, M155			MS400/HOR/PS	MS400W/H75/PS
MH-5	54354	MF400/BU/PS/BT37	M155	MVR400/C/VBU/PA	MS400/C/PS/BU-ONLY	MS400/C/BU/PS	MS400W/C/BU/PS
Position Oriented Pulse Start High Output - Open Fixture (EX39)							
MH-5	54319	MP250/BU/PS	M138, M153	MPR250/VBU/O	MP250/PS/BU-ONLY		MP250W/BU/UVS/PS
MH-5	54326	MPF250/BU/PS	M138, M153	MPR250/C/VBU/O	MP250/C/PS/BU-ONLY		MP250W/C/BU/PS
MH-5	54348	MP320/BU/PS/BT28	M154		MP320/350/PS/BU-ONLY/BT28	MP320/BU/PS	MP320W/BU/ED28/PS
MH-5	54355	MPF320/BU/PS/BT28	M154	MPR320/C/PA/ED28	MP320/350/C/PS/BU-ONLY/BT28	MP320/C/BU/PS	MP320W/C/BU/ED28/UVS/PS
MH-5	54369	MPF350/BU/PS	M131	MPR350/C/VBU/PA	MP350/400/C/PS/BU-ONLY	MP350/C/BU/PS	MP350W/C/V/UVS/PS
MH-5	54374	MP400/BU/PS	M135, M155	MPR400/C/VBU/XHO/PA	MP350/400/C/PS/BU-ONLY	MP400/C/BU/PS	MP400W/C/BU/UVS/PS
MH-5	54379	MPF400/BU/PS	M135, M155	MPR400/VBU/XHO/PA	MP350/400/PS/BU-ONLY	MP400/BU/PS	MP400W/BU/UVS/PS
Pulse Start Enclosed Fixture							
MH-6	54768	M100X/U/MED	M90	MVR100/U/MED	M100/U/MED	MH100/U/M	MH100/U/PS
Pulse Start Open Fixture (Shrouded Arc Tube)							
MH-6	56797	MP70/U/3K	M98	MXR70/U/MED/O (3K)	MP70/U/MED		MP 70W/U/UVS/PS/3K
MH-6	56650	MP100/U/3K	M90	MXR100/U/MED/O (3K)	MP100/U/MED		MP 100W/U/UVS/PS/3K
MH-6	56699	MP150/U/3K	M102	MXR150/U/MED/O (3K)	MP150/U/MED		MP 150W/U/UVS/PS/732
MH-6	56895	MPF150/U/3K	M102		MP150/C/U/MED		MP 150W/C/U/UVS/PS/732
Probe Start Enclosed Fixture							
MH-6	54866	M175X/U/MED	M57	MVR175/U/MED	M175/U/MED	MH175/U/M	
Pulse Start Metal Halide (EX39)							
MH-7	52461	M250X/U/PS BRUTUS	M138, M153	NO EQUAL			
MH-7	52495	M350X/U/PS BRUTUS	M131	NO EQUAL			
MH-7	50390	M400X/U/PS BRUTUS	M135, M155	NO EQUAL			
MH-7	52549	M400X/U/PS/BT28 BRUTUS	M135, M155	NO EQUAL			
MH-7	50083	M1000BX/U/PS/BT37 BRUTUS	M141	NO EQUAL			
Probe Start Metal Halide (E39)							
MH-7	50207	M250X/U BRUTUS	M58	NO EQUAL			
MH-7	50309	M400X/U/BT28 BRUTUS	M59	NO EQUAL			
MH-7	52536	M400X/U BRUTUS	M59	NO EQUAL			
MH-7	50074	M1000BX/U/BT37 BRUTUS	M47	NO EQUAL			
MH-7	50065	M1000BX/U BRUTUS	M47	NO EQUAL			
High Output, Energy Saving							
MH-8	52527	M360SX/BU/I	M59, M165	MVR360VBU/WM/XHO	MS360/SS/BU-HOR		
MH-8	52520	MF360SX/BU/I	M59, M165	MVR360C/VBUWMXHO	MS360/C/SS/BU-HOR		
Super High Output							
MH-8	52529	M400SX/BU/I	M59	MVR400/VBU/HO			
MH-8	52525	MF400SX/BU/I	M59	MVR400/C/VBU/HO			
High Output Open Fixture Series							
MH-8	52712	MP360SX/BU/I	M59, M165	MVR360VBUEWM/HO/O			
MH-8	57974	MP400SX/BU/I	M59	MVR360CVBUWMHO/O			
High Output, Position-Oriented SX							
MH-9	52680	M400SX/HOR/BT28	M59	MVR400/HOR/BT28	MS400/HOR/BT28		MS 400W/HOR/ED28
MH-9	52582	M400SX/BU/BT28	M59	MVR400/VBUED28HO			
MH-9	52631	M400SX/HOR	M59	MVR400/HOR/MOG	MS400/HOR	ONLY OFFERED IN E28 BULB	MS400W/HOR/T15/3K
MH-9	52533	M400SX/BU	M59	MVR400/VBU/HO	MS400/BU-ONLY	MS400/BU	MS400W/BU
MH-9	53925	M1000BSX/BU	M47	MVR1000/VBU/HO	MS1000/BU-ONLY	MS1000/BU	MS 1000W/BU
MH-9	54025	M1500BSX/HOR	M48	MVR1500/U/SPORTS	M1500/BU-HOR	MH1500BU	MS1500W/HOR/XP/SPORT60
MH-9	53974	M1500B/BD	M48	MVR1500/HBD	MH1500/BD	MH1500BD	MH1500/HBD
MH-9	54023	M1500B/BUH	M48	MVR1500/HBU	M1500/BU-HOR	MH1500/BU	MH1500W/HBU
High Output, Position-Oriented SX (Coated)							
MH-9	52876	MF400SX/HOR/BT28	M59				MS400W/C/HOR/ED28
MH-9	52778	MF400SX/BU/BT28	M59	NO EQUAL			
MH-9	52827	MF400SX/HOR	M59	MVR400/C/HOR/MOG		MS400/C/HOR	MS400W/C/HOR
MH-9	52729	MF400SX/BU	M59	MVR400/C/VBU/XHO	MS400/C/BU-ONLY	MS400/C/BU	MS400W/C/BU
MH-9	54121	MF1000BSX/BU	M47	MVR1000/C/VBU/HO		MS1000/C/BU	

PRODUCT CROSS REFERENCE

EYE LIGHTING				COMPETITOR PRODUCT DESCRIPTIONS			
Page #	Product Code	Product Description	ANSI Code/ Ballast Ref.	GE	OSRAM/SYLVANIA	PHILIPS	VENTURE
High Output, Position-Oriented Open Fixture Series SX							
MH-9	52540	MP400SX/BU	M59	MPR400/VBU/HO/O			MP1400W/BU/HO
MH-9	53625	MP1000BSX/BU	M47	MPR1000/VBU/HO/O			
MH-9	53916	MP1000BSX/BU/UVC	M47			NO EQUAL	
MH-9	53634	MP1000BX/U/BT37	M47			NO EQUAL	
Premium Universal Probe Start - XU							
MH-10	50151	M175X/U	M57			NO EQUAL	
MH-10	50494	MF175X/U	M57			NO EQUAL	
MH-10	50200	M250X/U	M58			NO EQUAL	
MH-10	50543	MF250X/U	M58			NO EQUAL	
MH-10	50298	M400X/U/BT28	M59			NO EQUAL	
MH-10	50641	MF400X/U/BT28	M59			NO EQUAL	
MH-10	50249	M400X/U	M59			NO EQUAL	
MH-10	50592	MF400X/U	M59			NO EQUAL	
MH-10	50102	M1000BX/U/BT37	M47			NO EQUAL	
MH-10	50445	MF1000BX/U/BT37	M47			NO EQUAL	
MH-10	50053	M1000BX/U	M47			NO EQUAL	
MH-10	50396	MF1000BX/U	M47			NO EQUAL	
Standard Universal Metal Halide (Mogul Base)							
MH-11	58100	M175/U	M57	MVR175/U	M175/U	MH175/U	MH175W/U
MH-11	58105	M250/U	M58	MVR250/U	M250/U	MH250/U	MH250W/U
MH-11	58110	M400/U	M59	MVR400/U	M400/U	MH400/U	MH400W/U
MH-11	58115	M1000/U	M47	MVR1000/U	M1000/U	MH1000/U	MH1000W/U
Metal Halide Conversion from High Pressure Sodium (Mogul Base)							
MH-12	51788	M250X/U/LU	S50	MVR250VBU/R			MH250W/U/LU
MH-12	51935	MF250X/U/LU	S50	MVR250/C/VBU/R			Not Available
MH-12	51886	M400X/U/LU/BT28	S51	MVR400U/ED28/R			MH400W/U/LU/ED28
MH-12	52033	MF400X/U/LU/BT28	S51			NO EQUAL	
MH-12	51837	M400X/U/LU	S51	MVR400/VBU/R			MH400W/U/LU
MH-12	51984	MF400X/U/LU	S51	MVR400/C/VBU/R			MH400W/C/U/LU
MH-12	51605	M1000BX/U/LU	S52				
High Color Rendering Tubular Metal Halide (Mogul Base) - Metal Halide Conversion from Mercury							
MH-13	57787	MT250DL	H37			NO EQUAL	
MH-13	57934	MT400DL/BUD	H33	MVR400/I/U			
MH-13	57885	MT400DL/BH	H33	MVR400/I/U			
High Color Rendering Tubular Metal Halide (Mogul Base)							
MH-14	57791	MT250D	M58			NO EQUAL	
MH-14	57875	MT400D/BUD	M59			NO EQUAL	
MH-14	57881	MT400D/HOR	M59			NO EQUAL	
Single-Ended High Color Rendering T6/T8 Enclosed Fixture Series Metal Halide (G12 Base)							
MH-15	56108	MT70/SDW/G12	M139	CMH70TU/830/G12			
MH-15	56162	MT70/SW/G12	M139	CMH70TU/942/G12			
MH-15	55930	MT70/D/G12	M139			NO EQUAL	
MH-15	55645	MT150/D/G12	M142			NO EQUAL	
Double-Ended High Color Rendering Enclosed Fixture Series Metal Halide (Rx7s Base)							
MH-16	55335	MTD150/SW	M81/E, M160			NO EQUAL	
MH-16	55345	MTD150/D	M81/E, M160			NO EQUAL	
PAR36 Aluminum Coated Reflector Open/Enclosed Fixture Series Metal Halide (Medium Base)							
MH-17	55452	M70P36S/SDW	M139			NO EQUAL	
MH-17	55459	M70P36S/SW	M139			NO EQUAL	
MH-17	55438	M70P36S/D	M139			NO EQUAL	
Specialty Color Double-Ended Enclosed Fixture Series Metal Halide (Rx7s Base)							
MH-18	56267	MTD150AQUA/10K	M142			NO EQUAL	
MH-18	56241	MTD150AQUA	M142			NO EQUAL	
MH-18	56260	MTD150AQUA2	M142			NO EQUAL	
MH-18	57753	MTD250AQUA/14K	M80			NO EQUAL	
Specialty Color Tubular Open/Enclosed Fixture Series Metal Halide (Medium Base)							
MH-20	55803	MT150AQUA	M142			NO EQUAL	
Specialty Color Tubular Enclosed Fixture Series Metal Halide (Mogul Base)							
MH-20	57713	MT175AQUA2/HOR	M57			NO EQUAL	
Tubular Metal Halide (Mogul Base)							
MH-21	57738	MT250/BH	M58		M250/U/ET18	MH250/U/T15	MH250W/U/T15
MH-21	57836	MT400/BH	M59		M400/U/ET18	MH400/T15	MH400W/U/T15



Lamp Family & Application Guide	HPS-2	Product Description Guide	HPS-2
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HPS WITH INTERNAL IGNITOR

EYE Ignitron™ EN – (Environmentally Friendly / TCLP Compliant)	HPS-3
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STANDARD HPS

Sunlux® EN Mogul Base – Universal Burn (Environmentally Friendly / TCLP Compliant)	HPS-4
Sunlux® Medium & Mogul Base – Universal Burn	HPS-5

ENERGY SAVING CONVERSION

Sunlux Ultra Ace® EN BT Bulb, Mogul Base – Mercury or Metal Halide to High Pressure Sodium Conversion Lamp	HPS-6
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WARNING AND OPERATING INSTRUCTIONS

Warning and Operating Instructions	HPS-7
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PRODUCT CROSS REFERENCE

Product Cross Reference	HPS-8
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Lamp Family & Application Guide

LAMP FAMILY	LAMP FEATURES	WATTS	APPLICATION	PAGE
IGNITRON™ EN	High Pressure Sodium lamp with a built-in ignitor that meets Federal EPA TCLP requirements for non-hazardous waste. Energy saving Ignitron Lamps designated by ES/EN.	50W through 1000W	• Parking Areas • Roadway • Security • Warehouse	HPS-3
SUNLUX® EN	Environmentally-friendly High Pressure Sodium lamps nickel-plated mogul base lamps. EPA, TCLP compliant, low Mercury content, lead-free base.	50W through 1000W	• Roadway • Parking Areas • Industrial • Warehouse	HPS-4
SUNLUX®	Complete line of economical High Pressure Sodium lamps in a wide range of wattages. Available in nickel-plated medium and mogul bases.	35W through 400W	• Industrial • Parking Areas • Security • Roadway • Warehouse	HPS-5
SUNLUX ULTRA ACE™ EN	Conversion High Pressure Sodium lamp operates on a Mercury or Metal Halide ballast by simply changing the lamp. Meets Federal EPA TCLP requirements for non-hazardous waste.	150W through 940W	• Industrial • Manufacturing • Parking Areas • Roadway • Warehouse	HPS-6

Product Description Guide

HIGH PRESSURE SODIUM LAMPS

LU 400 / I / EN

Lamp Type

LU: High Pressure Sodium Lamp
NH: High Pressure Sodium Lamp
 with special features

Lamp Wattage

Ignitron

Lamp Feature

EN: Environmental friendly
CE: Sunlux Ultra Ace Lamp

Notes:

For Warnings, Caution Notices, & Operating Instructions, see page HPS-7 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.
 Contact EYE Lighting International for further information and availability



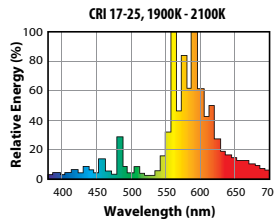
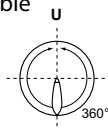
HIGH PRESSURE SODIUM LAMPS

HPS WITH INTERNAL IGNITOR

EYE Ignitron™ EN – (Environmentally Friendly / TCLP Compliant)

FEATURES

- High lumen output lamp with internal ignitor using EYE/Iwasaki patented FEC technology
- Up to 35,000 hrs. average rated life
- Up to 25% improvement in color rendering compared to standard HPS
- EYE/Iwasaki patented FEC technology protects lighting system components from continuous high voltage pulsing at the end of lamp life
- Universal operating position
- EPA TCLP compliant for non-hazardous waste
- Energy saving types available



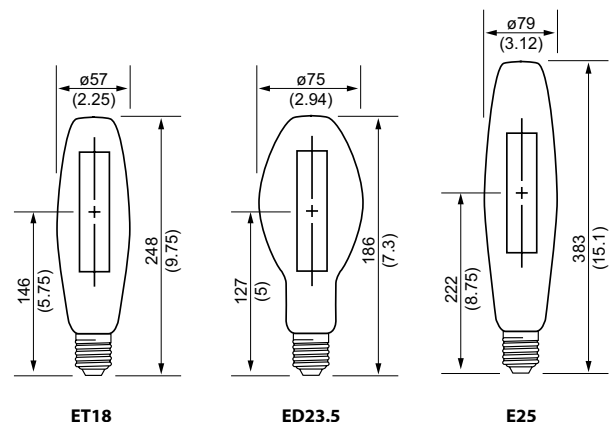
EYE/Iwasaki Patented
FEC Technology



Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code	Case Qty.	Initial Lumens	Mean Lumens	Avg. Life Hours	Color Temp. (K)	CRI
High Output HPS with Internal Ignitor (Mogul Base)												
1	50	ED23.5	Mog	59674	LU50/I/EN	S68	12	4000	3600	28500	1900	17
2	70	ED23.5	Mog	59685	LU70/I/EN	S62	12	6000	5400	35000	1900	17
3	100	ED23.5	Mog	59696	LU100/I/EN	S54	12	9500	8550	35000	1900	17
4	150	ED23.5	Mog	59707	LU150/55/I/EN	S55	12	16000	14400	35000	1900	17
5	200	ET18	Mog	59914	LU200/I/EN	S66	12	22000	19800	35000	2100	25
6	250	ET18	Mog	60012	LU250/I/EN	S50	12	28500	25600	35000	2100	25
7	310	ET18	Mog	60050	LU310/I/EN	S67	12	37000	33300	35000	2100	22
8	400	ET18	Mog	60110	LU400/I/EN	S51	12	50000	45000	35000	2100	25
9	1000	E25	Mog	59718	LU1000B/I/EN	S52	6	140000	126000	24000	2100	25

APPLICATIONS

- Parking Areas
- Security
- Roadway
- Warehouse



Notes:

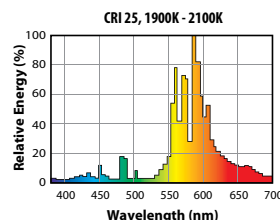
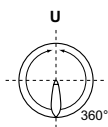
For Warnings, Caution Notices, & Operating Instructions, see page HPS-7 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.
Compatible with ballast for the ANSI lamp code shown. Lamp does not require an external starting pulse | Contact EYE Lighting International for further information and availability

STANDARD HPS

Sunlux® EN Mogul Base – Universal Burn (Environmentally Friendly / TCLP Compliant)

FEATURES

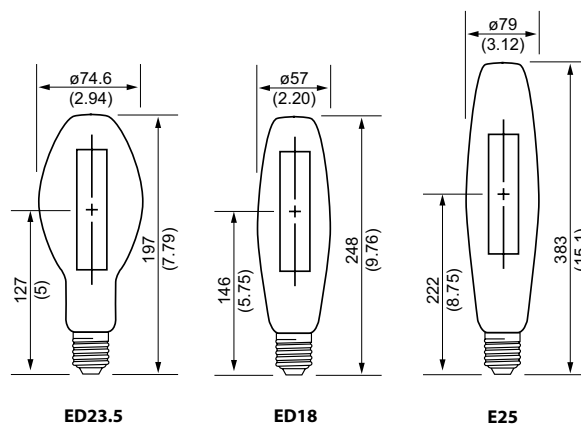
- Environmentally friendly
- Economic line of mogul base lamps
- Long life
- Universal burn position



Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code	Case Qty.	Initial Lumens	Mean Lumens	Avg. Life Hours	Color Temp. (K)	CRI
Sunlux EN Environmentally Friendly (TCLP) High Pressure Sodium (Mogul Base)												
1	50	ED23.5	Mog	65859	LU50/EN	S68	12	4000	3600	24000+	1900	22
2	70	ED23.5	Mog	66055	LU70/EN	S62	12	6300	5500	24000+	1900	22
3	100	ED23.5	Mog	65075	LU100/EN	S54	12	9500	8000	24000+	2100	22
4	150	ED23.5	Mog	65320	LU150/55/EN	S55	12	16000	13800	24000+	2100	22
5	200	ED18	Mog	65516	LU200/EN	S66	12	22000	19800	24000+	2100	22
6	250	ED18	Mog	65565	LU250/EN	S50	12	29000	26100	24000+	2100	22
7	310	ED18	Mog	65630	LU310/EN	S67	12	37000	32300	24000+	2100	22
8	400	ED18	Mog	65761	LU400/EN	S51	12	50000	45000	24000+	2100	22
9	1000	E25	Mog	66727	LU1000B/EN	S52	6	140000	126000	24000+	2100	25

APPLICATIONS

- Industrial
- Parking Areas
- Security
- Roadway
- Warehouse



Notes:

For Warnings, Caution Notices, & Operating Instructions, see page HPS-7 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.
Contact EYE Lighting International for further information and availability



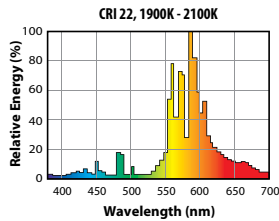
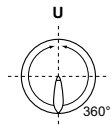
HIGH PRESSURE SODIUM LAMPS

STANDARD HPS

Sunlux® Medium & Mogul Base – Universal Burn

FEATURES

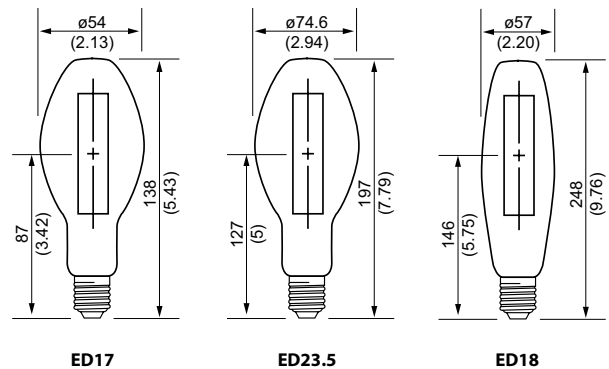
- Economic line of mogul & medium base lamps
- Long life
- Universal burn position



Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code	Case Qty.	Initial Lumens	Mean Lumens	Avg. Life Hours	Color Temp. (K)	CRI
Standard High Pressure Sodium (Medium Base)												
1	35	ED17	Med	65712	LU35/MED	S76	12	2250	2050	16000	1900	22
2	50	ED17	Med	66006	LU50/MED	S68	12	4000	3600	24000	1900	22
3	70	ED17	Med	66202	LU70/MED	S62	12	6300	5350	24000	1900	22
4	100	ED17	Med	65222	LU100/MED	S54	12	9500	8000	24000	2100	22
5	150	ED17	Med	65467	LU150/MED	S55	12	15800	13400	24000	2100	22
Standard High Pressure Sodium (Mogul Base)												
6	50	ED23.5	Mog	65863	LU50	S68	12	4000	3600	24000+	1900	22
7	70	ED23.5	Mog	66061	LU70	S62	12	6300	5500	24000+	1900	22
8	100	ED23.5	Mog	65088	LU100	S54	12	9500	8000	24000+	1900	22
9	150	ED23.5	Mog	65347	LU150/55	S55	12	16000	13800	24000+	1900	22
10	250	ED18	Mog	65576	LU250	S50	12	28000	25200	24000+	1900	22
11	400	ED18	Mog	65769	LU400	S51	12	50000	45000	24000+	1900	22

APPLICATIONS

- Industrial
- Parking Areas
- Security
- Roadway
- Warehouse



Notes:

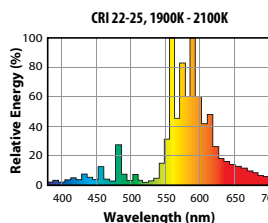
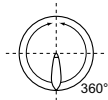
For Warnings, Caution Notices, & Operating Instructions, see page HPS-7 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.
Contact EYE Lighting International for further information and availability

