INNOVATIVE THINKING HAS MADE US AN INDUSTRY LEADER.

At Killark we are committed to on-time, error-free deliveries of products that meet the highest level of customer expectations. With over 85 years of extensive experience Killark is a leading manufacturer of weatherproof, harsh and hazardous location products suitable for standard, explosion proof and other hostile and adverse environment applications. These products include conduit raceway fittings, junction boxes, enclosures, lighting fixtures, plugs & receptacles, standard and custom controls. Killark is a major participant in the OEM, commercial and industrial construction and MRO segments of both the domestic and international electrical construction materials market.

As a division of Hubbell since 1985, increased levels of capital have funded major new product initiatives and have enabled Killark to compete across the entire spectrum of electrical construction products on a global basis. With Hubbell's 1998 acquisition of Chalmit Lighting, the company is now the leading manufacturer of floodlighting for hazardous locations globally.

Hubbell has Codes & Standards representatives in the US, Canada, Mexico and Europe, enabling Killark/Chalmit to be at the forefront of Global Harmonization. These efforts enable the most cost competitive solutions to user requirements regardless of the destination of the installation.

Today Killark is known for individual customer solutions to complex hazardous location requirements. Utilization of existing designs coupled with value added engineering enables lower total installed cost systems with a lifetime of savings.

Comprehensive lab capabilities allow R&D efforts to support new product development as well as user defined requirements. Together with our Total Quality Management Program and ISO 9001 certification means we are dedicated to meeting your needs, whether it's engineering a new product or on-time delivery.

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KILLARK

Outside the USA Killark operates through Hubbell sales offices in Canada, Mexico, Great Britain, Holland, the United Arab Emirates, Turkey, Singapore, Malaysia, Hong Kong, Korea, and Taiwan. Killark also has sales representatives in Venezuela, Columbia, and Australia.

All data within this catalog is subject to change without notice.

HAZARDOUS (CLASSIFIED) LOCATIONS

Hazardous locations are those locations where fire or explosion hazards may exist due to flammable gases or vapors, flammable liquids, combustible dust, or ignitible fibers or flyings. Although flammable gases and vapors, and combustible dusts, exist almost everywhere, they are usually present only in minute quantities, much less than necessary for a fire or explosion hazard to exist. Thus, the presence of a flammable gas or vapor, or combustible dust, does not in itself define a hazardous location. These materials must be present in sufficient quantities (concentrations) to present a potential explosion hazard.

Locations where there is an explosion hazard because of the presence of high explosives, such as blasting agents and munitions, are not classified as hazardous locations. There are standards covering the handling and use of such materials, and some of these require electrical equipment suitable for use in hazardous locations. This is because such equipment provides a greater degree of safety than ordinary location or general purpose equipment, not because such equipment has been tested for use in the presence of high explosives.

In a like manner, locations made hazardous because of the presence of pyrophoric materials, such as some phosphorous compounds and finely divided metal powders are not classified as hazardous locations. Pyrophoric is defined in the dictionary as "igniting spontaneously" or "emitting sparks when scratched or struck, especially with steel". Where pyrophoric material or high explosives are present, precautions beyond those in the electrical codes are necessary.

UNDERSTANDING "GLOBAL" HAZARDOUS LOCATIONS

The evolution of hazardous location electrical codes and standards throughout the world has taken two distinct paths. In North America, a "Class, Division" System has been used for decades as the basis for area classification of hazardous (classified) locations. Because the hazards and methods of protecting electrical equipment against these hazards differ for different materials, hazardous locations are divided into three Classes, and two Divisions. The Classes are based on the type of hazard and the explosive characteristics of the material with the Divisions being based on the occurance or risk of fire or explosion that the material presents. While Canada and the United States have some differences in acceptable wiring methods and product standards, their systems are very similar.

In other parts of the world, areas containing potentially explosive atmospheres are dealt with using a "Zone System". Zones are based predominately on the International Electrotechnical Commission (IEC) and the European Committee for Electrotechnical Standardization (CENELEC) standards.

Whereas North America deals with multiple types of hazardous atmospheres, the Zone system presently addresses only flammable gases and vapors which is the equivalent to North America's Class I locations. The most significant difference between the Zone system is that the level of hazard probability is divided into three Zones as opposed to two Divisions.

While specific requirements differ, the United States and Canada have incorporated the Zone System for Class I, hazardous locations into their recent electrical code updates. Both systems provide effective solutions for electrical equipment used in hazardous locations and both have excellent safety records.

In North America Hazardous (Classified) Locations are divided into three Classes based on the explosive characteristics of the material. The Classes of material are further divided into "Divisions" or "Zones" based on the risk of fire or explosion that the material presents. The Zone system has three levels of hazard whereas the Division system has two levels.

The table below provides a comparison between the "Class, Division" System and the "Zone" System.

HAZARDOUS MATERIAL	CLASS, DIVISION SYSTEM	ZONE SYSTEM
Gases or Vapors①	Class I, Div. 1	Zone 0 & Zone 1
	Class I, Div. 2	Zone 2

① *The United States and Canada have adopted Zones for Gases and Vapors.*

HAZARDOUS (CLASSIFIED) LOCATIONS

CLASS I LOCATIONS

Class I locations are those in which flammable gases or vapors are or may be present in the air in quantities sufficient to produce explosive or ignitible mixtures.

The term "gases or vapors" is used because of common usage in the English language. The term "gases" is commonly used to refer to materials that are in a gaseous state under normal atmospheric conditions, such as hydrogen and methane. The term "vapors" refers to the gases over a material that is a liquid under normal atmospheric conditions (such as gasoline) but which emits gases within the flammable range under these same atmospheric conditions.

CLASS I, DIVISIONS 1 AND 2 GROUPS A, B, C, AND D LOCATIONS

General

The subdivision of Class I into two divisions identifies the likelihood or risk that an ignitible concentration of gases or vapors will be in the location. Division 1 identifies locations where the risk is high or medium. Division 2 identifies locations where there is a small but still finite risk. If the risk is extremely low,

the location is not considered a hazardous location. Such a location is typified by a single family home with natural gas or propane as the energy source for heating. The gas could, and on extremely rare occasions does leak into the home, and an explosion occurs. However the risk is so low (because of the safety systems built into the gas supply and heating equipment) that such locations are not classified as a hazardous location.

Division 1

Class I, Division 1 locations are those where the explosion hazard exists under normal operating conditions. The area may be hazardous all or most of the time, or it may only be hazardous some of the time. Division 1 also includes locations where breakdown or faulty operation of electrical equipment or processes might release ignitible concentrations of flammable gases or vapors, and might also cause simultaneous failure of electrical equipment in such a way as to directly cause the electrical equipment to become a source of ignition. An example of such a location might be an area where a flammable liquid is stored under cryogenic conditions, and a leak of the extremely low temperature liquid directly onto electrical equipment could cause failure of the electrical equipment at the same time the vapors of the evaporating liquid are within the flammable range.

Division 2

Class I, Division 2 locations are those where ignitible concentrations of flammable gases or vapors are not normally present, but could be present in the event of a fault, such as a leak at a valve in a pipeline carrying flammable liquids. Division 2 locations also often exist around Division 1 locations where there is no barrier or partition to separate the Division 1 space from a nonhazardous location, or where ventilation failure (an abnormal condition) might extend the area where flammables exist under normal conditions. Electrical equipment approved for Class I, Division 1 locations is also suitable for use in Division 2 locations.

The frequency of occurance determines the level of hazard for a location, the longer the material is present, the greater the risk.

FREQUENCY OF OCCURRENCE	CLASS, DIVISION SYSTEM	ZONE SYSTEM
Continuous	Class I, Div. 1	Zone 0
Intermittent Periodically		Zone 1
Abnormal Conditions	Class I, Div. 2	Zone 2

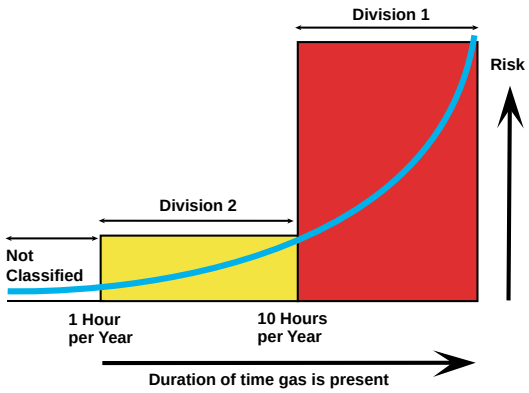
The abnormal conditions of occurrence, or lower risk areas, Division 2 and Zone 2 are basically identical in the Zone and Division system. However, in areas where a hazard is expected to occur during normal operation, Division 1 and Zone 1 and 0, the Zone system deals with highest risk areas Zone 0 separately, and risk associated with the remaining location Zone 1, is considered lower. The Division system tends to be less specific in its consideration of Division 1. The Division system treats all areas where a hazard is expected to occur in normal operation the same.

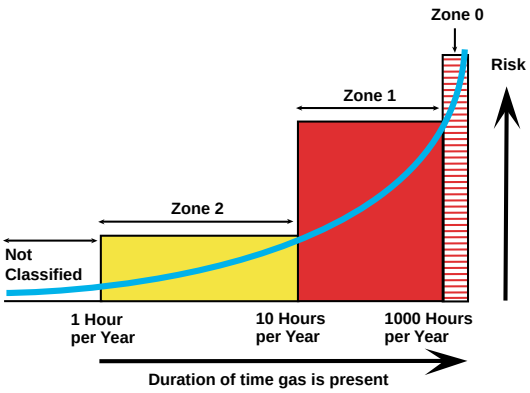
The following chart illustrates the differences between the various Zones.

GRADE OF RELEASE	ZONE	FLAMMABLE MIXTURE PRESENT
Continuous	0	1000 hours per year or more (10%)
Primary	1	Between 10 and 1000 hours per year or more (0.1% to 10%)
Secondary	2	Less than 10 hours per year (0.01% to 0.1%)
Unclassified	-	Less than 1 hour per year (Less than 0.01%) ①

This is a combination of Tables 2 and 3 from API RP505
① The 1-hour per year in API RP505 is considered to be high by some industry experts.

The illustration below compares the Division and Zone systems in terms of risk assessment.





CLASS I, GROUPS A, B, C, AND D

Class I locations are divided into groups because different materials have different explosion and ignition characteristics. The grouping permits equipment to be tested based on the type of flammable material in which it is intended to be used. It also permits area classification to be based on the type of material anticipated in that location.

The grouping is based on two major factors: the explosion pressure generated during an explosion; and the maximum gap between ground flat mating metal surfaces that will prevent propagation of an explosion through the gap to a flammable atmosphere of the same flammable material and concentration.

Group A

The highest explosion pressures of the materials grouped are generated by acetylene, the only material in Group A. Thus, explosionproof equipment designed for Group A must be very strong to withstand the explosion anticipated, and must have a very small gap between joint surfaces. Explosionproof equipment for Group A is the most difficult to design and there is less explosionproof equipment listed for this group than for any other group.

Group B

Group B materials produce explosion pressures somewhat less than acetylene, and the design of explosionproof enclosures for this group is somewhat less rigorous than for Group A enclosures. However, because of the very high explosion pressures in both Groups A and B, and, in particular, the very small gap between mating surfaces needed to prevent propagation of an explosion, there are no explosionproof motors listed for use in either Group A or B locations.

Group C

The chemical materials in Group C fall within the range between Groups B and D in both the explosion pressures generated and the gap between mating surfaces of explosion proof equipment that will prevent an explosion.

Group D

Group D is the most common group encountered in the field, and there is more equipment available for this group than for any other group.

There is no consistent relationship between such properties as ignition temperature, flash point, and flammable limits, and the Class I hazardous location group into which the various materials fall.

TYPICAL GAS	CLASS, DIVISION GAS GROUPS	ZONE GAS GROUPS
Acetylene	A	IIC
Hydrogen	B	IIC
Ethylene	C	IIB
Propane	D	IIA
Methane	D	IIA

CLASS I, ZONES 0, 1 AND 2, GROUPS IIC,IIB, AND IIA, LOCATIONS

General

This method of area classification follows the international method of area classification as developed by the International Electrotechnical Commission (IEC) and European Committee for Electrotechnical Standardization (CENELEC) standards.

This zone system of classification is currently only applicable to locations with Class I gases and vapors. Like the subdivisions under Class I locations of Divisions 1 and 2 and for the same reasons, (area classification and equipment testing) hazardous locations are classified by zones instead of divisions.

Zone 0

These are locations in which ignitible concentrations of flammable gases or vapors are present continuously or for long periods of time. Zone 0 represents the most dangerous part of the Division 1 classification.

There are situations where flammable liquids are stored in tanks and the vapor space above the liquid is above the upper flammable limit. If the vapor space is above the upper flammable limit most of the time, the space is not a Zone 0 location because the requirements are for "ignitible concentrations" of flammable gases or vapors (concentrations within the flammable range).

Zone 1

These locations are almost the same as Class I, Division 1 locations in the class, division system except they do not include those locations defined as Class I, Zone 0, where ignitible concentrations are present all or most of the time.

Zone 2

These locations are the same as Class I, Division 2 locations in the class, division system.

CLASS I, GROUPS IIC, IIB, AND IIA

General

In the international system of classification, Group I gas grouping is reserved for classification and equipment intended for use in underground mines. For information on electrical equipment in underground mines, see the Federal Register, regulations of the Mine Safety and Health Administration (MSHA).

Group IIC

This group is the equivalent of a combination of Class I, Groups A and B gases and vapors in the Division system. In the international system of classification, only the gap between machined flat mating surfaces, plus the igniting current (directly related to ignition energy), is considered in grouping materials. Explosion pressure is not one of the considerations. Thus, Groups A and B in the "class, division" system of classification can be grouped together in the international system. Internationally, rigid metal conduit and similar "pipe" wiring systems are not normally used in hazardous locations and thus consideration of pressure piling through a length of conduit (a major problem with acetylene) is unnecessary in the zone system. The maximum safe gap between machined flat mating surfaces is the same for Group A, and B materials.

Group IIB

This group is the equivalent to the Class I, Group C gases and vapors in the Division system.

Group IIA

This group is equivalent to the Class I, Group D gases and vapors in the Division system.

TEMPERATURE CODES (T-CODES)

Class I

The ignition temperature or auto-ignition temperature (AIT) is the minimum temperature required to initiate or cause self-sustained combustion in a substance without any apparent source of ignition. The lowest published ignition temperature should be the one used to determine the acceptability of equipment. This is of particular concern when selecting heat producing equipment such as lighting fixtures or motors which may generate sufficient heat to ignite the surrounding atmosphere.

Class I and Class II, areas use T-Codes or are subject to maximum temperature limitations as shown in the following chart. North America and the IEC are consistent in their temperature or T-Codes. However unlike the IEC, North America includes incremental values as shown below.

NORTH AMERICAN TEMP. CODES US (NEC-500) & CSA	IEC/CENELEC/US (NEC 505) TEMP. CODES	MAXIMUM TEMPERATURE	
		°C	°F
T1	T1	450	842
T2	T2	300	572
T2A		280	536
T2B		260	500
T2C		230	446
T2D		215	419
T3	T3	200	392
T3A		180	356
T3B		165	329
T3C		160	320
T4	T4	135	275
T4A		120	248
T5	T5	100	212
T6	T6	85	185

Ambient Temperature

The ambient temperature is the surrounding temperature of the environment in which a piece of equipment is installed, whether it is indoors or outdoors. Certain heat producing equipment such as lighting fixtures list a Temperature Code or T-Code at a given ambient temperature.

A heat producing product is considered acceptable for the location, provided the minimum ignition temperature of the hazardous material present and and the ambient temperature of the location do not exceed the limits set by the manufacturer. If the ambient temperature is higher than the maximum stated on the name plate, it might still be acceptable to use the product under certain conditions, provided the minimum ignition temperature of the hazardous material has not been exceeded. In all cases, consult the factory for assistance.

Operating Temperature

The rated operating temperature for hazardous (classified) products is determined by conducting laboratory test in an ambient temperature of 40° C. Products certified by the various agencies consider products certified to their standards to be suitable for different temperature ranges. The range for CSA is –50° C to +40° C, the range for UL is –25° C to +40° C, and the range for IEC and CENELEC is –20° C to +40° C.

CLASS II LOCATIONS

Class II locations are those that are hazardous because of the presence of combustible dust. Note that the dust must be present in sufficient quantities for a fire or explosion hazard to exist. The fact that there is some combustible dust present does not mean a Class II hazardous location exists. To be considered a "dust" the combustible material must exist as a finely divided solid of 420 microns (0.420 mm) or less. Such a dust will pass through a No. 40 U.S. sieve.

CLASS II, DIVISIONS 1 AND 2 GROUPS E, F, AND G LOCATIONS

General

Just as in Class I, Divisions 1 and 2, the subdivision of Class II into Divisions 1 and 2 identifies the likelihood that there will be an explosion hazard.

Division 1
A Class II, Division 1 location is one where combustible dust is normally in suspension in the air in sufficient quantities to produce ignitible mixtures, or where mechanical failure or abnormal operation of equipment or machinery might cause an explosive or ignitible dust-air mixture to be produced, and might also provide a source of ignition through simultaneous failure of electrical equipment. A Class II, Division 1 location also exists where combustible dusts of an electrically conductive nature may be present in hazardous quantities (Group E locations). The term "hazardous quantity" is intended to mean those locations where the dust may not be in suspension in the air in sufficient quantity to cause an explosion, but might have settled on electrical equipment so that the electrically conductive particles can penetrate the openings in the electrical equipment enclosure and cause an electrical failure, or where the dust can get into motor bearings and cause excessive temperatures because of bearing failure.

Division 2
A Class II, Division 2 location is one where combustible dust is not normally in the air in quantities sufficient to produce explosive or ignitible mixtures, and dust accumulations are not normally sufficient to interfere with the normal operation of electrical equipment, such as clogging ventilating openings or causing bearing failure. It includes locations where combustible dust may be in suspension in the air only as a result of infrequent malfunctioning of handling or processing equipment, and those locations where dust accumulation may be on or in the vicinity of the electrical equipment and may be sufficient to interfere with the safe dissipation of heat from the equipment, or may be ignitible by abnormal operation or failure of the electrical equipment.

Class II, Groups E, F, and G
The division into three groups in Class II locations is for the same reasons Class I locations are divided into Groups A, B, C, and D: equipment design and area classification. However, the three Class II groups are based on different characteristics than the four Class I groups because the design of dust-ignition proof equipment for Class II locations is based on different principles than the design of explosion proof equipment for Class I locations. In Class II locations the ignition temperature of the dust, the electrical conductivity of the dust, and the thermal blanketing effect the dust can have on heat-producing equipment, such as lighting fixtures and motors are the deciding factors in determining the Class II group.

Group E
Group E dusts include the metal dusts, such as aluminum and magnesium. In addition to being highly abrasive, and thus likely to cause overheating of motor bearings if the dust gets into the bearing, Group E dusts are electrically conductive. If they are allowed to enter an enclosure, they can cause electrical failure of the equipment.

Group F
The Group F dusts are carbonaceous, the primary dust in this group being coal dust. These dusts have somewhat lower ignition temperatures than the Group E dusts and a layer of a Group F dust has a higher thermal insulating value than a layer of a Group E dust, thus requiring more careful control of the temperature on the surface of the equipment. Such dusts are semi-conductive but this is not usually a factor for equipment rated 600 volts and less.

Group G
The Group G dusts include plastic dusts, most chemical dusts, and food and grain dusts. They are not electrically conductive. These dusts, in general, have the highest thermal insulating characteristics and the lowest ignition temperatures. Thus, dust-ignitionproof equipment for use in Group G atmospheres must have the lowest surface temperatures to prevent ignition of a dust layer by the heat generated within the equipment. Because of the different design characteristics, equipment suitable for Class I locations is not necessarily suitable for Class II locations, and equipment suitable for Class II locations is not necessarily suitable for Class I locations. The equipment must be approved for each class and group of location involved.

Much equipment suitable for Class I locations is also suitable for Class II locations, and is so marked, although when used in Class II locations there may be restrictions, such as lower maximum lamp wattage to maintain the lower surface temperature needed for equipment in dust atmospheres.

TYPE OF MATERIAL	GROUPS	TYPICAL MATERIALS
Electrically Conductive Dusts	E	Powdered metals such as aluminum or magnesium
Carbonaceous Dusts	F	Carbon Black, Coal Dust, Coke Dust
Agricultural Dusts	G	Grain, Flour, Sugars, Spices, Rice, Certain Polymers

In Class II areas all products must operate at temperatures as shown below based on whether they are heat producing or subject to overloading or not, and based on the Group which they fall under. Class III products in all cases must operate below 165° C.

	EQUIPMENT THAT IS NOT SUBJECT TO OVERLOADING		EQUIPMENT (SUCH AS MOTORS OR POWER TRANSFORMERS) THAT MAY BE OVERLOADED			
			NORMAL OPERATION		ABNORMAL OPERATION	
CLASS II GROUPS	°C	°F	°C	°F	°C	°F
E	200	392	200	392	200	392
F	200	392	150	302	200	392
G	165	329	120	248	165	329

CLASS III LOCATIONS

Class III locations are those that are hazardous because of the presence of easily ignitable fibers or flyings, but in which the fibers or flyings are not likely to be in suspension in the air in quantities sufficient to produce ignitible mixtures. Easily ignitible fibers and flyings present a fire but not an explosion hazard. A typical example of this type of material is the cotton lint that accumulates in the lint trap of clothes dryers. Listed clothes dryers are designed so that even if the lint ignites, the fire will be contained within the dryer enclosure.

CLASS III, DIVISIONS 1 AND 2

Division 1
This is a location where the equipment producing the ignitible fibers or flyings is located (near textile mill machinery, for example) or where the material is handled (for example, where the material is stuffed into bags).

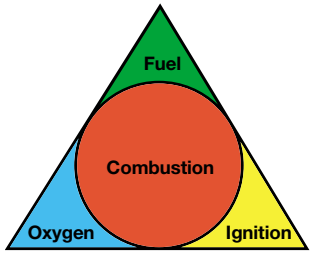
Division 2
This is a location where the easily ignitible fibers are stored or handled, except in manufacturing processes (which is Division 1).

Class III Groups
There are no groups in Class III locations.

EQUIPMENT DESIGN AND CONSTRUCTION

There are a number of ways of protecting electrical equipment so that it cannot cause an explosion when used in a surrounding flammable atmosphere, or ignite a layer of dust or fibers on the equipment. The two most common ways are explosionproof equipment in Class I, Division 1 and some Division 2 locations and dust-ignitionproof equipment in Class II, Division 1 locations. Flameproof and increased safety equipment is most common in Class I, Zone 1 locations. Intrinsically safe equipment is becoming increasingly more popular in Division 1 and Zone 1 locations. Most Killark equipment for use in hazardous locations is designed to meet the requirements for both explosionproof and dust-ignitionproof apparatus.

The Fire Triangle



In order for a fire or explosion to occur three conditions must exist. There must be a fuel (the flammable gas or vapor, or combustible dust) in ignitible quantities; there must also be an ignition source (energy in the form of heat or a spark) of sufficient energy to cause ignition; and there must be oxygen, usually the oxygen in the air.

These three conditions are called the fire triangle as shown. Remove any one or more of these three and a fire or explosion cannot occur. This is the basis of the various protection systems for electrical equipment permitted in the electrical codes for use in hazardous locations. These protection methods either contain the internal explosion or eliminate one or more of the fire triangle components necessary for an explosion to occur.

The most common methods of protection used in North America are explosionproof equipment for Class I locations, and dust-ignitionproof equipment for Class II locations. The fuel and oxygen must be in the correct mixture, too little fuel, or a lean mixture, or too much fuel, a rich mixture cannot ignite. These explosive limits are defined as "Lower Explosive Limit" (LEL) and "Upper Explosive Limit" (UEL).

TYPES OF PROTECTION

EXPLOSIONPROOF OR FLAMEPROOF TYPE "d" PROTECTION

These protection types are based on containment. The requirements for flameproof are somewhat less severe than the North American requirements for explosionproof equipment. Flameproof equipment is not permitted in Class I, Division 1 locations, and explosion proof equipment is not permitted in Class I, Zone 0 locations.

Since flammable gases and vapors are expected to be inside the enclosure the equipment design must be capable of withstanding an explosion caused by a spark at the contacts of switching devices, high temperature, or an electrical fault. The enclosure is designed so that hot gases generated during an internal explosion are cooled below the ignition temperature of the surrounding flammable atmosphere as they are transmitted through the joints of the enclosure.

In addition, the external surfaces of the enclosure must not be hot enough to ignite the surrounding atmosphere as a result of heat energy within the enclosure. This heat energy may be the result of normal operation of heat-producing equipment, or it may be the result of an electrical arc to the enclosure from an arcing ground fault.

MOULDED/ENCAPSULATED TYPE "m" PROTECTION

This type of protection is one in which the parts than can ignite an explosive atmosphere are enclosed in a resin (plastic) sufficiently resistant to environmental influences in such a way that this explosive atmosphere cannot be ignited by either sparking or heating, which may occur within the encapsulation.

INCREASED SAFETY TYPE "e" PROTECTION

This protection system is for equipment that, under normal operating conditions, does not produce ignition-capable arcs or sparks or high temperatures. It provides special increased spacing between live parts and live parts of opposite polarity or grounded metal parts, special insulating materials to reduce the likelihood of arc tracking, special terminals to reduce the likelihood of high temperatures or loose connections, and temperature control on heat producing equipment. It is widely used for protection of squirrel cage motors, terminal and connection boxes (junction boxes), and terminal boxes of flameproof equipment where the arcing contacts are in a separate enclosure connected to the increased safety enclosure by flameproof fittings. It is expected that both Underwriters Laboratories Incorporated and Factory Mutual Research Corporation, as well as Canadian Standards Association, will be listing equipment meeting these requirements for Class I, Zone 1 and Zone 2 locations for which it is approved.

INTRINSIC SAFETY OR INTRINSICALLY SAFE TYPE "ia", AND "ib" PROTECTION

There are two versions of this protection method in the "Zone" System, "ia" (2 fault) for Zone 0 and less dangerous locations, and "ib" (1 fault) for Zone 1 and 2 locations only. Additionally in the "Class, Division" System intrinsically safe equipment listed for use in Class I, Division 1 locations for the same gas group, and with a suitable temperature rating is permitted in Class I, Zone 0, 1 and 2 locations. There is no "i" marking for intrinsically safe equipment listed in the "Class, Division" System (2 fault type only).

INTRINSICALLY SAFE SYSTEMS

These are low-energy systems designed to assure safety by eliminating the ignition source leg of the fire triangle. The energy in the system is maintained below that needed to ignite the flammable atmosphere, even under fault conditions. Opening, grounding, or short-circuiting of field-installed wiring is considered a condition of normal operation in this protection technique, rather than a fault condition. The common protective device used in intrinsically safe circuits is a Zener Diode Barrier. While this type of device controls the energy going to a circuit, it does not prevent incorrectly installed products such as capacitors, which may store energy, from increasing the maximum current permitted in the system. It is important to understand that intrinsic safety is a "system approach" and that no single device provides total protection.

NON-SPARKING TYPE "nA" PROTECTION

This is protection suitable for use in Class I, Zone 2 or Division 2 locations only. It is subdivided into three categories, "nA", "nC" and "nR".

A - Non-sparking equipment.
C - Sparking equipment in which the contacts are suitably protected other than by restricted breathing.
R - Restricted breathing enclosure. This is similar to hermetically sealed however it also includes other enclosures where the rate of leaking of a flammable into the enclosure is restricted. Special leak tests are conducted on the enclosure.

HERMETICALLY SEALED TYPE "nC" PROTECTION

This protection technique is limited to Zone 2 or Division 2 locations only and works by eliminating the ignition source leg of the fire triangle. It defines "hermetically sealed" as a fusion process such as soldering, brazing, welding, or the fusion of glass to metal. So-called "hermetically sealed" relays that are sealed by use of gaskets are not included in this definition. Typical hermetically sealed devices are mercury-tube switches and reed switches.

NON-INCENDIVE EQUIPMENT TYPE "nC" PROTECTION

This is a method of protection of sparking contacts in Class I, Zone 2 or Division 2 locations. A non-incendive component is one having contacts for making or breaking an incendive circuit where the contact mechanism is constructed so that the component is incapable of igniting the specified flammable gas or vapor-air mixture. The housing of a non-incendive component is not intended to exclude the flammable atmosphere or contain an explosion.

OIL IMMERSION TYPE "o" PROTECTION

This protection technique is also limited to equipment in Division 2 and Zone 1 and 2 locations. It eliminates the ignition source leg of the fire triangle. It works because the ignition source is maintained under oil. There are provisions for assuring that there is always enough oil above the contacts to prevent ignition of a flammable atmospheres This technique is usually used for high-energy contacts, often rated over 600 volts, such as those in circuit breakers, motor controllers and other industrial control equipment. It can, however, be used for any switching device.

PURGED AND PRESSURIZED TYPE "p" PROTECTION

This is a type of protection which prevents the entry of the surrounding atmosphere into the enclosure of the electrical apparatus by maintaining a positive pressure within the enclosure of a protective gas (air, inert, or other suitable gas) at a higher pressure than the surrounding atmosphere.

Purging is the process of supplying an enclosure with a protective gas at a sufficient flow and positive pressure to reduce the concentration of any flammable gas or vapor initially present to an acceptable level. This technique can be used to change a Class I or Class II, Division 1 location into a nonhazardous location or into a Division 2 location, or to change a Class I or II, Division 2 location into a nonhazardous location. It requires a noncombustible enclosure (which may be a control room or a machine room) that is first purged of any combustibles or flammables that may be present, and is then maintained at a positive pressure sufficient to assure that combustibles or flammables cannot enter the enclosure and be ignited by electrical equipment within the enclosure. The purging may be a continuous purge or a single purge with a positive pressure maintained to make up for leaks. The pressurizing medium may be either air, commonly used in a control room where people will be working, or a nonflammable gas. In tanker ships at sea, flue gas is a common purging and pressurizing medium. In instrument enclosures in locations with corrosive atmospheres, specially processed and dried air or gas is used to protect the enclosed equipment against corrosion as well as to provide protection against ignition of exterior flammable gases and vapors, or combustible dusts.

TYPE	EXPLANATION
X	Changes the area within the unit from Division 1 to nonhazardous
Y	Changes the area within the unit from Division 1 to Division 2
Z	Changes the area within the unit from Division 2 to nonhazardous

POWDER FILLING TYPE "q" PROTECTION

This protection system is permitted in Zone 1 and 2 locations. There is no equivalent system recognized in the US NEC 500 electrical code. In this type of protection system the enclosure or the electrical apparatus is filled with a material in a finely divided granulated state so that, in the intended conditions of service, the arc occurring within the enclosure of an electrical apparatus will not ignite the surrounding atmosphere. Further, no ignition can be caused either by flame or excessive temperature of the surfaces of the enclosure. This protection system is used for protection of the components in junction boxes. It is sometimes called "sand filling".

SPECIAL PROTECTION

Some countries permit special protection systems consisting of combinations of other systems or other special systems. UL listed flashlights and lanterns for use in hazardous locations would be an example of such a special protection system.

ENVIRONMENTAL PROTECTION
NEMA ENCLOSURE TYPES AND CSA TYPES

DEFINITIONS PERTAINING TO NONHAZARDOUS LOCATIONS

The term NEMA enclosure is common in the US, although products are normally tested to a UL standard. The following are environmental protection designations, which are specified in addition to electrical or hazardous location requirements.

Type 1 Enclosures
Type 1 Enclosures are intended for indoor use primarily to provide a degree of protection against limited amounts of falling dirt. This type is not specifically identified in the CSA Standard.

Type 2 Enclosures
Type 2 Enclosures are intended for indoor use primarily to provide a degree of protection against limited amounts of falling water and dirt.

Type 3 Enclosures
Type 3 Enclosures are intended for outdoor use primarily to provide a degree of protection against rain, sleet, windblown dust; and damage from external ice formation.

Type 3R Enclosures
Type 3R Enclosures are intended for outdoor use primarily to provide a degree of protection against rain, sleet; and damage from external ice formation.

Type 3S Enclosures
Type 3S Enclosures are intended for outdoor use primarily to provide a degree of protection against rain, sleet, windblown dust; and to provide for operation of external mechanisms when ice laden.

Type 4 Enclosures
Type 4 Enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against windblown dust and rain, splashing water, hose directed water; and damage from external ice formation.

Type 4X Enclosures
Type 4X Enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water, hose directed water; and damage from external ice formation.

Type 5 Enclosures
Type 5 Enclosures are intended for indoor use primary to provide a degree of protection against settling airborne dust, falling dirt, and dripping noncorrosive liquids.

Type 6 Enclosures
Type 6 Enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against hose directed water, the entry of water during occasional temporary submersion at a limited depth; and damage from external ice formation.

Type 6P Enclosures
Type 6P Enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against hose-directed water, the entry of water during prolonged submersion at a limited depth; and damage from external ice formation.

Type 12 Enclosures
Type 12 Enclosures are intended for indoor use primarily to provide a degree of protection against circulating dust, falling dirt, and dripping noncorrosive liquids.

Type 12K Enclosures
Type 12K Enclosures with knockouts are intended for indoor use primarily to provide a degree of protection against circulating dust, falling dirt, and dripping noncorrosive liquids.

Type 13 Enclosures
Type 13 Enclosures are intended for indoor use primarily to provide a degree of protection against dust, spraying of water, oil, and noncorrosive coolant.

DEFINITIONS PERTAINING TO HAZARDOUS (CLASSIFIED) LOCATIONS

The following NEMA type enclosures occasionally appear on specifications and product literature however, they are not used by CSA. These NEMA types are specific to the US only.

Type 7 Enclosures
Type 7 Enclosures are intended for indoor use in locations classified as Class I, Groups A, B, C, or D, as defined in the NEC®.

Type 8 Enclosures
Type 8 Enclosures are for indoor or outdoor use in locations classified as Class I, Groups A, B, C, or D, as defined in the NEC®

Type 9 Enclosures
Type 9 Enclosures are intended for indoor use in locations classified as Class II, Groups E, F, and G, as defined in the NEC®

Type 10 Enclosures
Type 10 Enclosures are constructed to meet the applicable requirements of the Mine Safety and Health Administration (MSHA).

- *Refer to NEMA Standards Publication No. 250 Enclosures for Electrical Equipment (1000 Volts Maximum) or other third party certification standards for specific requirements for product construction, testing and performance such as Underwriters Laboratories Inc.®, Standard UL 50 "Standard for Enclosures for Electrical Equipment", and UL 886 "Outlet Boxes and Fittings for use in Hazardous (Classified) Locations".*

COMPARISON OF SPECIFIC APPLICATIONS OF ENCLOSURES FOR INDOOR NONHAZARDOUS LOCATIONS

PROVIDES A DEGREE OF PROTECTION AGAINST THE FOLLOWING ENVIRONMENTAL CONDITIONS	TYPE OF ENCLOSURE									
	1*	2*	4	4X	5	6	6P	12	12K	13
Incidental contact with the enclosed equipment	X	X	X	X	X	X	X	X	X	X
Falling dirt	X	X	X	X	X	X	X	X	X	X
Falling liquids and light splashing	—	X	X	X	X	X	X	X	X	X
Circulating dust, lint, fibers, and flyings**	—	—	X	X	—	X	X	X	X	X
Settling airborne dust, lint, fibers, and flyings**	—	—	X	X	X	X	X	X	X	X
Hosedown and splashing water	—	—	X	X	—	X	X	—	—	—
Oil and coolant seepage	—	—	—	—	—	—	—	X	X	X
Oil and coolant spraying and splashing	—	—	—	—	—	—	—	—	—	X
Corrosive agents	—	—	—	X	—	—	—	—	—	—
Occasional temporary submersion	—	—	—	—	—	X	X	—	—	—
Occasional prolonged submersion	—	—	—	—	—	—	—	—	—	—

** These enclosures may be ventilated. However, Type 1 may not provide protection against small particles of falling dirt when ventilation is provided in the enclosure top.*

*** These fibers and flyings are nonhazardous materials and are not considered as Class III type ignitable fibers or combustible flyings. For Class III type ignitable fibers or combustible flyings see the National Electrical Code®, Article 500.*

COMPARISON OF SPECIFIC APPLICATIONS OF ENCLOSURES FOR OUTDOOR NONHAZARDOUS LOCATIONS

PROVIDES A DEGREE OF PROTECTION AGAINST THE FOLLOWING ENVIRONMENTAL CONDITIONS	TYPE OF ENCLOSURE						
	3	3R***	3S	4	4X	6	6P
Incidental contact with the enclosed equipment	X	X	X	X	X	X	X
Rain, snow, sleet*	X	X	X	X	X	X	X
Sleet**	—	—	X	—	—	—	—
Windblown dust	X	—	X	X	X	X	X
Hosedown	—	—	—	X	X	X	X
Corrosive agents	—	—	—	—	X	—	X
Occasional temporary submersion	—	—	—	—	—	X	X
Occasional prolonged submersion	—	—	—	—	—	—	X

** External operating mechanisms are not required to operate when the enclosure is ice covered.*
*** External operating mechanisms are operable when the enclosure is ice covered.*
**** These enclosures may be ventilated.*

COMPARISON OF SPECIFIC APPLICATIONS OF ENCLOSURES FOR INDOOR HAZARDOUS (CLASSIFIED) LOCATIONS

PROVIDES A DEGREE OF PROTECTION AGAINST ATMOSPHERES TYPICALLY CONTAINING HAZARDOUS GASES, VAPORS, AND DUSTS***	TYPE OF ENCLOSURE NEMA 7 & 8, CLASS I GROUPS**					TYPE OF ENCLOSURE NEMA 9 & 10, CLASS II GROUPS**			
	Class	A	B	C	D	E	F	G	10
Acetylene	I	X	—	—	—	—	—	—	—
Hydrogen, manufactured gases	I	—	X	—	—	—	—	—	—
Diethyl ether, ethylene, cyclopropane	I	—	—	X	—	—	—	—	—
Gasoline, hexane, butane, naptha, propane, acetone									
Toluene, isoprene	I	—	—	—	X	—	—	—	—
Metal dusts	II	—	—	—	—	X	—	—	—
Carbon black, coal dust, coke dust	II	—	—	—	—	—	X	—	—
Flour, starch, grain dust	II	—	—	—	—	—	—	X	—
Fibers, flyings *	III	—	—	—	—	—	—	X	—
Methane with or without coal dust	MSHA	—	—	—	—	—	—	—	X

** Due to the characteristics of the gas, vapor, or dust, a product suitable for one Class or Group may not be suitable for another Class or Group unless so marked on the product.*
*** For Class III type ignitable fibers or combustible flyings refer to the National Electrical Code® Article 500.*
**** For a complete listing of flammable liquids, gases, or vapors refer to NFPA 497 - 1997 (Recommended Practice for the Classification of Flammable Liquids, Gases, or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas and NFPA 325 - 1994 (Fire Hazard Properties of Flammable Liquids, Gases, and Volatile Solids). Reference also NFPA 499 – 1997 Classifications of Combustible Dusts and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas.*

PROTECTION CLASSES OF ENCLOSURES (IP CODE)

The IEC uses the term "Ingress Protection" to identify the environmental protection of an enclosure. This is defined in IEC Standard 529 and is referenced by the CEC®. IP Codes are comparable to NEMA Enclosure Types.

The IP classification system designates, by means of a number, the degree of protection provided by an enclosure and the electrical equipment against physical contact, foreign bodies and water ingress.

The protection classes for electrical equipment in respect of:

I. Protection of persons against contact with live or moving parts. (Physical contact protection)
II. Protection against ingress of solid foreign bodies. (Foreign body protection)
III. Protection against ingress of water. (Water protection)

Structure and use of the IP Code:

I. If a code digit does not have to be given it should be replaced with the letter "X".
II. Additional and/or supplementary letters may be omitted without substitute letters.
III. If more than one supplementary letter is required, alphabetical order should be followed.

The numbering system and degree of protection follows:

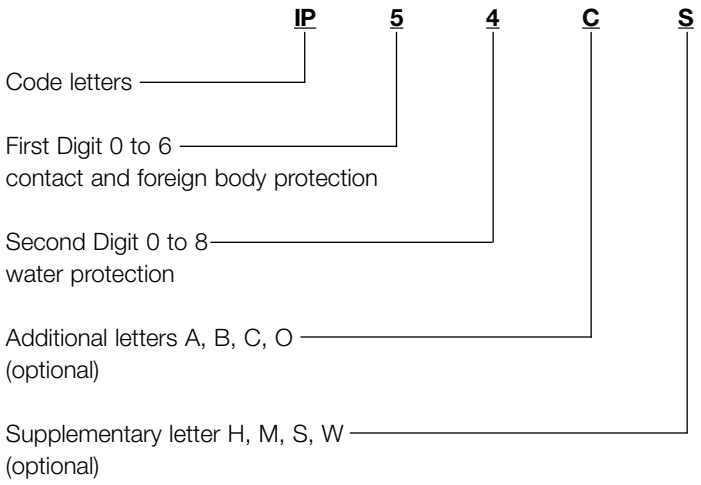
The additional (optional) letter concerns protection of persons and refers to information about protection against access to dangerous parts by:

I. Back of the hand	letter A
II. Finger	letter B
III. Tool	letter C
IV. Wire	letter O

The supplemental (optional) letter concerns protection of the equipment and provides supplementary information specially for:

I. High voltage equipment	letter H
II. Water-proofing during operation	letter M
III. Water-proofing during standstill	letter S
IV. Weather conditions	letter W

IP CODE: NUMBERING SYSTEM



DIGIT	FIRST DIGIT PHYSICAL PROTECTION	FOREIGN BODY PROTECTION	SECOND DIGIT WATER PROTECTION
0	Non-protected	Non-protected	Non-protected
1	Protection against back of hand contact.	Protected against solid objects greater than 50 mm (1.97 in.).	Protected against water dripping vertically.
2	Protection against finger contact.	Protected against solid objects greater than 12 mm (0.47 in.).	Protected against vertically dripping water when tilted up to 15, degrees.
3	Protection against contact from a wire or tools.	Protected against solid objects greater the 2.5 mm (0.098 in.).	Protected against spraying water at an angle up to 60° degrees from the vertical.
4	Protection against contact with a wire or strip of thickness greater than 1.0 mm (0.039 in.).	Protected against solid objects greater the 1.0 mm (0.039 in.).	Protected from splashing water from any direction.
5	Protection against contact with a wire.	Dust-protected prevents ingress of dust in sufficient quantity to interfere with operation of equipment.	Protected against water jets from any direction.
6	Protected against contact with a wire.	Dust-tight no dust ingress.	Protected against heavy seas or powerful jets of water and prevents ingress sufficient to cause harm.
7			Protected against the effects of immersion between a depth of 150 mm to 1 meter.
8			Protected against submersion, suitable for continuous immersion in water under conditions specified by the manufacture.

Refer to IEC Standards Publication 529 (Classification of Degrees of Protection Provided by Enclosures) for complete descriptions and test requirements.

NEMA ENCLOSURE TYPES VS. IEC CLASSIFICATION DESIGNATION

NEMA ENCLOSURE TYPE NUMBER	IEC ENCLOSURE CLASSIFICATION
1	IP 10
2	IP 11
3	IP 54
3R	IP 14
3S	IP 54
4 and 4X	IP 56
5	IP 52
6 and 6P	IP 67
12 and 12K	IP 52
13	IP 54

EQUIPMENT CERTIFICATION

United States and Canada

In most cases, equipment for use in hazardous locations must be certified to an appropriate National Standard and marked as such by an accredited third party testing organization. Follow-up inspection to ensure conformance is usually part of the program. Products may carry multiple markings for multiple countries.

The specific requirements for product certification vary from country to country. While CSA, UL and FM are similar in their approach, subtle differences still exist. CSA, UL and FM accept component listing of products. This means that selected products may be offered in modular form, which the customer may assemble without effecting the listing.

European Countries

The countries belonging to the European Union EU, who develop products based upon the standards of the European Committee for Electrotechnical Standardization (CENELEC), have requirements differing in many, but not all respects, from U.S. requirements established by the NEC® and American National Standards Institute. These CENELEC standards were developed based on the IEC publication 79 recommendations, and are called Euronorms (EN) standards. The CENELEC standards for equipment for hazardous (classified) locations are numbered EN50 014 through EN50 028.

MARKING

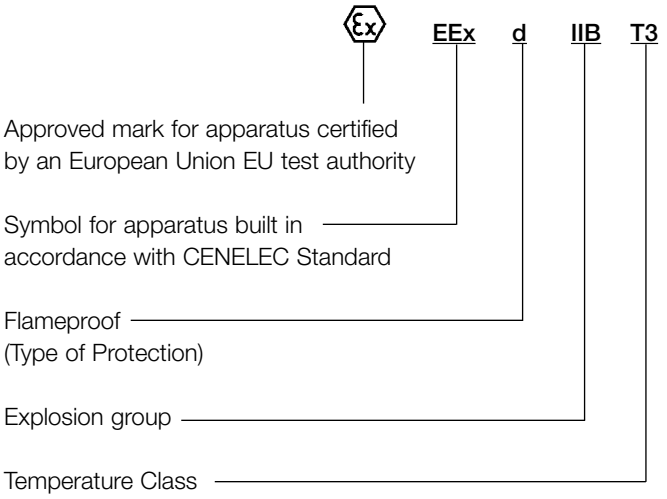
Typical North American marking

Class I,	Divisions 1 & 2	Groups A, B, C, and D, T6
Class I,	Zones 1 & 2	Groups IIC, IIB, IIA, T6
Class II,	Divisions 1 & 2	Groups E, F, and G
Class III		
NEMA 3, 4, 4X		

United States "AEx" marking requires Class and Zone suitability (Class I, Zone 1, AEx e IIC T5)

Typical International Marking

The symbol Ex is used to identify equipment designed to EN50 014 - EN50 028. In addition to the information on the manufacturer, electrical rating, model number, etc., the following is provided for equipment intended for use in hazardous locations.



ATEX DIRECTIVE

This directive applies to electrical and non-electrical components and protective systems intended for use in potentially explosive atmospheres. Compliance with the requirements of this new directive will become mandatory on July 1, 2003 when the old approach directives will be repealed. Certificates of Conformity issued under the old approach directives will remain valid until June 30, 2003, after this date all products will need to comply with the requirements outlined under the "New Approach" or ATEX Directive (94/9/EC).

The ATEX Directive relates to electrical and mechanical equipment and includes items such as:

- All equipment and protective systems intended for use in potentially explosive atmospheres within the European Union are covered and must have the CE marking along with specific type of explosion protection markings.
- Explosive atmospheres caused by the presence of gas, vapors and mists.
- Existing, previously certified products must be re-examined to determine compliance with the new directives.
- Mining (Group I) and surface (Group II) non-mining is addressed. (Group I) applies to equipment intended for use in underground parts of mines, and to those parts of surface installations of such mines, likely to be endangered by firedamp and/or combustible dusts. (Group II) non-mining applies to equipment intended for use in other surface industrial and offshore locations likely to be endangered by explosive atmospheres.
- Equipment categories defining the required levels of protection are introduced. Category 1 covers equipment having a very high level of protection. Category 2 covers equipment having a high level of protection, and Category 3 covers equipment having a normal level of protection.
- Harmonized European standards are no longer listed in the directive. Instead, a set of electrical health and safety requirements is specified. CEN and CENELEC, the European standards making bodies have been charged with the responsibility of preparing standards in support of these essential health and safety requirements (EHSR's).
- Technical requirements for equipment and protective systems where the risk arises from combustible dusts, gases, vapors and mist are covered by the Essential Health and Safety Requirements.
- There is more emphasis placed upon the continued compliance of certified products. Conformity assessment addresses both the design and production phases. There is an option to adopt a quality systems approach to cover the production phase for some equipment. The quality system will be based on the ISO 9000 series of standards but augmented for this purpose.
- The requirements for surveillance are addressed in more detail and are not therefore open to differing interpretations of the requirements.

All manufacturers of products covered by these new directives must prepare a declaration of conformity containing details about the product, its intended use and how it complies with the requirements. In most cases, this will entail the involvement of a Notified Body in the Conformity Assessment Procedure.

DIVISION, ZONE, CATEGORY RISK ASSESSMENT

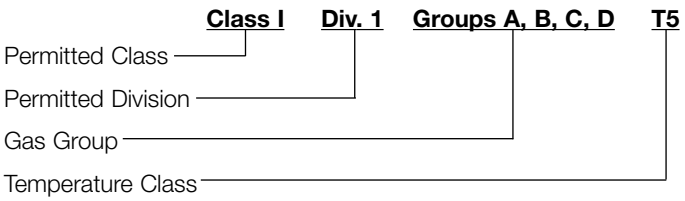
	FLAMMABLE GAS ALWAYS PRESENT >1000 HRS./YEAR	FLAMMABLE GAS NORMALLY PRESENT 10-1000 HRS./YEAR	FLAMMABLE GAS NOT NORMALLY PRESENT <10 HRS./YEAR
U.S. — NEC 500	Division 1	Division 1	Division 2
U.S. — NEC 505	Zone 0	Zone 1	Zone 2
CENELEC/IEC	Zone 0	Zone 1	Zone 2
ATEX	Category 1G (Gas)	Category 2G (Gas)	Category 3G (Gas)

PROTECTION METHODS

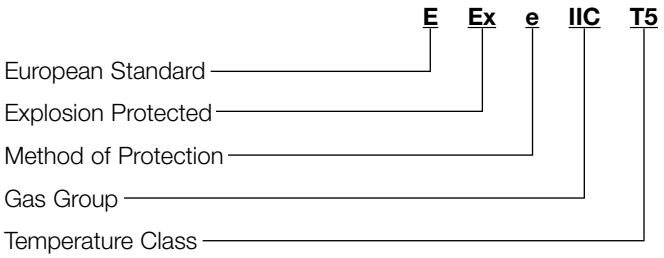
METHOD OF PROTECTION	SYMBOL	PERMITTED ZONE (CENELEC/IEC)	PERMITTED ZONE US (NEC 505)	ATEX PERMITTED CATEGORY
Flameproof	d	1 & 2	1 & 2	2 & 3
Enclosed Break	nC	2	2	3
Powder Filled	q	1 & 2	1 & 2	2 & 3
Increased Safety	e	1 & 2	1 & 2	2 & 3
Non-Sparking	nA	2	2	3
Intrinsic Safety	ia	0, 1 & 2	0, 1 & 2	1, 2 & 3
	ib	1 & 2	1 & 2	2 & 3
Energy Limitation	nL	2	2	3
Pressurized	p	1 & 2	1 & 2	2 & 3
Encapsulation	m	1 & 2	1 & 2	2 & 3
Oil Immersion	o	1 & 2	1 & 2	2 & 3
Restricted Breathing	nR	2	2	3
Special	s (1)	0, 1 & 2		1, 2 & 3

(1) Must be marked suitable for Zone 0

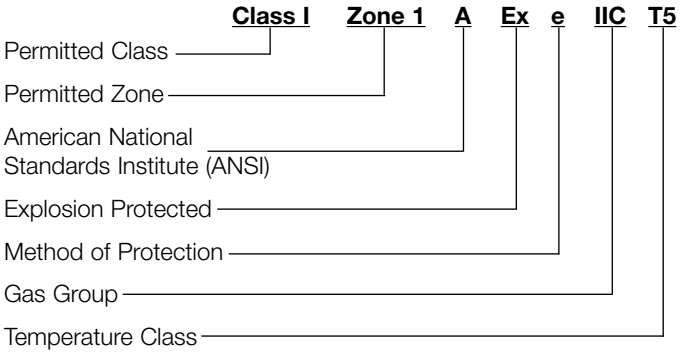
EXPANDED MARKINGS U.S. (NEC 500)



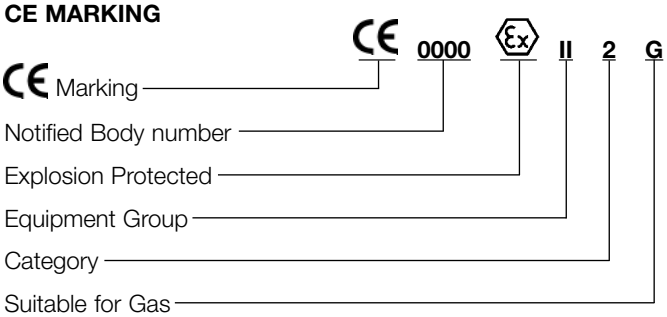
EX MARKING CENELEC/IEC



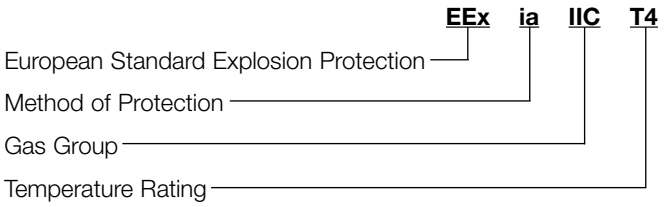
U. S. (NEC 505)



ATEX MARKING CE MARKING



ADDITIONAL MARKING



Equipment certified by the various test authorities may require additional marking information such as the symbol or name of the test authority, certificate number, year of issue, etc. European countries issue certificates of conformity, and these certificates will include special instructions on the installation, including installation limitations.

With the advent of free trade, the Standards Council of Canada and OSHA have accredited a number of nationally recognized testing laboratories (NRTL) to certify equipment to each others' National Standards.

USA Multiple agencies issue product standards
- OSHA accredits testing agencies (Listing to ANSI Standards)
- Specific, multiple or no marking may be acceptable to, or required by regulatory agencies.
- Self-certification by a manufacturer is permitted.

Canada CSA is responsible for issuing all product standards.
- Standards Council of Canada accredits testing agencies (Listing to CSA Standards)
- Specific marking required for approval by regulatory agencies.

CENELEC Issues Product Standards and Installation Practices for EU Member Nations
- Testing permitted by multiple member country agencies.
- Specific marking required for approval by regulatory agencies.

UNITED STATES - THE FOLLOWING CERTIFICATION MARKS APPLY TO THE U.S. ONLY

If the CSA Mark appears with the "NRTL" qualifier only, this indicates that the product is CSA certified for the U. S. market to the applicable ANSI/UL standards.

This logo was introduced in 1999 to be consistent in North America.

Listed means the same as certified or approved. This means a product has been fully investigated to a specific set of construction standards. In hazardous locations, Zone type products must be specifically "Listed" for the location.

Classified products are different than listed products. Products carrying this mark have been evaluated for specific properties. Although UL has a Canadian mark, CSA has no equivalent certification process.

UL's Component Recognition Service covers the testing and evaluation of component products that are incomplete or restricted in performance capabilities. These components will later be used in complete products or systems approved by UL. UL's Component Recognition Service covers components, such as plastics, wire and printed wiring boards, that may be used in very specific, or a broad spectrum of end-products, or components such as motors or power supplies. These components are not intended for separate installation in the field, they are intended for use as components of complete equipment submitted for investigation to UL.

Factory Mutual Approval is essentially the same as certified or listed. This means a product has been fully investigated to a specific set of construction standards. In hazardous locations, Factory Mutual specifically approves Zone type products for the location.

"Complies With" Certain manufacturers use the term "complies with" for selected products. In the U. S., companies are permitted to "self certify" products to a standard or set of standards, which may or may not include ANSI standards. This means no third party testing agency has actually investigated the product for safety or performance. The installer and the authorities having jurisdiction over the electrical installations are simply accepting the word or reputation of the manufacturer. This practice is not acceptable in Canada or EU countries.

CANADA
CANADIAN STANDARDS ASSOCIATION -
The CSA Mark may appear alone or with qualifiers.

If the CSA Mark appears alone, it means that the product is CSA certified for the Canadian Market, to the applicable Canadian standards.

If the CSA Mark appears with qualifiers "NRTL/C", It means that the product is CSA certified for the U. S. and Canadian markets.

A new logo was introduced in 1999 for consistency in North America.

Underwriters Laboratories of Canada – While it is affiliated with UL in the U.S., ULC is a separate agency. The ULC listing is often confused with the C-UL mark. Underwriters Laboratories of Canada is limited in its testing of electrical equipment therefore the mark is normally used in conjunction with marking from one or more agencies. ULC deals with all equipment related to fire alarms in Canada.

Underwriters Laboratories – There are three marks used by UL to accommodate the Canadian market.

Products with the C-UL Listing mark have been evaluated to Canadian safety requirements, which may be somewhat different from U. S. safety requirements.

The use of the C-UL Classification mark, indicates that UL has used some or portions of the Canadian standards to evaluate the product for specific hazards or properties. CSA does not have standards or certification procedures that allow this type of certification. Users should check with appropriate regulatory agency for further information.

The use of the Recognized Component mark, which indicates that UL has used some or portions of the Canadian standards to evaluate specific components, is rarely seen. This mark is used specifically on component parts that are part of a larger product or system. These components may have restrictions on their performance or may be incomplete in construction. CSA does not have standards or certification procedures that allow this type of certification. Users should check with appropriate regulatory agency for further information.

These marks indicate products meet the requirements of both CSA and ANSI (UL) and are suitable for both Canada and the United States.

While these marks indicate compliance with both U.S. and Canadian standards, construction or certification of this type is not necessarily recognized in Canada.

Others

Products approved by MET can be marked for acceptance throughout Canada. The MET CSA Label may indicate the applicable CSA standard to which the product has been certified.

Intertek Testing Services – products approved by ETL and Warnock Hersey can be marked for acceptance throughout Canada.

EUROPE - THE FOLLOWING IS INTENDED FOR PRODUCTS USED IN THE EUROPEAN UNION COUNTRIES

The "Hex EX" mark identifies products which are tested by an accredited EU member test facility to a harmonized (CENELEC) Standard. The Ex symbol is accompanied by the name of the testing agency and a report number. All hazardous location products used in the EU must have the Ex mark and may also require CE or ATEX markings.

Marking to show compliance with the European Union's (EU) approval directive. Use of the CE mark indicates conformity to the applicable directives for a particular type of product such as electromagnetic compatibility (EMC) or electromagnetic interference (EMI). This is often self declared by the manufacturer.

CERTIFICATION POLICY

The designs of Killark products are original and proprietary and in many instances are covered by patents.

Killark products are designed to be installed as governed by the National Electric Code. The products are designed to conform with suitable Third Party Certifier standards where such standards exist. Most Killark standard cataloged products are covered by third party certification reports and inspection procedures. These certifications are a matter of record and are indicated by the product identification marking and the certifiers logo. Generally, the marking is required on the product itself, however, under certain circumstances, the marking may be applied to the carton only.

In general, products are Third Party Certified as complete assemblies, however, exceptions do exist. One such exception would be separate shipment of control station cover assemblies and the splice boxes. In some instances, components may be covered (i.e., UL Recognized) for use in other equipment which will be submitted for certification of the complete assembly. The nature of the agreements with Third Party Certifiers requires that product deviations from the originally submitted design be resubmitted for evaluation prior to application of the logo. It is not uncommon for resubmittals to take a substantial length of time.

Generally, Killark's standard cataloged products are covered by one or more of the following Third Party certifiers: Underwriters Laboratories Inc., Factory Mutual Research Corporation, Canadian Standards Association, CENELEC, BASEEFA and PTB. Products covered are indicated by the Third Party Certifiers logo and file number on the individual catalog pages. There may be instances where not all products on a particular page containing a logo are listed. When certification information is required, consult the factory or refer to the appropriate certifier for listings.

REGISTERED TRADEMARKS

HUBBELL®
KILLARK®

Registered Logotype and Trademark of:
Killark
A Division of Hubbell Incorporated (Delaware)
St. Louis, MO USA
Manufacturer of Electrical Products for Hazardous and Non-Hazardous Locations: Fittings, Enclosures, Distribution Equipment, Plugs and Receptacles, Controls and Lighting Fixtures.

HUBBELL®
KILLARK®

K-PAK®
Is a registered trademark identifying packaging used with the Killark Merchandising System.

CorroSAFE® Electrical Conduit Fittings
CorroSAFE is a trademark identifying a protective coating used on Killark Aluminum Electrical Conduit Fittings.

DURALOY™ Electrical Conduit Fittings
DURALOY is a trademark identifying a Tri-Coat protective finish used on Iron Electrical Conduit Fittings for standard and hazardous locations.

CLENCHER® 2000 Cable Connectors
CLENCHER is a registered trademark identifying Killark Cable Connectors for standard and hazardous locations.

Z Cord and Cable Connectors
Z-SERIES is a trademark identifying Killark Cord and Cable Connectors for Standard and certain hazardous locations.

DuraTech Control Stations
DuraTech is a registered trademark identifying Killark Non-Metallic Control Stations and Devices for standard locations.

SEAL-X® Control Stations
SEAL-X is a registered trademark identifying Killark Factory Sealed Control Stations for hazardous locations.

QUANTUM®
Enclosures for Hazardous & Hostile Locations
QUANTUM is a registered trademark identifying Killark Electrical Junction Boxes and Enclosures for hazardous & hostile locations.

PRISM® Motor Controls and Panelboards
PRISM is a registered trademark identifying Killark Motor Controls and Panelboards for hazardous locations.

ACCEPTOR® Plugs and Receptacles
ACCEPTOR is a registered trademark identifying Killark interchangeable Plug and Receptacle System for hazardous locations.

VersaMATE® Plugs & Receptacles
VersaMATE is a registered trademark identifying Killark Pin & Sleeve Plugs and Receptacles for standard and hazardous locations.

VersaRANGE® Plugs & Receptacles
VersaRANGE is a trademark identifying Killark Plug and Connector Cable Clamps, which cover a wide range of cable diameters with a single assembly.

CERTILITE® Lighting Fixtures
CERTI***LITE*** is a registered trademark identifying Killark Luminaires for standard and certain hazardous locations.

HOSTILELITE® Lighting Fixtures
HOSTILE***LITE*** is a registered trademark identifying Killark Luminaires for hazardous and hostile locations.

MARIGARD™ Lighting
MARI***GARD*** is a trademark identifying Killark Stainless Steel Floodlights for Marine and Hazardous Locations.

PETROBRIGHT™ Lighting
PETRO***BRIGHT*** is a trademark identifying Killark HID Canopy Lighting for gasoline or other service stations.

LINEARLITE™ Lighting
LINEAR***LITE*** is a trademark identifying Killark Fluorescent Luminaires for hostile and hazardous locations.

LINEARLITE SMART-E™ Smart-E Lighting
LINEAR***LITE*** is a trademark identifying Killark Emergency Fluorescent Luminaires for hostile and hazardous locations.

ConSpec® CONTROL STATIONS & PANELS Control Stations & Panels
ConSpec is a registered trademark identifying Killark Control Stations and Panels for hazardous locations.

TECHNeTERM® Terminal Enclosures
TECHNeTERM is a registered trademark identifying Killark Increased Safety Terminal Enclosures for hazardous locations.

TECHNiTERM® Terminal Enclosures
TECHNiTERM is a registered trademark identifying Killark Increased Safety Terminal Enclosures for Intrinsically Safe Circuits.

DISCONEX® Disconnect Switches
DISCONEX is a registered trademark identifying Killark Control and Disconnect Switches for hazardous locations.