ENERGY SAVING CONVERSION

Sunlux Ultra Ace® EN BT Bulb, Mogul Base – Mercury or Metal Halide to High Pressure Sodium Conversion Lamp

FEATURES

- High Pressure Sodium retrofit in Metal Halide/Mercury lighting systems
- Requires no fixture/ballast changes
- Double the light output of Mercury lamps
- EYE/Iwasaki patented FEC technology protects lighting system components from continuous high voltage pulsing at the end of lamp life
- Universal operating position
- EPA TCLP compliant for non-hazardous waste
- Non-cycling design



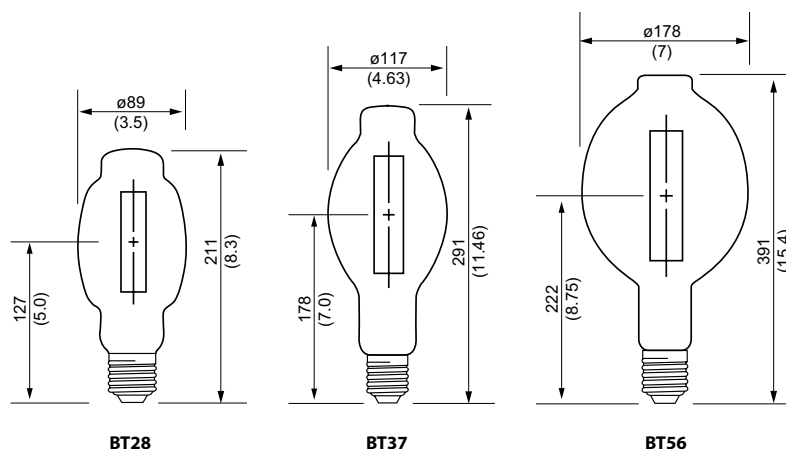
EYE/Iwasaki Patented FEC Technology



Line	Watts (W)	Replaces Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code	Case Qty.	Initial Lumens	Mean Lumens	Avg. Life Hours	Color Temp. (K)	CRI
Energy Saving HPS Conversion from Mercury/Metal Halide (Mogul Base) - Sunlux Ultra Ace™ EN													
1	150	175	BT28	Mog	62345	NH150CE/EN	M57/H39	12	15000	13500	24000	1900	25
2	220	250	BT28	Mog	62443	NH220CE/EN	M58/H37	12	25000	22500	24000	2100	25
3	360	400	BT37	Mog	62541	NH360CE/EN	M59/H33	12	45000	40500	24000	2100	25
4	940	1000	BT56	Mog	62639	NH940BCE/EN	M47/H36	6	130000	117000	24000	2100	25

APPLICATIONS

- Industrial
- Roadway
- Parking Areas
- Warehouse
- Security



Notes:

For Warnings, Caution Notices, & Operating Instructions, see page HPS-7 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.
Contact EYE Lighting International for further information and availability



Warning and Operating Instructions

WARNING

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

This lamp complies with U.S. Federal Standard 21 CFR 1040.30

1. This high intensity electric discharge lamp must be used only with proper circuit and auxiliary equipment and a suitable ballast. This lamp must be operated with a suitable fixture, ballast and ignitor which has an ANSI designation identical to the ANSI designation in this catalog or specified ballast as required, detailed information is contained in each page of this catalog. Failure to comply may result in poor lamp performance and possible personal injury or property damages for which the lamp manufacturer will not be held responsible.
2. Do not scratch glass of bulb or subject this lamp to undue pressure as either may cause lamp to break. Replace scratched, cracked, broken or damaged bulbs immediately.
3. Do not touch hot lamps with fingers, skin or any flammable material. Lamps will remain hot for some time after being turned OFF.
4. This vacuum jacket lamp may implode if broken. Use eye protection and gloves when handling this lamp. Replace lamp at or before end of its rated life.
5. This lamp must be shielded from direct contact with rain, sleet, snow, and other liquids to reduce the possibility of bulb breakage.
6. When operating this lamp, the base temperature should not exceed 210° C (410° F) for mogul base and 190° C (374° F) for medium base, the outer envelope should not exceed 400° C (752° F). The recommended ambient temperature limit for this lamp is -60° C (-76° F) minimum; 50° C (122° F) maximum.
7. Do not use this lamp in a location subject to vibration or shock, unless an adequate vibration-proof fixture is used.
8. Do not use this lamp in a corrosive atmosphere unless an adequate corrosion resistant-fixture is used.
9. Electrically insulate any metal support in contact with glass in order to reduce the risk of decomposition of the glass.
10. Do not look directly at lamp during operation.
11. When the lamp does not operate normally, turn off the power and replace the lamp with a new one.
12. Do not paint the lamp to prevent its overheating or breakage.
13. Do not use this lamp in an ignitable atmosphere (for example gasoline, inflammable spray, thinner, lacquer, dust, etc.) to prevent a fire or explosion unless an adequate fixture is used.
14. Do not use this lamp in a powdery or dusty atmosphere in order to eliminate the overheating of the lamp unless an adequate fixture is used.
15. Follow all instructions in the manufacturer's catalog or on the individual box or instruction sheet.

OPERATING INSTRUCTIONS

1. To install or replace bulb, disconnect power to reduce the risk of electrical shock and allow lamp to cool before replacing.
2. The lamp should be screwed firmly, but not forcibly, into the socket to reduce the possibility of loosening due to vibration. Use of excessive force may result in lamp breakage.
3. This lamp is suitable for operation in any position.
4. Replace lamp at or before the end of its rated life. Allowing lamps to burn until they fail may increase the risk of inner arc tube rupture.

FOR EYE IGNITRON™

1. EYE IGNITRON™ is a High Pressure Sodium lamp that operates on a standard High Pressure Sodium lamp ballast without an external ignitor.
2. Disconnect the external ignitor in the operating circuit.
3. For remote applications, the cable from lamp to ballast should be limited to 15m (50 ft) maximum length for lamps up to 150W and up to 25m (80 ft) for all lamps rated 200W and above, because of reduction of pulse volts.

FOR EYE SUNLUX ULTRA ACE™

1. EYE Sunlux Ultra Ace™ are High Pressure Sodium lamps that operate on Mercury and Metal Halide ballasts without an external ignitor and peaking capacitor.
2. See application chart for appropriate ballast for each lamp wattage in this catalog.
3. Eliminate the peaking capacitor in the ballast circuit for the correct operation of the lamp.
4. For remote applications, the cable from lamp to ballast should be limited to 25m (80 ft) maximum length because of a reduction of pulse volts.
5. Ballast circuit: On twin lamp ballast, a series circuit will not be suitable for the lamp. Parallel circuit and series circuit of regulator type ballast will not be suitable for operation of the lamp.
6. Do not use this lamp with a conventional type High Pressure Sodium ballast.

EYE LIGHTING INTERNATIONAL OF NORTH AMERICA INC. will not be responsible for property damage, personal injury or poor lamp performance due to failure to follow the above instructions. The statements contained herein do not create, and shall not be construed as creating, any warranties.

For more information regarding instructions or the above warnings, contact EYE LIGHTING INTERNATIONAL OF NORTH AMERICA INC. at 9150 Hendricks Rd., Mentor, Ohio 44060, 888-665-2677.

Note : Unless otherwise noted in this catalog, EYE High Pressure Sodium lamps can be operated with ballasts made in accordance with I.E.C. recommendations allowing for voltage fluctuations of $\pm 10\%$.

PRODUCT CROSS REFERENCE

EYE LIGHTING				COMPETITOR PRODUCT DESCRIPTIONS			
Page #	Product Code	Product Description	ANSI Code/ Ballast Ref.	GE	OSRAM/SYLVANIA	PHILIPS	VENTURE
High Output HPS with Internal Ignitor (Mogul Base)							
HPS-4	59674	LU50/I/EN	S68			NO EQUAL	
HPS-4	59685	LU70/I/EN	S62			NO EQUAL	
HPS-4	59696	LU100/I/EN	S54			NO EQUAL	
HPS-4	59707	LU150/55/I/EN	S55			NO EQUAL	
HPS-4	59914	LU200/I/EN	S66			NO EQUAL	
HPS-4	60012	LU250/I/EN	S50			NO EQUAL	
HPS-4	60050	LU310/I/EN	S67			NO EQUAL	
HPS-4	60110	LU400/I/EN	S51			NO EQUAL	
HPS-4	59718	LU1000B/I/EN	S52			NO EQUAL	
Energy Saving, High Output HPS with Internal Ignitor (Mogul Base)							
HPS-4	59919	LU225/I/EN5	S50			NO EQUAL	
HPS-4	60105	LU360/I/EN5	S51			NO EQUAL	
Sunlux EN Environmentally Friendly (TCLP) High Pressure Sodium (Mogul Base)							
HPS-6	65859	LU50/EN	S68	LU50/H/ECO	LU50/ECO	C50S68/ALTO	
HPS-6	66055	LU70/EN	S62	LU70/H/ECO	LU70/ECO	C70S62/ALTO	
HPS-6	65075	LU100/EN	S54	LU100/H/ECO	LU100/ECO	C100S54/ALTO	
HPS-6	65320	LU150/55/EN	S55	LU150/55/H/ECO	LU150/55/ECO	C150S55/ALTO	
HPS-6	65516	LU200/EN	S66	LU200/H/ECO	LU200/ECO	C200S66/ALTO	
HPS-6	65565	LU250/EN	S50	LU250/H/ECO	LU250/ECO	C250S50/ALTO	
HPS-6	65630	LU310/EN	S67		LU310/ECO		
HPS-6	65761	LU400/EN	S51	LU400/H/ECO	LU400/ECO	C400S51/ALTO	
HPS-6	66727	LU1000B/EN	S52	LU1000/H/ECO	LU1000/ECO	C1000S52/ALTO	
Standard High Pressure Sodium (Medium Base)							
HPS-5	65712	LU35/MED	S76	LU35/MED	LU35/MED	C35S76/M	
HPS-5	66006	LU50/MED	S68	LU50/MED	LU50/MED	C50S68/M	
HPS-5	66202	LU70/MED	S62	LU70/MED	LU70/MED	C70S62/M	
HPS-5	65222	LU100/MED	S54	LU100/MED	LU100/MED	C100S54/M	
HPS-5	65467	LU150/MED	S55	LU150/MED	LU150/MED	C150S55/M	
Standard High Pressure Sodium (Mogul Base)							
HPS-5	65863	LU50	S68	LU50/H/ECO	LU50/ECO	C50S68/ALTO	
HPS-5	66061	LU70	S62	LU70/H/ECO	LU70/ECO	C70S62/ALTO	
HPS-5	65088	LU100	S54	LU100/H/ECO	LU100/ECO	C100S54/ALTO	
HPS-5	65347	LU150/55	S55	LU150/55/H/ECO	LU150/55/ECO	C150S55/ALTO	
HPS-5	65576	LU250	S50	LU250/H/ECO	LU250/ECO	C250S50/ALTO	
HPS-5	65769	LU400	S51	LU400/H/ECO	LU400/ECO	C400S51/ALTO	
Energy Saving HPS Conversion from Mercury/Metal Halide (Mogul Base) - Sunlux Ultra Ace™ EN							
HPS-6	62345	NH150CE/EN	M57/H39	LUH150/EZ	ULX150	C150S63 Retrolux	
HPS-6	62443	NH220CE/EN	M58/H37	LUH215/EZ	ULX215	C215S675 Retrolux	
HPS-6	62541	NH360CE/EN	M59/H33	LUH360/EZ	ULX360	C360S64 Retrolux	
HPS-6	62639	NH940BCE/EN	M47/H36		ULX880		



Lamp Family & Application Guide	HG-2	Product Description Guide	HG-2
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STANDARD MERCURY

E & ED Bulb, Medium Base – Universal Burn	HG-3
E & BT Bulb, Mogul Base – Universal Burn	HG-4
Reflector Bulb, Medium & Mogul Base – Universal Burn.	HG-5

INCANDESCENT TO MERCURY CONVERSION

Self-Ballasted, E & BT Bulb, Medium & Mogul Base – Universal Burn Incandescent to Mercury Conversion Lamp	HG-6
Self-Ballasted, Reflector Bulb, Medium & Mogul Base – Universal Burn Incandescent to Mercury Conversion Lamp.	HG-7

WARNING AND OPERATING INSTRUCTIONS

Warning and Operating Instructions	HG-8
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PRODUCT CROSS REFERENCE

Product Cross Reference.	HG-9
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Lamp Family & Application Guide

LAMP FAMILY	LAMP FEATURES	WATTS	APPLICATION	PAGE
STANDARD	Long-life, nickel-plated base	50W through 1000W	- Industrial - Landscape - Parking Areas - Roadway - Security - Sports Lighting	HG-3
REFLECTOR	Long-life, nickel-plated base, reflector type	50W through 400W	- Industrial - Landscape - Manufacturing - Parking Areas - Specialty - Sports Lighting	HG-5
SELF-BALLASTED	Instant-on like incandescent. Converts an incandescent socket to Mercury technology by changing the lamp. Long-life, nickel-plated base, no ballast required. 1.5 times brighter than incandescent.	100W through 750W	- Home Garages & Decks - Park & Garden Lighting - Post Top - Security - Small-Scale Floodlighting - Special Effects - Stairwells - Warehouse	HG-6
SELF-BALLASTED REFLECTOR	Instant-on like incandescent. Long-life, nickel-plated base, reflector type, no ballast required. 8 times longer life than incandescent.	160W through 750W	- Home Garages & Deck - Park & Garden Lighting - Post Top - Security - Small-Scale Floodlighting - Special Effects - Stairwells - Warehouse	HG-7

Product Description Guide

MERCURY LAMPS

H F / 250 / PD

Lamp Type	Bulb Type	Lamp Wattage	Coating, Beam, or Special Feature
H: Mercury Lamp	F: Coated bulb R: Reflector bulb T: Tubular bulb RF: Phosphor coating on aluminum reflector RFF: Phosphor coating on face of lamp (Diffused)		PD: Phosphor coating W: Wide beam S: Reduced outer jacket B: High voltage arc tube 265V

SELF-BALLASTED MERCURY LAMPS

220/230V 160W SB / E24 W

Supply Voltage	Lamp Wattage	Glass Type	Bulb Shape & Size	Coating Type
		SB: Self ballasted HSB: Low Wattage Self ballasted with hard glass bulb		W: Phosphor coated RF: Phosphor coating on aluminum reflector RFF: Phosphor coating on face of lamp (Diffused) FL: Flood type-silica coated aluminum reflector

Notes:

For Warnings, Caution Notices, & Operating Instructions, see page HG-8 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.

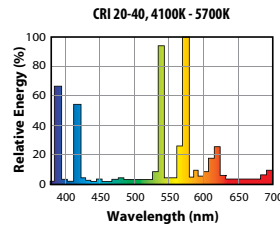
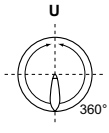


STANDARD MERCURY

E & ED Bulb, Medium Base – Universal Burn

FEATURES

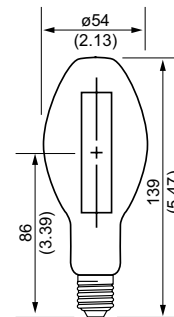
- Full line product offering
- Long life
- Nickel-plated base will not seize in the socket
- Heavy duty construction, superior quality



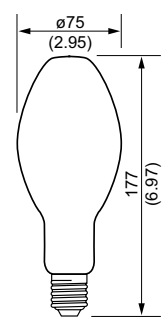
Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code	Case Qty.	Initial Lumens	Mean Lumens	Avg. Life Hours	Color Temp. (K)	CRI
E & ED Bulb Series Mercury (Medium Base)												
1	50	E17	Med	69966	H50	H46	24	1650	1300	8000	5700	20
2	50	E17 Coated	Med	70407	HF50PD	H46	24	1900	1500	8000	4100	40
3	75	E17	Med	70015	H75	H43	24	2700	2203	16000	5700	20
4	75	E17 Coated	Med	70554	HF75PD	H43	24	3000	2400	16000	4100	40
5	80	E17 Coated	Med	70603	HF80PD	--	24	3600	2880	16000	4100	40
6	100	E17	Med	69623	H100/MED	H38	24	4000	3000	24000	5700	20
7	100	E17 Coated	Med	70113	HF100PD/MED	H38	24	4500	3600	24000	4100	40
8	125	E24 Coated	Med	70211	HF125/PD	--	24	6250	5100	24000	4100	40
9	175	ED17	Med	71510	H175/MED	H39E	24	7800	6240	10000	5700	20

APPLICATIONS

- Industrial
- Landscape
- Parking Areas
- Roadway
- Security
- Sports Lighting



ED17, E17



E24

Notes:

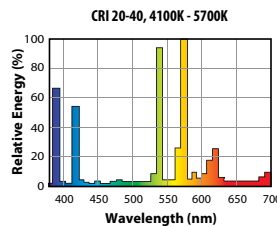
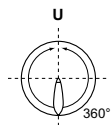
For Warnings, Caution Notices, & Operating Instructions, see page HG-8 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.

STANDARD MERCURY

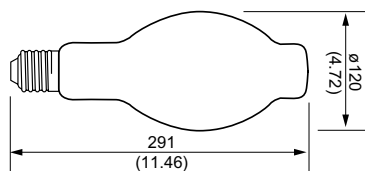
E & BT Bulb, Mogul Base – Universal Burn

FEATURES

- Full line product offering
- Long life
- Nickel-plated base will not seize in the socket
- Heavy duty construction, superior quality



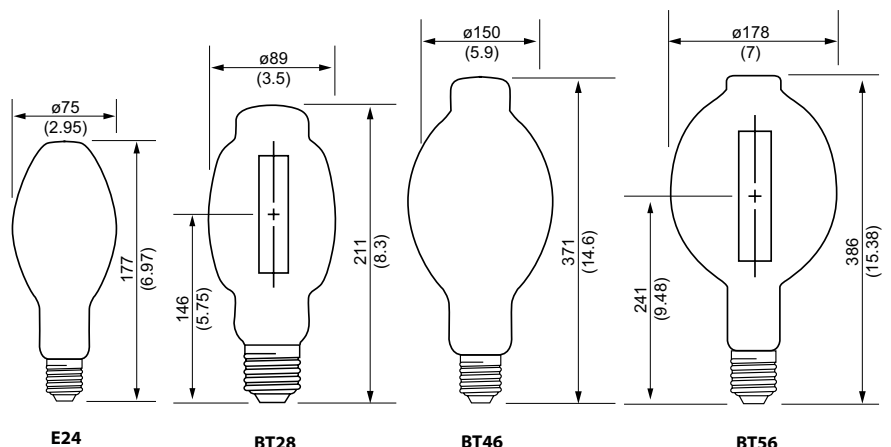
Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code	Case Qty.	Initial Lumens	Mean Lumens	Avg. Life Hours	Color Temp. (K)	CRI
E and BT Bulb Series Mercury (Mogul Base)												
1	100	E24	Mog	69672	H100	H38	24	4000	3000	24000	5700	20
2	100	E24 Coated	Mog	70162	HF100PD	H38	24	4500	3600	24000	4100	40
3	175	BT28	Mog	69770	H175	H39	12	7800	6365	24000	5700	20
4	175	BT28 Coated	Mog	70260	HF175PD	H39	12	8900	7262	24000	4100	40
5	250	BT28	Mog	69819	H250	H37	12	12000	9792	24000	5700	20
6	250	BT28 Coated	Mog	70309	HF250PD	H37	12	13700	11179	24000	4100	40
7	400	BT37	Mog	69868	H400	H33	12	21000	17136	24000	5700	20
8	400	BT37 Coated	Mog	70358	HF400PD	H33	12	24000	19584	24000	4100	40
9	700	BT46	Mog	70456	HF700BPD	H35	6	44000	35904	24000	4100	40
10	1000	BT56	Mog	69721	H1000B	H36	6	58000	46400	24000	5700	20
11	1000	BT56 Coated	Mog	70064	HF1000BPD	H36	6	64000	52224	24000	4100	40



BT37

APPLICATIONS

- Industrial
- Landscape
- Parking Areas
- Roadway
- Security
- Sports Lighting



Notes:

For Warnings, Caution Notices, & Operating Instructions, see page HG-8 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.

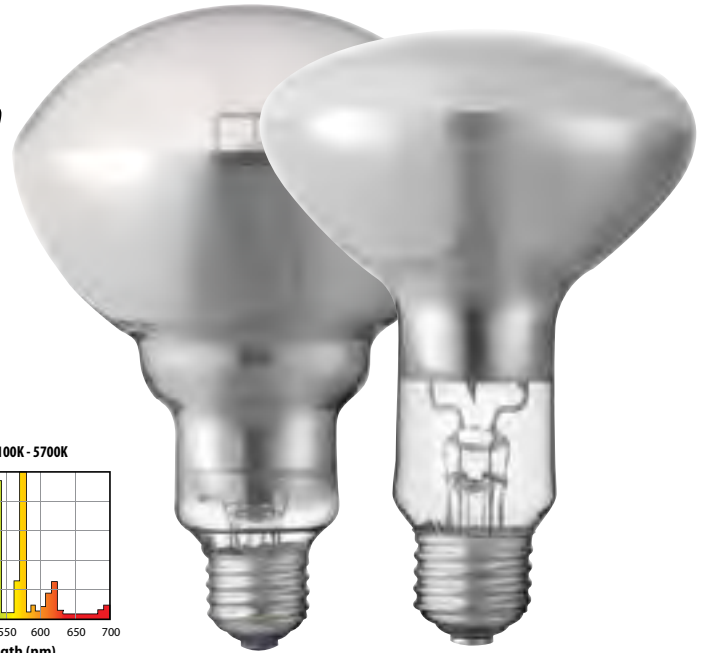
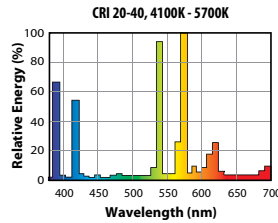
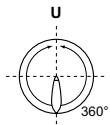


STANDARD MERCURY

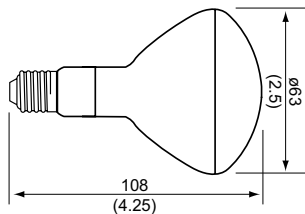
Reflector Bulb, Medium & Mogul Base – Universal Burn

FEATURES

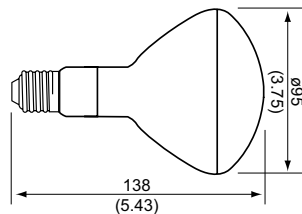
- Full reflector line product offering
- Medium, mogul designs available
- Long life
- Nickel-plated base will not seize in the socket
- Heavy duty construction, superior quality



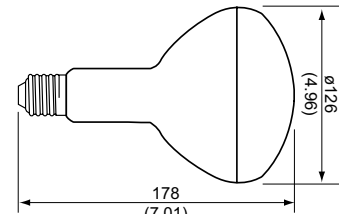
Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code	Case Qty.	Initial Lumens	Beam Lumens	Avg. Life Hours	Color Temp. (K)	CRI	Beam Angle (°)	Peak Intensity
Reflector Mercury (Medium Base)														
1	50	R20	Med	70995	HR50W/S	H46	24	1150	1050	8000	5700	25	160	130
2	50	R30	Med	70946	HR50W	H46	12	1050	750	8000	5700	25	110	400
3	100	R30	Med	70701	HR100W/R30	H38	12	2900	2000	24000	5700	25	115	950
4	100	RD40	Med	70750	HR100W	H38	6	3100	2000	24000	5700	25	100	1250
5	100	RD40	Med	71289	HRFF100PD	H38	6	2800	2240	24000	4100	40	110	850
6	100	R30	Med	71250	HRFF100PD/R30	H38	12	2800	1600	24000	4100	40	125	620
7	175	RD40	Med	70799	HR175W	H39	6	5800	3700	24000	5700	25	100	2200
8	175	RD40	Med	71338	HRFF175PD	H39	6	5300	3000	24000	4100	40	110	1500
Reflector Mercury (Mogul Base)														
9	400	R57	Mog	71191	HRF400PD	H33	6	15500	14000	24000	4100	40	130	4000



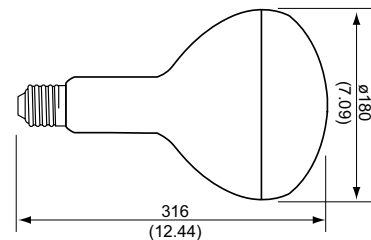
R20



R30



RD40



R57

APPLICATIONS

- Industrial
- Landscape
- Manufacturing
- Parking Areas
- Specialty
- Sports Lighting

Notes:

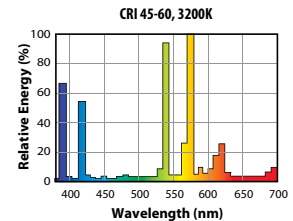
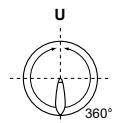
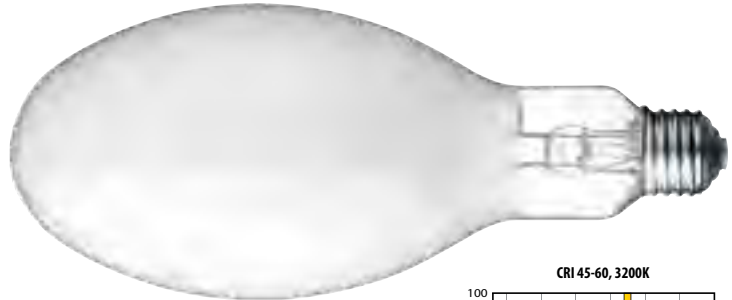
For Warnings, Caution Notices, & Operating Instructions, see page HG-8 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.

INCANDESCENT TO MERCURY CONVERSION

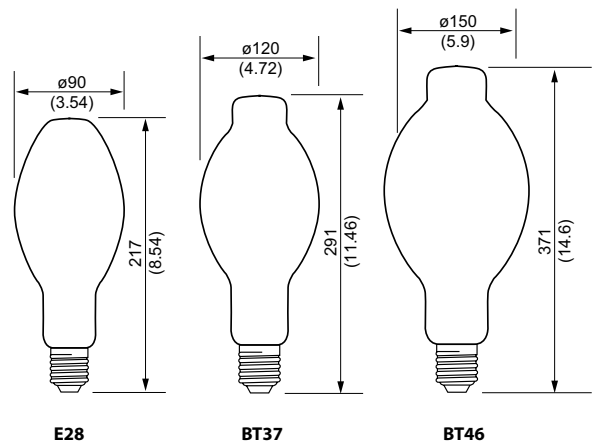
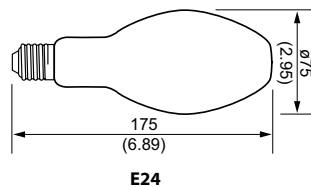
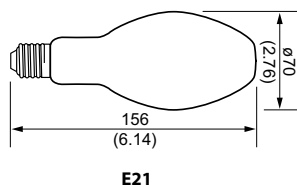
Self-Ballasted, E & BT Bulb, Medium & Mogul Base – Universal Burn Incandescent to Mercury Conversion Lamp

FEATURES

- Instant-on
- Eight times longer life compared to incandescent
- Screws into existing incandescent socket
- No ballast required
- Nickel-plated base will not seize in the socket
- Incandescent color in a HID lamp



Line	Watts (W)	Bulb	Base	Product Code	Product Description	Case Qty.	Initial Lumens	Mean Lumens	Avg. Life Hours	Color Temp. (K)	CRI	Line Voltage
Self-Ballasted E Bulb Series Mercury (Medium Base)												
1	100	E21 Coated	Med	67947	100WSB/E21W	24	1100	830	6000	3200	60	120
2	160	E24 Coated	Med	67996	160WSB/E24W	24	2550	1910	12000	3200	60	120
3	160	E24 Coated	Med	68780	220/230V160W/E24W	24	3000	2250	8000	3300	60	220/230
4	250	E28 Coated	Med	68290	250WSB/E28MED	20	5000	3750	12000	3200	50	120
5	250	E28 Coated	Med	68829	220/230V250W/E28W/MED	20	5700	4280	12000	3300	50	220/230
Self-Ballasted E and BT Bulb Series Mercury (Mogul Base)												
6	250	E28 Coated	Mog	68339	250WSB/E28/MOG	20	5000	3750	12000	3200	50	120
7	250	E28 Coated	Mog	68878	220/230V250W/E28W/MOG	20	5700	4280	12000	3300	50	220/230
8	450	BT37 Coated	Mog	68584	450WSB/BT37W	12	10000	7500	12000	3200	50	120
9	450	BT37 Coated	Mog	68976	230/240V450W/BT37W	12	11500	8830	16000	3300	50	230/240
10	750	BT46 Coated	Mog	68682	750WSB/BT46W	6	19000	14250	16000	3200	45	120



APPLICATIONS

- Home Garages & Decks
- Park & Garden Lighting
- Post Top
- Security
- Small-Scale Floodlighting
- Special Effects
- Stairwells
- Warehouse

Notes:

For Warnings, Caution Notices, & Operating Instructions, see page HG-8 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.

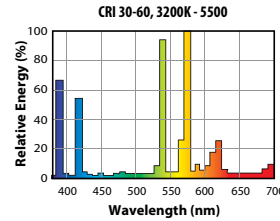
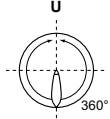


INCANDESCENT TO MERCURY CONVERSION

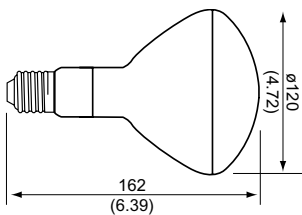
Self-Ballasted, Reflector Bulb, Medium & Mogul Base – Universal Burn Incandescent to Mercury Conversion Lamp

FEATURES

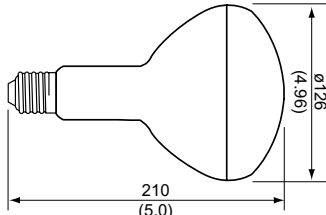
- Instant-on
- Eight times longer life compared to incandescent
- Screws into existing incandescent socket
- No ballast required
- Nickel-plated base will not seize in the socket
- Incandescent color in a HID lamp



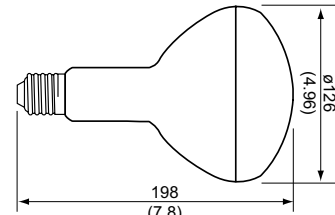
Line	Watts (W)	Bulb	Base	Product Code	Product Description	Case Qty.	Initial Lumens	Beam Lumens	Avg. Life Hours	Color Temp. (K)	CRI	Beam Angle (°)	Peak Intensity	Line Voltage
Self-Ballasted Reflector Mercury (Medium Base)														
1	160	RSP38	Med	68192	160WSB/RSP38RF	12	1520	1220	10000	3200	60	120	480	120
2	160	RSP38	Med	68241	160WSB/RSP38RFF	12	1520	1220	10000	3200	60	120	480	120
3	160	R40 (A)	Med	68143	160WSB/R40FL	12	1680	1420	10000	4500	40	130	500	120
4	250	R40 (B)	Med	68388	250WSB/R40FL	12	3200	2700	12000	4500	40	130	800	120
Self-Ballasted Reflector Mercury (Mogul Base)														
5	450	R57	Mog	68633	450WSB/R57FL	6	7600	6500	16000	4500	40	130	1800	120
6	750	R57	Mog	68731	750WSB/R57FL	6	12600	10700	16000	5000	40	130	3300	120
7	750	R57	Mog	69074	230/240V750W/R57FL	6	14000	12000	16000	5500	30	130	3900	230/240
8	750	R57	Mog	69123	240/250V750W/R57FL	6	14000	12000	16000	4000	40	130	3900	240/250



RSP38



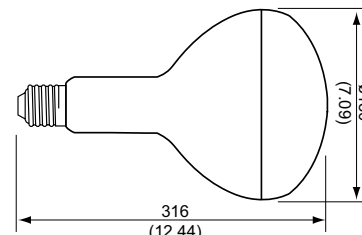
R40 (A)



R40 (B)

APPLICATIONS

- Home Garages & Decks
- Park & Garden Lighting
- Post Top
- Security
- Small-Scale Floodlighting
- Special Effects
- Stairwells
- Warehouse



R57

Notes:

For Warnings, Caution Notices, & Operating Instructions, see page HG-8 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.

Warning and Operating Instructions

⚠ WARNING

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

This lamp complies with U.S. Federal Standard 21 CFR 1040.30

1. EYE Mercury lamps must be used only with proper circuit and auxiliary equipment and a suitable ballast. This lamp must be operated with a suitable fixture and ballast which has an ANSI designation identical to the ANSI designation in this catalog. Do not operate in excess of rated voltages as this will increase lamp pressure and the possibility of shattering. Failure to comply with this may result in poor lamp performance and possible personal injury or property damage for which the manufacturer will not be held responsible.
2. Do not scratch bulb or subject this lamp to undue pressure as either may cause lamp to break. Replace scratched, cracked, broken or damaged bulbs immediately.
3. Do not touch hot lamps with fingers, skin, or any flammable material. Lamps may remain hot after being turned OFF.
4. This lamp must be shielded from direct contact with rain, sleet, snow, and other liquids to reduce the possibility of bulb breakage. This lamp may implode if broken. Use eye protection and gloves when handling this lamp.
5. When operating the hard glass bulb lamp, the base temperature should not exceed 210° C (410° F), and the outer envelope should not exceed 400° C (752° F). When operating the soft glass bulb lamp, the base temperature should not exceed 190° C (374° F), and the outer envelope should not exceed 250° C (482° F). The recommended ambient temperature limit for this lamp is -5° C (23° F) minimum; 40° C (104° F) maximum. For EYE Black Light, when operating this lamp, the base temperature should not exceed 190° C (374° F) for E26 and E27 base, and 210° C (410° F) for E39 and E40 base. The outer envelope should not exceed 350° C (662° F). Do not use this lamp in a fixture that fails to meet these temperature specifications.
6. Do not use this lamp in a location subject to vibration or shock, unless an adequate vibration-proof fixture is used.
7. Do not use this lamp in a corrosive atmosphere unless an adequate corrosion resistant fixture is used.
8. Replace lamp at or before end of rated life. Allowing lamps to burn until they fail may increase the risk of rupture.
9. Electrically insulate any metal support in contact with glass in order to reduce the risk of decomposition of the glass.
10. Do not look directly at lamp during operation to avoid eye inflammation from short wave ultraviolet radiation.
11. When the lamp does not operate normally, turn off the power and replace the lamp with a new one.
12. Do not paint the lamp to prevent its overheating or breakage.
13. Do not use this lamp in an ignitable atmosphere (for example gasoline, inflammable spray, thinner, lacquer, dust, etc.) to prevent a fire or explosion unless an adequate fixture is used.
14. Do not use this lamp in a powdery or dusty atmosphere in order to eliminate the overheating of the lamp unless an adequate fixture is used.
15. The radiation from this lamp may cause colored objects to fade unless an adequate fixture is used.
16. Follow all instructions in the manufacturer's catalog or on the individual box or instruction sheet.
17. Do not use this lamp in a fixture designed for less than the rated lamp wattage.
18. Mercury lamps are constructed of an outer glass jacket and an internal arc tube made of quartz. The arc tube operates under high pressure and high temperatures. The arc tube and outer jacket may unexpectedly rupture due to internal causes or external factors such as system malfunction or misapplication, creating a risk of personal injury, property damage, burns and fire. To reduce this risk the following instructions must be adhered to.

OPERATING INSTRUCTIONS

1. To install or replace bulb, disconnect power to reduce the risk of electrical shock and allow lamp to cool before replacing.
2. The lamp should be firmly but not forcibly screwed into the socket to reduce the possibility of loosening due to vibration. Use of excessive force or pressure may result in lamp breakage.
3. This Mercury lamp is suitable for operation in any position.
4. This Mercury lamp should operate with appropriate ballast.

FOR EYE SELF-BALLASTED MERCURY LAMPS

1. Variation of AC line volts should be kept to within $\pm 5\%$ of the rated voltage of the lamps. There is a chance the Self-Ballasted Mercury lamp will extinguish when the line volts drops suddenly to less than 95% of the rated voltage.
2. EYE Self-Ballasted Mercury lamps do not require a ballast. The ballast is built in the lamp.

EYE LIGHTING INTERNATIONAL OF NORTH AMERICA INC. will not be responsible for property damage, personal injury or poor lamp performance due to failure to follow the above instructions. The statements contained herein do not create, and shall not be construed as creating, any warranties.

For more information regarding instructions or the above warnings, contact EYE LIGHTING INTERNATIONAL OF NORTH AMERICA INC. at 9150 Hendricks Rd., Mentor, Ohio 44060, 888-665-2677.

Note : Unless otherwise noted in this catalog, EYE Mercury lamps can be operated with ballasts made in accordance with I.E.C. recommendations allowing for voltage fluctuations of $\pm 10\%$.



MERCURY LAMPS

PRODUCT CROSS REFERENCE

EYE LIGHTING				COMPETITOR PRODUCT DESCRIPTIONS			
Page #	Product Code	Product Description	ANSI Code/ Ballast Ref.	GE	OSRAM/SYLVANIA	PHILIPS	VENTURE
E & ED Bulb Series Mercury (Medium Base)							
HG-3	69966	H50	H46	H50 E27			
HG-3	70407	HF50PD	H46	H50 DX E27	H45/46DL-40/50/DX	H46DL-40-50/DX	
HG-3	70015	H75	H43		NO EQUAL		
HG-3	70554	HF75PD	H43	HR75DX43	H43AV-75/DX	H43AV-75/DX	
HG-3	70603	HF80PD			NO EQUAL		
HG-3	69623	H100/MED	H38		NO EQUAL		
HG-3	70113	HF100PD/MED	H38	HR100DX38/MED	H38AV-100/DX	H38MP-100/DX	
HG-3	70211	HF125/PD	--		NO EQUAL		
HG-3	71510	H175/MED	H39E		NO EQUAL		
E and BT Bulb Series Mercury (Mogul Base)							
HG-4	69672	H100	H38	HR100A38	H38HT-100	H38HT-100	
HG-4	70162	HF100PD	H38	HR100DX38	H38JA-100/DX	H38JA-100/DX	
HG-4	69770	H175	H39	HR175A39	H39KB-175	H39KB-175	
HG-4	70260	HF175PD	H39	HR175DX39	H39KC-175/DX	H39KC-175/DX	
HG-4	69819	H250	H37	HR250A37	H37KB-250	H37KB-250	
HG-4	70309	HF250PD	H37	HR250DX37	H37KC-250/DX	H37KC-250/DX	
HG-4	69868	H400	H33	HR400A33	H33CD-400	H33CD-400	
HG-4	70358	HF400PD	H33	HR400DX33	H33GL-400/DX	H33GL-400/DX	
HG-4	70456	HF700PD	H35		NO EQUAL		
HG-4	69721	H1000B	H36	HR1000A36	H36GV-1000	H35GV-1000	
HG-4	70064	HF1000BPD	H36	HR1000DX36	H36GW-1000/DX	H36GW-1000/DX	
Reflector Mercury (Medium Base)							
HG-5	70995	HR50W/S	H46		NO EQUAL		
HG-5	70946	HR50W	H46		NO EQUAL		
HG-5	70701	HR100W/R30	H38	HR100W/R30			
HG-5	70750	HR100W	H38	HR100RFL38			
HG-5	71289	HRFF100PD	H38	HR100RDXFL38	H38BP-100/DX		
HG-5	71250	HRFF100PD/R30	H38		NO EQUAL		
HG-5	70799	HR175W	H39	HR175RFL39		H39BM-175	
HG-5	71338	HRFF175PD	H39	HR175RDXFL39	H39BP-175/DX	H39BP-175/DX	
Reflector Mercury (Mogul Base)							
HG-5	71191	HRF400PD	H33	HR400RDXFL33		H33FS-400/DX	
Self-Ballasted E Bulb Series Mercury (Medium Base)							
HG-6	67947	100WSB/E21W			NO EQUAL		
HG-6	67996	160WSB/E24W		HSB160/M		S160E23/DX	
HG-6	68780	220/230V160W/E24W			NO EQUAL		
HG-6	68290	250WSB/E28MED		HSB250/M		S250E28/DX/M	
HG-6	68829	220/230V250W/E28W/MED			NO EQUAL		
Self-Ballasted E and BT Bulb Series Mercury (Mogul Base)							
HG-6	68339	250WSB/E28/MOG		HSB250		S250E28/DX 120V MOG	
HG-6	68878	220/230V250W/E28W/MOG			NO EQUAL		
HG-6	68584	450WSB/BT37W		HSB450		S450BT37/C	
HG-6	68976	230/240V450W/BT37W				S450BT37/C230V	
HG-6	68682	750WSB/BT46W			NO EQUAL		
HG-6	68927	230/240V750W/BT46W			NO EQUAL		
Self-Ballasted Reflector Mercury (Medium Base)							
HG-7	68192	160WSB/RSP38RF	--		NO EQUAL		
HG-7	68241	160WSB/RSP38RFF	--		NO EQUAL		
HG-7	68143	160WSB/R40FL	B87		NO EQUAL		
HG-7	68388	250WSB/R40FL	B94		NO EQUAL		
Self-Ballasted Reflector Mercury (Mogul Base)							
HG-7	68633	450WSB/R57FL	--		NO EQUAL		
HG-7	68731	750WSB/R57FL	B78	HSB750R/120		S750R57120V	
HG-7	69074	230/240V750W/R57FL	--	HSB750R/240V			
HG-7	69123	240/250V750W/R57FL	--		NO EQUAL		

Product Description Guide **CONV-2**

HPS TO METAL HALIDE CONVERSION

Multi-Metal Ace™ Mogul Base –
HPS to Metal Halide Conversion Lamp **CONV-3**

HPS TO HIGH COLOR RENDERING CERAMIC TECHNOLOGY

Cera Arc® High Performance,
Mogul Base Ceramic Technology –
HPS to Metal Halide Conversion Lamp **CONV-4**

Cera Tek™ Mogul Base – Ceramic Technology
on CWA MH/Hg Core & Coil Ballast **CONV-4**

HPS TO HIGH PERFORMANCE CERAMIC TECHNOLOGY

Cera Arc® Mogul Base – HPS to
Ceramic Technology Conversion Lamp **CONV-5**

MERCURY TO HIGH COLOR RENDERING METAL HALIDE

Clean Ace™ (Daylight) Mogul Base – 6500K CCT/90CRI
Mercury to Metal Halide Conversion Lamp **CONV-6**

MERCURY OR METAL HALIDE TO HPS

Sunlux Ultra Ace® EN BT Bulb, Mogul Base –
Mercury or Metal Halide to
High Pressure Sodium Conversion Lamp **CONV-7**

HIGH COLOR RENDERING ON STANDARD CWA BALLAST

Clean Arc™ (Daylight) Mogul Base –
6500K CCT/90CRI on Standard
Metal Halide CWA Ballast Conversion Lamp. **CONV-8**

HIGH OUTPUT PROBE START

Multi-Metal Ignitek™ Pulse Start Technology
on M59/M165 Probe Start Metal Halide System **CONV-9**

INCANDESCENT TO MERCURY

Self-Ballasted, E & BT Bulb, Medium & Mogul Base –
Universal Burn Incandescent
to Mercury Conversion Lamp **CONV-10**

Self-Ballasted, Reflector Bulb, Medium
& Mogul Base – Universal Burn
Incandescent to Mercury Conversion Lamp **CONV-11**

ENERGY SAVING LED UPGRADE

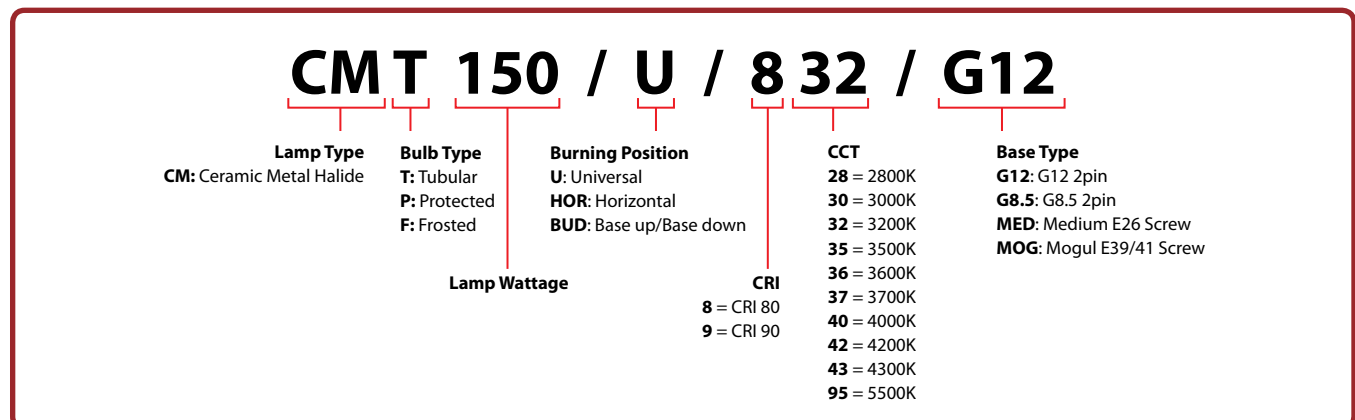
LEDioc™ LED Upgrade for
Post Top & Pendant Mount
Decorative Luminaires **CONV-12**