General Suitability — See catalog pages for details

PRODUCT	PAGE NO.	Wet / Damp Location	NEMA 4 (or 4X, or IP6x)	Class I, Div. 2 / Zone 2	Class I, Zone 2 Ex nR (option)	Class I, Div. 2 / Zone I	Class II / III Div. 1	Class II / III Div. 2	Class I, Div. 1 C,D / Zone I	Class I, Div. 1 A,B,C,D / Zone I	CENELEC Zone 2	CENELEC Zone 1
INCANDESCENT FIXTURES												
 **NV Series** Corrosion Resistant	2-4	X	X									
 **V Series** Standard Location	5-8	X										
Class 1, D2; NEMA 4	9-10	X	X	X								
Accessories	11-12											
 **DO & DV Series** DO Midget	14	X										
DV Dust Ignition Proof	14						X					
 **EMI Series** Hazardous Location NEMA 4X Groups C,D 60-300 Watt Incandescent	70-74	X	X				X		X			
 **H Series** Hazardous Location Groups C,D 500 Watt Incandescent	15						X		X			
 **E Series** Hazardous Location Groups A,B 200-300 Watt Incandescent	16						X		X	X		
 **XHL Series** Hazardous Location Handlamps 100 Watt Incandescent	16								X			

General Suitability — See catalog pages for details

PRODUCT	PAGE NO.	Wet / Damp Location	NEMA 4 (or 4X, or IP6x)	Class I, Div. 2 / Zone 2	Class I, Zone 2 Ex nR (option)	Class I, Div. 2 / Zone I	Class II / III Div. 1	Class II / III Div. 2	Class I, Div. 1 C,D / Zone I	Class I, Div. 1 A,B,C,D / Zone I	CENELEC Zone 2	CENELEC Zone 1
COMPACT FLUORESCENT												
 **NVQ Series** Corrosion Resistant, 18 Watt Quad-Pin	2-4	X	X	X								
 **MBF Series** 13-39 Watt for Standard & Certain Hazardous Locations	17-18	X	X	X	X		X					
Accessories	24-25											
 **VBF/VQF Series** 26-84 Watt for Standard & Certain Hazardous Locations	34-35	X	X	X			X					
 **EBF/EQF Series** 13-42 Watt for Hazardous Location	70-71	X	X				X		X			
 **XHLF Series** Hazardous Location Handlamps 26 Watt Fluorescent	16						X		X			

General Suitability — See catalog pages for details

PRODUCT	PAGE	Wet / Damp Location	NEMA 4 (or 4X, or IP6x)	Class I, Div. 2 / Zone 2	Class I, Zone 2 Ex nR (option)	Class I, Div. 2 / Zone I	Class II / III Div. 1	Class II / III Div. 2	Class I, Div. 1 C,D / Zone I	Class I, Div. 1 A,B,C,D / Zone I	CENELEC Zone 2	CENELEC Zone 1
HID FIXTURES												
												
MB Series												
Medium Base HID	17-21	X	X	X			X					
Ex nR version	22-23	X	X	X	X		X					
Accessories	24-25											
Temperature Data	26											
Photometrics	27-33											
												
VM Series												
Mogul Base HID	36-48	X	X	X			X					
Ex nR version	49-52	X	X	X	X		X					
Accessories	53-57											
Temperature Data	58-60											
Photometrics	61-69											
												
EM Series												
Medium Base HID	70, 72	X	X				X		X			
Accessories	73-74											
Temperature Data	77-78											
Photometrics	79-88											
												
EZ Series												
Mogul Base HID	89-93	X	X				X		X			
Accessories	94-96											
Temperature Data	98-99											
Photometrics	100-105											

General Suitability — See catalog pages for details

PRODUCT	PAGE	Wet / Damp Location	NEMA 4 (or 4X, or IP6x)	Class I, Div. 2 / Zone 2	Class I, Zone 2 Ex nR (option)	Class I, Div. 2 / Zone I	Class II / III Div. 1	Class II / III Div. 2	Class I, Div. 1 C,D / Zone I	Class I, Div. 1 A,B,C,D / Zone I	CENELEC Zone 2	CENELEC Zone 1
LINEAR FLUORESCENT												
												
DBF Series												
Fluorescent Class I, D2	106	X	X	X				X				
												
SSHZ Series												
Fluorescent Stainless Steel	107	X	X	X								
												
HFX Series												
Hazardous Location Paint Spray Suitable	108-110	X	X				X		X			
												
NWL Series												
LinearLite Non-Metallic Wet Location	114-115	X										
NHL Series												
LinearLite Non-Metallic Wet Location, Class I, D2	114-115	X		X								
												
LLN2 Series												
Zone 2 LinearLite	116	X	X	X			X					
LLN1 Series												
Zone 1 LinearLite	117	X	X	X		X	X					
												
LLC Series												
Task or Exit fixture	118	X	X	X			X					
												
LLN/LLI Series												
Accessories	119											

L

PRODUCT	PAGE NO.	General Suitability — See catalog pages for details: Wet / Damp Location	NEMA 4 (or 4X, or IP6x)	Class I, Div. 2 / Zone 2	Class I, Zone 2 Ex nR (option)	Class I, Div. 2 / Zone I	Class II / III Div. 1	Class II / III Div. 2	Class I, Div. 1 C,D / Zone I	Class I, Div. 1 A,B,C,D / Zone I	CENELEC Zone 2	CENELEC Zone 1
FLOODLIGHTS & WALL MOUNT FIXTURES												
 **KWP Series** Wallpack for Class I, D2 & N4	126	X	X	X								
 **QL/QM** Quartz Floods	120-121	X										
 **KF Series** Floods Aluminum Class I, D2 Marine N4 150 to **1000 Watt**	122-123	X	X	X								
 **KF-SS** MariGard **Stainless** Class I, D2 Marine N4 150-400 Watt	124-125	X	X	X	X							
 **EM/DM** Portable Floods	127	X	X				X		X			
 **EZ-T Trunnion**	128-129	X	X						X			
CANOPY LIGHTING  **PETROBRIGHT**	130-131	X										
EMERGENCY SIGNALING STROBE LIGHTING												
 **GSH** Strobe Class I, D2	142	X		X				X				
 **ESX** Strobe Class I, D1	140-141	X	X				X		X			

PRODUCT	PAGE NO.	General Suitability — See catalog pages for details: Wet / Damp Location	NEMA 4 (or 4X, or IP6x)	Class I, Div. 2 / Zone 2	Class I, Zone 2 Ex nR (option)	Class I, Div. 2 / Zone I	Class II / III Div. 1	Class II / III Div. 2	Class I, Div. 1 C,D / Zone I	Class I, Div. 1 A,B,C,D / Zone I	CENELEC Zone 2	CENELEC Zone 1
EMERGENCY LIGHTING BATTERY-BACKED												
 **DEB** Class II, D1	132-133	X	X				X					
Exit Accessory	133											
 **VEB/VEQ** Class I, D2/N4 Class II/N4	134-135	X	X	X			X					
Exit Accessory	135											
 **EEQ** Class I, D1	136	X	X				X		X			
Exit Accessory	74											
 **DBFE** Linear Fluorescent Class I, D2/N4	137	X	X	X								
 **EBB** Class I, D1/N3 Halogen Lamps	138-139	X					X		X			
BATTERY OPTION FLUORESCENT  **NWL Series**	114-115	X										
NHL Series	114-115	X		X								
 **LLN2 Series**	116	X	X	X			X					
LLN1 Series	117	X	X	X		X	X					
LLI2 Series	160	X	X								X	
LLI1 Series	161	X	X									X

General Suitability — See catalog pages for details

PRODUCT	PAGE NO.	Wet / Damp Location	NEMA 4 (or 4X, or IP6x)	Class I, Div. 2 / Zone 2	Class I, Zone 2 Ex nR (option)	Class I, Div. 2 / Zone I	Class II / III Div. 1	Class II / III Div. 2	Class I, Div. 1 C,D / Zone I	Class I, Div. 1 A,B,C,D / Zone I	CENELEC Zone 2	CENELEC Zone 1
FITTINGS & ADAPTERS												
 **FKA & FHC**	143	X										
 **HOOK/LOOP**	143	X										
 **FH HOOK**	144	X										
 **V Series** Fixture Hangers	144	X										
 **HXB & XFH**	145	X					X		X			
 **EKJ Series** Flexible Couplings	145	X					X		X	X		
 **JL & JAL**	146	X					X		X			
 **ENY-2SET** Pendant Seals	146	X					X		X	X		
 **VMCHVM** Adapter	147	X	X	X	X		X					
 **EAC** Adapters	148	X	X				X		X			

General Suitability — See catalog pages for details

PRODUCT	PAGE NO.	Wet / Damp Location	NEMA 4 (or 4X, or IP6x)	Class I, Div. 2 / Zone 2	Class I, Zone 2 Ex nR (option)	Class I, Div. 2 / Zone I	Class II / III Div. 1	Class II / III Div. 2	Class I, Div. 1 C,D / Zone I	Class I, Div. 1 A,B,C,D / Zone I	CENELEC Zone 2	CENELEC Zone 1
CENELEC-EUROPEAN RATED FIXTURES												
 **Eclipse Jr.** E27 Socket HID	149	X	X								X	
 **EM CEN** E26 Socket HID/Incandescent Compact Fluorescent	150-152	X	X				X		X			X
 **EZ CEN** E39 Socket HID	153-156	X	X				X		X			X
 **Micronex/Maxinex** Aluminum E40 Socket HID	157	X	X								X	
 **800N Series** Stainless E40 Socket HID	158	X	X								X	
 **Evolution** Zone 1 Flood E40 Socket	159	X	X									X
 **LLI2** Zone 2 LinearLite	160	X	X								X	
 **LLI1** Zone 1 LinearLite	161	X	X									X

L

Pendant

Ceiling

Wall Mount

NEMA 3, 4X

Listed - Files E227731 and E91793

FEATURES-SPECIFICATIONS

Applications

Designed specifically for corrosive environments.

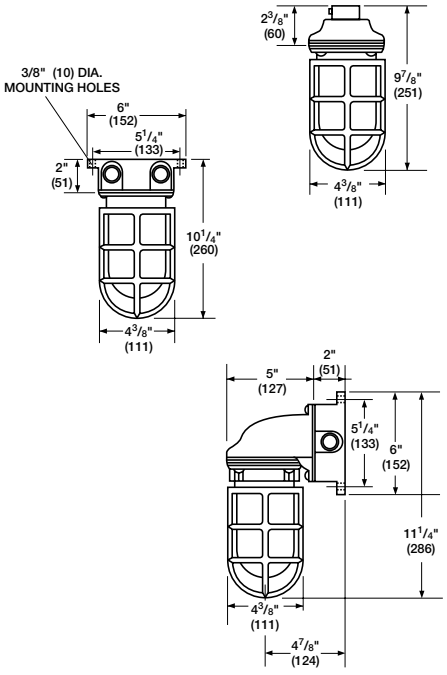
Typical applications include manufacturing plants, chemical and petrochemical processing facilities, sewage treatment plants, off-shore and dockside installations, agricultural, commercial/industrial, mining and marine facilities.

Features

- Series NV non-metallic light fixtures combine an outstanding balance of strength, stiffness, toughness and electrical properties
- Molded from 30% glass-filled thermoplastic polyester for high strength
- Resists corrosive effects of most chemicals, hydrocarbons and solvents
- Designed for indoor and outdoor applications. Molded threads will not "freeze"—components are easy to remove, even after long exposure to corrosive environments.
- Accepts up to 150 watt, size A-21 lamp
- Compact size

Compliances

- UL-1571 standard
- UL Marine type fixtures
- Suitable for wet locations
- NEMA 3, 4X
- Material meets U.L. 94-V-O standards for flame retardancy



PENDANT NON-METALLIC INCANDESCENT ①③

FIXTURE TYPE	LAMP	HUB SIZE	CATALOG NUMBER	CONSISTS OF			
			FIXTURE W/GLOBE & GUARD	MOUNTING BOX	FIXTURE BODY	GLOBE*	GUARD
Clear globe	150 A	3/4"	**NVA15GG**	NVA	NVFC	VCG-100	NVG
Heat resistant	150 A	3/4"	**NVA15GHG**	NVA	NVFC	VCGP-100	NVG

CEILING NON-METALLIC INCANDESCENT ①③

FIXTURE TYPE	LAMP	HUB SIZE	CATALOG NUMBER	CONSISTS OF			
			FIXTURE W/GLOBE & GUARD	MOUNTING BOX	FIXTURE BODY	GLOBE*	GUARD
Clear globe	150 A	3/4"	**NVX15GG**	NVX	NVFC	VCG-100	NVG
Heat resistant	150 A	3/4"	**NVX15GHG**	NVX	NVFC	VCGP-100	NVG

WALL MOUNT NON-METALLIC INCANDESCENT ①②③

FIXTURE TYPE	LAMP	HUB SIZE	CATALOG NUMBER	CONSISTS OF			
			FIXTURE W/GLOBE & GUARD	MOUNTING BOX	FIXTURE BODY	GLOBE*	GUARD
Clear globe	150 A	3/4"	**NVB15GG**	NVX+NVB	NVFC	VCG-100	NVG
Heat resistant	150 A	3/4"	**NVB15GHG**	NVX+NVB	NVFC	VCGP-100	NVG

① *Maximum 150 watt lamp type A. Suitable for wet and damp locations when supplied with heat resistant glass globes. Suitable for marine applications with maximum 100 watt lamp. Fixtures are unit packed.*

② *Wall fixture supplied as ceiling mount unit with all necessary components to make bracket conversion. Elbow bracket adapter shipped separately.*

③ *Standard marked supply wire is 125°C. For suitability with 90°C minimum supply wire, add suffix **LT** to catalog number. Example: **NVA15GG-LT**.*

** Clear globe furnished. For other colors, order globes and mounting components separately* *See page L4.*


Pendant


Ceiling


Wall Mount

Class I, Div. 2, Groups A,B,C,D③
Class I, Zone 2, Groups IIC,IIB,IIA
NEMA 3, 4X

UL Listed - Files E227731 and E91793

FEATURES-SPECIFICATIONS

Applications
Designed specifically for corrosive environments.

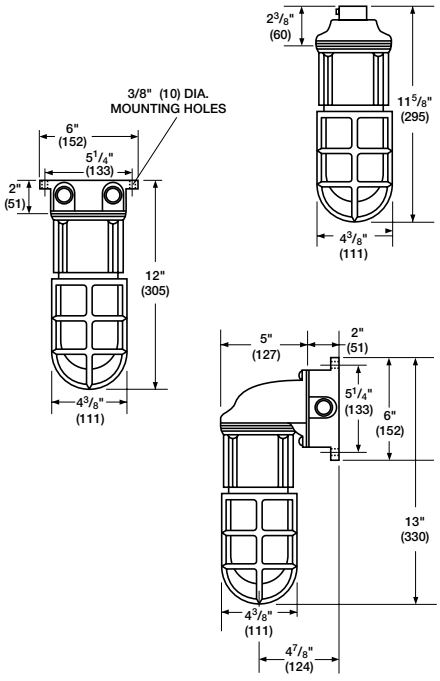
Typical applications include manufacturing plants, chemical and petrochemical processing facilities, sewage treatment plants, off-shore and dock-side installations, agricultural, commercial/industrial, mining and marine facilities.

Features
- Series NVQ non-metallic light fixtures combine an outstanding balance of strength, stiffness, toughness and electrical properties
- Molded from 30% glass-filled thermoplastic polyester for high strength
- Resists corrosive effects of most chemicals, hydrocarbons and solvents
- Designed for indoor and outdoor applications. Molded threads will not "freeze"—components are easy to remove, even after long exposure to corrosive environments

Compliances
- UL-1570 standard
- UL Marine type fixtures
- Suitable for wet locations
- NEMA 3, 4X
- Material meets U.L. 94-V-O standards for flame retardancy

NVQ Fluorescent Fixture Enclosed and Gasketed

Special Features
- Electronic ballast and lamp combination reduces energy consumption up to 70%
- Lamp life rated 10,000 hours with minimum starting temperature of -25°C (-13°F)
- Rated for use with 60° minimum supply wire
- Furnished with 18W compact fluorescent lamp



PENDANT NON-METALLIC FLUORESCENT ①④

FIXTURE TYPE	LAMP①	HUB SIZE	CATALOG NUMBER	CONSISTS OF			
			FIXTURE W/GLOBE & GUARD	MOUNTING BOX	FIXTURE BODY	GLOBE*	GUARD
Clear globe	PL-18	3/4"	**NVQA18GG**	NVA	NVQFC	VCG-100	NVG
Heat resistant	PL-18	3/4"	**NVQA18GHG**	NVA	NVQFC	VCGP-100	NVG

CEILING NON-METALLIC FLUORESCENT ①④

FIXTURE TYPE	LAMP①	HUB SIZE	CATALOG NUMBER	CONSISTS OF			
			FIXTURE W/GLOBE & GUARD	MOUNTING BOX	FIXTURE BODY	GLOBE*	GUARD
Clear globe	PL-18	3/4"	**NVQX18GG**	NVX	NVQFC	VCG-100	NVG
Heat resistant	PL-18	3/4"	**NVQX18GHG**	NVX	NVQFC	VCGP-100	NVG

WALL MOUNT NON-METALLIC FLUORESCENT 90° ①②④

FIXTURE TYPE	LAMP①	HUB SIZE	CATALOG NUMBER	CONSISTS OF			
			FIXTURE W/GLOBE & GUARD②	MOUNTING BOX	FIXTURE BODY	GLOBE*	GUARD
Clear globe	PL-18	3/4"	**NVQB18GG**	NVX+NVB	NVQFC	VCG-100	NVG
Heat resistant	PL-18	3/4"	**NVQB18GHG**	NVX+NVB	NVQFC	VCGP-100	NVG

① *Fixtures are unit packed and supplied with OSRAM® DuLux® D/E 18 watt Quad-Pin fluorescent lamp.*

② *Wall fixture supplied as ceiling mount unit with all necessary components to make bracket conversion. Elbow bracket adapter shipped separately.*

③ *Applications in Class I Div. 2 governed by NEC article 501-9(b)(2). 80% rule. NVQ maximum labeled operating temperature is 162°C. Minimum ignition temperature of hazardous gas or vapor is 203°C. Not UL listed or labeled for hazardous locations.*

④ *Listed catalog numbers are 120V AC. Order components for 277V or insert a **4** after the 18 for 277 assemblies; example **NVQA184GG**.*

** Clear globe furnished. For other colors, order globes and fixture components separately. See page L4.*

HUBBELL®
KILLARK®

Mounting Splice Boxes For NVQ/NV Series

For replacement or to make assemblies with special globes or voltages. Supplied complete with silicone gasket and brass screws. Pendant splice box includes a 316 stainless steel set screw at the conduit connection

Bracket mount available with integral on/off switch

Splice Boxes

Pendant

Ceiling

Wall Bracket

Switched Bracket

VGA SPLICE BOXES - INCLUDES SILICONE GASKETS & BRASS SCREWS		
CATALOG NUMBER	**DESCRIPTION**	
NVA	Pendant	Pendant splice box includes a 316 stainless steel set screw at the conduit connection
NVX	Ceiling	Direct ceiling mount or use with NVB for wall mount
NVB	Wall bracket	Use with NVX for wall mount
NVB-SW	Wall bracket with switch	Wall bracket with integral on/off switch

NVQFC
120V Fluorescent
NVQFC184
277V Fluorescent

NVFC
Incandescent

NVQ/NV FIXTURE BODIES		
CAT. NO.	**DESCRIPTION**	
NVQFC	Fluorescent 120V	Quad-pin lamp socket, 18 watt electronic ballast, silicon gasket and brass screws
NVQFC184	Fluorescent 277V	
NVFC	Incandescent	Includes heat resistant medium base socket, silicon gasket and brass screws

*Note: NVQFC rated for use with 60°C minimum supply wire. NVFC rated for use with 125°C minimum supply wire. For suitability with 90°C minimum supply wire, add suffix **LT** to catalog number (**NVFC-LT**)*

VCG-100

NVQ/NV GLASS GLOBES		
CATALOG NUMBER	**DESCRIPTION**	
VCG-100	Clear	150 watt max. Lamp size A-21
VCGP-100*	Clear. Tempered	
VAMG-100	Amber	
VGG-100	Blue Green	
VBG-100	Blue	
VRG-100	Ruby	
VRSG-100	Green	

** Thermal and shock resistant tempered glass. See "V" 100 series globes for other available colors*

VPLCG-100

NVQ/NV POLYCARBONATE GLOBES	
VPLCG-100	Polycarbonate 75 watt max. Lamp size A-19. Not UL Listed

Can be used with guard

NVQ/NV GUARD	
NVG	Replacement guard

NVQ FLUORESCENT LAMP	
NVQ-18	18 watt Quad-pin lamp

NVQ/NV COVER COMPONENTS	
NVBC	Blank cover supplied with gasket and screws
NVSG	Replacement gasket - fits between splice box and fixture body

HUBBELL®
KILLARK®

Pendant

Ceiling

Enclosed & Gasketed*

Listed - File E10514

Certified - File LR11713

FEATURES-SPECIFICATIONS

V SERIES ENCLOSED & GASKETED

Applications

Locations requiring durable, protected lighting fixtures

Wet and dirt laden locations, such as industrial environments requiring enclosed and gasketed (vaportight) fixtures

Lighting walkways, tunnels, loading docks, exits, stairwells, etc

Fixtures intended for base-up mounting

Heat resistant glass globes recommended for wet locations

Features

- Electrostatically applied epoxy/polyester finish
- Enclosed and gasketed fixture (vapor-tight). Joint gaskets provided to seal out moisture and dirt
- Splice box selections include pendant, ceiling, bracket and stanchion mounting types
- Modular design permits selection of splice box, fixture body, globe, guard and reflector for specific or custom applications
- Hubs are threaded for attachment to conduit and set screws are provided in pendant fixtures
- Copper-free aluminum (less than 4/10 of 1%) construction with electrostatically applied epoxy/polyester finish resists corrosion

***Class I, Div. 2, NEMA 4 models available - see VXFC Series lighting assemblies & components, pages L9-L12. Dimensions page L13.**




Enclosed & Gasketed

UL Listed - File E27731

CSA Certified - File LR11851

ORDERING INFORMATION

PENDANT MOUNT WITH VGA SPLICE BOX

FIXTURE TYPE	LAMP WATT	HUB SIZE	CATALOG NUMBER		CONSISTS OF			
			FIXTURE W/ GLOBE	FIXTURE W/ GLOBE & GUARD	MOUNTING BOX	FIXTURE BODY	CLEAR GLOBE*	GUARD (if selected)
100	150	1/2"	VUAG-1-100 ②	VUAGG-1-100 ②	VGA-1	VFC-100	VCG-100	VAG-100
		3/4"	VUAG-2-100 ②	VUAGG-2-100 ①	VGA-2	VFC-100	VCG-100	VAG-100
200	300	1/2"	VUAG-1-200 ②	VUAGG-1-200 ②	VGA-1	VFC-200	VCG-200	VAG-200
		3/4"	VUAG-2-200 ②	VUAGG-2-200 ②	VGA-2	VFC-200	VCG-200	VAG-200

CEILING MOUNT WITH FEET USING VBC SPLICE BOX AND VBA ADAPTER

FIXTURE TYPE	LAMP WATT	HUB SIZE	CATALOG NUMBER		CONSISTS OF			
			FIXTURE W/ GLOBE	FIXTURE W/ GLOBE & GUARD	MOUNTING BOX/ADAPTER	FIXTURE BODY	CLEAR GLOBE*	GUARD (if selected)
100	150	1/2"	VUXBG-1-100 ①	VUXBGG-1-100 ①	VBC-1 + VBA	VFC-100	VCG-100	VAG-100
		3/4"	VUXBG-2-100 ①	VUXBGG-2-100 ①	VBC-2 + VBA	VFC-100	VCG-100	VAG-100
200	300	1/2"	VUXBG-1-200 ②	VUXBGG-1-200 ②	VBC-1 + VBA	VFC-200	VCG-200	VAG-200
		3/4"	VUXBG-2-200 ②	VUXBGG-2-200 ②	VBC-2 + VBA	VFC-200	VCG-200	VAG-200

CEILING MOUNT WITH VGX SPLICE BOX

FIXTURE TYPE	LAMP WATT	HUB SIZE	CATALOG NUMBER		CONSISTS OF			
			FIXTURE W/ GLOBE	FIXTURE W/ GLOBE & GUARD	MOUNTING BOX	FIXTURE BODY	CLEAR GLOBE*	GUARD (if selected)
100	150	1/2"	VUXG-1-100 ②	VUXGG-1-100 ②	VGX-1	VFC-100	VCG-100	VAG-100
		3/4"	VUXG-2-100 ②	VUXGG-2-100 ②	VGX-2	VFC-100	VCG-100	VAG-100
200	300	1/2"	VUXG-1-200 ②	VUXGG-1-200 ②	VGX-1	VFC-200	VCG-200	VAG-200
		3/4"	VUXG-2-200 ②	VUXGG-2-200 ②	VGX-2	VFC-200	VCG-200	VAG-200

CEILING MOUNT WITH VGC SPLICE BOX - FEED THROUGH

FIXTURE TYPE	LAMP WATT	HUB SIZE	CATALOG NUMBER		CONSISTS OF			
			FIXTURE W/ GLOBE	FIXTURE W/ GLOBE & GUARD	MOUNTING BOX	FIXTURE BODY	CLEAR GLOBE*	GUARD (if selected)
100	150	1/2"	VUCG-1-100 ②	VUCGG-1-100 ①	VGC-1	VFC-100	VCG-100	VAG-100
		3/4"	VUCG-2-100 ②	VUCGG-2-100 ②	VGC-2	VFC-100	VCG-100	VAG-100
200	300	1/2"	VUCG-1-200 ②	VUCGG-1-200 ②	VGC-1	VFC-200	VCG-200	VAG-200
		3/4"	VUCG-2-200 ②	VUCGG-2-200 ②	VGC-2	VFC-200	VCG-200	VAG-200

**For other colors, order globes and fixture components separately.*

① Fixture supplied as component unit pack when ordered by this catalog number.

② Catalog number for ordering convenience; fixture is shipped as components as listed in catalog number table.

Enclosed & Gasketed

Listed - File E27731

Certified - File LR11851

ORDERING INFORMATION

CEILING MOUNT WITH VGH SPLICE BOX - DEAD END

FIXTURE TYPE	LAMP WATT	HUB SIZE	CATALOG NUMBER		CONSISTS OF			
			FIXTURE W/ GLOBE	FIXTURE W/ GLOBE & GUARD	MOUNTING BOX	FIXTURE BODY	CLEAR GLOBE*	GUARD (if selected)
100	150	1/2"	VUHG-1-100 ②	VUHGG-1-100 ②	VGH-1	VFC-100	VCG-100	VAG-100
		3/4"	VUHG-2-100 ②	VUHGG-2-100 ②	VGH-2	VFC-100	VCG-100	VAG-100
200	300	1/2"	VUHG-1-200 ②	VUHGG-1-200 ②	VGH-1	VFC-200	VCG-200	VAG-200
		3/4"	VUHG-2-200 ②	VUHGG-2-200 ②	VGH-2	VFC-200	VCG-200	VAG-200

CEILING MOUNT WITH VXA DEEP 5-HUB SPLICE BOX

FIXTURE TYPE	LAMP WATT	HUB SIZE	CATALOG NUMBER		CONSISTS OF			
			FIXTURE W/ GLOBE	FIXTURE W/ GLOBE & GUARD	MOUNTING BOX	FIXTURE BODY	CLEAR GLOBE*	GUARD (if selected)
100	150	1/2"	VXAG-110 ②	VXAGG-110 ①	VXA-1	VFC-100	VCG-100	VAG-100
		3/4"	VXAG-210 ②	VXAGG-210 ②	VXA-2	VFC-100	VCG-100	VAG-100
120 220	300	1/2"	VXAG-120 ②	VXAGG-120 ②	VXA-1	VFC-200	VCG-200	VAG-200
		3/4"	VXAG-220 ②	VXAGG-220 ②	VXA-2	VFC-200	VCG-200	VAG-200

CEILING MOUNT WITH VBA ADAPTER FOR ROUND OUTLET BOX

FIXTURE TYPE	LAMP WATT	HUB SIZE	CATALOG NUMBER		CONSISTS OF			
			FIXTURE W/ GUARD	FIXTURE W/ GLOBE & GUARD	BOX ADAPTER	FIXTURE BODY	CLEAR GLOBE*	GUARD (if selected)
100	150	1/2"	VOB-100 ①	VOBG-100 ①	VBA	VFC-100	VCG-100	VAG-100
200	300	3/4"	VOB-200 ②	VOBG-200 ①	VBA	VFC-200	VCG-200	VAG-200

NOTES: Mounts directly to VJ ,VB or steel 3-1/2" or 4" outlet boxes. Supplied with gasket.

CEILING MOUNT WITH VFPS ADAPTER FOR SQUARE OR OCTAGON OUTLET BOX

FIXTURE TYPE	LAMP WATT	HUB SIZE	CATALOG NUMBER		CONSISTS OF			
			FIXTURE W/ GLOBE	FIXTURE W/ GLOBE & GUARD	BOX ADAPTER	FIXTURE BODY	CLEAR GLOBE*	GUARD (if selected)
100	150	1/2"	VFCA-100 ②	VFCAG-100 ②	VFPS	VFC-100	VCG-100	VAG-100
200	300	3/4"	VFCA-200 ②	VFCAG-200 ②	VFPS	VFC-200	VCG-200	VAG-200

NOTES: Mounts directly to steel 4" square and 3-1/2" or 4" octagon outlet box. Supplied with gasket.

**For other colors, order globe and fixture components separately.*

① Fixture supplied as component unit pack when ordered by this catalog number.

② Catalog number for ordering convenience; fixture is shipped as components as listed in catalog number table.

V SERIES • WEATHERPROOF
INCANDESCENT COPPER-FREE ALUMINUM FIXTURES

Enclosed & Gasketed

UL Listed - File E27731

CSA Certified - File LR11851

ORDERING INFORMATION

WALL MOUNT WITH FEET USING VBC SPLICE BOX AND VB ELBOW

FIXTURE TYPE	LAMP WATT	HUB SIZE	CATALOG NUMBER		CONSISTS OF			
			FIXTURE W/ GLOBE	FIXTURE W/ GLOBE & GUARD	MOUNTING BOX/ELBOW	FIXTURE BODY	CLEAR GLOBE*	GUARD (if selected)
100	150	1/2"	**VFBG-1-100** ①	**VFBGG-1-100** ①	VBC-1+VB-1	VFC-100	VCG-100	VAG-100
		3/4"	**VFBG-2-100** ①	**VFBGG-2-100** ①	VBC-2+VB-2	VFC-100	VCG-100	VAG-100
200	300	1/2"	**VFBG-1-200** ②	**VFBGG-1-200** ②	VBC-1+VB-1	VFC-200	VCG-200	VAG-200
		3/4"	**VFBG-2-200** ②	**VFBGG-2-200** ②	VBC-2+VB-2	VFC-200	VCG-200	VAG-200

WALL MOUNT WITH VB ELBOW TO MOUNT TO 4" OUTLET BOX

FIXTURE TYPE	LAMP WATT	HUB SIZE	CATALOG NUMBER		CONSISTS OF			
			FIXTURE W/ GLOBE	FIXTURE W/ GLOBE & GUARD	MOUNTING ELBOW	FIXTURE BODY	CLEAR GLOBE*	GUARD (if selected)
100	150	1/2"	**VFBG-110** ②	**VFBGG-110** ①	VB-1	VFC-100	VCG-100	VAG-100
		3/4"	**VFBG-210** ②	**VFBGG-210** ①	VB-2	VFC-100	VCG-100	VAG-100
200	300	1/2"	**VFBG-120** ②	**VFBGG-120** ②	VB-1	VFC-200	VCG-200	VAG-200
		3/4"	**VFBG-220** ②	**VFBGG-220** ②	VB-2	VFC-200	VCG-200	VAG-200

Mounts directly to VJ or VB Series or 4" steel outlet boxes. One hub in back, supplied with gasket.

WALL MOUNT-WITH VFL ELBOW FOR DIRECT MOUNT TO V SERIES SPLICE BOXES

FIXTURE TYPE	LAMP WATT	HUB SIZE	CATALOG NUMBER		CONSISTS OF			
			FIXTURE W/ GLOBE	FIXTURE W/ GLOBE & GUARD	MOUNTING ELBOW	FIXTURE BODY	CLEAR GLOBE*	GUARD (if selected)
100	150	—	**VOBL-100** ②	**VOBLG-100** ①	VFL	VFC-100	VCG-100	VAG-100
200	300	—	**VOBL-200** ②	**VOBLG-200** ②	VFL	VFC-200	VCG-200	VAG-200

Mounts directly to V Series splice boxes. Supplied with adapter plate and gasket for mounting to VJ, VB or 4" outlet boxes.

STANCHION MOUNT FOR 1-1/4" THREADED PIPE

FIXTURE TYPE	LAMP WATT	HUB SIZE	CATALOG NUMBER		CONSISTS OF			
			FIXTURE W/ GLOBE	FIXTURE W/ GLOBE & GUARD	MOUNTING ARM	FIXTURE BODY	CLEAR GLOBE*	GUARD (if selected)
100	150	1-1/4"	**VD-410G** ①	**VD-410GG** ①	VD-4	VFC-100	VCG-100	VAG-100
200	300	1-1/4"	**VD-420G** ②	**VD-420GG** ②	VD-4	VFC-200	VCG-200	VAG-200

**For other colors, order globe and fixture components separately.*

① Fixture supplied as component unit pack when ordered by this catalog number.

② Catalog number for ordering convenience; fixture is shipped as components as listed in catalog number table.

Pendant

Ceiling

Class I, Div. 2, Groups A,B,C,D
Class I, Zone 2, Groups IIC,IIB,IIA
NEMA 3, 4*

Listed - File E10514
UL-1571 Standard for incandescent fixtures
UL-844 Standard for hazardous location fixtures

Certified - File LR11713

FEATURES-SPECIFICATIONS

Applications

Killark "V" Series Vaportight fixtures are now available Third Party Certified for use in certain hazardous as well as wet locations which require durable, protected lighting fixtures.

Wet and dirt laden industrial environments such as walkways, tunnels, loading docks, stairwells, etc. made hazardous by the presence of flammable vapors as defined by the NEC.

Fixtures intended for base-up mounting only.

Heat resistant (tempered) glass globes recommended for wet locations.

** NEMA 3, 4 when used with tempered glass.*

Features

Killark Vaportight assemblies using V**X**FC bodies & tempered glass have all the features & advantages of "V" Enclosed & Gasketed" models plus:

- Heavy-duty silicone gasketing for NEMA 4 requirements
- Third party tested & labeled for use in C1D2 areas
- Modular design permits selection of splice box, fixture body, globe, guard and reflector for specific or custom applications
- Existing V Series mounting boxes may be retrofitted to upgrade to NEMA 4; C1D2 suitability

Copper-free aluminum construction with electrostatically applied epoxy/polyester finish resists corrosion

APPLICATION DATA①

FIXTURE TYPE	LAMP SIZE	GLOBE TYPE	TEMPERATURE CODE
100	A-19 60W	colored & clear	T2C (230°C)
100	A-19 70W	colored & clear	T2D (215°C)
100	A-19 100W	colored & clear	T2A (280°C)
100	A-21 100W	colored & clear	T2B (260°C)
100	A-21 150W	colored & clear	T2 (300°C)
100	A-21 100W	clear only	T2B (260°C)
100	A-21 150W	clear only	T2C (230°C)
200	A-23 200W	colored & clear	T2 (300°C)
200	PS-25 200W	colored & clear	T2A (280°C)
200	PS-25 300W	colored & clear	(350°C)

① Suitability based on base up installation

See dimensions page L13.

HUBBELL
KILLARK®

INCANDESCENT NEMA 4 - CLASS I, DIV. 2 ALUMINUM FIXTURES

Class I, Div. 2, Groups A,B,C,D
Class I, Zone 2, Groups IIC,IIB,IIA
NEMA 3, 4 - When used with tempered glass

Listed - File E10514
UL-1571 Standard for incandescent fixtures
UL-844 Standard for hazardous location fixtures

Certified - File LR11713

ORDERING INFORMATION

PENDANT MOUNT WITH VGA SPLICE BOX

FIXTURE TYPE	LAMP WATT	HUB SIZE	CATALOG NUMBER	CONSISTS OF			
			FIXTURE W/ GLOBE & GUARD	MOUNTING BOX	FIXTURE BODY	CLEAR GLOBE*	GUARD
100	150	1/2"	**VUAGG-1-100PX** ①	VGA-1	VXFC-100 N34	VCGP-100	VAG-100
		3/4"	**VUAGG-2-100PX** ①	VGA-2	VXFC-100 N34	VCGP-100	VAG-100
200	300	1/2"	**VUAGG-1-200PX** ①	VGA-1	VXFC-200 N34	VCGP-200	VAG-200
		3/4"	**VUAGG-2-200PX** ①	VGA-2	VXFC-200 N34	VCGP-200	VAG-200

CEILING FIXTURE WITH VGX SPLICE BOX

FIXTURE TYPE	LAMP WATT	HUB SIZE	CATALOG NUMBER	CONSISTS OF			
			FIXTURE W/ GLOBE & GUARD	MOUNTING BOX	FIXTURE BODY	CLEAR GLOBE*	GUARD
100	150	1/2"	**VUXGG-1-100PX** ①	VGX-1	VXFC-100 N34	VCGP-100	VAG-100
		3/4"	**VUXGG-2-100PX** ①	VGX-2	VXFC-100 N34	VCGP-100	VAG-100
200	300	1/2"	**VUXGG-1-200PX** ①	VGX-1	VXFC-200 N34	VCGP-200	VAG-200
		3/4"	**VUXGG-2-200PX** ①	VGX-2	VXFC-200 N34	VCGP-200	VAG-200

CEILING FIXTURE WITH MOUNTING FEET USING VBC SPLICE BOX & VBA ADAPTER

FIXTURE TYPE	LAMP WATT	HUB SIZE	CATALOG NUMBER	CONSISTS OF			
			FIXTURE W/ GLOBE & GUARD	MOUNTING BOX/ADAPTER	FIXTURE BODY	CLEAR GLOBE*	GUARD
100	150	1/2"	**VUXBGG-1-100PX** ①	VBC-1+VBA	VXFC-100 N34	VCGP-100	VAG-100
		3/4"	**VUXBGG-2-100PX** ①	VBC-2+VBA	VXFC-100 N34	VCGP-100	VAG-100
200	300	1/2"	**VUXBGG-1-200PX** ①	VBC-1+VBA	VXFC-200 N34	VCGP-200	VAG-200
		3/4"	**VUXBGG-2-200PX** ①	VBC-2+VBA	VXFC-200 N34	VCGP-200	VAG-200

WALL FIXTURE WITH MOUNTING FEET USING VBC SPLICE BOX & VB ELBOW

FIXTURE TYPE	LAMP WATT	HUB SIZE	CATALOG NUMBER	CONSISTS OF			
			FIXTURE W/ GLOBE & GUARD	MOUNTING BOX/ELBOW	FIXTURE BODY	CLEAR GLOBE*	GUARD
100	150	1/2"	**VFBGG-1-100PX** ①	VBC-1 + VB-1	VXFC-100 N34	VCGP-100	VAG-100
		3/4"	**VFBGG-2-100PX** ①	VBC-2 + VB-2	VXFC-100 N34	VCGP-100	VAG-100
200	300	1/2"	**VFBGG-1-200PX** ①	VBC-1 + VB-1	VXFC-200 N34	VCGP-200	VAG-200
		3/4"	**VFBGG-2-200PX** ①	VBC-2 + VB-2	VXFC-200 N34	VCGP-200	VAG-200

**For other colors, order globes and mounting components separately.*

① *Fixture supplied as component unit pack when ordered by this catalog number.*

Listed - File E27731

Certified - File LR11851

VFC Fixture Bodies

Fixture bodies contain lamp receptacle and are threaded to accept globes, guards and reflectors. These fixture bodies are mounted directly to V Series splice boxes. They may also be mounted to VJ Series, VB Series or other 4" outlet boxes with the use of the appropriate adapter plate. Each fixture body is supplied with gaskets.

VFC-100
VXFC-100①

VFC-200
VXFC-200①

V FIXTURE BODIES	
CATALOG NUMBER	DESCRIPTION
VFC-100	150W max. Enclosed & Gasketed Fixture Boby
VFC-200	300W max. Enclosed & Gasketed Fixture Boby
VXFC-100 N34	150W max. NEMA 3,4 - Class I, Div. 2 Fixture Body①
VXFC-200 N34	300W max. NEMA 3,4 - Class I, Div. 2 Fixture Body①

① Use VXFC body with tempered globe for NEMA 3, 4 - Class 1, Div. 2 applications. Consult temperature table, page L9 for suitability.

V Splice Boxes

For use with types 100 and 200 fixture bodies

VGA

VGH

VGC

VGX

VXA

VBC

V SPLICE BOXES			
CATALOG NUMBER	HUB SIZE & QTY.		DESCRIPTION
VGA-1	1/2"	1	Pendant mount
VGA-2	3/4"	1	
VGH-1	1/2"	1	Ceiling mount
VGH-2	3/4"	1	
VGC-1	1/2"	2	Ceiling mount
VGC-2	3/4"	2	
VGX-1	1/2"	4	Ceiling mount
VGX-2	3/4"	4	
VXA-1	1/2"	5	Ceiling mount, deep box
VXA-2	3/4"	5	
VBC-1	1/2"	4	Ceiling mount, with 3 close-up plugs (requires **VBA** Adapter)
VBC-2	3/4"	4	

VBA

VFPS

V ADAPTER MOUNTING PLATES	
CATALOG NUMBER	DESCRIPTION
VBA	Adapts fixture body to VB, VJ or steel 3-1/2" & 4" splice boxes. Supplied with gasket.
VFPS	Adapts fixture body to steel 4" square outlet boxes or 3-1/2" or 4" octagon boxes

VB

VFL

VD

V MOUNTING BRACKETS			
CATALOG NUMBER	HUB SIZE	QTY.	DESCRIPTION
VB-1	1/2"	1	Wall mount to VJ or VB boxes
VB-2	3/4"	1	Wall mount to VJ or VB boxes
VFL	—	—	Wall mount to V boxes directly or to VJ, VB boxes with VBA adapter
VD-4	1-1/4"	1	Stanchion mount

Listed - File E27731

Certified - File LR11851

150 W Max.
Lamp Size A-21

300 W Max.
Lamp Size PS-25

Polycarbonate

500 W Max.
Lamp Size PS-35

V GLASS GLOBES		
CATALOG NUMBER		DESCRIPTION
150 W A-21 LAMP	300 W PS-25 LAMP	
VCG-100	VCG-200	Clear
VCGP-100	VCGP-200	Clear Tempered. Thermal and shock resistant①
VCGPT-100	—	Clear Tempered with Tuffskin® coating②
VAMG-100	VAMG-200	Amber
VGG-100	VGG-200	Blue Green
VGGP-100	VGGP-200	Blue Green Tempered①
VBG-100	VBG-200	Blue
VBGP-100	—	Blue Tempered①
VRG-100	VRG-200	Ruby
VRGP-100	—	Ruby Tempered①
VRSG-100	—	Green
VPG-100	—	Purple
75 W A-19 LAMP	150 W A-21 LAMP	Polycarbonate. Cannot be used with guard or in high ambient temperature locations (40°C/104°F max.) Not UL Listed.
VPLCG-100	VPLCG-200	
500 W PS-35 LAMP		
VCG-500		Clear (for replacement)
VCGP-500		Tempered. Thermal and shock resistant (for replacement).

① *Recommended for use with VXFC fixture basis.*

② *TM Thomas Manufacturing.*

V GUARDS	
CATALOG NUMBER	DESCRIPTION
VAG-100	100 Series Vaportite guard
VAG-200	200 Series Vaportite guard

V REFLECTORS		
CATALOG NUMBER	DESCRIPTION	
VPRSD-100	100 Series Reflector	16 3/8" Dia. White polypropylene for pendant & ceiling applications. Not for use with wall or stanchion models.
VPRSD-200	200 Series Reflector	

Body To Splice Box
Gasket
100 or 200 Series
VTG Standard
VTG-S Silicone (pictured)

Lamp Socket
Gasket
VTRG

V SERIES GASKETS			
CATALOG NUMBER		TYPE	DESCRIPTION
100 SERIES	200 SERIES		
VTG		VFC	Fixture body to splice box
VTG-S		VXFC	Silicone, Fixture body to splice box
VTRG		VFC, VXFC	Porcelain lamp socket gasket
—	VTGG	VFC	Globe gasket
VTGG1-S	VTGG2-S	VFXC	Silicone, globe gasket

Globe Gasket
100 Series Standard - none required
200 Series Standard - VTGG (pictured)
100 Series Silicone - VTGG1-S
200 Series Silicone - VTGG2-S

V LAMP SOCKET	
CATALOG NUMBER	DESCRIPTION
VRME	For fixture types 100 and 200

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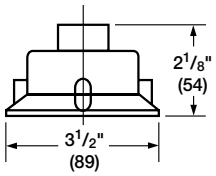
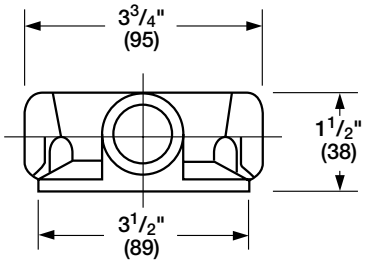
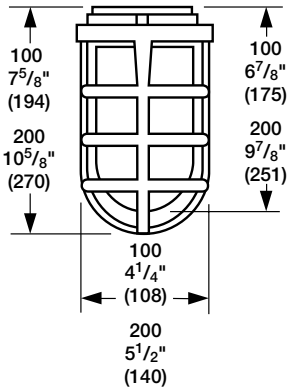


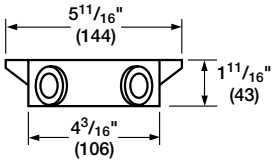
VGA

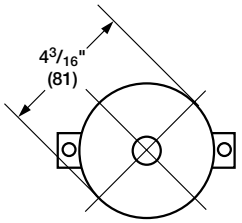


VGC VGX

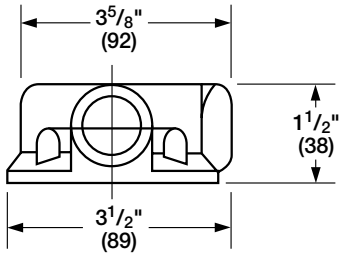


V Fixture
w/o Splice Box

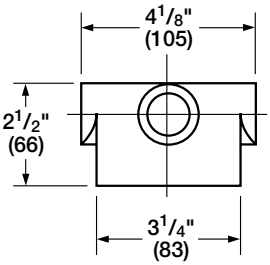


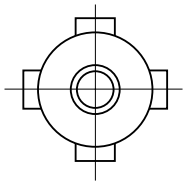


VBC-1 & VBC-2

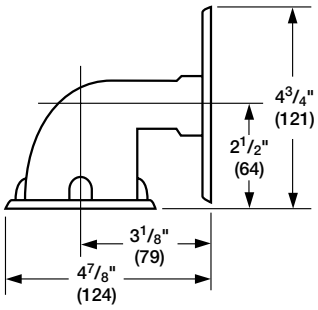


VGH

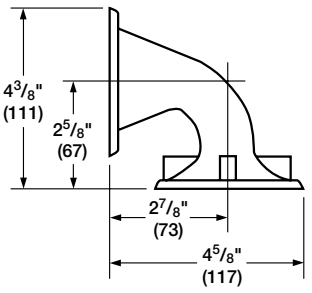




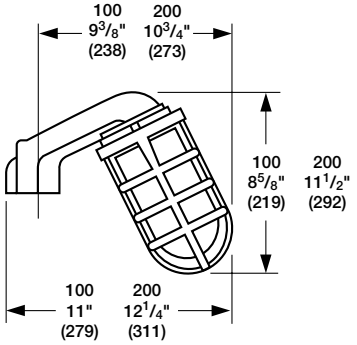
VXA



VB



VFL



V Stanchion

DO MIDGET LIGHTS

Application

DO Midget Lights are ideal for small, low wattage instrumental panel lighting and equipment warning lights. Uses 10 watt S-11 intermediate screw base lamp.

Features

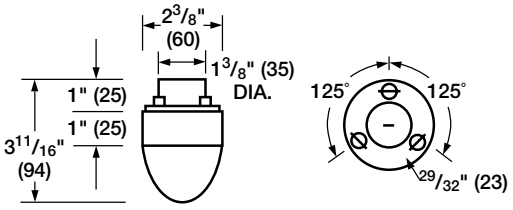
- Corrosion Resistant Thermoplastic-Body. Mounts to panel or boxes with three 6-32 screws
- Heavy Duty Mounting Adapters-Two types of cast aluminum boxes, side and box mounting
- Shatter Resistant Globes-Thread mount acrylic globes available in a variety of colors for all signal requirements
- Shock Proof Socket-Flexible mounted socket for long lamp life on equipment subject to vibration

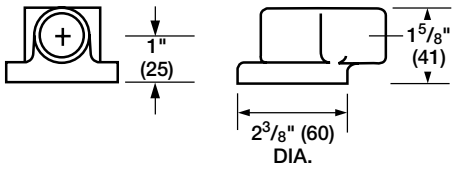
DO-1-A with DON-5 and Globe

Damp Location

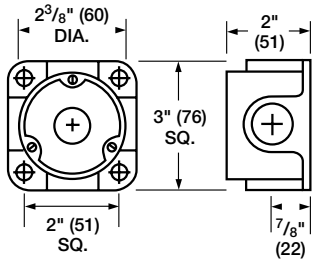
DO MIDGET LIGHTS ORDERING INFORMATION	
CATALOG NUMBER	DESCRIPTION
DON-5	**Body/Socket Assembly Less Globe** **Permits Mounting Directly to Panel or "DO" Boxes.** Assembly with intermediate screw socket
DO-1-A DO-105-XE	**Mounting Boxes–hubs tapped 1/2" N.P.T.** Side mount box–one hub Sq. box–four side hubs, four plugs, one back hub
DO-53	**Globe Guard** Plated clamp type wire guard

ACRYLIC GLOBES THREAD MOUNT	
CATALOG NUMBER	DESCRIPTION
DO-5-LP	Red
DO-5-RP	Green
DO-5-AP	Amber
DO-5-TAP	Opal





DO-1-A



DO-105-XE

DV DUST-IGNITION PROOF

Applications

For hazardous locations where suspended metal, carbon (coal, etc.) and grain dusts create explosive or ignitable mixtures with the air

Features

Cast of corrosion resistant aluminum alloy with electrostatically applied epoxy/polyester finish

Dust-Ignition Proof

Class II, Div. 1 & 2 Groups E,F,G①
Class III

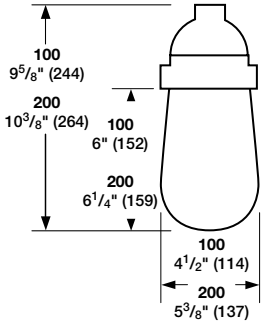
Listed - File E12976

Certified - File LR11713

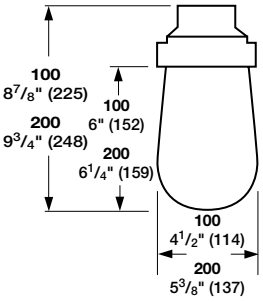
DV 100/200				
MODEL	LAMP SIZE	HUB SIZE	CATALOG NUMBER	
			PENDANT	CEILING
TYPE 100	100 WATT A-21	1/2"	DVA-110	DVX-110
	150 Watt A-23	3/4"	DVA-210	DVX-210
TYPE 200	150 Watt PS-25	1/2"	DVA-120	DVX-120
	200 Watt PS-25	3/4"	DVA-220	DVX-220

ACCESSORIES/REPLACEMENT PARTS			
FIXTURE TYPE	CATALOG NUMBER		
	GLASS GLOBE	WIRE GUARD	REPLACEMENT RECEPTACLE
100	DCGE-10	DAG-100	VRME
200	DCGE-20	DAG-200	VRME

①Temperature code T3B, use supply wire suitable for 150° C.



Pendant 100-200



Ceiling 100-200

HUBBELL
KILLARK®

HPG-2-500F

HXG-2-500F

HBG-2-500F

Class I, Div. 1 & 2, Groups C,D
Class I, Zones 1 & 2, Groups IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G

Listed* - File E12976

Certified* - File LR11713
*Complete assemblies only

See Hazardous location application data

FEATURES-SPECIFICATIONS

Applications

H Series fixtures can be used for:

Hazardous locations indoors and outdoors.

General lighting or process finish, storage and handling areas where flammable gases, vapor or dust may be present in the air to produce explosive or ignitable mixtures.

Features

- Cast of corrosion resistant aluminum alloy with electrostatically applied epoxy/polyester finish
- Heat and impact resistant pre-stressed fluted globe
- Relamp without tools—no need to remove accessories for relamping
- Fixture for lamp base-up mounting only
- Reflectors-aluminum with white finish

Fixture Ordering Information

- See catalog numbers shown at right
- For mogul base 300 watt PS-35 or 500 watt PS-40 lamps
- Fixture hub size is 3/4"
- Omit “G” in fixture catalog number to omit guard

H COMPLETE FIXTURES

CATALOG NUMBER	HUB SIZE	DESCRIPTION
HPG-2-500F	3/4"	Pendant
HXG-2-500F	3/4"	Ceiling
HBG-2-500F	3/4"	Wall

HP-2

HX-2

HB-2

H MOUNTING SPLICE BOXES

HP-2	3/4"	Pendant
HX-2	3/4"	Ceiling
HB-2	3/4"	Wall

HRSD-500

HRD-400

HRA-500

HGSA-500F

EZG1G

HRMO

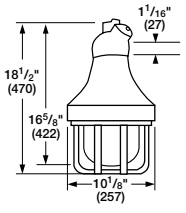
H ACCESSORIES

CATALOG NUMBER	DESCRIPTION
HRSD-500	Standard dome reflector 18-1/4" dia.
HRD-400	Deep reflector 21-1/8" dia.
HRA-500	Angle reflector 15-1/8" dia.
HGSA-500F	Globe with support assembly (for replacement)
EZG1G	Guard
HG-500	Guard (old style without “F” only)
HRMO	Replacement mogul socket

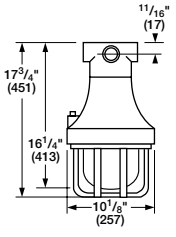
H APPLICATION DATA

LAMP WATTS	RATED AMBIENT °C	CLASS I, DIV. 1 & 2		CLASS II, DIV. 1 & 2		CLASS III SUITABILITY	SUPPLY WIRE °C
		T-CODE	GROUPS	T-CODE	GROUPS		
300	40	T3C	C, D	T3C	E F G	YES	150
500	40	T3	C, D	T3	E	NO	150

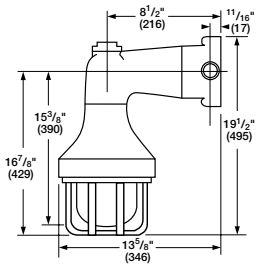
Dimensions



Pendant



Ceiling



Wall

HUBBELL
KILLARK®

E INCANDESCENT FACTORY SEALED


EPG-2-200


EXG-2-200


EBG-2-200

Class I, Div. 1 & 2, Groups A,B,C,D
Class I, Zones 1 & 2, Groups IIC,IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G


HG-200

Applications

For hazardous locations including where Group A or Group B gases are present, indoors or outdoors.

General, local or supplementary lighting in areas where Group A or Group B gases are manufactured, used or handled.

Features

- Cast of corrosion resistant aluminum alloy with electrostatically applied epoxy/polyester finish
- For 200 watt or 300 watt PS-30 medium base lamps. Fixture for lamp base-up mounting only
- Omit "G" in catalog number to omit guard

Groups A,B Rated

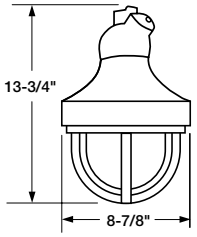
E INCANDESCENT FIXTURE	
CATALOG NUMBER	DESCRIPTION
EPG-2-200	Pendant 3/4" hub
EXG-2-200	Ceiling 3/4" hub
EBG-2-200	Bracket 3/4" hub

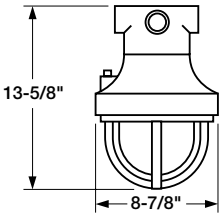
Note: For 200 watt or 300 watt PS-30 lamps. Fixture for lamp base-up mounting only.

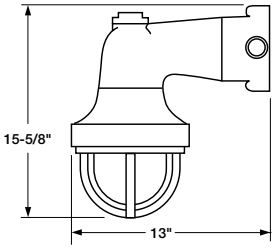
E ACCESSORIES	
CATALOG NUMBER	DESCRIPTION
HG-200	Guard
EGSA-200	Globe w/ support assembly
HRME	Replacement socket

E APPLICATION DATA

LAMP WATTS	RATED AMBIENT °C	CLASS I, DIV. 1 & 2		CLASS II, DIV. 1 & 2		CLASS III SUITABILITY	SUPPLY WIRE °C
		T-CODE	GROUPS	T-CODE	GROUPS		
200	40	T4	A, B, C, D	T3C	E F G	YES	90
300	40	T3C	A, B, C, D	T3A	E, F	NO	150







XHL SERIES HAND LAMPS

XHL Series Hand Lamps are a handy accessory to the ACCEPTOR® Series. Used as a supplemental illumination source for areas where flammable materials are present such as processed finished goods, storage vats or handling areas.


XHL


XHLF

Features XHL Incandescent

- Phenolic handle for long service in rugged conditions
- Aluminum guard
- Heat and impact resistant globe
- Supplied with an A-21 100 Watt (100A/RS) Rough Service lamp
- Supplied with 2 grommets for use with either 14/3 or 16/3 user furnished SO cable

CATALOG NUMBER	DESCRIPTION
XHL-100	Handlamp
XHL-GL	Replacement Globe
XHLG	Replacement Guard
XHLS	Replacement Socket

XHL Incandescent
Class I, Div. 1 & 2, Groups C, D
Class I, Zones 1 & 2, Groups IIB,IIA

Listed File No. E97760

Certified File No. LR10019

Features XHLF Fluorescent

- No exposed metal parts
- Furnished with 26 watt 1800 Lumen fluorescent lamp and light shield
- Supplied with grommet for use with 16/3 user furnished SO cable

CATALOG NUMBER	DESCRIPTION
XHLF26	Fluorescent hand lamp
XHLF26-50KP	Fluorescent hand lamp with 50' of 16/3 SOW cord and 15A Acceptor plug

XHLF Fluorescent
Class I, Div. 1 & 2, Groups C,D
Class I, Zones 1 & 2, Groups IIB,IIA
Class II, Div. 1 & 2, Groups F,G

Listed File No. E97760

HUBBELL
KILLARK®

Pendant

Ceiling

Wall

Stanchion

Class I, Div. 2, Groups A,B,C,D*
Class I, Zone 2, Groups IIC,IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G*
Class III
Suitable for wet locations
Marine
NEMA 3, 4X

Listed - Files E10514 and E91793 (Marine)

Certified - File LR11713

FEATURES-SPECIFICATIONS

CERTILITE®

Applications

CERTI***LITE***® MB fixtures are designed for installations where moisture, dirt, dust, corrosion and vibration may be present, or NEMA 3 and 4X areas where wind, water, snow or high ambients can be expected. They can be used in locations made hazardous by the presence of flammable vapors or gases or combustible dusts as defined by the NEC.

Typical applications include manufacturing plants, and certain chemical and petrochemical processing facilities, sewage treatment plants, offshore and dockside installations, garages and storage facilities.

Compliances

- UL-1572 Standard for HID lighting fixtures
- UL-1570 Standard for Fluorescent fixtures
- UL Marine type lighting fixtures (HID models) UL-844 Standard for lighting fixtures for hazardous locations, Class I, Division 2; Class II, Divisions 1 and 2; Class III
- CSA C22.2 no. 137-M1981 electric luminaries for use in hazardous locations
- Enclosed and gasketed
- NEMA 3, 4X

Features

- Ballast tank and splice box — corrosion resistant copper-free aluminum alloy
- Baked powder epoxy/polyester finish, electrostatically applied for complete, uniform corrosion protection
- All external hardware — stainless steel
- Guard — copper-free aluminum alloy
- Normally shipped as components for quick delivery
- Refractor guard — steel with corrosion resistant finish
- Reflector — lightweight, corrosion resistant polyester reinforced fiberglass
- Fluorescent models furnished **with lamps**. Energy efficient instant on white light (2700K). 10,000 hour lamp life
- HID lamp holders are E26 medium base

Catalog Number Logic

MB 0 00 0 - 000 00 (NR)①

Series Constant

Lamp Type
F—Fluorescent
L—High Pressure Sodium
H—Metal Halide
K—MV Mercury Vapor

Lamp Wattage
13—(1) 13 Watt PL Lamp
26—(2) 13 Watt PL Lamp
39—(3) 13 Watt PL Lamp
50—50 Watt—HPS/MH/MV
70—70 Watt—HPS/MH
75—75 Watt—MV
10—100 Watt—HPS/MV②
15—150 Watt—HPS

Voltage
0—Quad - 120/208/240/277 Volts 60 Hz (50, 70 HPS/MH)
1—120 Volts 60 Hz (HPS/MV/Fluorescent)
4—277 Volts 60 Hz (13, 26 Watt Fluorescent/MV)
5—480 Volts (100MV only)

Optic
G—Fluted Glass Globe
GG—Globe and Guard
R5—Glass Refractor Type V
R5G—Glass Refractor & Guard

Mounting Style
A2—3/4" Pendant
A3—1" Pendant
X2—3/4" Ceiling
X3—1" Ceiling
B2—3/4" Wall Bracket
B3—1" Wall Bracket
D4—1-1/4" Stanchion
D5—1-1/2" Stanchion

HUBBELL®
KILLARK®

** See Hazardous Location Application Data on page L26 for limitations.*

① See page L22 for Ex nR Restricted Breathing models.

② Consult factory for 100 Watt Metal Halide availability.

Class I, Div. 2, Groups A,B,C,D*
Class I, Zone 2, Groups IIC,IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G*
Class III
Suitable for wet locations
NEMA 3, 4X

Listed - Files E10514 and E91793

Certified - File LR11713

ORDERING INFORMATION

PENDANT

PENDANT FLUORESCENT					
LAMP TYPE	LAMP/① WATTS	HUB SIZE②	VOLTAGE 60 HZ③	CATALOG NUMBER②	
				GLOBE AND GUARD	REFRACTOR AND GUARD
Bi-Pin	13 Watt (1 x 13)	3/4"	120	MBF131-GGA2	MBF131-R5GA2
	26 Watt (2 x 13)	3/4"	120	MBF261-GGA2	MBF261-R5GA2
	39 Watt (3 x 13)	3/4"	120	MBF391-GGA2	MBF391-R5GA2

CEILING

CEILING FLUORESCENT					
LAMP TYPE	LAMP/① WATTS	HUB SIZE②	VOLTAGE 60 HZ③	CATALOG NUMBER②	
				GLOBE AND GUARD	REFRACTOR AND GUARD
Bi-Pin	13 Watt (1 x 13)	3/4"	120	MBF131-GGX2	MBF131-R5GX2
	26 Watt (2 x 13)	3/4"	120	MBF261-GGX2	MBF261-R5GX2
	39 Watt (3 x 13)	3/4"	120	MBF391-GGX2	MBF391-R5GX2

WALL

WALL FLUORESCENT					
LAMP TYPE	LAMP/① WATTS	HUB SIZE②	VOLTAGE 60 HZ③	CATALOG NUMBER②	
				GLOBE AND GUARD	REFRACTOR AND GUARD
Bi-Pin	13 Watt (1 x 13)	3/4"	120	MBF131-GGB2	MBF131-R5GB2
	26 Watt (2 x 13)	3/4"	120	MBF261-GGB2	MBF261-R5GB2
	39 Watt (3 x 13)	3/4"	120	MBF391-GGB2	MBF391-R5GB2

STANCHION

STANCHION FLUORESCENT					
LAMP TYPE	LAMP/① WATTS	HUB SIZE②	VOLTAGE 60 HZ③	CATALOG NUMBER②	
				GLOBE AND GUARD	REFRACTOR AND GUARD
Bi-Pin	13 Watt (1 x 13)	1-1/4"	120	MBF131-GGD4	MBF131-R5GD4
	26 Watt (2 x 13)	1-1/4"	120	MBF261-GGD4	MBF261-R5GD4
	39 Watt (3 x 13)	1-1/4"	120	MBF391-GGD4	MBF391-R5GD4

① *Fixtures supplied with Bi-Pin fluorescent lamps. Replacement number MPL13.*
② *Catalog numbers shown are with 3/4" conduit openings (1-1/4" on stanchion mount) and include globe and guard. See catalog logic for other possible configurations.*
③ *Catalog numbers are shown with 120V ballasts. 1 & 2 lamp fixtures are available with 277V ballasts Change 6th character from "**1**" to "**4**"; e.g. **MBF264-GGA2**.*

** See Hazardous Location Application Data on page L26 for limitations.*

Class I, Div. 2, Groups A,B,C,D*
Class I, Zone 2, Groups IIC,IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G*
Class III
Suitable for wet locations
UL Marine
NEMA 3, 4X

Listed - Files E10514 and E91793 (Marine)

Certified - File LR11713

ORDERING INFORMATION

PENDANT

PENDANT 50-150W HIGH PRESSURE SODIUM					
LAMP TYPE	LAMP WATTS	HUB SIZE②	VOLTAGE 60 HZ①	CATALOG NUMBER②	
				GLOBE AND GUARD	REFRACTOR AND GUARD
HPS	50	3/4"	120	MBL501-GGA2	MBL501-R5GA2
	70	3/4"	120	MBL701-GGA2	MBL701-R5GA2
	100	3/4"	120	MBL101-GGA2	MBL101-R5GA2
	150	3/4"	120	MBL151-GGA2	MBL151-R5GA2

CEILING

CEILING 50-150W HIGH PRESSURE SODIUM					
LAMP TYPE	LAMP WATTS	HUB SIZE②	VOLTAGE 60 HZ①	CATALOG NUMBER②	
				GLOBE AND GUARD	REFRACTOR AND GUARD
HPS	50	3/4"	120	MBL501-GGX2	MBL501-R5GX2
	70	3/4"	120	MBL701-GGX2	MBL701-R5GX2
	100	3/4"	120	MBL101-GGX2	MBL101-R5GX2
	150	3/4"	120	MBL151-GGX2	MBL151-R5GX2

WALL

WALL 50-150W HIGH PRESSURE SODIUM					
LAMP TYPE	LAMP WATTS	HUB SIZE②	VOLTAGE 60 HZ①	CATALOG NUMBER②	
				GLOBE AND GUARD	REFRACTOR AND GUARD
HPS	50	3/4"	120	MBL501-GGB2	MBL501-R5GB2
	70	3/4	120	MBL701-GGB2	MBL701-R5GB2
	100	3/4"	120	MBL101-GGB2	MBL101-R5GB2
	150	3/4"	120	MBL151-GGB2	MBL151-R5GB2

STANCHION

STANCHION 50-150W HIGH PRESSURE SODIUM					
LAMP TYPE	LAMP WATTS	HUB SIZE②	VOLTAGE 60 HZ①	CATALOG NUMBER②	
				GLOBE AND GUARD	REFRACTOR AND GUARD
HPS	50	1-1/4"	120	MBL501-GGD4	MBL501-R5GD4
	70	1-1/4"	120	MBL701-GGD4	MBL701-R5GD4
	100	1-1/4"	120	MBL101-GGD4	MBL101-R5GD4
	150	1-1/4"	120	MBL151-GGD4	MBL151-R5GD4

① Catalog numbers shown are 120. Consult catalog logic for other available voltages.
② Catalog numbers shown with 3/4" conduit openings (1-1/4" on stanchion mount) and includes globe and guard or IES type V 8" glass refractor and guard. See catalog logic for other possible configurations.