PRODUCT CROSS REFERENCE

Product Cross Reference. **CONV-13**

Product Description Guide

CERA ARC CERAMIC TECHNOLOGY LAMPS





Product Description Guide

METAL HALIDE LAMPS

M F 400 X / U

Lamp Type
M: Metal Halide Lamp

Bulb Type
F: Frosted bulb
P: Shrouded arc tube
T: Tubular bulb
R: Reflector bulb

Lamp Wattage

Lamp Feature
X: Premium performance
SX: High output
D: Daylight 6500K
PS: Pulse Start

Burning Position
U: Universal
BU: Base up
BD: Base down
HOR: Horizontal
BUH: Base up to Horizontal

HIGH PRESSURE SODIUM LAMPS

LU 400 / I / EN

Lamp Type
LU: High Pressure Sodium Lamp
NH: High Pressure Sodium Lamp with special features

Lamp Wattage

Ignitron

Lamp Feature
EN: Environmental friendly
CE: Sunlux Ultra Ace Lamp

MERCURY LAMPS

H F / 250 / PD

Lamp Type
H: Mercury Lamp

Bulb Type
F: Coated bulb
R: Reflector bulb
T: Tubular bulb
RF: Phosphor coating on aluminum reflector
RFF: Phosphor coating on face of lamp (Diffused)

Lamp Wattage

Coating, Beam, or Special Feature
PD: Phosphor coating
W: Wide beam
S: Reduced outer jacket
B: High voltage arc tube 265V

SELF-BALLASTED MERCURY LAMPS

220/230V 160W SB / E24 W

Supply Voltage

Lamp Wattage

Glass Type
SB: Self ballasted
HSB: Low Wattage Self ballasted with hard glass bulb

Bulb Shape & Size

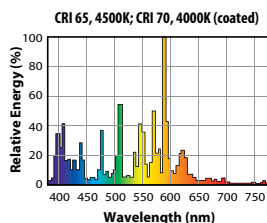
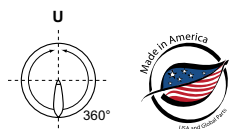
Coating Type
W: Phosphor coated
RF: Phosphor coating on aluminum reflector
RFF: Phosphor coating on face of lamp (Diffused)
FL: Flood type-silica coated aluminum reflector

HPS TO METAL HALIDE CONVERSION

Multi-Metal Ace™ Mogul Base – HPS to Metal Halide Conversion Lamp

FEATURES

- Metal Halide conversion in High Pressure Sodium lighting systems
- Works in High Pressure Sodium lighting systems with an ignitor
- Improves color rendering index from 20 CRI to 65 CRI
- Nickel-plated base will not seize in the socket



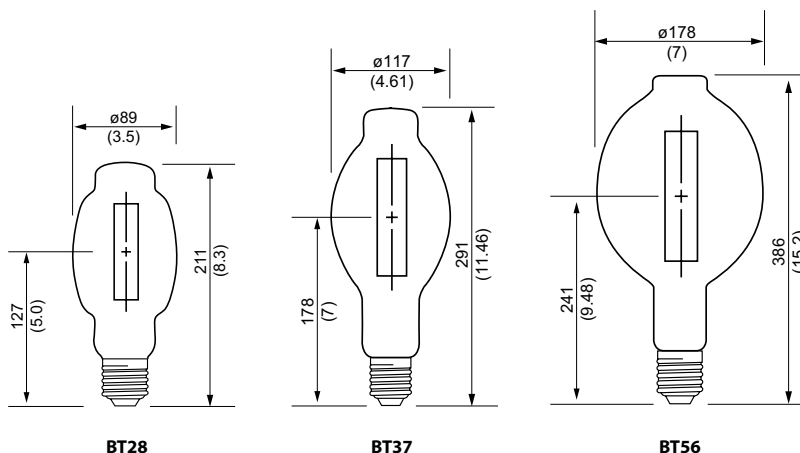
Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code/ Ballast Ref.	Case Qty.	Initial Lumens ^o		Mean Lumens ^o		Avg. Life Hours ^o		Color Temp. (K)	CRI	Fix. ¹ Req.	Burn Pos.
Metal Halide Conversion from High Pressure Sodium (Mogul Base)																	
1	250	BT28	Mog	51788	M250X/U/LU	S50	12	19100	16700	14300	12400	10000	7500	4500	65	E	U
2	250	BT28 Coated	Mog	51935	MF250X/U/LU	S50	12	18100	16600	13600	11800	10000	7500	4000	70	E	U
3	400	BT28	Mog	51886	M400X/U/LU/BT28	S51	12	36600	32700	27300	24400	20000	15000	4500	65	E	U
4	400	BT28 Coated	Mog	52033	MF400X/U/LU/BT28	S51	12	34800	31800	25900	25200	20000	15000	4000	70	E	U
5	400	BT37	Mog	51837	M400X/U/LU	S51	12	36600	32700	27300	24400	20000	15000	4500	65	E	U
6	400	BT37 Coated	Mog	51984	MF400X/U/LU	S51	12	34800	31800	25900	23200	20000	15000	4000	70	E	U
7	1000	BT56	Mog	51605	M1000BX/U/LU	S52	6	110200	105500	85500	81700	12000	9000	4200	65	E	U

¹ E = Enclosed Fixture Required | See page TECH-8 for further information regarding fixture requirements

^o V = Vertical Operation, H = Horizontal Operation

APPLICATIONS

- Manufacturing
- Roadway
- Parking Areas
- Warehouse



Notes:

For Warnings, Caution Notices, & Operating Instructions, see page MH-20 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.



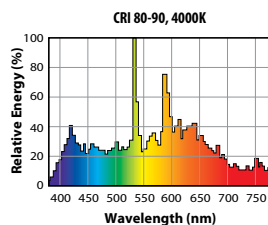
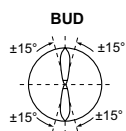
CONVERSION LAMPS

HPS TO HIGH COLOR RENDERING CERAMIC TECHNOLOGY

Cera Arc® High Performance, Mogul Base Ceramic Technology – HPS to Metal Halide Conversion Lamp

FEATURES

- High color rendering, up to CRI 90
- Stable in color over lamp life
- Excellent lumen maintenance
- High efficacy, up to 120 LPW
- UV coating



EYE/Iwasaki Patented
FEC Technology



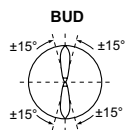
Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code/ Ballast Ref.	Case Qty.	Initial Lumens	Mean Lumens	Avg. Life Hours	Color Temp. (K)	CRI	Fix. [†] Req.	Burn Pos.
High Performance Ceramic Technology - Operates on HPS Ballast														
1	250	T15	Mog	55100	CMTP250/BUD/940/LU/MOG	S50	12	22500	18000	20000	4000	90	0	BUD

[†] E = Enclosed Fixture Required | 0 = Open Fixture Permissible | See page TECH-8 for further information regarding fixture requirements

Cera Tek™ Mogul Base – Ceramic Technology on CWA MH/Hg Core & Coil Ballast

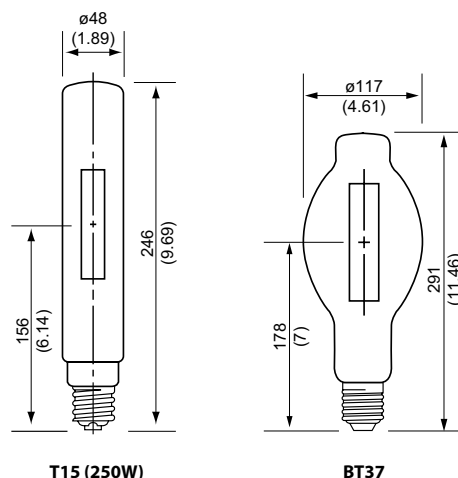
Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code/ Ballast Ref.	Case Qty.	Initial Lumens	Mean Lumens	Avg. Life Hours	Color Temp. (K)	CRI	Fix. [†] Req.	Burn Pos.
High Performance Ceramic Technology (EX39) - Operates on CWA MH/Mercury Core & Coil Ballast														
1	360	BT37	Mog	55115	CMP360/BUD/840/I/MOG*	M59	12	43200	35200	15000	4000	80	0	BUD

[†] 0 = Open Fixture Permissible | See page TECH-8 for further information regarding fixture requirements



APPLICATIONS

- Retail Stores
- Industrial High/Low Bay
- Parking Areas
- Sports Facilities
- Showrooms



Notes:

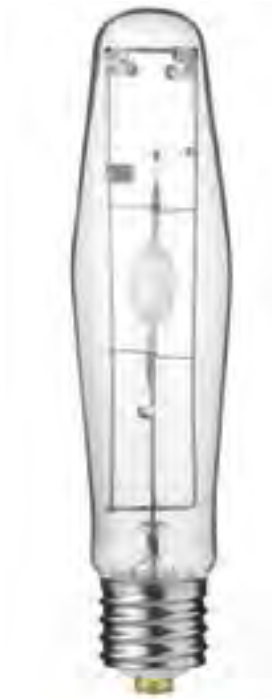
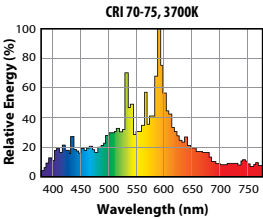
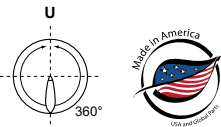
For Warnings, Caution Notices, & Operating Instructions, see page CT-10 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.

HPS TO HIGH PERFORMANCE CERAMIC TECHNOLOGY

Cera Arc® Mogul Base – HPS to Ceramic Technology Conversion Lamp

FEATURES

- 24,000 hour long life
- Universal burning position
- Direct replacement for HPS
- High initial and maintained lumens
- Superior lamp-to-lamp color uniformity through lamp life
- Nickel-plated base will not seize in the socket
- Operates on standard HPS ballast

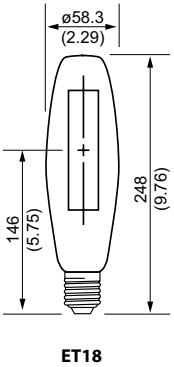


Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code/ Ballast Ref.	Case Qty.	Initial Lumens [†]	Mean Lumens [†]	Avg. Life Hours	Color Temp. (K)	CRI [‡]	Fix. [†] Req.	Burn Pos.
High Performance Ceramic Technology - Operates on HPS Ballast														
1	250	ET18	Mog	55102	CMT250/U/737/LU/MOG	S50	12	28000 33000	23800 28100	24000	3700	70 75	E	U

[†] E = Enclosed Fixture Required | See page TECH-8 for further information regarding fixture requirements
[‡] V = Vertical Operation, H = Horizontal Operation

APPLICATIONS

- Street
 - Area
 - Parking Lots
- Industrial
 - Warehouses
 - Security



Notes:
For Warnings, Caution Notices, & Operating Instructions, see page CT-10 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.

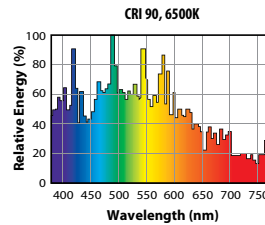
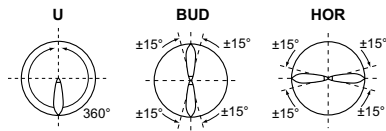


MERCURY TO HIGH COLOR RENDERING METAL HALIDE

Clean Ace™ (Daylight) Mogul Base – 6500K CCT/90CRI Mercury to Metal Halide Conversion Lamp

FEATURES

- Metal Halide conversion in Mercury lighting system
- High color temperature 6500K
- High color rendering, CRI 90
- Appearance of natural sunlight
- Brightness approximately 1.5 times that of a Mercury lamp of equal wattage (400W)
- Operates on Mercury reactor ballast only

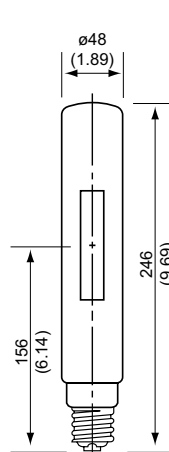


Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code/ Ballast Ref.	Case Qty.	Initial Lumens	Mean Lumens	Avg. Life Hours	Color Temp. (K)	CRI	Fix. Req.	Burn Pos.
High Color Rendering Tubular Metal Halide (Mogul Base) - Metal Halide Conversion from Mercury														
1	250	T15	Mog	57787	MT250DL	H37	12	18000	13500	10000	6500	90	E	U
2	400	T15	Mog	57934	MT400DL/BUD	H33	12	32000	24000	12000	6500	90	E	BUD
3	400	T17	Mog	57885	MT400DL/BH	H33	12	29000	22000	12000	6500	90	E	HOR

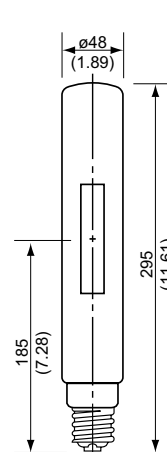
* E = Enclosed Fixture Required | See page TECH-8 for further information regarding fixture requirements

APPLICATIONS

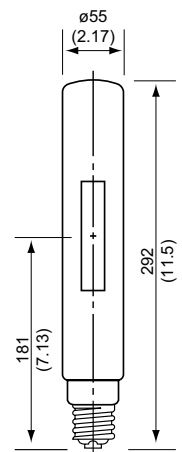
- Aquariums
- Retail
- Building
- Sports Lighting
- Manufacturing



T15 (250W)



T15 (400W)



T17 (400W)

Notes:

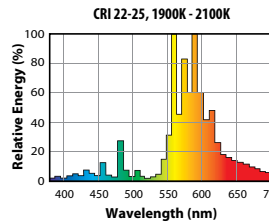
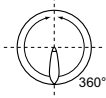
For Warnings, Caution Notices, & Operating Instructions, see page MH-20 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.

MERCURY OR METAL HALIDE TO HPS

Sunlux Ultra Ace® EN BT Bulb, Mogul Base – Mercury or Metal Halide to High Pressure Sodium Conversion Lamp

FEATURES

- High Pressure Sodium retrofit in Metal Halide/Mercury lighting systems
- Requires no fixture/ballast changes
- Double the light output of Mercury lamps
- EYE/Iwasaki patented FEC technology protects lighting system components from continuous high voltage pulsing at the end of lamp life
- Universal operating position
- EPA TCLP compliant for non-hazardous waste
- Non-cycling design



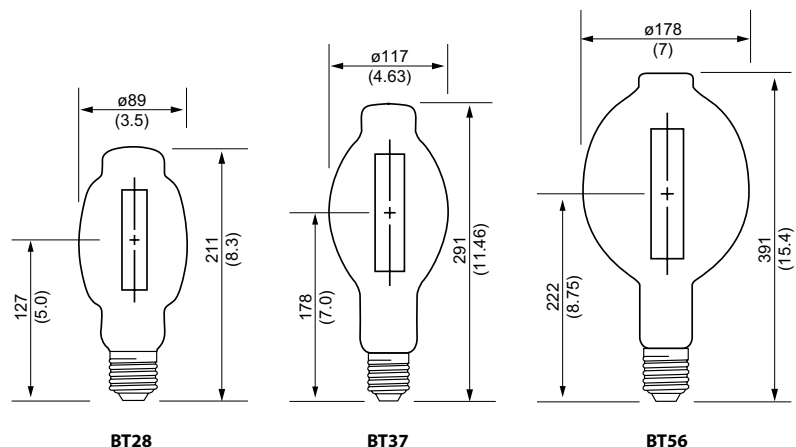
EYE/Iwasaki Patented
FEC Technology



Line	Watts (W)	Replaces Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code	Case Qty.	Initial Lumens	Mean Lumens	Avg. Life Hours	Color Temp. (K)	CRI
Energy Saving HPS Conversion from Mercury/Metal Halide (Mogul Base) - Sunlux Ultra Ace™ EN													
1	150	175	BT28	Mog	62345	NH150CE/EN	M57/H39	12	15000	13500	24000	1900	25
2	220	250	BT28	Mog	62443	NH220CE/EN	M58/H37	12	25000	22500	24000	2100	25
3	360	400	BT37	Mog	62541	NH360CE/EN	M59/H33	12	45000	40500	24000	2100	25
4	940	1000	BT56	Mog	62639	NH940BCE/EN	M47/H36	6	130000	117000	24000	2100	25

APPLICATIONS

- Industrial
- Parking Areas
- Security
- Roadway
- Warehouse



Notes:

For Warnings, Caution Notices, & Operating Instructions, see page HPS-7 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.
Contact EYE Lighting International for further information and availability

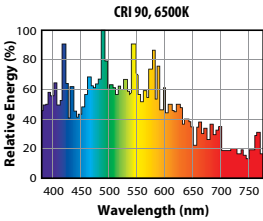
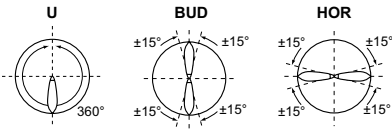


HIGH COLOR RENDERING ON STANDARD CWA BALLAST

Clean Arc™ (Daylight) Mogul Base – 6500K CCT/90CRI on Standard Metal Halide CWA Ballast Conversion Lamp

FEATURES

- High color temperature 6500K
- High color rendering, CRI 90
- Appearance of natural sunlight
- Operates on standard Metal Halide CWA ballast

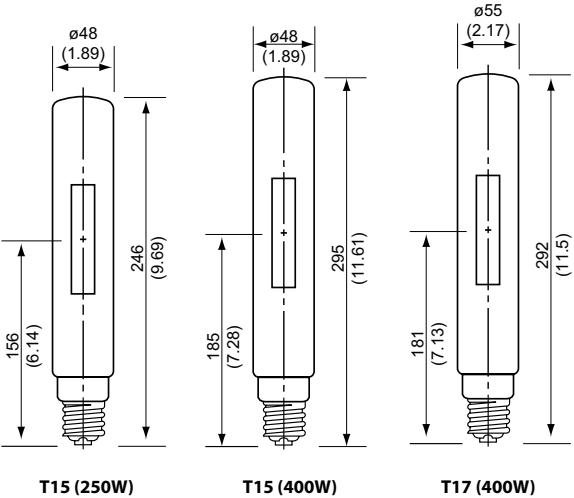


Line	Watts (W)	Bulb	Base	Product Code	Product Description	ANSI Code/ Ballast Ref.	Case Qty.	Initial Lumens	Mean Lumens	Avg. Life Hours	Color Temp. (K)	CRI	Fix. [†] Req.	Burn Pos.
High Color Rendering Tubular Metal Halide (Mogul Base)														
1	250	T15	Mog	57791	MT250D	M58	12	18000	13500	10000	6500	90	E	U
2	400	T15	Mog	57875	MT400/BUD	M59	12	32000	24000	12000	6500	90	E	BUD
3	400	T17	Mog	57881	MT400D/HOR	M59	12	29000	22000	12000	6500	90	E	HOR

[†] E = Enclosed Fixture Required | See page TECH-8 for further information regarding fixture requirements

APPLICATIONS

- Aquariums
- Printing Industry
- Critical Commercial and Industrial Color Applications
- Manufacturing
- Retail
- Painting Industry
- Sports Lighting



Notes:

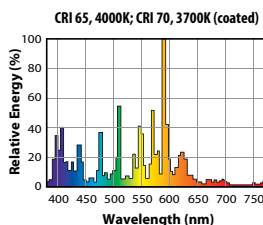
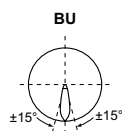
For Warnings, Caution Notices, & Operating Instructions, see page MH-20 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.

HIGH OUTPUT PROBE START

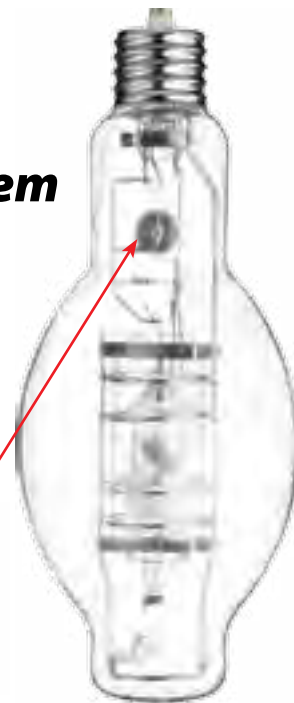
Multi-Metal Ignitek™ Pulse Start Technology on M59/M165 Probe Start Metal Halide System

FEATURES

- Extra high lumen output Metal Halide lamp operating on standard Probe Start ballast
- 50% higher maintained lumens compared to standard universal Metal Halide
- Shrouded and energy saving types available
- EYE/Iwasaki patented FEC ignitor
- Long Life (up to 30,000 hours)
- Operates on standard M59/M165 Metal Halide systems
- Pulse Start technology



EYE/Iwasaki Patented FEC Technology



Line	Watts (W)	Bulb	Base	Product Code	Product Description	Converts From	ANSI Code/ Ballast Ref.	Case Qty.	Initial Lumens	Mean Lumens	Avg. Life Hours ¹ V	Color Temp. (K)	CRI	Fix. ² Req.	Burn Pos.
High Output, Energy Saving															
1	360	BT37	Mog	52527	M360SX/BU/I	400 Watt	M59, M165	12	35000	28000	20000	30000 ¹	4000	65	E BU
2	360	BT37 Coated	Mog	52520	MF360SX/BU/I	400 Watt	M59, M165	12	33200	26560	20000	30000 ¹	3700	70	E BU
Super High Output															
3	400	BT37	Mog	52529	M400SX/BU/I	-	M59	12	44000	35200	20000	30000 ¹	4000	65	E BU
4	400	BT37 Coated	Mog	52525	MF400SX/BU/I	-	M59	12	41800	33400	20000	30000 ¹	3700	70	E BU
High Output Open Fixture Series															
5	360	BT37	EX39	52712	MP360SX/BU/I	400 Watt	M59, M165	12	33200	26560	20000	30000 ¹	3600	65	O BU
6	400	BT37	EX39	57974	MP400SX/BU/I	-	M59	12	41800	33400	20000	30000 ¹	3600	65	O BU

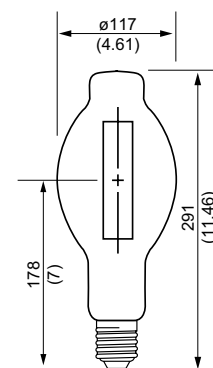
¹ E = Enclosed Fixture Required | O = Open Fixture Permissible | See page TECH-8 for further information regarding fixture requirements

² V = Vertical Operation

¹ Rated average life at 120 hrs. per start

APPLICATIONS

- Auto Sales
- Industrial
- Parking Areas
- Retail
- Sports Lighting
- Warehouses



BT37

Notes:

For Warnings, Caution Notices, & Operating Instructions, see page MH-20 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.