** See Hazardous Location Application Data on page L26 for limitations.*

Class I, Div. 2, Groups A,B,C,D*
Class I, Zone 2, Groups IIC,IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G*
Class III
Suitable for wet locations
UL Marine
NEMA 3, 4X

Listed - Files E10514 and E91793 (Marine)

Certified - File LR11713

ORDERING INFORMATION

PENDANT

PENDANT 50-70W METAL HALIDE					
LAMP TYPE	LAMP WATTS	HUB SIZE②	VOLTAGE 60 HZ①	CATALOG NUMBER②	
				GLOBE AND GUARD	REFRACTOR AND GUARD
MH	50	3/4"	120/208/240/277	**MBH500-GGA2**	**MBH500-R5GA2**
	70	3/4"	120/208/240/277	**MBH700-GGA2**	**MBH700-R5GA2**

CEILING

CEILING 50-70W METAL HALIDE					
LAMP TYPE	LAMP WATTS	HUB SIZE②	VOLTAGE 60 HZ①	CATALOG NUMBER②	
				GLOBE AND GUARD	REFRACTOR AND GUARD
MH	50	3/4"	120/208/240/277	**MBH500-GGX2**	**MBH500-R5GX2**
	70	3/4"	120/208/240/277	**MBH700-GGX2**	**MBH700-R5GX2**

WALL

WALL 50-70W METAL HALIDE					
LAMP TYPE	LAMP WATTS	HUB SIZE②	VOLTAGE 60 HZ①	CATALOG NUMBER②	
				GLOBE AND GUARD	REFRACTOR AND GUARD
MH	50	3/4"	120/208/240/277	**MBH500-GGB2**	**MBH500-R5GB2**
	70	3/4"	120/208/240/277	**MBH700-GGB2**	**MBH700-R5GB2**

STANCHION

STANCHION 50-70W METAL HALIDE					
LAMP TYPE	LAMP WATTS	HUB SIZE②	VOLTAGE 60 HZ①	CATALOG NUMBER②	
				GLOBE AND GUARD	REFRACTOR AND GUARD
MH	50	1-1/4"	120/208/240/277	**MBH500-GGD4**	**MBH500-R5GD4**
	70	1-1/4"	120/208/240/277	**MBH700-GGD4**	**MBH700-R5GD4**

① Metal Halide MB fixtures use quad-volt ballasts.
② Catalog numbers shown with 3/4" conduit openings (1-1/4" on stanchion mount) and include globe and guard or IES type V 8" glass refractor and guard. See catalog logic for other possible configurations.

** See Hazardous Location Application Data on page L26 for limitations.*

Class I, Div. 2, Groups A,B,C,D*
Class I, Zone 2, Groups IIC,IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G*
Class III
Suitable for wet locations
UL Marine
NEMA 3, 4X

Listed - Files E10514 and E91793 (Marine)

Certified - File LR11713

ORDERING INFORMATION

PENDANT

PENDANT 50-100W MERCURY VAPOR					
LAMP TYPE	LAMP/ WATTS	HUB SIZE②	VOLTAGE 60 HZ①	CATALOG NUMBER②	
				GLOBE AND GUARD	REFRACTOR AND GUARD
MV	50	3/4"	120	MBK501-GGA2	MBK501-R5GA2
	75	3/4"	120	MBK751-GGA2	MBK701-R5GA2
	100	3/4"	120	MBK101-GGA2	MBK101-R5GA2

CEILING

CEILING 50-100W MERCURY VAPOR					
LAMP TYPE	LAMP/ WATTS	HUB SIZE②	VOLTAGE 60 HZ①	CATALOG NUMBER②	
				GLOBE AND GUARD	REFRACTOR AND GUARD
MV	50	3/4"	120	MBK501-GGX2	MBK501-R5GX2
	75	3/4"	120	MBK751-GGX2	MBK751-R5GX2
	100	3/4"	120	MBK101-GGX2	MBK101-R5GX2

WALL

WALL 50-100W MERCURY VAPOR					
LAMP TYPE	LAMP/ WATTS	HUB SIZE②	VOLTAGE 60 HZ①	CATALOG NUMBER②	
				GLOBE AND GUARD	REFRACTOR AND GUARD
MV	50	3/4"	120	MBK501-GGB2	MBK501-R5GB2
	75	3/4"	120	MBK751-GGB2	MBK751-R5GB2
	100	3/4"	120	MBK101-GGB2	MBK101-R5GB2

STANCHION

STANCHION 50-100W MERCURY VAPOR					
LAMP TYPE	LAMP/ WATTS	HUB SIZE②	VOLTAGE 60 HZ①	CATALOG NUMBER②	
				GLOBE AND GUARD	REFRACTOR AND GUARD
MV	50	1-1/4"	120	MBK501-GGD4	MBK501-R5GD4
	75	1-1/4"	120	MBK751-GGD4	MBK751-R5GD4
	100	1-1/4"	120	MBK101-GGD4	MBK101-R5GD4

① Catalog numbers shown are 120 volt. Consult catalog logic for other available voltages.
② Catalog numbers shown with 3/4" conduit openings (1-1/4" on stanchion mount) and includes globe and guard or IES type V 8" glass refractor and guard. See catalog logic for other possible configurations.

** See Hazardous Location Application Data on page L26 for limitations.*


Pendant


Ceiling


Wall


Stanchion

AEx nR / Ex nR*
Class I, Div. 2, Groups A,B,C,D*
Class I, Zone 2, Groups IIC,IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G*
Class III
Suitable for wet locations
UL Marine
NEMA 3, 4X

Listed - Files E10514 and E91793 (Marine)

Certified - File LR11713

FEATURES-SPECIFICATIONS

CERTILITE®

Applications

MB Restricted Breathing option fixtures maintain all the features and compliances listed for standard MB HID lighting fixtures. An alternate testing and installation method allows much lower Temperature Codes when compared to conventional units. Installation requires sealed entry (conduit or cable). See temperature data charts to determine suitability per applicable construction codes. Ex nR Restricted Breathing fixtures are available with globe only, not refractors.

CERTI***LITE***® MB fixtures are designed for installations where moisture, dirt, dust, corrosion and vibration may be present, or NEMA 3 and 4X areas where wind, water, snow or high ambients can be expected. They can be used in locations made hazardous by the presence of flammable vapors or gases or combustible dusts as defined by the NEC.

Typical applications include manufacturing plants, and certain chemical and petrochemical processing facilities, sewage treatment plants, off-shore and dockside installations, garages and storage facilities.

Compliances

- UL-1572 Standard for HID lighting fixtures
- UL Marine type lighting fixtures
- UL-844 Standard for lighting fixtures for hazardous locations, Class I, Division 2; Class II, Divisions 1 and 2; Class III
- CSA C22.2 no. 137-M1981 electric luminaries for use in hazardous locations
- IEC 60079-15 Electrical apparatus with “n” type protection
- Enclosed and gasketed
- NEMA 3, 4X

Features

- Ballast tank and splice box — corrosion resistant copper-free aluminum alloy
- HID lamp holders are E-26 medium base
- Baked powder epoxy/polyester finish, electrostatically applied for complete, uniform corrosion protection
- All external hardware — stainless steel
- Guard — copper-free aluminum alloy
- Reflector — lightweight, corrosion resistant polyester reinforced fiberglass

Electrical

Fixtures are available in

- Fluorescent Bi-Pin: 13-39 watts①
- HPS: 50 through 150 watts
- MH: 50 & 70 watts②
- MV: 50 through 100 watts

All HID ballast circuits are high power factor. Consult catalog logic on page L17 for available voltages.

** See Hazardous Location Application Data on page L26 for limitations.*
*① Ex nR HID models listed page L23. For fluorescent models, add **NR** to “globe” model number from page L18.*
② Consult factory for 100 watt Metal Halide availability.

AEx nR / Ex nR*
Class I, Div. 2, Groups A,B,C,D*
Class I, Zone 2, Groups IIC,IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G*
Class III
Suitable for wet locations
UL Marine
NEMA 3, 4X

Listed - Files E10514 and E91793 (Marine)

Certified - File LR11713

ORDERING INFORMATION

PENDANT

MB 50-150W Ex nR PENDANT①				
LAMP WATTS	VOLTAGE @ 60 HERTZ	CATALOG NUMBER		
		HPS	MH②	MV
50	120②	MBL501-GGA2NR	MBH500-GGA2NR	MBK501-GGA2NR
70	120②	MBL701-GGA2NR	MBH700-GGA2NR	—
75	120	—	—	MBK751-GGA2NR
100	120	MBL101-GGA2NR	—	MBK101-GGA2NR
150	120	MBL151-GGA2NR	—	—

CEILING

MB 50-150W Ex nR CEILING①				
LAMP WATTS	VOLTAGE @ 60 HERTZ	CATALOG NUMBER		
		HPS	MH②	MV
50	120②	MBL501-GGX2NR	MBH500-GGX2NR	MBK501-GGX2NR
70	120②	MBL701-GGX2NR	MBH700-GGX2NR	—
75	120	—	—	MBK751-GGX2NR
100	120	MBL101-GGX2NR	—	MBK101-GGX2NR
150	120	MBL151-GGX2NR	—	—

WALL

MB 50-150W Ex nR WALL①				
LAMP WATTS	VOLTAGE @ 60 HERTZ	CATALOG NUMBER		
		HPS	MH②	MV
50	120②	MBL501-GGB2NR	MBH500-GGB2NR	MBK501-GGB2NR
70	120②	MBL701-GGB2NR	MBH700-GGB2NR	—
75	120	—	—	MBK751-GGB2NR
100	120	MBL101-GGB2NR	—	MBK101-GGB2NR
150	120	MBL151-GGB2NR	—	—

STANCHION

MB 50-150W Ex nR STANCHION①				
LAMP WATTS	VOLTAGE @ 60 HERTZ	CATALOG NUMBER		
		HPS	MH②	MV
50	120②	MBL501-GGD4NR	MBH500-GGD4NR	MBK501-GGD4NR
70	120②	MBL701-GGD4NR	MBH700-GGD4NR	—
75	120	—	—	MBK751-GGD4NR
100	120	MBL101-GGD4NR	—	MBK101-GGD4NR
150	120	MBL151-GGD4NR	—	—

① Fixtures are shown with 120V ballasts, except Metal Halide. All assemblies with 3/4" conduit openings (1-1/4" Stanchion), globe and guard. Consult prior pages and catalog logic for other options.
② Metal Halide fixtures are furnished with quad-volt ballasts.

** See Hazardous Location Application Data on page L26 for limitations.*
*Note: For fluorescent Ex nR models, add **NR** to "globe" model number from page L18.*


Pendant


Ceiling


Wall


Stanchion

MB MOUNTING BRACKETS

CATALOG NUMBER				HUB SIZE
PENDANT	CEILING	WALL	STANCHION	
MBA-2	MBX-2	MBB-2	—	3/4"
MBA-3	MBX-3	MBB-3	—	1"
—	—	—	MBD-4	1-1/4"
—	—	—	MBD-5	1-1/2"

④ *Catalog numbers shown are 120 volt (except Metal Halide). Consult catalog number logic on page L17 and change sixth character to indicate other available voltages.*

⑤ *For Class I Ex nR Restricted Breathing ballast housings, add "**NR**" to catalog number e.g. **MBL501NR**. "**NR**" ballast housing not available for use with refractors.*


EBRS


EMRS


ENY-2SET

MB ACCESSORIES

CATALOG NUMBER	DESCRIPTION
EMRS	MB medium base replacement socket (E26)
EBRS	MB Bi-Pin base replacement socket
MPL13	Replacement lamp for MBF and EBF series
ENY-2SET	3/4" ENY seal with set screw for sealed (Ex nR) pendant installations
ENY-3SET	1" ENY seal with set screw for sealed (Ex nR) pendant installations

MB BALLAST TANK④⑤

LAMP TYPE	LAMP WATTAGE	VOLTAGE 60 HZ	CATALOG NUMBER
FL	13	120	MBF131
	26	120	MBF261
	39	120	MBF391
HPS	50	120	MBL501
	70	120	MBL701
	100	120	MBL101
	150	120	MBL151
MH	50	120/208/240/277	MBH500
	70	120/208/240/277	MBH700
MV	50	120	MBK501
	75	120	MBK751
	100	120	MBK101

MB BALLAST DATA

LAMP TYPE			STARTING AMPS	OPERATING AMPS	OPEN CIRCUIT AMPS	INPUT WATTS MAX	BALLAST CIRCUIT	REGULATIONS	MINIMUM START TEMPERATURE	
LAMP	WATTS	VOLTS								
FL①	13	120/277	.39/.35	.30/.3	—	16	NPF	—	0F	-17C
HPS	50	120	.75	.55	.90	60	HX-HPF②	±5% Line voltage③	-40F	-40C
	70	120	.85	.75	1.30	82	HX-HPF②	±5% Line voltage③	-40F	-40C
	100	120	1.50	1.05	1.80	115	HX-HPF②	±5% Line voltage③	-40F	-40C
	150	120	2.20	1.50	2.35	170	HX-HPF②	±5% Line voltage③	-40F	-40C
MH	50	120/208 240/277	.87/.51/.47/.39	.6/.35/.3/.25	1.6/.67/.57/.5	67	HX-HPF②	±5% Line voltage③ ±12% Lamp watts③	-20F	-30C
	70	120/208 240/277	.8/.5/.43/.39	.85/.5/.43/.37	1.7/1.04/.87/.78	95	HX-HPF②	±5% Line voltage③ ±12% Lamp watts③	-20F	-30C
MV	50	120/277	.60/.26	.67/.29	.30/.13	74	CWA②	±10% Lamp watts③	-20F	-30C
	75	120/277	.80/.35	.82/.36	.50/.22	93	CWA②	±10% Lamp watts③	-20F	-30C
	100	120/277/480	1.00/.43/.25	1.05/.45/.26	.64/.28/.16	118	CWA②	±10% Lamp watts③	-20F	-30C

① *Per lamp, max available lamps @ 120 volt is 3; max @ 277 volt is 2.*

② *Ballasts are High Power Factor 90%+.*

③ *Lamp watts within ANSI Trapezoid limitations.*

HUBBELL®
KILLARK®

Globe

MBG

Refractor

VZRG-1550

Guards

MBAG

VMRWG-8

Reflectors

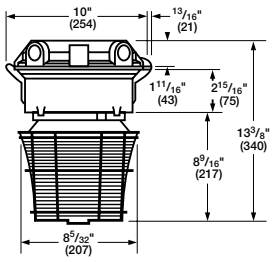
VMPSD-17

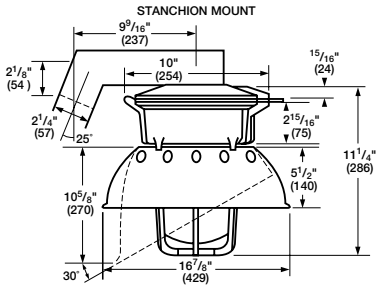
VMPA-17

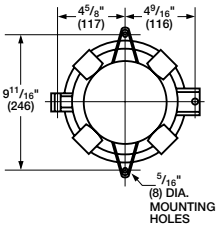
ORDERING INFORMATION

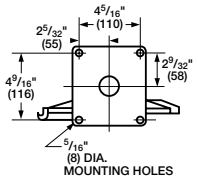
MB ACCESSORIES	
CATALOG NUMBER	DESCRIPTION
MBG	Heat and impact resistant globe
VZRG-1550	(I.E.S. Type V) closed bottom 8" glass refractor
MBAG	Globe guard - Epoxy/polyester painted aluminum
VMRWG-8	Refractor guard - plated steel
VMPSD-17	Standard dome reflector (polyester reinforced fiberglass)
VMPA-17	Angle reflector (polyester reinforced fiberglass)

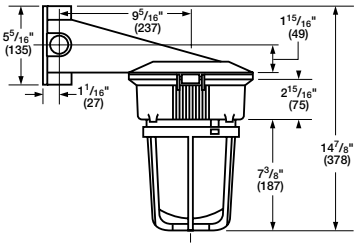
Dimensions











MBF HAZARDOUS LOCATION DATA

			CLASS I, DIVISION 2 GROUPS A, B, C, D① LAMP TEMP, W/GLOBE, GLOBE & REFLECTOR② OR 8" GLASS REFRACTOR	CLASS II, DIVISION 1 & 2① MAXIMUM SURFACE TEMPERATURE W/GLOBE, GUARD③ & REFLECTOR② OR 8" GLASS REFRACTOR④		CLASS III, DIV. 1 & 2① W/GLOBE, W/GUARD③ & REFLECTOR② OR 8" GLASS REFRACTOR	SUPPLY WIRE SUITABLE FOR °C
LAMP TYPE	LAMPS/ WATTS	RATED AMBIENT°C	UL/CSA TEMP I.D.⑤	UL/CSA TEMP I.D.	GROUP	UL/CSA	
PL	13	40	(T3B) 165°C	(T4) 135°C	E, F & G	YES	90
	26 (2x13)	40	(T3B) 165°C	(T4) 135°C	E, F & G	YES	90
	39 (3x13)	25	(T3A) 180°C	(T4) 135°C	E, F & G	YES	90

① *Verify temperatures for suitability for intended use.*
② *Includes both standard dome and angle reflectors.*
③ *Guard required for Class II, Division 1 and Class III, Division 1 applications.*
④ *Note: 8 inch glass refractor not CSA certified for Class II, Division 1 and Class III, Divisions 1 installations.*
⑤ *Add NR to globe fluorescent models for Ex nR Restricted Breathing—all have T6 Temperature I.D.*

MB HAZARDOUS LOCATION DATA

LAMP		RATED AMBIENT °C	CLASS I, DIV. 2, GROUPS A, B, C, D① LAMP TEMPERATURES			CLASS II, DIV. 1 & 2, GROUPS E, F, G③⑤ MAXIMUM SURFACE TEMPERATURES			CLASS III, DIV. 1 & 2③			SUPPLY WIRE SUITABLE FOR °C
TYPE	WATTAGE		WITHOUT④ REFLECTOR	WITH② REFLECTOR	WITH REFRACTOR	WITHOUT④ REFLECTOR	WITH② REFLECTOR	WITH REFRACTOR	WITHOUT④ REFLECTOR	WITH② REFLECTOR	WITH REFRACTOR	
HPS	50	40	215°C(T2D)	215°C(T2D)	215°C(T2D)	120°C(T4A)	135°C(T4)	120°C(T4A)	YES	YES	YES	75
	50	55	230°C(T2C)	230°C(T2C)	230°C(T2C)	135°C(T4)	160°C(T3C)	135°C(T4)	YES	YES	YES	90
	50	65	230°C(T2C)	230°C(T2C)	230°C(T2C)	160°C(T3C)	160°C(T3C)	160°C(T3C)	YES	YES	YES	90
	70	40	260°C(T2B)	260°C(T2B)	230°C(T2C)	120°C(T4A)	135°C(T4)	120°C(T4A)	YES	YES	YES	75
	100	40	280°C(T2A)	280°C(T2A)	280°C(T2A)	160°C(T3C)	160°C(T3C)	160°C(T3C)	YES	YES	YES	90
	150	40	325°C(T1)	325°C(T1)	325°C(T1)	—	—	160°C(T3C)	NO	NO	YES	110
	150	40	325°C(T1)	325°C(T1)	325°C(T1)	180°C(T3A)	200°C(T3)	—	NO	NO	NO	110
MH	50	40	260°C(T2B)	260°C(T2B)	260°C(T2B)	160°C(T3C)	160°C(T3C)	160°C(T3C)	YES	YES	YES	90
	50	55	260°C(T2B)	260°C(T2B)	260°C(T2B)	160°C(T3C)	—	160°C(T3C)	YES	—	YES	110
	70	40	325°C(T1)	325°C(T1)	325°C(T1)	160°C(T3C)	160°C(T3C)	160°C(T3C)	YES	YES	YES	90
MV	50	40	260°C(T2B)	260°C(T2B)	260°C(T2B)	160°C(T3C)	160°C(T3C)	160°C(T3C)	YES	YES	YES	90
	50	55	260°C(T2B)	260°C(T2B)	260°C(T2B)	160°C(T3C)	160°C(T3C)	160°C(T3C)	YES	YES	YES	90
	75	40	325°C(T1)	325°C(T1)	325°C(T1)	160°C(T3C)	160°C(T3C)	160°C(T3C)	YES	YES	YES	90
	100	40	450°C(T1)	450°C(T1)	450°C(T1)	160°C(T3C)	160°C(T3C)	160°C(T3C)	YES	YES	YES	110

① *Verify temperatures for suitability for intended use.*
② *Includes both standard dome and angle reflectors.*
③ *Guard required for Class II, Division 1 and Class III, Division 1 applications.*
④ *Based on luminaire with globe and guard only.*
⑤ *150 watt HPS—Groups E, F only with or without reflector and Groups E, F and G with refractor.*

MB-NR Ex nR RESTRICTED BREATHING DATA① CLASS 1, ZONE 2, IIC,IIB,IIA

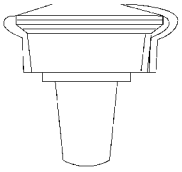
LAMP WITH GLOBE			RATED AMBIENT °C	GLOBE OR GLOBE WITH REFLECTOR	SUPPLY WIRE SUITABLE FOR °C
SERIES	TYPE	WATTAGE		UL/CSA	
MBL	HPS	50	40	T6	75
			55	T5	90
			65	T5	90
MBL	HPS	70	40	T5	75
MBL	HPS	100	40	T4	90
MBL	HPS	150	40	T4	110
MBH	MH	50	40	T5	90
MBH	MH	70	40	T4	90
MBK	MV	50	40	T5	90
			55	T5	110
MBK	MV	75	40	T4	90
MBK	MV	100	40	T4	110

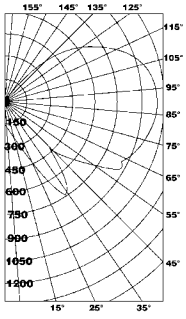
HIGH PRESSURE SODIUM
With Globe Only
50 – 100 Watt Medium Base

CANDLEPOWER–100 WATT
B-17 Clear Lamp
(9500 Lumens)

For CP of a 70 Watt Luminaire multiply by .663;

For a 50 Watt Luminaire multiply by .421





Angle	CP	Angle	CP
0	160	85	1006
5	149	90	1012
15	206	95	1008
25	398	105	955
35	727	115	818
45	430	125	643
55	736	135	289
65	874	145	26
75	955	165	12

Efficiency 88.8%

COEFFICIENTS OF UTILIZATIO-ZONAL CAVITY

% Effective Ceiling Cavity Reflectance rcc	80			70			50			30			10			0
% Wall Reflectance rw	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance															
1	.76	.70	.65	.70	.65	.60	.59	.55	.51	.48	.45	.42	.39	.36	.34	.30
2	.63	.55	.49	.58	.51	.45	.48	.43	.38	.39	.35	.31	.31	.28	.25	.21
3	.54	.45	.38	.49	.42	.35	.44	.35	.30	.33	.28	.24	.26	.22	.19	.15
4	.46	.37	.31	.43	.34	.28	.35	.29	.24	.28	.23	.19	.22	.18	.15	.11
5	.40	.32	.25	.37	.29	.23	.31	.24	.19	.25	.19	.15	.19	.15	.12	.09
6	.36	.27	.21	.33	.25	.19	.27	.21	.16	.22	.17	.13	.17	.13	.10	.07
7	.32	.23	.18	.19	.21	.16	.24	.18	.13	.19	.14	.11	.15	.11	.08	.05
8	.28	.20	.15	.26	.19	.14	.21	.16	.11	.17	.12	.09	.13	.09	.06	.04
9	.25	.18	.13	.23	.16	.12	.19	.14	.10	.16	.11	.07	.12	.08	.05	.03
10	.23	.16	.11	.21	.14	.10	.17	.12	.08	.14	.09	.06	.11	.07	.04	.02

SPACING TO MOUNTING HEIGHT RATIO–S/MH 3.9
ILLUMINATION ON HORIZONTAL SURFACE

Illumination for 100 Watts HPS
For 70 Watt Mult. by .663
For 50 Watt Mult. by .421

$$FC = \frac{\text{(Candlepower) (COS 0)}}{D^2}$$

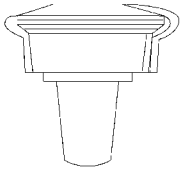
FOOTCANDLE CHART (INITIAL) 100 WATT
HORIZONTAL DISTANCE FROM SOURCE IN FT.

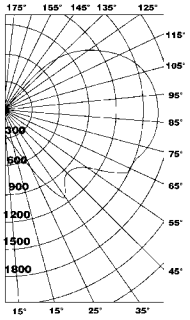
MOUNTING HEIGHT	0'	4'	8'	12'	16'	20'	24'	28'	32'	36'	40'
8'	2.50	5.05	2.38	2.00	1.22	.72	.46	.31	.21	.16	.12
10'	1.60	2.40	2.86	1.53	1.27	.78	.51	.35	.25	.18	.14
12'	1.11	1.42	2.80	1.06	1.01	.82	.54	.38	.28	.20	.15
14'	.82	.98	2.04	1.25	.79	.71	.57	.40	.29	.22	.17
16'	.63	.68	1.26	1.40	.59	.62	.51	.42	.31	.23	.18

Test No. HP-03126

HIGH PRESSURE SODIUM
With Globe Only
150 Watt Medium Base

CANDLEPOWER–150 WATT
B-17 Clear Lamp
(16000 Lumens)





Angle	CP	Angle	CP
0	260	85	1647
5	246	90	1647
15	363	95	1624
25	669	105	1527
35	1126	115	1338
45	968	125	1093
55	1159	135	536
65	1505	145	42
75	1566	165	13

Efficiency 87.7%

COEFFICIENTS OF UTILIZATIO-ZONAL CAVITY

% Effective Ceiling Cavity Reflectance rcc	80			70			50			30			10			0
% Wall Reflectance rw	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance															
1	.75	.69	.64	.69	.64	.59	.58	.54	.51	.48	.45	.42	.39	.37	.35	.30
2	.63	.55	.48	.58	.51	.45	.48	.43	.38	.39	.35	.31	.31	.28	.25	.21
3	.53	.45	.38	.49	.41	.35	.41	.35	.30	.33	.29	.24	.26	.22	.19	.15
4	.46	.37	.30	.42	.34	.28	.35	.29	.24	.28	.23	.19	.22	.18	.15	.12
5	.40	.31	.25	.37	.29	.23	.31	.24	.19	.25	.20	.15	.19	.15	.12	.09
6	.35	.27	.21	.32	.25	.19	.27	.21	.16	.22	.17	.13	.17	.13	.10	.07
7	.31	.23	.17	.29	.21	.16	.24	.18	.13	.19	.14	.11	.15	.11	.08	.06
8	.28	.20	.15	.26	.18	.13	.21	.15	.11	.17	.12	.09	.13	.10	.07	.04
9	.25	.18	.13	.23	.16	.12	.19	.14	.09	.16	.11	.07	.12	.08	.05	.03
10	.22	.15	.10	.21	.14	.10	.17	.12	.08	.14	.09	.06	.11	.07	.04	.02

SPACING TO MOUNTING HEIGHT RATIO–S/MH 4.0
ILLUMINATION ON HORIZONTAL SURFACE

$$FC = \frac{\text{(Candlepower) (COS 0)}}{D^2}$$

FOOTCANDLE CHART (INITIAL) 150 WATT
HORIZONTAL DISTANCE FROM SOURCE IN FT.

MOUNTING HEIGHT	0'	4'	8'	12'	16'	20'	24'	28'	32'	36'	40'
8'	4.06	9.50	5.35	3.20	2.03	1.21	.75	.51	.35	.26	.19
10'	2.60	4.40	5.00	2.60	1.86	1.30	.86	.58	.41	.30	.23
12'	1.81	2.67	4.40	2.38	1.54	1.23	.90	.64	.46	.33	.26
14'	1.33	1.81	3.37	2.29	1.38	1.12	.86	.66	.50	.37	.28
16'	1.02	1.07	2.38	2.20	1.34	.95	.81	.64	.51	.40	.30

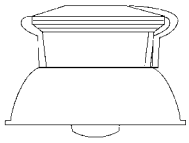
Test No. HP-03128

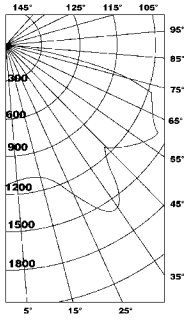
HIGH PRESSURE SODIUM
With Globe and Dome Reflector
50 – 100 Watt Medium Base

CANDLEPOWER–100 WATT
B-17 Clear Lamp
(9500 Lumens)

For CP of a 70 Watt Luminaire multiply by .663;

For a 50 Watt Luminaire multiply by .421





Angle	CP	Angle	CP
0	1127	85	103
5	1084	90	34
15	1104	95	25
25	1288	105	32
35	1561	115	136
45	1154	125	18
55	1352	135	15
65	1316	145	13
75	980	165	10

Efficiency 71.5%

COEFFICIENTS OF UTILIZATIO-ZONAL CAVITY

% Effective Ceiling Cavity Reflectance rcc	80			70			50			30			10			0
% Wall Reflectance rw	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance															
1	.72	.68	.65	.70	.67	.64	.66	.64	.61	.63	.61	.59	.60	.58	.57	.55
2	.61	.56	.51	.60	.54	.50	.57	.43	.48	.54	.50	.47	.51	.48	.45	.44
3	.52	.46	.41	.51	.45	.40	.49	.35	.39	.46	.42	.38	.44	.40	.37	.35
4	.45	.38	.33	.44	.37	.32	.42	.29	.32	.40	.35	.31	.38	.34	.30	.28
5	.39	.32	.27	.38	.32	.27	.37	.24	.26	.35	.30	.26	.33	.29	.25	.23
6	.35	.28	.23	.34	.28	.23	.33	.21	.22	.31	.26	.22	.30	.25	.21	.20
7	.31	.24	.19	.30	.24	.19	.29	.18	.19	.28	.22	.18	.26	.22	.18	.16
8	.28	.21	.16	.27	.21	.16	.26	.16	.16	.25	.19	.16	.23	.19	.15	.14
9	.25	.19	.14	.24	.18	.14	.19	.23	.14	.22	.17	.14	.21	.17	.13	.12
10	.22	.16	.11	.21	.15	.11	.17	.20	.11	.20	.15	.11	.19	.14	.11	.09

SPACING TO MOUNTING HEIGHT RATIO–S/MH 1.7
ILLUMINATION ON HORIZONTAL SURFACE

Illumination for 100 Watts HPS
For 70 Watt Mult. by .663
For 50 Watt Mult. by .421

$$FC = \frac{\text{(Candlepower) (COS 0)}}{D^2}$$

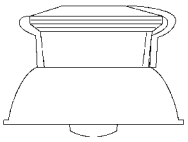
FOOTCANDLE CHART (INITIAL) 100 WATT
HORIZONTAL DISTANCE FROM SOURCE IN FT.

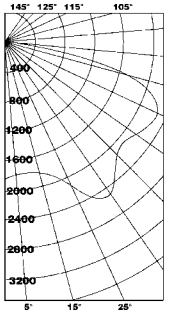
MOUNTING HEIGHT	0'	4'	8'	12'	16'	20'	24'	28'	32'	36'	40'
8'	17.34	14.53	6.35	3.60	1.85	1.04	.63	.32	.21	.14	.04
10'	11.10	9.20	6.43	3.25	2.08	1.21	.74	.49	.33	.19	.13
12'	7.70	6.52	6.36	2.82	1.95	1.32	.82	.55	.38	.27	.20
14'	5.66	4.99	5.01	3.01	1.86	1.30	.91	.63	.42	.37	.23
16'	4.34	3.92	3.63	3.12	1.59	1.19	.87	.67	.46	.34	.26

Test No. HP-03125

HIGH PRESSURE SODIUM
With Globe and Dome Reflector
150 Watt Medium Base

CANDLEPOWER–150 WATT
B-17 Clear Lamp
(16000 Lumens)





Angle	CP	Angle	CP
0	1832	85	178
5	1772	90	48
15	1825	95	35
25	2108	105	44
35	2461	115	204
45	2155	125	40
55	2163	135	18
65	2271	145	16
75	1613	165	11

Efficiency 70.8%

COEFFICIENTS OF UTILIZATIO-ZONAL CAVITY

% Effective Ceiling Cavity Reflectance rcc	80			70			50			30			10			0
% Wall Reflectance rw	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance															
1	.71	.68	.64	.69	.66	.63	.66	.63	.61	.63	.60	.58	.60	.58	.56	.55
2	.61	.55	.50	.59	.54	.49	.56	.52	.48	.56	.50	.46	.51	.48	.45	.43
3	.52	.45	.40	.51	.45	.40	.48	.43	.39	.46	.41	.38	.44	.40	.37	.35
4	.45	.38	.32	.44	.37	.32	.41	.36	.31	.39	.34	.30	.38	.33	.30	.28
5	.39	.32	.27	.38	.31	.26	.36	.30	.26	.34	.29	.25	.33	.28	.25	.23
6	.35	.28	.22	.34	.27	.22	.32	.26	.22	.31	.25	.21	.29	.25	.21	.19
7	.31	.24	.19	.30	.23	.19	.29	.23	.18	.27	.22	.18	.26	.21	.18	.16
8	.27	.21	.16	.27	.20	.16	.25	.20	.16	.24	.19	.15	.23	.19	.15	.14
9	.25	.18	.14	.24	.18	.14	.23	.17	.14	.22	.17	.13	.21	.17	.13	.12
10	.21	.15	.11	.21	.15	.11	.20	.15	.11	.19	.14	.11	.18	.14	.11	.09

SPACING TO MOUNTING HEIGHT RATIO–S/MH 1.8
ILLUMINATION ON HORIZONTAL SURFACE

$$FC = \frac{(Candlepower)\ (COS\ 0)}{D^2}$$

FOOTCANDLE CHART (INITIAL) 150 WATT
HORIZONTAL DISTANCE FROM SOURCE IN FT.

MOUNTING HEIGHT	0'	4'	8'	12'	16'	20'	24'	28'	32'	36'	40'
8'	28.63	24.60	11.90	5.81	3.18	1.76	1.04	.55	.36	.15	.11
10'	18.32	15.61	11.31	5.49	3.28	2.03	1.25	.81	.56	.33	.23
12'	12.72	10.67	9.90	5.29	3.15	2.10	1.41	.96	.64	.46	.34
14'	9.35	8.30	8.01	5.02	3.05	2.08	1.45	1.04	.75	.53	.39
16'	7.16	6.49	6.15	4.86	2.98	2.00	1.45	1.06	.79	.59	.44

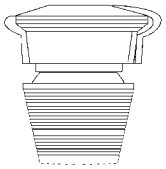
Test No. HP-03130

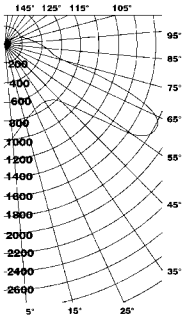
HIGH PRESSURE SODIUM
With Type V 8" Refractor
50 – 100 Watt Medium Base

CANDLEPOWER–100 WATT
B-17 Clear Lamp
(9500 Lumens)

For CP of a 70 watt luminaire multiply by .663;

For a 50 watt luminaire multiply by .421





Angle	CP	Angle	CP
0	1078	85	457
5	980	90	391
15	801	95	342
25	742	105	235
35	735	115	165
45	846	125	140
55	1556	135	104
65	1729	145	61
75	698	165	29

Efficiency 75.6%

COEFFICIENTS OF UTILIZATIO-ZONAL CAVITY

% Effective Ceiling Cavity Reflectance rcc	80			70			50			30			10			0
% Wall Reflectance rw	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance															
1	.72	.67	.64	.69	.65	.61	.64	.60	.57	.59	.56	.54	.54	.52	.50	.48
2	.60	.54	.49	.58	.52	.47	.53	.49	.44	.49	.45	.42	.45	.42	.39	.37
3	.51	.44	.38	.49	.42	.37	.45	.39	.35	.41	.37	.33	.38	.34	.31	.28
4	.43	.35	.29	.41	.34	.28	.38	.32	.27	.35	.30	.25	.32	.27	.24	.21
5	.37	.29	.23	.35	.24	.22	.33	.26	.21	.30	.24	.20	.27	.22	.19	.17
6	.33	.25	.19	.31	.24	.19	.29	.22	.17	.26	.21	.16	.24	.19	.15	.13
7	.29	.21	.16	.27	.20	.15	.25	.19	.14	.23	.18	.14	.21	.16	.13	.00
8	.25	.18	.13	.24	.18	.13	.22	.16	.12	.21	.15	.11	.19	.14	.11	.09
9	.23	.16	.12	.22	.16	.11	.21	.15	.11	.19	.14	.10	.17	.13	.09	.08
10	.21	.14	.10	.20	.14	.09	.18	.13	.09	.17	.12	.08	.16	.11	.08	.06

SPACING TO MOUNTING HEIGHT RATIO–S/MH 1.0
ILLUMINATION ON HORIZONTAL SURFACE

Illumination for 100 Watts HPS
For 70 Watt Mult. by .663
For 50 Watt Mult. by .421

$$FC = \frac{(Candlepower)\ (COS\ 0)}{D^2}$$

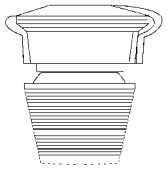
FOOTCANDLE CHART (INITIAL) 100 WATT
HORIZONTAL DISTANCE FROM SOURCE IN FT.

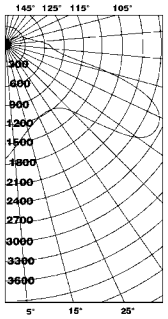
MOUNTING HEIGHT	0'	4'	8'	12'	16'	20'	24'	28'	32'	36'	40'
8'	16.84	8.25	4.67	4.40	2.49	1.20	.52	.24	.16	.09	.06
10'	10.78	6.12	3.57	2.75	2.62	1.59	.88	.47	.24	.14	.08
12'	7.49	4.62	2.94	2.08	2.10	1.70	1.11	.68	.39	.24	.13
14'	5.50	3.61	2.41	1.70	1.49	1.49	1.19	.81	.53	.34	.20
16'	4.21	2.89	2.06	1.48	1.17	1.04	1.10	.87	.63	.43	.29

Test No. HP-03127

HIGH PRESSURE SODIUM
With Type V 8" Refractor
150 Watt Medium Base

CANDLEPOWER–150 WATT
B-17 Clear Lamp
(16000 Lumens)





Angle	CP	Angle	CP
0	1707	85	804
5	1555	90	672
15	1274	95	589
25	1180	105	385
35	1174	115	271
45	1389	125	228
55	2381	135	169
65	2576	145	95
75	1775	165	43

Efficiency 75.4%

COEFFICIENTS OF UTILIZATIO-ZONAL CAVITY

% Effective Ceiling Cavity Reflectance rcc	80			70			50			30			10			0
% Wall Reflectance rw	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance															
1	.71	.66	.62	.68	.64	.60	.63	.59	.56	.58	.55	.52	.53	.51	.49	.46
2	.59	.52	.46	.56	.50	.45	.52	.47	.42	.48	.43	.40	.44	.40	.37	.35
3	.50	.42	.36	.47	.40	.35	.44	.38	.33	.40	.35	.31	.36	.32	.29	.26
4	.42	.34	.28	.40	.33	.27	.37	.30	.25	.34	.28	.24	.31	.26	.22	.20
5	.36	.28	.22	.35	.27	.21	.32	.25	.20	.29	.23	.19	.26	.22	.18	.16
6	.32	.24	.18	.30	.23	.18	.28	.22	.17	.26	.20	.16	.23	.18	.15	.13
7	.28	.21	.15	.27	.20	.15	.25	.18	.14	.23	.17	.13	.21	.16	.12	.10
8	.25	.18	.13	.24	.17	.12	.22	.16	.12	.20	.15	.11	.18	.14	.10	.08
9	.23	.16	.11	.22	.15	.11	.20	.14	.10	.18	.13	.09	.17	.12	.09	.07
10	.20	.14	.09	.20	.13	.09	.18	.12	.08	.17	.11	.08	.15	.11	.07	.06

SPACING TO MOUNTING HEIGHT RATIO–S/MH 1.0
ILLUMINATION ON HORIZONTAL SURFACE

$$FC = \frac{(Candlepower)\ (COS\ 0)}{D^2}$$

FOOTCANDLE CHART (INITIAL) 150 WATT
HORIZONTAL DISTANCE FROM SOURCE IN FT.

MOUNTING HEIGHT	0'	4'	8'	12'	16'	20'	24'	28'	32'	36'	40'
8'	26.67	12.86	7.67	6.40	3.63	2.00	1.06	.62	.39	.22	.14
10'	17.07	9.60	5.71	4.67	3.84	2.33	1.42	.88	.58	.36	.25
12'	11.85	7.41	4.68	3.41	3.23	2.46	1.61	1.08	.69	.47	.34
14'	8.71	5.78	3.88	2.75	2.48	2.29	1.70	1.19	.84	.60	.42
16'	6.67	4.64	3.21	2.40	1.92	1.90	1.60	1.24	.91	.67	.50

Test No. HP-03129

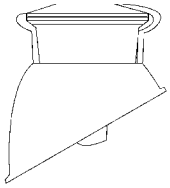
HIGH PRESSURE SODIUM
With Globe and 30° Angle Reflector

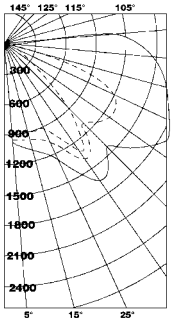
50 – 100 Watt Medium Base

CANDLEPOWER–100 WATT
B-17 Clear Lamp
(9500 Lumens)

For CP of a 70 Watt Luminaire multiply by .663;

For a 50 Watt Luminaire multiply by .421





Angle	Front	Side	Back
0	1001	1001	1001
5	1021	972	930
15	1118	986	897
25	1322	1114	976
35	1646	1366	1272
45	1437	1071	670
55	1776	1214	135
65	1752	1162	21
75	1629	284	24
85	1462	47	32
90	1353	15	41
95	1176	15	44
105	132	14	207

Efficiency 67.4%

COEFFICIENTS OF UTILIZATIO-ZONAL CAVITY

% Effective Ceiling Cavity Reflectance rcc	80			70			50			30			10			0
% Wall Reflectance rw	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance															
1	.65	.61	.58	.63	.59	.56	.59	.56	.53	.55	.53	.51	.52	.50	.48	.46
2	.56	.50	.45	.54	.49	.44	.51	.46	.43	.47	.44	.41	.45	.42	.39	.37
3	.48	.42	.37	.47	.41	.36	.44	.39	.35	.41	.37	.34	.39	.35	.32	.31
4	.42	.35	.30	.41	.35	.30	.38	.33	.29	.36	.31	.28	.34	.30	.27	.25
5	.37	.30	.25	.36	.30	.25	.34	.28	.24	.32	.27	.23	.30	.26	.23	.21
6	.33	.26	.22	.32	.26	.21	.30	.25	.21	.28	.24	.20	.27	.23	.19	.18
7	.29	.23	.18	.28	.22	.18	.27	.21	.17	.25	.21	.17	.24	.20	.16	.15
8	.26	.20	.16	.25	.19	.15	.24	.19	.15	.23	.18	.14	.21	.17	.14	.13
9	.23	.17	.13	.23	.17	.13	.22	.16	.13	.20	.16	.12	.19	.15	.12	.11
10	.21	.15	.11	.20	.14	.11	.19	.14	.10	.18	.13	.10	.17	.13	.10	.08

SPACING TO MOUNTING HEIGHT RATIO–S/MH 1.8
ILLUMINATION ON HORIZONTAL SURFACE

Illumination for 100 Watts HPS
For 70 Watt Mult. by .663
For 50 Watt Mult. by .421

$$FC = \frac{\text{(Candlepower) (COS 0)}}{D^2}$$

FOOTCANDLE CHART (INITIAL) 100 WATT
HORIZONTAL DISTANCE FROM SOURCE (FRONT) IN FT.

MOUNTING HEIGHT	0'	4'	8'	12'	16'	20'
8'	15.64	15.37	7.94	4.80	2.51	1.37
10'	10.01	9.77	7.28	4.23	2.75	1.61
12'	6.95	6.82	6.56	3.53	2.51	1.75
14'	5.11	5.10	5.18	3.35	2.33	1.71
16'	3.91	3.92	3.84	3.26	1.98	1.57

FOOTCANDLE CHART (INITIAL) 100 WATT
HORIZONTAL DISTANCE FROM SOURCE (SIDE) IN FT.

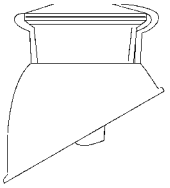
MOUNTING HEIGHT	0'	4'	8'	12'	16'	20'
8'	15.64	13.14	5.92	3.25	1.68	.82
10'	10.01	8.24	5.98	3.09	1.86	1.07
12'	6.95	5.93	5.48	2.63	1.77	1.18
14'	5.11	4.47	4.27	2.62	1.68	1.17
16'	3.91	3.50	3.26	2.70	1.48	1.12

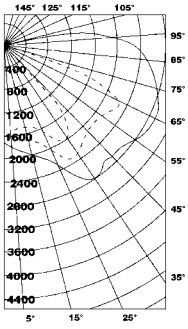
Test No. HP-03124

HIGH PRESSURE SODIUM
With Globe and 30° Angle Reflector

150 Watt Medium Base

CANDLEPOWER–150 WATT
B-17 Clear Lamp
(16000 Lumens)





Angle	Front	Side	Back
0	1649	1649	1649
5	1722	1615	1519
15	1918	1684	1452
25	2229	1926	1602
35	2777	2297	1948
45	2683	2110	1260
55	2837	2122	209
65	2943	2237	28
75	2802	607	30
85	2508	82	47
90	2296	21	54
95	1969	19	59
105	336	19	297

Efficiency 67.6%

COEFFICIENTS OF UTILIZATIO-ZONAL CAVITY

% Effective Ceiling Cavity Reflectance rcc	80			70			50			30			10			0
% Wall Reflectance rw	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance															
1	.65	.61	.58	.63	.60	.56	.59	.56	.54	.56	.53	.51	.52	.50	.49	.47
2	.56	.50	.46	.54	.49	.45	.51	.47	.43	.48	.41	.44	.45	.42	.39	.37
3	.48	.42	.37	.47	.41	.37	.44	.39	.35	.41	.37	.34	.39	.35	.33	.31
4	.42	.35	.30	.41	.35	.30	.38	.33	.29	.36	.32	.28	.34	.30	.27	.25
5	.37	.30	.25	.36	.30	.25	.34	.28	.24	.32	.27	.23	.30	.26	.23	.21
6	.33	.26	.22	.32	.26	.21	.30	.25	.21	.28	.24	.20	.27	.23	.19	.18
7	.29	.23	.18	.28	.22	.18	.27	.21	.17	.25	.21	.17	.24	.20	.16	.15
8	.26	.20	.16	.25	.19	.15	.24	.19	.15	.23	.18	.14	.21	.17	.14	.13
9	.23	.17	.13	.23	.17	.13	.22	.16	.13	.20	.16	.12	.19	.15	.12	.11
10	.20	.15	.11	.20	.14	.11	.19	.14	.10	.18	.13	.10	.17	.13	.10	.08

SPACING TO MOUNTING HEIGHT RATIO–S/MH 1.9
ILLUMINATION ON HORIZONTAL SURFACE

$$FC = \frac{\text{(Candlepower) (COS 0)}}{D^2}$$

FOOTCANDLE CHART (INITIAL) 150 WATT
HORIZONTAL DISTANCE FROM SOURCE (FRONT) IN FT.

MOUNTING HEIGHT	0'	4'	8'	12'	16'	20'
8'	25.77	25.71	14.82	7.57	4.11	2.33
10'	16.49	16.61	13.14	7.12	4.22	2.63
12'	11.45	11.86	11.04	6.59	28.00	2.73
14'	8.41	8.84	8.60	6.05	3.91	2.73
16'	6.44	6.78	6.43	5.52	3.71	2.59

FOOTCANDLE CHART (INITIAL) 150 WATT
HORIZONTAL DISTANCE FROM SOURCE (SIDE) IN FT.

MOUNTING HEIGHT	0'	4'	8'	12'	16'	20'
8'	25.77	22.47	11.66	5.66	3.13	1.36
10'	16.49	14.29	10.71	5.46	3.16	2.00
12'	11.45	10.08	9.19	5.18	3.11	2.08
14'	8.41	7.64	7.38	4.87	3.04	2.04
16'	6.44	6.01	5.62	4.55	2.91	1.98

Test No. HP-03131

MERCURY VAPOR & METAL HALIDE
With Globe Only

50 – 100 Watt Medium Base

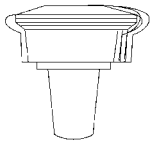
CANDLEPOWER–100 WATT MV
B-17 Clear Lamp
(4400 Lumens)

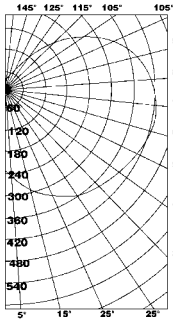
For CP of a 75 Watt MV Luminaire multiply by .636;

For a 50 Watt MV Luminaire multiply by .359

For a 50 Watt MH Luminaire multiply by .77;

For a 70 Watt MH Luminaire multiply by 1.36





Angle	CP	Angle	CP
0	237	85	429
5	240	90	420
15	283	95	407
25	326	105	377
35	355	115	322
45	376	125	244
55	397	135	154
65	413	145	57
75	429	165	15

Efficiency 91.1%

COEFFICIENTS OF UTILIZATIO-ZONAL CAVITY

% Effective Ceiling Cavity Reflectance rcc	80			70			50			30			10			0
% Wall Reflectance rw	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance															
1	.80	.74	.69	.74	.69	.65	.64	.60	.56	.54	.51	.48	.45	.43	.41	.36
2	.67	.60	.53	.63	.56	.50	.54	.48	.43	.45	.41	.37	.37	.34	.35	.27
3	.58	.49	.42	.54	.46	.40	.46	.40	.35	.39	.34	.30	.32	.28	.25	.21
4	.50	.41	.34	.47	.38	.32	.40	.33	.28	.33	.28	.24	.27	.23	.20	.17
5	.44	.35	.28	.41	.33	.27	.35	.28	.23	.29	.24	.20	.24	.20	.16	.13
6	.39	.30	.24	.36	.28	.23	.31	.25	.20	.26	.21	.17	.22	.17	.14	.11
7	.35	.26	.20	.32	.25	.19	.28	.21	.17	.23	.18	.14	.19	.15	.12	.09
8	.31	.23	.17	.29	.21	.16	.25	.19	.14	.21	.16	.12	.17	.13	.10	.08
9	.28	.20	.15	.26	.19	.14	.22	.16	.12	.19	.14	.10	.16	.12	.09	.06
10	.25	.18	.13	.23	.16	.12	.20	.14	.10	.17	.12	.08	.14	.10	.07	.05

SPACING TO MOUNTING HEIGHT RATIO–S/MH 2.2
ILLUMINATION ON HORIZONTAL SURFACE

Illumination for 100 Watts MV
See above for other values

$$FC = \frac{\text{(Candlepower) (COS 0)}}{D^2}$$

FOOTCANDLE CHART (INITIAL) 100 WATT
HORIZONTAL DISTANCE FROM SOURCE IN FT.

MOUNTING HEIGHT	0'	4'	8'	12'	16'	20'	24'	28'	32'	36'	40'
8'	3.75	3.63	2.10	1.06	.59	.34	.21	.14	.10	.07	.05
10'	2.40	2.56	1.71	1.01	.60	.37	.24	.16	.11	.08	.06
12'	1.67	1.78	1.40	.92	.59	.38	.25	.18	.13	.10	.07
14'	1.22	1.27	1.11	.82	.56	.38	.26	.19	.14	.10	.08
16'	.94	.98	.92	.72	.52	.37	.27	.19	.14	.11	.08

Test No. HP-03138

MERCURY VAPOR & METAL HALIDE
With Globe and Dome Reflector

50 – 100 Watt Medium Base

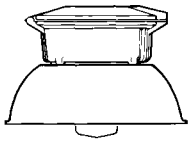
CANDLEPOWER–100 WATT MV
B-17 Clear Lamp
(4400 Lumens)

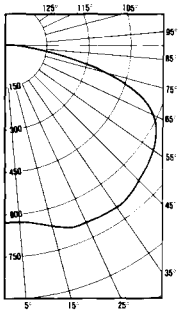
For CP of a 75 Watt MV Luminaire multiply by .636;

For a 50 Watt MV Luminaire multiply by .359;

For a 50 Watt MH Luminaire multiply by .77;

For a 70 Watt MH Luminaire multiply by 1.36





Angle	CP	Angle	CP
0	627	85	75
5	627	90	27
15	662	95	22
25	690	105	26
35	698		
45	676		
55	646		
65	580		
75	366		

Efficiency 75.0%

COEFFICIENTS OF UTILIZATION-ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE pcc	80			70			50			30			10			0
% WALL REFLECTANCE pw	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance															
1	76	72	69	74	70	67	70	67	65	66	64	62	63	61	63	58
2	65	60	55	63	58	54	60	56	52	57	54	50	53	51	45	47
3	57	50	45	55	49	44	52	47	43	50	45	42	48	44	41	39
4	49	42	37	48	41	36	45	40	35	43	38	34	41	37	34	32
5	43	36	31	42	35	30	38	34	29	38	33	29	39	32	28	26
6	38	31	26	37	31	26	36	30	25	34	29	25	33	28	24	23
7	34	27	22	33	27	22	32	26	22	30	25	21	29	24	21	19
8	31	24	19	30	23	19	29	23	19	27	22	18	26	21	18	16
9	28	21	17	27	21	16	26	20	14	25	20	16	24	19	16	14
10	24	18	13	24	18	13	23	18	13	22	17	13	21	16	13	11

SPACING TO MOUNTING HEIGHT RATIO — S/MH 1.7

ILLUMINATION ON HORIZONTAL SURFACE

Illumination for 100 Watts MV
See above for other values

$$FC = \frac{(Candlepower)\ (COS\ \theta)}{D^2}$$

FOOTCANDLE CHART (INITIAL) 100 WATT

HORIZONTAL DISTANCE FROM SOURCE IN FT

MOUNTING HEIGHT FT	0'	4'	8'	12'	16'	20'	24'	28'	32'	36'	40'
8'	9.80	7.73	3.73	1.69	.84	.41	.27	.12	.07	.04	.02
10'	6.27	5.49	3.30	1.73	.94	.58	.31	.19	.15	.07	.05
12'	4.35	4.03	2.78	1.66	.98	.59	.37	.24	.15	.10	.07
14'	3.20	3.01	2.32	1.55	.97	.62	.40	.27	.18	.13	.09
16'	3.19	2.26	1.93	1.39	.93	.63	.43	.30	.20	.15	.10

Test No. HP-03139

MERCURY VAPOR & METAL HALIDE
With Type V 8" Refractor

50 – 100 Watt Medium Base

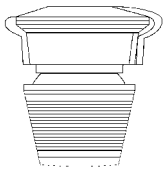
CANDLEPOWER–100 WATT MV
B-17 Clear Lamp
(4400 Lumens)

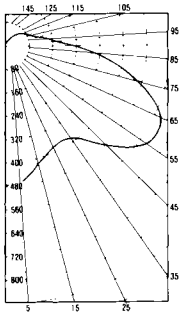
For CP of a 75 Watt MV Luminaire multiply by .636;

For a 50 Watt MV Luminaire multiply by .359;

For a 50 Watt MH Luminaire multiply by .77;

For a 70 Watt MH Luminaire multiply by 1.36





Angle	CP	Angle	CP
0	475	85	304
5	470	90	226
15	418	95	169
25	382	105	112
35	385	115	86
45	479	125	75
55	583	135	58
65	579	145	38
75	457	165	14

Efficiency 77.4%

COEFFICIENTS OF UTILIZATION-ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE pcc	80			70			50			30			10			0
% WALL REFLECTANCE pw	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance															
1	72	67	63	69	65	61	63	60	57	58	55	53	53	51	49	46
2	61	54	48	58	52	46	53	48	43	49	44	41	44	41	38	35
3	52	44	38	49	42	37	45	39	34	41	36	32	38	34	30	28
4	44	36	30	42	35	29	39	32	27	35	30	26	32	28	24	22
5	38	30	25	37	29	24	34	27	22	31	25	21	28	23	20	17
6	34	26	21	33	25	20	30	24	19	27	22	18	25	20	16	14
7	30	23	17	29	22	17	27	20	16	24	19	15	22	18	14	12
8	27	20	15	26	19	14	24	18	13	22	16	13	20	15	12	10
9	24	17	13	23	17	12	22	16	12	20	15	11	18	14	10	09
10	22	15	11	21	15	10	19	14	10	18	13	09	16	12	08	07

SPACING TO MOUNTING HEIGHT RATIO — S/MH 1.2

ILLUMINATION OF HORIZONTAL SURFACE

Illumination for 100 Watts MV
See above for other values

$$FC = \frac{(Candlepower)\ (COS\ \theta)}{D^2}$$

FOOTCANDLE CHART (INITIAL) 100 WATT

HORIZONTAL DISTANCE FROM SOURCE IN FT

MOUNTING HEIGHT FT	0'	4'	8'	12'	16'	20'	24'	28'	32'	36'	40'
8'	7.42	4.25	2.65	1.57	.82	.44	.25	.15	.10	.06	.04
10'	4.75	3.14	1.95	1.42	.88	.52	.33	.20	.13	.09	.06
12'	3.30	2.40	1.52	1.18	.86	.56	.36	.23	.16	.13	.08
14'	2.42	1.86	1.25	.95	.77	.56	.39	.27	.19	.13	.09
16'	1.86	1.52	1.06	.79	.66	.52	.39	.28	.20	.15	.11

Test No. HP-03141

MERCURY VAPOR & METAL HALIDE
With Globe and 30° Angle Reflector

50 – 100 Watt Medium Base

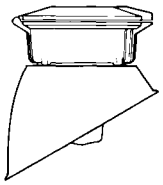
CANDLEPOWER–100 WATT MV
B-17 Clear Lamp
(4400 Lumens)

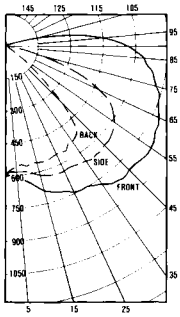
For CP of a 75 Watt Luminaire multiply by .636;

For a 50 Watt MV Luminaire multiply by .359;

For a 50 Watt MH Luminaire multiply by .77;

For a 70 Watt MH Luminaire multiply by 1.36





Angle	Front	Side	Back
0	588	588	588
5	608	585	559
15	687	615	558
25	740	634	552
35	774	646	535
45	806	644	348
55	818	611	63
65	778	470	17
75	716	167	19
85	638	25	22
90	561	16	30
95	439	12	37
105	127	10	69

Efficiency 72.5%

COEFFICIENTS OF UTILIZATION-ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE pcc	80			70			50			30			10			0
% WALL REFLECTANCE pw	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance															
1	71	67	63	68	65	62	64	61	58	60	58	56	56	55	53	51
2	61	55	51	59	54	49	55	51	47	52	48	45	49	46	43	41
3	53	47	42	52	46	41	49	44	39	46	41	38	43	39	36	34
4	47	40	35	45	39	34	43	37	33	40	35	32	38	34	31	29
5	41	34	29	40	34	29	38	32	28	36	31	27	34	29	26	24
6	37	30	25	36	29	25	34	28	24	32	27	23	30	26	23	21
7	33	26	22	32	26	21	30	25	21	29	24	20	27	23	19	18
8	29	23	18	29	23	18	27	22	18	26	21	17	24	20	17	15
9	27	20	16	26	20	16	25	19	15	23	19	15	22	18	15	13
10	23	17	13	23	14	11	19	14	10	18	13	10	17	13	10	08

SPACING TO MOUNTING HEIGHT RATIO — S/MH 1.6

ILLUMINATION OF HORIZONTAL SURFACE

Illumination for 100 Watts MV
See above for other values

$$FC = \frac{(Candlepower)\ (COS\ \theta)}{D^2}$$

FOOTCANDLE CHART (Initial) 100 WATT

HORIZONTAL DISTANCE FROM SOURCE (From) IN FT

MOUNTING HEIGHT FT	0'	4'	8'	12'	16'	20'
8'	9.19	8.27	4.45	2.18	1.09	.61
10'	5.88	5.72	3.81	2.14	1.16	.70
12'	4.08	4.18	3.06	1.98	1.21	.75
14'	3.00	3.17	2.49	1.80	1.18	.79
16'	2.30	2.45	2.07	1.56	1.11	.78

FOOTCANDLE CHART (Initial) 100 WATT

HORIZONTAL DISTANCE FROM SOURCE (Side) IN FT

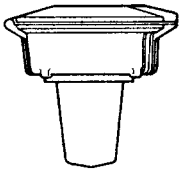
MOUNTING HEIGHT FT	0'	4'	8'	12'	16'	20'
8'	9.19	7.12	3.56	1.61	.73	.27
10'	5.88	5.08	2.98	1.67	.85	.47
12'	4.08	3.65	2.56	1.58	.92	.53
14'	3.00	2.77	2.11	1.45	.93	.59
16'	2.30	2.19	1.78	1.30	.89	.60

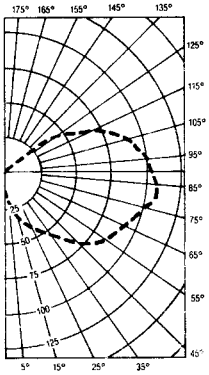
Test No. HP-03140

HUBBELL®
KILLARK®

FLUORESCENT
With Globe Only—13 Watt

CANDLEPOWER —13 WATT
(900 Lumens
One Lamp)





ANGLE	CP	ANGLE	CP
0.00	15.0	90.00	104.0
5.00	15.0	95.00	99.0
10.00	21.0	100.00	92.0
15.00	29.0	105.00	84.0
20.00	35.0	110.00	74.0
25.00	41.0	115.00	64.0
30.00	47.0	120.00	54.0
35.00	55.0	125.00	44.0
40.00	63.0	130.00	32.0
45.00	75.0	135.00	22.0
50.00	78.0	140.00	14.0
55.00	84.0	145.00	7.0
60.00	84.0	150.00	2.0
65.00	92.0	155.00	1.0
70.00	96.0	160.00	1.0
75.00	102.0	165.00	1.0
80.00	110.0	170.00	0.0
85.00	107.0	175.00	0.0

Efficiency 92.4%

COEFFICIENTS OF UTILIZATION — ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE rcc	80			70			50			30			10			0
% WALL REFLECTANCE rw	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance															
0	1.01	1.01	1.01	.95	.95	.95	.83	.83	.83	.72	.72	.72	.62	.62	.62	.57
1	.80	.74	.69	.75	.69	.65	.64	.60	.56	.54	.51	.48	.45	.43	.40	.36
2	.66	.58	.51	.61	.54	.47	.52	.46	.41	.44	.39	.35	.36	.32	.29	.25
3	.56	.47	.40	.52	.44	.37	.44	.38	.32	.37	.32	.27	.30	.26	.22	.18
4	.49	.39	.32	.45	.37	.30	.38	.31	.26	.32	.26	.22	.26	.21	.18	.14
5	.42	.33	.26	.39	.30	.24	.33	.26	.20	.27	.21	.17	.22	.17	.14	.10
6	.37	.28	.21	.34	.26	.20	.29	.22	.17	.24	.18	.14	.19	.15	.11	.08
7	.33	.24	.18	.30	.22	.17	.26	.19	.14	.21	.16	.11	.17	.12	.09	.06
8	.29	.21	.15	.27	.19	.14	.23	.16	.12	.19	.14	.10	.15	.11	.07	.05
9	.26	.18	.13	.24	.17	.12	.21	.14	.10	.17	.12	.08	.14	.09	.06	.04
10	.24	.16	.11	.22	.15	.10	.19	.13	.09	.15	.10	.07	.12	.08	.05	.03

SPACING CRITERIA: ADJACENT = 4.1
DIAGONAL = 2.9

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (INITIAL) 13 WATT
HORIZONTAL DISTANCE FROM SOURCE IN FT.

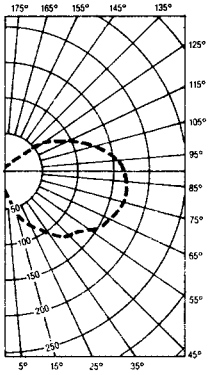
MOUNTING HEIGHT FT.	0′	4′	8′	12′	16′	20′	24′	28′
8′	.23	.46	.41	.22	.12	.07	.05	.03
10′	.15	.28	.28	.20	.13	.08	.05	.04
12′	.10	.19	.21	.18	.12	.08	.06	.04
14′	.08	.13	.16	.14	.11	.08	.06	04
16′	.06	.10	.11	.11	.10	.07	.06	.04

$$FC = \frac{(CANDLEPOWER)(COS\ \theta)}{D^2}$$

Test No. 5659.1

FLUORESCENT
With Globe Only—26 Watt

CANDLEPOWER —26 WATT
(1800 Lumens
Two Lamps)



ANGLE	CP	ANGLE	CP
0.00	32.0	90.00	164.0
5.00	37.0	95.00	155.0
10.00	48.0	100.00	145.0
15.00	58.0	105.00	131.0
20.00	70.0	110.00	116.0
25.00	80.0	115.00	100.0
30.00	91.0	120.00	83.0
35.00	104.0	125.00	66.0
40.00	117.0	130.00	49.0
45.00	129.0	135.00	34.0
50.00	137.0	140.00	21.0
55.00	146.0	145.00	14.0
60.00	152.0	150.00	7.0
65.00	159.0	155.00	5.0
70.00	165.0	160.00	4.0
75.00	170.0	165.00	3.0
80.00	173.0	170.00	0.0
85.00	171.0	175.00	0.0

Efficiency 76.7%

COEFFICIENTS OF UTILIZATION — ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE rcc	80			70			50			30			10			0
% WALL REFLECTANCE rw	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance															
0	.85	.85	.85	.79	.79	.79	.70	.70	.70	.61	.61	.61	.53	.53	.53	.49
1	.67	.62	.58	.63	.58	.54	.54	.51	.48	.46	.44	.41	.39	.37	.35	.31
2	.56	.49	.43	.52	.45	.40	.44	.39	.35	.37	.33	.30	.31	.28	.25	.22
3	.47	.40	.34	.44	.37	.31	.38	.32	.27	.32	.27	.23	.26	.23	.20	.16
4	.41	.33	.27	.38	.31	.25	.32	.27	.22	.27	.23	.19	.22	.19	.16	.13
5	.35	.28	.22	.33	.26	.20	.28	.22	.18	.23	.19	.15	.19	.15	.12	.10
6	.31	.23	.18	.29	.22	.17	.25	.19	.14	.21	.16	.12	.17	.13	.10	.07
7	.28	.20	.15	.26	.19	.14	.22	.16	.12	.18	.14	.10	.15	.11	.08	.06
8	.25	.18	.13	.23	.16	.12	.20	.14	.10	.16	.12	.08	.13	.09	.07	.05
9	.22	.16	.11	.21	.14	.10	.18	.12	.09	.15	.10	.07	.12	.08	.05	.04
10	.20	.14	.10	.19	.13	.09	.16	.11	.07	.13	.09	.06	.11	.07	.05	.03

SPACING CRITERIA: ADJACENT = 3.8
DIAGONAL = 2.7

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (INITIAL) 26 WATT
HORIZONTAL DISTANCE FROM SOURCE IN FT.

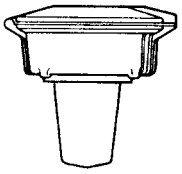
MOUNTING HEIGHT FT.	0′	4′	8′	12′	16′	20′	24′	28′
8′	.50	.92	.71	.39	.22	.13	.08	.05
10′	.32	.58	.53	.36	.22	.14	.09	.06
12′	.22	.38	.39	.32	.21	.14	.10	.07
14′	.16	.27	.30	.27	.19	.14	.10	.07
16′	.13	.20	.23	.22	.18	.13	.10	.07

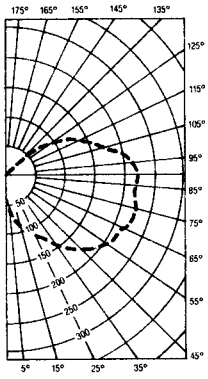
$$FC = \frac{(CANDLEPOWER)(COS\ \theta)}{D^2}$$

Test No. 5658.0

FLUORESCENT
With Globe Only—39 Watt

CANDLEPOWER —39 WATT
(2700 Lumens
Three Lamps)





ANGLE	CP	ANGLE	CP
0.00	46.0	90.00	222.0
5.00	55.0	95.00	212.0
10.00	70.0	100.00	198.0
15.00	88.0	105.00	181.0
20.00	104.0	110.00	160.0
25.00	117.0	115.00	139.0
30.00	132.0	120.00	116.0
35.00	148.0	125.00	93.0
40.00	165.0	130.00	71.0
45.00	181.0	135.00	51.0
50.00	193.0	140.00	32.0
55.00	204.0	145.00	15.0
60.00	210.0	150.00	8.0
65.00	216.0	155.00	3.0
70.00	224.0	160.00	2.0
75.00	230.0	165.00	4.0
80.00	233.0	170.00	0.0
85.00	232.0	175.00	0.0

Efficiency 70.6%

COEFFICIENTS OF UTILIZATION — ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE rcc	80			70			50			30			10			0
% WALL REFLECTANCE rw	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance															
0	.78	.78	.78	.73	.73	.73	.64	.64	.64	.56	.56	.56	.48	.48	.48	.45
1	.62	.58	.54	.58	.54	.50	.50	.47	.44	.43	.40	.38	.36	.34	.33	.29
2	.51	.45	.40	.48	.42	.37	.41	.36	.32	.35	.31	.28	.29	.26	.24	.20
3	.44	.37	.31	.41	.34	.29	.35	.30	.25	.29	.25	.22	.24	.21	.18	.15
4	.38	.31	.25	.35	.29	.24	.30	.25	.21	.25	.21	.18	.21	.17	.15	.12
5	.33	.26	.20	.30	.24	.19	.26	.21	.16	.22	.17	.14	.18	.14	.11	.09
6	.29	.22	.17	.27	.20	.16	.23	.17	.14	.19	.15	.11	.16	.12	.09	.07
7	.26	.19	.14	.24	.18	.13	.20	.15	.11	.17	.13	.09	.14	.10	.08	.06
8	.23	.16	.12	.21	.15	.11	.18	.13	.10	.15	.11	.08	.12	.09	.06	.05
9	.21	.14	.10	.19	.13	.10	.16	.11	.08	.14	.10	.07	.11	.08	.05	.04
10	.19	.13	.09	.17	.12	.08	.15	.10	.07	.12	.08	.06	.10	.07	.04	.03

SPACING CRITERIA: ADJACENT = 3.7
DIAGONAL = 2.6

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (INITIAL) 39 WATT
HORIZONTAL DISTANCE FROM SOURCE IN FT.

MOUNTING HEIGHT FT.	0′	4′	8′	12′	16′	20′	24′	28′
8′	.72	1.38	1.00	.55	.31	.18	.11	.07
10′	.46	.86	.76	.51	.31	.19	.12	.09
12′	.44	.58	.58	.44	.30	.20	.13	.09
14′	.33	.41	.44	.38	.28	.20	.14	.10
16′	.25	.29	.34	.31	.25	.18	.14	.10

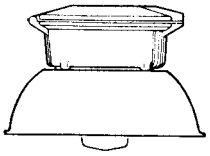
$$FC = \frac{(CANDLEPOWER)(COS\ \theta)}{D^2}$$

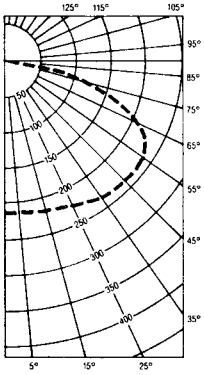
Test No. 5657.0

FLUORESCENT
With Globe and Dome Reflector—26 Watt

CANDLEPOWER —26 WATT
(1800 Lumens
Two Lamp)

For CP of a 13 Watt
Luminaire Multiply by .50





ANGLE	CP	ANGLE	CP
0.00	215.0	90.00	8.0
5.00	219.0	95.00	4.0
10.00	221.0	100.00	6.0
15.00	219.0	105.00	7.0
20.00	219.0	110.00	7.0
25.00	221.0	115.00	7.0
30.00	226.0	120.00	7.0
35.00	234.0	125.00	5.0
40.00	237.0	130.00	2.0
45.00	238.0	135.00	0.0
50.00	239.0	140.00	0.0
55.00	239.0	145.00	0.0
60.00	231.0	150.00	0.0
65.00	209.0	155.00	0.0
70.00	170.0	160.00	0.0
75.00	124.0	165.00	0.0
80.00	78.0	170.00	0.0
85.00	37.0	175.00	0.0

Efficiency 62.8%

COEFFICIENTS OF UTILIZATION — ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE rcc	80			70			50			30			10			0
% WALL REFLECTANCE rw	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance															
0	.75	.75	.75	.73	.73	.73	.69	.69	.69	.66	.66	.66	.63	.63	.63	.62
1	.64	.61	.58	.62	.59	.57	.59	.57	.55	.57	.55	.53	.54	.53	.51	.50
2	.54	.50	.45	.53	.49	.45	.51	.47	.44	.48	.45	.42	.46	.44	.41	.40
3	.47	.41	.37	.46	.41	.36	.44	.39	.36	.42	.38	.35	.40	.37	.34	.32
4	.41	.35	.30	.40	.34	.30	.38	.33	.29	.36	.32	.29	.35	.31	.28	.27
5	.35	.29	.24	.34	.29	.24	.33	.28	.24	.31	.27	.23	.30	.26	.23	.21
6	.31	.25	.20	.30	.24	.20	.29	.24	.20	.28	.23	.19	.27	.22	.19	.18
7	.27	.21	.17	.27	.21	.17	.26	.20	.17	.25	.20	.16	.24	.19	.16	.15
8	.24	.18	.14	.24	.18	.14	.23	.18	.14	.22	.17	.14	.21	.17	.14	.12
9	.22	.16	.12	.21	.16	.12	.20	.15	.12	.19	.15	.12	.19	.15	.12	.10
10	.20	.14	.10	.19	.14	.10	.18	.14	.10	.18	.13	.10	.17	.13	.10	.09

SPACING CRITERIA: ADJACENT = 1.7
DIAGONAL = 1.2

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (INITIAL) 26 WATT
HORIZONTAL DISTANCE FROM SOURCE IN FT.

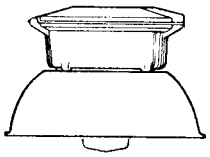
MOUNTING HEIGHT FT.	0'	4'	8'	12'	16'	20'	24'	28'
8'	3.36	2.49	1.31	.63	.31	.15	.09	.04
10'	2.15	1.75	1.13	.63	.34	.19	.13	.06
12'	1.49	1.30	.94	.58	.36	.22	.19	.09
14'	1.10	.99	.75	.53	.35	.23	.15	.10
16'	.84	.78	.62	.47	.33	.23	.16	.11

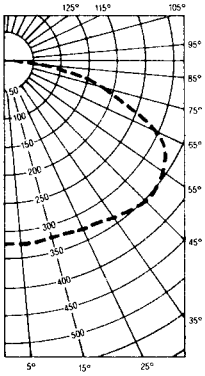
$$FC = \frac{(CANDLEPOWER)\ (COS\ \theta)}{D^2}$$

Test No. 5689.0

FLUORESCENT
With Globe and Dome Reflector—39 Watt

CANDLEPOWER —39 WATT
(2700 Lumens
Three Lamps)





ANGLE	CP	ANGLE	CP
0.00	329.0	90.00	9.0
5.00	327.0	95.00	6.0
10.00	329.0	100.00	10.0
15.00	323.0	105.00	11.0
20.00	324.0	110.00	12.0
25.00	328.0	115.00	11.0
30.00	337.0	120.00	10.0
35.00	345.0	125.00	7.0
40.00	349.0	130.00	3.0
45.00	351.0	135.00	0.0
50.00	350.0	140.00	0.0
55.00	347.0	145.00	0.0
60.00	332.0	150.00	0.0
65.00	296.0	155.00	0.0
70.00	239.0	160.00	0.0
75.00	176.0	165.00	0.0
80.00	110.0	170.00	0.0
85.00	51.0	175.00	0.0

Efficiency 60.9%

COEFFICIENTS OF UTILIZATION — ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE rcc	80			70			50			30			10			0
% WALL REFLECTANCE rw	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance															
0	.72	.72	.72	.70	.70	.70	.67	.67	.67	.64	.64	.64	.61	.61	.61	.60
1	.62	.59	.56	.60	.58	.55	.58	.56	.53	.56	.55	.53	.53	.51	.50	.48
2	.53	.48	.44	.52	.47	.44	.49	.46	.42	.47	.44	.41	.45	.42	.40	.39
3	.46	.40	.36	.45	.40	.36	.43	.38	.35	.41	.37	.34	.39	.36	.33	.32
4	.40	.34	.29	.39	.33	.29	.37	.32	.29	.36	.31	.28	.34	.30	.28	.26
5	.34	.28	.24	.34	.28	.24	.32	.27	.23	.31	.26	.23	.29	.26	.22	.21
6	.30	.24	.20	.30	.24	.20	.28	.23	.19	.27	.22	.19	.26	.22	.19	.17
7	.27	.21	.17	.26	.21	.17	.25	.20	.16	.24	.20	.16	.23	.19	.16	.15
8	.24	.18	.14	.23	.18	.14	.22	.17	.14	.21	.17	.14	.20	.16	.13	.12
9	.21	.16	.12	.21	.15	.12	.20	.15	.12	.19	.15	.12	.18	.14	.11	.10
10	.19	.14	.10	.19	.14	.10	.18	.13	.10	.17	.13	.10	.17	.13	.10	.09

SPACING CRITERIA: ADJACENT = 1.6
DIAGONAL = 1.1

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (INITIAL) 39 WATT
HORIZONTAL DISTANCE FROM SOURCE IN FT.

MOUNTING HEIGHT FT.	0'	4'	8'	12'	16'	20'	24'	28'
8'	5.14	3.71	1.94	.93	.43	.21	.11	.06
10'	3.29	2.61	1.66	.92	.55	.28	.15	.09
12'	2.28	1.92	1.38	.86	.52	.32	.19	.12
14'	1.68	1.47	1.13	.78	.51	.33	.22	.14
16'	1.29	1.16	.93	.69	.48	.33	.23	.16

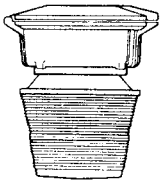
$$FC = \frac{(CANDLEPOWER)\ (COS\ \theta)}{D^2}$$

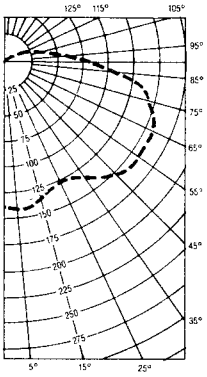
Test No. 5692.0

FLUORESCENT
With Type V "8" Refractor—26 Watt

CANDLEPOWER —26 WATT
(1800 Lumens
Two Lamps)

For CP of a 13 Watt
Luminaire multiply by .50





ANGLE	CP	ANGLE	CP
0.00	142.0	90.00	84.0
5.00	143.0	95.00	61.0
10.00	140.0	100.00	45.0
15.00	137.0	105.00	33.0
20.00	132.0	110.00	27.0
25.00	129.0	115.00	23.0
30.00	130.0	120.00	20.0
35.00	135.0	125.00	20.0
40.00	143.0	130.00	20.0
45.00	152.0	135.00	17.0
50.00	161.0	140.00	15.0
55.00	162.0	145.00	10.0
60.00	162.0	150.00	6.0
65.00	159.0	155.00	1.0
70.00	153.0	160.00	0.0
75.00	143.0	165.00	0.0
80.00	129.0	170.00	0.0
85.00	110.0	175.00	0.0

Efficiency 58.4%

COEFFICIENTS OF UTILIZATION — ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE rcc	80			70			50			30			10			0
% WALL REFLECTANCE rw	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance															
0	.67	.67	.67	.65	.65	.65	.60	.60	.60	.55	.55	.55	.51	.51	.51	.49
1	.55	.51	.48	.53	.49	.46	.48	.46	.43	.44	.42	.40	.41	.39	.37	.35
2	.46	.40	.36	.44	.39	.35	.40	.36	.33	.37	.33	.31	.34	.31	.29	.27
3	.39	.33	.29	.37	.32	.28	.34	.30	.26	.31	.28	.24	.29	.26	.23	.21
4	.34	.28	.23	.32	.27	.22	.30	.25	.21	.27	.23	.20	.25	.21	.19	.17
5	.29	.23	.19	.28	.22	.18	.26	.21	.17	.23	.19	.16	.21	.18	.15	.13
6	.26	.20	.16	.25	.19	.15	.23	.18	.14	.21	.17	.13	.19	.15	.12	.11
7	.23	.17	.13	.22	.17	.13	.20	.15	.12	.18	.14	.11	.17	.13	.11	.09
8	.20	.15	.11	.20	.14	.11	.18	.13	.10	.16	.12	.10	.15	.12	.09	.08
9	.18	.13	.09	.18	.13	.09	.16	.12	.09	.15	.11	.08	.14	.10	.08	.06
10	.17	.12	.08	.16	.11	.08	.15	.10	.08	.13	.10	.07	.12	.09	.07	.05

SPACING CRITERIA: ADJACENT = 1.5
DIAGONAL = 1.1

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (INITIAL) 26 WATT
HORIZONTAL DISTANCE FROM SOURCE IN FT.

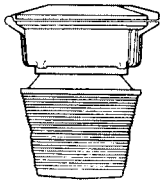
MOUNTING HEIGHT FT.	0'	4'	8'	12'	16'	20'	24'	28'
8'	2.22	1.44	.84	.43	.22	.12	.07	.05
10'	1.42	1.04	.66	.42	.24	.14	.09	.06
12'	.99	.79	.55	.37	.24	.15	.10	.07
14'	.72	.62	.43	.32	.23	.16	.11	.07
16'	.55	.49	.36	.27	.21	.15	.11	.08

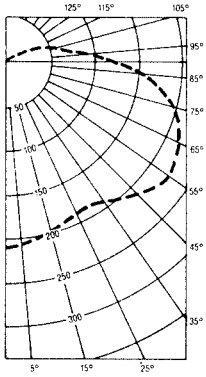
$$FC = \frac{(CANDLEPOWER)\ (COS\ \theta)}{D^2}$$

Test No. 5691.0

FLUORESCENT
With Type V "8" Refractor—39 Watt

CANDLEPOWER –39 WATT
(2700 Lumens
Three Lamps)





ANGLE	CP	ANGLE	CP
0.00	210.0	90.00	118.0
5.00	207.0	95.00	87.0
10.00	201.0	100.00	64.0
15.00	197.0	105.00	50.0
20.00	192.0	110.00	41.0
25.00	187.0	115.00	35.0
30.00	187.0	120.00	31.0
35.00	192.0	125.00	31.0
40.00	201.0	130.00	30.0
45.00	212.0	135.00	26.0
50.00	221.0	140.00	20.0
55.00	224.0	145.00	15.0
60.00	222.0	150.00	8.0
65.00	218.0	155.00	2.0
70.00	208.0	160.00	0.0
75.00	195.0	165.00	0.0
80.00	177.0	170.00	0.0
85.00	153.0	175.00	0.0

Efficiency 54.7%

COEFFICIENTS OF UTILIZATION — ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE rcc	80			70			50			30			10			0
% WALL REFLECTANCE rw	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance															
0	63	63	63	60	60	60	58	58	58	57	57	57	55	55	55	53
1	51	48	45	49	46	43	47	43	40	41	39	38	36	35	34	33
2	43	38	34	41	37	33	37	34	31	34	31	29	31	29	27	25
3	37	31	27	35	30	26	32	28	24	29	26	23	27	24	21	20
4	32	26	22	30	25	21	28	23	20	25	22	19	23	20	18	16
5	28	22	18	26	21	17	24	20	16	22	18	15	20	17	14	13
6	24	19	15	23	18	14	21	17	13	19	16	13	18	14	12	10
7	22	16	13	21	16	12	19	15	11	17	14	11	16	13	10	09
8	19	14	11	18	14	10	17	13	10	16	12	09	14	11	08	07
9	17	12	09	17	12	09	15	11	08	14	10	08	13	09	07	06
10	16	11	08	15	11	08	14	10	07	13	09	07	12	08	06	05

SPACING CRITERIA: ADJACENT = 1.4
DIAGONAL = 1.0

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (INITIAL) 39 WATT
HORIZONTAL DISTANCE FROM SOURCE IN FT.

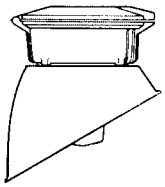
MOUNTING HEIGHT FT.	0′	4′	8′	12′	16′	20′	24′	28′
8′	3.28	2.09	1.17	.59	.31	.18	.10	.06
10′	2.10	1.52	.92	.58	.33	.20	.12	.08
12′	1.46	1.13	.76	.52	.33	.21	.14	.09
14′	1.07	.90	.62	.45	.32	.22	.14	.10
16′	.82	.71	.52	.38	.29	.21	.15	11

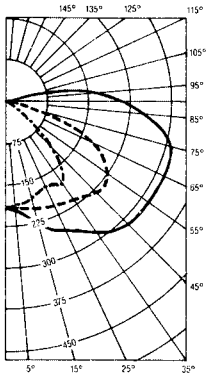
$$FC = \frac{(CANDLEPOWER)(COS\ \theta)}{D^2}$$

Test No. 5694.0

FLUORESCENT
With Globe and 30° Angle Reflector
—26 Watt

CANDLEPOWER –26 WATT
(1800 Lumens
Two Lamps)
For CP of a 13 Watt
Luminaire multiply by .50





ANGLE	FRONT	SIDE	BACK
0.00	184.0	184.0	184.0
5.00	194.0	186.0	179.0
10.00	207.0	189.0	178.0
15.00	220.0	193.0	172.0
20.00	234.0	196.0	167.0
25.00	247.0	201.0	165.0
30.00	267.0	209.0	168.0
35.00	287.0	218.0	171.0
40.00	300.0	224.0	152.0
45.00	311.0	227.0	109.0
50.00	314.0	229.0	66.0
55.00	316.0	222.0	20.0
60.00	316.0	202.0	4.0
65.00	317.0	164.0	1.0
70.00	317.0	123.0	1.0
75.00	313.0	75.0	2.0
80.00	295.0	31.0	7.0
85.00	259.0	10.0	15.0
90.00	214.0	3.0	24.0
95.00	166.0	3.0	31.0
100.00	113.0	2.0	31.0
105.00	65.0	2.0	30.0

Efficiency 57.2%

COEFFICIENTS OF UTILIZATION — ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE rcc	80			70			50			30			10			0
% WALL REFLECTANCE rw	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance															
0	.67	.67	.67	.65	.65	.65	.61	.61	.61	.58	.58	.58	.55	.55	.55	.53
1	.56	.53	.51	.55	.52	.49	.51	.49	.47	.48	.47	.45	.46	.44	.43	.41
2	.48	.44	.40	.47	.43	.39	.44	.40	.37	.41	.39	.36	.39	.37	.35	.33
3	.42	.37	.32	.41	.36	.32	.38	.34	.31	.36	.33	.30	.34	.31	.29	.27
4	.37	.31	.27	.36	.30	.27	.34	.29	.26	.32	.28	.25	.30	.27	.24	.23
5	.32	.26	.22	.31	.26	.22	.29	.25	.21	.28	.24	.21	.26	.23	.20	.19
6	.28	.23	.19	.27	.22	.18	.26	.21	.18	.25	.21	.17	.23	.20	.17	.16
7	.25	.20	.16	.24	.19	.16	.23	.19	.15	.22	.18	.15	.21	.17	.14	.13
8	.22	.17	.13	.22	.17	.13	.21	.16	.13	.19	.15	.13	.18	.15	.12	.11
9	.20	.15	.11	.19	.15	.11	.18	.14	.11	.17	.13	.11	.16	.13	.10	.09
10	.18	.13	.10	.18	.13	.10	.17	.12	.10	.16	.12	.09	.15	.11	.09	.08

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 26 WATT
Horizontal Distance from Source (Front) in Ft.

MOUNTING HEIGHT FT.	0′	4′	8′	12′	16′
8′	2.87	2.76	1.72	.84	.44
10′	1.84	1.87	1.43	.82	.47
12′	1.28	1.39	1.15	.76	.47

FOOTCANDLE CHART (Initial) 26 WATT
Horizontal Distance from Source (Side) in Ft.

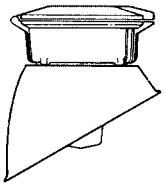
MOUNTING HEIGHT FT.	0′	4′	8′	12′	16′
8′	2.87	2.25	1.25	.59	.53
10′	1.84	1.57	.107	.60	.30
12′	1.28	1.16	.87	.56	.33

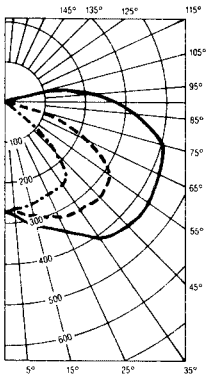
$$FC = \frac{(CANDLEPOWER)(COS\ \theta)}{D^2}$$

Test No. 5690.0

FLUORESCENT
With Globe and 30° Angle Reflector
—39 Watt

CANDLEPOWER –39 WATT
(2700 Lumens
Three Lamps)





ANGLE	FRONT	SIDE	BACK
0.00	276.0	276.0	276.0
5.00	287.0	280.0	269.0
10.00	303.0	287.0	265.0
15.00	319.0	295.0	256.0
20.00	336.0	302.0	250.0
25.00	356.0	310.0	248.0
30.00	384.0	317.0	251.0
35.00	407.0	323.0	248.0
40.00	418.0	326.0	217.0
45.00	427.0	330.0	163.0
50.00	432.0	326.0	99.0
55.00	431.0	312.0	37.0
60.00	424.0	275.0	6.0
65.00	417.0	226.0	1.0
70.00	411.0	164.0	1.0
75.00	402.0	101.0	3.0
80.00	369.0	45.0	12.0
85.00	323.0	13.0	22.0
90.00	275.0	2.0	34.0
95.00	216.0	2.0	39.0
100.00	152.0	2.0	37.0
105.00	95.0	1.0	34.0

Efficiency 58.3%

COEFFICIENTS OF UTILIZATION — ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE rcc	80			70			50			30			10			0
% WALL REFLECTANCE rw	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance															
0	.68	.68	.68	.66	.66	.66	.62	.62	.62	.59	.59	.59	.55	.55	.55	.54
1	.57	.54	.51	.56	.53	.50	.52	.50	.48	.49	.47	.45	.46	.45	.43	.42
2	.49	.44	.40	.57	.43	.39	.44	.41	.38	.42	.39	.36	.39	.37	.35	.33
3	.42	.37	.33	.41	.36	.32	.39	.35	.31	.36	.33	.30	.34	.31	.29	.27
4	.37	.31	.27	.36	.31	.27	.34	.29	.26	.32	.28	.25	.30	.27	.24	.23
5	.32	.27	.22	.31	.26	.22	.30	.25	.21	.28	.24	.21	.26	.23	.20	.19
6	.29	.23	.19	.28	.22	.19	.26	.22	.18	.25	.21	.18	.23	.20	.17	.16
7	.25	.20	.16	.25	.19	.16	.23	.19	.15	.22	.18	.15	.21	.17	.14	.13
8	.23	.17	.14	.22	.17	.13	.21	.16	.13	.20	.16	.13	.19	.15	.12	.11
9	.20	.15	.12	.20	.15	.11	.19	.14	.11	.18	.14	.11	.17	.13	.10	.09
10	.18	.13	.10	.18	.13	.10	.17	.13	.10	.16	.12	.09	.15	.12	.09	.08

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 39 WATT
Horizontal Distance from Source (Front) in Ft.

MOUNTING HEIGHT FT.	0′	4′	8′	12′	16′
8′	4.31	3.75	2.36	1.15	.58
10′	2.76	2.69	1.99	1.05	.63
12′	1.92	1.99	1.63	1.05	.65

FOOTCANDLE CHART (Initial) 39 WATT
Horizontal Distance from Source (Side) in Ft.

MOUNTING HEIGHT FT.	0′	4′	8′	12′	16′
8′	4.31	3.47	1.82	.83	.32
10′	2.76	2.42	.155	.86	.46
12′	1.92	1.79	1.29	.81	.47

$$FC = \frac{(CANDLEPOWER)(COS\ \theta)}{D^2}$$

Test No. 5693.0


Pendant


Ceiling


Wall


Stanchion

Class I, Div. 2, Groups A,B,C,D
Class I, Zone 2, Groups IIC, IIB, IIA
Class II, Div. 1 & 2, Groups E,F,G
Class III
NEMA 3, 4, 4X

Compliances: UL 844; UL 1570
Listed & CSA Certified
CSA C22.2 no. 137-M1981
Rated for 40C° ambient. Minimum start 0° C.

FEATURES-SPECIFICATIONS

CERTILITE®

Applications

CERTI***LITE***® VBF and VQF are designed for installations where moisture, dirt, dust, corrosion and vibration may be present, or NEMA 3 and 4X areas where wind, water, snow or high ambients can be expected. They can be used in locations made hazardous by the presence of flammable vapors or gases or combustible dusts as defined by the NEC.

Typical applications include manufacturing plants, and certain chemical and petro-chemical processing facilities, sewage treatment plants, off-shore and dockside installations, garages and storage facilities.

Features

- Bi-Pin Twin (VBF) or Quad-Pin triple-tube (VQF) long-life compact fluorescent lamps included
- **World Voltage** on Quad-Pin VQF Series: 120 through 277VAC; 50/60 Hz
- Choice of Pendant, Ceiling, Wall or Stanchion mount
- Energy-saving instant on white light
- Corrosion resistant-Copper-free aluminum die-cast construction (less than 4/10 of 1%) w/Baked-on epoxy/polyester powder finish
- Exposed hardware is 316 grade stainless steel

Accessories

Exit sign: Model **VEXA-100** (Note: omit 2nd "**G**" in catalog number for globe-only fixture), see page L135

Reflectors: Use standard dome **VMPSD-17** or angle model **VMPA-17** (see page L54)

Options

For Factory Fusing on **VBF** and for **VQF** to be used on 120V or 277V systems, add **-F** to catalog number e.g. **VBF261A2GGN4-F**. For **VQF** to be used on 208V, 220V, 230V, 240V systems, add **-FF** to catalog number e.g. **VQF2630A2GGN4-FF**.

VBF/VQF 26-84WATT

COMPACT FLUORESCENT LAMPS INCLUDED	LINE VOLTAGE	CATALOG NUMBER ③④⑤			
		PENDANT 3/4" ①	CEILING 3/4" ①	WALL 3/4" ①	STANCHION 1-1/4" ②
26Watt (2x13)	120VAC 60Hz	VBF261A2GGN4	VBF261X2GGN4	VBF261B2GGN4	VBF261D4GGN4
	277VAC 60Hz	VBF264A2GGN4	VBF264X2GGN4	VBF264B2GGN4	VBF264D4GGN4
39Watt (3x13)	120VAC 60Hz	VBF391A2GGN4	VBF391X2GGN4	VBF391B2GGN4	VBF391D4GGN4
	277VAC 60Hz	VBF394A2GGN4	VBF394X2GGN4	VBF394B2GGN4	VBF394D4GGN4
26Watt (1x26)	120-277 50-60Hz	VQF2630A2GGN4	VQF2630X2GGN4	VQF2630B2GGN4	VQF2630D4GGN4
32Watt (1x32)	120-277 50-60Hz	VQF3230A2GGN4	VQF3230X2GGN4	VQF3230B2GGN4	VQF3230D4GGN4
42Watt (1x42)	120-277 50-60Hz	VQF4230A2GGN4	VQF4230X2GGN4	VQF4230B2GGN4	VQF4230D4GGN4
52Watt (2x26)	120-277 50-60Hz	VQF5230A2GGN4	VQF5230X2GGN4	VQF5230B2GGN4	VQF5230D4GGN4
64Watt (2x32)	120-277 50-60Hz	VQF6430A2GGN4	VQF6430X2GGN4	VQF6430B2GGN4	VQF6430D4GGN4
84Watt (2x42)	120-277 50-60Hz	VQF8430A2GGN4	VQF8430X2GGN4	VQF8430B2GGN4	VQF8430D4GGN4

*① Pendant, Ceiling & Bracket models may be changed to 1" hubs by changing the 8th character from **2** to **3** e.g. **VBF261A3GGN4** (9th character in VQF series).*
*② For 1-1/2" angle Stanchion, change **D4** to **D5** in catalog number. Change **D4** to **S5** for 1-1/2" Straight (90°) Stanchion.*
*③ Omit 2nd "**G**" for globe-only fixture for use with VEXA-100 Exit Accessory.*
④ Refer to page L55 VM series for dimensional data.
⑤ For refractor assemblies, order ballast tank, mounting splice box, "low wattage" optic and guard from "VM" pages L53, L54.


Pendant


Ceiling


Wall


Stanchion

Class I, Div. 2, Groups A,B,C,D
Class I, Zone 2, Groups IIC, IIB, IIA
Class II, Div. 1 & 2, Groups E,F,G
Class III
NEMA 3, 4, 4X

Compliances: UL 844; UL 1570
UL Listed & CSA Certified
CSA C22.2 no. 137-M1981
Rated for 40C° ambient. Minimum start 0° C.

FEATURES-SPECIFICATIONS

LUMEN OUTPUT①	
LAMP SOURCE	LUMEN OUTPUT
26Watt (2x13)	1800
39Watt (3X13)	2700
26Watt (1x26)	1800
32Watt (1X32)	2400
42Watt (1X42)	3200
52Watt (2x26)	3600
64Watt (2X32)	4800
84Watt (2X42)	6400

① *Photometric characteristics similar to 39 watt MBF pages L31-L33, except adjusted for Lumen output.*

VBF/VQF 26-84WATT BALLAST TANKS ONLY③		
COMPACT FLUOR.② LAMPS SOLD SEP-ARATELY	LINE VOLTAGE	CATALOG NUMBER
26Watt (2x13)	120VAC 60Hz	**VBF261**
	277VAC 60Hz	**VBF264**
39Watt (3x13)	120VAC 60Hz	**VBF391**
	277VAC 60Hz	**VBF394**
26Watt (1x26)	120-277 50-60Hz	**VQF2630**
32Watt (1x32)	120-277 50-60Hz	**VQF3230**
42Watt (1x42)	120-277 50-60Hz	**VQF4230**
52Watt (2x26)	120-277 50-60Hz	**VQF5230**
64Watt (2x32)	120-277 50-60Hz	**VQF6430**
84Watt (2x42)	120-277 50-60Hz	**VQF8430**

② *Order lamps, splice box and optic separately.*
③ *See page L135 for ballast data.*

REPLACEMENT LAMPS	
CATALOG NUMBER	DESCRIPTION
MPL13	13W Bi-Pin
MQL26	26W Quad-Pin
MQL32	32W Quad-Pin
MQL42	42W Quad-Pin

HAZARDOUS LOCATION APPLICATION DATA FOR GLOBE & GUARD (SAME WITH REFLECTOR OR EXIT ACCESSORY)③				
LAMP SOURCE	CLASS I DIV. 2 A,B,C,D	CLASS II DIV. 1 & 2 E,F,G	CLASS III SUITABILITY	SUPPLY WIRE
26Watt (2x13)	180°C (T3A)	85°C (T6)	YES	85°C
39Watt (3X13)	180°C (T3A)	85°C (T6)	YES	85°C
26Watt (1x26)	215°C (T2D)	120°C (T4A)	YES	85°C
32Watt (1X32)	215°C (T2D)	120°C (T4A)	YES	85°C
42Watt (1X42)	215°C (T2D)	120°C (T4A)	YES	85°C
52Watt (2x26)	215°C (T2D)	120°C (T4A)	YES	85°C
64Watt (2X32)	215°C (T2D)	120°C (T4A)	YES	85°C
84Watt (2X42)	215°C (T2D)	120°C (T4A)	YES	85°C

④ *VBF/VQF units are rated for simultaneous presence.*

Class I, Div. 2, Groups A,B,C,D*
Class I, Zone 2, Groups IIC, IIB, IIA
Class II, Div. 1 & 2, Groups E,F,G,*
Class III
Suitable for wet locations
UL Marine
NEMA 3, 4X

Listed - Files E10514 and E91793 (Marine)

Certified - File LR11713

FEATURES-SPECIFICATIONS

CERTILITE®

Applications

CERTI*LITE*® VM fixtures are designed for installations where moisture, dirt, dust, corrosion and vibration may be present, or NEMA 3 and 4X areas where wind, water, snow or high ambients can be expected. They can be used in locations made hazardous by the presence of flammable vapors or gases or combustible dusts as defined by the NEC.

Typical applications include manufacturing plants, and certain chemical and petrochemical processing facilities, sewage treatment plants, off-shore and dockside installations, garages and storage facilities.

Features

- CERTI*LITE*® VM fixtures are now available with Pulse Start Metal Halide ballasts. Pulse Start systems provide higher and better maintained light output with longer life compared standard Metal Halide systems

  Pulse Start and standard Metal Halide lamps and ballasts are ***not*** interchangeable
- Ballast tank and splice box — corrosion resistant copper-free aluminum alloy
- Baked powder epoxy polyester finish, electrostatically applied for complete, uniform corrosion protection
- All external hardware — stainless steel
- Guard — copper-free aluminum alloy
- Normally shipped as components for quick delivery
- Refractor guard — steel with corrosion resistant finish
- Reflector — lightweight, corrosion resistant polyester reinforced fiberglass
- Five mounting splice box types; pendant, ceiling, bracket, cone top, stanchion
- Quartz and incandescent auxiliary or HPS instant restart
- Minimum starting temperature HPS – 40°C, MV, MH & MHP – 30°C

Compliances

- UL-1572 Standard for HID lighting fixtures
- UL Marine type lighting fixtures
- UL-844 Standard for lighting fixtures for hazardous locations, Class I, Division 2; Class II, Divisions 1 and 2; Class III
- CSA C22.2 no. 137-M1981 electric luminaries for use in hazardous locations
- Enclosed and gasketed
- NEMA 3, 4X

Catalog Number Logic

VM 0 0 - 0 - 0 0 000 - 000 (NR) ①

Series Constant

Ballast and Housing
L—HPS 50-150 Watt
V—HPS 250-400 Watt
M—MH 70-250 Watt
F—MH 400 Watt
U—MHP 175 Watt
P—MHP 175-400 Watt
K—MV 100-250 Watt
E—MV 400 Watt

Splice Box
A—Pendant
B—Wall
C—Cone Top
D—Stanchion 25°
S—Straight Stanchion
X—Ceiling

Conduit Size
2—3/4"
3—1"
4—1-1/4"
5—1-1/2"

Wattage
1—50
4—70
5—100
6—175
7—250
8—400
9—150
32—320
35—350

**See hazardous location information for limitations on pages L58-L60.*
① See page L47 for Ex nR Restricted Breathing models.

Voltage
0—Quadri-Volt (120, 208, 240, 277) 60Hz
5—480 60Hz
6—Tri-Tap 120, 277, 347 60Hz (Canada)
7—220V, 60Hz.
8—220/240, 50Hz
9—Special

Globe & Guard or Refractor

Globe
G—Globe Only
GG—Globe and Guard
ER—Enclosed Reflector

Refractor
G1—Glass IES Type I 12"
G5—Glass IES Type V 12"
P5—Plastic IES Type V
G58—Glass IES Type V 8"

Suffix
QTZ—Quartz Auxiliary
IR—Instant Restrike HPS only
BP—Ballast Protector HPS only

HUBBELL®
KILLARK®

Pendant

Ceiling

Class I, Div. 2, Groups A,B,C,D①
Class I, Zone 2, Groups IIC,IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G*
Class III
Suitable for wet locations
UL Marine
NEMA 3, 4X

Listed - Files E10514 and E91793 (Marine)

Certified - File LR11713

PENDANT

50-150W

250-400W

VM 50-400 WATT HIGH PRESSURE SODIUM PENDANT

WATTS	ANSI LAMP	HUB SIZE②	VOLTAGE	CATALOG NUMBER		
				GLOBE AND GUARD③	REFRACTOR④	ENCLOSED REFLECTOR
50	S-68	3/4"	QUAD	VMLA-2-10GG	VMLA-2-10G58	—
			TRI	—	—	
			480	—	—	
70	S-62	3/4"	QUAD	VMLA-2-40GG	VMLA-2-40G58	—
			TRI	VMLA-2-46GG	VMLA-2-46G58	
			480	VMLA-2-45GG	VMLA-2-45G58	
100	S-54	3/4"	QUAD	VMLA-2-50GG	VMLA-2-50G58	—
			TRI	VMLA-2-56GG	VMLA-2-56G58	
			480	VMLA-2-55GG	VMLA-2-55G58	
150	S-55	3/4"	QUAD	VMLA-2-90GG	VMLA-2-90G58	—
			TRI	VMLA-2-96GG	VMLA-2-96G58	
			480	VMLA-2-95GG	VMLA-2-95G58	
250	S-50	3/4"	QUAD	VMVA-2-70GG	VMVA-2-70G5	VMVA-2-70ER
			TRI	VMVA-2-76GG	VMVA-2-76G5	VMVA-2-76ER
			480	VMVA-2-75GG	VMVA-2-75G5	VMVA-2-75ER
400	S-51	3/4"	QUAD	VMVA-2-80GG	VMVA-2-80G5	VMVA-2-80ER
			TRI	VMVA-2-86GG	VMVA-2-86G5	VMVA-2-86ER
			480	VMVA-2-85GG	VMVA-2-85G5	VMVA-2-85ER

CEILING

50-150W

250-400W

VM 50-400 WATT HIGH PRESSURE SODIUM CEILING

WATTS	ANSI LAMP	HUB SIZE②	VOLTAGE	CATALOG NUMBER		
				GLOBE AND GUARD③	REFRACTOR④	ENCLOSED REFLECTOR
50	S-68	3/4"	QUAD	VMLX-2-10GG	VMLX-2-10G58	—
			TRI	—	—	
			480	—	—	
70	S-62	3/4"	QUAD	VMLX-2-40GG	VMLX-2-40G58	—
			TRI	VMLX-2-46GG	VMLX-2-46G58	
			480	VMLX-2-45GG	VMLX-2-45G58	
100	S-54	3/4"	QUAD	VMLX-2-50GG	VMLX-2-50G58	—
			TRI	VMLX-2-56GG	VMLX-2-56G58	
			480	VMLX-2-55GG	VMLX-2-55G58	
150	S-55	3/4"	QUAD	VMLX-2-90GG	VMLX-2-90G58	—
			TRI	VMLX-2-96GG	VMLX-2-96G58	
			480	VMLX-2-95GG	VMLX-2-95G58	
250	S-50	3/4"	QUAD	VMVX-2-70GG	VMVX-2-70G5	VMVX-2-70ER
			TRI	VMVX-2-76GG	VMVX-2-76G5	VMVX-2-76ER
			480	VMVX-2-75GG	VMVX-2-75G5	VMVX-2-75ER
400	S-51	3/4"	QUAD	VMVX-2-80GG	VMVX-2-80G5	VMVX-2-80ER
			TRI	VMVX-2-86GG	VMVX-2-86G5	VMVX-2-86ER
			480	VMVX-2-85GG	VMVX-2-85G5	VMVX-2-85ER

① *See hazardous application data on pages L58-L60 for limitations.*
② *Hub size shown is 3/4" NPT, for 1" pendant or ceiling, change "**2**" to "**3**" in catalog number; e.g.* ***VMLA-3-40GG****. For flexible 3/4" pendant mounting, order* ***VMA-24 SU75*** *w/ballast tank, optic and guard.*
③ *Omit 2nd "**G**" for Globe only.*
④ *Order Refractor Guards separately. On Series VML 8" refractors are standard. To order 12" refractor, delete "**8**" from catalog number. To order fixture with other refractors, change catalog number as shown in refractor chart page L54.*

HIGH PRESSURE SODIUM, 50-400W MOGUL BASE HID

Wall

Cone Top

Class I, Div. 2, Groups A,B,C,D①
Class I, Zone 2, Groups IIC,IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G*
Class III
Suitable for wet locations
UL Marine
NEMA 3, 4X

Listed - Files E10514 and E91793 (Marine)

Certified - File LR11713

WALL

50-150W

250-400W

VM 50-400 WATT HIGH PRESSURE SODIUM WALL						
WATTS	ANSI LAMP	HUB SIZE②	VOLTAGE @ 60Hz	CATALOG NUMBER		
				GLOBE AND GUARD③	REFRACTOR④	ENCLOSED REFLECTOR
50	S-68	3/4"	QUAD	VMLB-2-10GG	VMLB-2-10G58	—
			TRI	—	—	
			480	—	—	
70	S-62	3/4"	QUAD	VMLB-2-40GG	VMLB-2-40G58	—
			TRI	VMLB-2-46GG	VMLB-2-46G58	
			480	VMLB-2-45GG	VMLB-2-45G58	
100	S-54	3/4"	QUAD	VMLB-2-50GG	VMLB-2-50G58	—
			TRI	VMLB-2-56GG	VMLB-2-56G58	
			480	VMLB-2-55GG	VMLB-2-55G58	
150	S-55	3/4"	QUAD	VMLB-2-90GG	VMLB-2-90G58	—
			TRI	VMLB-2-96GG	VMLB-2-96G58	
			480	VMLB-2-95GG	VMLB-2-95G58	
250	S-50	3/4"	QUAD	VMVB-2-70GG	VMVB-2-70G5	—
			TRI	VMVB-2-76GG	VMVB-2-76G5	
			480	VMVB-2-75GG	VMVB-2-75G5	
400	S-51	3/4"	QUAD	VMVB-2-80GG	VMVB-2-80G5	—
			TRI	VMVB-2-86GG	VMVB-2-86G5	
			480	VMVB-2-85GG	VMVB-2-85G5	

CONE TOP

50-150W

250-400W

VM 50-400 WATT HIGH PRESSURE SODIUM CONE TOP						
WATTS	ANSI LAMP	HUB SIZE	VOLTAGE @ 60Hz	CATALOG NUMBER		
				GLOBE AND GUARD③	REFRACTOR④	ENCLOSED REFLECTOR
50	S-68	3/4"	QUAD	VMLC-2-10GG	VMLC-2-10G58	—
			TRI	—	—	
			480	—	—	
70	S-62	3/4"	QUAD	VMLC-2-40GG	VMLC-2-40G58	—
			TRI	VMLC-2-46GG	VMLC-2-46G58	
			480	VMLC-2-45GG	VMLC-2-45G58	
100	S-54	3/4"	QUAD	VMLC-2-50GG	VMLC-2-50G58	—
			TRI	VMLC-2-56GG	VMLC-2-56G58	
			480	VMLC-2-55GG	VMLC-2-55G58	
150	S-55	3/4"	QUAD	VMLC-2-90GG	VMLC-2-90G58	—
			TRI	VMLC-2-96GG	VMLC-2-96G58	
			480	VMLC-2-95GG	VMLC-2-95G58	
250	S-50	3/4"	QUAD	VMVC-2-70GG	VMVC-2-70G5	VMVC-2-70ER
			TRI	VMVC-2-76GG	VMVC-2-76G5	VMVC-2-76ER
			480	VMVC-2-75GG	VMVC-2-75G5	VMVC-2-75ER
400	S-51	3/4"	QUAD	VMVC-2-80GG	VMVC-2-80G5	VMVC-2-80ER
			TRI	VMVC-2-86GG	VMVC-2-86G5	VMVC-2-86ER
			480	VMVC-2-85GG	VMVC-2-85G5	VMVC-2-85ER

① See hazardous application data on pages L58-L60 for limitations.
*② Hub size shown is 3/4" NPT, for 1" wall bracket, change "**2**" to "**3**" in catalog number; e.g. **VMLB-3-40GG***
*③ Omit 2nd "**G**" for Globe only.*
*④ Order Refractor Guards separately. On Series VML 8" refractors are standard. To order 12" refractor, delete "**8**" from catalog number. To order fixture with other refractors, change catalog number as shown in refractor chart page L54.*

HUBBELL
KILLARK®

Stanchion 25° Angle

Stanchion Straight

Class I, Div. 2, Groups A,B,C,D①
Class I, Zone 2, Groups IIC,IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G*
Class III
Suitable for wet locations
UL Marine
NEMA 3, 4X

Listed - Files E10514 and E91793 (Marine)

Certified - File LR11713

STANCHION 25° ANGLE

50-150W

250-400W

VM 50-400 WATT HIGH PRESSURE SODIUM STANCHION 25° ANGLE

WATTS	ANSI LAMP	HUB SIZE②	VOLTAGE @ 60Hz	CATALOG NUMBER		
				GLOBE AND GUARD③	REFRACTOR④	ENCLOSED REFLECTOR
50	S-68	1-1/4"	QUAD	VMLD-4-10GG	VMLD-4-10G58	—
			TRI	—	—	
			480	—	—	
70	S-62	1-1/4"	QUAD	VMLD-4-40GG	VMLD-4-40G58	—
			TRI	VMLD-4-46GG	VMLD-4-46G58	
			480	VMLD-4-45GG	VMLD-4-45G58	
100	S-54	1-1/4"	QUAD	VMLD-4-50GG	VMLD-4-50G58	—
			TRI	VMLD-4-56GG	VMLD-4-56G58	
			480	VMLD-4-55GG	VMLD-4-55G58	
150	S-55	1-1/4"	QUAD	VMLD-4-90GG	VMLD-4-90G58	—
			TRI	VMLD-4-96GG	VMLD-4-96G58	
			480	VMLD-4-95GG	VMLD-4-95G58	
250	S-50	1-1/4"	QUAD	VMVD-4-70GG	VMVD-4-70G5	VMVD-4-70ER
			TRI	VMVD-4-76GG	VMVD-4-76G5	VMVD-4-76ER
			480	VMVD-4-75GG	VMVD-4-75G5	VMVD-4-75ER
400	S-51	1-1/4"	QUAD	VMVD-4-80GG	VMVD-4-80G5	VMVD-4-80ER
			TRI	VMVD-4-86GG	VMVD-4-86G5	VMVD-4-86ER
			480	VMVD-4-85GG	VMVD-4-85G5	VMVD-4-85ER

STANCHION STRAIGHT

50-150W

250-400W

VM 50-400 WATT HIGH PRESSURE SODIUM STANCHION STRAIGHT

WATTS	ANSI LAMP	HUB SIZE	VOLTAGE @ 60Hz	CATALOG NUMBER		
				GLOBE AND GUARD③	REFRACTOR④	ENCLOSED REFLECTOR
50	S-68	1-1/2"	QUAD	VMLS-5-10GG	VMLS-5-10G58	—
			TRI	—	—	
			480	—	—	
70	S-62	1-1/2"	QUAD	VMLS-5-40GG	VMLS-5-40G58	—
			TRI	VMLS-5-46GG	VMLS-5-46G58	
			480	VMLS-5-45GG	VMLS-5-45G58	
100	S-54	1-1/2"	QUAD	VMLS-5-50GG	VMLS-5-50G58	—
			TRI	VMLS-5-56GG	VMLS-5-56G58	
			480	VMLS-5-55GG	VMLS-5-55G58	
150	S-55	1-1/2"	QUAD	VMLS-5-90GG	VMLS-5-90G58	—
			TRI	VMLS-5-96GG	VMLS-5-96G58	
			480	VMLS-5-95GG	VMLS-5-95G58	
250	S-50	1-1/2"	QUAD	VMVS-5-70GG	VMVS-5-70G5	—
			TRI	VMVS-5-76GG	VMVS-5-76G5	
			480	VMVS-5-75GG	VMVS-5-75G5	
400	S-51	1-1/2"	QUAD	VMVS-5-80GG	VMVS-5-80G5	—
			TRI	VMVS-5-86GG	VMVS-5-86G5	
			480	VMVS-5-85GG	VMVS-5-85G5	

① See hazardous application data on pages L58-L60 for limitations.
*② 25° Stanchion hub size shown is 1-1/4" NPT. For 1-1/2" change "**4**" to "**5**"; e.g. **VMLD-5-40GG**.*
*③ Omit 2nd "**G**" for Globe only.*
④ Order Refractor Guards separately. On Series VML 8" refractors are standard.
*To order 12" refractor, delete "**8**" from catalog number.*
To order fixture with other refractors, change catalog number as shown in refractor chart page L54.

Pendant

Ceiling

Class I, Div. 2, Groups A,B,C,D①
Class I, Zone 2, Groups IIC,IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G*
Class III
Suitable for wet locations
UL Marine
NEMA 3, 4X

Listed - Files E10514 and E91793 (Marine)

Certified - File LR11713

PENDANT

70-250W

400W

VM 70-400 WATT METAL HALIDE PENDANT

WATTS	ANSI LAMP	HUB SIZE②	VOLTAGE @ 60Hz	CATALOG NUMBER		
				GLOBE AND GUARD③	REFRACTOR④	ENCLOSED REFLECTOR
70	M-98	3/4"	QUAD	VMMA-2-40GG	VMMA-2-40G58	—
			TRI	VMMA-2-46GG	VMMA-2-46G58	
			480	VMMA-2-45GG	VMMA-2-45G58	
100	M-90	3/4"	QUAD	VMMA-2-50GG	VMMA-2-50G58	—
			TRI	VMMA-2-56GG	VMMA-2-56G58	
			480	VMMA-2-55GG	VMMA-2-55G58	
175	M-57	3/4"	QUAD	VMMA-2-60GG	VMMA-2-60G58	—
			TRI	VMMA-2-66GG	VMMA-2-66G58	
			480	VMMA-2-65GG	VMMA-2-65G58	
250	M-58	3/4"	QUAD	VMMA-2-70GG	VMMA-2-70G58	—
			TRI	VMMA-2-76GG	VMMA-2-76G58	
			480	VMMA-2-75GG	VMMA-2-75G58	
400	M-59	3/4"	QUAD	VMFA-2-80GG	VMFA-2-80G5	VMFA-2-80ER
			TRI	VMFA-2-86GG	VMFA-2-86G5	VMFA-2-86ER
			480	VMFA-2-85GG	VMFA-2-85G5	VMFA-2-85ER

CEILING

70-250W

400W

VM 70-400 WATT METAL HALIDE CEILING

WATTS	ANSI LAMP	HUB SIZE②	VOLTAGE @ 60Hz	CATALOG NUMBER		
				GLOBE AND GUARD③	REFRACTOR④	ENCLOSED REFLECTOR
70	M-98	3/4"	QUAD	VMMX-2-40GG	VMMX-2-40G58	—
			TRI	VMMX-2-46GG	VMMX-2-46G58	
			480	VMMX-2-45GG	VMMX-2-45G58	
100	M-90	3/4"	QUAD	VMMX-2-50GG	VMMX-2-50G58	—
			TRI	VMMX-2-56GG	VMMX-2-56G58	
			480	VMMX-2-55GG	VMMX-2-55G58	
175	M-57	3/4"	QUAD	VMMX-2-60GG	VMMX-2-60G58	—
			TRI	VMMX-2-66GG	VMMX-2-66G58	
			480	VMMX-2-65GG	VMMX-2-65G58	
250	M-58	3/4"	QUAD	VMMX-2-70GG	VMMX-2-70G58	—
			TRI	VMMX-2-76GG	VMMX-2-76G58	
			480	VMMX-2-75GG	VMMX-2-75G58	
400	M-59	3/4"	QUAD	VMFX-2-80GG	VMFX-2-80G5	VMFX-2-80ER
			TRI	VMFX-2-86GG	VMFX-2-86G5	VMFX-2-86ER
			480	VMFX-2-85GG	VMFX-2-85G5	VMFX-2-85ER

① See hazardous application data on pages L58-L60 for limitations.
*② Hub size shown is 3/4" NPT, for pendant or ceiling, change "**2**" to "**3**" in catalog number; e.g. **VMMA-3-40GG**. For flexible 3/4" pendant mounting, order **VMA-24 SU75** w/ballast tank, optic and guard*
*③ Omit 2nd "**G**" for Globe only.*
*④ Order Refractor Guards separately. On Series VMM 8" refractors are standard. To order 12" refractor, delete "**8**" from catalog number. To order fixture with other refractors, change catalog number as shown in refractor chart page L54.*
Note: 175-400 ballasts will also drive same wattage Mercury Vapor lamps, if desired. 175 watt will also operate 150W M107 Metal Halide lamps.

Wall

Cone Top

Class I, Div. 2, Groups A,B,C,D①
Class I, Zone 2, Groups IIC,IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G*
Class III
Suitable for wet locations
UL Marine
NEMA 3, 4X

Listed - Files E10514 and E91793 (Marine)

Certified - File LR11713

WALL

70-250W

400W

VM 70-400 WATT METAL HALIDE WALL

WATTS	ANSI LAMP	HUB SIZE②	VOLTAGE @ 60Hz	CATALOG NUMBER		
				GLOBE AND GUARD③	REFRACTOR④	ENCLOSED REFLECTOR
70	M-98	3/4"	QUAD	VMMB-2-40GG	VMMB-2-40G58	—
			TRI	VMMB-2-46GG	VMMB-2-46G58	
			480	VMMB-2-45GG	VMMB-2-45G58	
100	M-90	3/4"	QUAD	VMMB-2-50GG	VMMB-2-50G58	—
			TRI	VMMB-2-56GG	VMMB-2-56G58	
			480	VMMB-2-55GG	VMMB-2-55G58	
175	M-57	3/4"	QUAD	VMMB-2-60GG	VMMB-2-60G58	—
			TRI	VMMB-2-66GG	VMMB-2-66G58	
			480	VMMB-2-65GG	VMMB-2-65G58	
250	M-58	3/4"	QUAD	VMMB-2-70GG	VMMB-2-70G58	—
			TRI	VMMB-2-76GG	VMMB-2-76G58	
			480	VMMB-2-75GG	VMMB-2-75G58	
400	M-59	3/4"	QUAD	VMFB-2-80GG	VMFB-2-80G5	—
			TRI	VMFB-2-86GG	VMFB-2-86G5	
			480	VMFB-2-85GG	VMFB-2-85G5	

CONE TOP

70-250W

400W

VM 70-400 WATT METAL HALIDE CONE TOP

WATTS	ANSI LAMP	HUB SIZE	VOLTAGE @ 60Hz	CATALOG NUMBER		
				GLOBE AND GUARD③	REFRACTOR④	ENCLOSED REFLECTOR
70	M-98	3/4"	QUAD	VMMC-2-40GG	VMMC-2-40G58	—
			TRI	VMMC-2-46GG	VMMC-2-46G58	
			480	VMMC-2-45GG	VMMC-2-45G58	
100	M-90	3/4"	QUAD	VMMC-2-50GG	VMMC-2-50G58	—
			TRI	VMMC-2-56GG	VMMC-2-56G58	
			480	VMMC-2-55GG	VMMC-2-55G58	
175	M-57	3/4"	QUAD	VMMC-2-60GG	VMMC-2-60G58	—
			TRI	VMMC-2-66GG	VMMC-2-66G58	
			480	VMMC-2-65GG	VMMC-2-65G58	
250	M-58	3/4"	QUAD	VMMC-2-70GG	VMMC-2-70G58	—
			TRI	VMMC-2-76GG	VMMC-2-76G58	
			480	VMMC-2-75GG	VMMC-2-75G58	
400	M-59	3/4"	QUAD	VMFC-2-80GG	VMFC-2-80G5	VMFC-2-80ER
			TRI	VMFC-2-86GG	VMFC-2-86G5	VMFC-2-86ER
			480	VMFC-2-85GG	VMFC-2-85G5	VMFC-2-85ER

① *See hazardous application data on pages L58-L60 for limitations.*
② *Hub size shown is 3/4" NPT, for 1" wall bracket, change "**2**" to "**3**" in catalog number; e.g. **VMMB-3-40GG**.*
③ *Omit 2nd "**G**" for Globe only.*
④ *Order Refractor Guards separately. On Series VMM 8" refractors are standard.*
*To order 12" refractor, delete "**8**" from catalog number.*
To order fixture with other refractors, change catalog number as shown in refractor chart page L54.
Note: 175-400 ballasts will also drive same wattage Mercury Vapor lamps, if desired . 175 watt will also operate 150W M107 Metal Halide lamps.

METAL HALIDE, 70-400W MOGUL BASE HID

Stanchion 25° Angle

Stanchion Straight

Class I, Div. 2, Groups A,B,C,D①
Class I, Zone 2, Groups IIC,IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G*
Class III
Suitable for wet locations
UL Marine
NEMA 3, 4X

Listed - Files E10514 and E91793 (Marine)

Certified - File LR11713

STANCHION 25° ANGLE

70-250W

400W

VM 70-400 WATT METAL HALIDE STANCHION 25° ANGLE

WATTS	ANSI LAMP	HUB SIZE②	VOLTAGE @ 60Hz	CATALOG NUMBER		
				GLOBE AND GUARD③	REFRACTOR④	ENCLOSED REFLECTOR
70	M-98	1-1/4"	QUAD	VMMD-4-40GG	VMMD-4-40G58	—
			TRI	VMMD-4-46GG	VMMD-4-46G58	
			480	VMMD-4-45GG	VMMD-4-45G58	
100	M-90	1-1/4"	QUAD	VMMD-4-50GG	VMMD-4-50G58	—
			TRI	VMMD-4-56GG	VMMD-4-56G58	
			480	VMMD-4-55GG	VMMD-4-55G58	
175	M-57	1-1/4"	QUAD	VMMD-4-60GG	VMMD-4-60G58	—
			TRI	VMMD-4-66GG	VMMD-4-66G58	
			480	VMMD-4-65GG	VMMD-4-65G58	
250	M-58	1-1/4"	QUAD	VMMD-4-70GG	VMMD-4-70G58	—
			TRI	VMMD-4-76GG	VMMD-4-76G58	
			480	VMMD-4-75GG	VMMD-4-75G58	
400	M-59	1-1/4"	QUAD	VMFD-4-80GG	VMFD-4-80G5	VMFD-4-80ER
			TRI	VMFD-4-86GG	VMFD-4-86G5	VMFD-4-80ER
			480	VMFD-4-85GG	VMFD-4-85G5	VMFD-4-80ER

STANCHION STRAIGHT

70-250W

400W

VM 70-400 WATT METAL HALIDE STANCHION STRAIGHT

WATTS	ANSI LAMP	HUB SIZE	VOLTAGE @ 60Hz	CATALOG NUMBER		
				GLOBE AND GUARD③	REFRACTOR④	ENCLOSED REFLECTOR
70	M-98	1-1/2"	QUAD	VMMS-5-40GG	VMMS-5-40G58	—
			TRI	VMMS-5-46GG	VMMS-5-46G58	
			480	VMMS-5-45GG	VMMS-5-45G58	
100	M-90	1-1/2"	QUAD	VMMS-5-50GG	VMMS-5-50G58	—
			TRI	VMMS-5-56GG	VMMS-5-56G58	
			480	VMMS-5-55GG	VMMS-5-55G58	
175	M-57	1-1/2"	QUAD	VMMS-5-60GG	VMMS-5-60G58	—
			TRI	VMMS-5-66GG	VMMS-5-66G58	
			480	VMMS-5-65GG	VMMS-5-65G58	
250	M-58	1-1/2"	QUAD	VMMS-5-70GG	VMMS-5-70G58	—
			TRI	VMMS-5-76GG	VMMS-5-76G58	
			480	VMMS-5-75GG	VMMS-5-75G58	
400	M-59	1-1/2"	QUAD	VMFS-5-80GG	VMFS-5-80G5	—
			TRI	VMFS-5-86GG	VMFS-5-86G5	
			480	VMFS-5-85GG	VMFS-5-85G5	

① See hazardous application data on pages L58-L60 for limitations.
*② 25° Stanchion hub size shown is 1-1/4" NPT. For 1-1/2" change "**4**" to "**5**"; e.g. **VMMD-5-40GG**.*
*③ Omit 2nd "**G**" for Globe only.*
④ Order Refractor Guards separately. On Series VMM 8" refractors are standard.
*To order 12" refractor, delete "**8**" from catalog number.*
To order fixture with other refractors, change catalog number as shown in refractor chart page L54.
Note: 175-400 ballasts will also drive same wattage Mercury Vapor lamps, if desired. 175 watt will also operate 150W M107 Metal Halide lamps.