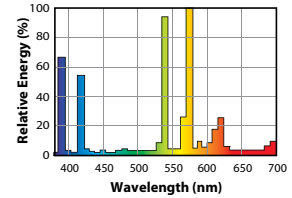
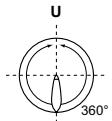
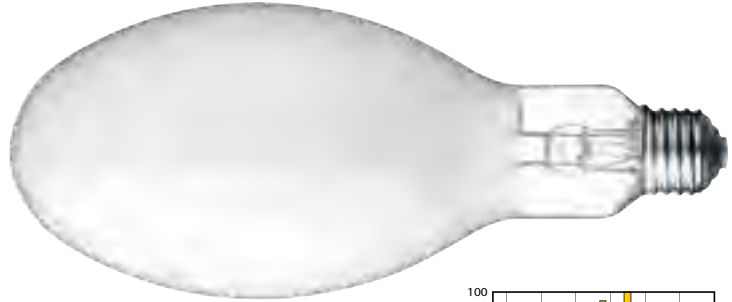


INCANDESCENT TO MERCURY

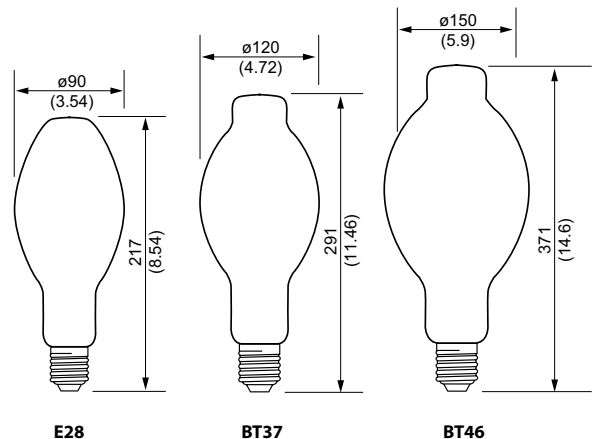
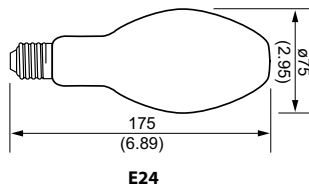
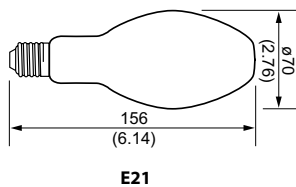
Self-Ballasted, E & BT Bulb, Medium & Mogul Base – Universal Burn Incandescent to Mercury Conversion Lamp

FEATURES

- Instant-on
- Eight times longer life compared to incandescent
- Screws into existing incandescent socket
- No ballast required
- Nickel-plated base will not seize in the socket
- Incandescent color in a HID lamp



Line	Watts (W)	Bulb	Base	Product Code	Product Description	Case Qty.	Initial Lumens	Mean Lumens	Avg. Life Hours	Color Temp. (K)	CRI	Line Voltage
Self-Ballasted E Bulb Series Mercury (Medium Base)												
1	100	E21 Coated	Med	67947	100WSB/E21W	24	1100	830	6000	3200	60	120
2	160	E24 Coated	Med	67996	160WSB/E24W	24	2550	1910	12000	3200	60	120
3	160	E24 Coated	Med	68780	220/230V160W/E24W	24	3000	2250	8000	3300	60	220/230
4	250	E28 Coated	Med	68290	250WSB/E28MED	20	5000	3750	12000	3200	50	120
5	250	E28 Coated	Med	68829	220/230V250W/E28W/MED	20	5700	4280	12000	3300	50	220/230
Self-Ballasted E and BT Bulb Series Mercury (Mogul Base)												
6	250	E28 Coated	Mog	68339	250WSB/E28/MOG	20	5000	3750	12000	3200	50	120
7	250	E28 Coated	Mog	68878	220/230V250W/E28W/MOG	20	5700	4280	12000	3300	50	220/230
8	450	BT37 Coated	Mog	68584	450WSB/BT37W	12	10000	7500	12000	3200	50	120
9	450	BT37 Coated	Mog	68976	230/240V450W/BT37W	12	11500	8830	16000	3300	50	230/240
10	750	BT46 Coated	Mog	68682	750WSB/BT46W	6	19000	14250	16000	3200	45	120



APPLICATIONS

- Home Garages & Decks
- Park & Garden Lighting
- Post Top
- Security
- Small-Scale Floodlighting
- Special Effects
- Stairwells
- Warehouse

Notes:

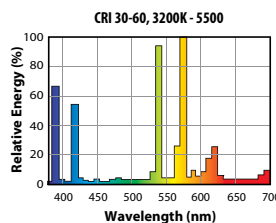
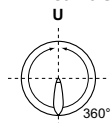
For Warnings, Caution Notices, & Operating Instructions, see page HG-8 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.

INCANDESCENT TO MERCURY

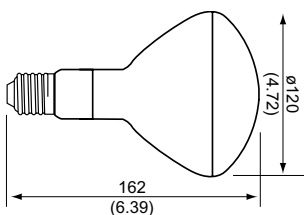
Self-Ballasted, Reflector Bulb, Medium & Mogul Base – Universal Burn Incandescent to Mercury Conversion Lamp

FEATURES

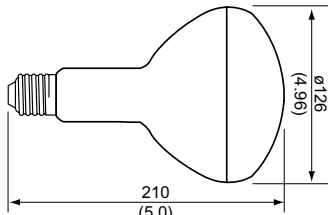
- Instant-on
- Eight times longer life compared to incandescent
- Screws into existing incandescent socket
- No ballast required
- Nickel-plated base will not seize in the socket
- Incandescent color in a HID lamp



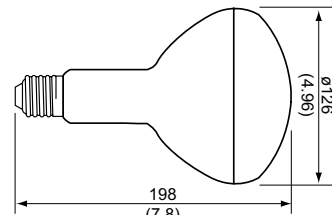
Line	Watts (W)	Bulb	Base	Product Code	Product Description	Case Qty.	Initial Lumens	Beam Lumens	Avg. Life Hours	Color Temp. (K)	CRI	Beam Angle (°)	Peak Intensity	Line Voltage
Self-Ballasted Reflector Mercury (Medium Base)														
1	160	RSP38	Med	68192	160WSB/RSP38RF	12	1520	1220	10000	3200	60	120	480	120
2	160	RSP38	Med	68241	160WSB/RSP38RFF	12	1520	1220	10000	3200	60	120	480	120
3	160	R40 (A)	Med	68143	160WSB/R40FL	12	1680	1420	10000	4500	40	130	500	120
4	250	R40 (B)	Med	68388	250WSB/R40FL	12	3200	2700	12000	4500	40	130	800	120
Self-Ballasted Reflector Mercury (Mogul Base)														
5	450	R57	Mog	68633	450WSB/R57FL	6	7600	6500	16000	4500	40	130	1800	120
6	750	R57	Mog	68731	750WSB/R57FL	6	12600	10700	16000	5000	40	130	3300	120
7	750	R57	Mog	69074	230/240V750W/R57FL	6	14000	12000	16000	5500	30	130	3900	230/240
8	750	R57	Mog	69123	240/250V750W/R57FL	6	14000	12000	16000	4000	40	130	3900	240/250



RSP38



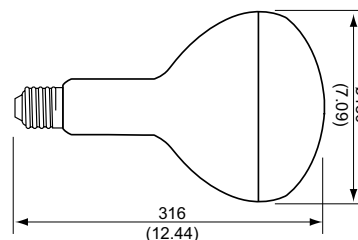
R40 (A)



R40 (B)

APPLICATIONS

- Home Garages & Decks
- Park & Garden Lighting
- Post Top
- Security
- Small-Scale Floodlighting
- Special Effects
- Stairwells
- Warehouse



R57

Notes:

For Warnings, Caution Notices, & Operating Instructions, see page HG-8 | All information subject to change without notice | All measurements shown as mm (in) unless otherwise noted.



CONVERSION LAMPS

ENERGY SAVING LED UPGRADE

LEDioc™ LED Upgrade for Post Top & Pendant Mount Decorative Luminaires

FEATURES

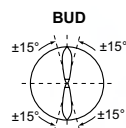
- Long life, efficient LED Technology
- Provides upgrade to new LED Technology while preserving the existing system and achieving sustainability goals
- Upgrade system includes the lamp, driver, socket, surge protector, and engineered mechanical package
- Maintainable lamp and driver components
- Medium & mogul base
- 3000K and 5000K
- Energy Saving
- Dimmable
- Vertical, Base Up or Base Down operating position
- Designed for use in existing HID Post Top and Pendant Mount decorative luminaires



Visit www.eyelighting.com for the latest LEDioc solutions.

APPLICATIONS

- | | |
|-----------------------------|--------------------------|
| • Street/Area | • Glass Lens Post Tops |
| • Historic Districts | • Plastic Lens Post Tops |
| • City Parks and Recreation | • Teardrop Pendants |
| • Campuses | |



Notes:

All information subject to change without notice

PRODUCT CROSS REFERENCE

EYE LIGHTING				COMPETITOR PRODUCT DESCRIPTIONS			
Page #	Product Code	Product Description	ANSI Code/ Ballast Ref.	GE	OSRAM/SYLVANIA	PHILIPS	VENTURE
Metal Halide Conversion from High Pressure Sodium (Mogul Base)							
CONV-3	51788	M250X/U/LU	S50	U TYPE Not Available			MH250W/U/LU
CONV-3	51935	MF250X/U/LU	S50	U TYPE Not Available			U TYPE Not Available
CONV-3	51886	M400X/U/LU/BT28	S51	MVR400U/ED28/R			MH400W/U/LU/ED28
CONV-3	52033	MF400X/U/LU/BT28	S51				U TYPE Not Available
CONV-3	51837	M400X/U/LU	S51	U TYPE Not Available			MH400W/U/LU
CONV-3	51984	MF400X/U/LU	S51	U TYPE Not Available			MH400W/C/U/LU
CONV-3	51605	M1000BX/U/LU	S52		NO EQUAL		
High Performance Ceramic Technology - Operates on HPS Ballast							
CONV-4	55100	CMT250/BUD/940/LU/MOG	S50			CDM250S50/V/O/4K ALTO	
High Performance Ceramic Technology (EX39) - Operates on CWA MH/Mercury Core & Coil Ballast							
CONV-4	55115	CMP360/BUD/840/I/MOG	M59		NO EQUAL		
High Performance Ceramic Technology - Operates on HPS Ballast							
CONV-5	55102	CMT250/U/737/LU/MOG	S50		NO EQUAL		
High Color Rendering Tubular Metal Halide (Mogul Base) - Metal Halide Conversion from Mercury							
CONV-6	57787	MT250DL	H37/E2		NO EQUAL		
CONV-6	57934	MT400DL/BUD	H33/E2		NO EQUAL		
CONV-6	57885	MT400DL/BH	H33/E2		NO EQUAL		
Energy Saving HPS Conversion from Mercury/Metal Halide (Mogul Base) - Sunlux Ultra Ace™ EN							
CONV-7	62345	NH150CE/EN	M57/H39	LUH150/EZ	ULX150	C150S63 Retrolux	
CONV-7	62443	NH220CE/EN	M58/H37	LUH215/EZ	ULX215	C215S675 Retrolux	
CONV-7	62541	NH360CE/EN	M59/H33	LUH360/EZ	ULX360	C360S64 Retrolux	
CONV-7	62639	NH940BCE/EN	M47/H36		ULX880		
High Color Rendering Tubular Metal Halide (Mogul Base)							
CONV-8	57791	MT250D1	M58/E		NO EQUAL		
CONV-8	57875	MT400/BUD1	M59/E		NO EQUAL		
CONV-8	57881	MT400D/HOR1	M59/E		NO EQUAL		
High Output, Energy Saving							
CONV-9	52527	M360SX/BU/I	M165	MVR360VBU/WM/XHO	MS360/SS/BU-HOR		
CONV-9	52520	MF360SX/BU/I	M165	MVR360C/VBUWMXHO	MS360/C/SS/BU-HOR		
Super High Output							
CONV-9	52529	M400SX/BU/I	M59	MVR400/VBU/HO			
CONV-9	52525	MF400SX/BU/I	M59	MVR400/C/VBU/HO			
High Output Open Fixture Series							
CONV-9	52712	MP360SX/BU/I	M165	MVR360VBUWM/HO/O			
CONV-9	57974	MP400SX/BU/I	M59	MVR360CVBUWMHO/O			
Self-Ballasted E Bulb Series Mercury (Medium Base)							
CONV-10	67947	100WSB/E21W			NO EQUAL		
CONV-10	67996	160WSB/E24W		HSB160/M		S160E23/DX	
CONV-10	68780	220/230V160W/E24W			NO EQUAL		
CONV-10	68290	250WSB/E28MED		HSB250/M		S250E28/DX/M	
CONV-10	68829	220/230V250W/E28W/MED			NO EQUAL		
Self-Ballasted E and BT Bulb Series Mercury (Mogul Base)							
CONV-10	68339	250WSB/E28/MOG		HSB250/M / HSB250		S250E28/DX 120V MOG	
CONV-10	68878	220/230V250W/E28W/MOG			NO EQUAL		
CONV-10	68584	450WSB/BT37W		HSB450		S450BT37/C	
CONV-10	68976	230/240V450W/BT37W				S450BT37/C230V	
CONV-10	68682	750WSB/BT46W			NO EQUAL		
CONV-10	68927	230/240V750W/BT46W			NO EQUAL		
Self-Ballasted Reflector Mercury (Medium Base)							
CONV-11	68192	160WSB/RSP38RF-E26	--		NO EQUAL		
CONV-11	68241	160WSB/RSP38RFF-E26	--		NO EQUAL		
CONV-11	68143	160WSB/R40FL	B87		NO EQUAL		
CONV-11	68388	250WSB/R40FL-E26	B94		NO EQUAL		
Self-Ballasted Reflector Mercury (Mogul Base)							
CONV-11	68633	450WSB/R57FL	--		NO EQUAL		
CONV-11	68731	750WSB/R57FL	B78	HSB750R/120		S750R57120V	
CONV-11	69074	230/240V750W/R57FL	--	HSB750R/240V			
CONV-11	69123	240/250V750W/R57FL	--		NO EQUAL		
LEDioc 37W Med (E26) - Coated							
CONV-12	77201	LDTS37/750/BUD/MED/KIT			NO EQUAL		
CONV-12	77206	LDTS37/830/BUD/MED/KIT			NO EQUAL		



LED & HID LUMINAIRES

Award-Winning LED and HID LuminairesTECH-2

LAMP TECHNOLOGY

Understanding the Spectral Distribution Chart.TECH-3

Understanding Color Rendering.TECH-4

Understanding Correlated Color Temperature (CCT) . . .TECH-5

Understanding the R9 Color Rendering ValueTECH-6

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Warning: 24-hr Operating CycleTECH-7

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Rugged, High-Quality, Patented EYE BaseTECH-10

Base MarkingsTECH-10

EN/TCLP Environmentally-Safe, Improved Weld Lock . .TECH-10

AWARD-WINNING LED AND HID LUMINAIRES

kíaroLED®
street & area by EYE Lighting

kíaroLED STREET & AREA LUMINAIRES

Superior light-on-task optical control results in outstanding Backlight, Uplight and Glare control for roadways, parking lots and building facades.

- Minimizes Backlight, Uplight and Glare
- Precise Positioning of Light
- Increased Pole Spacing through Street-Side Lumens
- Lower Maintenance & Energy Costs
- Intelligent Controls
- Rugged Reliable Construction
- Versatile, Replaceable, Interchangeable

kíaroLED®
post tops by EYE Lighting

kíaroLED POST TOP LUMINAIRES

Proven optical performance for which kíaroLED is renowned is now housed in the sleek modern styling of the Post Top for walkways, streets and campuses.

- Precision optics eliminates light trespass
- Zero uplight and glare-free
- Assortment of custom optics for a variety of applications
- Applications include urban streets, parks, residential areas, walkways and college campuses
- Energy efficient, low-maintenance solution

Aphos
Luminaires by EYE Lighting

APHOS FAMILY OF LED LUMINAIRES

Aphos is a new energy efficient line of built-to-last LED luminaires. Highly versatile, there are multiple designs and mounting options ideal for both indoor and outdoor applications, including warehouses, manufacturing facilities, parking garages, canopies, roadways, parking lots, and facades.

- Patented design provides airflow, resulting in superior heat management
- Assortment of custom optics for a variety of applications
- Advanced control options include motion-sensing and late-night dimming
- Applications include parking garages, warehouses, roadways, building façades
- Energy efficient, low-maintenance solution

URBAN ACT HID ARCHITECTURAL FLOODLIGHTS

The Urban Act family of luminaires features superior optical control and integral electronic ballasts. Combined with EYE Ceramic lamp technologies, it provides unsurpassed precision.

- From Super Narrow (6°) to Wide (48 x 64°)
- Designed for Ceramic Technology lamps
- Energy savings through electronic ballast
- IP65 and UL Wet Location listings

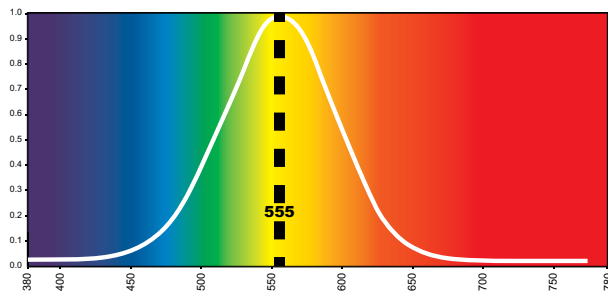
Visit www.eyelighting.com for the latest Luminaire solutions.



UNDERSTANDING THE SPECTRAL DISTRIBUTION CHART

HOW IS LIGHT INTENSITY MEASURED?

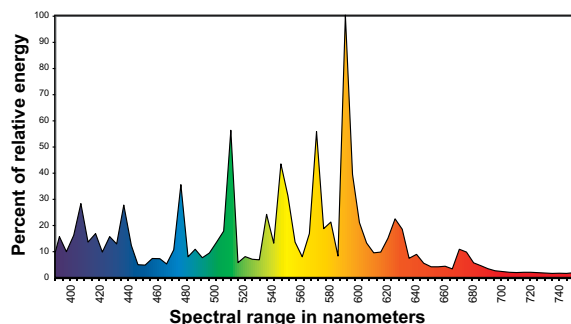
The lighting industry measures light intensity in lumens. Lumens represent how intense or bright a light source is to the human eye. A lumen rating does not measure the quality of the spectrum being produced by a light source.



This is the human eye response curve.

WHAT IS A SPECTRAL DISTRIBUTION CHART?

The spectral distribution chart is a visual representation of the light spectrum produced by a lamp. It is a graph showing the relative intensities of a light source at each wavelength. These charts can be used to compare the energy levels of various light sources. They are the most practical way to compare the quality of light created by different light sources. The chart shows exactly which wavelengths of light (measured in nanometers) the objects are receiving.



An example of a spectral distribution chart

HOW TO READ A SPECTRAL DISTRIBUTION CHART?

On the left of the chart is the percent of relative energy. The highest energy output of the light source is plotted as 100% Relative Energy. The 100% peak is used to compare the energy levels of all other wavelengths of light produced by that light source.

The bottom of the chart shows all of the wavelengths of visible light energy that the light source produces. For example, if a wavelength is at 50% relative energy, that peak has half the energy when compared to the 100% peak. Scaling each chart to 100% relative energy allows side by side comparison of light sources with different lumen ratings (intensity) or wattages. For example, a 1000W HPS lamp has more overall intensity than a 400W HPS lamp even though their spectral distribution charts are the same.

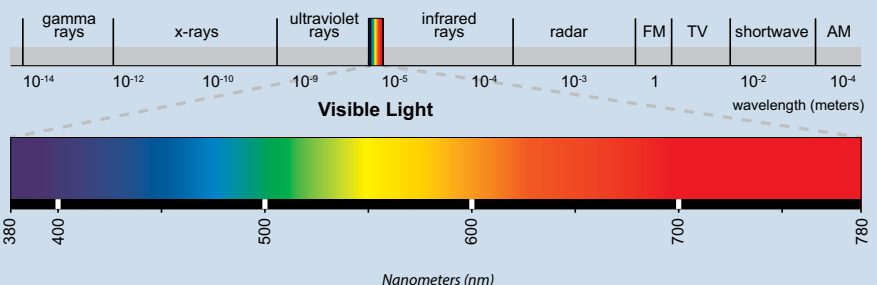


HOW TO EVALUATE THE QUALITY OF A LIGHT SOURCE?

The spectral distribution chart is the best illustration of the quality of the light spectrum.

WHAT IS A LIGHT SPECTRUM?

Light spectrum is the many different wavelengths of energy produced by a light source. Light is measured in nanometers (nm). Each nanometer represents a wavelength of light or band of light energy. Visible light is the part of the spectrum from 380nm to 780nm.



UNDERSTANDING COLOR RENDERING

The eye sees all objects in the form of reflected light. All of the colors contained in the object must also be present in the beam of light to accurately reproduce the image in reflected light. The Color Rendering Index is a numerical scale from zero to one hundred used to rate the accuracy at which a light source will render colors. A value of 100 CRI indicates perfect color rendering. There is, however, another factor to consider in the color equation... the amount of light. Low light levels make an object lack color and look dull, or grayish.

DAYLIGHT

Natural daylight contains all the colors in the visible light spectrum, plus the Power, or Energy Level of the light in each color is nearly consistent across the entire spectrum.

CERAMIC TECHNOLOGY LAMP

The latest advancements in Ceramic Technology provide lamps with high color temperature (CCT) and a variety of high CRI values available for various applications, vastly improving visual acuity. In addition, Ceramic Technology lamps feature long lifetimes, similar to HPS lamps. Ceramic Technology lamps are an excellent choice where visibility, good color rendering and minimized maintenance are required...in other words—virtually everywhere!