Pendant

Ceiling

Class I, Div. 2, Groups A,B,C,D①
Class I, Zone 2, Groups IIC,IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G*
Class III
Suitable for wet locations
UL Marine
NEMA 3, 4X

Listed - Files E10514 and E91793 (Marine)

Certified - File LR11713

PENDANT

175W

250-400W

VM 175-400 WATT PULSE START METAL HALIDE PENDANT						
WATTS	ANSI LAMP	HUB SIZE②	VOLTAGE @ 60Hz	CATALOG NUMBER		
				GLOBE AND GUARD③	REFRACTOR④	ENCLOSED REFLECTOR
175	M-137	3/4"	QUAD	VMUA-2-60GG	VMUA-2-60G58	—
			TRI	VMUA-2-66GG	VMUA-2-66G58	
			480	VMUA-2-65GG	VMUA-2-65G58	
250	M-138	3/4"	QUAD	VMPA-2-70GG	VMPA-2-70G5	VMPA-2-70ER
			TRI	VMPA-2-76GG	VMPA-2-76G5	VMPA-2-76ER
			480	VMPA-2-75GG	VMPA-2-75G5	VMPA-2-75ER
320	M-132	3/4"	QUAD	VMPA-2-320GG	VMPA-2-320G5	VMPA-2-320ER
			TRI	VMPA-2-326GG	VMPA-2-326G5	VMPA-2-326ER
			480	VMPA-2-325GG	VMPA-2-325G5	VMPA-2-325ER
350	M-131	3/4"	QUAD	VMPA-2-350GG	VMPA-2-350G5	VMPA-2-350ER
			TRI	VMPA-2-356GG	VMPA-2-356G5	VMPA-2-356ER
			480	VMPA-2-355GG	VMPA-2-355G5	VMPA-2-355ER
400	M-135	3/4"	QUAD	VMPA-2-80GG	VMPA-2-80G5	VMPA-2-80ER
			TRI	VMPA-2-86GG	VMPA-2-86G5	VMPA-2-86ER
			480	VMPA-2-85GG	VMPA-2-85G5	VMPA-2-85ER

CEILING

175W

250-400W

VM 175-400 WATT PULSE START METAL HALIDE CEILING						
WATTS	ANSI LAMP	HUB SIZE②	VOLTAGE @ 60Hz	CATALOG NUMBER		
				GLOBE AND GUARD③	REFRACTOR④	ENCLOSED REFLECTOR
175	M-137	3/4"	QUAD	VMUX-2-60GG	VMUX-2-60G58	—
			TRI	VMUX-2-66GG	VMUX-2-66G58	
			480	VMUX-2-65GG	VMUX-2-65G58	
250	M-138	3/4"	QUAD	VMPX-2-70GG	VMPX-2-70G5	VMPX-2-70ER
			TRI	VMPX-2-76GG	VMPX-2-76G5	VMPX-2-76ER
			480	VMPX-2-75GG	VMPX-2-75G5	VMPX-2-75ER
320	M-132	3/4"	QUAD	VMPX-2-320GG	VMPX-2-320G5	VMPX-2-320ER
			TRI	VMPX-2-326GG	VMPX-2-326G5	VMPX-2-326ER
			480	VMPX-2-325GG	VMPX-2-325G5	VMPX-2-325ER
350	M-131	3/4"	QUAD	VMPX-2-350GG	VMPX-2-350G5	VMPX-2-350ER
			TRI	VMPX-2-356GG	VMPX-2-356G5	VMPX-2-356ER
			480	VMPX-2-355GG	VMPX-2-355G5	VMPX-2-355ER
400	M-135	3/4"	QUAD	VMPX-2-80GG	VMPX-2-80G5	VMPX-2-80ER
			TRI	VMPX-2-86GG	VMPX-2-86G5	VMPX-2-86ER
			480	VMPX-2-85GG	VMPX-2-85G5	VMPX-2-85ER

① *See hazardous application data on pages L58-L60 for limitations.*
② *Hub size shown is 3/4" NPT, for 1" pendant or ceiling, change "**2**" to "**3**" in catalog number; e.g. **VMUA-3-60GG**. For flexible 3/4" pendant mounting, order **VMA-24 SU75** w/ ballast tank, optic and guard.*
③ *Omit 2nd "**G**" for Globe only.*
④ *Order Refractor Guards separately. On Series VMU 8" refractors are standard. To order 12" refractor, delete "**8**" from catalog number. To order fixture with other refractors, change catalog number as shown in refractor chart page L54.*

PULSE START METAL HALIDE, 175-400W MOGUL BASE HID

Wall

Cone Top

Class I, Div. 2, Groups A,B,C,D①
Class I, Zone 2, Groups IIC,IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G*
Class III
Suitable for wet locations
UL Marine
NEMA 3, 4X

Listed - Files E10514 and E91793 (Marine)

Certified - File LR11713

WALL

175W

250-400W

VM 175-400 WATT PULSE START METAL HALIDE WALL						
WATTS	ANSI LAMP	HUB SIZE②	VOLTAGE @ 60Hz	CATALOG NUMBER		
				GLOBE AND GUARD③	REFRACTOR④	ENCLOSED REFLECTOR
175	M-137	3/4"	QUAD	VMUB-2-60GG	VMUB-2-60G58	—
			TRI	VMUB-2-66GG	VMUB-2-66G58	
			480	VMUB-2-65GG	VMUB-2-65G58	
250	M-138	3/4"	QUAD	VMPB-2-70GG	VMPB-2-70G5	—
			TRI	VMPB-2-76GG	VMPB-2-76G5	
			480	VMPB-2-75GG	VMPB-2-75G5	
320	M-132	3/4"	QUAD	VMPB-2-320GG	VMPB-2-320G5	—
			TRI	VMPB-2-326GG	VMPB-2-326G5	
			480	VMPB-2-325GG	VMPB-2-325G5	
350	M-131	3/4"	QUAD	VMPB-2-350GG	VMPB-2-350G5	—
			TRI	VMPB-2-356GG	VMPB-2-356G5	
			480	VMPB-2-355GG	VMPB-2-355G5	
400	M-135	3/4"	QUAD	VMPB-2-80GG	VMPB-2-80G5	—
			TRI	VMPB-2-86GG	VMPB-2-86G5	
			480	VMPB-2-85GG	VMPB-2-85G5	

CONE TOP

175W

250-400W

VM 175-400 WATT PULSE START METAL HALIDE CONE TOP						
WATTS	ANSI LAMP	HUB SIZE	VOLTAGE @ 60Hz	CATALOG NUMBER		
				GLOBE AND GUARD③	REFRACTOR④	ENCLOSED REFLECTOR
175	M-137	3/4"	QUAD	VMUC-2-60GG	VMUC-2-60G58	—
			TRI	VMUC-2-66GG	VMUC-2-66G58	
			480	VMUC-2-65GG	VMUC-2-65G58	
250	M-138	3/4"	QUAD	VMPC-2-70GG	VMPC-2-70G5	VMPC-2-70ER
			TRI	VMPC-2-76GG	VMPC-2-76G5	VMPC-2-76ER
			480	VMPC-2-75GG	VMPC-2-75G5	VMPC-2-75ER
320	M-132	3/4"	QUAD	VMPC-2-320GG	VMPC-2-320G5	VMPC-2-320ER
			TRI	VMPC-2-326GG	VMPC-2-326G5	VMPC-2-326ER
			480	VMPC-2-325GG	VMPC-2-325G5	VMPC-2-325ER
350	M-131	3/4"	QUAD	VMPC-2-350GG	VMPC-2-350G5	VMPC-2-350ER
			TRI	VMPC-2-356GG	VMPC-2-356G5	VMPC-2-356ER
			480	VMPC-2-355GG	VMPC-2-355G5	VMPC-2-355ER
400	M-135	3/4"	QUAD	VMPC-2-80GG	VMPC-2-80G5	VMPC-2-80ER
			TRI	VMPC-2-86GG	VMPC-2-86G5	VMPC-2-86ER
			480	VMPC-2-85GG	VMPC-2-85G5	VMPC-2-85ER

① See hazardous application data on pages L58-L60 for limitations.
*② Hub size shown is 3/4" NPT, for 1" wall bracket, change "**2**" to "**3**" in catalog number; e.g. **VMUB-3-60GG**.*
*③ Omit 2nd "**G**" for Globe only.*
④ Order Refractor Guards separately. On Series VMU 8" refractors are standard.
*To order 12" refractor, delete "**8**" from catalog number.*
To order fixture with other refractors, change catalog number as shown in refractor chart page L54.

Stanchion 25° Angle

Stanchion Straight

Class I, Div. 2, Groups A,B,C,D①
Class I, Zone 2, Groups IIC,IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G*
Class III
Suitable for wet locations
UL Marine
NEMA 3, 4X

Listed - Files E10514 and E91793 (Marine)

Certified - File LR11713

STANCHION 25° ANGLE

175W

250-400W

VM 175-400 WATT PULSE START METAL HALIDE STANCHION 25° ANGLE

WATTS	ANSI LAMP	HUB SIZE②	VOLTAGE @ 60Hz	CATALOG NUMBER		
				GLOBE AND GUARD③	REFRACTOR④	ENCLOSED REFLECTOR
175	M-137	1-1/4"	QUAD	VMUD-4-60GG	VMUD-4-60G58	—
			TRI	VMUD-4-66GG	VMUD-4-66G58	
			480	VMUD-4-65GG	VMUD-4-65G58	
250	M-138	1-1/4"	QUAD	VMPD-4-70GG	VMPD-4-70G5	VMPD-4-70ER
			TRI	VMPD-4-76GG	VMPD-4-76G5	VMPD-4-76ER
			480	VMPD-4-75GG	VMPD-4-75G5	VMPD-4-75ER
320	M-132	1-1/4"	QUAD	VMPD-4-320GG	VMPD-4-320G5	VMPD-4-320ER
			TRI	VMPD-4-326GG	VMPD-4-326G5	VMPD-4-326ER
			480	VMPD-4-325GG	VMPD-4-325G5	VMPD-4-325ER
350	M-131	1-1/4"	QUAD	VMPD-4-350GG	VMPD-4-350G5	VMPD-4-350ER
			TRI	VMPD-4-356GG	VMPD-4-356G5	VMPD-4-356ER
			480	VMPD-4-355GG	VMPD-4-355G5	VMPD-4-355ER
400	M-135	1-1/4"	QUAD	VMPD-4-80GG	VMPD-4-80G5	VMPD-4-80ER
			TRI	VMPD-4-86GG	VMPD-4-86G5	VMPD-4-86ER
			480	VMPD-4-85GG	VMPD-4-85G5	VMPD-4-85ER

STANCHION STRAIGHT

175W

250-400W

VM 175-400 WATT PULSE START METAL HALIDE STANCHION STRAIGHT

WATTS	ANSI LAMP	HUB SIZE	VOLTAGE @ 60Hz	CATALOG NUMBER		
				GLOBE AND GUARD③	REFRACTOR④	ENCLOSED REFLECTOR
175	M-137	1-1/2"	QUAD	VMUS-5-60GG	VMUS-5-60G58	—
			TRI	VMUS-5-66GG	VMUS-5-66G58	
			480	VMUS-5-65GG	VMUS-5-65G58	
250	M-138	1-1/2"	QUAD	VMPS-5-70GG	VMPS-5-70G5	—
			TRI	VMPS-5-76GG	VMPS-5-76G5	
			480	VMPS-5-75GG	VMPS-5-75G5	
320	M-132	1-1/2"	QUAD	VMPS-5-320GG	VMPS-5-320G5	—
			TRI	VMPS-5-326GG	VMPS-5-326G5	
			480	VMPS-5-325GG	VMPS-5-325G5	
350	M-131	1-1/2"	QUAD	VMPS-5-350GG	VMPS-5-350G5	—
			TRI	VMPS-5-356GG	VMPS-5-356G5	
			480	VMPS-5-355GG	VMPS-5-355G5	
400	M-135	1-1/2"	QUAD	VMPS-5-80GG	VMPS-5-80G5	—
			TRI	VMPS-5-86GG	VMPS-5-86G5	
			480	VMPS-5-85GG	VMPS-5-85G5	

① See hazardous application data on pages L58-L60 for limitations.
*② 25° Stanchion hub size shown is 1-1/4" NPT. For 1-1/2" change "**4**" to "**5**"; e.g. **VMUD-5-60GG**.*
*③ Omit 2nd "**G**" for Globe only.*
④ Order Refractor Guards separately. On Series VMU 8" refractors are standard.
*To order 12" refractor, delete "**8**" from catalog number.*
To order fixture with other refractors, change catalog number as shown in refractor chart page L54.

Pendant

Ceiling

Class I, Div. 2, Groups A,B,C,D①
Class I, Zone 2, Groups IIC,IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G*
Class III
Suitable for wet locations
UL Marine
NEMA 3, 4X

Listed - Files E10514 and E91793 (Marine)

Certified - File LR11713

PENDANT

100-250W

400W

VM 100-400 WATT MERCURY VAPOR PENDANT

WATTS	ANSI LAMP	HUB SIZE②	VOLTAGE @ 60Hz	CATALOG NUMBER		
				GLOBE AND GUARD③	REFRACTOR④	ENCLOSED REFLECTOR
100	H-38	3/4"	QUAD	VMKA-2-50GG	VMKA-2-50G58	—
			TRI	VMKA-2-56GG	VMKA-2-56G58	
			480	VMKA-2-55GG	VMKA-2-55G58	
175	H-39	3/4"	QUAD	VMKA-2-60GG	VMKA-2-60G58	—
			TRI	VMKA-2-66GG	VMKA-2-66G58	
			480	VMKA-2-65GG	VMKA-2-65G58	
250	H-37	3/4"	QUAD	VMKA-2-70GG	VMKA-2-70G58	—
			TRI	VMKA-2-76GG	VMKA-2-76G58	
			480	VMKA-2-75GG	VMKA-2-75G58	
400	H-33	3/4"	QUAD	VMEA-2-80GG	VMEA-2-80G5	VMEA-2-80ER
			TRI	VMEA-2-86GG	VMEA-2-86G5	VMEA-2-86ER
			480	VMEA-2-85GG	VMEA-2-85G5	VMEA-2-85ER

CEILING

100-250W

400W

VM 100-400 WATT MERCURY VAPOR CEILING

WATTS	ANSI LAMP	HUB SIZE②	VOLTAGE @ 60Hz	CATALOG NUMBER		
				GLOBE AND GUARD③	REFRACTOR④	ENCLOSED REFLECTOR
100	H-38	3/4"	QUAD	VMKX-2-50GG	VMKX-2-50G58	—
			TRI	VMKX-2-56GG	VMKX-2-56G58	
			480	VMKX-2-55GG	VMKX-2-55G58	
175	H-39	3/4"	QUAD	VMKX-2-60GG	VMKX-2-60G58	—
			TRI	VMKX-2-66GG	VMKX-2-66G58	
			480	VMKX-2-65GG	VMKX-2-65G58	
250	H-37	3/4"	QUAD	VMKX-2-70GG	VMKX-2-70G58	—
			TRI	VMKX-2-76GG	VMKX-2-76G58	
			480	VMKX-2-75GG	VMKX-2-75G58	
400	H-33	3/4"	QUAD	VMEX-2-80GG	VMEX-2-80G5	VMEX-2-80ER
			TRI	VMEX-2-86GG	VMEX-2-86G5	VMEX-2-86ER
			480	VMEX-2-85GG	VMEX-2-85G5	VMEX-2-85ER

① See hazardous application data on pages L58-L60 for limitations.
*② Hub size shown is 3/4" NPT, for 1" pendant or ceiling, change "**2**" to "**3**" in catalog number; e.g. **VMKA-3-60GG**. For flexible 3/4" pendant mounting, order VMA-24 SU75 w/ ballast tank, optic and guard.*
*③ Omit 2nd "**G**" for Globe only.*
*④ Order Refractor Guards separately. On Series VMK 8" refractors are standard. To order 12" refractor, delete "**8**" from catalog number. To order fixture with other refractors, change catalog number as shown in refractor chart page L54.*

Wall

Cone Top

Class I, Div. 2, Groups A,B,C,D①
Class I, Zone 2, Groups IIC,IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G*
Class III
Suitable for wet locations
UL Marine
NEMA 3, 4X

Listed - Files E10514 and E91793 (Marine)

Certified - File LR11713

WALL

100-250W

400W

VM 100-400 WATT MERCURY VAPOR WALL

WATTS	ANSI LAMP	HUB SIZE②	VOLTAGE @ 60Hz	CATALOG NUMBER		
				GLOBE AND GUARD③	REFRACTOR④	ENCLOSED REFLECTOR
100	H-38	3/4"	QUAD	VMKB-2-50GG	VMKB-2-50G58	—
			TRI	VMKB-2-56GG	VMKB-2-56G58	
			480	VMKB-2-55GG	VMKB-2-55G58	
175	H-39	3/4"	QUAD	VMKB-2-60GG	VMKB-2-60G58	—
			TRI	VMKB-2-66GG	VMKB-2-66G58	
			480	VMKB-2-65GG	VMKB-2-65G58	
250	H-37	3/4"	QUAD	VMKB-2-70GG	VMKB-2-70G58	—
			TRI	VMKB-2-76GG	VMKB-2-76G58	
			480	VMKB-2-75GG	VMKB-2-75G58	
400	H-33	3/4"	QUAD	VMEB-2-80GG	VMEB-2-80G5	—
			TRI	VMEB-2-86GG	VMEB-2-86G5	
			480	VMEB-2-85GG	VMEB-2-85G5	

CONE TOP

100-250W

400W

VM 100-400 WATT MERCURY VAPOR CONE TOP

WATTS	ANSI LAMP	HUB SIZE	VOLTAGE @ 60Hz	CATALOG NUMBER		
				GLOBE AND GUARD③	REFRACTOR④	ENCLOSED REFLECTOR
100	H-38	3/4"	QUAD	VMKC-2-50GG	VMKC-2-50G58	—
			TRI	VMKC-2-56GG	VMKC-2-56G58	
			480	VMKC-2-55GG	VMKC-2-55G58	
175	H-39	3/4"	QUAD	VMKC-2-60GG	VMKC-2-60G58	—
			TRI	VMKC-2-66GG	VMKC-2-66G58	
			480	VMKC-2-65GG	VMKC-2-65G58	
250	H-37	3/4"	QUAD	VMKC-2-70GG	VMKC-2-70G58	—
			TRI	VMKC-2-76GG	VMKC-2-76G58	
			480	VMKC-2-75GG	VMKC-2-75G58	
400	H-33	3/4"	QUAD	VMEC-2-80GG	VMEC-2-80G5	VMEC-2-80ER
			TRI	VMEC-2-86GG	VMEC-2-86G5	VMEC-2-86ER
			480	VMEC-2-85GG	VMEC-2-85G5	VMEC-2-85ER

① *See hazardous application data on pages L58-L60 for limitations.*
② *Hub size shown is 3/4" NPT, for 1" wall bracket, change "**2**" to "**3**" in catalog number; e.g. **VMKB-3-60GG***
③ *Omit 2nd "**G**" for Globe only.*
④ *Order Refractor Guards separately. On Series VMK 8" refractors are standard. To order 12" refractor, delete "**8**" from catalog number. To order fixture with other refractors, change catalog number as shown in refractor chart page L54.*

Stanchion 25° Angle

Stanchion Straight

Class I, Div. 2, Groups A,B,C,D①
Class I, Zone 2, Groups IIC,IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G*
Class III
Suitable for wet locations
UL Marine
NEMA 3, 4X

Listed - Files E10514 and E91793 (Marine)

Certified - File LR11713

STANCHION 25° ANGLE

100-250W

400W

VM 100-400 WATT MERCURY VAPOR STANCHION 25° ANGLE						
WATTS	ANSI LAMP	HUB SIZE②	VOLTAGE @ 60Hz	CATALOG NUMBER		
				GLOBE AND GUARD③	REFRACTOR④	ENCLOSED REFLECTOR
100	H-38	1-1/4"	QUAD	VMKD-4-50GG	VMKD-4-50G58	—
			TRI	VMKD-4-56GG	VMKD-4-56G58	
			480	VMKD-4-55GG	VMKD-4-55G58	
175	H-39	1-1/4"	QUAD	VMKD-4-60GG	VMKD-4-60G58	—
			TRI	VMKD-4-66GG	VMKD-4-66G58	
			480	VMKD-4-65GG	VMKD-4-65G58	
250	H-37	1-1/4"	QUAD	VMKD-4-70GG	VMKD-4-70G58	—
			TRI	VMKD-4-76GG	VMKD-4-76G58	
			480	VMKD-4-75GG	VMKD-4-75G58	
400	H-33	1-1/4"	QUAD	VMED-4-80GG	VMED-4-80G5	VMED-4-80ER
			TRI	VMED-4-86GG	VMED-4-86G5	VMED-4-86ER
			480	VMED-4-85GG	VMED-4-85G5	VMED-4-85ER

STANCHION STRAIGHT

100-250W

400W

VM 100-400 WATT MERCURY VAPOR STANCHION STRAIGHT						
WATTS	ANSI LAMP	HUB SIZE	VOLTAGE @ 60Hz	CATALOG NUMBER		
				GLOBE AND GUARD③	REFRACTOR④	ENCLOSED REFLECTOR
100	H-38	1-1/2"	QUAD	VMKS-5-50GG	VMKS-5-50G58	—
			TRI	VMKS-5-56GG	VMKS-5-56G58	
			480	VMKS-5-55GG	VMKS-5-55G58	
175	H-39	1-1/2"	QUAD	VMKS-5-60GG	VMKS-5-60G58	—
			TRI	VMKS-5-66GG	VMKS-5-66G58	
			480	VMKS-5-65GG	VMKS-5-65G58	
250	H-37	1-1/2"	QUAD	VMKS-5-70GG	VMKS-5-70G58	—
			TRI	VMKS-5-76GG	VMKS-5-76G58	
			480	VMKS-5-75GG	VMKS-5-75G58	
400	H-33	1-1/2"	QUAD	VMES-5-80GG	VMES-5-80G5	—
			TRI	VMES-5-86GG	VMES-5-86G5	
			480	VMES-5-85GG	VMES-5-85G5	

① See hazardous application data on pages L58-L60 for limitations.
*② 25° Stanchion hub size shown is 1-1/4" NPT. For 1-1/2" change "**4**" to "**5**"; e.g. **VMKD-5-60GG**.*
*③ Omit 2nd "**G**" for Globe only.*
*④ Order Refractor Guards separately. On Series VMK 8" refractors are standard . To order 12" refractor, delete "**8**" from catalog number. To order fixture with other refractors, change catalog number as shown in refractor chart page L54.*

AEx nR/Ex nR*
Class I, Div. 2, Groups A,B,C,D*
Class I, Zone 2, Groups IIC, IIB, IIA
Class II, Div. 1 & 2, Groups E,F,G,*
Class III
Suitable for wet locations
UL Marine
NEMA 3, 4X

Listed - Files E10514 and E91793 (Marine)

Certified - File LR11713

FEATURES-SPECIFICATIONS

CERTILITE®

Applications

VM Restricted Breathing option fixtures maintain all the features and compliances listed for standard VM lighting fixtures. An alternate testing and installation method allows much lower Temperature Codes when compared to conventional units. Installation requires sealed entry (conduit or cable). See temperature data charts to determine suitability per applicable construction code. Ex nR Restricted Breathing fixtures are available with globe only, not refractors.

CERTI***LITE***® VM fixtures are designed for installations where moisture, dirt, dust, corrosion and vibration may be present, or NEMA 3 and 4X areas where wind, water, snow or high ambients can be expected. They can be used in locations made hazardous by the presence of flammable vapors or gases or combustible dusts as defined by the NEC.

Typical applications include manufacturing plants, and certain chemical and petrochemical processing facilities, sewage treatment plants, off-shore and dockside installations, garages and storage facilities.

Compliances

- UL-1572 Standard for HID lighting fixtures
- UL Marine type lighting fixtures
- UL-844 Standard for lighting fixtures for hazardous locations, Class I, Division 2; Class II, Divisions 1 and 2; Class III
- CSA C22.2 no. 137-M1981 electric luminaries for use in hazardous locations
- IEC 60079-15 Electrical apparatus with “n” type protection
- Enclosed and gasketed
- NEMA 3, 4X

Features

- Ballast tank and splice box — corrosion resistant copper-free aluminum alloy
- HID lampholders are E-39 mogul base
- Baked powder epoxy/polyester finish, electrostatically applied for complete, uniform corrosion protection
- All external hardware — stainless steel
- Guard — copper-free aluminum alloy
- Reflector — lightweight, corrosion resistant polyester reinforced fiberglass

Electrical

Fixtures are available in

- HPS: 50 through 400 watts
- MH: 70 through 400 watts
- MHP: 175 through 400 watts
- MV: 100 through 400 watts

All ballast circuits are high power factor. Consult catalog logic on page L36 for available voltages.

See hazardous location information page L60 for limitations.

ExnR RESTRICTED BREATHING, 50-400W PENDANT AND CEILING HID

AEx nR / Ex nR① **UL Marine**
Class I, Zone 2, Groups IIC,IIB,IIA NEMA 3, 4X
Class I, Div. 2, Groups A,B,C,D
Class II, Div. 1 & 2, Groups E,F,G
Class III
Suitable for wet locations

Listed - Files E10514 and E91793 (Marine)
Certified - File LR11713

PENDANT⑤

VM standard reflectors may be used. See page L54 for applicable part number.

For Ex nR rated fixtures with enclosed reflectors, add "NR" to catalog number shown on preceding pages e.g. **VMEA-2-80ERNR**.

Restricted Breathing (Ex nR) fixtures are not available with refractors.

① *See hazardous application data on page L60 for limitations.*
② *Hub size shown is 3/4" NPT, for 1" pendant or ceiling change "**2**" to "**3**" in catalog number; e.g. **VMLA-3-40GGNR**.*
*For Flexible 3/4" pendant mounting, order **VMA-24 SU75** w/ ballast tank, optic and guard.*
③ *Omit 2nd "G" for Globe only.*
④ *ANSI Lamp and ballast circuit types are the same as for standard VM fixtures.*
⑤ *See non-Ex nR version pages L37-L48 for wattage tank size.*

CEILING⑤

PENDANT 3/4"② NPT HUB GLOBE & GUARD③

WATTS④	VOLTAGE @ 60Hz	CATALOG NUMBER③ LAMP TYPE			
		HPS	MH	PULSE START MH	MV
50	QUAD	VMLA-2-10GGNR	—	—	—
	TRI	—	—	—	—
	480	—	—	—	—
70	QUAD	VMLA-2-40GGNR	VMMA-2-40GGNR	—	—
	TRI	VMLA-2-46GGNR	VMMA-2-46GGNR	—	—
	480	VMLA-2-45GGNR	VMMA-2-45GGNR	—	—
100	QUAD	VMLA-2-50GGNR	VMMA-2-50GGNR	—	VMKA-2-50GGNR
	TRI	VMLA-2-56GGNR	VMMA-2-56GGNR	—	VMKA-2-56GGNR
	480	VMLA-2-55GGNR	VMMA-2-55GGNR	—	VMKA-2-55GGNR
150	QUAD	VMLA-2-90GGNR	—	—	—
	TRI	VMLA-2-96GGNR	—	—	—
	480	VMLA-2-95GGNR	—	—	—
175	QUAD	—	VMMA-2-60GGNR	VMUA-2-60GGNR	VMKA-2-60GGNR
	TRI	—	VMMA-2-66GGNR	VMUA-2-66GGNR	VMKA-2-66GGNR
	480	—	VMMA-2-65GGNR	VMUA-2-65GGNR	VMKA-2-65GGNR
250	QUAD	VMVA-2-70GGNR	VMMA-2-70GGNR	VMPA-2-70GGNR	VMKA-2-70GGNR
	TRI	VMVA-2-76GGNR	VMMA-2-76GGNR	VMPA-2-76GGNR	VMKA-2-76GGNR
	480	VMVA-2-75GGNR	VMMA-2-75GGNR	VMPA-2-75GGNR	VMKA-2-75GGNR
320	QUAD	—	—	VMPA-2-320GGNR	—
	TRI	—	—	VMPA-2-326GGNR	—
	480	—	—	VMPA-2-325GGNR	—
350	QUAD	—	—	VMPA-2-350GGNR	—
	TRI	—	—	VMPA-2-356GGNR	—
	480	—	—	VMPA-2-355GGNR	—
400	QUAD	VMVA-2-80GGNR	VMFA-2-80GGNR	VMPA-2-80GGNR	VMEA-2-80GGNR
	TRI	VMVA-2-86GGNR	VMFA-2-86GGNR	VMPA-2-86GGNR	VMEA-2-86GGNR
	480	VMVA-2-85GGNR	VMFA-2-85GGNR	VMPA-2-85GGNR	VMEA-2-85GGNR

CEILING 3/4"② NPT HUB GLOBE & GUARD③

WATTS④	VOLTAGE @ 60Hz	CATALOG NUMBER③ LAMP TYPE			
		HPS	MH	PULSE START MH	MV
50	QUAD	VMLX-2-10GGNR	—	—	—
	TRI	—	—	—	—
	480	—	—	—	—
70	QUAD	VMLX-2-40GGNR	VMMX-2-40GGNR	—	—
	TRI	VMLX-2-46GGNR	VMMX-2-46GGNR	—	—
	480	VMLX-2-45GGNR	VMMX-2-45GGNR	—	—
100	QUAD	VMLX-2-50GGNR	VMMX-2-50GGNR	—	VMKX-2-50GGNR
	TRI	VMLX-2-56GGNR	VMMX-2-56GGNR	—	VMKX-2-56GGNR
	480	VMLX-2-55GGNR	VMMX-2-55GGNR	—	VMKX-2-55GGNR
150	QUAD	VMLX-2-90GGNR	—	—	—
	TRI	VMLX-2-96GGNR	—	—	—
	480	VMLX-2-95GGNR	—	—	—
175	QUAD	—	VMMX-2-60GGNR	VMUX-2-60GGNR	VMKX-2-60GGNR
	TRI	—	VMMX-2-66GGNR	VMUX-2-66GGNR	VMKX-2-66GGNR
	480	—	VMMX-2-65GGNR	VMUX-2-65GGNR	VMKX-2-65GGNR
250	QUAD	VMVX-2-70GGNR	VMMX-2-70GGNR	VMPX-2-70GGNR	VMKX-2-70GGNR
	TRI	VMVX-2-76GGNR	VMMX-2-76GGNR	VMPX-2-76GGNR	VMKX-2-76GGNR
	480	VMVX-2-75GGNR	VMMX-2-75GGNR	VMPX-2-75GGNR	VMKX-2-75GGNR
320	QUAD	—	—	VMPX-2-320GGNR	—
	TRI	—	—	VMPX-2-326GGNR	—
	480	—	—	VMPX-2-325GGNR	—
350	QUAD	—	—	VMPX-2-350GGNR	—
	TRI	—	—	VMPX-2-356GGNR	—
	480	—	—	VMPX-2-355GGNR	—
400	QUAD	VMVX-2-80GGNR	VMFX-2-80GGNR	VMPX-2-80GGNR	VMEX-2-80GGNR
	TRI	VMVX-2-86GGNR	VMFX-2-86GGNR	VMPX-2-86GGNR	VMEX-2-86GGNR
	480	VMVX-2-85GGNR	VMFX-2-85GGNR	VMPX-2-85GGNR	VMEX-2-85GGNR

HUBBELL
KILLARK®

AEx nR / Ex nR ①
Class I, Zone 2, Groups IIC,IIB,IIA
Class I, Div. 2, Groups A,B,C,D
Class II, Div. 1 & 2, Groups E,F,G
Class III
Suitable for wet locations

UL Marine
NEMA 3, 4X

Listed - Files E10514 and E91793 (Marine)
Certified - File LR11713

WALL ⑤

VM standard reflectors may be used. See page L54 for applicable part number.

For Ex nR rated fixtures with enclosed reflectors, add "NR" to catalog number shown on preceding pages e.g. **VMEC-2-80ERNR**.

Restricted Breathing (Ex nR) fixtures are not available with refractors.

① *See hazardous application data on page L60 for limitations.*
② *Hub size shown is 3/4" NPT, for 1" wall change "**2**" to "**3**" in catalog number; e.g. **VMLB-3-40GGNR**.*
③ *Omit 2nd "G" for Globe only.*
④ *ANSI Lamp and ballast circuit types are the same as for standard VM fixtures.*
⑤ *See non-Ex nR version pages L37-L48 for wattage tank size.*

CONE TOP ⑤

WALL 3/4"② NPT HUB GLOBE & GUARD③

WATTS④	VOLTAGE @ 60Hz	CATALOG NUMBER LAMP TYPE			
		HPS	MH	PULSE START MH	MV
50	QUAD	VMLB-2-10GGNR	—	—	—
	TRI	—	—	—	—
	480	—	—	—	—
70	QUAD	VMLB-2-40GGNR	VMMB-2-40GGNR	—	—
	TRI	VMLB-2-46GGNR	VMMB-2-46GGNR	—	—
	480	VMLB-2-45GGNR	VMMB-2-45GGNR	—	—
100	QUAD	VMLB-2-50GGNR	VMMB-2-50GGNR	—	VMKB-2-50GGNR
	TRI	VMLB-2-56GGNR	VMMB-2-56GGNR	—	VMKB-2-56GGNR
	480	VMLB-2-55GGNR	VMMB-2-55GGNR	—	VMKB-2-55GGNR
150	QUAD	VMLB-2-90GGNR	—	—	—
	TRI	VMLB-2-96GGNR	—	—	—
	480	VMLB-2-95GGNR	—	—	—
175	QUAD	—	VMMB-2-60GGNR	VMUB-2-60GGNR	VMKB-2-60GGNR
	TRI	—	VMMB-2-66GGNR	VMUB-2-66GGNR	VMKB-2-66GGNR
	480	—	VMMB-2-65GGNR	VMUB-2-65GGNR	VMKB-2-65GGNR
250	QUAD	VMVB-2-70GGNR	VMMB-2-70GGNR	VMPB-2-70GGNR	VMKB-2-70GGNR
	TRI	VMVB-2-76GGNR	VMMB-2-76GGNR	VMPB-2-76GGNR	VMKB-2-76GGNR
	480	VMVB-2-75GGNR	VMMB-2-75GGNR	VMPB-2-75GGNR	VMKB-2-75GGNR
320	QUAD	—	—	VMPB-2-320GGNR	—
	TRI	—	—	VMPB-2-326GGNR	—
	480	—	—	VMPB-2-325GGNR	—
350	QUAD	—	—	VMPB-2-350GGNR	—
	TRI	—	—	VMPB-2-356GGNR	—
	480	—	—	VMPB-2-355GGNR	—
400	QUAD	VMVB-2-80GGNR	VMFB-2-80GGNR	VMPB-2-80GGNR	VMEB-2-80GGNR
	TRI	VMVB-2-86GGNR	VMFB-2-86GGNR	VMPB-2-86GGNR	VMEB-2-86GGNR
	480	VMVB-2-85GGNR	VMFB-2-85GGNR	VMPB-2-85GGNR	VMEB-2-85GGNR

CONE TOP 3/4" NPT HUB GLOBE & GUARD③

WATTS④	VOLTAGE @ 60Hz	CATALOG NUMBER LAMP TYPE			
		HPS	MH	PULSE START MH	MV
50	QUAD	VMLC-2-10GGNR	—	—	—
	TRI	—	—	—	—
	480	—	—	—	—
70	QUAD	VMLC-2-40GGNR	VMMC-2-40GGNR	—	—
	TRI	VMLC-2-46GGNR	VMMC-2-46GGNR	—	—
	480	VMLC-2-45GGNR	VMMC-2-45GGNR	—	—
100	QUAD	VMLC-2-50GGNR	VMMC-2-50GGNR	—	VMKC-2-50GGNR
	TRI	VMLC-2-56GGNR	VMMC-2-56GGNR	—	VMKC-2-56GGNR
	480	VMLC-2-55GGNR	VMMC-2-55GGNR	—	VMKC-2-55GGNR
150	QUAD	VMLC-2-90GGNR	—	—	—
	TRI	VMLC-2-96GGNR	—	—	—
	480	VMLC-2-95GGNR	—	—	—
175	QUAD	—	VMMC-2-60GGNR	VMUC-2-60GGNR	VMKC-2-60GGNR
	TRI	—	VMMC-2-66GGNR	VMUC-2-66GGNR	VMKC-2-66GGNR
	480	—	VMMC-2-65GGNR	VMUC-2-65GGNR	VMKC-2-65GGNR
250	QUAD	VMVC-2-70GGNR	VMMC-2-70GGNR	VMPC-2-70GGNR	VMKC-2-70GGNR
	TRI	VMVC-2-76GGNR	VMMC-2-76GGNR	VMPC-2-76GGNR	VMKC-2-76GGNR
	480	VMVC-2-75GGNR	VMMC-2-75GGNR	VMPC-2-75GGNR	VMKC-2-75GGNR
320	QUAD	—	—	VMPC-2-320GGNR	—
	TRI	—	—	VMPC-2-326GGNR	—
	480	—	—	VMPC-2-325GGNR	—
350	QUAD	—	—	VMPC-2-350GGNR	—
	TRI	—	—	VMPC-2-356GGNR	—
	480	—	—	VMPC-2-355GGNR	—
400	QUAD	VMVC-2-80GGNR	VMFC-2-80GGNR	VMPC-2-80GGNR	VMEC-2-80GGNR
	TRI	VMVC-2-86GGNR	VMFC-2-86GGNR	VMPC-2-86GGNR	VMEC-2-86GGNR
	480	VMVC-2-85GGNR	VMFC-2-85GGNR	VMPC-2-85GGNR	VMEC-2-85GGNR

AEx nR / Ex nR①
Class I, Zone 2, Groups IIC,IIB,IIA
Class I, Div. 2, Groups A,B,C,D
Class II, Div. 1 & 2, Groups E,F,G
Class III
Suitable for wet locations

UL Marine
NEMA 3, 4X

Listed - Files E10514 and E91793 (Marine)
Certified - File LR11713

STANCHION⑤ 25° ANGLE

VM standard reflectors may be used. See page L54 for applicable part number.

For Ex nR rated fixtures with enclosed reflectors, add "**NR**" to catalog number shown on preceding pages e.g. **VMED-4-80ERNR**.

Restricted Breathing (Ex nR) fixtures are not available with refractors.

① *See hazardous application data on page L60 for limitations.*
② *25° stanchion hub size shown in 1-1/4" NPT. For 1-1/2" change "**4**" to "**5**" e.g. **VMLD-5-10GGNR**.*
③ *Omit 2nd "G" for Globe only.*
④ *ANSI Lamp and ballast circuit types are the same as for standard VM fixtures.*
⑤ *See non-Ex nR version pages L37-L48 for wattage tank size.*

STANCHION⑤ STRAIGHT

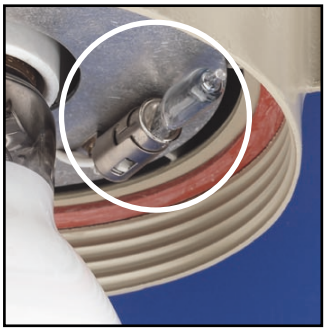
25° STANCHION 1-1/4"② NPT HUB GLOBE & GUARD③

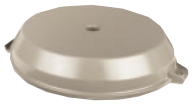
WATTS④	VOLTAGE @ 60Hz	CATALOG NUMBER LAMP TYPE			
		HPS	MH	PULSE START MH	MV
50	QUAD	VMLD-4-10GGNR	—	—	—
	TRI	—	—	—	—
	480	—	—	—	—
70	QUAD	VMLD-4-40GGNR	VMMD-4-40GGNR	—	—
	TRI	VMLD-4-46GGNR	VMMD-4-46GGNR	—	—
	480	VMLD-4-45GGNR	VMMD-4-45GGNR	—	—
100	QUAD	VMLD-4-50GGNR	VMMD-4-50GGNR	—	VMKD-4-50GGNR
	TRI	VMLD-4-56GGNR	VMMD-4-56GGNR	—	VMKD-4-56GGNR
	480	VMLD-4-55GGNR	VMMD-4-55GGNR	—	VMKD-4-55GGNR
150	QUAD	VMLD-4-90GGNR	—	—	—
	TRI	VMLD-4-96GGNR	—	—	—
	480	VMLD-4-95GGNR	—	—	—
175	QUAD	—	VMMD-4-60GGNR	VMUD-4-60GGNR	VMKD-4-60GGNR
	TRI	—	VMMD-4-66GGNR	VMUD-4-66GGNR	VMKD-4-66GGNR
	480	—	VMMD-4-65GGNR	VMUD-4-65GGNR	VMKD-4-65GGNR
250	QUAD	VMVD-4-70GGNR	VMMD-4-70GGNR	VMPD-4-70GGNR	VMKD-4-70GGNR
	TRI	VMVD-4-76GGNR	VMMD-4-76GGNR	VMPD-4-76GGNR	VMKD-4-76GGNR
	480	VMVD-4-75GGNR	VMMD-4-75GGNR	VMPD-4-75GGNR	VMKD-4-75GGNR
320	QUAD	—	—	VMPD-4-320GGNR	—
	TRI	—	—	VMPD-4-326GGNR	—
	480	—	—	VMPD-4-325GGNR	—
350	QUAD	—	—	VMPD-4-350GGNR	—
	TRI	—	—	VMPD-4-356GGNR	—
	480	—	—	VMPD-4-355GGNR	—
400	QUAD	VMVD-4-80GGNR	VMFD-4-80GGNR	VMPD-4-80GGNR	VMED-4-80GGNR
	TRI	VMVD-4-86GGNR	VMFD-4-86GGNR	VMPD-4-86GGNR	VMED-4-86GGNR
	480	VMVD-4-85GGNR	VMFD-4-85GGNR	VMPD-4-85GGNR	VMED-4-85GGNR

STRAIGHT STANCHION 1-1/2" NPT HUB GLOBE & GUARD③

WATTS④	VOLTAGE @ 60Hz	CATALOG NUMBER LAMP TYPE			
		HPS	MH	PULSE START MH	MV
50	QUAD	VMLS-5-10GGNR	—	—	—
	TRI	—	—	—	—
	480	—	—	—	—
70	QUAD	VMLS-5-40GGNR	VMMS-5-40GGNR	—	—
	TRI	VMLS-5-46GGNR	VMMS-5-46GGNR	—	—
	480	VMLS-5-45GGNR	VMMS-5-45GGNR	—	—
100	QUAD	VMLS-5-50GGNR	VMMS-5-50GGNR	—	VMKS-5-50GGNR
	TRI	VMLS-5-56GGNR	VMMS-5-56GGNR	—	VMKS-5-56GGNR
	480	VMLS-5-55GGNR	VMMS-5-55GGNR	—	VMKS-5-55GGNR
150	QUAD	VMLS-5-90GGNR	—	—	—
	TRI	VMLS-5-96GGNR	—	—	—
	480	VMLS-5-95GGNR	—	—	—
175	QUAD	—	VMMS-5-60GGNR	VMUS-5-60GGNR	VMKS-5-60GGNR
	TRI	—	VMMS-5-66GGNR	VMUS-5-66GGNR	VMKS-5-66GGNR
	480	—	VMMS-5-65GGNR	VMUS-5-65GGNR	VMKS-5-65GGNR
250	QUAD	VMVS-5-70GGNR	VMMS-5-70GGNR	VMPS-5-70GGNR	VMKS-5-70GGNR
	TRI	VMVS-5-76GGNR	VMMS-5-76GGNR	VMPS-5-76GGNR	VMKS-5-76GGNR
	480	VMVS-5-75GGNR	VMMS-5-75GGNR	VMPS-5-75GGNR	VMKS-5-75GGNR
320	QUAD	—	—	VMPS-5-320GGNR	—
	TRI	—	—	VMPS-5-326GGNR	—
	480	—	—	VMPS-5-325GGNR	—
350	QUAD	—	—	VMPS-5-350GGNR	—
	TRI	—	—	VMPS-5-356GGNR	—
	480	—	—	VMPS-5-355GGNR	—
400	QUAD	VMVS-5-80GGNR	VMFS-5-80GGNR	VMPS-5-80GGNR	VMES-5-80GGNR
	TRI	VMVS-5-86GGNR	VMFS-5-86GGNR	VMPS-5-86GGNR	VMES-5-86GGNR
	480	VMVS-5-85GGNR	VMFS-5-85GGNR	VMPS-5-85GGNR	VMES-5-85GGNR

HUBBELL
KILLARK®




Pendant


Ceiling


Wall


Cone Top


25° Stanchion


Straight Stanchion

Auxiliary Lighting

Momentary voltage outages or dips can temporarily extinguish HID lamps which may require up to ten (10) minutes to restrike. To provide illumination during this period, about 10% of the fixtures should be specified with auxiliary lighting.

Quartz Auxiliary

Quartz auxiliary is available for all VM Series fixtures (except those with plastic refractors) by adding the suffix QTZ to the fixture catalog number. Example: VMLA-2-90GG-QTZ.

Series VML, VMK, VMM and VMV fixtures with this option use 100 or 150 watt quartz lamps. Series VMV, VME and VMF high wattage fixtures can use up to 250 watt quartz lamps. Quartz lamps are not supplied with the fixture. Use quartz lamp type Q100 CL/DC (100W) or Q150 CL/DC (150W) DC Bayonet T-4 Base.

Due to the quartz envelope surface temperature (exceeding 600°C), fixtures with this option are not suitable for Class I, Division 2, Class I, Zone 2, some Class I, Zone 2 Ex nR, Class II and Class III hazardous locations. Contact the factory for specific fixture suitabilities.

Instant Restart

Available for 50-150 Watt VML Series High Pressure Sodium Fixtures by adding Suffix "**IR**" to catalog number (Example: **VMLA-2-50GG-IR**).

Additional instant restart interior circuitry may decrease High Pressure Sodium lamp life. Feature will not affect fixture suitability in hazardous location applications.

Ballast Protection Circuit

Optional factory installed special ballast protector replaces the standard HPS ignitor and applies starting pulse to the lamp for 10 to 15 seconds each time voltage is supplied to the ballast. If the lamp has not ignited by the end of the time period, the starter will cease pulsing. Used to eliminate the continuous high voltage pulsing of the ignitor when end of life, lamp cycling, or missing lamp conditions exist. Available for 70, 100, 150, 250 and 400 watt HPS fixtures. Add suffix "BP" to fixture catalog number.

Notes: BP and IR cannot be used together. QTZ and IR cannot be used together.

VM MOUNTING SPLICE BOX

CATALOG NUMBER							HUB SIZE
PENDANT①	PENDANT②	CEILING	WALL	CONE TOP	25° STANCHION	STRAIGHT STANCHION	
VMA-2	VMA-24	VMX-2	VMB-2	VMC-2	—	—	3/4"
VMA-3	—	VMX-3	VMB-3	—	—	—	1"
—	—	—	—	—	VMD-4	—	1-1/4"
—	—	—	—	—	VMD-5	VMDS-5	1-1/2"

①*For use with Series VML, VMK, VMM and VMU fixtures.*
②*For use with Series VMV, VME, VMF and VMP fixtures.*
Flexible pendant mounting-order VMA-24 with suffix SU75.
Cone top pendant not suitable for flexible mounting.


50-250 Watt


250-400 Watt

50-400W BALLAST TANK ASSEMBLY

WATTS	VOLTAGE @ 60Hz	CATALOG NUMBER LAMP TYPE			
		HPS	MH	PULSE START MH	MV
50	Quad	VMLO-0-100	—	—	—
	Tri	—	—	—	—
	480	—	—	—	—
70	Quad	VMLO-0-400	VMMO-0-400	—	—
	Tri	VMLO-0-460	VMMO-0-460	—	—
	480	VMLO-0-450	VMMO-0-450	—	—
100	Quad	VMLO-0-500	VMMO-0-500	—	VMKO-0-500
	Tri	VMLO-0-560	VMMO-0-560	—	VMKO-0-560
	480	VMLO-0-550	VMMO-0-550	—	VMKO-0-550
150	Quad	VMLO-0-900	—	—	—
	Tri	VMLO-0-960	—	—	—
	480	VMLO-0-950	—	—	—
175	Quad	—	VMMO-0-600	VMUO-0-600	VMKO-0-600
	Tri	—	VMMO-0-660	VMUO-0-660	VMKO-0-660
	480	—	VMMO-0-650	VMUO-0-650	VMKO-0-650
250	Quad	VMVO-0-700	VMMO-0-700	VMPO-0-700	VMKO-0-700
	Tri	VMVO-0-760	VMMO-0-760	VMPO-0-760	VMKO-0-760
	480	VMVO-0-750	VMMO-0-750	VMPO-0-750	VMKO-0-750
320	Quad	—	—	VMPO-0-3200	—
	Tri	—	—	VMPO-0-3260	—
	480	—	—	VMPO-0-3250	—
350	Quad	—	—	VMPO-0-3500	—
	Tri	—	—	VMPO-0-3560	—
	480	—	—	VMPO-0-3550	—
400	Quad	VMVO-0-800	VMFO-0-800	VMPO-0-800	VMEO-0-800
	Tri	VMVO-0-860	VMFO-0-860	VMPO-0-860	VMEO-0-860
	480	VMVO-0-850	VMFO-0-850	VMPO-0-850	VMEO-0-850

*Note: For Class I, Zone 2 ExnR Restricted Breathing ballast housings, add "**NR**" suffix to catalog number; e.g. **VMLO-0-400NR**. "**NR**" ballast housings are NOT approved for use with refractors.*

Globes


VMG-17


VMGTC-17*


VMG-40

Guards


VMAG-17


VMAG-40

VM SERIES GLOBES & GUARDS					
SERIES	CATALOG NUMBER				DESCRIPTION
	GLOBE	TUFF-SKIN COATED*	TEFLON COATED**	GUARD	
VML,VMM VMU, VMK	VMG-17	VMGT-17	VMGTC-17	VMAG-17	"Small tank" heat and impact resistant glass globe; aluminum guard.
VMV, VMF VMP, VME	VMG-40	—	—	VMAG-40	"Large tank" heat and impact resistant glass globe; plated steel wire guard.

*Registered trademark of Thomas Manufacturing Corp.
**Registered trademark of DuPont, Inc.
Coatings for added resistance to thermal shock, but diminish light output and may hinder heat dissipation.

Refractor Guards


12" VMRWG
8" VMRWG-8

LOW WATTAGE REFRACTORS & GUARDS						
I.E.S. TYPE	CATALOG NUMBER					
	8" GLASS	SUFFIX	12" GLASS	SUFFIX	12" PLASTIC	SUFFIX
I	—	—	VZRG-2510	G1	—	—
V	VZRG-1550	G58	VZRG-2550	G5	VZRP-175	P5
Guard	VMRWG-8	—	VMRWG	—	VMRWG	—

*To order a fixture with a glass or plastic 12" refractor, change the last 3 numbers from **G58** to the appropriate number found on the chart above. For instance, a **VMLA-2-40G58** to a 12" Type V Plastic Refractor, becomes a **VMLA-2-40P5**. To figure the price, subtract the cost of the 8" refractor from the 12" refractor. Add the cost difference to the fixture ending with **G58**. Low wattage glass refractors are available with Tuffskin coating for added shatter resistance. Add "**T**" to catalog number e.g. **VZRGT-1550**.*
Closed bottom glass refractors for use on VMK, VML, VMU and VMM Series up to 250 watts.
12" Closed bottom low wattage plastic refractors for use on VMK, VML, VMU and VMM Series up to 175 watts and are not hazardous location listed.


Standard Dome


Angle


Deep①


Enclosed②

VM POLYESTER REINFORCED FIBERGLASS REFLECTORS								
SERIES	CATALOG NUMBER							
	STANDARD	DIA.	ANGLE	DIA.	DEEP	DIA.	ENCLOSED	DIA.
VML, VMM VMU, VMK	VMPSD-17	16"	VMPA-17	16"	—	—	—	—
VMV, VMF VMP, VME	VMPSD-40	16"	VMPA-40	16"	HRD-400①	21"	VMER40②	18.25"

Notes: Standard and Angle Reflectors are White Reinforced Fiberglass.
*①Deep Reflectors are aluminum with white baked enamel. Also available with Alzak finish, catalog number **HRD400-ALZ**.*
②Enclosed Reflectors are Alzak (tm Alcoa) aluminum with heat-tempered lens.


VMCHVM adapter for upgrading existing Crouse-Hinds® to Killark, see page L147 for more information.


ENY-2SET

VM ACCESSORIES	
CATALOG NUMBER	DESCRIPTION
ENY-2SET 3/4"	Pendant seal for Ex nR applications. See p. L146 for more information.
ENY-3SET 1"	
VMCHVM	Adapter

NOTE: Ex nR fixtures and ballast tanks are not rated for use with refractors

HIGH WATTAGE REFRACTORS & GUARDS	
I.E.S. TYPE	CATALOG NUMBER
II	VZRG-4020
V	VZRG-4050
Guard	VMRWG

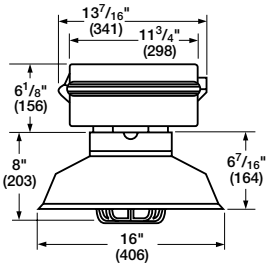
Closed bottom glass refractors for use on VME, VMF, VMP and VMV Series up to 400 watts

PHOTO CONTROL KITS			
CATALOG NUMBER	VOLTS	WATTS	RATING
KIT 102	120	900W	1800VA
KIT 104	240 (50/60Hz)	900W	1800VA
KIT 105	277	900W	1800VA
KIT 106	480	900W	1800VA

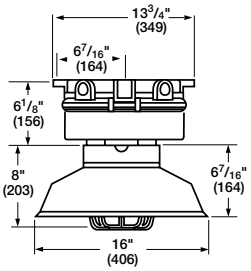
(Not for Hazardous Locations)
Separate photo control kits are designed to turn fixtures on and off at predetermined light levels which may be adjusted. These kits must be installed separately in the electrical system. Suitable for all wattages. Select proper voltage.

VM SOCKET REPLACEMENTS	
CATALOG NUMBER	DESCRIPTION
0735015B	Mogul socket all VM
16255AAAB	Quartz socket VMK, VML, VMM, VMU
0735033B	Quartz socket VME, VMF, VMP, VMV

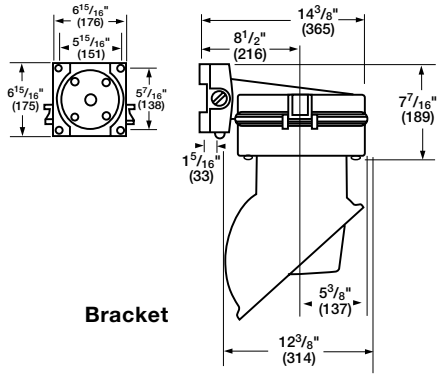
Dimensions — VMK, VML, VMM, VMU



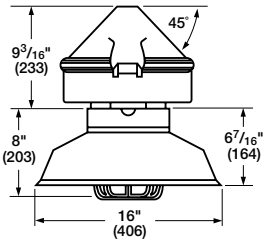
Pendant



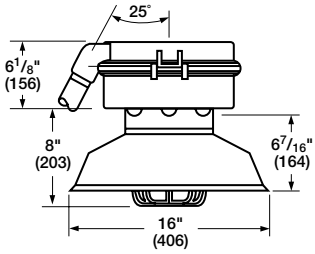
Ceiling



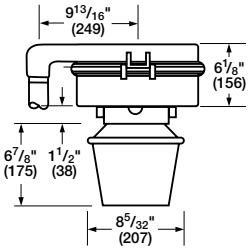
Bracket



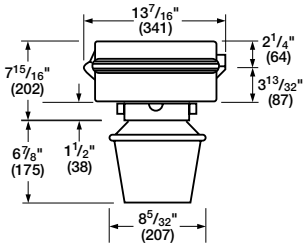
Cone Top



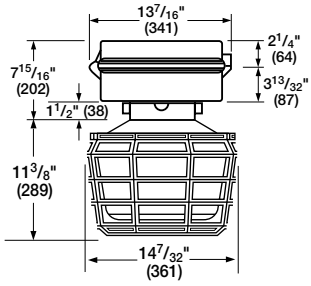
25° Stanchion



Straight Stanchion

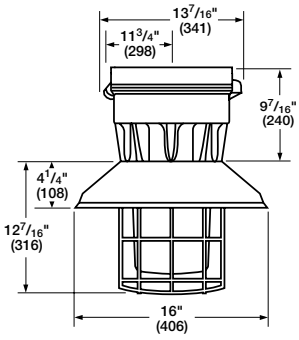


8" Refractor Assembly

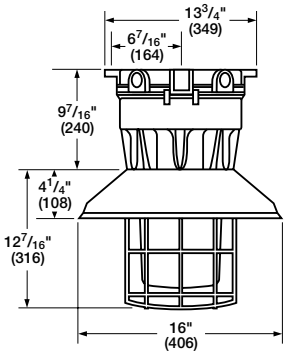


12" Refractor Assembly

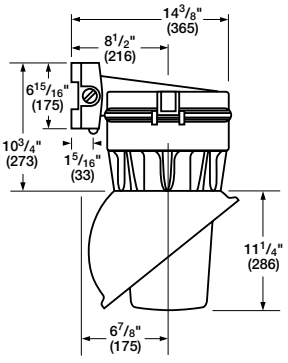
Dimensions — VME, VMF, VMP, VMV



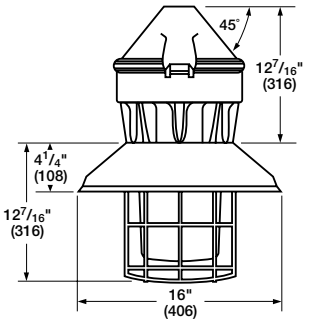
Pendant



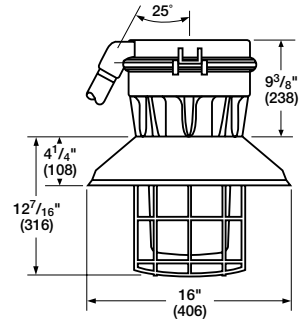
Ceiling



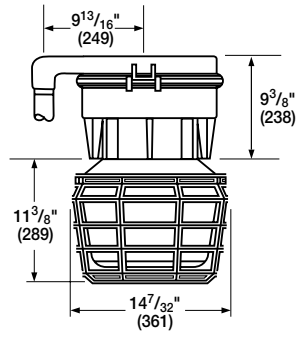
Bracket



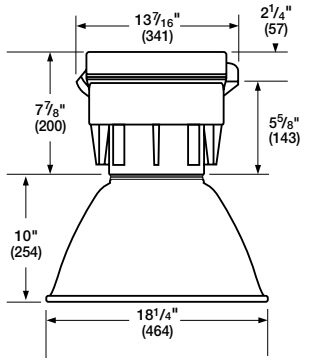
Cone Top



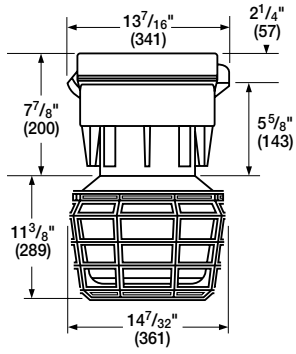
25° Stanchion



Straight Stanchion



Enclosed Reflector



12" Refractor Assembly

L

HUBBELL
KILLARK®

BALLAST DATA & FUSE KITS①

LAMP SOURCE	LAMP WATTS/TYPE	VOLTAGE	CURRENT (AMPS) START	CURRENT (AMPS) OPERATING	CURRENT (AMPS) OPEN	INPUT WATTS	BALLAST CIRCUIT①	REGULATION	MIN. START	VM FUSE KIT	EZ FUSE KIT
HPS	50 S-68	120	.58	.58	1.24	62	HX/HPF	±5% VOLTAGE* ±12% WATTAGE	-40C -40F	KIT-138	1FK-3
		208	.35	.33	.59					KIT-135	2FK-2
		240	.30	.29	.50					KIT-135	2FK-2
		277	.24	.25	.44					KIT-134	1FK-2
HPS	70 S-62	120	.75	.81	1.45	93	HX/HPF	±5% VOLTAGE* ±12% WATTAGE	-40C -40F	KIT-136	1FK-5
		208	.45	.47	.85					KIT-135	2FK-3
		240	.35	.40	.75					KIT-135	2FK-2
		277	.37	.35	.65					KIT-134	1FK-2
		480	.21	.21	.36					KIT-135	2FK-2
		347	.28	.30	0.52					KIT-134	1FK-2
HPS	100 S-54	120	1.30	1.15	2.20	130	HX/HPF	±5% VOLTAGE* ±12% WATTAGE	-40C -40F	KIT-140	1FK-7
		208	.76	.67	1.27					KIT-137	2FK-5
		240	.66	.58	1.10					KIT-135	2FK-3
		277	.60	.50	.85					KIT-134	1FK-3
		480	0.35	0.29	.55					KIT-134	2FK-3
		347	.44	.39	.70					KIT-137	1FK-3
		220-240/50	.56/.51	.67/.62	1.28/1.17					KIT-135	2FK-3
HPS	150 (55 VOLT LAMP) S-55	120	2.00	1.65	2.80	188	HX/HPF	±5% VOLTAGE* ±12% WATTAGE	-40C -40F	KIT-142	1FK-10
		208	1.15	.95	1.60					KIT-137	2FK-5
		240	1.00	.83	1.40					KIT-137	2FK-5
		277	.85	.72	1.25					KIT-136	1FK-4
		480	.50	.42	.70					KIT-137	2FK-2
		347	.52	.59	.92					KIT-134	1FK-3
		220-240/50	1.27/1.16	.91/.83	1.52/1.40					KIT-135	2FK-5
HPS	250 S-50	120	1.80	2.75	1.50	295	CWA	±10% VOLTAGE* ±5% WATTAGE	-40C -40F	KIT-142	1FK-7
		208	1.00	1.60	.87					KIT-137	2FK-4
		240	.90	1.38	.75					KIT-137	2FK-4
		277	.78	1.20	.65					KIT-134	1FK-3
		480	.38	.69	.37					KIT-135	2FK-2
		347	.56	.93	.75					KIT-134	1FK-2
		220-240/50	1.00/.90	.91/.83	.90/.80					KIT-137	2FK-5
HPS	400 S-51	120	2.82	4.30	1.83	464	CWA	±10% VOLTAGE* ±5% WATTAGE	-40C -40F	KIT-144	1FK-10
		208	1.56	2.48	1.15					KIT-143	2FK-8
		240	1.36	2.15	.84					KIT-143	2FK-5
		277	1.18	1.86	.71					KIT-136	1FK-5
		480	.60	1.00	.75					KIT-137	2FK-8
		347	1.05	1.40	.75					KIT-136	1FK-5
		220-240/50	1.65/1.50	2.30/2.10	1.20/1.10					KIT-139	2FK-5
MH	70 M-98	120	.80	.85	1.70	90	HX-HPF	±5% VOLTAGE ±12% WATTAGE	-30C -20F	KIT-136	1FK-4
		208	.50	.50	1.04					KIT-137	2FK-3
		240	.43	.43	.87					KIT-137	2FK-2
		277	.39	.39	.78					KIT-135	1FK-2
		480	0.19	0.23	.50					KIT-134	2FK-2
		347	.30	.30	.60					KIT-135	1FK-2
MH	100 M-90	120	1.20	2.60	1.15	129	HX-HPF	±5% VOLTAGE ±12% WATTAGE	-30C -20F -30C -20F	KIT-138	1FK-6
		208	.70	1.50	.60					KIT-137	2FK-4
		240	.61	1.30	.55					KIT-137	2FK-3
		277	.55	1.15	.45					KIT-134	1FK-3
		480	0.30	0.30	0.55					KIT-134	2FK-3
		347	.40	.90	.40					KIT-137	1FK-2
		220-240/50	.45/.41	.52/.51	.60/.85					KIT-135	2FK-2
MH	175 M-57	120	.80	1.80	1.80	210	CWA	±10% VOLTAGE ±5% WATTAGE	-30C -20F	KIT-136	1FK-5
		208	.42	1.04	1.04					KIT-135	2FK-3
		240	.42	.90	.90					KIT-135	2FK-3
		277	.35	.78	.78					KIT-134	1FK-2
		480	.22	.45	.45					KIT-135	2FK-2
		347	.42	.62	.62					KIT-134	1FK-2
		220-240/50	.60/.55	.98/.90	.97/.89					KIT-135	2FK-2
MH	250 M-58	120	1.25	2.60	2.50	294	CWA	±10% VOLTAGE ±5% WATTAGE	-30C -20F	KIT-142	1FK-8
		208	.65	1.50	1.58					KIT-137	2FK-5
		240	.60	1.30	1.25					KIT-137	2FK-5
		277	.50	1.12	1.10					KIT-134	1FK-3
		480	.25	.65	.65					KIT-135	2FK-2
		347	.90	.95	.65					KIT-???	1FK-3
		220-240/50	.94/.86	1.35/1.24	1.20/1.10					KIT-137	2FK-3
MH	400 M-59	120	1.10	4.00	3.80	458	CWA	±10% VOLTAGE ±5% WATTAGE	-30C -20F	KIT-142	1FK-10
		208	.70	2.30	2.20					KIT-141	2FK-7
		240	.52	2.00	1.90					KIT-137	2FK-5
		277	.45	1.75	1.65					KIT-136	1FK-5
		480	.38	1.00	1.00					KIT-137	2FK-3
		347	1.20	1.40	1.35					KIT-137	1FK-5
		220-240/50	1.30/1.19	2.20/2.00	2.10/1.93					KIT-139	2FK-3

① *Fuse kits, for field installation, must be used within guidelines of governing Electric Codes. Fuses not permitted by CSA C22.2 no. 37 for Canada.*
② *All ballasts circuits are High Power Factor 90%+.*
** Lamp watts: within ANSI trapezoid limitations.*
Consult major lamp & ballast manufacturer catalogs if more detailed data is needed.

BALLAST DATA & FUSE KIT①

LAMP SOURCE	LAMP WATTS/TYPE	VOLTAGE	CURRENT (AMPS) START	CURRENT (AMPS) OPERATING	CURRENT (AMPS) OPEN	INPUT WATTS	BALLAST CIRCUIT②	REGULATION	MIN. START	VM FUSE KIT	EZ FUSE KIT
MHP	175 M-137	120	0.95	1.80	1.80	208	CWA	±10% VOLTAGE ±10% WATTAGE	-30C -20F	KIT-136	1FK-5
		208	0.55	1.05	1.05					KIT-135	2FK-3
		240	0.45	0.90	0.90					KIT-135	2FK-3
		277	0.40	0.80	0.80					KIT-134	1FK-2
		480	0.25	0.50	0.45					KIT-135	2FK-2
		347	0.4	0.70	0.60					KIT-134	1FK-8
MHP	250 M-138	120	2.30	2.50	1.40	288	CWA	±10% VOLTAGE ±10% WATTAGE	-30C -20F	KIT-142	1FK-8
		208	1.30	1.45	0.80					KIT-137	2FK-5
		240	1.15	1.25	0.70					KIT-137	2FK-5
		277	1.00	1.10	0.60					KIT-134	1FK-3
		480	0.21	0.57	0.48					KIT-135	2FK-2
		347	0.45	0.95	0.75					KIT-134	1FK-3
MHP	320 M-132	120	1.80	3.25	2.30	365	CWA	±10% VOLTAGE ±10% WATTAGE	-30C -20F	KIT-142	1FK-8
		208	1.05	1.90	1.35					KIT-139	2FK-6
		240	0.30	1.65	1.15					KIT-137	2FK-5
		277	0.80	1.40	1.00					KIT-134	1FK-3
		480	0.45	0.80	0.60					KIT-135	2FK-5
		347	0.70	1.10	0.80					KIT-134	1FK-5
MHP	350 M-131	120	2.20	3.40	2.20	400	CWA	±10% VOLTAGE ±10% WATTAGE	-30C -20F	KIT-142	1FK-10
		208	1.30	2.00	1.30					KIT-141	2FK-7
		240	1.10	1.70	1.10					KIT-137	2FK-5
		277	1.00	1.50	1.00					KIT-136	1FK-5
		480	0.60	0.85	0.60					KIT-135	2FK-3
		347	0.85	1.20	0.80					KIT-134	1FK-3
MHP	400 M-135	120	2.85	3.80	2.20	452	CWA	±10% VOLTAGE ±10% WATTAGE	-30C -20F	KIT-142	1FK-10
		208	1.65	2.20	1.50					KIT-141	2FK-7
		240	1.45	1.90	1.10					KIT-137	2FK-5
		277	1.25	1.65	0.95					KIT-136	1FK-5
		480	0.75	1.00	0.60					KIT-137	2FK-3
		347	1.10	1.35	0.75					KIT-136	1FK-3
MV	100 H-38	120	1.00	1.05	0.64	125	CWA	±10% VOLTAGE ±5% WATTAGE	-30C -20F	KIT-134	1FK-3
		208	0.58	0.60	0.37					KIT-135	2FK-2
		240	0.50	0.52	0.32					KIT-135	2FK-2
		277	0.43	0.45	0.28					KIT-134	1FK-2
		480	0.25	0.26	0.16					KIT-135	2FK-1
		347	0.35	0.40	0.20					KIT-134	1FK-1
		220-240/50	.56/.51	.59/.54	.25/.23					KIT-135	2FK-2
MV	175 H-39	120	1.70	1.75	0.86	205	CWA	±10% VOLTAGE ±5% WATTAGE	-30C -20F	KIT-136	1FK-5
		208	0.98	1.00	0.50					KIT-135	2FK-3
		240	0.85	0.88	0.43					KIT-135	2FK-3
		277	0.74	0.76	0.37					KIT-134	1FK-2
		480	0.41	0.44	0.20					KIT-135	2FK-2
		347	0.60	0.60	0.21					KIT-134	1FK-2
		220-240/50	.83/.76	.97/.89	.62/.57					KIT-135	2FK-2
MV	250 H-37	120	2.40	2.50	0.60	285	CWA	±10% VOLTAGE ±5% WATTAGE	-30C -20F	KIT-142	1FK-8
		208	1.40	1.45	0.35					KIT-137	2FK-5
		240	1.20	1.25	0.30					KIT-137	2FK-5
		277	1.00	1.10	0.29					KIT-134	1FK-3
		480	0.60	0.62	0.20					KIT-135	2FK-2
		347	0.80	0.85	0.50					KIT-134	1FK-3
		220-240/50	1.40/1.28	1.40/1.28	.38/.35					KIT-137	2FK-5
MV	400 H-33	120	2.90	3.90	1.30	454	CWA	±10% VOLTAGE ±5% WATTAGE	-30C -20F	KIT-142	1FK-10
		208	1.67	2.20	0.75					KIT-143	2FK-8
		240	1.45	1.95	0.65					KIT-137	2FK-5
		277	1.25	1.70	0.56					KIT-136	1FK-5
		480	0.95	0.98	0.24					KIT-137	2FK-5
		347	1.00	1.30	0.45					KIT-136	1FK-4
		220-240/50	1.75/1.61	2.20/2.00	.42/.39					KIT-137	2FK-5

① Fuse kits, for field installation, must be used within guidelines of governing Electric Codes. Fuses not permitted by CSA C22.2 no.137 for Canada.
② All ballasts circuits are High Power Factor 90%+.
** Lamp watts: within ANSI trapezoid limitations .*
Consult major lamp & ballast manufacturer catalogs if more detailed data is needed.

APPLICATION DATA FOR HAZARDOUS LOCATIONS

VM HAZARDOUS LOCATION APPLICATION DATA① –CLASS I, DIVISION 2, GROUPS A, B, C, D & CLASS I, ZONE 2, GROUPS IIC,IIB,IIA

LAMP			RATED AMBIENT °C	TEMPERATURE °C				
SERIES	TYPE	WATTAGE		WITHOUT REFLECTOR	WITH REFLECTOR	WITH 8" REFRACTOR	WITH 12" REFRACTOR	SUPPLY WIRE SUITABLE FOR °C
VML	HPS	50	40	200 (T3)	200 (T3)	200 (T3)	180 (T3A)	75
			55	200 (T3)	200 (T3)	200 (T3)	180 (T3A)	90
			65	215 (T2D)	215 (T2D	215 T2D	200 (T3)	90
VML	HPS	70	40	200 (T3)	200 (T3)	200 (T3)	180 (T3A)	75
			55	200 (T3)	200 (T3)	200 (T3)	180 (T3A)	90
			65	215 (T2D)	215 (T2D)	215 (T2D)	200 (T3)	90
VML	HPS	100	40	230 (T2C)	230 (T2C)	230 (T2C)	200 (T3)	90
			55	230 (T2C)	230 (T2C)	230 (T2C)	215 (T2D)	110
			65	—	—	—	215 (T2D)	90
VML	HPS	150	40	260 (T2B)	280 (T2A)	260 (T2B)	260 (T2B)	90
			55	280 (T2A)	280 (T2A)	280 (T2A)	260 (T2B)	110
			65	—	—	—	260 (T2B)	110
VMV	HPS	250	40	325	325	NA	325	90
			55	—	—	—	—	—
			65	—	—	—	—	—
VMV	HPS	400	40	280 (T2A)	280 (T2A)	NA	260 (T2B)	110
			55	—	—	—	—	—
			65	—	—	—	—	—
VMM	MH	70	40	180 (T3A)	180 (T3A)	180 (T3A)	160 (T3C)	75
			55	180 (T3A)	180 (T3A)	180 (T3A)	160 (T3C)	90
			65	200 (T3)	200 (T3)	200 (T3)	165 (T3B)	90
VMM	MH	100	40	215 (T2D)	230 (T2C)	215 (T2D)	200 (T3)	90
			55	230 (T2D)	230 (T2C)	230 (T2C)	200 (T3)	90
			65	230 (T2C)	230 (T2C)	230 (T2C)	215 (T2D)	90
VMM	MH	175	40	300 (T2)	300 (T2)	280 (T2A)	280 (T2A)	110
			55	300 (T2)	300 (T2)	280 (T2A)	280 (T2A)	110
			65	—	—	—	280 (T2A)	110
VMM	MH	250	40	325	325	300 (T2)	300 (T2)	90
			55	—	—	—	300 (T2)	90
			65	—	—	—	—	—
VMF	MH	400	40	325	325	NA	300 (T2)	125
			55	—	—	—	—	—
			65	—	—	—	—	—
VMU	MHP	175	40	300 (T2)	300 (T2)	280 (T2A)	280 (T2A)	110
			55	300 (T2)	300 (T2)	280 (T2A)	280 (T2A)	110
			65	—	—	—	280 (T2A)	110
VMP	MHP	250	40	325	325	300 (T2)	300 (T2)	90
			55	—	—	—	300 (T2)	90
			65	—	—	—	—	—
VMP	MHP	320	40	325	325	NA	300 (T2)	125
			55	—	—	—	—	—
			65	—	—	—	—	—
VMP	MHP	350	40	325	325	NA	300 (T2)	125
			55	—	—	—	—	—
			65	—	—	—	—	—
VMP	MHP	400	40	325	325	NA	300 (T2)	125
			55	—	—	—	—	—
			65	—	—	—	—	—
VMK	MV	100	40	260 (T2B)	260 (T2B)	280 (T2B)	260 (T2B)	90
			55	280 (T2A)	280 (T2A)	280 (T2A)	260 (T2B)	90
			65	280 (T2A)	280 (T2A)	280 (T2A)	260 (T2B)	110
VMK	MV	175	40	300 (T2)	300 (T2)	280 (T2A)	280 (T2A)	110
			55	300 (T2)	325 (T2)	300 (T2)	280 (T2A)	110
			65	—	—	—	280 (T2A)	110
VMK	MV	250	40	300 (T2)	325	325	300 (T2)	110
			55	—	—	—	325	110
			65	—	—	—	—	—
VME	MV	400	40	350	350	NA	325	125
			55	—	—	—	—	—
			65	—	—	—	—	—

① This data does not apply to luminaires with auxiliary quartz lighting. Contact factory with specific requirements and suitability. The suitability of these fixtures for Class I, Division 2 locations must be determined for each application based on Article 501-9(b) (2) of the NEC.

See separate tables page L60 for "Enclosed Reflector" or Ex nR Restricted Breathing temperature data.

VM HAZARDOUS LOCATION APPLICATION DATA① –CLASS II, DIVISION 1 & 2, AND CLASS III②

LAMP			RATED AMBIENT③ °C	GROUPS*	TEMPERATURE °C				CLASS III	SUPPLY WIRE SUITABLE FOR °C
SERIES	TYPE	WATTAGE			WITHOUT REFLECTOR	WITH REFLECTOR	WITH 8" REFRACTOR	WITH 12" REFRACTOR		
VML	HPS	50	40	EFG	120 (T4A)	120 (T4A)	120 (T4A)	120 (T4A)	Y	75
			55	EFG	120 (T4A)	120 (T4A)	120 (T4A)	120 (T4A)	Y	90
			65	EFG	135 (T4)	135 (T4)	135 (T4)	135 (T4)	Y	90
VML	HPS	70	40	EFG	135 (T4)	135 (T4)	135 (T4)	135 (T4)	Y	75
			55	EFG	160 (T3C)	160 (T3C)	160 (T3C)	160 (T3C)	Y	90
			65	EFG	160 (T3C)	160 (T3C)	160 (T3C)	160 (T3C)	Y	90
VML	HPS	100	40	EFG*	—	—	160 (T3C)	160 (T3C)	Y*	75
			55	EF	—	—	180 (T3A)	180 (T3A)	N	90
			65	EF	—	—	—	200 (T3)	N	90
VML	HPS	150	40	EFG*	—	—	160 (T3C)	160 (T3C)	Y*	90
			55	EF	—	—	180 (T3A)	180 (T3A)	N	110
			65	—	—	—	—	—	—	—
VMV	HPS	250	40	EFG*	180 (T3A)	180 (T3A)	NA	160 (T3C)	Y*	90
			55	—	—	—	—	—	—	—
			65	—	—	—	—	—	—	—
VMV	HPS	400	40	EFG*	200 (T3)	200 (T3)	NA	160 (T3C)	Y*	110
			55	—	—	—	—	—	—	—
			65	—	—	—	—	—	—	—
VMM	MH	70	40	EFG*	—	—	160 (T3C)	160 (T3C)	Y*	75
			55	EF	—	—	180 (T3A)	180 (T3A)	N	90
			65	EF	—	—	200 (T3)	200 (T3)	N	90
VMM	MH	100	40	EFG*	—	—	160 (T3C)	160 (T3C)	Y*	75
			55	EF	—	—	180 (T3A)	180 (T3A)	N	90
			65	EF	—	—	200 (T3)	200 (T3)	N	90
VMM	MH	175	40	EFG*	—	—	180 (T3A)	160 (T3C)	Y*	90
			55	EF	—	—	—	200 (T3)	N	110
			65	—	—	—	—	—	—	—
VMM	MH	250	40	EFG*	—	—	—	160 (T3C)	Y*	90
			55	—	—	—	—	—	—	—
			65	—	—	—	—	—	—	—
VMF	MH	400	40	EFG*	—	—	NA	160 (T3C)	Y*	125
			55	—	—	—	—	—	—	—
			65	—	—	—	—	—	—	—
VMU	MHP	175	40	EF	—	—	180 (T3A)	180 (T3A)	N	90
			55	EF	—	—	—	200 (T3)	N	110
			65	—	—	—	—	—	—	110
VMP	MHP	250	40	EFG*	—	—	NA	160 (T3C)	Y*	90
			55	—	—	—	NA	—	—	90
			65	—	—	—	—	—	—	—
VMP	MHP	320	40	EFG*	—	—	NA	160 (T3C)	Y*	125
			55	—	—	—	—	—	—	—
			65	—	—	—	—	—	—	—
VMP	MHP	350	40	EFG*	—	—	NA	160 (T3C)	Y*	125
			55	—	—	—	—	—	—	—
			65	—	—	—	—	—	—	—
VMP	MHP	400	40	EFG*	—	—	NA	160 (T3C)	Y*	125
			55	—	—	—	—	—	—	—
			65	—	—	—	—	—	—	—
VMK	MV	100	40	EFG*	—	—	160 (T3C)	160 (T3C)	Y*	75
			55	EF	—	—	180 (T3A)	180 (T3A)	N	90
			65	EF	—	—	200 (T3)	200 (T3)	N	110
VMK	MV	175	40	EFG*	—	—	180 (T3A)	160 (T3C)	Y*	90
			55	EF	—	—	180 (T3A)	180 (T3A)	N	110
			65	—	—	—	—	—	N	110
VMK	MV	250	40	EFG*	—	—	—	160 (T3C)	Y*	110
			55	—	—	—	—	—	—	—
			65	—	—	—	—	—	—	—
VME	MV	400	40	EFG*	—	—	NA	160 (T3C)	Y*	125
			55	—	—	—	—	—	—	—
			65	—	—	—	—	—	—	—

① This data does not apply to luminaires with auxiliary quartz lighting. Contact factory with specific requirements and suitability.
② Guard required for Class II, Div. 1 and Class III application.
** Fixture configurations with T-CODE ≤165°C are suitable for Class II Group G & Class III.*

HUBBELL®
KILLARK®

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APPLICATION DATA FOR HAZARDOUS LOCATIONS

VM ENCLOSED REFLECTOR HAZARDOUS LOCATION APPLICATION DATA						
LAMP TYPE	WATTAGE	RATED AMBIENT °C	CLASS I DIV. 2 CLASS I ZONE 2	CLASS II DIV. 1	CLASS III SUITABILITY	SUPPLY WIRE TEMPERATURE °C
HPS	150	40	260°C (T2B)	100°C (T5)	Y	75
	250	40	260°C (T2B)	100°C (T5)		
	400	40	260°C (T2B)	160°C (T3C)		
MH	400	40	280°C (T2A)	135°C (T4)	Y	75
MHP	250	40	280°C (T2A)	135°C (T4)	Y	75
	320	40	280°C (T2A)	135°C (T4)		
	350	40	280°C (T2A)	135°C (T4)		
	400	40	280°C (T2A)	135°C (T4)		
MV	400	40	450°C (T1)	160°C (T3C)	Y	75

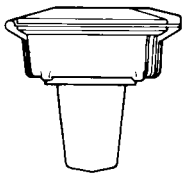
VM RESTRICTED BREATHING Ex nR HAZARDOUS LOCATION APPLICATION DATA① –CLASS I, ZONE 2 Ex nR IIC, IIB, IIA						
LAMP			RATED AMBIENT °C	GLOBE OR GLOBE WITH REFLECTOR		ENCLOSED REFLECTOR② UL/CSA
SERIES	TYPE	WATTAGE		UL/CSA	SUPPLY WIRE SUITABLE FOR °C	
VML	HPS	50	40	100°C (T5)	75	—
VML	HPS	70	40	100°C (T5)	75	—
VML	HPS	100	40	135°C (T4)	75	—
VML	HPS	150	40	135°C (T4)	90	100°C (T5)
VMV	HPS	250	40	135°C (T4)	90	100°C (T5)
VMV	HPS	400	40	200°C (T3)	10	160°C (T3C)
VMM	MH	70	40	100°C (T4)	75	—
VMM	MH	100	40	200°C (T3)	75	—
VMM	MH	175	40	200°C (T3)	90	—
VMM	MH	250	40	200°C (T3)	90	—
VMF	MH	400	40	200°C (T3)	125	135°C (T4)
VMU	MHP	175	40	200°C (T3)	90	—
VMP	MHP	250	40	200°C (T3)	90	135°C (T4)
VMP	MHP	320	40	200°C (T3)	125	135°C (T4)
VMP	MHP	350	40	200°C (T3)	125	135°C (T4)
VMP	MHP	400	40	200°C (T3)	125	135°C (T4)
VMK	MV	100	40	135°C (T4)	75	—
VMK	MV	175	40	200°C (T3)	90	—
VMK	MV	250	40	200°C (T3)	110	—
VME	MV	400	40	200°C (T3)	125	160°C (T3C)

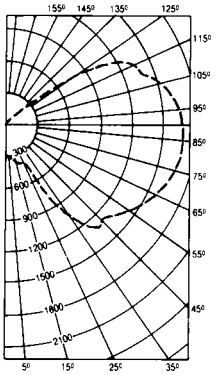
① *This data does not apply to luminaires with auxiliary quartz lighting. Contact factory with specific requirements and suitability.*
② *Supply wire temperature for all VM with enclosed reflector is 75°C.*

HIGH PRESSURE SODIUM
With Globe Only
50 – 150 Watt Mogul Base

CANDLEPOWER – 150 WATT
E-23½ Clear Lamp
16000 Lumens

For 100 Watt multiply by .59
For 70 Watt multiply by .36
For 50 Watt multiply by .25





ANGLE	CP	ANGLE	CP
.0	309.	95.0	1654.
5.0	291.	100.0	1600.
10.0	332.	105.0	1521.
15.0	371.	110.0	1412.
20.0	394.	115.0	1336.
25.0	395.	120.0	1165.
30.0	633.	125.0	663.
35.0	1039.	130.0	157.
40.0	1260.	135.0	30.
45.0	1295.	140.0	18.
50.0	1338.	145.0	15.
55.0	1441.	150.0	12.
60.0	1513.	155.0	9.
65.0	1586.	160.0	0.
70.0	1641.	165.0	0.
75.0	1676.	170.0	0.
80.0	1696.	175.0	0.
85.0	1696.	180.0	0.
90.0	1683.		

Efficiency 86-5%

COEFFICIENTS OF UTILIZATION - ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE fcc	80			70			50			30			10			0
% WALL REFLECTANCE rw	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance															
1	.74	.69	.64	.69	.64	.59	.59	.55	.51	.50	.47	.44	.41	.39	.37	.32
2	.62	.54	.47	.57	.50	.44	.49	.43	.38	.41	.36	.32	.33	.30	.27	.23
3	.52	.44	.37	.48	.41	.34	.41	.35	.29	.34	.29	.25	.28	.24	.20	.17
4	.45	.36	.29	.41	.33	.27	.35	.28	.23	.29	.24	.19	.23	.19	.15	.12
5	.39	.30	.23	.36	.28	.22	.30	.24	.18	.25	.19	.15	.20	.16	.12	.09
6	.34	.26	.19	.32	.24	.18	.27	.20	.15	.22	.16	.12	.17	.13	.10	.07
7	.30	.22	.16	.28	.20	.15	.23	.17	.12	.19	.14	.10	.15	.11	.08	.05
8	.27	.19	.13	.25	.17	.12	.21	.15	.10	.17	.12	.08	.13	.09	.06	.04
9	.24	.16	.11	.22	.15	.10	.19	.13	.08	.15	.10	.07	.12	.08	.05	.03
10	.21	.14	.09	.20	.13	.08	.17	.11	.07	.14	.09	.05	.11	.07	.04	.02

SPACING TO MOUNTING HEIGHT RATIO — S/MH 3.8

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 150 WATT H.P.S.
(See top for other wattage multipliers)
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	0'	5'	10'	15'	20'	25'	30'	35'	40'	45'	50'
8'	4.82	7.58	5.10	2.51	1.28	.73	.44	.29	.20	.14	.10
10'	3.09	3.49	4.58	2.47	1.38	.83	.52	.35	.23	.17	.13
12'	2.15	2.15	3.97	2.27	1.43	.89	.57	.39	.27	.20	.15
14'	1.58	1.68	2.86	2.11	1.39	.90	.61	.42	.30	.22	.17
16'	1.21	1.29	1.89	1.95	1.28	.90	.62	.44	.32	.24	.18
18'	.95	1.02	1.30	1.76	1.22	.88	.63	.45	.34	.25	.19
20'	.77	.84	.73	1.44	1.14	.82	.62	.46	.35	.26	.20

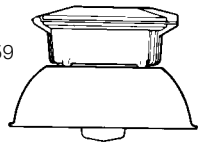
FC = (Candlepower) (COS Θ) / DISTANCE²

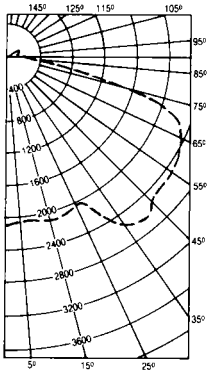
Test No. HP-03426

HIGH PRESSURE SODIUM
With Globe and Standard Dome Reflector
50 – 150 Watt Mogul Base

CANDLEPOWER – 150 WATT
E-23½ Clear Lamp
16000 Lumens

For 100 Watt multiply by .59
For 70 Watt multiply by .36
For 50 Watt multiply by .25





ANGLE	CP	ANGLE	CP
.0	2059.	95.0	39.
5.0	2034.	100.0	38.
10.0	2060.	105.0	60.
15.0	2076.	110.0	159.
20.0	2077.	115.0	184.
25.0	2026.	120.0	98.
30.0	2183.	125.0	21.
35.0	2503.	130.0	16.
40.0	2831.	135.0	13.
45.0	2574.	140.0	11.
50.0	2512.	145.0	9.
55.0	2512.	150.0	9.
60.0	2472.	155.0	9.
65.0	2391.	160.0	7.
70.0	2247.	165.0	7.
75.0	1459.	170.0	7.
80.0	551.	175.0	7.
85.0	206.	180.0	0.
90.0	43.		

Efficiency 75.1%

COEFFICIENTS OF UTILIZATION - ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE fcc	80			70			50			30			10			0
% WALL REFLECTANCE rw	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance															
1	.76	.72	.69	.74	.70	.67	.70	.67	.65	.67	.65	.62	.64	.62	.60	.58
2	.65	.59	.54	.63	.58	.53	.60	.56	.52	.57	.53	.50	.55	.51	.49	.47
3	.56	.49	.43	.54	.48	.43	.52	.46	.42	.49	.45	.41	.47	.43	.40	.38
4	.48	.40	.35	.47	.40	.34	.44	.38	.34	.42	.37	.33	.40	.36	.32	.30
5	.42	.34	.29	.41	.34	.28	.39	.32	.28	.37	.31	.27	.35	.31	.27	.25
6	.37	.29	.24	.36	.29	.24	.34	.28	.23	.33	.27	.23	.31	.26	.23	.21
7	.32	.25	.20	.32	.25	.20	.30	.24	.20	.29	.23	.19	.28	.23	.19	.17
8	.29	.22	.17	.28	.21	.17	.27	.21	.17	.26	.20	.16	.24	.20	.16	.14
9	.26	.19	.14	.25	.19	.14	.24	.18	.14	.23	.18	.14	.22	.17	.14	.12
10	.23	.16	.12	.22	.16	.12	.21	.15	.11	.20	.15	.11	.19	.15	.11	.10

SPACING TO MOUNTING HEIGHT RATIO — S/MH 1.8

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 150 WATT H.P.S.
(See top for other wattage multipliers)
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	0'	5'	10'	15'	20'	25'	30'	35'	40'	45'	50'
8'	32.17	20.80	9.57	4.03	1.80	.99	.39	.25	.06	.04	.03
10'	20.59	14.50	9.10	4.28	2.15	1.19	.71	.30	.20	.14	.04
12'	14.29	11.34	8.28	4.25	2.33	1.34	.82	.53	.36	.17	.12
14'	10.51	8.85	6.88	4.17	2.41	1.47	.92	.61	.41	.29	.14
16'	8.04	7.05	5.20	4.00	2.39	1.53	1.01	.67	.46	.33	.22
18'	6.35	5.73	4.50	3.68	2.32	1.54	1.04	.71	.51	.36	.26
20'	5.15	4.74	3.62	3.20	2.28	1.52	1.07	.75	.52	.38	.28

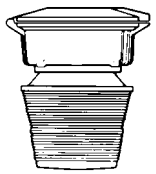
FC = (Candlepower) (COS Θ) / DISTANCE²

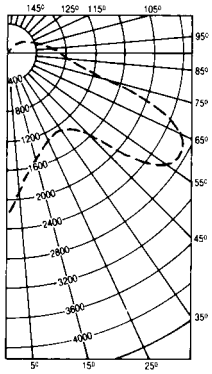
Test No. HP-03425

HIGH PRESSURE SODIUM
With 8" Glass Refractor IES Type V
50 – 150 Watt Mogul Base

CANDLEPOWER – 150 WATT
E-23½ Clear Lamp
16000 Lumens

For 100 Watt multiply by .59
For 70 Watt multiply by .36
For 50 Watt multiply by .25





ANGLE	CP	ANGLE	CP
.0	2206.	95.0	591.
5.0	1936.	100.0	487.
10.0	1673.	105.0	381.
15.0	1509.	110.0	309.
20.0	1410.	115.0	262.
25.0	1330.	120.0	247.
30.0	1299.	125.0	245.
35.0	1299.	130.0	228.
40.0	1375.	135.0	196.
45.0	1613.	140.0	149.
50.0	2194.	145.0	110.
55.0	2673.	150.0	73.
60.0	2743.	155.0	40.
65.0	2599.	160.0	14.
70.0	2081.	165.0	0.
75.0	1288.	170.0	0.
80.0	936.	175.0	0.
85.0	793.	180.0	0.
90.0	681.		

Efficiency 76.6%

COEFFICIENTS OF UTILIZATION - ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE fcc	80			70			50			30			10			0
% WALL REFLECTANCE rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance																	
0	.89	.89	.89	.89	.85	.85	.85	.85	.79	.79	.79	.73	.73	.73	.68	.68	.68	.66
1	.78	.73	.69	.65	.75	.71	.67	.63	.65	.62	.59	.60	.58	.55	.56	.54	.52	.49
2	.69	.62	.55	.50	.66	.59	.53	.48	.55	.50	.45	.50	.46	.43	.46	.43	.40	.38
3	.62	.52	.45	.39	.59	.50	.43	.38	.46	.40	.35	.42	.37	.33	.39	.35	.31	.29
4	.56	.45	.37	.31	.53	.43	.36	.30	.40	.33	.28	.36	.31	.27	.33	.29	.25	.23
5	.50	.39	.31	.25	.47	.37	.30	.24	.34	.28	.23	.31	.26	.21	.29	.24	.20	.18
6	.45	.33	.26	.20	.43	.32	.25	.19	.29	.23	.18	.27	.22	.17	.25	.20	.16	.14
7	.41	.29	.22	.16	.39	.28	.21	.16	.26	.19	.15	.24	.18	.14	.22	.17	.13	.11
8	.38	.26	.19	.14	.36	.25	.18	.14	.23	.17	.13	.21	.16	.12	.20	.15	.11	.09
9	.35	.24	.17	.12	.33	.23	.16	.12	.21	.15	.11	.19	.14	.10	.18	.13	.10	.08
10	.33	.22	.15	.10	.31	.21	.14	.10	.19	.14	.10	.18	.13	.09	.16	.12	.08	.07

SPACING TO MOUNTING HEIGHT RATIO — S/MH .8

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 150 WATT H.P.S.
(See top for other wattage multipliers)
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	0'	5'	10'	15'	20'	25'	30'	35'	40'	45'	50'
8'	34.47	12.38	8.36	4.39	1.84	.74	.34	.20	.11	.08	.06
10'	22.06	9.52	5.70	4.56	2.37	1.18	.63	.27	.18	.11	.08
12'	15.32	7.37	4.33	3.71	2.59	1.46	.82	.47	.26	.15	.10
14'	11.26	6.01	3.57	2.99	2.57	1.63	1.00	.60	.38	.26	.14
16'	8.62	4.93	3.09	2.16	2.09	1.65	1.14	.73	.46	.31	.21
18'	6.81	4.17	2.68	1.92	1.81	1.64	1.13	.76	.55	.36	.25
20'	5.52	3.44	2.38	1.70	1.42	1.34	1.14	.84	.59	.42	.29

FC = (Candlepower) (COS Θ) / DISTANCE²

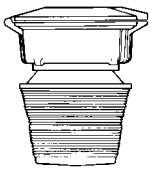
Test No. HP-03463

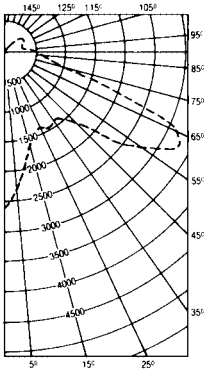
HUBBELL®
KILLARK®

HIGH PRESSURE SODIUM
With 12" Glass Refractor IES Type V
50 – 150 Watt Mogul Base

CANDLEPOWER – 150 WATT
E-23½ Clear Lamp
16000 Lumens

For 100 Watt multiply by .59
For 70 Watt multiply by .36
For 50 Watt multiply by .25





ANGLE	CP	ANGLE	CP
0	2528.	95.0	507.
5.0	2307.	100.0	423.
10.0	1923.	105.0	329.
15.0	1621.	110.0	275.
20.0	1418.	115.0	293.
25.0	1360.	120.0	341.
30.0	1401.	125.0	352.
35.0	1371.	130.0	326.
40.0	1400.	135.0	276.
45.0	1580.	140.0	220.
50.0	2069.	145.0	158.
55.0	2679.	150.0	110.
60.0	3168.	155.0	79.
65.0	3195.	160.0	48.
70.0	2128.	165.0	26.
75.0	1197.	170.0	0.
80.0	823.	175.0	0.
85.0	658.	180.0	0.
90.0	576.		

Efficiency 80.1%

COEFFICIENTS OF UTILIZATION - ZONAL CAVITY

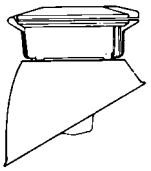
% EFFECTIVE CEILING CAVITY REFLECTANCE rcc	80			70			50			30			10			0
% WALL REFLECTANCE rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance																	
0	93	93	93	93	89	89	89	89	83	83	83	77	77	77	71	71	71	68
1	82	77	73	69	79	74	70	67	69	65	63	63	61	59	59	57	55	52
2	73	65	58	53	70	62	56	51	58	53	48	53	49	45	49	46	43	40
3	65	55	47	41	62	53	45	40	48	42	38	45	40	35	41	37	33	31
4	58	47	39	33	55	45	38	32	42	35	30	38	33	28	35	30	27	24
5	52	40	32	26	49	39	31	25	35	29	24	32	27	22	30	25	21	19
6	47	35	27	21	45	33	26	20	31	24	19	28	22	18	26	21	17	15
7	43	31	23	17	41	29	22	17	27	20	16	25	19	15	23	18	14	12
8	40	28	20	15	38	26	19	14	24	18	13	22	17	13	21	16	12	10
9	37	25	18	13	35	24	17	12	22	16	12	20	15	11	19	14	10	08
10	34	23	16	11	33	22	15	11	20	14	10	19	13	10	17	12	09	07

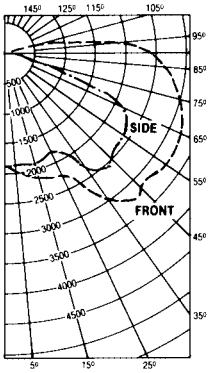
SPACING TO MOUNTING HEIGHT RATIO — S/MH .7

HIGH PRESSURE SODIUM
With Globe and Angle Reflector
50 – 150 Watt Mogul Base

CANDLEPOWER – 150 WATT
E-23½ Clear Lamp
16000 Lumens

For 100 watt multiply by .59
For 70 watt multiply by .36
For 50 watt multiply by .25





FRONT ANGLE	FRONT CP	SIDE ANGLE	SIDE CP
.0	1905.	.0	1905.
5.0	1977.	5.0	1883.
10.0	2095.	10.0	1918.
15.0	2161.	15.0	1926.
20.0	2214.	20.0	1883.
25.0	2259.	25.0	1806.
30.0	2572.	30.0	1982.
35.0	3002.	35.0	2340.
40.0	3200.	40.0	2516.
45.0	3215.	45.0	2504.
50.0	3205.	50.0	2439.
55.0	3266.	55.0	2427.
60.0	3280.	60.0	2346.
65.0	3223.	65.0	2163.
70.0	3149.	70.0	1364.
75.0	3003.	75.0	532.
80.0	2843.	80.0	248.
85.0	2654.	85.0	93.
90.0	2396.	90.0	25.
95.0	1737.	95.0	19.
100.0	829.	100.0	16.
105.0	250.	105.0	20.
110.0	127.	110.0	15.
115.0	43.	115.0	16.

Efficiency 72.5%

COEFFICIENTS OF UTILIZATION - ZONAL CAVITY

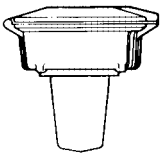
% EFFECTIVE CEILING CAVITY REFLECTANCE rcc	80			70			50			30			10			0
% WALL REFLECTANCE rw	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance															
1	71	66	63	68	65	61	64	61	58	60	58	56	57	55	53	51
2	60	54	49	58	53	48	55	50	46	52	48	45	49	46	43	41
3	52	46	40	51	44	39	48	42	38	45	41	37	42	39	35	34
4	45	38	33	44	37	32	41	36	31	39	34	30	37	33	29	27
5	40	33	27	39	32	27	36	31	26	34	29	25	33	28	24	23
6	35	28	23	34	28	23	32	26	22	31	25	21	29	24	21	19
7	31	24	19	30	24	19	29	23	19	27	22	18	26	21	18	16
8	28	21	16	27	21	16	26	20	16	24	19	15	23	18	15	13
9	25	18	14	24	18	14	23	17	13	22	17	13	21	16	13	11
10	22	15	11	21	15	11	20	15	11	19	14	10	18	13	10	09

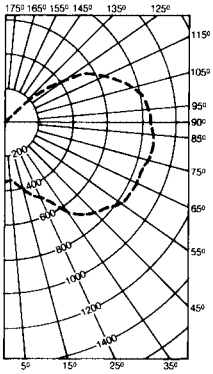
SPACING TO MOUNTING HEIGHT RATIO — S/MH 1.9

MERCURY VAPOR
With Globe Only
100 – 250 Watt Mogul Base

CANDLEPOWER – 175 WATT
E-28 deluxe white coated lamp
8600 Lumens

For 100 watt multiply by .48
For 250 watt multiply by 1.41





ANGLE	CP	ANGLE	CP
.0	355.	95.0	843.
5.0	353.	100.0	818.
10.0	372.	105.0	767.
15.0	407.	110.0	710.
20.0	440.	115.0	642.
25.0	488.	120.0	550.
30.0	571.	125.0	404.
35.0	653.	130.0	268.
40.0	709.	135.0	154.
45.0	742.	140.0	47.
50.0	782.	145.0	5.
55.0	806.	150.0	2.
60.0	826.	155.0	0.
65.0	853.	160.0	0.
70.0	850.	165.0	0.
75.0	859.	170.0	0.
80.0	874.	175.0	0.
85.0	868.	180.0	0.
90.0	848.		

Efficiency 88.8%

COEFFICIENTS OF UTILIZATION - ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE rcc	80			70			50			30			10			0
% WALL REFLECTANCE rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance																	
0	98	98	98	98	92	92	92	92	80	80	80	70	70	70	60	60	60	56
1	85	78	73	68	79	73	68	64	63	59	56	54	51	48	46	43	41	37
2	75	65	57	51	69	61	54	48	52	46	42	44	40	36	37	33	30	26
3	67	56	47	40	62	52	44	38	44	38	33	37	32	28	31	27	24	20
4	60	48	39	33	56	45	37	31	38	32	27	32	27	23	27	23	19	16
5	55	42	33	26	50	39	31	25	33	27	21	28	22	18	23	19	15	12
6	50	37	28	22	46	34	26	21	29	23	18	25	19	15	20	16	12	10
7	46	33	24	19	42	30	23	17	26	20	15	22	17	13	18	14	10	08
8	42	29	21	16	39	27	20	15	23	17	13	19	14	11	16	12	08	06
9	39	26	19	14	36	24	17	13	21	15	11	17	12	09	14	10	07	05
10	36	24	17	12	33	22	16	11	19	13	09	16	11	08	13	09	06	04

SPACING TO MOUNTING HEIGHT RATIO — S/MH 2.6

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 150 WATT H.P.S.
(See top for other wattage multipliers)
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	0'	5'	10'	15'	20'	25'	30'	35'	40'	45'	50'
8'	39.50	13.23	8.27	5.16	2.04	.77	.32	.19	.12	.02	.05
10'	25.28	9.80	5.59	4.61	2.84	1.31	.55	.25	.17	.10	.06
12'	17.56	7.61	4.41	3.56	2.93	1.80	.90	.49	.27	.14	.09
14'	12.90	6.04	3.77	2.88	2.58	1.88	1.23	.66	.39	.23	.13
16'	9.88	5.23	3.31	2.29	2.08	1.76	1.29	.89	.51	.31	.19
18'	7.80	4.47	2.89	1.96	1.66	1.60	1.30	.93	.68	.40	.25
20'	6.32	3.84	2.46	1.76	1.40	1.34	1.15	.97	.71	.48	.33

FC = (Candlepower) (COS Θ) / DISTANCE²

Test No. HP-03464

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 150 WATT H.P.S.
(See top for other wattage multipliers)
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	0'	5'	10'	15'	20'
8'	29.77	26.14	12.22	5.31	2.60
10'	19.05	16.88	11.37	5.58	2.90
12'	13.23	12.15	10.07	5.44	3.10
14'	9.72	9.37	8.25	5.19	3.14
16'	7.44	7.47	6.60	4.87	3.06
18'	5.88	5.97	5.15	4.48	2.96
20'	4.76	4.90	4.22	3.94	2.84

MOUNTING HEIGHT IN FEET	0'	5'	10'	15'	20'
8'	29.77	20.23	9.25	3.42	1.48
10'	19.05	13.20	8.85	4.09	1.87
12'	13.23	10.16	7.92	4.11	2.22
14'	9.72	8.02	6.43	4.00	2.33
16'	7.44	6.45	5.00	3.80	2.31
18'	5.88	5.32	3.92	3.50	2.27
20'	4.76	4.38	3.29	3.12	2.21

FC = (Candlepower) (COS Θ) / DISTANCE²

Test No. HP-03424

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 175 WATT MX
(See top for other wattage multipliers)
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	0'	5'	10'	15'	20'	25'	30'	35'	40'	45'	50'
8'	5.54	5.74	2.99	1.36	.68	.37	.22	.14	.10	.07	.05
10'	3.55	3.60	2.62	1.38	.75	.43	.26	.17	.12	.08	.06
12'	2.46	2.50	2.23	1.33	.77	.47	.30	.20	.14	.10	.07
14'	1.81	1.84	1.79	1.22	.77	.49	.32	.22	.15	.11	.08
16'	1.38	1.42	1.43	1.10	.74	.49	.34	.23	.17	.12	.09
18'	1.09	1.12	1.14	.99	.70	.49	.34	.24	.18	.13	.10
20'	.88	.91	.90	.84	.65	.47	.34	.25	.18	.14	.10

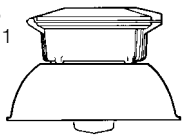
FC = (Candlepower) (COS Θ) / DISTANCE²

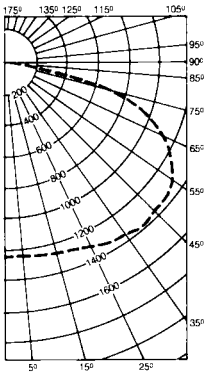
Test No. 5466.0

MERCURY VAPOR
With Globe and Standard Dome Reflector
100 – 250 Watt Mogul Base

CANDLEPOWER – 175 WATT
E-28 deluxe white coated lamp
8600 Lumens

For 100 Watt multiply by .48
For 250 Watt multiply by 1.41





ANGLE	CP	ANGLE	CP
0	1251.	95.0	24.
5.0	1254.	100.0	28.
10.0	1268.	105.0	37.
15.0	1276.	110.0	50.
20.0	1299.	115.0	44.
25.0	1315.	120.0	38.
30.0	1351.	125.0	39.
35.0	1388.	130.0	22.
40.0	1392.	135.0	10.
45.0	1371.	140.0	2.
50.0	1359.	145.0	1.
55.0	1329.	150.0	0.
60.0	1254.	155.0	0.
65.0	1137.	160.0	0.
70.0	928.	165.0	0.
75.0	647.	170.0	0.
80.0	394.	175.0	0.
85.0	185.	180.0	0.
90.0	61.		

Efficiency 74.2%

COEFFICIENTS OF UTILIZATION - ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE rcc	80			70			50		30		10		0
% WALL REFLECTANCE rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance														
0	.88	.88	.88	.88	.86	.86	.86	.86	.81	.81	.81	.78	.78	.78	.74	.74	.74	.72
1	.80	.76	.72	.69	.77	.74	.71	.68	.70	.68	.65	.67	.65	.63	.64	.62	.61	.59
2	.72	.65	.59	.54	.69	.63	.58	.54	.60	.56	.52	.57	.54	.51	.55	.52	.49	.47
3	.65	.56	.50	.44	.63	.55	.49	.44	.52	.47	.43	.50	.46	.42	.48	.44	.41	.39
4	.59	.49	.42	.36	.57	.48	.41	.36	.46	.40	.35	.44	.39	.35	.42	.37	.34	.32
5	.53	.42	.35	.30	.51	.41	.34	.29	.39	.33	.29	.38	.32	.28	.36	.31	.28	.26
6	.48	.37	.30	.25	.46	.36	.29	.24	.35	.29	.24	.33	.28	.24	.32	.27	.23	.22
7	.44	.33	.26	.21	.42	.32	.25	.21	.31	.25	.20	.30	.24	.20	.28	.23	.20	.18
8	.40	.29	.22	.18	.39	.29	.22	.17	.27	.21	.17	.26	.21	.17	.25	.20	.17	.15
9	.37	.26	.19	.15	.36	.25	.19	.15	.24	.19	.15	.23	.18	.14	.22	.18	.14	.13
10	.34	.23	.17	.13	.33	.23	.17	.13	.22	.16	.13	.21	.16	.12	.20	.16	.12	.11

SPACING TO MOUNTING HEIGHT RATIO — S/MH 1.7

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 175 WATT MV
(See top for other wattage multipliers)
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	0'	5'	10'	15'	20'	25'	30'	35'	40'	45'	50'
8'	19.54	13.00	5.15	1.96	.81	.36	.17	.09	.05	.03	.02
10'	12.51	9.45	4.84	2.24	1.05	.51	.27	.14	.09	.05	.03
12'	8.68	7.12	4.38	2.29	1.20	.65	.36	.20	.12	.07	.05
14'	6.38	5.58	3.81	2.21	1.27	.74	.43	.26	.17	.10	.07
16'	4.88	4.36	3.25	2.09	1.28	.79	.49	.31	.20	.13	.09
18'	3.86	3.52	2.76	1.94	1.26	.82	.53	.35	.24	.16	.11
20'	3.12	2.90	2.36	1.77	1.21	.82	.56	.38	.26	.18	.12

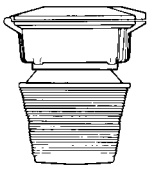
$FC = \frac{(Candlepower)(COS\ \Theta)}{DISTANCE^2}$

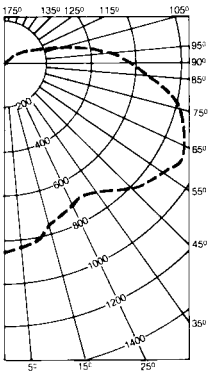
Test No. 5467.0

MERCURY VAPOR
With 8" Glass Refractor IES Type V
100 – 250 Watt Mogul Base

CANDLEPOWER – 175 WATT
E-28 deluxe white coated lamp
8600 Lumens

For 100 Watt multiply by .48
For 250 Watt multiply by 1.41





ANGLE	CP	ANGLE	CP
.0	857.	95.0	500.
5.0	844.	100.0	406.
10.0	807.	105.0	297.
15.0	770.	110.0	203.
20.0	735.	115.0	162.
25.0	708.	120.0	150.
30.0	703.	125.0	134.
35.0	728.	130.0	117.
40.0	760.	135.0	97.
45.0	807.	140.0	78.
50.0	844.	145.0	58.
55.0	890.	150.0	31.
60.0	920.	155.0	7.
65.0	918.	160.0	0.
70.0	890.	165.0	0.
75.0	837.	170.0	0.
80.0	752.	175.0	0.
85.0	671.	180.0	0.
90.0	591.		

Efficiency 73.1%

COEFFICIENTS OF UTILIZATION - ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE rcc	80			70			50		30		10		0
% WALL REFLECTANCE rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance														
0	.84	.84	.84	.84	.80	.80	.80	.80	.73	.73	.73	.67	.67	.67	.61	.61	.61	.59
1	.73	.68	.63	.59	.69	.65	.61	.57	.59	.55	.52	.53	.51	.48	.48	.46	.44	.41
2	.64	.56	.50	.44	.61	.54	.48	.43	.49	.44	.39	.44	.40	.36	.39	.36	.33	.31
3	.58	.48	.41	.35	.54	.46	.39	.34	.42	.36	.31	.37	.33	.29	.34	.30	.27	.24
4	.52	.42	.34	.29	.49	.40	.33	.27	.36	.30	.26	.32	.28	.24	.29	.25	.22	.19
5	.47	.36	.29	.23	.44	.34	.27	.22	.31	.25	.21	.28	.23	.19	.25	.21	.17	.15
6	.43	.32	.24	.19	.40	.30	.23	.19	.27	.22	.17	.25	.20	.16	.22	.18	.15	.13
7	.39	.28	.21	.16	.37	.27	.20	.16	.24	.19	.15	.22	.17	.13	.20	.16	.12	.10
8	.36	.25	.19	.14	.34	.24	.18	.13	.22	.16	.12	.20	.15	.11	.18	.14	.10	.09
9	.33	.23	.16	.12	.32	.22	.16	.11	.20	.14	.11	.18	.13	.10	.16	.12	.09	.07
10	.31	.21	.15	.10	.29	.20	.14	.10	.18	.13	.09	.16	.12	.08	.15	.11	.08	.06

SPACING TO MOUNTING HEIGHT RATIO — S/MH 1.3

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 175 WATT MV
(See top for other wattage multipliers)
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	0'	5'	10'	15'	20'	25'	30'	35'	40'	45'	50'
8'	13.39	6.79	3.24	1.49	.72	.38	.22	.13	.09	.06	.04
10'	8.57	5.05	2.85	1.52	.82	.46	.27	.17	.11	.08	.05
12'	5.95	3.95	2.39	1.44	.86	.51	.30	.20	.14	.09	.07
14'	4.37	3.04	2.00	1.33	.85	.54	.35	.23	.16	.11	.08
16'	3.34	2.56	1.69	1.19	.81	.55	.37	.25	.18	.13	.09
18'	2.64	2.12	1.45	1.06	.76	.54	.38	.27	.19	.14	.10
20'	2.14	1.77	1.26	.92	.71	.51	.38	.28	.20	.15	.11

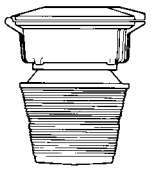
$FC = \frac{(Candlepower)(COS\ \Theta)}{DISTANCE^2}$

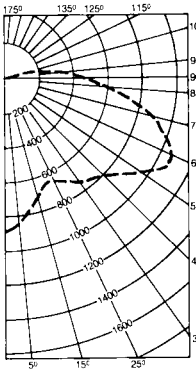
Test No. 5469.0

MERCURY VAPOR
With 12" Glass Refractor IES Type V
100 – 250 Watt Mogul Base

CANDLEPOWER – 175 WATT
E-28 deluxe white coated lamp
8600 Lumens

For 100 Watt multiply by .48
For 250 Watt multiply by 1.41





ANGLE	CP	ANGLE	CP
.0	875.	95.0	293.
5.0	849.	100.0	182.
10.0	794.	105.0	161.
15.0	733.	110.0	154.
20.0	685.	115.0	143.
25.0	671.	120.0	136.
30.0	689.	125.0	108.
35.0	699.	130.0	97.
40.0	739.	135.0	71.
45.0	793.	140.0	58.
50.0	882.	145.0	41.
55.0	983.	150.0	26.
60.0	1060.	155.0	10.
65.0	1060.	160.0	3.
70.0	985.	165.0	0.
75.0	850.	170.0	0.
80.0	734.	175.0	0.
85.0	609.	180.0	0.
90.0	470.		

Efficiency 69.3%

COEFFICIENTS OF UTILIZATION - ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE rcc	80			70			50		30		10		0
% WALL REFLECTANCE rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance														
0	.80	.80	.80	.80	.77	.77	.77	.77	.72	.72	.72	.67	.67	.67	.62	.62	.62	.60
1	.70	.65	.61	.57	.67	.63	.59	.55	.58	.55	.52	.53	.51	.48	.49	.47	.45	.43
2	.62	.54	.48	.42	.59	.52	.46	.41	.48	.43	.39	.44	.40	.36	.40	.37	.34	.32
3	.55	.46	.39	.33	.52	.44	.38	.32	.40	.35	.30	.37	.33	.29	.34	.30	.27	.25
4	.50	.40	.32	.27	.47	.38	.31	.26	.35	.29	.25	.32	.27	.23	.29	.25	.22	.20
5	.44	.34	.27	.21	.42	.33	.26	.21	.30	.24	.19	.27	.22	.18	.25	.21	.17	.15
6	.40	.30	.23	.17	.38	.29	.22	.17	.26	.20	.16	.24	.19	.15	.22	.18	.14	.12
7	.37	.26	.20	.15	.35	.25	.19	.14	.23	.18	.13	.21	.16	.13	.20	.15	.12	.10
8	.34	.24	.17	.12	.32	.23	.16	.12	.21	.15	.11	.19	.14	.11	.18	.13	.10	.08
9	.31	.21	.15	.11	.30	.20	.14	.10	.19	.13	.10	.17	.12	.09	.16	.12	.08	.07
10	.29	.19	.13	.09	.28	.18	.13	.09	.17	.12	.08	.16	.11	.08	.14	.10	.07	.06

SPACING TO MOUNTING HEIGHT RATIO — S/MH 1.2

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 175 WATT MV
(See top for other wattage multipliers)
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	0'	5'	10'	15'	20'	25'	30'	35'	40'	45'	50'
8'	13.67	6.60	3.43	1.72	.82	.41	.22	.13	.09	.06	.04
10'	8.75	4.82	2.80	1.70	.94	.51	.30	.18	.12	.08	.05
12'	6.07	3.71	2.32	1.52	.98	.59	.36	.22	.14	.10	.07
14'	4.46	2.96	1.92	1.34	.94	.63	.40	.26	.18	.12	.08
16'	3.41	2.42	1.65	1.16	.85	.61	.43	.29	.20	.14	.10
18'	2.70	2.02	1.41	1.03	.78	.59	.43	.31	.22	.16	.11
20'	2.18	1.70	1.20	.88	.70	.54	.42	.32	.23	.17	.13

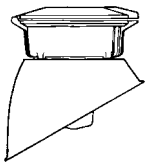
$FC = \frac{(Candlepower)(COS\ \Theta)}{DISTANCE^2}$

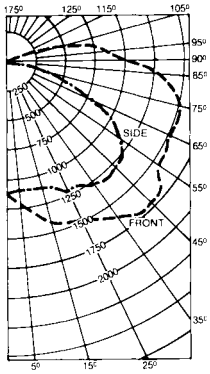
Test No. 5470.0

MERCURY VAPOR
With Globe and Angle Reflector
100 – 250 Watt Mogul Base

CANDLEPOWER – 175 WATT
E-28 deluxe white coated lamp
8600 Lumens

For 100 Watt multiply by .48
For 250 Watt multiply by 1.41





FRONT ANGLE	FRONT CP	SIDE ANGLE	SIDE CP
0	1170.	0	1170.
5.0	1236.	5.0	1163.
10.0	1277.	10.0	1170.
15.0	1342.	15.0	1185.
20.0	1408.	20.0	1196.
25.0	1467.	25.0	1233.
30.0	1569.	30.0	1266.
35.0	1679.	35.0	1295.
40.0	1734.	40.0	1317.
45.0	1734.	45.0	1291.
50.0	1719.	50.0	1273.
55.0	1697.	55.0	1167.
60.0	1690.	60.0	1024.
65.0	1628.	65.0	790.
70.0	1591.	70.0	548.
75.0	1522.	75.0	314.
80.0	1405.	80.0	124.
85.0	1295.	85.0	25.
90.0	1064.	90.0	0.
95.0	867.	95.0	0.
100.0	556.	100.0	0.
105.0	358.	105.0	0.
110.0	161.	110.0	0.
115.0	54.	115.0	0.

Efficiency 68.0%

COEFFICIENTS OF UTILIZATION - ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE pcc	80			70			50		30		10		0
% WALL REFLECTANCE pw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance														
0	.80	.80	.80	.80	.78	.78	.78	.78	.73	.73	.73	.69	.69	.69	.66	.66	.66	.64
1	.72	.68	.64	.61	.69	.66	.63	.60	.62	.59	.57	.59	.56	.54	.55	.54	.52	.50
2	.64	.58	.53	.48	.62	.56	.52	.47	.53	.49	.46	.50	.47	.44	.48	.45	.42	.41
3	.58	.51	.45	.40	.55	.49	.44	.39	.47	.42	.38	.44	.40	.37	.42	.38	.35	.34
4	.53	.44	.38	.33	.51	.43	.37	.33	.41	.36	.32	.39	.34	.31	.37	.33	.30	.28
5	.48	.39	.32	.27	.46	.38	.32	.27	.36	.30	.26	.34	.29	.26	.32	.28	.25	.23
6	.44	.34	.28	.23	.42	.35	.27	.23	.32	.26	.22	.30	.25	.22	.29	.24	.21	.20
7	.40	.31	.24	.20	.39	.30	.24	.20	.28	.23	.19	.27	.22	.19	.26	.21	.18	.17
8	.37	.27	.21	.17	.36	.27	.21	.17	.25	.20	.16	.24	.19	.16	.23	.19	.15	.14
9	.34	.24	.18	.14	.33	.24	.18	.14	.23	.17	.14	.21	.17	.13	.20	.16	.13	.12
10	.32	.22	.16	.12	.30	.21	.16	.12	.20	.15	.12	.19	.15	.12	.19	.14	.11	.10

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 175 WATT MV
(See top for other wattage multipliers)
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	0'	5'	10'	15'	20'
8'	18.28	15.36	6.53	2.71	1.28
10'	11.70	10.64	6.13	2.89	1.47
12'	8.12	8.23	5.45	2.90	1.60
14'	5.96	6.20	4.61	2.80	1.63
16'	4.57	4.64	3.84	2.63	1.63
18'	3.61	3.70	3.19	2.42	1.59
20'	2.92	3.03	2.66	2.16	1.53

MOUNTING HEIGHT IN FEET	0'	5'	10'	15'	20'
8'	18.28	12.16	4.76	1.51	.51
10'	11.70	8.86	4.56	1.94	.79
12'	8.12	6.60	4.14	2.11	.99
14'	5.96	5.22	3.56	2.08	1.12
16'	4.57	4.03	3.04	1.97	1.19
18'	3.61	3.27	2.59	1.84	1.18
20'	2.92	2.69	2.21	1.66	1.14

$FC = \frac{(Candlepower)\ (COS\ \theta)}{DISTANCE^2}$

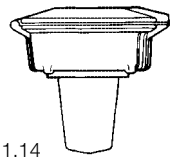
Test No. 5468.0

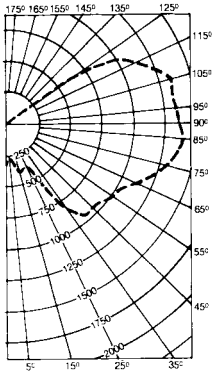
METAL HALIDE, MHP
With Globe Only
70-250 MH (175 MHP) Watt Mogul Base

CANDLEPOWER – 175 WATT
E-28 Clear Lamp
14000 Lumens

For 70 Watt multiply by .4
For 100 Watt multiply by .64
For 250 Watt multiply by 1.46

For 175 MHP Watt multiply by 1.14





ANGLE	CP	ANGLE	CP
.0	306.	95.0	1398.
5.0	291.	100.0	1377.
10.0	340.	105.0	1343.
15.0	397.	110.0	1275.
20.0	374.	115.0	1211.
25.0	360.	120.0	1167.
30.0	536.	125.0	643.
35.0	835.	130.0	122.
40.0	915.	135.0	16.
45.0	904.	140.0	4.
50.0	961.	145.0	0.
55.0	1029.	150.0	0.
60.0	1070.	155.0	0.
65.0	1148.	160.0	0.
70.0	1231.	165.0	0.
75.0	1315.	170.0	0.
80.0	1374.	175.0	0.
85.0	1400.	180.0	0.
90.0	1398.		

Efficiency 80.3%

COEFFICIENTS OF UTILIZATION - ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE pcc	80			70			50		30		10		0
% WALL REFLECTANCE pw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance														
0	.88	.88	.88	.88	.82	.82	.82	.82	.70	.70	.70	.60	.60	.60	.51	.51	.51	.47
1	.75	.70	.64	.60	.69	.64	.60	.56	.55	.55	.51	.48	.46	.43	.40	.37	.35	.33	.29
2	.66	.57	.50	.44	.61	.53	.47	.41	.44	.39	.35	.37	.33	.29	.30	.26	.24	.20
3	.59	.49	.41	.35	.54	.45	.38	.32	.38	.32	.27	.31	.27	.23	.25	.21	.18	.15
4	.53	.42	.34	.28	.49	.39	.32	.26	.33	.27	.22	.27	.22	.18	.21	.17	.14	.11
5	.48	.37	.29	.23	.44	.34	.26	.21	.28	.22	.18	.23	.18	.14	.18	.14	.11	.08
6	.44	.32	.24	.19	.40	.30	.23	.17	.25	.19	.15	.20	.15	.12	.16	.12	.09	.07
7	.40	.29	.21	.16	.37	.26	.20	.15	.22	.16	.12	.18	.13	.10	.14	.10	.07	.05
8	.37	.26	.19	.14	.34	.24	.17	.12	.20	.14	.10	.16	.12	.08	.13	.09	.06	.04
9	.34	.23	.16	.12	.31	.21	.15	.11	.18	.12	.09	.14	.10	.07	.11	.08	.05	.03
10	.32	.21	.15	.10	.29	.19	.13	.09	.16	.11	.08	.13	.09	.06	.10	.07	.04	.03

SPACING TO MOUNTING HEIGHT RATIO — S/MH 3.3

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 175 WATT MH
(See top for other wattage multipliers)
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	0'	5'	10'	15'	20'	25'	30'	35'	40'	45'	50'
8'	4.75	6.21	3.68	1.78	.95	.55	.34	.22	.15	.11	.08
10'	3.04	2.80	3.17	1.75	.99	.60	.38	.26	.18	.13	.10
12'	2.10	2.00	2.86	1.63	.99	.63	.42	.29	.21	.15	.11
14'	1.54	1.62	2.28	1.47	.98	.63	.42	.31	.21	.16	.13
16'	1.18	1.30	1.55	1.37	.91	.63	.43	.32	.23	.17	.13
18'	.93	1.08	1.02	1.25	.85	.62	.43	.32	.24	.18	.14
20'	.75	.87	.69	1.08	.79	.58	.43	.32	.24	.19	.15

$FC = \frac{(Candlepower)\ (COS\ \theta)}{DISTANCE^2}$

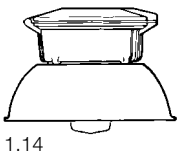
Test No. 5461.0

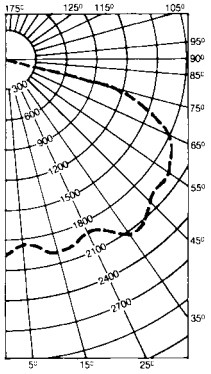
METAL HALIDE, MHP
With Globe and Standard Dome Reflector
70-250 MH (175 MHP) Watt Mogul Base

CANDLEPOWER – 175 WATT
E-28 Clear Lamp
14000 Lumens

For 70 Watt multiply by .4
For 100 Watt multiply by .64
For 250 Watt multiply by 1.46

For 175 MHP Watt multiply by 1.14





ANGLE	CP	ANGLE	CP
.0	1886.	95.0	21.
5.0	1863.	100.0	25.
10.0	1896.	105.0	35.
15.0	1928.	110.0	129.
20.0	1884.	115.0	210.
25.0	1826.	120.0	53.
30.0	1917.	125.0	32.
35.0	2153.	130.0	11.
40.0	2127.	135.0	1.
45.0	2026.	140.0	0.
50.0	1987.	145.0	0.
55.0	1934.	150.0	0.
60.0	1879.	155.0	0.
65.0	1815.	160.0	0.
70.0	1733.	165.0	0.
75.0	1167.	170.0	0.
80.0	339.	175.0	0.
85.0	127.	180.0	0.
90.0	16.		