METAL HALIDE LAMP

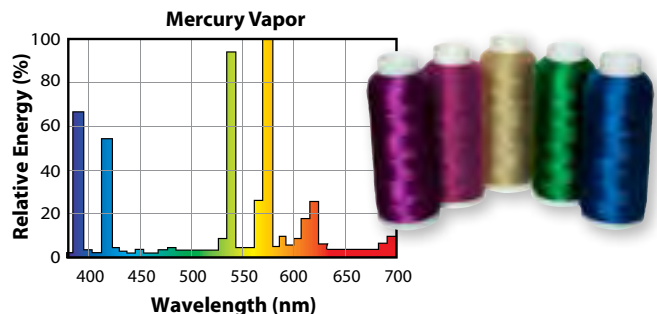
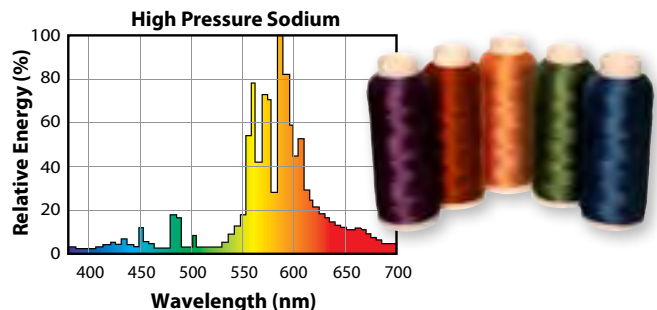
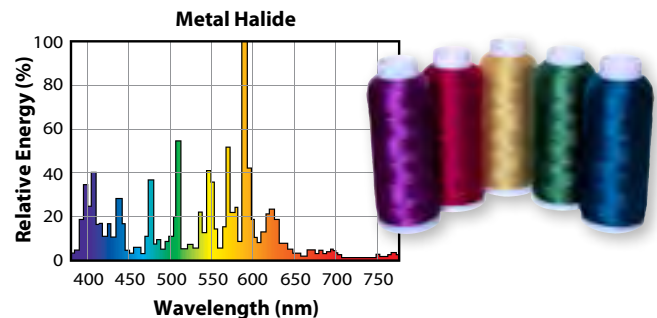
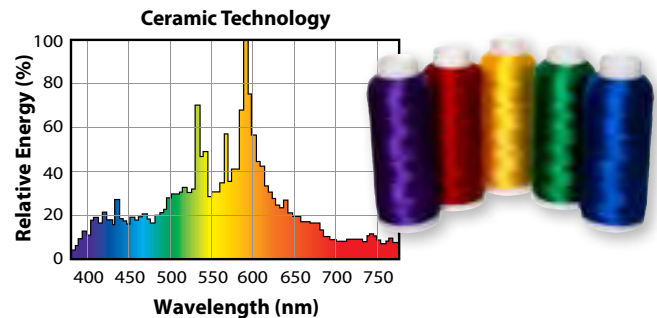
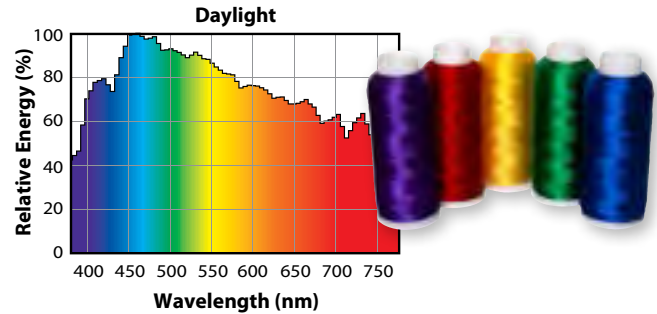
A typical Metal Halide lamp does not contain all of the colors in the light spectrum. Additionally, the color power levels are inconsistent.

HIGH PRESSURE SODIUM LAMP

High Pressure Sodium (HPS) lamps are great for photopic (ability to see in bright light) lighting conditions and have been used primarily outdoors due to its high efficacy (lumens per watt) and long life characteristics. The light from sodium sources is predominantly emitted in the longer wavelengths, between yellow and red. HPS lamps are suitable for applications where color rendering is not a crucial concern.

MERCURY VAPOR LAMP

Clear Mercury lamps produce white light with a bluish-green tint. While it may not be flattering to human skin color, it is an outstanding choice for foliage and landscape lighting applications. Mercury lamps with a phosphor coating on the outer lamp envelope help to somewhat correct this color rendering issue.



UNDERSTANDING CORRELATED COLOR TEMPERATURE (CCT)

There are a number of color combinations that can be used to create White Light, or a particular Color Temperature. The Chromaticity Chart is used to qualify the color of the

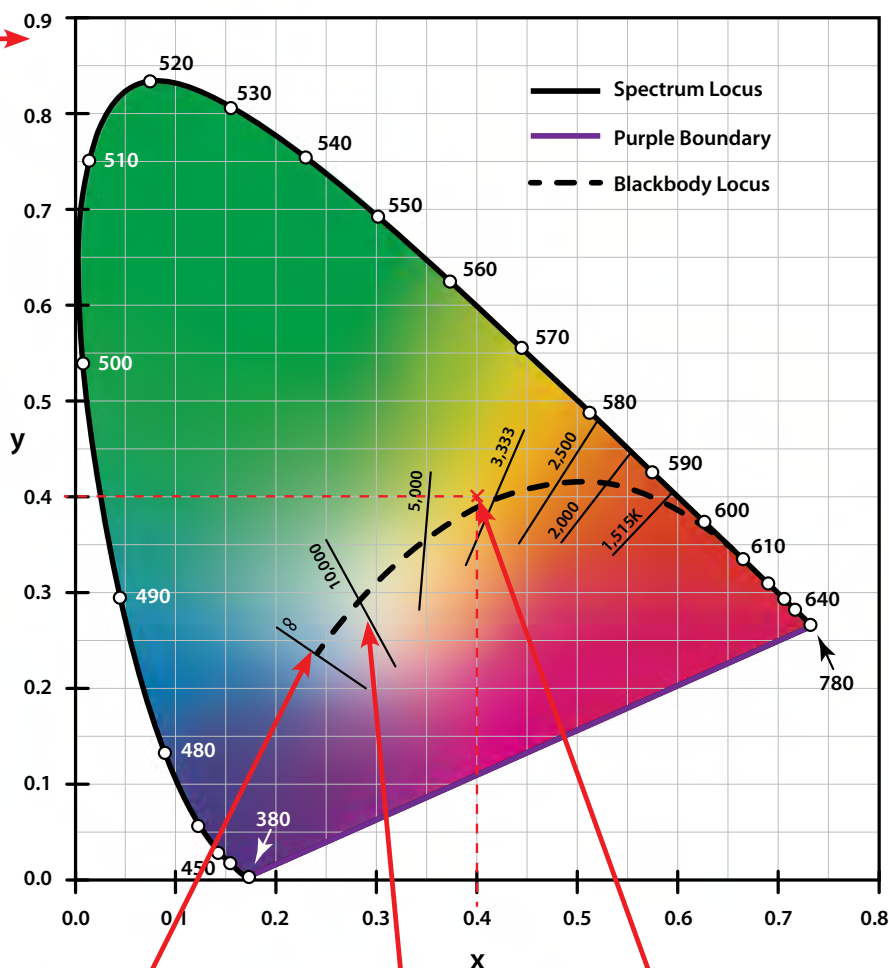
light that is produced by a lamp. This is called a lamp's Color Temperature. This can be seen on the Chromaticity chart. Color temperature is specified in **degrees Kelvin (°K)***.

THE GRID

The chart is laid over an X, Y grid with numbers at the left and bottom used to define an exact point on the chart.

THE NUMBERS

The numbers surrounding the curved part of the color form represent wavelengths in nanometers in the color spectrum.



HOW TO READ THE CHART

The curved line is called the "Black Body Curve" and represents the color temperature of an object (for instance a piece of steel) that is heated until it gives off light.

The curve begins at the extreme right of the of the chart and moves to the left. As the steel is heated, its color (Color Temperature) changes from black to dull red, orange, yellow, white and finally blue, as the heat increases.

The lines intersecting the black body curve represent the range of points on the chart that will result in a specific color temperature.

A Metal Halide lamp with Chromaticity coordinates of $X=0.396$, $Y=0.402$ shows that the lamp has a 3800K Color Temperature (shown by the red "X").

*Kelvin is a temperature scale in which zero occurs at absolute zero and each degree equals one Kelvin.

UNDERSTANDING THE R9 COLOR RENDERING VALUE

Color Rendering Index (CRI) is a rating system that measures the accuracy of how well a light source reproduces the (total) color of an illuminated object. CRI is an average value based on R1 - R8. R9 is one of 6 saturated test colors not used in calculating CRI.

Since some percentage of the color Red can be found mixed into the various hues of most processed colors, the ability to accurately reproduce Red is key for accurately rendering colors of displayed objects. Lamps with high R9 values produce the most vivid colors.

WHY R9 MATTERS

The color of many items, including meat, fish, vegetables and fruit, can be adversely affected by the inaccurate rendering of the color red. If R9 is a concern for your application, EYE Lighting offers a solution.

EYE Cera Arc "Natural Red" sets the standard in rendering the color Red, offering the highest color rendering ratings of red in any Metal Halide or Ceramic Technology lamp in the industry. EYE Cera Arc "Natural Red" accurately brings out the true beauty and richness of red and other colors to create a vibrant display.

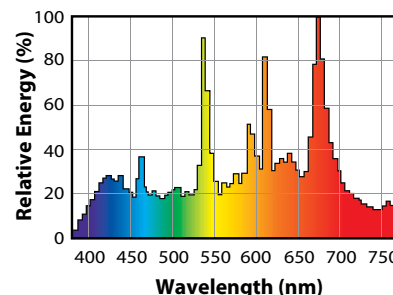
- High CRI of 92 coupled with enhanced red color creates brilliant, more accurate displays
- Enhances greens, blues and whites, with greater accuracy

TEST COLORS USED IN CALCULATING CRI

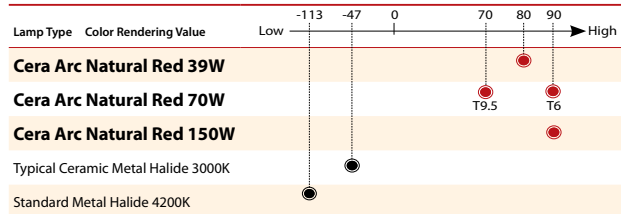


EYE CERA ARC "NATURAL RED"

The Richest Red Color Rendering in Ceramic Technology
(see CT-3 for more information)



COMPARISON OF COLOR RENDERING VALUE OF RED (R9)



COLOR RENDERING CHARACTERISTICS OF COMMON LIGHT SOURCE LAMPS

LAMP	CCT (KELVIN)	CRI	R9
Tungsten Halogen	3190	100	100
Cera Arc® (Natural Red)	3600	92	90
Metal Halide	4220	67	-113
Metal Halide Coated	3800	70	-88
Mercury Clear	6410	18	-299
Mercury Coated	3600	49	-68
High Pressure Sodium	2100	24	-197
Xenon	5920	94	-81
Low Pressure Sodium	1740	-44	-492



HID LAMP LIFE VERSUS OPERATING CYCLE

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

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

Electrodes of a HID lamp are designed to withstand operating cycles of 1 start every 10 hours to achieve the life rating of the lamp. Operating cycles less than 10 hours will result in shorter lamp life.

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

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

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

Published Average Rated Life is achieved using a 10-hour (on) operating cycle.

A five-hour operating cycle may result in achieving only 75% of the published Average Rated Life.

A two and one-half hour operating cycle may result in achieving only 50% of the published Average Rated Life.

WARNING: 24-HR OPERATING CYCLE

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

CERAMIC TECHNOLOGY OPERATED ON DIMMING BALLASTS

All EYE Metal Halide lamps, except, Multi-Metal Ace™ family, can be dimmed up to 80% of the lamp nominal wattage on EYE Lighting approved dimming ballast systems. Lamps must be operated at least 15 minutes at full power prior to dimming.

Dimming systems that reduce the input line voltage to the ballast are NOT RECOMMENDED. Lamps operated on dimming systems may exhibit extreme color shift and low lumen output.

METAL HALIDE OPERATED ON DIMMING BALLASTS

All EYE Metal Halide lamps, except, Multi-Metal Ace™ family, can be dimmed up to 65% of the lamp nominal wattage on EYE Lighting approved dimming ballast systems. Lamps must be operated at least 15 minutes at full power prior to dimming.

Dimming systems that reduce the input line voltage to the ballast are NOT RECOMMENDED. Lamps operated on dimming systems may exhibit extreme color shift and low lumen output.

Contact your local EYE Lighting representative for a list of approved dimming systems.



HID LAMP TYPES AND CHARACTERISTICS

TYPES OF HID LAMPS

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

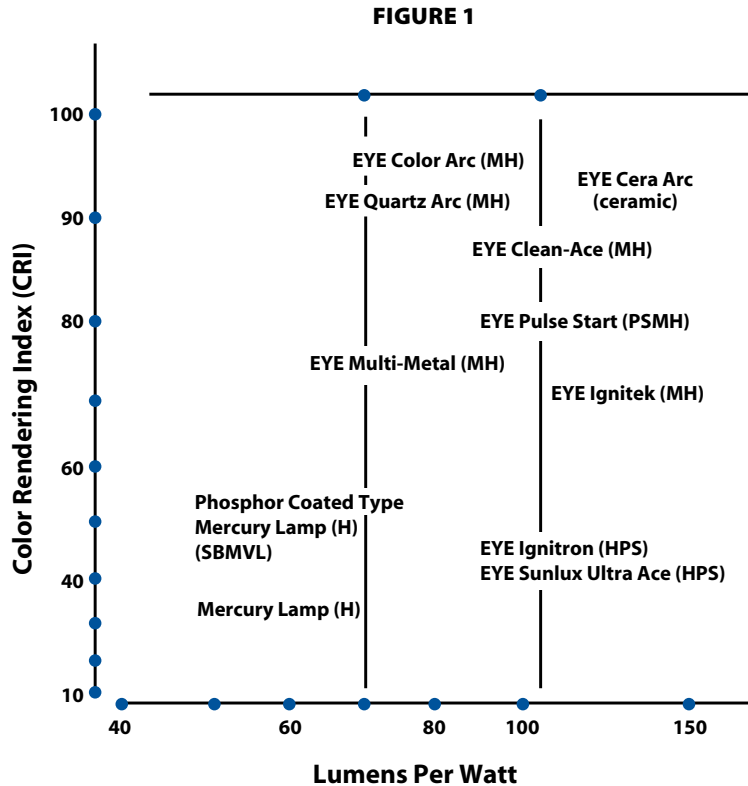
- Ceramic Technology
- Pulse Start Metal Halide (PSMH)
- Metal Halide (MH)
- High Pressure Sodium (HPS)
- Mercury (H), (SBMVL)

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

LAMP CHARACTERISTICS

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

- Lamp Efficacy (Lumens Per Watt)
- Color Rendering Index (CRI)



LAMP OPERATING POSITIONS AND FIXTURE REQUIREMENTS

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

FIXTURE REQUIREMENT CODES

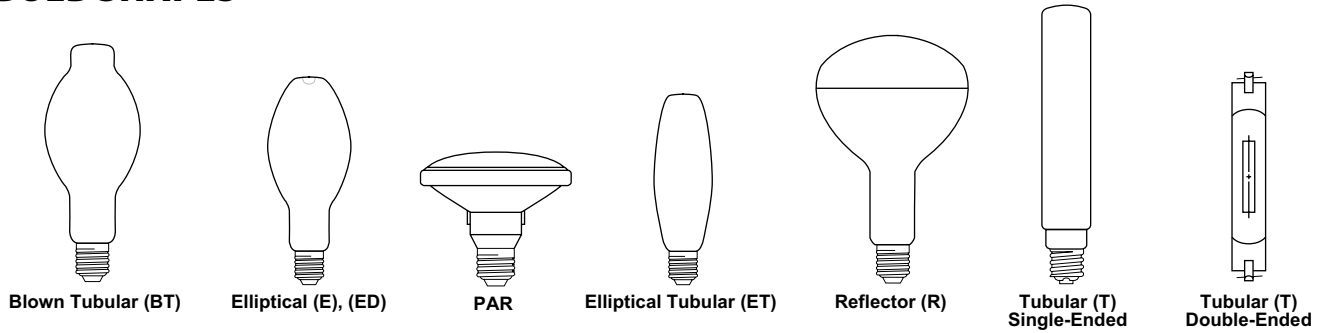
- O = Open fixture permissible. Lamps can be operated in an open fixture within the lamp's specified operating position limits.
- E = Enclosed fixture required. Lamps must be operated in an enclosed fixture.

LAMP OPERATING POSITION CODES AND SYMBOLS

U or no code	BU	BUD	BUH	HOR	HOR ± 30	HOR ± 45	HOR ± 60
Universal (no limit)	Base Up $\pm 15^\circ$	Base Up or Base Down $\pm 15^\circ$	Base Up to Horizontal	Horizontal $\pm 15^\circ$	Horizontal $\pm 30^\circ$	Horizontal $\pm 45^\circ$	Horizontal $\pm 60^\circ$
U 	BU 	BUD 	BUH 	HOR 	HOR ± 30 	HOR ± 45 	HOR ± 60

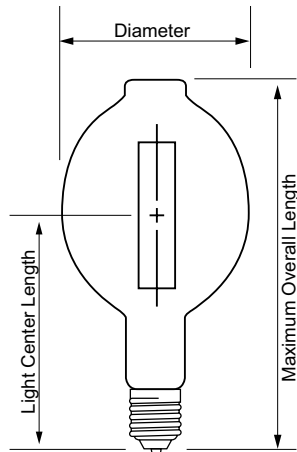


BULB SHAPES



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

LAMP DIMENSIONS



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

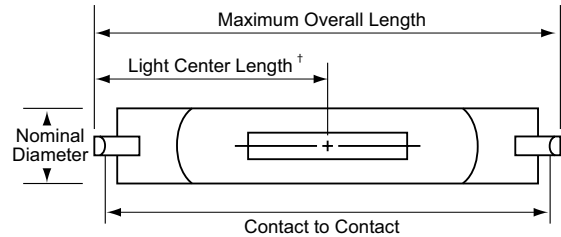
MOL is measured from the end of the lamp base to the top of the outer jacket.

Light Center Length (L.C.L.):†

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

Diameter:

The diameter is the maximum diameter of the glass bulb.



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

The distance between the ends of the bases.

Contact to Contact:

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

Nominal Diameter:

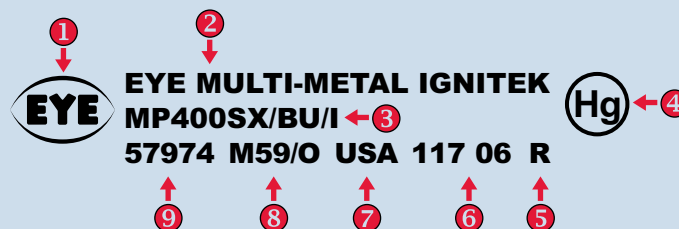
The approximate diameter of the tube.

* Not a controlled dimension - can vary $\pm 10\text{mm}$

† A controlled dimension - can vary $\pm 3\text{mm}$

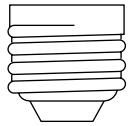
EASY TO READ MONOGRAMS

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

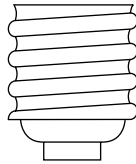


- 5 Code of Federal Regulation UV Safety Code
- 6 Julian Date Code: Day of the Year (Manufacture)
- 7 Country of origin
- 8 ANSI Rating, lamp code
- 9 Product code

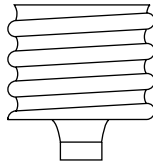
BASE TYPES



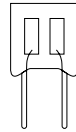
Edison Screw
Medium Base
E26



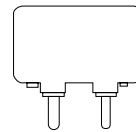
Edison Screw
Mogul Base
E39



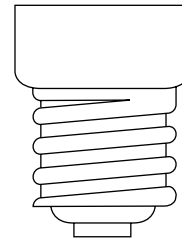
Mogul Screw
Exclusionary
EX39



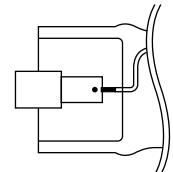
Single-Ended
G8.5



Single-Ended
G12



Edison Screw
Mogul Skirted Base
E39



Recessed Contact
R7 Base

RUGGED, HIGH-QUALITY, PATENTED EYE BASE

EYE lamps use a nickel-plated brass base that is easily removed from the socket after many years of operation.

The ceramic insulator insures against cracking.

The tall brass eyelet guarantees solid contact.

EYE SUPERIOR LAMP BASE



COMMON LAMP BASE



Typical HID lamps with brass base often stick in the fixture socket.

Glass insulator is prone to cracking which leads to electrical arcing and socket damage.

The Center Contact is shallow which increases the chance of poor contact, arcing and socket damage.