Efficiency 69.2%

COEFFICIENTS OF UTILIZATION - ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE pcc	80			70			50		30		10		0
% WALL REFLECTANCE pw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance														
0	.82	.82	.82	.82	.80	.80	.80	.80	.76	.76	.76	.72	.72	.72	.69	.69	.69	.67
1	.74	.71	.68	.65	.72	.69	.66	.63	.66	.63	.61	.63	.61	.59	.60	.58	.57	.55
2	.67	.60	.55	.51	.65	.59	.54	.50	.56	.52	.48	.53	.50	.47	.51	.48	.46	.44
3	.60	.52	.46	.41	.58	.51	.45	.40	.48	.43	.39	.46	.42	.38	.44	.41	.38	.36
4	.54	.45	.39	.34	.52	.44	.38	.33	.42	.37	.32	.40	.36	.32	.38	.34	.31	.29
5	.49	.39	.32	.27	.47	.38	.32	.27	.36	.31	.26	.35	.30	.26	.33	.29	.25	.24
6	.44	.34	.28	.23	.43	.34	.27	.22	.32	.26	.22	.31	.25	.22	.29	.25	.21	.20
7	.41	.30	.24	.19	.39	.30	.23	.19	.28	.23	.19	.27	.22	.18	.26	.21	.18	.17
8	.37	.27	.21	.16	.36	.26	.20	.16	.25	.20	.16	.24	.19	.15	.23	.19	.15	.14
9	.34	.24	.18	.14	.33	.23	.18	.13	.22	.17	.13	.21	.17	.13	.21	.16	.13	.11
10	.32	.22	.16	.12	.31	.21	.16	.12	.20	.15	.12	.19	.15	.11	.19	.14	.11	.10

SPACING TO MOUNTING HEIGHT RATIO — S/MH 1.7

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 175 WATT MH
(See top for other wattage multipliers)
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	0'	5'	10'	15'	20'	25'	30'	35'	40'	45'	50'
8'	29.34	19.07	7.49	3.02	1.40	.66	.30	.14	.07	.07	.01
10'	18.78	13.13	7.13	3.26	1.63	.89	.50	.26	.16	.08	.05
12'	13.03	10.11	6.67	3.32	1.77	1.01	.62	.37	.22	.13	.02
14'	9.57	8.03	5.88	3.24	1.84	1.10	.69	.45	.31	.19	.12
16'	7.33	6.46	4.76	3.11	1.87	1.16	.75	.50	.34	.25	.16
18'	5.79	5.30	3.89	2.96	1.84	1.18	.79	.53	.30	.27	.20
20'	4.69	4.24	3.21	2.73	1.78	1.19	.81	.57	.40	.29	.21

$FC = \frac{(Candlepower)\ (COS\ \theta)}{DISTANCE^2}$

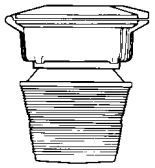
Test No. 5462.0

HUBBELL®
KILLARK®

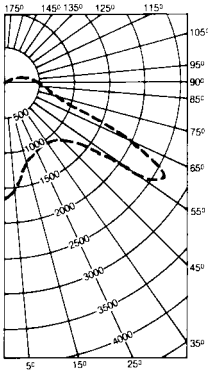
METAL HALIDE, MHP
With 8" Glass Refractor IES Type V
70-250 MH (175 MHP) Watt Mogul Base

CANDLEPOWER – 175 WATT
E-28 Clear Lamp
14000 Lumens

For 70 Watt multiply by .4
For 100 Watt multiply by .64
For 250 Watt multiply by 1.46



For 175 MHP Watt multiply by 1.14



ANGLE	CP	ANGLE	CP
0	1649.	95.0	417.
5.0	1546.	100.0	339.
10.0	1357.	105.0	291.
15.0	1233.	110.0	235.
20.0	1162.	115.0	210.
25.0	1088.	120.0	208.
30.0	1052.	125.0	188.
35.0	1029.	130.0	163.
40.0	1060.	135.0	125.
45.0	1164.	140.0	84.
50.0	1438.	145.0	59.
55.0	2436.	150.0	28.
60.0	2680.	155.0	4.
65.0	1937.	160.0	0.
70.0	1063.	165.0	0.
75.0	795.	170.0	0.
80.0	690.	175.0	0.
85.0	570.	180.0	0.
90.0	481.		

Efficiency 67.1%

COEFFICIENTS OF UTILIZATION - ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE fcc	80			70			50		30		10		0
% WALL REFLECTANCE fw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance														
0	78	78	78	78	75	75	75	75	69	69	69	65	65	65	60	60	60	58
1	69	65	61	58	66	63	59	56	58	55	53	54	52	50	50	48	47	44
2	61	55	49	45	59	53	48	43	49	45	41	45	42	39	42	39	37	34
3	55	47	40	35	52	45	39	34	42	37	33	39	34	31	36	32	29	27
4	49	40	33	28	47	39	32	28	36	30	26	33	28	25	30	27	24	22
5	44	34	27	22	42	33	26	21	30	25	20	28	23	19	26	22	18	16
6	40	30	23	18	38	28	22	17	26	21	16	24	19	15	22	18	15	13
7	36	26	19	15	34	25	19	14	23	18	14	21	16	13	20	15	12	10
8	33	23	17	12	32	22	16	12	20	15	11	19	14	11	17	13	10	09
9	31	21	15	10	29	20	14	10	18	13	10	17	12	09	15	11	08	07
10	28	19	13	09	27	18	13	09	17	12	08	15	11	08	14	10	07	06

SPACING TO MOUNTING HEIGHT RATIO — S/MH .9

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 175 WATT MH
(See top for other wattage multipliers)
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	0'	5'	10'	15'	20'	25'	30'	35'	40'	45'	50'
8'	25.65	9.89	6.20	4.10	1.12	.42	.21	.12	.08	.05	.04
10'	16.42	7.69	4.09	4.05	1.98	.91	.31	.16	.11	.07	.05
12'	11.39	6.15	3.31	2.75	2.47	1.16	.49	.23	.14	.09	.06
14'	8.37	4.92	2.81	2.05	2.32	1.58	.74	.36	.19	.12	.08
16'	6.41	4.07	2.47	1.68	1.54	1.53	.96	.53	.27	.15	.10
18'	5.06	3.38	2.16	1.47	1.21	1.37	1.10	.69	.40	.21	.12
20'	4.10	2.85	1.93	1.31	1.01	.99	1.05	.81	.49	.28	.17

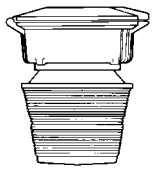
$FC = \frac{(Candlepower)(COS\,\theta)}{DISTANCE^2}$

Test No. 5464.0

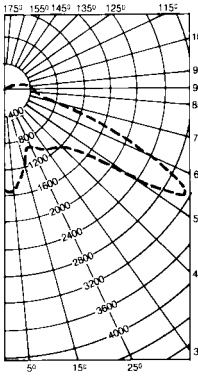
METAL HALIDE, MHP
With 12" Glass Refractor IES Type V
70-250 MH (175 MHP) Watt Mogul Base

CANDLEPOWER – 175 WATT
E-28 Clear Lamp
14000 Lumens

For 70 Watt multiply by .4
For 100 Watt multiply by .64
For 250 Watt multiply by 1.46



For 175 MHP Watt multiply by 1.14



ANGLE	CP	ANGLE	CP
0	1492.	95.0	376.
5.0	1354.	100.0	363.
10.0	1156.	105.0	262.
15.0	1049.	110.0	252.
20.0	978.	115.0	234.
25.0	972.	120.0	215.
30.0	1031.	125.0	192.
35.0	1052.	130.0	143.
40.0	1111.	135.0	117.
45.0	1207.	140.0	90.
50.0	1453.	145.0	69.
55.0	2301.	150.0	44.
60.0	3159.	155.0	28.
65.0	2434.	160.0	14.
70.0	1307.	165.0	0.
75.0	798.	170.0	0.
80.0	576.	175.0	0.
85.0	471.	180.0	0.
90.0	417.		

Efficiency 68.2%

COEFFICIENTS OF UTILIZATION - ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE fcc	80			70			50		30		10		0
% WALL REFLECTANCE fw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance														
0	79	79	79	79	76	76	76	76	71	71	71	66	66	66	61	61	61	59
1	70	66	63	59	68	64	61	58	59	57	54	55	53	51	51	50	48	46
2	62	56	50	45	60	54	48	44	50	45	42	46	43	39	43	40	37	35
3	56	47	41	36	53	46	40	35	42	37	33	39	35	31	36	33	30	28
4	50	40	33	28	47	39	32	27	36	30	26	33	28	25	31	27	23	21
5	44	34	27	21	42	33	26	21	30	24	20	28	23	19	25	21	18	16
6	40	29	22	17	38	28	21	17	26	20	16	24	19	15	22	17	14	12
7	36	26	19	14	34	25	18	14	23	17	13	21	16	12	19	15	11	10
8	33	23	16	12	32	22	16	11	20	15	11	19	14	10	17	13	09	08
9	31	20	14	10	29	20	14	10	18	13	09	17	12	08	15	11	08	06
10	28	18	13	09	27	18	12	08	16	11	08	15	11	07	14	10	07	05

SPACING TO MOUNTING HEIGHT RATIO — S/MH .9

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 175 WATT MH
(See top for other wattage multipliers)
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	0'	5'	10'	15'	20'	25'	30'	35'	40'	45'	50'
8'	23.20	9.85	6.14	4.64	1.39	.47	.21	.11	.07	.04	.03
10'	14.85	6.95	4.24	3.61	2.42	.89	.37	.18	.10	.06	.04
12'	10.30	5.30	3.47	2.73	2.80	1.44	.62	.27	.16	.09	.05
14'	7.57	4.20	2.87	2.10	2.20	1.86	.93	.45	.23	.14	.08
16'	5.79	3.45	2.42	1.76	1.53	1.60	1.16	.68	.43	.18	.11
18'	4.57	2.88	2.09	1.54	1.24	1.30	1.24	.84	.51	.26	.15
20'	3.71	2.42	1.74	1.35	1.05	.98	1.05	.95	.60	.36	.21

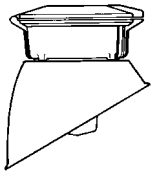
$FC = \frac{(Candlepower)(COS\,\theta)}{DISTANCE^2}$

Test No. 5465.0

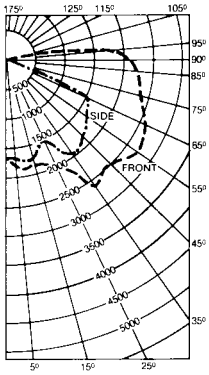
METAL HALIDE, MHP
With Globe and Angle Reflector
70-250 MH (175 MHP) Watt Mogul Base

CANDLEPOWER – 175 WATT
E-28 Clear Lamp
14000 Lumens

For 70 Watt multiply by .4
For 100 Watt multiply by .64
For 250 Watt multiply by 1.46



For 175 MHP Watt multiply by 1.14



FRONT ANGLE	FRONT CP	SIDE ANGLE	SIDE CP
0	1690.	0	1690.
5.0	1748.	5.0	1680.
10.0	1824.	10.0	1738.
15.0	1891.	15.0	1710.
20.0	1881.	20.0	1557.
25.0	1920.	25.0	1500.
30.0	2206.	30.0	1776.
35.0	2655.	35.0	1967.
40.0	2550.	40.0	1862.
45.0	2559.	45.0	1843.
50.0	2693.	50.0	1757.
55.0	2769.	55.0	1662.
60.0	2664.	60.0	1623.
65.0	2616.	65.0	1538.
70.0	2511.	70.0	793.
75.0	2435.	75.0	268.
80.0	2368.	80.0	96.
85.0	2311.	85.0	29.
90.0	2110.	90.0	0.
95.0	1843.	95.0	0.
100.0	573.	100.0	0.
105.0	163.	105.0	0.
110.0	96.	110.0	0.
115.0	20.	115.0	0.

Efficiency 64.9%

COEFFICIENTS OF UTILIZATION - ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE fcc	80			70			50		30		10		0
% WALL REFLECTANCE fw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance														
0	76	76	76	76	74	74	74	74	70	70	70	66	66	66	62	62	62	60
1	68	64	60	57	65	62	59	56	58	56	53	55	53	51	52	50	49	47
2	61	54	49	45	59	53	48	44	50	46	42	47	43	41	44	41	39	37
3	55	47	41	36	53	46	40	36	43	38	35	41	37	33	38	35	32	30
4	50	41	35	30	48	40	34	30	38	33	29	36	31	28	34	30	27	25
5	45	36	29	25	43	35	29	24	33	28	24	31	27	23	29	25	22	21
6	41	32	25	21	40	31	25	21	29	24	20	28	23	19	26	22	19	17
7	38	28	22	18	36	27	22	17	26	21	17	25	20	17	23	19	16	15
8	35	25	19	15	33	24	19	15	23	18	14	22	17	14	21	17	14	12
9	32	22	17	13	31	22	16	12	21	16	12	20	15	12	19	14	12	10
10	29	20	15	11	28	20	14	11	19	14	11	18	13	10	17	13	10	09

SPACING TO MOUNTING HEIGHT RATIO — S/MH .9

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 175 WATT MH
(See top for other wattage multipliers)
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	0'	5'	10'	15'	20'
8'	26.40	22.72	10.30	4.30	2.04
10'	16.90	14.13	9.03	4.68	2.35
12'	11.73	10.34	8.02	4.57	2.53
14'	8.61	8.02	7.29	4.22	2.66
16'	6.59	6.41	5.67	3.87	2.57
18'	5.20	5.21	4.42	3.56	2.43
20'	4.22	4.28	3.52	3.34	2.26

MOUNTING HEIGHT IN FEET	0'	5'	10'	15'	20'
8'	26.40	17.63	6.62	2.58	.86
10'	16.90	11.11	6.51	2.82	1.40
12'	11.73	8.37	5.85	2.94	1.53
14'	8.61	6.76	5.40	2.92	1.59
16'	6.59	5.59	4.41	2.80	1.65
18'	5.20	4.71	3.54	2.60	1.65
20'	4.22	3.91	2.77	2.48	1.62

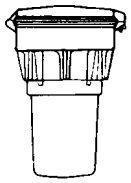
$FC = \frac{(Candlepower)(COS\,\theta)}{DISTANCE^2}$

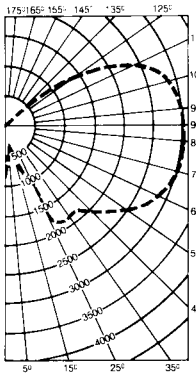
Test No. 5463.0

HUBBELL®
KILLARK®

HIGH PRESSURE SODIUM
With Globe Only
250 – 400 Watt Mogul Base

CANDLEPOWER – 250 WATT
E-18 Clear Lamp
30000 Lumens
For 400 Watt multiply by 1.67





ANGLE	CP	ANGLE	CP
.0	800.	95.0	3034.
5.0	341.	100.0	2997.
10.0	486.	105.0	2901.
15.0	623.	110.0	2718.
20.0	792.	115.0	2423.
25.0	1179.	120.0	1904.
30.0	1728.	125.0	1253.
35.0	1922.	130.0	692.
40.0	1893.	135.0	242.
45.0	2074.	140.0	38.
50.0	2319.	145.0	20.
55.0	2545.	150.0	20.
60.0	2717.	155.0	19.
65.0	2830.	160.0	15.
70.0	2943.	165.0	11.
75.0	3015.	170.0	0.
80.0	3056.	175.0	0.
85.0	3079.	180.0	0.
90.0	3058.		

Efficiency 84.4%

COEFFICIENTS OF UTILIZATION - ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE fcc	80			70			50			30			10		0
% WALL REFLECTANCE fw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance																	
0	.92	.92	.92	.92	.86	.86	.86	.86	.75	.75	.75	.65	.65	.65	.55	.55	.55	.51
1	.79	.74	.68	.63	.73	.68	.63	.59	.58	.55	.51	.49	.46	.44	.41	.39	.37	.32
2	.70	.61	.53	.47	.64	.56	.49	.44	.48	.42	.37	.40	.35	.32	.32	.29	.26	.22
3	.62	.52	.43	.37	.57	.48	.40	.34	.40	.34	.29	.33	.29	.25	.27	.23	.20	.16
4	.56	.45	.36	.29	.52	.41	.33	.27	.35	.28	.23	.29	.24	.20	.23	.19	.16	.13
5	.51	.39	.30	.24	.46	.36	.28	.22	.30	.23	.19	.25	.19	.15	.20	.15	.12	.09
6	.46	.34	.26	.20	.42	.31	.24	.18	.26	.20	.15	.22	.16	.13	.17	.13	.10	.07
7	.42	.30	.22	.17	.39	.28	.20	.15	.23	.17	.13	.19	.14	.10	.15	.11	.08	.06
8	.39	.27	.19	.14	.36	.25	.18	.13	.21	.15	.11	.17	.12	.09	.14	.10	.07	.04
9	.36	.24	.17	.12	.33	.22	.16	.11	.19	.13	.09	.15	.11	.07	.12	.08	.05	.03
10	.34	.22	.15	.10	.31	.20	.14	.10	.17	.12	.08	.14	.09	.06	.11	.07	.05	.03

SPACING TO MOUNTING HEIGHT RATIO — S/MH .2

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 250 WATT H.P.S.
(See top for other wattage multipliers)
HORIZONTAL DISTANCE FROM SOURCE IN FEET

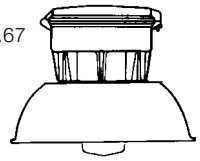
MOUNTING HEIGHT IN FEET	0'	5'	10'	15'	20'	25'	30'	35'	40'	45'	50'
10'	8.00	9.21	7.33	4.40	2.49	1.48	.93	.62	.43	.30	.22
15'	3.55	2.74	4.72	3.25	2.33	1.62	1.10	.78	.56	.41	.31
20'	2.00	1.35	2.30	2.45	1.83	1.44	1.10	.82	.62	.47	.37
25'	1.28	.55	1.11	1.74	1.45	1.17	.97	.78	.63	.49	.39
30'	.88	.48	.68	1.02	1.18	.95	.81	.69	.58	.48	.40
35'	.65	.33	.45	.64	.92	.84	.67	.59	.51	.45	.39

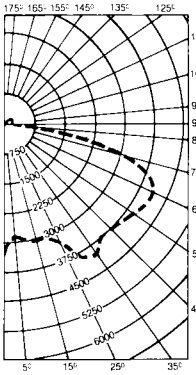
$FC = \frac{(Candlepower)(COS\,\Theta)}{DISTANCE^2}$

Test No. 5482.0

HIGH PRESSURE SODIUM
With Globe and Standard Dome Reflector
250 – 400 Watt Mogul Base

CANDLEPOWER – 250 WATT
E-18 Clear Lamp
30000 Lumens
For 400 Watt multiply by 1.67





ANGLE	CP	ANGLE	CP
.0	3321.	95.0	57.
5.0	2813.	100.0	64.
10.0	2964.	105.0	82.
15.0	3049.	110.0	146.
20.0	3125.	115.0	151.
25.0	3395.	120.0	138.
30.0	3806.	125.0	87.
35.0	3900.	130.0	20.
40.0	3750.	135.0	15.
45.0	3776.	140.0	8.
50.0	3910.	145.0	8.
55.0	4008.	150.0	7.
60.0	4043.	155.0	7.
65.0	4020.	160.0	7.
70.0	3845.	165.0	0.
75.0	2949.	170.0	0.
80.0	1770.	175.0	0.
85.0	566.	180.0	0.
90.0	69.		

Efficiency 66.0%

COEFFICIENTS OF UTILIZATION - ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE fcc	80			70			50			30			10		0
% WALL REFLECTANCE fw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance																	
0	.78	.78	.78	.78	.76	.76	.76	.76	.73	.73	.73	.69	.69	.69	.66	.66	.66	.65
1	.70	.66	.63	.60	.68	.65	.62	.59	.62	.59	.57	.59	.57	.55	.56	.55	.53	.51
2	.62	.56	.50	.46	.60	.54	.49	.45	.52	.48	.44	.49	.46	.43	.47	.44	.42	.40
3	.56	.48	.41	.36	.54	.47	.41	.36	.44	.39	.35	.42	.38	.34	.40	.37	.33	.32
4	.50	.41	.34	.29	.49	.40	.34	.29	.38	.33	.28	.36	.32	.28	.35	.31	.27	.26
5	.45	.35	.28	.23	.43	.34	.28	.23	.33	.27	.23	.31	.26	.22	.30	.25	.22	.20
6	.41	.31	.24	.19	.39	.30	.24	.19	.29	.23	.19	.27	.22	.18	.26	.22	.18	.17
7	.37	.27	.21	.16	.36	.27	.20	.16	.25	.20	.16	.24	.19	.15	.23	.19	.15	.14
8	.34	.24	.18	.13	.33	.24	.18	.13	.23	.17	.13	.22	.17	.13	.21	.16	.13	.11
9	.31	.21	.15	.11	.30	.21	.15	.11	.20	.15	.11	.19	.14	.11	.18	.14	.11	.09
10	.29	.19	.14	.10	.28	.19	.13	.10	.18	.13	.09	.17	.13	.09	.17	.12	.09	.08

SPACING TO MOUNTING HEIGHT RATIO — S/MH 1.7

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 250 WATT H.P.S.
(See top for other wattage multipliers)
HORIZONTAL DISTANCE FROM SOURCE IN FEET

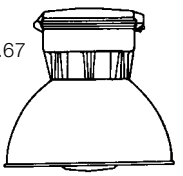
MOUNTING HEIGHT IN FEET	0'	5'	10'	15'	20'	25'	30'	35'	40'	45'	50'
10'	33.21	24.87	13.35	6.85	3.60	2.00	1.15	.64	.42	.25	.16
15'	14.76	12.47	9.88	5.93	3.80	2.44	1.60	1.08	.74	.51	.34
20'	8.30	6.92	6.21	4.95	3.33	2.39	1.71	1.23	.90	.66	.50
25'	5.31	4.49	4.07	3.83	2.94	2.13	1.64	1.25	.95	.74	.57
30'	3.69	3.12	2.93	2.76	2.47	1.88	1.48	1.18	.95	.76	.61
35'	2.71	2.29	2.21	2.08	2.03	1.71	1.33	1.08	.89	.74	.61

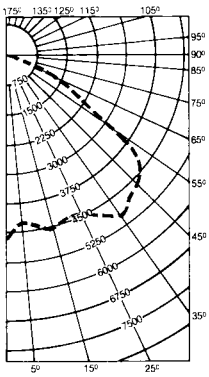
$FC = \frac{(Candlepower)(COS\,\Theta)}{DISTANCE^2}$

Test No. 5484.0

HIGH PRESSURE SODIUM
With Globe and Deep Reflector (HRD-400)
250 – 400 Watt Mogul Base

CANDLEPOWER – 250 WATT
E-18 Clear Lamp
30000 Lumens
For 400 Watt multiply by 1.67





ANGLE	CP	ANGLE	CP
.0	4568.	95.0	10.
5.0	4128.	100.0	11.
10.0	4421.	105.0	10.
15.0	4531.	110.0	15.
20.0	4450.	115.0	18.
25.0	4461.	120.0	29.
30.0	4825.	125.0	27.
35.0	4977.	130.0	29.
40.0	4759.	135.0	24.
45.0	4704.	140.0	25.
50.0	4359.	145.0	22.
55.0	3503.	150.0	24.
60.0	2033.	155.0	17.
65.0	1296.	160.0	15.
70.0	864.	165.0	21.
75.0	535.	170.0	14.
80.0	278.	175.0	0.
85.0	81.	180.0	0.
90.0	8.		

Efficiency 52.3%

COEFFICIENTS OF UTILIZATION - ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE fcc	80			70			50			30			10		0
% WALL REFLECTANCE fw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance																	
0	.62	.62	.62	.62	.61	.61	.61	.61	.58	.58	.58	.55	.55	.55	.53	.53	.53	.52
1	.58	.56	.54	.52	.56	.54	.53	.51	.52	.51	.49	.50	.49	.48	.48	.47	.46	.45
2	.53	.49	.46	.44	.52	.48	.46	.43	.47	.44	.42	.45	.43	.41	.43	.42	.40	.39
3	.49	.44	.40	.37	.48	.43	.40	.37	.42	.39	.36	.40	.38	.35	.39	.37	.35	.34
4	.45	.39	.35	.32	.44	.38	.34	.31	.37	.34	.31	.36	.33	.30	.35	.32	.30	.29
5	.41	.34	.30	.27	.40	.34	.30	.27	.33	.29	.26	.32	.28	.26	.31	.28	.26	.24
6	.37	.31	.26	.23	.36	.30	.26	.23	.29	.25	.22	.28	.25	.22	.27	.24	.22	.21
7	.34	.27	.23	.19	.33	.27	.22	.19	.26	.22	.19	.25	.22	.19	.24	.21	.19	.18
8	.31	.24	.20	.16	.30	.24	.19	.16	.23	.19	.16	.22	.19	.16	.22	.18	.16	.15
9	.28	.21	.17	.14	.28	.21	.17	.14	.20	.16	.14	.20	.16	.14	.19	.16	.14	.13
10	.26	.19	.15	.12	.26	.19	.15	.12	.18	.14	.12	.18	.14	.12	.17	.14	.12	.11

SPACING TO MOUNTING HEIGHT RATIO — S/MH 1.6

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 250 WATT H.P.S.
(See top for other wattage multipliers)
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	0'	5'	10'	15'	20'	25'	30'	35'	40'	45'	50'
10'	45.68	32.43	16.63	5.47	1.42	.53	.26	.12	.07	.04	.02
15'	20.30	17.01	12.58	7.39	3.69	1.40	.63	.32	.18	.11	.07
20'	11.42	10.29	8.10	6.31	4.15	2.55	1.36	.62	.35	.20	.13
25'	7.30	6.70	5.69	4.86	3.69	2.66	1.82	1.15	.69	.37	.22
30'	5.07	4.65	4.25	3.60	3.14	2.39	1.84	1.35	.92	.60	.35
35'	3.72	3.40	3.28	2.82	2.57	2.18	1.70	1.35	1.04	.75	.53

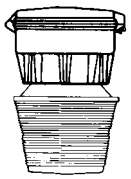
$FC = \frac{(Candlepower)(COS\,\Theta)}{DISTANCE^2}$

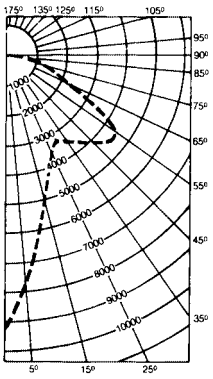
Test No. 5483.0

HUBBELL®
KILLARK®

HIGH PRESSURE SODIUM
With 12" Glass Refractor IES Type V
250 – 400 Watt Mogul Base

CANDLEPOWER – 250 WATT
E-18 Clear Lamp
30000 Lumens
For 400 Watt multiply by 1.67





ANGLE	CP	ANGLE	CP
.0	9175.	95.0	673.
5.0	7801.	100.0	595.
10.0	6382.	105.0	583.
15.0	5004.	110.0	694.
20.0	4007.	115.0	842.
25.0	3562.	120.0	871.
30.0	3379.	125.0	798.
35.0	3475.	130.0	703.
40.0	3716.	135.0	580.
45.0	4094.	140.0	457.
50.0	4495.	145.0	338.
55.0	4459.	150.0	239.
60.0	3362.	155.0	148.
65.0	2237.	160.0	82.
70.0	1652.	165.0	39.
75.0	1375.	170.0	25.
80.0	1226.	175.0	12.
85.0	1005.	180.0	0.
90.0	830.		

Efficiency 71.9%

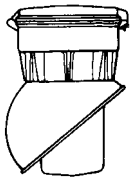
COEFFICIENTS OF UTILIZATION - ZONAL CAVITY

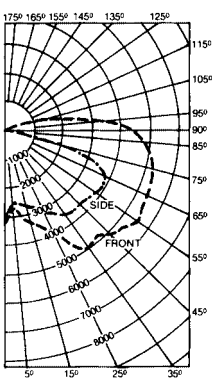
% EFFECTIVE CEILING CAVITY REFLECTANCE fcc	80			70			50			30			10			0
% WALL REFLECTANCE fw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance																	
0	.83	.83	.83	.83	.79	.79	.79	.79	.73	.73	.73	.67	.67	.67	.62	.62	.62	.60
1	.75	.71	.68	.65	.72	.68	.65	.62	.63	.61	.58	.58	.56	.54	.54	.52	.51	.48
2	.68	.62	.57	.52	.65	.59	.55	.51	.55	.51	.48	.51	.47	.45	.47	.44	.42	.40
3	.62	.54	.48	.43	.59	.52	.47	.42	.48	.44	.40	.45	.41	.38	.41	.38	.36	.34
4	.56	.48	.41	.36	.54	.46	.40	.35	.42	.38	.34	.39	.35	.32	.36	.33	.30	.28
5	.51	.42	.35	.30	.49	.40	.34	.30	.37	.32	.28	.35	.30	.27	.32	.28	.25	.23
6	.47	.37	.30	.26	.45	.36	.30	.25	.33	.28	.24	.31	.26	.23	.28	.25	.22	.20
7	.43	.33	.27	.22	.41	.32	.26	.22	.30	.24	.21	.27	.23	.20	.25	.22	.19	.17
8	.39	.29	.23	.19	.38	.28	.23	.18	.26	.21	.18	.25	.20	.17	.23	.19	.16	.14
9	.36	.26	.20	.16	.35	.25	.20	.16	.24	.19	.15	.22	.18	.14	.20	.17	.14	.12
10	.34	.24	.18	.14	.32	.23	.18	.14	.22	.17	.13	.20	.16	.13	.19	.15	.12	.11

SPACING TO MOUNTING HEIGHT RATIO — S/MH .5

HIGH PRESSURE SODIUM
With Globe and Angle Reflector
250 – 400 Watt Mogul Base

CANDLEPOWER – 250 WATT
E-18 Clear Lamp
30000 Lumens
For 400 Watt multiply by 1.67





FRONT ANGLE	FRONT CP	SIDE ANGLE	SIDE CP
.0	3083.	.0	3083.
5.0	2812.	5.0	2578.
10.0	3156.	10.0	2645.
15.0	3365.	15.0	2752.
20.0	3589.	20.0	2882.
25.0	3994.	25.0	3125.
30.0	4708.	30.0	3491.
35.0	4996.	35.0	3608.
40.0	4936.	40.0	3435.
45.0	5081.	45.0	3596.
50.0	5258.	50.0	3788.
55.0	5343.	55.0	3867.
60.0	5451.	60.0	3912.
65.0	5425.	65.0	3798.
70.0	5369.	70.0	3021.
75.0	5274.	75.0	1839.
80.0	5068.	80.0	679.
85.0	4793.	85.0	183.
90.0	4512.	90.0	47.
95.0	3567.	95.0	12.
100.0	2316.	100.0	15.
105.0	1169.	105.0	6.
110.0	281.	110.0	0.
115.0	82.	115.0	0.

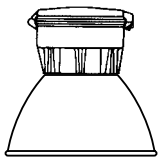
Efficiency 63.5%

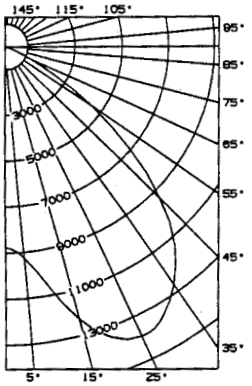
COEFFICIENTS OF UTILIZATION - ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE fcc	80			70			50			30			10			0
% WALL REFLECTANCE fw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance																	
0	.75	.75	.75	.75	.72	.72	.72	.72	.68	.68	.68	.64	.64	.64	.61	.61	.61	.59
1	.66	.62	.58	.55	.63	.60	.56	.53	.56	.53	.51	.53	.51	.49	.50	.48	.46	.45
2	.59	.52	.47	.42	.56	.50	.46	.41	.47	.43	.40	.45	.41	.38	.42	.39	.37	.35
3	.53	.45	.39	.34	.51	.44	.38	.33	.41	.36	.32	.39	.34	.31	.36	.33	.30	.28
4	.48	.39	.33	.28	.46	.38	.32	.27	.36	.31	.27	.34	.29	.26	.32	.28	.25	.23
5	.43	.34	.27	.23	.41	.33	.27	.22	.31	.26	.22	.29	.25	.21	.27	.23	.20	.19
6	.39	.30	.23	.19	.38	.29	.23	.19	.27	.22	.18	.26	.21	.18	.24	.20	.17	.15
7	.36	.26	.20	.16	.35	.26	.20	.16	.24	.19	.15	.23	.18	.15	.22	.17	.14	.13
8	.33	.23	.17	.13	.32	.23	.17	.13	.21	.16	.13	.20	.16	.12	.19	.15	.12	.11
9	.30	.21	.15	.11	.29	.20	.15	.11	.19	.14	.11	.18	.14	.10	.17	.13	.10	.09
10	.28	.19	.13	.10	.27	.18	.13	.10	.17	.13	.09	.16	.12	.09	.15	.11	.09	.07

HIGH PRESSURE SODIUM
With Enclosed Reflector (VMER40)
150-400 Watt Mogul Base

CANDLEPOWER – 400 WATT HPS
E-37 Coated Lamp
47500 Lumens
For 150W multiply by .34
For 250W multiply by .60





CANDELA DISTRIBUTION

0	8771
5	9240
10	10578
15	12268
20	13466
25	13913
30	13576
35	12657
40	11348
45	9362
50	6943
55	4519
60	2495
65	1195
70	551
75	239
80	92
85	40
90	0

Efficiency 66.5%

COEFFICIENTS OF UTILIZATION—ZONAL CAVITY METHOD

% EFFECTIVE CEILING CAVITY REFLECTANCE fcc	80			70			50		30		10		0
% WALL REFLECTANCE fw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance																	
*0	.79	.79	.79	.79	.77	.77	.77	.77	.74	.74	.74	.71	.71	.71	.68	.68	.68	.66
*1	.74	.72	.70	.68	.73	.71	.69	.67	.68	.66	.65	.65	.64	.63	.63	.62	.61	.60
*2	.70	.66	.63	.60	.68	.65	.62	.59	.63	.60	.58	.61	.59	.57	.59	.57	.56	.54
*3	.66	.60	.57	.53	.64	.60	.56	.53	.58	.55	.52	.56	.53	.51	.54	.52	.50	.49
R4	.61	.55	.50	.47	.60	.54	.50	.47	.53	.49	.46	.51	.48	.46	.50	.47	.45	.44
C5	.57	.50	.45	.42	.56	.49	.45	.42	.48	.44	.41	.47	.43	.41	.46	.43	.40	.39
R6	.53	.46	.41	.37	.52	.45	.40	.37	.44	.40	.37	.43	.39	.36	.42	.39	.36	.35
*7	.49	.41	.36	.33	.48	.41	.36	.33	.40	.36	.33	.39	.35	.32	.38	.35	.32	.31
*8	.45	.37	.33	.29	.44	.37	.32	.29	.36	.32	.29	.35	.32	.29	.35	.31	.29	.27
*9	.42	.34	.29	.26	.41	.34	.29	.26	.33	.29	.26	.32	.28	.25	.32	.28	.25	.24
*10	.38	.29	.24	.21	.37	.29	.24	.21	.28	.24	.21	.28	.24	.21	.27	.23	.21	.20

SPACING CRITERION: 1.8

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 250 WATT H.P.S.
(See top for other wattage multipliers)
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	0'	5'	10'	15'	20'	25'	30'	35'	40'	45'	50'
10'	91.75	25.23	14.47	7.23	2.40	.96	.50	.29	.19	.13	.09
15'	40.77	16.71	8.79	6.43	4.29	2.16	1.06	.57	.34	.22	.15
20'	22.93	12.05	6.30	4.50	3.61	2.73	1.80	1.02	.60	.35	.24
25'	14.68	9.21	5.01	3.40	2.75	2.31	1.88	1.40	.90	.61	.38
30'	10.19	7.10	4.17	2.80	2.19	1.87	1.60	1.35	1.07	.80	.54
35'	7.48	5.50	3.63	2.37	1.80	1.52	1.32	1.18	1.01	.84	.68

$FC = \frac{\text{(Candlepower) (COS } \theta)}{\text{DISTANCE}^2}$

Test No. 5529.0

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 250 WATT H.P.S.
(See top for other wattage multipliers)
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	FRONT 0'	5'	10'	15'	20'	SIDE 0'	5'	10'	15'	20'
10'	30.83	29.59	17.96	9.15	4.86	30.83	29.59	12.71	6.61	3.43
15'	13.70	13.27	12.49	7.98	5.09	13.70	10.73	9.11	5.65	3.68
20'	7.70	7.58	7.39	6.37	4.49	7.70	6.23	5.72	4.57	3.17
25'	4.93	4.82	4.70	4.74	3.77	4.93	4.02	3.75	3.52	2.67
30'	3.42	3.29	3.31	3.28	3.12	3.42	2.80	2.68	2.54	2.27

$FC = \frac{\text{(Candlepower) (COS } \theta)}{\text{DISTANCE}^2}$

Test No. 5485.0

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 400 WATT H.P.S.
(See top for other wattage multipliers)
HORIZONTAL DISTANCE FROM SOURCE IN FEET

	0'	5'	10'	15'	20'	25'	30'	35'	40'	45'	50'
10'	87.7	99.4	33.1	6.75	1.38	0.38	0.14	0.06	0.03	0.02	0.01
15'	39.0	49.9	33.1	14.7	5.18	1.73	0.61	0.25	0.12	0.06	0.03
20'	21.9	27.3	24.8	15.6	8.27	3.82	1.69	0.74	0.34	0.17	0.10
25'	14.0	16.7	17.6	13.5	8.93	5.30	2.87	1.50	0.78	0.41	0.22
30'	9.75	11.1	12.5	11.0	8.27	5.74	3.68	2.22	1.30	0.75	0.43
35'	7.16	7.92	9.09	8.77	7.27	5.51	3.98	2.70	1.76	1.11	0.70

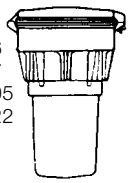
$FC = \frac{\text{(Candlepower) (COS } \theta)}{\text{DISTANCE}^2}$

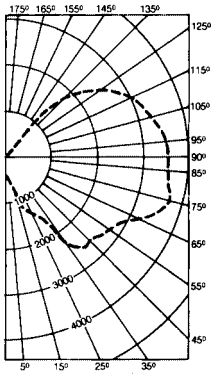
Test No. 7803

METAL HALIDE, MHP, MERCURY VAPOR
With Globe Only
400 Watt Mogul Base

CANDLEPOWER – 400 WATT MH
E-37 Clear Lamp
36000 Lumens

For 250W MHP multiply by .66
For 320W MHP multiply by .87
For 350W MHP multiply by 1.05
For 400W MHP multiply by 1.22
For 400W MV multiply by .62





ANGLE	CP	ANGLE	CP
.0	444.	95.0	3500.
5.0	420.	100.0	3400.
10.0	640.	105.0	3277.
15.0	834.	110.0	3174.
20.0	1132.	115.0	3006.
25.0	1147.	120.0	2802.
30.0	1552.	125.0	2598.
35.0	2303.	130.0	2346.
40.0	2627.	135.0	1913.
45.0	2579.	140.0	1156.
50.0	2761.	145.0	198.
55.0	2983.	150.0	16.
60.0	3178.	155.0	0.
65.0	3446.	160.0	0.
70.0	3617.	165.0	0.
75.0	3643.	170.0	0.
80.0	3594.	175.0	0.
85.0	3570.	180.0	0.
90.0	3535.		

Efficiency 89.7%

COEFFICIENTS OF UTILIZATION - ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE rcc	80			70			50			30			10		0
% WALL REFLECTANCE rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance														
0	.97	.97	.97	.97	.91	.91	.91	.91	.78	.78	.78	.66	.66	.66	.55	.55	.55	.50
1	.84	.78	.72	.67	.77	.72	.67	.63	.61	.57	.54	.51	.48	.45	.41	.39	.37	.32
2	.74	.65	.57	.50	.68	.59	.52	.46	.50	.44	.39	.41	.37	.33	.33	.29	.26	.22
3	.66	.55	.46	.39	.60	.51	.43	.36	.42	.36	.31	.34	.30	.25	.27	.23	.20	.16
4	.60	.48	.39	.32	.54	.44	.36	.29	.36	.30	.25	.30	.24	.20	.23	.19	.16	.12
5	.54	.41	.32	.26	.49	.38	.30	.24	.31	.25	.20	.25	.20	.16	.20	.16	.12	.09
6	.49	.36	.28	.21	.45	.33	.25	.20	.28	.21	.16	.22	.17	.13	.17	.13	.10	.07
7	.45	.32	.24	.18	.41	.30	.22	.17	.24	.18	.14	.20	.15	.11	.15	.11	.08	.06
8	.42	.29	.21	.15	.38	.26	.19	.14	.22	.16	.11	.18	.13	.09	.14	.10	.07	.04
9	.38	.26	.18	.13	.35	.24	.17	.12	.20	.14	.10	.16	.11	.08	.12	.08	.05	.03
10	.36	.24	.16	.11	.33	.22	.15	.10	.18	.12	.08	.14	.10	.06	.11	.07	.05	.03

SPACING TO MOUNTING HEIGHT RATIO — S/MH 4.6

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 400 WATT MH
(See top for other wattage multipliers)
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	0'	5'	10'	15'	20'	25'	30'	35'	40'	45'	50'
10'	4.44	8.78	9.11	5.15	2.98	1.81	1.14	.75	.51	.37	.27
15'	1.97	3.84	5.12	4.05	2.77	1.90	1.32	.94	.68	.50	.38
20'	1.11	1.81	2.08	3.02	2.27	1.70	1.28	.97	.74	.58	.45
25'	.71	1.02	1.45	1.56	1.90	1.45	1.15	.92	.73	.58	.47
30'	.49	.63	.96	.97	1.28	1.32	1.01	.83	.69	.57	.47
35'	.36	.43	.60	.72	.82	1.01	.93	.74	.62	.53	.45

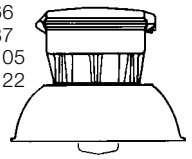
FC = (Candlepower) (COS θ) / DISTANCE²

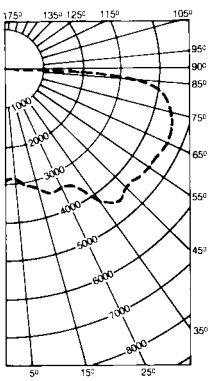
Test No. 5476.0

METAL HALIDE, MHP, MERCURY VAPOR
With Globe and Standard Dome Reflector
400 Watt Mogul Base

CANDLEPOWER – 400 WATT MH
E-37 Clear Lamp
36000 Lumens

For 250W MHP multiply by .66
For 320W MHP multiply by .87
For 350W MHP multiply by 1.05
For 400W MHP multiply by 1.22
For 400W MV multiply by .62





ANGLE	CP	ANGLE	CP
0	2965.	95.0	136.
5.0	2947.	100.0	97.
10.0	3130.	105.0	73.
15.0	3284.	110.0	71.
20.0	3481.	115.0	58.
25.0	3398.	120.0	42.
30.0	3609.	125.0	243.
35.0	4235.	130.0	432.
40.0	4569.	135.0	95.
45.0	4372.	140.0	21.
50.0	4474.	145.0	21.
55.0	4582.	150.0	21.
60.0	4631.	155.0	13.
65.0	4757.	160.0	0.
70.0	4730.	165.0	0.
75.0	4467.	170.0	0.
80.0	4117.	175.0	0.
85.0	3338.	180.0	0.
90.0	1179.		

Efficiency 74.0%

COEFFICIENTS OF UTILIZATION - ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE rcc	80			70			50			30			10		0
% WALL REFLECTANCE rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance														
0	.88	.88	.88	.88	.85	.85	.85	.85	.81	.81	.81	.77	.77	.77	.74	.74	.74	.72
1	.76	.70	.65	.61	.73	.68	.64	.60	.65	.61	.57	.61	.58	.55	.58	.56	.53	.51
2	.66	.58	.51	.45	.64	.56	.50	.44	.53	.47	.43	.50	.45	.41	.47	.44	.40	.38
3	.59	.49	.41	.35	.57	.48	.40	.34	.45	.39	.33	.43	.37	.33	.40	.36	.32	.30
4	.53	.42	.34	.28	.51	.41	.33	.28	.39	.32	.27	.37	.31	.26	.35	.30	.26	.24
5	.48	.36	.28	.22	.46	.35	.28	.22	.33	.27	.21	.32	.26	.21	.30	.25	.20	.18
6	.44	.32	.24	.18	.42	.31	.23	.18	.29	.23	.18	.28	.22	.17	.26	.21	.17	.15
7	.40	.28	.20	.15	.38	.27	.20	.15	.26	.19	.15	.25	.19	.14	.23	.18	.14	.12
8	.37	.25	.18	.13	.35	.24	.17	.12	.23	.17	.12	.22	.16	.12	.21	.16	.12	.10
9	.34	.22	.15	.11	.32	.22	.15	.10	.21	.14	.10	.20	.14	.10	.19	.14	.10	.08
10	.31	.20	.13	.09	.30	.20	.13	.09	.19	.13	.09	.18	.12	.09	.17	.12	.08	.07

SPACING TO MOUNTING HEIGHT RATIO — S/MH 2.1

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 400 WATT MH
(See top for other wattage multipliers)
HORIZONTAL DISTANCE FROM SOURCE IN FEET

	0'	5'	10'	15'	20'	25'	30'	35'	40'	45'	50'
10'	29.65	24.61	15.45	7.83	4.20	2.42	1.47	.93	.63	.44	.32
15'	13.17	12.90	10.19	6.86	4.35	2.79	1.87	1.29	.91	.65	.48
20'	7.41	7.42	6.15	5.50	3.86	2.73	1.95	1.41	1.05	.79	.60
25'	4.74	4.76	4.43	3.64	3.37	2.47	1.87	1.43	1.09	.84	.67
30'	3.29	3.29	3.22	2.73	2.54	2.30	1.71	1.36	1.08	.87	.69
35'	2.42	2.42	2.38	2.17	1.92	1.86	1.63	1.26	1.03	.85	.70

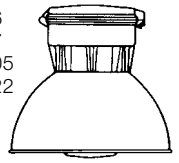
FC = (Candlepower) (COS θ) / DISTANCE²

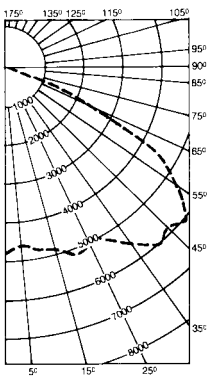
Test No. 5478.0

METAL HALIDE, MHP, MERCURY VAPOR
With Globe and Deep Reflector (HRD-400)
400 Watt Mogul Base

CANDLEPOWER – 400 WATT MH
E-37 Clear Lamp
36000 Lumens

For 250W MHP multiply by .66
For 320W MHP multiply by .87
For 350W MHP multiply by 1.05
For 400W MHP multiply by 1.22
For 400W MV multiply by .62





ANGLE	CP	ANGLE	CP
.0	4824.	95.0	7.
5.0	4734.	100.0	0.
10.0	4890.	105.0	8.
15.0	4978.	110.0	16.
20.0	5136.	115.0	20.
25.0	5033.	120.0	21.
30.0	5157.	125.0	39.
35.0	5686.	130.0	33.
40.0	6005.	135.0	29.
45.0	5818.	140.0	29.
50.0	6109.	145.0	120.
55.0	5473.	150.0	24.
60.0	4507.	155.0	8.
65.0	2094.	160.0	5.
70.0	1510.	165.0	0.
75.0	868.	170.0	0.
80.0	430.	175.0	0.
85.0	149.	180.0	0.
90.0	16.		

Efficiency 57.0%

COEFFICIENTS OF UTILIZATION - ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE rcc	80			70			50			30			10		0
% WALL REFLECTANCE rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance														
0	.68	.68	.68	.68	.66	.66	.66	.66	.63	.63	.63	.60	.60	.60	.58	.58	.58	.56
1	.63	.60	.58	.56	.61	.59	.57	.55	.56	.55	.53	.54	.53	.51	.52	.51	.50	.49
2	.57	.53	.49	.46	.56	.52	.49	.46	.50	.47	.45	.48	.46	.44	.46	.44	.42	.41
3	.52	.47	.42	.39	.51	.46	.42	.38	.44	.41	.38	.42	.39	.37	.41	.38	.35	.35
4	.48	.41	.36	.33	.46	.40	.36	.32	.39	.35	.32	.37	.34	.31	.36	.33	.31	.30
5	.43	.36	.31	.27	.42	.35	.31	.27	.34	.30	.27	.33	.29	.26	.32	.29	.26	.25
6	.39	.32	.26	.23	.38	.31	.26	.23	.30	.26	.22	.29	.25	.22	.28	.25	.22	.21
7	.36	.28	.23	.19	.35	.27	.23	.19	.26	.22	.19	.26	.22	.19	.25	.21	.19	.17
8	.33	.25	.20	.16	.32	.24	.19	.16	.23	.19	.16	.23	.19	.16	.22	.18	.16	.14
9	.30	.22	.17	.13	.29	.21	.17	.13	.21	.16	.13	.20	.16	.13	.19	.16	.13	.12
10	.27	.19	.15	.12	.27	.19	.15	.12	.19	.14	.11	.18	.14	.11	.17	.14	.11	.10

SPACING TO MOUNTING HEIGHT RATIO — S/MH 1.8

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 400 WATT MH
(See top for other wattage multipliers)
HORIZONTAL DISTANCE FROM SOURCE IN FEET

	0'	5'	10'	15'	20'	25'	30'	35'	40'	45'	50'
10'	48.24	36.18	20.55	9.01	2.73	.89	.43	.20	.12	.07	.04
15'	21.44	19.24	14.01	9.14	5.49	2.84	1.21	.53	.31	.19	.11
20'	12.06	11.32	9.04	7.35	5.14	3.64	2.25	1.37	.68	.33	.22
25'	7.71	7.40	6.55	5.20	4.47	3.29	2.56	1.75	1.21	.82	.43
30'	5.36	5.18	4.81	4.02	3.50	3.02	2.28	1.85	1.37	1.00	.71
35'	3.93	3.82	3.61	3.21	2.75	2.50	2.14	1.67	1.41	1.10	.84

FC = (Candlepower) (COS θ) / DISTANCE²

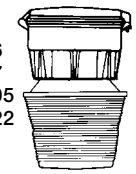
Test No. 5477.0

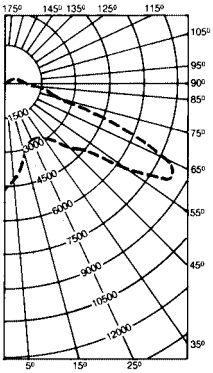
HUBBELL®
KILLARK®

METAL HALIDE, MHP, MERCURY VAPOR
With 12" Glass Refractor IES Type V
400 Watt Mogul Base

CANDLEPOWER – 400 WATT MH
E-37 Clear Lamp
36000 Lumens

For 250W MHP multiply by .66
For 320W MHP multiply by .87
For 350W MHP multiply by 1.05
For 400W MHP multiply by 1.22
For 400W MV multiply by .62





ANGLE	CP	ANGLE	CP
.0	4617.	95.0	1179.
5.0	4184.	100.0	947.
10.0	3490.	105.0	762.
15.0	3022.	110.0	743.
20.0	2729.	115.0	752.
25.0	2761.	120.0	703.
30.0	2811.	125.0	619.
35.0	2870.	130.0	478.
40.0	3105.	135.0	385.
45.0	3435.	140.0	284.
50.0	4481.	145.0	214.
55.0	7120.	150.0	153.
60.0	8771.	155.0	108.
65.0	8035.	160.0	67.
70.0	4582.	165.0	0.
75.0	2629.	170.0	0.
80.0	1925.	175.0	0.
85.0	1494.	180.0	0.
90.0	1287.		

Efficiency 82.4%

COEFFICIENTS OF UTILIZATION—ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE fcc	80			70				50			30			10			0
% WALL REFLECTANCE fw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance																	
0	.95	.95	.95	.95	.92	.92	.92	.92	.86	.86	.86	.80	.80	.80	.74	.74	.74	.72
1	.85	.80	.75	.71	.81	.77	.73	.69	.71	.68	.65	.66	.64	.61	.62	.59	.57	.55
2	.75	.67	.60	.54	.72	.64	.58	.52	.59	.54	.50	.55	.51	.47	.51	.47	.44	.42
3	.67	.57	.48	.42	.64	.54	.47	.41	.50	.44	.39	.46	.41	.37	.43	.39	.35	.32
4	.60	.48	.39	.33	.57	.46	.38	.32	.43	.36	.30	.39	.34	.29	.36	.31	.27	.25
5	.53	.40	.31	.25	.50	.38	.30	.24	.35	.28	.23	.32	.26	.22	.30	.25	.20	.18
6	.47	.35	.26	.20	.45	.33	.25	.19	.30	.23	.18	.28	.22	.17	.26	.20	.16	.14
7	.43	.30	.22	.16	.41	.29	.21	.16	.27	.20	.15	.25	.18	.14	.22	.17	.13	.11
8	.40	.27	.19	.14	.38	.26	.18	.13	.24	.17	.12	.22	.16	.12	.20	.15	.11	.09
9	.37	.24	.16	.11	.35	.23	.16	.11	.21	.15	.10	.20	.14	.10	.18	.13	.09	.07
10	.34	.22	.15	.10	.32	.21	.14	.10	.19	.13	.09	.18	.12	.08	.16	.11	.08	.06

SPACING TO MOUNTING HEIGHT RATIO — S/MH .7

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 400 WATT MH
(See top for other wattage multipliers)
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	0'	5'	10'	15'	20'	25'	30'	35'	40'	45'	50'
10'	46.17	19.82	12.14	12.71	7.45	3.05	1.32	.62	.37	.23	.16
15'	20.52	10.80	7.28	5.39	5.82	5.10	3.31	1.99	1.01	.58	.35
20'	11.54	7.11	4.95	3.73	3.03	3.05	3.17	2.67	1.86	1.23	.76
25'	7.38	5.12	3.50	2.83	2.29	1.94	1.88	2.07	1.93	1.60	1.19
30'	5.13	3.86	2.70	2.20	1.82	1.56	1.34	1.30	1.45	1.41	1.27
35'	3.76	2.98	2.19	1.74	1.50	1.26	1.10	.99	.94	1.04	1.09

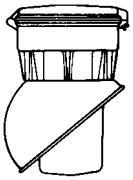
$FC = \frac{(Candlepower)\ (COS\ \Theta)}{DISTANCE^2}$

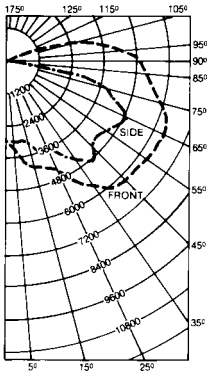
Test No. 5480.0

METAL HALIDE, MHP, MERCURY VAPOR
With Globe and Angle Reflector
400 Watt Mogul Base

CANDLEPOWER – 400 WATT MH
E-37 Clear Lamp
36000 Lumens

For 250W MHP multiply by .66
For 320W MHP multiply by .87
For 350W MHP multiply by 1.05
For 400W MHP multiply by 1.22
For 400W MV multiply by .62





FRONT ANGLE	FRONT CP	SIDE ANGLE	SIDE CP
.0	2998.	.0	2998.
5.0	3238.	5.0	3045.
10.0	3775.	10.0	3280.
15.0	4091.	15.0	3404.
20.0	4551.	20.0	3749.
25.0	4555.	25.0	3602.
30.0	5074.	30.0	3858.
35.0	5790.	35.0	4597.
40.0	6152.	40.0	4858.
45.0	6170.	45.0	4473.
50.0	6285.	50.0	4454.
55.0	6353.	55.0	4547.
60.0	6409.	60.0	4721.
65.0	6454.	65.0	4831.
70.0	6226.	70.0	4633.
75.0	5996.	75.0	4073.
80.0	5720.	80.0	2774.
85.0	5390.	85.0	806.
90.0	5079.	90.0	137.
95.0	4638.	95.0	54.
100.0	4091.	100.0	18.
105.0	3151.	105.0	0.
110.0	743.	110.0	0.
115.0	77.	115.0	0.

Efficiency 68.7%

COEFFICIENTS OF UTILIZATION—ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE fcc	80			70				50			30			10			0
% WALL REFLECTANCE fw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance																	
0	.80	.80	.80	.80	.77	.77	.77	.77	.72	.72	.72	.68	.68	.68	.63	.63	.63	.61
1	.70	.66	.62	.58	.68	.64	.60	.57	.59	.56	.54	.55	.53	.51	.52	.50	.48	.46
2	.63	.56	.50	.45	.60	.54	.48	.44	.50	.45	.41	.46	.43	.39	.43	.40	.37	.35
3	.56	.48	.41	.36	.54	.46	.40	.35	.43	.38	.34	.40	.36	.32	.37	.34	.31	.28
4	.51	.42	.35	.29	.49	.40	.34	.29	.37	.32	.27	.35	.30	.26	.32	.28	.25	.23
5	.46	.36	.29	.24	.44	.35	.28	.23	.32	.27	.22	.30	.25	.21	.28	.24	.20	.19
6	.42	.32	.25	.20	.40	.30	.24	.19	.28	.23	.19	.26	.22	.18	.25	.20	.17	.15
7	.38	.28	.21	.17	.37	.27	.21	.16	.25	.20	.16	.24	.19	.15	.22	.18	.14	.13
8	.35	.25	.18	.14	.34	.24	.18	.14	.22	.17	.13	.21	.16	.13	.20	.15	.12	.10
9	.32	.22	.16	.12	.31	.21	.16	.11	.20	.15	.11	.19	.14	.11	.17	.13	.10	.09
10	.30	.20	.14	.10	.29	.19	.14	.10	.18	.13	.10	.17	.12	.09	.16	.12	.09	.07

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 400 WATT MH
(See top for other wattage multipliers)
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	FRONT 0'	FRONT 5'	FRONT 10'	FRONT 15'	FRONT 20'	SIDE 0'	SIDE 5'	SIDE 10'	SIDE 15'	SIDE 20'
10'	29.98	33.32	21.81	10.74	5.71	29.98	26.13	15.81	7.81	4.28
15'	13.32	16.57	14.08	9.69	6.03	13.32	13.70	11.01	7.02	4.32
20'	7.49	9.19	8.33	7.50	5.45	7.49	7.71	6.53	5.95	3.95
25'	4.79	5.79	5.82	5.11	4.57	4.79	4.98	4.76	3.89	3.62
30'	3.33	3.91	4.14	3.70	3.52	3.33	3.44	3.42	2.90	2.75

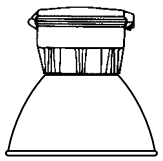
$FC = \frac{(Candlepower)\ (COS\ \Theta)}{DISTANCE^2}$

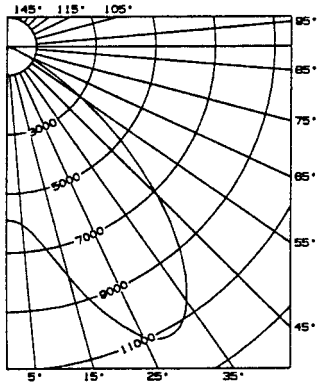
Test No. 5479.0

METAL HALIDE, MHP, MERCURY VAPOR
With Enclosed Reflector (VMER40)
250-400 Watt Mogul Base

CANDLEPOWER – 400 WATT MH
E-37 Coated Lamp
36000 Lumens

For 250W MHP multiply by .66
For 320W MHP multiply by .87
For 350W MHP multiply by 1.05
For 400W MHP multiply by 1.22
For 400W MV multiply by .62





CANDELA DISTRIBUTION	
0	5893
5	6064
10	6785
15	8085
20	9585
25	10877
30	11247
35	10539
40	9118
45	7149
50	5069
55	3088
60	1582
65	753
70	352
75	159
80	64
85	29
90	0

Efficiency 67.9%

COEFFICIENTS OF UTILIZATION—ZONAL CAVITY

% EFFECTIVE CEILING CAVITY REFLECTANCE fcc	80			70				50			30			10			0
% WALL REFLECTANCE fw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance																	
*0	.81	.81	.81	.81	.79	.79	.79	.79	.75	.75	.75	.69	.69	.69	.72	.72	.72	.68
*1	.76	.74	.72	.70	.74	.72	.70	.69	.70	.68	.67	.65	.64	.63	.67	.66	.65	.61
*2	.72	.68	.64	.62	.70	.66	.63	.61	.64	.62	.60	.60	.58	.57	.62	.60	.58	.56
*3	.67	.62	.58	.55	.66	.61	.57	.54	.59	.56	.53	.56	.54	.52	.57	.55	.53	.51
R4	.62	.56	.52	.48	.61	.55	.51	.48	.54	.50	.47	.51	.48	.46	.52	.49	.47	.45
C5	.58	.51	.46	.43	.57	.51	.46	.43	.49	.45	.42	.47	.44	.41	.48	.44	.42	.40
R6	.54	.47	.42	.38	.53	.46	.41	.38	.45	.41	.38	.43	.40	.37	.44	.40	.37	.36
*7	.50	.42	.37	.34	.49	.42	.37	.33	.41	.36	.33	.39	.35	.33	.39	.35	.33	.32
*8	.46	.38	.33	.29	.45	.38	.33	.29	.37	.32	.29	.35	.32	.29	.35	.32	.29	.28
*9	.43	.34	.29	.26	.42	.34	.29	.26	.33	.29	.26	.32	.28	.25	.32	.28	.25	.24
*10	.38	.29	.24	.21	.37	.29	.24	.21	.28	.24	.21	.27	.23	.21	.27	.23	.21	.19

SPACING CRITERION: 1.9

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 400 WATT MH
(See top for other wattage multipliers)
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	0'	5'	10'	15'	20'	25'	30'	35'	40'	45'	50'
10'	58.9	79.2	25.3	4.50	0.87	0.24	0.09	0.04	0.02	0.01	0.01
15'	26.2	34.6	27.6	11.2	3.67	1.11	0.39	0.16	0.07	0.04	0.02
20'	14.7	17.8	19.8	12.9	6.32	2.76	1.13	0.47	0.22	0.11	0.06
25'	9.43	10.7	12.9	11.3	7.27	4.04	2.10	1.04	0.50	0.26	0.14
30'	6.55	7.13	8.66	8.81	6.91	4.62	2.81	1.63	0.92	0.50	0.28
35'	4.81	5.11	6.08	6.62	6.01	4.58	3.18	2.06	1.30	0.80	0.48

$FC = \frac{(Candlepower)\ (COS\ 0)}{DISTANCE^2}$

Test No. 7804

HUBBELL
KILLARK®

Class I, Div. 1 & 2, Groups C,D
Class I, Zones 1 & 2, Groups IIB, IIA
Class II, Div. 1 & 2, Groups E,F,G
Class III, Div. 1 & 2
Suitable for wet locations
Marine
NEMA 3, 4, 4X
Factory Sealed

Listed - Files E10514 and E91793 (Marine)

Certified - File LR11713

FEATURES-SPECIFICATIONS

HOSTILE*LITE*®

Applications

HOSTILE***LITE***® EM, EB, & EQ Series fixtures are designed for installations where moisture, dirt, dust, corrosion and vibration may be present, or NEMA 3 and 4x areas where wind, water, snow or high ambients can be expected. They can be used in locations made hazardous due to the presence of flammable or explosive gases, vapors and combustible dusts as defined by the NEC.

Applications include classified areas such as paint manufacturing plants, ammunition facilities, oil and gas producing and refining plants, off-shore and dockside installations, tank farms, pipeline pumping stations and marine loading and fuel transfer terminals.