BASE MARKINGS

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

Plasma-Welded Eyelet is Lead-Free

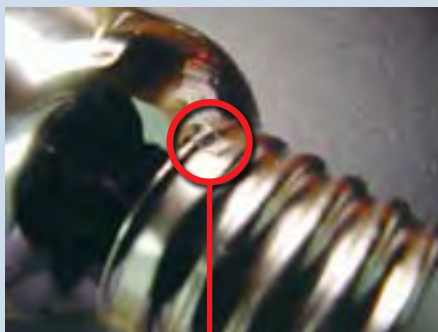


Month: J, F, M, A, M, J, J, A, S, O, N, D

Year: 0-9

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

EN/TCLP ENVIRONMENTALLY-SAFE, IMPROVED WELD LOCK



Improved Weld Lock

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





PRODUCT LOCATOR

Product Locator by EYE Lighting Product Number**REF-2**

Product Locator by Wattage**REF-3**

Product Locator by Industry Description.**REF-4**

GLOSSARY AND DEFINITIONS

Glossary of Terms**REF-6**

EYE Lighting Product Family Definitions**REF-10**

PRODUCT LOCATOR BY EYE LIGHTING PRODUCT NUMBER

Product	Page#	Product	Page#	Product	Page#	Product	Page#	Product	Page#
50053.....MH-10		52529.....CONV-9		55131.....CT-4		56378.....CT-4		62443.....CONV-7	68731.....HG-7
50065.....MH-7		52533.....MH-9		55134.....CT-4		56385.....CT-4		62541.....HPS-6	68731..... CONV-11
50074.....MH-7		52536.....MH-7		55137.....CT-4		56392.....CT-5		62541..... CONV-7	68780.....HG-6
50083.....MH-7		52540.....MH-9		55141.....CT-4		56399.....CT-5		62639.....HPS-6	68780..... CONV-10
50102.....MH-10		52545.....MH-4		55144.....CT-3		56420.....CT-5		62639..... CONV-7	68829.....HG-6
50151.....MH-10		52549.....MH-7		55147.....CT-4		56423.....CT-3		65075.....HPS-4	68829..... CONV-10
50200.....MH-10		52582.....MH-9		55150.....CT-4		56427.....CT-5		65088.....HPS-5	68878.....HG-6
50207.....MH-7		52631.....MH-9		55154.....CT-6		56462.....CT-5		65222.....HPS-5	68878..... CONV-10
50249.....MH-10		52680.....MH-9		55157.....CT-6		56469.....CT-5		65320.....HPS-4	68976.....HG-6
50298.....MH-10		52712.....MH-8		55161.....CT-7		56650.....MH-6		65347.....HPS-5	68976..... CONV-10
50309.....MH-7		52712..... CONV-9		55162.....CT-5		56699.....MH-6		65467.....HPS-5	69074.....HG-7
50330.....MH-5		52729.....MH-9		55165.....CT-3		56797.....MH-6		65516.....HPS-4	69074..... CONV-11
50390.....MH-7		52778.....MH-9		55170.....CT-7		56895.....MH-6		65565.....HPS-4	69123.....HG-7
50396.....MH-10		52827.....MH-9		55177.....CT-3		57713.....MH-17		65576.....HPS-5	69123..... CONV-11
50445.....MH-10		52876.....MH-9		55178.....CT-5		57738.....MH-19		65630.....HPS-4	69623.....HG-3
50494.....MH-10		53440.....MH-4		55181.....CT-3		57753.....MH-17		65712.....HPS-5	69672.....HG-4
50543.....MH-10		53625.....MH-9		55183.....CT-5		57787.....MH-13		65761.....HPS-4	69721.....HG-4
50565.....MH-4		53634.....MH-9		55185.....CT-3		57787..... CONV-6		65769.....HPS-5	69770.....HG-4
50570.....MH-4		53650.....MH-4		55187.....CT-5		57791.....MH-14		65859.....HPS-4	69819.....HG-4
50578.....MH-4		53916.....MH-9		55189.....CT-3		57791..... CONV-8		65863.....HPS-5	69868.....HG-4
50592.....MH-10		53925.....MH-9		55193.....CT-3		57836.....MH-19		66006.....HPS-5	69966.....HG-3
50641.....MH-10		53974.....MH-9		55197.....CT-5		57875.....MH-14		66055.....HPS-4	70015.....HG-3
51605.....MH-12		54023.....MH-9		55199.....CT-6		57875..... CONV-8		66061.....HPS-5	70064.....HG-4
51605..... CONV-3		54025.....MH-9		55201.....CT-5		57881.....MH-14		66202.....HPS-5	70113.....HG-3
51788.....MH-12		54121.....MH-9		55206.....CT-5		57881..... CONV-8		66727.....HPS-4	70162.....HG-4
51788..... CONV-3		54232.....MH-4		55210.....CT-5		57885.....MH-13		67947.....HG-6	70211.....HG-3
51837.....MH-12		54305.....MH-5		55215.....CT-7		57885..... CONV-6		67947..... CONV-10	70260.....HG-4
51837..... CONV-3		54309.....MH-5		55218.....CT-7		57934.....MH-13		67996.....HG-6	70309.....HG-4
51886.....MH-12		54312.....MH-5		55227.....CT-7		57934..... CONV-6		67996..... CONV-10	70358.....HG-4
51886..... CONV-3		54319.....MH-5		55235.....CT-7		57974.....MH-8		68143.....HG-7	70407.....HG-3
51935.....MH-12		54326.....MH-5		55250.....CT-7		57974..... CONV-9		68143..... CONV-11	70456.....HG-4
51935..... CONV-3		54341.....MH-5		55335.....MH-16		58100.....MH-11		68192.....HG-7	70554.....HG-3
51984.....MH-12		54348.....MH-5		55345.....MH-16		58105.....MH-11		68192..... CONV-11	70603.....HG-3
51984..... CONV-3		54354.....MH-5		55438.....MH-18		58110.....MH-11		68241.....HG-7	70701.....HG-5
52033.....MH-12		54355.....MH-5		55452.....MH-18		58115.....MH-11		68241..... CONV-11	70750.....HG-5
52033..... CONV-3		54369.....MH-5		55459.....MH-18		59674.....HPS-3		68290.....HG-6	70799.....HG-5
52461.....MH-7		54374.....MH-5		55645.....MH-15		59685.....HPS-3		68290..... CONV-10	70946.....HG-5
52464.....MH-4		54379.....MH-5		55803.....MH-17		59696.....HPS-3		68339.....HG-6	70995.....HG-5
52470.....MH-4		54768.....MH-6		55930.....MH-15		59707.....HPS-3		68339..... CONV-10	71191.....HG-5
52495.....MH-7		54866.....MH-6		56108.....MH-15		59718.....HPS-3		68388.....HG-7	71250.....HG-5
52520.....MH-8		55100.....CT-8		56162.....MH-15		59914.....HPS-3		68388..... CONV-11	71289.....HG-5
52520..... CONV-9		55100..... CONV-4		56241.....MH-17		60012.....HPS-3		68584.....HG-6	71338.....HG-5
52525.....MH-8		55102.....CT-9		56260.....MH-17		60050.....HPS-3		68584..... CONV-10	71510.....HG-3
52525..... CONV-9		55102..... CONV-5		56267.....MH-17		60110.....HPS-3		68633.....HG-7	77201..... CONV-12
52527.....MH-8		55115.....CT-8		56322.....CT-4		62345.....HPS-6		68633..... CONV-11	77206..... CONV-12
52527..... CONV-9		55115..... CONV-4		56326.....CT-4		62345..... CONV-7		68682.....HG-6	
52529.....MH-8		55128.....CT-4		56371.....CT-4		62443.....HPS-6		68682..... CONV-10	



PRODUCT LOCATOR BY WATTAGE

Wattage	Base	Page#
CERAMIC TECHNOLOGY		
39	G8.5	CT-4
39	G12	CT-3, 4
70	G8.5	CT-3, 4
70	G12	CT-3, 4
70	MEDIUM	CT-3, 5
100	MEDIUM	CT-5
100	MOGUL	CT-16
150	G12	CT-3, 4
150	MEDIUM	CT-3, 5
150	MOGUL	CT-6
220	MOGUL	CT-7
250	MOGUL	CT-8, 15 CONV-4, 5
270	MOGUL	CT-7
360	MOGUL	CT-7, 15 CONV-4
375	MOGUL	CT-7

METAL HALIDE - PROBE START		
175	MOGUL	MH-10, 11
250	MOGUL	MH-7, 10-14 CONV-3, 6, 8
360	MOGUL	MH-8 CONV-8
400	MOGUL	MH-7-14 CONV-3, 6, 8, 9
1000	MOGUL	MH-7, 9-12 CONV-3
1500	MOGUL	MH9

METAL HALIDE - PULSE START		
70	MEDIUM	MH-6
70	G12	MH-16
100	MEDIUM	MH-6
150	MEDIUM	MH-18
150	G12	MH-16
150	Rx7S	MH-17, 18
175	MEDIUM	MH-6
175	MOGUL	MH-5
250	MOGUL	MH-4, 5, 7
320	MOGUL	MH-4, 5, 7
350	MOGUL	MH-4, 5, 7
400	MOGUL	MH-4, 5, 7
750	MOGUL	MH-4, 5, 7
1000	MOGUL	MH-4, 5, 7

Wattage	Base	Page#
HPS - STANDARD		
35	MEDIUM	HPS-5
50	MEDIUM	HPS-5
70	MEDIUM	HPS-5
100	MEDIUM	HPS-5
150	MEDIUM	HPS-5
50	MOGUL	HPS-5
70	MOGUL	HPS-5
100	MOGUL	HPS-5
150	MOGUL	HPS-5, 6 CONV-7
220	MOGUL	HPS-6 CONV-7
250	MOGUL	HPS-5
360	MOGUL	HPS-6 CONV-7
400	MOGUL	HPS-5
940	MOGUL	HPS-6 CONV-7

HPS - TCLP COMPLIANT		
50	MOGUL	HPS-4
70	MOGUL	HPS-4
100	MOGUL	HPS-4
150	MOGUL	HPS-4
200	MOGUL	HPS-4
250	MOGUL	HPS-4
310	MOGUL	HPS-4
400	MOGUL	HPS-4
1000	MOGUL	HPS-4

HPS - INTERNAL IGNITOR		
50	MOGUL	HPS-3
70	MOGUL	HPS-3
100	MOGUL	HPS-3
150	MOGUL	HPS-3
200	MOGUL	HPS-3
250	MOGUL	HPS-3
310	MOGUL	HPS-3
400	MOGUL	HPS-3
1000	MOGUL	HPS-3

Wattage	Base	Page#
STANDARD MERCURY		
50	MEDIUM	HG-3, 5
75	MEDIUM	HG-3
80	MEDIUM	HG-3
100	MEDIUM	HG-3, 5
125	MEDIUM	HG-3
175	MEDIUM	HG-3, 5
100	MOGUL	HG-4
175	MOGUL	HG-4
250	MOGUL	HG-4
400	MOGUL	HG-4, 5
700	MOGUL	HG-4
1000	MOGUL	HG-4

SELF-BALLASTED MERCURY		
100	MEDIUM	HG-6 CONV-10
160	MEDIUM	HG-6, 7 CONV-0, 11
250	MEDIUM	HG-6, 7 CONV-10, 11
250	MOGUL	HG-6 CONV-10
450	MOGUL	HG-6, 7 CONV-10, 11
750	MOGUL	HG-6, 7 CONV-10, 11

LED		
37	MEDIUM	CONV-12
37	MEDIUM	CONV-12

PRODUCT LOCATOR BY INDUSTRY DESCRIPTION

Product	Page#	Product	Page#	Product	Page#
100WSB/E21W	HG-6	CMT35/U/830/G12	CT-4	H1000B.....	HG-4
100WSB/E21W	CONV-10	CMT35/U/942/G8.5	CT-4	HF50PD	HG-3
160WSB/E24W	HG-6	CMT35/U/942/G12	CT-4	HF75PD	HG-3
160WSB/E24W	CONV-10	CMT35/U/NR936/G12	CT-3	HF80PD	HG-3
160WSB/R40FL	HG-7	CMT70/U/928/G12	CT-4	HF100PD	HG-4
160WSB/R40FL	CONV-11	CMT70/U/930/G8.5	CT-4	HF100PD/MED	HG-3
160WSB/RSP38RF	HG-7	CMT70/U/930/G12	CT-4	HF125/PD	HG-3
160WSB/RSP38RF	CONV-11	CMT70/U/935/G12	CT-4	HF175PD	HG-4
160WSB/RSP38RFF	HG-7	CMT70/U/942/G12	CT-4	HF250PD	HG-4
160WSB/RSP38RFF	CONV-11	CMT70/U/NR936/G8.5	CT-3	HF400PD	HG-4
220/230V160W/E24W	HG-6	CMT70/U/NR936/G12	CT-3	HF700BPD	HG-4
220/230V160W/E24W	CONV-10	CMT150/U/832/G12	CT-4	HF1000BPD	HG-4
220/230V250W/E28W/MED	HG-6	CMT150/U/837/MOG	CT-6	HR50W	HG-5
220/230V250W/E28W/MED	CONV-10	CMT150/U/935/G12	CT-4	HR50W/S	HG-5
220/230V250W/E28W/MOG	HG-6	CMT150/U/942/G12	CT-4	HR100W	HG-5
220/230V250W/E28W/MOG	CONV-10	CMT150/U/NR936/G12	CT-3	HR100W/R30	HG-5
230/240V450W/BT37W	HG-6	CMT250/U/737/LU/MOG	CT-9	HR175W	HG-5
230/240V450W/BT37W	CONV-10	CMT250/U/737/LU/MOG	CONV-5	HRF400PD	HG-5
230/240V750W/R57FL	HG-7	CMTP70/U/932/MED	CT-5	HRFF100PD	HG-5
230/240V750W/R57FL	CONV-11	CMTP70/U/943/MED	CT-5	HRFF100PD/R30	HG-5
240/250V750W/R57FL	HG-7	CMTP70/U/NR936/MED	CT-3	HRFF175PD	HG-5
240/250V750W/R57FL	CONV-11	CMTP100/U/935/MED	CT-5	LDS37/750/BUD/MED/KIT	CONV-12
250WSB/E28MED	HG-6	CMTP100/U/942/MED	CT-5	LDS37/830/BUD/MED/KIT	CONV-12
250WSB/E28MED	CONV-10	CMTP150/U/928/MED	CT-5	LU35/MED	HPS-5
250WSB/E28/MOG	HG-6	CMTP150/U/943/MED	CT-5	LU50	HPS-5
250WSB/E28/MOG	CONV-10	CMTP150/U/955/MED	CT-5	LU50/EN	HPS-4
250WSB/R40FL	HG-7	CMTP150/U/NR936/MED	CT-3	LU50/I/EN	HPS-3
250WSB/R40FL	CONV-11	CMTP250/BUD/940/LU/MOG	CT-8	LU50/MED	HPS-5
450WSB/BT37W	HG-6	CMTP250/BUD/940/LU/MOG	CONV-4	LU70	HPS-5
450WSB/BT37W	CONV-10	CMTP270/BUD/941/PS	CT-7	LU70/EN	HPS-4
450WSB/R57FL	HG-7	CMTPF70/U/932/MED	CT-5	LU70/I/EN	HPS-3
450WSB/R57FL	CONV-11	CMTPF70/U/943/MED	CT-5	LU70/MED	HPS-5
750WSB/BT46W	HG-6	CMTPF70/U/NR936/MED	CT-3	LU100	HPS-5
750WSB/BT46W	CONV-10	CMTPF100/U/935/MED	CT-5	LU100/EN	HPS-4
750WSB/R57FL	HG-7	CMTPF100/U/942/MED	CT-5	LU100/I/EN	HPS-3
750WSB/R57FL	CONV-11	CMTPF150/U/928/MED	CT-5	LU100/MED	HPS-5
CM100/U/837/MOG/EN	CT-6	CMTPF150/U/943/MED	CT-5	LU150/55	HPS-5
CM150/U/837/MOG/EN	CT-6	CMTPF150/U/955/MED	CT-5	LU150/55/EN	HPS-4
CM220/250/HOR/837/PS	CT-7	CMTPF150/U/NR936/MED	CT-3	LU150/55/I/EN	HPS-3
CM360/HOR/840/PS*	CT-7	H50	HG-3	LU150/MED	HPS-5
CM375/HOR/840/PS	CT-7	H75	HG-3	LU200/EN	HPS-4
CMP220/BUD/837/PS	CT-7	H100	HG-4	LU200/I/EN	HPS-3
CMP250/BUD/937/PS	CT-7	H100/MED	HG-3	LU250	HPS-5
CMP360/BUD/840/I/MOG*	CT-8	H175	HG-4	LU250/EN	HPS-4
CMP360/BUD/840/I/MOG*	CONV-4	H175/MED	HG-3	LU250/I/EN	HPS-3
CMP360/BUD/840/PS	CT-7	H250	HG-4	LU310/EN	HPS-4
CMT35/U/830/G8.5	CT-4	H400	HG-4	LU310/I/EN	HPS-3



PRODUCT LOCATOR BY INDUSTRY DESCRIPTION

Product	Page#	Product	Page#	Product	Page#
LU400.....	HPS-5	M1000BSX/BU.....	MH-9	MP400SX/BU.....	MH-9
LU400/EN.....	HPS-4	M1000BX/U.....	MH-10	MP400SX/BU/I.....	MH-8
LU400/I/EN.....	HPS-3	M1000BX/U BRUTUS.....	MH-7	MP400SX/BU/I.....	CONV-9
LU1000B/EN.....	HPS-4	M1000BX/U/BT37.....	MH-10	MP1000BSX/BU.....	MH-9
LU1000B/I/EN.....	HPS-3	M1000BX/U/BT37 BRUTUS.....	MH-7	MP1000BSX/BU/UVC.....	MH-9
M70P36S/D.....	MH-18	M1000BX/U/LU.....	MH-12	MP1000BX/U/BT37.....	MH-9
M70P36S/SDW.....	MH-18	M1000BX/U/LU.....	CONV-3	MPF150/U/3K.....	MH-6
M70P36S/SW.....	MH-18	M1000BX/U/PS/BT37.....	MH-4	MPF250/BU/PS.....	MH-5
M100X/U/MED.....	MH-6	M1000BX/U/PS/BT37 BRUTUS.....	MH-7	MPF320/BU/PS/BT28.....	MH-5
M175/BU/PS/ED28.....	MH-5	M1000/U.....	MH-11	MPF350/BU/PS.....	MH-5
M175/U.....	MH-11	M1500B/BD.....	MH-9	MPF400/BU/PS.....	MH-5
M175X/U.....	MH-10	M1500B/BUH.....	MH-9	MT70/D/G12.....	MH-15
M175X/U/MED.....	MH-6	M1500BSX/HOR.....	MH-9	MT70/SDW/G12.....	MH-15
M250/U.....	MH-11	MF175/BU/PS/ED28.....	MH-5	MT70/SW/G12.....	MH-15
M250X/U.....	MH-10	MF175X/U.....	MH-10	MT150AQUA.....	MH-17
M250X/U BRUTUS.....	MH-7	MF250/BU/PS.....	MH-5	MT150/D/G12.....	MH-15
M250X/U/LU.....	MH-12	MF250X/U.....	MH-10	MT175AQUA2/HOR.....	MH-17
M250X/U/LU.....	CONV-3	MF250X/U/LU.....	MH-12	MT250/BH.....	MH-19
M250X/U/PS.....	MH-4	MF250X/U/LU.....	CONV-3	MT250D.....	MH-14
M250X/U/PS BRUTUS.....	MH-7	MF250X/U/PS.....	MH-4	MT250D.....	CONV-8
M320X/U/PS.....	MH-4	MF320/BU-HOR/PS/BT28.....	MH-5	MT250DL.....	MH-13
M350X/U/PS.....	MH-4	MF360SX/BU/I.....	MH-8	MT250DL.....	CONV-6
M350X/U/PS BRUTUS.....	MH-7	MF360SX/BU/I.....	CONV-9	MT400/BH.....	MH-19
M350X/U/PS/BT28.....	MH-4	MF400/BU/PS/BT37.....	MH-5	MT400/BUD.....	CONV-8
M360SX/BU/I.....	MH-8	MF400SX/BU.....	MH-9	MT400D/BUD.....	MH-14
M360SX/BU/I.....	CONV-9	MF400SX/BU/BT28.....	MH-9	MT400D/HOR.....	MH-14
M400SX/BU.....	MH-9	MF400SX/BU/I.....	MH-8	MT400D/HOR.....	CONV-8
M400SX/BU/BT28.....	MH-9	MF400SX/BU/I.....	CONV-9	MT400DL/BH.....	MH-13
M400SX/BU/I.....	MH-8	MF400SX/HOR.....	MH-9	MT400DL/BH.....	CONV-6
M400SX/BU/I.....	CONV-9	MF400SX/HOR/BT28.....	MH-9	MT400DL/BUD.....	MH-13
M400SX/HOR.....	MH-9	MF400X/U.....	MH-10	MT400DL/BUD.....	CONV-6
M400SX/HOR/BT28.....	MH-9	MF400X/U/BT28.....	MH-10	MTD150AQUA.....	MH-17
M400SX/HOR/PS.....	MH-5	MF400X/U/LU.....	MH-12	MTD150AQUA2.....	MH-17
M400/U.....	MH-11	MF400X/U/LU.....	CONV-3	MTD150AQUA/10K.....	MH-17
M400X/U.....	MH-10	MF400X/U/LU/BT28.....	MH-12	MTD150/D.....	MH-16
M400X/U BRUTUS.....	MH-7	MF400X/U/LU/BT28.....	CONV-3	MTD150/SW.....	MH-16
M400X/U/BT28.....	MH-10	MF1000BSX/BU.....	MH-9	MTD250AQUA/14K.....	MH-17
M400X/U/BT28 BRUTUS.....	MH-7	MF1000BX/U.....	MH-10	NH150CE/EN.....	HPS-6
M400X/U/LU.....	MH-12	MF1000BX/U/BT37.....	MH-10	NH150CE/EN.....	CONV-7
M400X/U/LU.....	CONV-3	MP70/U/3K.....	MH-6	NH220CE/EN.....	HPS-6
M400X/U/LU/BT28.....	MH-12	MP100/U/3K.....	MH-6	NH220CE/EN.....	CONV-7
M400X/U/LU/BT28.....	CONV-3	MP150/U/3K.....	MH-6	NH360CE/EN.....	HPS-6
M400X/U/PS.....	MH-4	MP250/BU/PS.....	MH-5	NH360CE/EN.....	CONV-7
M400X/U/PS BRUTUS.....	MH-7	MP320/BU/PS/BT28.....	MH-5	NH940BCE/EN.....	HPS-6
M400X/U/PS/BT28.....	MH-4	MP360SX/BU/I.....	MH-8	NH940BCE/EN.....	CONV-7
M400X/U/PS/BT28 BRUTUS.....	MH-7	MP360SX/BU/I.....	CONV-9		
M750X/U/PS/BT37.....	MH-4	MP400/BU/PS.....	MH-5		

GLOSSARY OF TERMS

A

Ace: The EYE trade name that identifies the product family as a retrofit or conversion lamp.

Ambient Temperature: Temperature of the surrounding environment.

Ampere: A unit to quantify the intensity of electric current flow. Commonly referred to as Amps (A) or current (I).

Amperes = Watts/Volts

ANSI (American National Standards Institute): A non-profit accredited standards organization established to administer a voluntary industry standards in the United States.

Aphos™: Full family of durable LED luminaires including ceiling, wall and pole mount variations. Available in a wide variety of distribution patterns, lumen output and LED color temperatures. Ideal for parking garage, warehouse, façade, security, and area lighting applications.

Arctube: The inner tube of a high intensity discharge (HID) lamp, that contains an electric arc which produces light when an electric current passed through the tube.

Auto-Restrike: Circuitry used to restart the lamps without resetting the power to the ballast.

Autotransformer: A tapped winding transformer that changes the voltage available locally to the voltage required by a particular load.

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

Axis Candelas: (See Center Beam Intensity)

B

Ballast: A device that, by means of resistance, inductance, capacitance, or electronic elements, singly or in combination, controls the current, voltage and waveform to the required values for proper lamp starting and operation. Capacitors for power factor correction and capacitor discharge resistors may form part of such ballast.

Ballast Cycling: Undesirable condition under which the ballast turns lamps on and off (cycles) due to the overheating of the thermal switch inside the ballast. This may be due to incorrect lamps, improper voltage being supplied, high ambient temperature around the fixture, or the early stage of ballast failure.

Ballast Efficacy Factor (BEF): Measure used to compare various lighting systems based upon light output and power input. Higher BEF is favorable. $BEF = \text{Ballast Factor} \times 100 / \text{Input Watts}$.

Ballast Factor (BF): Measure of light output from lamp operated by commercial ballast, as compared to a laboratory standard reference ballast.

BF = Lumens (Commercial Ballast) / Lumens (Reference Ballast)

Ballast Losses: The power consumed by the ballast when it is operating a lamp. The ballast loss is calculated by subtracting the input power from the lamp power.

Ballast Noise "Hum": Sound made by operating Core & Coil assemblies in both electromagnetic and electronic ballasts, generated by the vibration of laminations in the electromagnetic field that transforms the voltage and current used by discharge lamps. The sound made by high frequency electronic ballasts is lower, and any noise made by models with electronic power factor connection circuits is inaudible.

Ballast Regulation: The ability of a ballast to control lamp wattage (and therefore light output) when subject to changes in line voltage.

Base: A mechanical device that supports the lamp and may provide an electrical connection to operate the lamp.

Beam Angle: The angle between two directions within a plane, which contain the points of 50% center beam intensity.

Beam Axis: The axis that the distribution of light flux is substantially symmetrical.

Beam Lumens: The total flux in that region of space where the intensity exceeds 50 percent of the maximum intensity.

B

Beam Pattern: The pattern of light on a surface perpendicular to the beam axis.

Bimetallic Switch: A temperature-sensitive electrical switch inside a HID lamp that opens and closes at the appropriate temperatures. One common use of a bimetallic switch in a HID LAMP is to deactivate the starting aid once the lamp has warmed up to extend the lamp life.

C

C&I (Commercial and Industrial): Market segments that exclude residential applications.

Candela (cd): The international (SI) unit of luminous intensity equal to one lumen per unit area (steradian). The candela was formerly called a candle.

Candlepower (cp): The luminous intensity expressed in candelas.

Candlepower Distribution Curve: A photometric curve showing the luminous intensity of a lamp or luminaire at various angles from the lamp or luminaire axis, which shows how the light will be spread.

Capacitor: Device in ballast that stores electrical energy.

CCF (Current Crest Factor, Lamp): The peak lamp current, divided by the RMS lamp current (See RMS Lamp Current). Low crest factors are important for achieving rated lamp life. $CCF = \text{Peak Lamp Current (Amps)} / \text{RMS Lamp Current (Amps)}$

CCT (Correlated Color Temperature): The color appearance of light, usually expressed in Kelvin. For example, 6500K is the approximate CCT of sunlight at high noon.

Center Beam Intensity (Ic): The value of light intensity, measured on the beam axis. The unit of measurement for Center Beam Intensity is the Candela.

Centigrade (C): Celsius temperature scale where $0^{\circ}\text{C} = 32^{\circ}\text{F}$ and $100^{\circ}\text{C} = 212^{\circ}\text{F}$.

Chromaticity: The dominant or complimentary wavelengths (colors) and purity aspects of the colors taken together.

Circle-E: Marking on ballast that shows compliance with Federal Ballast Energy Law (Public Law 100-357).

Clean Ace™: Retrofit Metal Halide lamps that operate on Mercury CWA ballasts. Converts Mercury CRI 40 fixtures to Metal Halide CRI 90 fixtures by changing the lamp.

Clean Arc™: Metal Halide lamps that operate on CWA ballasts providing 6500K color temperature at CRI 90.

Coated: Lamp bulb has a phosphor coating on the inside surface to enhance color temperature. Designated in product code as "C".

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

Cera Arc®: High-performing Ceramic Technology with large assortment of base designs.

Cera Tek™: Ceramic Technology operates on Pulse Start Ballast. Can be used in open fixtures.

Color Arc®: Compact, medium base Tubular and PAR Metal Halide lamps rated for use in open fixtures. 3500K, 4500K, 6500K color temp. Plus aqua and blue colors, all at CRI 96.

Color Shift: The change in a lamp's color appearance, over life, measured in Kelvin compared to the initial color temperature rating.

Core: Component of electromagnetic ballast that is surrounded by the coil and comprised of steel laminations or solid ferrite material.

Core & Coil Ballast: Another term for electromagnetic ballast.

Correlated Color Temperature: A specification of the color appearance of a lamp relating its color to that of a reference source heated to a particular temperature, measured in degrees Kelvin (K).

Cost of Light: The total cost of owning a lighting system, which includes fixture, lamp, installation, maintenance labor, and electrical power costs.



GLOSSARY OF TERMS

C

Crest Factor: Ratio of peak lamp current to RMS (average) lamp current.

CRI (Color Rendering Index): An international system used to rate a lamp's ability to render object colors. The higher the CRI (based upon a 0-100 scale), the better colors appear. CRI ratings of various lamps may be compared, but a numerical comparison is only valid if the lamps are also rated for the same chromaticity. CRI differences among lamps are not usually significant (visible to the eye) unless the difference is more than 3-5 points.

CSA (Canadian Standards Association): An independent Canadian private accredited safety and performance standards organization.

CWA (Constant Wattage Autotransformer): A lamp power regulating type ballast that has many similar features of the Constant-Wattage Isolated (Isolated CWI) ballast, including a capacitor in series with a lamp. The CWA ballast uses an autotransformer circuit that combines the primary and secondary on the same winding.

CWI Ballast (Constant-wattage Isolated): A lamp power regulating type ballast incorporating fully isolated secondary windings in series with a capacitor and lamp. CWI ballasts tend to regulate the lamp wattage with small changes in line input voltage.

D

Diode: Usually a semiconductor device that conducts electric current in one direction only.

E

Efficacy: The measure of the luminous efficiency of a light source, efficacy is the quotient of the total luminous flux emitted by the total lamp power input, expressed in lm/W.

Electromagnetic Ballast: An inductive type ballast consisting of a coil or coils wound on an iron or steel core and operated at a line frequency of either 50 or 60Hz.

Electromagnetic Interference (EMI): Electrical interference (noise) generated by electrical and electronic devices. Levels generated by high frequency electronic devices are subject to regulation by the Federal Communications Commission (FCC). Two classifications exist; Non-Consumer (also referred to as Class A or Commercial) and Consumer (also referred to as Class B or Residential).

Electromagnetic Radiation: Radiation originating in a varying electromagnetic field, such as visible light, radio waves, x-rays, and gamma rays.

Electronic Ballast: A type of ballast that uses electronic components to provide the open circuit voltage and current regulation to start and sustain a discharge lamp.

Enclosed Fixture: A luminaire designed to contain any hot quartz fragments that might result from an arc tube rupture.

ESCO: Energy Saving Service Company.

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

F

FCC (Federal Communications Commission): The U.S. federal agency that is charged with regulating electrical interference emissions of the electromagnetic spectrum. The regulation entitled, "Part 18" deals with electromagnetic interference (EMI) from all lighting devices operating at frequencies higher than 9 kilohertz (kHz).

FEC (Ferro-Electric Capacitor): Iwasaki's exclusive patented switching capacitor contained within the outer jacket of special EYE HID lamp designs, (Ignitron & Ignitek), that controls starting voltage pulse height, width and phase.

Filament: Coated coil of special wire that emits electrons or light when heated.

Fixture Requirement: An ANSI containment classification of luminaires for specific HID lamp types. The classification code consists of the letters "O" for open, "E" for enclosed and "S" for open luminaires with lamp operating position restrictions.

F

Footcandle (fc): A unit of illuminance equal to 1 lumen per square foot or 10.76 lux.

Frequency: Rate of alteration in an AC current. Expressed in cycles per second or Hertz (Hz).

Frosted: Lamp bulb is acid-etched to diffuse and disperse the concentrated light source. Designated idayIn product code as "F".

G

Getter: Chemicals added to a lamp that neutralizes contaminants such as hydrogen and oxygen, which negatively affect lamp starting and life.

Group Re-Lamping: Replacing a group of lamps in the same area at the same time at a predetermined interval, rather than changing them individually as they fail. This is the most cost-effective method of re-lamping because it maximizes the lighting system performance and labor efficiency.

H

Hard Glass: Heat resistant glass that prevents breaking from thermal shock when struck by water. Borosilicate is one type of hard glass used for lamp outer jackets.

Harmonic Distortion: A measurement of the magnitude of voltage and current harmonics as compared with the amplitude of the fundamental frequency. Harmonic distortion can be generated by a load and fed back into the AC mains, causing distortion of the sinusoidal waveform.

Harmonics: Refers to components of the overall frequency, an integral multiple of the fundamental sine wave frequency.

Hertz (Hz): Unit used to measure frequency of alteration of electric current or voltage per unit time. Formerly CPS (Cycles Per Second) 1CPS = 1 Hz.

HID (High Intensity Discharge): An electric discharge lamp in which the light-producing arc is stabilized by the bulb wall temperature and the bulb wall loading is in excess of three watts per square centimeter. High intensity discharge lamp includes groups of lamps commonly known as Mercury, Metal Halide, and High Pressure Sodium.

High Output Horizontal Operation: High lumen output with long life does not require Position-Oriented lamp holder (Pin design socket).

High Output Position-Oriented: High lumen output, position specific, excellent lamp-to-lamp color uniformity.

High Power Factor Ballast (HPF): A ballast in which the power factor is greater than 0.9 (90%). These ballasts require less line current than normal power factor ballast.

High Pressure Sodium (HPS) Lamp: High Intensity Discharge light source which produces light by an electrical discharge sodium vapor operating at relatively high pressures and temperatures.

High Reactance AutoTransformer Ballast (HX): HID ballast used when the input voltage does not meet the starting voltage requirement for a lamp. The ballast will transform the input voltage to the required level.

Hot Restart Time: The time it takes a HID lamp to restart and reach 90% of its light output after going from on to off to on. Typical restart times are 1 to 2 minutes for High Pressure Sodium and 5 to 20 minutes for Metal Halide.

HPS Lamp (High Pressure Sodium Lamp): A high intensity discharge lamp (HID) in which the light is produced by radiation from sodium vapor operating at a partial pressure of 100 Torr. Includes clear and diffuse coated lamps.

HX (High Reactance Ballast): A ballast that consists of a step up voltage autotransformer on the input and a single inductive element wound on the same steel or iron core.

I

IEC (International Electro-technical Committee): An international independent standards organization. IEC standards are almost exclusively used in Europe and are adopted by many countries as their national standards for product safety and performance.

GLOSSARY OF TERMS

I

Ignitek™: Long-life Metal Halide with FEC technology. Excellent lumen maintenance in standard Metal Halide lighting system. Operates on standard ballast.

Ignitor (Starter): A device used within the ballast circuit to generate high voltage electrical pulses required to start High Pressure Sodium and some Metal Halide lamps.

Ignitron™ EN: High Pressure Sodium lamp with a built-in ignitor that meets Federal EPA TCLP requirements for non-hazardous waste.

Illuminance: Density of the luminous flux incident at a point on a surface. It is the quotient of the luminous flux divided by the area of the surface when the latter is uniformly illuminated.

Initial Lumens: The measure of the amount of light a lamp produces after it has been operating 100 hours.

Input Voltage: Voltage provided by a power line or power supply to the ballast or driver.

Input Watts: Total power consumed by lamp and ballast when the lamp is operated at rated wattage.

Inrush Current: Initial surge of current when an electrical device is turned on.

Instant Start Ballast: Electromagnetic or electronic lighting circuit without lamp filament heating that produces instant light.

K

Kelvin: The unit of measure used to designate the color temperature of a light source.

kiaroLED®: Family of high-performance, architecturally styled LED luminaires. Superior backlight, uplight and glare control, in a wide variety of distribution patterns, make it ideal for street, area, walkway, and pathway lighting applications.

Kilohertz (KHz): One thousand Hertz (cycles per second).

Kilowatt Hour (kwh): The standard of measure of electrical energy and the typical billing unit used by electrical utilities for electricity.

L

Lag Ballast: A ballast exhibiting primarily inductive electrical characteristics, including a lagging lamp current with respect to line voltage and lagging or corrected line power factor. This includes reactors and high reactance transformers.

LCL (Light Center Length): The distance from the light center to a specified reference point on the lamp.

Lead-Lag Slimline Ballast: Ballast that operates fluorescent lamps independently of one another. Can start lamps at 0°F.

LEDioc™: LED intelligent optical control (LEDioc) is a family of LED upgrade lamps intended to replace incumbent HID and incandescent lamp sources in period style post and pendant luminaires. LEDioc is the perfect upgrade solution in street, pathway, campus and area lighting applications.

Light: Radiant energy which can be sensed or seen by the human eye. Visible light is measured in lumens.

Low Power Factor Ballast (LPF): Ballast with a power factor of 0.79 or less – also called normal power factor (NPF) ballast. LPF ballast requires about twice the line current of HPF ballast so fewer LPF ballasts can be installed on a circuit, which increases installation cost.

LPW (Lumens Per Watt): See Efficacy

Lumen (lm): The SI unit of luminous flux, equal to the luminous flux emitted per unit solid angle by a standard point source having a luminous intensity of 1 candela.

Lumen Depreciation: The decrease in lumen output of a light source over time. Also called Lumen Maintenance.

Luminaire: A complete lighting unit consisting of a lamp or lamps together with the parts designed to distribute the light, to position and protect the lamps and to connect the lamps to the power supply.

L

Lux (lx): The SI unit of illuminance. One lux equals one lumen per square meter.

M

Mean Lumens: The average light output of a lamp over its life, usually determined by the light output at 40% of rated life.

Mercury Lamp: A High Intensity Discharge (HID) lamp in which the major portion of the light is produced by radiation from Mercury vapor operating at a partial pressure in excess of an atmosphere. Includes clear, phosphor coated and Self-Ballasted lamps.

Metal Halide Lamp: A High Intensity Discharge (HID) lamp in which the major portion of light is produced by radiation of Metal Halides and their products of dissociation in combination with metallic vapors such as Mercury. Includes clear and phosphor coated lamps.

Mogul Base: A large Edison Screw Base whose diameter is approximately 1.5 inches.

MOL (Maximum Overall Length): The largest outside dimension of a lamp. Typically MOL is measured from the end of the lamp base to the top of the outer jacket.

Multi-Metal™: Metal Halide lamps including U-Line, X-Line, Super X-Line and reduced jacket.

Multi-Metal Ace™: Retrofit Metal Halide lamps that operate on High Pressure Sodium ballasts. Converts High Pressure Sodium CRI 25 fixtures to Metal Halide CRI 65 fixtures by changing the lamp.

N

NEC (National Electric Code®): A collection of electrical wiring specifications and standards developed by the National Fire Protection Association (NFPA), and adopted and used in all 50 states in the USA. This standard is accredited by ANSI and CSA.

Nominal Beam Angle: That beam angle which is established as being representative of a manufacturer's production.

Normal Power Factor: Ballast in which the power factor is less than 0.80 (80%). These ballasts require about twice the line current of high power factor ballasts.

O

Open Circuit Voltage (OCV): Voltage, as measured at the lamp socket (HID or CFL) or across the lamp holders (fluorescent) when the lamp is not present, generated by the ballast required to start a lamp when power is turned on.

Operating Position: The specific physical orientation in which lamps are designed to operate. (for example, Base Up = BU, Base Up or Down=BUD, Base Up to Horizontal=BUH, Base Down = BD, Horizontal = HOR, etc.)

P

Parallel Circuit: Ballast circuit in which the lamps connected to one ballast operate independently of one another – if one lamp fails, the rest remain lit.

Peak Intensity (Ip): The highest value of light flux intensity regardless of whether or not it occurs on the beam axis. The unit of measure of Peak Intensity is the Candela.

Peak-Lead Ballast: A ballast that produces a highly peaked open circuit voltage wave shape, and has a capacitor in series with the lamp. CWA and CWI ballasts are typically Peak-lead ballasts.

Phosphor: Material lining the interior of a fluorescent lamp which emits light.

Potting: Compound used to completely surround and cover components of some magnetic and electronic ballasts in order to protect components, dampen sound, and dissipate heat.

Power Factor (PF): The ratio of real power (watts) to apparent power VA (volts x amps). HID ballast power factor is classified in two categories, High (Pf ≥0.90), and Normal or Low, (Pf <0.90).



GLOSSARY OF TERMS

P

Preheat Ballast: Electromagnetic ballast that requires separate starter in order to ignite the lamp.

Preheat Lamp: A fluorescent lamp in which the filaments must be heated before the lamp ignites.

Premium Multi-Metal™: Higher lumens and Improved color consistency compared to universal Metal Halide.

Premium Universal: Higher lumens and Improved color consistency compared to universal Metal Halide.

Probe Start: Method of starting Mercury vapor and specific Metal Halide lamps in which an additional electrode at one end of the arc tube assists in lamps starting.

Pulse Start: Method of starting High Pressure Sodium and specific Metal Halide lamps in which a high voltage starting pulse starts the lamps.

Q

Quartz: A high heat resistant glass-like material manufactured from pure silica sand. Quartz is used for the arc tube in Mercury and many Metal Halide lamp types.

R

Rated Life: See Average Rated Life

Reduced Jacket: A reduction in lamp bulb outer jacket size from the traditional standard size. Reduced jacket lamps are designed for special fixture applications and have generally shorter rated life.

Reference Ballast (Standard Reactor): Laboratory device used to provide ANSI specified measurements of initial and mean lamp lumens.

Reflector Lamp: An incandescent filament or electric discharge lamp in which the outer blown glass is coated with a reflecting material so as to direct the light (such as R, MR, PAR or ER type lamps). The light-transmitting region can be clear, frosted, patterned, or phosphor coated.

RFI (Radio Frequency Interference): Form of electromagnetic interference.

RMS Lamp Current: The effective lamp current. The lamp current of an HID lamp is normally measured as the RMS lamp current since the lamp current is frequently non-sinusoidal.

S

Seasoning Time: The time required for a new operating lamp to reach a state of equilibrium where the electrical, light level and color parameters stabilize. Typically, HID lamps obtain their rated performance after 100 hours of seasoning.

Self-Ballasted: An electric discharge or HID lamp that contains integral ballast as part of the lighting device.

Series Circuit: Ballast circuit in which the lamps connected to one ballast operate as a group. If one lamp fails or is removed, then all lamps in the circuit turn off.

Series-Parallel Circuit: Ballast circuit in which the lamps connected to one ballast operate both as a group and independently. If one lamp fails or is removed in the series connected section, then all lamps in that section will turn off, but the lamps in the parallel circuit remain on.

Shroud: The quartz enclosure around the arc tube designed to prevent bulb breakage of the outer jacket if the arc tube ruptures. Shrouded lamps are typically used in place of an enclosed fixture.

SI Unit: The International System of Units universally abbreviated SI (from the French Le Systeme d'Unites).

Soft Glass: Soft Glass or soda lime glass is easily melted and formed with relatively low melting temperatures as compared to heat resistant glass. Soft glass lamps may fracture when water hits a hot bulb.

S

Spectrum: A linear representation of the different radiant electromagnet wavelengths ranging from cosmic rays to radio waves.

SSL: Solid-State Lighting.

Standard Universal: Basic Metal Halide in all commonly used wattages.

Steridian: The steridian is the solid angle which, having its vertex in the center of a sphere, cuts off an area of the sphere equal to that of a square with sides of equal length equal to the radius of the sphere.

SUNLUX®: Basic High Pressure Sodium in all commonly used wattages.

SUNLUX® EN: High Pressure Sodium designs. EPA, TCLP compliant for non-hazardous waste.

Sunlux Ultra Ace™ EN: Converts a Mercury or Metal Halide system to High Pressure Sodium by simply changing the lamp. Meets Federal EPA TCLP requirements for non-hazardous waste.

System Efficacy: Overall efficiency of the lamp/ballast system. System efficacy = total lamp lumens / system wattage.

T

Thermal Protector: A self resetting switch that disconnects power to the ballast if internal temperatures rise above the trip point – typically 105°C.

Third Harmonic: Third multiple of the fundamental frequency that will add in the neutral wire of a three phase, 4 wire, Wye system and will cause overheating of the neutral wire should it exceed 33 1/3%.

Transients: High voltage and resultant high current surges through an electrical system caused by lightning strikes to nearby transformers, overhead lines or the ground. May also be caused by switching of large motors or other electrical loads, as well as by short circuits or utility system switching. Can lead to premature failure of ballasts or other electrical devices.

U

UL (Underwriters Laboratories): Underwriters Laboratories Inc. is an independent, not-for-profit product safety testing and certification organization. UL has tested products for public safety for more than a century.

UV (Ultraviolet): Radiant energy within the wavelengths of 100-400nm. UV energy is classified by IEC in three categories: UVA - 315 to 400 nm ("Black Light"), UVB - 280 to 315 nm (Bacterial Sterilization) and UVC - 100 to 280 nm (Ozone Producing).

Universal Operating Base Position: Lamps that can be installed and operated in any position. The letter U commonly designates universal position operating lamps.

Urban Act™: Family of small, high performance, architectural grade HID floodlight luminaires. Featuring ceramic lamp technology, combined with superior optical performance, Urban Act luminaires are the ideal solution for architectural highlight, sign, flagpole, and landscape lighting applications.

W

Warm Up Time: The time from the initial establishment of an arc to 90% of the steady state full light output of the lamp.

Watt (W): A unit of power used to quantify the rate of doing work. In electrical calculations, one watt is the power produced by a current of 1 ampere across a potential difference of one volt. In addition, the radiant luminous flux of a lamp is also expressed in watts.

EYE LIGHTING PRODUCT FAMILY DEFINITIONS

Aphos™

LED luminaires in a variety of mounting/application configurations including ceiling, wall and pole mount variations. See EYE Lighting Aphos Catalog.

Cera Arc®

High-performing Ceramic Technology with large assortment of base designs.

Cera Tek™

Ceramic Technology operates on Pulse Start Ballast. Can be used in open fixtures.

Clean Ace™

Retrofit Metal Halide lamps that operate on Mercury CWA ballasts. Converts Mercury CRI 40 fixtures to Metal Halide CRI 90 fixtures by changing the lamp.

Clean Arc™

Metal Halide lamps that operate on CWA ballasts providing 6500K color temperature at CRI 90.

Color Arc®

Compact, medium base Tubular and PAR Metal Halide lamps rated for use in open fixtures. 3500K, 4500K, 6500K color temp. Plus aqua and blue colors, all at CRI 96.

High Output Horizontal Operation

High lumen output with long life does not require Position-Oriented lamp holder (Pin design socket).

High Output Position-Oriented

High lumen output, position specific, excellent lamp-to-lamp color uniformity.

Ignitek™

Long-life Metal Halide with FEC technology. Excellent lumen maintenance in standard Metal Halide lighting system. Operates on standard ballast.

Ignitron™ EN

High Pressure Sodium lamp with a built-in ignitor that meets Federal EPA TCLP requirements for non-hazardous waste.

kiaroLED®

LED luminaires with a variety of illumination levels, color temperatures, controls, mounting options and accessories. See EYE Lighting kiaroLED Catalog.

LEDioc™

LED upgrade lamps intended to replace incumbent HID and incandescent lamp sources in period style post and pendant luminaires.

Mercury

Complete lamp line of standard E, BT and R bulbs plus Self-Ballasted E types.

Multi-Metal™

Metal Halide lamps including U-Line, X-Line, Super X-Line and reduced jacket.

Multi-Metal Ace™

Retrofit Metal Halide lamps that operate on High Pressure Sodium ballasts. Converts High Pressure Sodium CRI 25 fixtures to Metal Halide CRI 65 fixtures by changing the lamp.

Premium Multi-Metal™

Higher lumens and Improved color consistency compared to universal Metal Halide.

Premium Universal

Higher lumens and Improved color consistency compared to universal Metal Halide.

Pulse Start

Standard long-life Metal Halide, with improved lumen maintenance and reduce power cost. Requires special lamp and ballast system.

Pure White™

EYE exclusive ceramic technology chemistry that produces pure white light.

Standard Universal

Basic Metal Halide in all commonly used wattages.

SUNLUX®

Basic High Pressure Sodium in all commonly used wattages.

SUNLUX® EN

High Pressure Sodium designs. EPA, TCLP compliant for non-hazardous waste.

Sunlux Ultra Ace™ EN

Converts a Mercury or Metal Halide system to High Pressure Sodium by simply changing the lamp. Meets Federal EPA TCLP requirements for non-hazardous waste.

Urban Act™

Architectural floodlighting luminaires for Ceramic Technology lamps with technically superior optical control and integral electronic ballast technology. See EYE Lighting Urban Act Catalog.



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