Features:

- Five light sources—Incandescent, compact fluorescent, high pressure sodium, metal halide and mercury vapor
- Mounting choice—Pendant, ceiling, 25˚ stanchion or 90˚ wall mount, all with "wireless" design that allows fast, easy fixture installation
- Factory sealed—No external seal needed. Simply wire mounting cap and thread on fixture to install
- Compact size—Medium base incandescent and HID lamps, plus PL fluorescent lamps allow smaller fixture design
- Corrosion resistant—-Copper-free aluminum die-cast construction. Baked powder epoxy finish, electrostatically applied. Exposed hardware is 316 grade stainless steel

Accessories

- Available with or without guard, standard dome or 25˚ angle reflector, exit sign and inner colored globes

Compliances

- UL-844 Electric Lighting Fixtures for use in Hazardous Locations
- UL Marine Type Electric Lighting Fixtures
- UL-1570 Standard for Fluorescent Lighting Fixtures
- UL-1571 Standard for Incandescent Lighting Fixtures
- UL-1572 Standard for HID Lighting Fixtures
- CSA C22.2 no. 137-M1981 Electric Luminaires for use in Hazardous Locations
- NEMA 3, 4, 4X, 7CD, 9EFG

Catalog Number Logic

E 0 0 00 0 00 0 - 00 (CEN)*

Series Constant

Lamp Base
M—Medium Base
B—Bi-Pin Base
Q—Quad-Pin Base

Lamp Type
I—Incandescent
F—Fluorescent
S—HPS
H—MH
M—MV

Lamp Wattage
15—150W, A-21, INC
20—300W, PS-25, INC
30—300W, PS-30, INC
13—(1) 13W, Bi-Pin FLUOR
26—(2) 13W Bi-Pin or (1) Quad-Pin 26Watt FLUOR
32—Quad-Pin FLUOR
35—35W, HPS
42—Quad-Pin FLUOR
05—50W, HPS, MH, MV
07—70W, HPS, MH
75—75W, MV
10—100W, HPS, MH, MV
15—150W, HPS

Voltage @ 60 Hertz
0—Quadri-Volt (120, 208, 240, 277)
1—120
4—277
5—480
6—347 Canada (70,100MH/HPS)
30—120-277 50/60 Hz EQF Series Only

Mounting Type
A2—3/4" Pendant
A3—1" Pendant
X2—3/4" Ceiling
X3—1" Ceiling
B2—3/4" Bracket
B3—1" Bracket
D4—1-1/4"/1-1/2" Stanchion

Guard
G—Omit G if guard is not required

Options
ML—UL Marine Listing for EMI. Standard on EMS, EMM and EMH. Not available on EBF, EQF

**CEN (CENELEC) approval option available.* *See pages L150-151 for more information.*

HUBBELL®
KILLARK®

Class I, Div. 1 & 2, Groups C,D
Class I, Zones 1 & 2, Groups IIB, IIA
Class II, Div. 1 & 2, Groups E,F,G
Class III, Div. 1 & 2
Suitable for wet locations
Marine
NEMA 3, 4, 4X
Factory Sealed

Listed - Files E10514 and E91793 (Marine)

Certified - File LR11713

ORDERING INFORMATION

Pendant

Ceiling

Wall

Stanchion

EM 60–300W MEDIUM BASE INCANDESCENT①

LAMP TYPE	LAMP/WATTS	LAMP SIZE	CATALOG NUMBER④			
			PENDANT 3/4"②	CEILING 3/4"②	WALL 3/4"②	STANCHION 1-1/4"③
INC	60, 75, 100, 150	A-19, A-21	EMI15A2G	EMI15X2G	EMI15B2G	EMI15D4G
	100, 150, 200, 300	A-23, PS-25	EMI20A2G	EMI20X2G	EMI20B2G	EMI20D4G
	200, 300	PS-25, PS-30	EMI30A2G	EMI30X2G	EMI30B2G	EMI30D4G

EBF 13-26W Bi-Pin COMPACT FLUORESCENT①

LAMP TYPE	Bi-Pin FLUORESCENT⑤		CATALOG NUMBER④			
	LAMP INCLUDED	LINE VOLTAGE @60Hz	PENDANT 3/4"②	CEILING 3/4"②	WALL 3/4"②	STANCHION 1-1/4"③
COMPACT FLUOR.	13 (1 X 13)	120	EBF131A2G	EBF131X2G	EBF131B2G	EBF131D4G
		277	EBF134A2G	EBF134X2G	EBF134B2G	EBF134D4G
	26 (2 X 13)	120	EBF261A2G	EBF261X2G	EBF261B2G	EBF261D4G
		277	EBF264A2G	EBF264X2G	EBF264B2G	EBF264D4G

EQF 26-42W WORLD VOLTAGE QUAD-PIN COMPACT FLUORESCENT①

LAMP TYPE	Quad-Pin FLUORESCENT⑤		CATALOG NUMBER④⑥			
	LAMP INCLUDED	LINE VOLTAGE	PENDANT 3/4"②	CEILING 3/4"②	WALL 3/4"②	STANCHION 1-1/4"③
COMPACT FLUOR.	26 Watt	120-277VAC 50-60Hz	EQF2630A2G	EQF2630X2G	EQF2630B2G	EQF2630D4G
	32 Watt	120-277VAC 50-60Hz	EQF3230A2G	EQF3230X2G	EQF3230B2G	EQF3230D4G
	42 Watt	120-277VAC 50-60Hz	EQF4230A2G	EQF4230X2G	EQF4230B2G	EQF4230D4G

① See Hazardous Location Application Data on pages L77-78 for specific suitabilities.
*② For 1" pendant, ceiling and wall hubs, substitute "**3**" for "**2**" in catalog number; example: **EBF131A3G**.*
③ Stanchion conduit hub size supplied is 1-1/2" with 1-1/2" to 1-1/4" reducer for 1-1/4" mounting. (refer to catalog logic).
*④ Luminaire catalog numbers include guards. To order luminaire without guard, omit last letter "**G**" from catalog number.*
⑤ Minimum starting temperature is 0°F. Lamps supplied with fixture.
⑥ EQF fixtures use a tank extension ring and are 2.5" taller than EBF fixtures.
NOTE: Reflectors must be ordered separately (see page L73). All luminaires are designed for mounting with lamp in base up position.

Class I, Div. 1 & 2, Groups C,D
Class I, Zones 1 & 2, Groups IIB, IIA
Class II, Div. 1 & 2, Groups E,F,G
Class III, Div. 1 & 2
Suitable for wet locations
Marine
NEMA 3, 4, 4X
Factory Sealed

Listed - Files E10514 and E91793 (Marine)

Certified - File LR11713

ORDERING INFORMATION


Pendant


Ceiling


Wall


Stanchion

EM 35-150W MEDIUM BASE HIGH PRESSURE SODIUM ① ④

LAMP TYPE	LAMP WATTS	ANSI LAMP TYPE	VOLTAGE @60 HERTZ	CATALOG NUMBER④			
				PENDANT 3/4"②	CEILING 3/4"②	WALL 3/4"②	STANCHION 1-1/4"③
HPS	35	S-76	120	EMS351A2G	EMS351X2G	EMS351B2G	EMS351D4G
	50	S-68	120, 208, 240, 277	EMS050A2G	EMS050X2G	EMS050B2G	EMS050D4G
	70	S-62	120, 208, 240, 277	EMS070A2G	EMS070X2G	EMS070B2G	EMS070D4G
	70	S-62	480	EMS075A2G	EMS075X2G	EMS075B2G	EMS075D4G
	100	S-54	120, 208, 240, 277	EMS100A2G	EMS100X2G	EMS100B2G	EMS100D4G
	100	S-54	480	EMS105A2G	EMS105X2G	EMS105B2G	EMS105D4G
	150	S-55	120	EMS151A2G	EMS151X2G	EMS151B2G	EMS151D4G

EM 50-100W MEDIUM BASE METAL HALIDE ① ④

LAMP TYPE	LAMP WATTS	ANSI LAMP TYPE	VOLTAGE @60 HERTZ	CATALOG NUMBER④			
				PENDANT 3/4"②	CEILING 3/4"②	WALL 3/4"②	STANCHION 1-1/4"③
MH	50	M-110	120, 208, 240, 277	EMH050A2G	EMH050X2G	EMH050B2G	EMH050D4G
	70	M-98	120, 208, 240, 277	EMH070A2G	EMH070X2G	EMH070B2G	EMH070D4G
	100	M-90	120, 208, 240, 277	EMH100A2G	EMH100X2G	EMH100B2G	EMH100D4G

EM 50-100W MEDIUM BASE MERCURY VAPOR ① ④

LAMP TYPE	LAMP WATTS	ANSI LAMP TYPE	VOLTAGE @60 HERTZ	CATALOG NUMBER④			
				PENDANT 3/4" ②	CEILING 3/4"②	WALL 3/4"②	STANCHION 1-1/4"③
MV	50	H-46	120/277	EMM0510A2G	EMM0510X2G	EMM0510B2G	EMM0510D4G
	75	H-43	120	EMM751A2G	EMM751X2G	EMM751B2G	EMM751D4G
	75	H-43	277	EMM754A2G	EMM754X2G	EMM754B2G	EMM754D4G
	100	H-38	120, 208, 240, 277	EMM100A2G	EMM100X2G	EMM100B2G	EMM100D4G
	100	H-38	480	EMM105A2G	EMM105X2G	EMM105B2G	EMM105D4G

① See Hazardous Location Application Data on page L77-78 for specific suitabilities.
*② For 1" pendant, ceiling and wall hubs, substitute "**3**" for "**2**" in catalog number; example: **EMS351A3G**.*
③ Stanchion conduit hub size supplied is 1-1/2" with 1-1/2" to 1-1/4" reducer for 1-1/4" mounting. (refer to catalog logic).
*④ Luminaire catalog numbers include guards. To order luminaire without guard, omit last letter "**G**" from catalog number.*
NOTE: Reflectors must be ordered separately (see page L73). All luminaires are designed for mounting with lamp in base up position.

HUBBELL
KILLARK®

EMI15/20/EBF

EMI30 & HID

Listed - Files E10514 and E91793 (Marine)

Certified - File LR11713

Pendant

Ceiling

Wall Bracket

25° Stanchion

Housing, Globe and Globe Support Assemblies①

INCANDESCENT			
CATALOG NUMBER	LAMP TYPE	WATTS	VOLTS
EMI15	A-19 A-19, A-21 A-21	60, 75 100 150	250 MAX. VAC
EMI20	A-23, PS-25 A-23, PS-25 PS-25	150 200 300	250 MAX. VAC
EMI30	PS-25 PS-30	200 300	250 MAX. VAC

FLUORESCENT			
CATALOG NUMBER	ANSI LAMP TYPE	WATTS	VOLTS
EBF131 EBF134	Bi-Pin Fluorescent	13	120VAC 277VAC
EBF261 EBF264	Bi-Pin Fluorescent	26 (2x13)	120VAC 277VAC
EQF2630 EQF3230 EQF4230	Quad Pin Fluorescent	26 32 42	120-277 VAC 50-60Hz

HPS			
CATALOG NUMBER	ANSI LAMP TYPE	WATTS	VOLTS @60HZ.
EMS351	S-76	35	120
EMS050	S-68	50	Quadri-Volt
EMS070 EMS075	S-62	70	Quadri-Volt 480
EMS100 EMS105	S-54	100	Quadri-Volt 480
EMS151	S-55	150	120

METAL HALIDE			
CATALOG NUMBER	ANSI LAMP TYPE	WATTS	VOLTS @60HZ.
EMH050	M-110	50	Quadri-Volt
EMH070	M-98	70	Quadri-Volt
EMH100	M-90	100	Quadri-Volt

MERCURY VAPOR			
CATALOG NUMBER	ANSI LAMP TYPE	WATTS	VOLTS @60HZ.
EMM0510	H-46	50	120, 277
EMM751 EMM754	H-43	70	120 277
EMM100 EMM105	H-38	100	Quadri-Volt 480

① *Assemblies may be ordered with the CEN (CENELEC) suffix. See pages L150-151 for more information.*

MOUNTING BOXES				
CATALOG NUMBER				HUB SIZE
PENDANT	CEILING	BRACKET	STANCHION	
EZA2	EZX2	EZB2	—	3/4"
EZA3	EZX3	EZB3	—	1"
—	—	—	EZD4*	1-1/4"/1-1/2"*

**1-1/2" furnished with 1-1/2"-1-1/4" reducer*

EMG1

EMG2

EAC②

Standard Dome

Angle Dome

GUARDS		
CATALOG NUMBER	SERIES	LAMP TYPE
EMG1	EMI15	INC
	EMI20	INC
	EBF	Bi-Pin
	EQF	Quad-Pin
EMG2	EMI30	INC
	EMS	HPS
	EMH	MH
	EMM	MV
	ESX	Strobe

Guards are cast of copper-free aluminum with electrostatically applied epoxy/polyester finish.

② *Adapters for discontinued Killark "H" Series and Crouse Hinds® available. See page L148 for more information.*

REFLECTORS		
CATALOG NUMBER		SERIES
STANDARD DOME	ANGLE	
ERSD15	ERA15	EMI15/EMI20
		EBF
		EQF
ERSD30	ERA30	EMI30
		EMS
		EMH
		EMM

Reflectors are aluminum with white finish.

L

HUBBELL®
KILLARK®

Exit Sign Accessory

Replacement Globe & Support Assemblies

Hazardous Locations Exit Sign

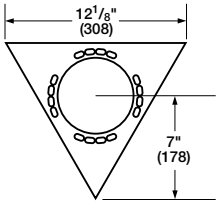
Applications

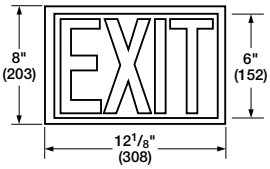
For use in hazardous areas to mark exits over doorways and in hallways.

Features

- Three sided illuminated sign visible from all three sides
- EXIT printed in 6" high red letters with 3/4" strokes as required by OSHA. Sign has open bottom providing light on exit area while illuminating the panel

EXIT SIGN	
CATALOG NUMBER	DESCRIPTION
HEXA-100	Fits EMI15, EMI20, EBF/EQF/EEQ Series without guard (Fixture not included)





REPLACEMENT FLUORESCENT LAMPS	
CATALOG NUMBER	SIZE & TYPE
MPL13	13W Bi-Pin
MQL26	26W Quad-Pin
MQL32	32W Quad-Pin
MQL42	42W Quad-Pin

REPLACEMENT GLOBE AND GLOBE SUPPORTS			
CATALOG NUMBER①	SERIES	LAMP TYPE	MAX. WATTAGE
EMGS1	EMI15	INC	150
	EMI20	INC	300
	EBF13/26	PL Bi-Pin Fluorescent	26
	EQF	PL Quad-Pin Fluorescent	42
EMGS2 EMGS3	EMI30	INC	300
	EMS	HPS	150
	EMH	MH	100
	EMM	MV	100

① *EMGS1, EMGS3 are internally fluted glass. EMGS2 is smooth clear glass used for ESX strobe.*

EM Series

EB Series

Male

Female

REPLACEMENT SOCKETS	
CATALOG NUMBER	DESCRIPTION
EMRS	EM Series E-26 Medium Base
EBRS	EB Series

REPLACEMENT CONNECTION BLOCKS	
CATALOG NUMBER	DESCRIPTION
EZTB	Male
EZCB	Female

COLORED GLOBE KITS FOR HAZARDOUS LOCATIONS②		
CATALOG NUMBER		DESCRIPTION
KIT NO.	REPLACEMENT COLORED GLOBE	
KT-100SU41R	VRGA-100	Red
KT-100SU41G	VGGA-100	Green

Used to modify EMI20 Series only fixtures to accept a colored inner globe. The kit includes the globe plus an adapter assembly and mounting instructions.
② *Maximum lamp size A-21 150 Watt.*

HUBBELL®
KILLARK®

EM/EB BALLAST DATA							
LAMP SOURCE	LAMP WATTS/TYPE	VOLTAGE @ 60 HERTZ	START (AMPS)	OPERATING (AMPS)	OPEN (AMPS)	BALLAST CIRCUIT	REGULATION
(1) Bi-Pin Fluorescent	13W (1 X 13)	120 277	.39 .35	.30	—	NPF	—
(2) Bi-Pin Fluorescent	26W (2 X 13)	120 277	.78 .70	.60	—	NPF	—
Quad-Pin Fluorescent	26W 32W 42W	120-277	—	.24(120)/.11(277) .31(120)/.13(277) .38(120)/.18(277)	—	HPF	ELECTRONIC
HPS	35W S-76	120	.55	.40	.65	R-HPF①	±5% Line Voltage*
HPS	50W S-68	120	.58	.58	1.24	HX-HPF①	±5% Line Voltage*
		208	.35	.33	.59		
		240	.30	.29	.50		
		277	.24	.25	.44		
HPS	70W S-62	120	.75	.81	1.45	HX-HPF①	±5% Line Voltage*
		208	.45	.47	.85		
		240	.37	.40	.75		
		277	.35	.35	.65		
		480	.21	.21	.36		
HPS	100W S-54	120	1.30	1.15	2.20	HX-HPF①	±5% Line Voltage*
		208	.76	.66	1.27		
		240	.66	.57	1.10		
		277	.60	.49	.85		
		480	.33	.28	.57		
HPS	150W S-55	120	2.20	1.50	2.35	HX-HPF①	±5% Line Voltage*
MH	50W M-110	120	.87	.60	1.16	HX-HPF①	±5% Line Voltage ±12% Lamp Watts
		208	.51	.35	.67		
		240	.47	.30	.57		
		277	.39	.25	.50		
MH	70W M-98	120	.80	.85	1.70	HX-HPF①	±5% Line Voltage ±12% Lamp Watts
		208	.50	.50	1.04		
		240	.43	.43	.87		
		277	.39	.37	.78		
MH	100W M-90	120	1.20	1.15	2.30	HX-HPF①	±5% Line Voltage ±12% Lamp Watts
		208	.70	.60	1.30		
		240	.61	.55	1.10		
		277	.55	.45	.95		
MV	50W H-46	120	.60	.67	.30	CWA①	±5% Line Voltage ±10% Lamp Watts
		277	.26	.29	.13		
MV	75W H-43	120	.80	.82	.50	CWA①	±5% Line Voltage ±10% Lamp Watts
		277	.35	.36	.22		
MV	100W H-38	120	1.00	1.05	.64	CWA①	±5%Line Voltage ±10% Lamp Watts
		208	.58	.60	.37		
		240	.50	.52	.32		
		277	.43	.45	.28		
		480	.26	.26	.15		

** Lamp watts within ANSI Trapezoid limitations.*
① *Ballast circuits are High Power Factor 90%+.*

DIMENSIONS

Pendant

Ceiling

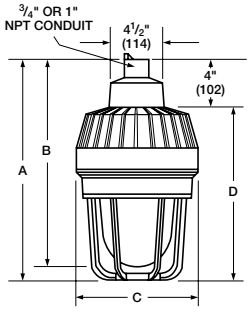
Wall

Stanchion

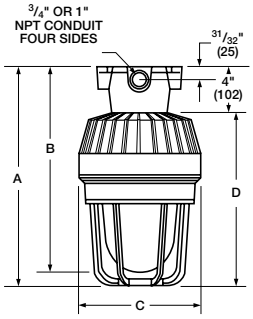
EM/EMB/ESX DIMENSIONS

SERIES	PENDANT				CEILING				WALL				STANCHION		
	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C
EMI15 EMI20 EBF13 EBF26	14-5/16" (363)	13-11/16" (346)	7-7/16" (188)	10-5/16" (261)	14-5/16" (363)	13-11/16" (347)	7-7/16" (188)	10-5/16" (261)	15-13/16" (385)	14-7/16" (366)	14-1/2" (369)	10-5/16" (26)	14" (256)	13-1/4" (337)	13" (330)
EQF/EEQ	16-13/16" (427)	16-3/16" (411)	7-7/16" (188)	12-5/8" (321)	16-13/16" (427)	16-3/16" (411)	7-7/16" (188)	12-5/8" (321)	18-5/16" (465)	16-15/16" (430)	14-1/2" (368)	12-5/8" (321)	16-1/4" (413)	15-3/4" (400)	15-1/4" (387)
EMI30 EMH EMM EMS ESX	15-15/1" (404)	15-1/16" (382)	8-13/16" (224)	11-15/16" (303)	15-15/16" (404)	15-1/16" (382)	8-13/16" (224)	11-15/16" (303)	16-13/16" (426)	15-15/16" (404)	15" (379)	11-15/16" (303)	15-1/8" (384)	14" (356)	13-1/2" (343)

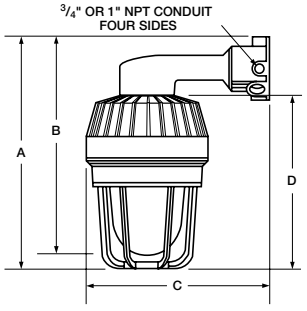
Pendant



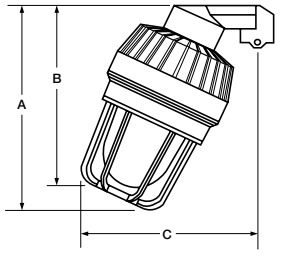
Ceiling

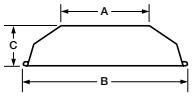


Wall

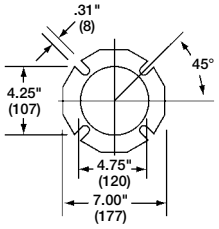


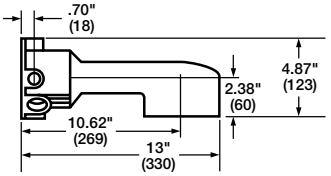
25° Stanchion

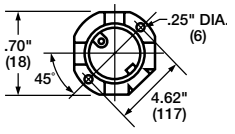


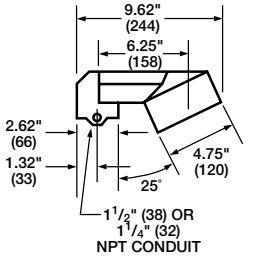


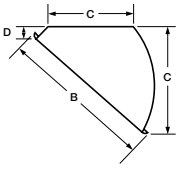
Standard Dome











Angle

REFLECTOR DIMENSIONS

SERIES	STANDARD DOME			ANGLE			
	A	B	C	A	B	C	D
EMI15/EMI20 EBF/EQF	7-3/8" (187)	14" (356)	3-3/4" (95)	7" (178)	11-1/2" (292)	7-3/4" (197)	1" (25)
EMI30/EMS EMH/EMM	8-3/4" (222)	16-1/8" (409)	3-15/16" (100)	8-3/4" (222)	14-3/16" (360)	7-3/4" (197)	1" (25)

HUBBELL®
KILLARK®

Pendant

Ceiling

Wall

Stanchion

EM/EB/EQ HAZARDOUS LOCATION DATA–CLASS I, DIV. 1 & 2①②

FIXTURE SERIES	LAMP TYPE/SIZE MAX.	LAMP WATTS	RATED AMBIENT °C	SUPPLY WIRE SUITABLE FOR °C MIN.	CLASS I, DIVISIONS 1 & 2 MAXIMUM SURFACE TEMPERATURE °C UL/CSA WITH OR WITHOUT REFLECTOR		
					TEMP. I.D.	ACTUAL TEMP.	UL/CSA GROUPS
EMI15	INC A-19	60	40	75	T6	79	C,D
EMI15	INC A-19	75	40	75	T4A	103	C,D
EMI15	INC A-19	100	40	75	T4A	103	C,D
EMI15	INC A-21	100	40	75	T4A	101	C,D
EMI15	INC A-21	150	40	75	T4	123	C,D
EMI20	INC A-23	100	40	90	T4A	107	C,D
EMI20	INC A-23	150	40	90	T4	132	C,D
EMI20	INC PS-25	150	40	90	T4	126	C,D
EMI20	INC A-23	200	40	90	T3C	146	C,D
EMI20	INC PS-25	200	40	90	T3C	154	C,D
EMI20	INC PS-25	300	40	90	T3	190	C,D
EMI30	INC PS-25	200	40	110	T3C	146	C,D
EMI30	INC PS-25	300	40	110	T3C	143	C,D
EMI30	INC PS-30	200	40	110	T3C	146	C,D
EMI30	INC PS-30	300	40	110	T3C	146	C,D
EBF	1 13W Bi-Pin	13	40	75	T6	62	C,D
EBF	2 13W Bi-Pin	13	40	75	T6	62	C,D
EQF	1 26W Quad-Pin	26	40	75	T6	75	C,D
EQF	1 32W Quad-Pin	32	40	75	T6	75	C,D
EQF	1 42W Quad-Pin	42	40	75	T6	75	C,D
EMS35	HPS S-70	35	40	75	T6	65	C,D
EMS05	HPS S-68	50	40	75	T6	68	C,D
EMS07	HPS S-62	75	40	75	T6	83	C,D
EMS100	HPS S-54	100	40	75	T5	99	C,D
EMS150	HPS S-55	150	40	75	T4A	119	C,D
EMM05	MV H-46	50	40	75	T6	78	C,D
EMM75	MV H-43	75	40	75	T5	95	C,D
EMM100	MV H-38	100	40	75	T4A	111	C,D
EMH05	MH M-110	50	40	75	T6	78	C,D
EMH07	MH M-98	75	40	75	T5	95	C,D
EMH100	MH M-90	100	40	75	T4A	101	C,D

①Do not install where marked operating temperature exceeds ignition temperature of hazardous atmosphere.
②Simultaneous presence listed.

TABLE N.E.C. 500-5 (d)

I.D. NUMBER	MAXIMUM TEMPERATURE	
	DEGREES C	DEGREES F
T1	450	842
T2	300	572
T2A	280	536
T2B	260	500
T2C	230	446
T2D	215	419
T3	200	392
T3A	180	356
T3B	165	329
T3C	160	320
T4	135	275
T4A	120	248
T5	100	212
T6	85	185

Pendant

Ceiling

Wall

Stanchion

EM/EB/EQ HAZARDOUS LOCATION DATA–CLASS II, III, DIVISIONS 1 & 2 ① ②

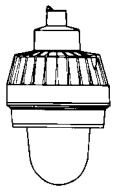
FIXTURE SERIES	LAMP TYPE/SIZE MAX.	LAMP WATTS	RATED AMBIENT °C	SUPPLY WIRE SUITABLE FOR °C MIN.	CLASS II, DIV. 1 & 2 MAXIMUM SURFACE TEMPERATURE °C				UL/CSA GROUPS	CLASS III DIV. 1 & 2 UL/CSA SUITABILITY	UL MARINE LISTED③	U.L. PAINT SPRAY SUITABILITY	UL/CSA TYPE 3 (RAIN-TIGHT)	UL/CSA TYPE 4 (HOSE-DOWN)③
					UL/CSA WITHOUT REFLECTOR		UL/CSA WITH REFLECTOR							
					TEMP. I.D.	ACTUAL TEMP. °C	TEMP. I.D.	ACTUAL TEMP. °C						
EMI15	INC A-19	60	40	75	T3C	132	T3C	132	E,F,G	YES	YES	NO	YES	YES
EMI15	INC A-19	75	40	75	T3A	163	T3A	162	E,F	NO	YES	NO	YES	YES
EMI15	INC A-19	100	40	75	T3A	163	T3A	162	E,F	NO	YES	NO	YES	YES
EMI15	INC A-21	100	40	75	T3A	172	T3A	172	E,F	NO	YES	NO	YES	YES
EMI15	INC A-21	150	40	75	N/A	192	T3	192	E,F	NO	YES	NO	YES	YES
EMI20	INC A-23	100	40	90	T3A	166	T3A	166	E,F	NO	YES	NO	YES	YES
EMI20	INC A-23	150	40	90	T3	196	T3A	178	E,F	NO	YES	NO	YES	YES
EMI20	INC PS-25	150	40	90	N/A	N/A	N/A	N/A	NO	NO	YES	NO	YES	YES
EMI20	INC A-23	200	40	90	N/A	N/A	N/A	N/A	NO	NO	YES	NO	YES	YES
EMI20	INC PS-25	200	40	90	N/A	N/A	N/A	N/A	NO	NO	YES	NO	YES	YES
EMI20	INC PS-25	300	40	90	N/A	N/A	N/A	N/A	NO	NO	YES	NO	YES	YES
EMI30	INC PS-25	200	40	110	N/A	N/A	N/A	N/A	NO	NO	YES	NO	YES	YES
EMI30	INC PS-25	300	40	110	N/A	N/A	N/A	N/A	NO	NO	YES	NO	YES	YES
EMI30	INC PS-30	200	40	110	N/A	N/A	N/A	N/A	NO	NO	YES	NO	YES	YES
EMI30	INC PS-30	300	40	110	N/A	N/A	N/A	N/A	NO	NO	YES	NO	YES	YES
EBF	1 13W Bi-Pin	13	40	75	T6	69	T6	66	E,F,G	YES	NO	YES	YES	YES
EBF	2 13W Bi-Pin	13	40	75	T6	69	T6	66	E,F,G	YES	NO	YES	YES	YES
EQF	1 26W Quad-Pin	26	40	75	T4	135	T4	135	E,F,G	YES	NO	YES	YES	YES
EQF	1 32W Quad-Pin	32	40	75	T4	135	T4	135	E,F,G	YES	NO	YES	YES	YES
EQF	1 42W Quad-Pin	42	40	75	T4	135	T4	135	E,F,G	YES	NO	YES	YES	YES
EMS35	HPS S-70	35	40	75	T4A	116	T4A	116	E,F,G	YES	YES	YES	YES	YES
EMS05	HPS S-68	50	40	75	T4A	116	T4A	116	E,F,G	YES	YES	YES	YES	YES
EMS07	HPS S-62	75	40	75	T4A	116	T4A	116	E,F,G	YES	YES	YES	YES	YES
EMS100	HPS S-54	100	40	75	T3B	161	T3B	161	E,F,G	YES	YES	NO	YES	YES
EMS150	HPS S-55	150	40	75	T3A	180	T3B	180	E,F	NO	YES	NO	YES	YES
EMM05	MV H-46	50	40	75	T4	121	T4	121	E,F,G	YES	YES	YES	YES	YES
EMM75	MV H-43	75	40	75	T4	121	T4	121	E,F,G	YES	YES	YES	YES	YES
EMM100	MV H-38	100	40	75	T3C	153	T3C	153	E,F,G	YES	YES	NO	YES	YES
EMH05	MH M-110	50	40	75	T4	121	T4	121	E,F,G	YES	YES	YES	YES	YES
EMH07	MH M-98	70	40	75	T4	121	T4	121	E,F,G	YES	YES	YES	YES	YES
EMH100	MH M-90	100	40	75	T3C	153	T3C	153	E,F,G	YES	YES	NO	YES	YES

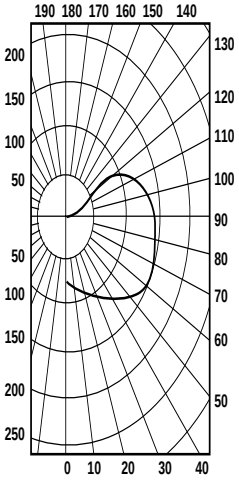
①Do not install where marked operating temperature exceeds ignition temperature of hazardous atmosphere.
②Simultaneous presence listed.
*③For UL-Marine and UL/CSA Type 4 listing add suffix "**ML**" to "**EMI**" Series fixture catalog number; standard on "**EMS**", "**EMH**", "**EMM**" series. Not available on "**EBF**", or "**EQF**" series.*

EMI15 INCANDESCENT
With Globe Only
60 – 100 Watt Medium Base

CANDLEPOWER – 100 WATT
A-19 lamp 1740 lumens

For 60 watt multiply by .494
For 75 watt multiply by .678





ANGLE	CP	ANGLE	CP
.0	72.	95.0	143.
5.0	74.	105.0	130.
15.0	86.	115.0	65.
25.0	100.	125.0	9.
35.0	109.	135.0	0.
45.0	123.	145.0	0.
55.0	148.	155.0	0.
65.0	160.	165.0	0.
75.0	155.	175.0	0.
85.0	149.	180.0	0.
90.0	146.		

Coefficients of Utilization -- Zonal Cavity Method

% Effective Ceiling Cavity Reflectance 1cc	80			70			50		30		10		0
% Wall Reflectance 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance														
0	.79	.79	.79	.79	.74	.74	.74	.74	.66	.66	.66	.59	.59	.59	.52	.52	.52	.49
1	.68	.63	.58	.54	.63	.59	.55	.51	.52	.49	.46	.45	.43	.40	.40	.38	.36	.33
2	.60	.52	.46	.40	.56	.49	.43	.38	.43	.38	.34	.37	.33	.30	.32	.29	.26	.23
3	.53	.44	.37	.31	.49	.41	.35	.30	.36	.31	.26	.31	.27	.23	.27	.23	.20	.18
4	.48	.38	.31	.25	.45	.36	.29	.24	.31	.26	.21	.27	.23	.19	.23	.20	.16	.14
5	.44	.33	.26	.21	.40	.31	.25	.20	.27	.22	.17	.24	.19	.15	.20	.16	.13	.11
6	.40	.29	.22	.17	.37	.27	.21	.16	.24	.18	.14	.21	.16	.13	.18	.14	.11	.09
7	.36	.26	.19	.14	.34	.24	.18	.13	.21	.16	.12	.18	.14	.10	.16	.12	.09	.07
8	.34	.23	.17	.12	.31	.22	.16	.12	.19	.14	.10	.17	.12	.09	.14	.10	.08	.06
9	.31	.21	.15	.10	.29	.20	.14	.10	.17	.12	.09	.15	.11	.08	.13	.09	.06	.05
10	.29	.19	.13	.09	.27	.18	.12	.09	.16	.11	.08	.14	.09	.07	.12	.08	.06	.04

Spacing Criterion -- SC = 2.4

Illumination on Horizontal Surface

Mounting Height in Feet	FOOTCANDLE CHART (Initial) 100 WATT INCANDESCENT Horizontal Distance From Source in Feet									
	0'	5'	10'	12'	14'	16'	18'	20'	25'	30'
8'	1.12	1.02	.55	.39	.23	.22	.16	.12	.07	.04
10'	.72	.71	.43	.35	.29	.22	.18	.14	.08	.05
12'	.50	.51	.36	.30	.25	.21	.17	.14	.09	.05
14'	.36	.39	.29	.27	.22	.18	.15	.14	.09	.06
16'	.28	.30	.25	.21	.19	.16	.14	.12	.09	.06
18'	.22	.23	.21	.19	.16	.14	.13	.12	.09	.06

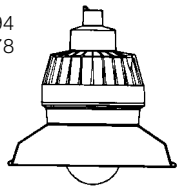
$$FC = \frac{(\text{Candlepower}) (\cos \emptyset)}{\text{DISTANCE}^2}$$

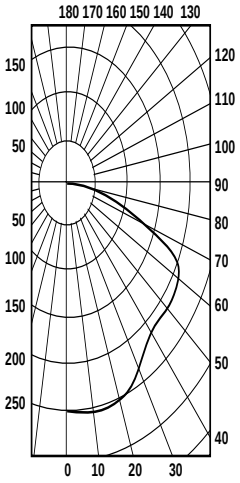
Test No. LTL-00676

EMI15 INCANDESCENT
With Globe and Standard Dome Reflector
60 – 100 Watt Medium Base

CANDLEPOWER – 100 WATT
A-19 lamp 1740 lumens

For 60 watt multiply by .494
For 75 watt multiply by .678





ANGLE	CP	ANGLE	CP
.0	261.	95.0	0.
5.0	260.	105.0	0.
15.0	254.	115.0	0.
25.0	252.	125.0	0.
35.0	236.	135.0	0.
45.0	220.	145.0	0.
55.0	221.	155.0	0.
65.0	203.	165.0	0.
75.0	72.	175.0	0.
85.0	10.	180.0	0.
90.0	2.		

Coefficients of Utilization -- Zonal Cavity Method

% Effective Ceiling Cavity Reflectance 1cc	80			70			50		30		10		0
% Wall Reflectance 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance														
0	.70	.70	.70	.70	.68	.68	.68	.68	.65	.65	.65	.62	.62	.62	.60	.60	.60	.58
1	.64	.61	.58	.56	.62	.59	.57	.55	.57	.55	.53	.55	.53	.52	.53	.51	.50	.49
2	.58	.53	.49	.45	.56	.52	.48	.45	.50	.46	.44	.48	.45	.43	.46	.44	.42	.41
3	.52	.46	.41	.37	.51	.45	.40	.37	.43	.39	.36	.42	.38	.35	.40	.37	.35	.33
4	.48	.40	.35	.31	.46	.40	.35	.31	.38	.34	.30	.37	.33	.30	.35	.32	.29	.28
5	.43	.35	.30	.26	.42	.35	.29	.26	.33	.29	.25	.32	.28	.25	.31	.28	.25	.23
6	.39	.31	.26	.22	.38	.31	.25	.22	.30	.25	.21	.29	.24	.21	.28	.24	.21	.20
7	.36	.28	.22	.18	.35	.27	.22	.18	.26	.22	.18	.25	.21	.18	.24	.21	.18	.17
8	.33	.25	.20	.16	.32	.24	.19	.16	.24	.19	.16	.23	.19	.16	.22	.18	.16	.14
9	.31	.22	.17	.14	.30	.22	.17	.14	.21	.17	.14	.21	.17	.14	.20	.16	.14	.12
10	.29	.20	.15	.12	.28	.20	.15	.12	.19	.15	.12	.19	.15	.12	.18	.15	.12	.11

Spacing Criterion -- SC = 1.4

Illumination on Horizontal Surface

Mounting Height in Feet	FOOTCANDLE CHART (Initial) 100 WATT INCANDESCENT Horizontal Distance From Source in Feet									
	0'	5'	10'	12'	14'	16'	18'	20'	25'	30'
8'	4.07	2.28	.83	.58	.40	.28	.21	.13	.04	.02
10'	2.61	1.80	.77	.57	.43	.32	.24	.18	.08	.03
12'	1.81	1.38	.71	.54	.42	.33	.26	.20	.11	.05
14'	1.33	1.07	.64	.50	.39	.32	.26	.21	.12	.07
16'	1.01	.86	.57	.46	.37	.30	.25	.21	.13	.08
18'	.80	.70	.50	.42	.35	.29	.24	.20	.13	.09

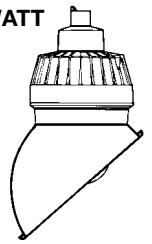
$$FC = \frac{(\text{Candlepower}) (\cos \emptyset)}{\text{DISTANCE}^2}$$

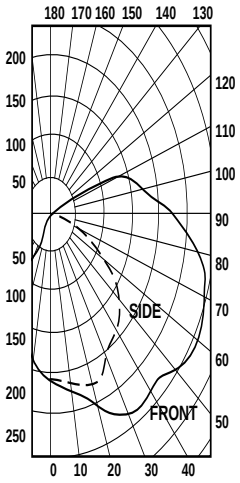
Test No. LTL-00677

EMI15 INCANDESCENT
With Globe and Angle Reflector
60 – 100 Watt Medium Base

CANDLEPOWER – 100 WATT
A-19 lamp 1740 lumens

For 60 watt multiply by .494
For 75 watt multiply by .678





0° (FRONT) ANGLE	CP	90° (SIDE) ANGLE	CP
.0	209.	.0	209.
5.0	216.	5.0	213.
15.0	241.	15.0	222.
25.0	281.	25.0	227.
35.0	291.	35.0	206.
45.0	292.	45.0	190.
55.0	304.	55.0	149.
65.0	314.	65.0	55.
75.0	296.	75.0	25.
85.0	264.	85.0	6.
90.0	238.	90.0	2.
95.0	185.	95.0	0.
105.0	63.	105.0	0.
115.0	28.	115.0	0.
125.0	7.	125.0	0.
135.0	0.	135.0	0.
145.0	0.	145.0	0.
155.0	0.	155.0	0.
165.0	0.	165.0	0.
175.0	0.	175.0	0.
180.0	0.	180.0	0.

Coefficients of Utilization -- Zonal Cavity Method

% Effective Ceiling Cavity Reflectance 1cc	80			70			50		30		10		0
% Wall Reflectance 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance														
0	.63	.63	.63	.63	.61	.61	.61	.61	.57	.57	.57	.54	.54	.54	.51	.51	.51	.50
1	.56	.52	.49	.47	.54	.51	.48	.46	.48	.46	.44	.45	.43	.42	.42	.41	.40	.38
2	.50	.45	.41	.37	.48	.44	.40	.36	.41	.38	.35	.39	.36	.34	.36	.34	.32	.31
3	.45	.39	.34	.30	.44	.38	.33	.30	.36	.32	.29	.34	.30	.28	.32	.29	.27	.25
4	.41	.34	.29	.26	.40	.34	.29	.25	.32	.28	.24	.30	.27	.24	.28	.25	.23	.22
5	.38	.31	.25	.22	.36	.30	.25	.21	.28	.24	.21	.27	.23	.20	.25	.22	.20	.18
6	.35	.27	.22	.19	.33	.26	.22	.18	.25	.21	.18	.24	.20	.17	.23	.19	.17	.16
7	.32	.24	.19	.16	.31	.24	.19	.16	.22	.18	.15	.21	.18	.15	.20	.17	.15	.13
8	.30	.22	.17	.14	.29	.21	.17	.14	.20	.16	.13	.19	.16	.13	.19	.15	.13	.12
9	.27	.20	.15	.12	.26	.19	.15	.12	.19	.15	.12	.18	.14	.12	.17	.14	.11	.10
10	.26	.18	.14	.11	.25	.18	.14	.11	.17	.13	.11	.16	.13	.10	.16	.12	.10	.09

0-DEG / 90-DEG
Spacing Criterion -- SC = 2.0 / 1.5

Illumination on Horizontal Surface

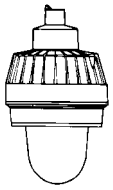
	Mounting Height in Feet	FOOTCANDLE CHART (Initial) 100 WATT INCANDESCENT Horizontal Distance From Source in Feet									
		0'	5'	10'	12'	14'	16'	18'	20'	25'	30'
0°	8'	3.26	2.74	1.13	.81	.59	.43	.32	.24	.13	.08
	10'	2.09	2.01	1.03	.78	.59	.45	.35	.27	.15	.09
	12'	1.45	1.46	.91	.71	.56	.45	.36	.29	.17	.10
	14'	1.06	1.09	.80	.64	.52	.43	.35	.29	.18	.12
	16'	.81	.80	.68	.58	.48	.40	.33	.28	.18	.12
	18'	.64	.66	.58	.51	.44	.37	.31	.27	.18	.12
90°	8'	3.26	2.09	.64	.37	.19	.10	.05	.03	.02	.01
	10'	2.09	1.62	.67	.45	.28	.19	.11	.07	.02	.01
	12'	1.45	1.23	.62	.44	.33	.24	.17	.09	.03	.02
	14'	1.06	.96	.57	.44	.34	.25	.19	.14	.06	.02
	16'	.81	.76	.52	.41	.33	.26	.20	.16	.08	.04
	18'	.64	.61	.45	.36	.30	.25	.21	.16	.09	.04

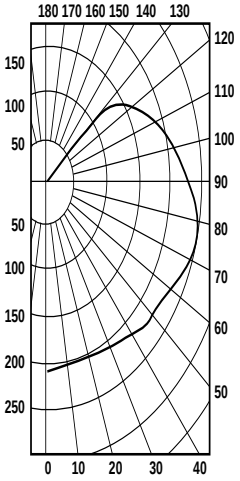
$$FC = \frac{(\text{Candlepower}) (\cos \emptyset)}{\text{DISTANCE}^2}$$

Test No. LTL-00678

EMI15 INCANDESCENT
With Globe Only
100 – 150 Watt Medium Base

CANDLEPOWER – 150 WATT
A-21 lamp 2880 lumens
For 100 watt multiply by .587





ANGLE	CP	ANGLE	CP
.0	214.	95.0	235.
5.0	215.	105.0	212.
15.0	214.	115.0	171.
25.0	213.	125.0	100.
35.0	218.	135.0	27.
45.0	230.	145.0	1.
55.0	242.	155.0	0.
65.0	249.	165.0	0.
75.0	251.	175.0	0.
85.0	246.	180.0	0.
90.0	242.		

Coefficients of Utilization -- Zonal Cavity Method

% Effective Ceiling Cavity Reflectance 1cc	80			70			50		30		10		0
% Wall Reflectance 1w	70	50	30	70	50	30	50	30	50	30	50	30	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance												
0	.87	.87	.87	.82	.82	.82	.72	.72	.64	.64	.56	.56	.52
1	.75	.70	.65	.70	.66	.61	.57	.54	.50	.47	.43	.41	.39	.35
2	.67	.59	.52	.62	.55	.49	.48	.43	.39	.41	.37	.34	.35	.32	.29	.26
3	.60	.50	.43	.37	.56	.47	.40	.35	.41	.35	.31	.35	.31	.27	.30	.26	.23	.20
4	.55	.44	.36	.30	.51	.41	.34	.29	.36	.30	.25	.31	.26	.22	.26	.22	.19	.16
5	.50	.39	.31	.25	.46	.36	.29	.24	.31	.26	.21	.27	.22	.18	.23	.19	.16	.13
6	.45	.34	.26	.21	.42	.32	.25	.20	.28	.22	.18	.24	.19	.15	.20	.16	.13	.11
7	.42	.30	.23	.18	.38	.28	.22	.17	.25	.19	.15	.21	.17	.13	.18	.14	.11	.09
8	.38	.27	.20	.15	.36	.26	.19	.15	.22	.17	.13	.19	.15	.11	.16	.13	.10	.08
9	.36	.25	.18	.13	.33	.23	.17	.13	.20	.15	.11	.17	.13	.10	.15	.11	.08	.07
10	.33	.22	.16	.12	.31	.21	.15	.11	.18	.13	.10	.16	.12	.08	.14	.10	.07	.06

Spacing Criterion -- SC = 1.6

Illumination on Horizontal Surface

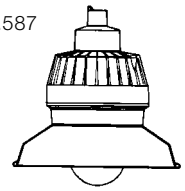
Mounting Height in Feet	FOOTCANDLE CHART (Initial) 150 WATT INCANDESCENT Horizontal Distance From Source in Feet									
	0'	5'	10'	12'	14'	16'	18'	20'	25'	30'
8'	3.34	2.05	.90	.65	.47	.34	.26	.20	.11	.07
10'	2.14	1.65	.81	.62	.47	.36	.28	.22	.13	.08
12'	1.48	1.17	.70	.56	.45	.36	.29	.23	.14	.09
14'	1.09	.91	.60	.50	.41	.34	.28	.23	.15	.10
16'	.83	.73	.51	.44	.37	.32	.27	.23	.15	.10
18'	.66	.59	.44	.38	.33	.29	.25	.22	.15	.10

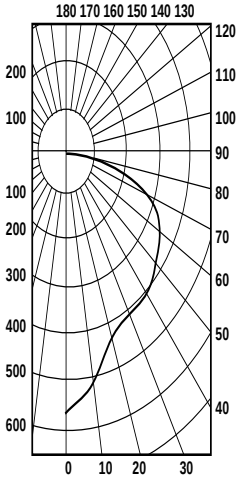
$$FC = \frac{(\text{Candlepower})\ (\cos \varnothing)}{\text{DISTANCE}^2}$$

Test No. LTL-00679

EMI15 INCANDESCENT
With Globe and Standard Dome Reflector
100 – 150 Watt Medium Base

CANDLEPOWER – 150 WATT
A-21 lamp 2880 lumens
For 100 watt multiply by .587





ANGLE	CP	ANGLE	CP
.0	571.	95.0	0.
5.0	559.	105.0	0.
15.0	505.	115.0	0.
25.0	455.	125.0	0.
35.0	431.	135.0	0.
45.0	405.	145.0	0.
55.0	372.	155.0	0.
65.0	327.	165.0	0.
75.0	206.	175.0	0.
85.0	35.	180.0	0.
90.0	4.		

Coefficients of Utilization -- Zonal Cavity Method

% Effective Ceiling Cavity Reflectance 1cc	80			70			50		30		10		0
% Wall Reflectance 1w	70	50	30	70	50	30	50	30	50	30	50	30	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance												
0	.79	.79	.79	.77	.77	.77	.74	.74	.70	.70	.67	.67	.66
1	.72	.68	.65	.62	.70	.67	.64	.61	.64	.62	.59	.61	.59	.58	.59	.57	.56	.54
2	.65	.59	.54	.50	.63	.58	.53	.49	.55	.51	.48	.53	.50	.47	.51	.48	.46	.45
3	.58	.51	.45	.41	.57	.50	.45	.40	.48	.43	.40	.46	.42	.39	.44	.41	.38	.37
4	.53	.45	.39	.34	.52	.44	.38	.34	.42	.37	.34	.41	.37	.33	.39	.36	.33	.31
5	.49	.40	.33	.29	.47	.39	.33	.29	.37	.32	.28	.36	.32	.28	.35	.31	.28	.26
6	.45	.35	.29	.24	.43	.35	.29	.24	.33	.28	.24	.32	.27	.24	.31	.27	.24	.22
7	.41	.31	.25	.21	.40	.31	.25	.21	.30	.24	.21	.29	.24	.20	.28	.23	.20	.19
8	.38	.28	.22	.18	.37	.28	.22	.18	.27	.22	.18	.26	.21	.18	.25	.21	.18	.16
9	.35	.26	.20	.16	.34	.25	.20	.16	.24	.19	.16	.24	.19	.16	.23	.19	.16	.14
10	.32	.23	.18	.14	.32	.23	.18	.14	.22	.17	.14	.22	.17	.14	.21	.17	.14	.13

Spacing Criterion -- SC = 1.2

Illumination on Horizontal Surface

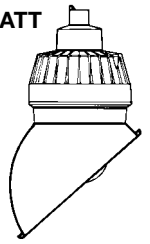
Mounting Height in Feet	FOOTCANDLE CHART (Initial) 150 WATT INCANDESCENT Horizontal Distance From Source in Feet									
	0'	5'	10'	12'	14'	16'	18'	20'	25'	30'
8'	8.92	4.17	1.47	.98	.67	.48	.33	.23	.11	.06
10'	5.71	3.17	1.43	1.02	.72	.51	.40	.30	.14	.08
12'	3.96	2.57	1.32	.99	.75	.57	.44	.33	.19	.10
14'	2.91	2.05	1.18	.93	.73	.57	.46	.36	.21	.13
16'	2.23	1.68	1.04	.86	.69	.56	.45	.37	.22	.14
18'	1.76	1.39	.91	.76	.65	.54	.44	.36	.23	.15

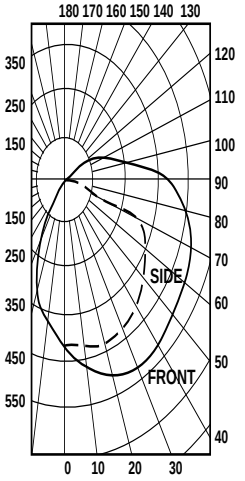
$$FC = \frac{(\text{Candlepower})\ (\cos \varnothing)}{\text{DISTANCE}^2}$$

Test No. LTL-00680

EMI15 INCANDESCENT
With Globe and Angle Reflector
100 – 150 Watt Medium Base

CANDLEPOWER – 150 WATT
A-21 lamp 2880 lumens
For 100 watt multiply by .587





0° (FRONT) ANGLE	CP	90° (SIDE) ANGLE	CP
.0	435.	.0	435.
5.0	451.	5.0	437.
15.0	486.	15.0	428.
25.0	504.	25.0	416.
35.0	520.	35.0	399.
45.0	525.	45.0	372.
55.0	518.	55.0	291.
65.0	502.	65.0	157.
75.0	479.	75.0	52.
85.0	438.	85.0	10.
90.0	401.	90.0	0.
95.0	348.	95.0	0.
105.0	204.	105.0	0.
115.0	72.	115.0	0.
125.0	14.	125.0	0.
135.0	0.	135.0	0.
145.0	0.	145.0	0.
155.0	0.	155.0	0.
165.0	0.	165.0	0.
175.0	0.	175.0	0.
180.0	0.	180.0	0.

Coefficients of Utilization -- Zonal Cavity Method

% Effective Ceiling Cavity Reflectance 1cc	80			70			50		30		10		0
% Wall Reflectance 1w	70	50	30	70	50	30	50	30	50	30	50	30	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance												
0	.70	.70	.70	.68	.68	.68	.64	.64	.64	.60	.60	.60	.57	.57	.57	.55
1	.63	.59	.56	.53	.60	.57	.54	.52	.54	.51	.49	.50	.48	.47	.47	.46	.44	.43
2	.56	.51	.46	.42	.54	.49	.45	.41	.46	.43	.40	.43	.41	.38	.41	.38	.36	.35
3	.51	.44	.39	.35	.49	.43	.38	.34	.40	.36	.33	.38	.35	.32	.36	.33	.30	.29
4	.47	.39	.34	.30	.45	.38	.33	.29	.36	.32	.28	.34	.30	.27	.32	.29	.26	.25
5	.43	.35	.29	.25	.41	.34	.29	.25	.32	.28	.24	.30	.26	.23	.29	.25	.23	.21
6	.40	.31	.26	.22	.38	.30	.25	.21	.29	.24	.21	.27	.23	.20	.26	.22	.20	.18
7	.36	.28	.23	.19	.35	.27	.22	.18	.26	.21	.18	.24	.20	.17	.23	.20	.17	.16
8	.34	.25	.20	.16	.33	.25	.20	.16	.23	.19	.16	.22	.18	.15	.21	.18	.15	.14
9	.31	.23	.18	.14	.30	.22	.18	.14	.21	.17	.14	.20	.16	.14	.19	.16	.13	.12
10	.29	.21	.16	.13	.28	.20	.16	.13	.20	.15	.12	.19	.15	.12	.18	.14	.12	.11

0-DEG / 90-DEG
Spacing Criterion -- SC = 1.8 / 1.4

Illumination on Horizontal Surface

Mounting Height in Feet		FOOTCANDLE CHART (Initial) 150 WATT INCANDESCENT Horizontal Distance From Source in Feet									
		0'	5'	10'	12'	14'	16'	18'	20'	25'	30'
0°	8'	6.79	4.90	1.99	1.38	.97	.70	.53	.40	.22	.13
	10'	4.35	3.61	1.86	1.37	1.02	.77	.58	.45	.25	.15
	12'	3.02	2.73	1.64	1.29	1.00	.77	.61	.48	.28	.18
	14'	2.21	2.11	1.43	1.17	.95	.76	.62	.50	.30	.19
	16'	1.69	1.66	1.23	1.04	.87	.73	.60	.50	.32	.21
	18'	1.34	1.34	1.06	.92	.79	.67	.57	.48	.28	.21
90°	8'	6.79	3.86	1.26	.78	.43	.28	.16	.09	.04	.01
	10'	4.35	2.98	1.32	.87	.57	.39	.26	.16	.06	.03
	12'	3.02	2.29	1.21	.91	.64	.46	.34	.21	.08	.04
	14'	2.22	1.80	1.10	.86	.67	.51	.41	.28	.13	.06
	16'	1.70	1.45	.96	.80	.64	.51	.36	.32	.16	.09
	18'	1.34	1.18	.84	.70	.60	.50	.41	.29	.18	.09

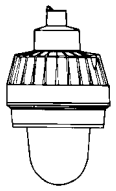
$$FC = \frac{(\text{Candlepower})\ (\cos \varnothing)}{\text{DISTANCE}^2}$$

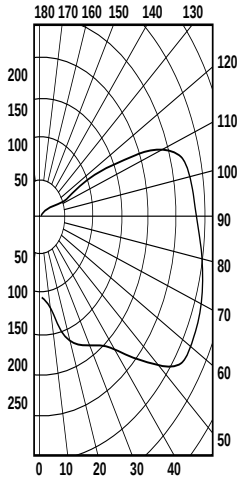
Test No. LTL-00681

EMI20 INCANDESCENT
With Globe Only
150 – 200 Watt Medium Base

CANDLEPOWER – 200 WATT
A-23 lamp 4000 lumens

For 150 watt multiply by .695





ANGLE	CP	ANGLE	CP
.0	127.	95.0	322.
5.0	132.	105.0	241.
15.0	177.	115.0	87.
25.0	209.	125.0	11.
35.0	235.	135.0	1.
45.0	296.	145.0	0.
55.0	370.	155.0	0.
65.0	369.	165.0	0.
75.0	351.	175.0	0.
85.0	339.	180.0	0.
90.0	332.		

Coefficients of Utilization -- Zonal Cavity Method

% Effective Ceiling Cavity Reflectance 1cc	80			70			50		30		10		0
% Wall Reflectance 1w	70	50	30	10	70	50	30	10	50	30	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance													
0	.76	.76	.76	.76	.72	.72	.72	.72	.65	.65	.58	.58	.52	.52	.52	.49
1	.65	.60	.55	.51	.61	.57	.53	.49	.50	.47	.44	.45	.42	.40	.39	.37	.35	.33
2	.57	.50	.43	.38	.53	.47	.41	.36	.41	.37	.33	.36	.33	.29	.32	.29	.26	.23
3	.51	.42	.35	.29	.47	.39	.33	.28	.35	.30	.25	.30	.26	.23	.26	.23	.20	.17
4	.46	.36	.29	.24	.43	.34	.28	.23	.30	.25	.20	.26	.22	.18	.23	.19	.16	.14
5	.41	.31	.24	.19	.39	.30	.23	.18	.26	.21	.16	.23	.18	.15	.20	.16	.13	.11
6	.38	.27	.21	.16	.35	.26	.20	.15	.23	.17	.13	.20	.15	.12	.17	.13	.10	.08
7	.34	.24	.18	.13	.32	.23	.17	.12	.20	.15	.11	.18	.13	.10	.15	.11	.08	.07
8	.32	.22	.15	.11	.30	.20	.15	.10	.18	.13	.09	.16	.11	.08	.14	.10	.07	.05
9	.29	.19	.13	.09	.27	.18	.13	.09	.16	.11	.08	.14	.10	.07	.12	.09	.06	.04
10	.27	.18	.12	.08	.25	.17	.11	.08	.15	.10	.07	.13	.09	.06	.11	.08	.05	.04

Spacing Criterion -- SC = 3.0

Illumination on Horizontal Surface

Mounting Height in Feet	FOOTCANDLE CHART (Initial) 200 WATT INCANDESCENT Horizontal Distance From Source in Feet									
	0'	5'	10'	12'	14'	16'	18'	20'	25'	30'
8'	1.98	2.16	1.30	.99	.71	.52	.39	.28	.16	.09
10'	1.27	1.50	1.05	.87	.73	.55	.42	.33	.19	.11
12'	.88	1.09	.83	.73	.64	.52	.44	.35	.21	.13
14'	.64	.82	.65	.59	.53	.46	.41	.36	.22	.14
16'	.49	.62	.54	.47	.44	.41	.40	.32	.23	.15
18'	.39	.49	.46	.40	.37	.34	.32	.29	.23	.16

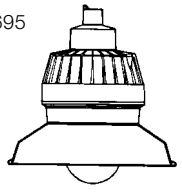
$$FC = \frac{(\text{Candlepower}) (\cos \text{Ø})}{\text{DISTANCE}^2}$$

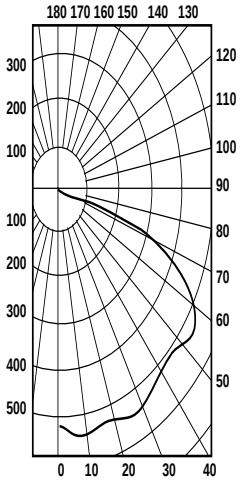
Test No. LTL-00670

EMI20 INCANDESCENT
With Globe and Standard Dome Reflector
150 – 200 Watt Medium Base

CANDLEPOWER – 200 WATT
A-23 lamp 4000 lumens

For 150 watt multiply by .695





ANGLE	CP	ANGLE	CP
.0	517.	95.0	0.
5.0	529.	105.0	0.
15.0	534.	115.0	0.
25.0	556.	125.0	0.
35.0	519.	135.0	0.
45.0	503.	145.0	0.
55.0	531.	155.0	0.
65.0	451.	165.0	0.
75.0	108.	175.0	0.
85.0	20.	180.0	0.
90.0	1.		

Coefficients of Utilization -- Zonal Cavity Method

% Effective Ceiling Cavity Reflectance 1cc	80			70			50		30		10		0
% Wall Reflectance 1w	70	50	30	10	70	50	30	10	50	30	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance													
0	.66	.66	.66	.66	.65	.65	.65	.65	.62	.62	.59	.59	.57	.57	.57	.56
1	.61	.58	.56	.54	.59	.57	.55	.53	.55	.53	.51	.52	.51	.50	.50	.49	.48	.47
2	.55	.51	.47	.44	.54	.50	.46	.43	.48	.45	.42	.46	.44	.41	.44	.42	.40	.39
3	.50	.44	.40	.36	.49	.43	.39	.36	.42	.38	.35	.40	.37	.34	.39	.36	.34	.33
4	.46	.39	.34	.30	.44	.38	.33	.30	.37	.33	.29	.35	.32	.29	.34	.31	.29	.27
5	.41	.34	.29	.25	.40	.33	.28	.25	.32	.28	.24	.31	.27	.24	.30	.27	.24	.23
6	.38	.30	.25	.21	.37	.29	.24	.21	.28	.24	.21	.27	.23	.20	.26	.23	.20	.19
7	.34	.26	.21	.17	.33	.26	.21	.17	.25	.20	.17	.24	.20	.17	.23	.20	.17	.16
8	.32	.24	.19	.15	.31	.23	.18	.15	.22	.18	.15	.22	.18	.15	.21	.17	.15	.14
9	.29	.21	.16	.13	.28	.21	.16	.13	.20	.16	.13	.20	.16	.13	.19	.15	.13	.12
10	.27	.19	.15	.11	.26	.19	.14	.11	.18	.14	.11	.18	.14	.11	.17	.14	.11	.10

Spacing Criterion -- SC = 1.5

Illumination on Horizontal Surface

Mounting Height in Feet	FOOTCANDLE CHART (Initial) 200 WATT INCANDESCENT Horizontal Distance From Source in Feet									
	0'	5'	10'	12'	14'	16'	18'	20'	25'	30'
8'	8.08	5.06	1.97	1.42	.94	.61	.47	.28	.09	.03
10'	5.17	3.98	1.78	1.36	1.04	.77	.56	.42	.18	.09
12'	3.59	3.00	1.61	1.24	.99	.78	.63	.46	.25	.12
14'	2.64	2.32	1.43	1.14	.91	.74	.62	.51	.29	.17
16'	2.02	1.83	1.26	1.04	.85	.69	.59	.49	.32	.20
18'	1.60	1.47	1.11	.94	.78	.66	.55	.47	.33	.21

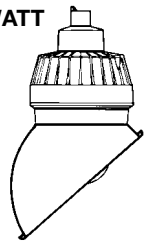
$$FC = \frac{(\text{Candlepower}) (\cos \text{Ø})}{\text{DISTANCE}^2}$$

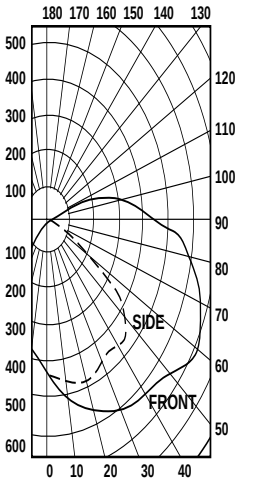
Test No. LTL-00671

EMI20 INCANDESCENT
With Globe and Angle Reflector
150 – 200 Watt Medium Base

CANDLEPOWER – 200 WATT
A-23 lamp 4000 lumens

For 150 watt multiply by .695





0° (FRONT) ANGLE	CP	90° (SIDE) ANGLE	CP
.0	448.	.0	448.
5.0	473.	5.0	457.
15.0	544.	15.0	486.
25.0	590.	25.0	497.
35.0	613.	35.0	460.
45.0	641.	45.0	462.
55.0	716.	55.0	353.
65.0	700.	65.0	129.
75.0	643.	75.0	59.
85.0	563.	85.0	14.
90.0	460.	90.0	5.
95.0	316.	95.0	1.
105.0	120.	105.0	0.
115.0	58.	115.0	0.
125.0	14.	125.0	0.
135.0	0.	135.0	0.
145.0	0.	145.0	0.
155.0	0.	155.0	0.
165.0	0.	165.0	0.
175.0	0.	175.0	0.
180.0	0.	180.0	0.

Coefficients of Utilization -- Zonal Cavity Method

% Effective Ceiling Cavity Reflectance 1cc	80			70			50		30		10		0
% Wall Reflectance 1w	70	50	30	10	70	50	30	10	50	30	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance													
0	.60	.60	.60	.60	.58	.58	.58	.58	.55	.55	.55	.52	.52	.52	.49	.49	.49	.48
1	.53	.50	.48	.45	.51	.49	.46	.44	.46	.44	.42	.43	.42	.40	.41	.40	.39	.37
2	.48	.43	.39	.36	.46	.42	.38	.35	.40	.36	.34	.37	.35	.33	.35	.33	.31	.30
3	.43	.37	.33	.29	.42	.36	.32	.29	.34	.31	.28	.33	.29	.27	.31	.28	.26	.25
4	.40	.33	.28	.25	.38	.32	.28	.24	.31	.27	.24	.29	.26	.23	.27	.25	.22	.21
5	.36	.29	.24	.21	.35	.28	.24	.20	.27	.23	.20	.26	.22	.19	.24	.21	.19	.18
6	.33	.26	.21	.18	.32	.25	.21	.17	.24	.20	.17	.23	.19	.17	.22	.19	.16	.15
7	.30	.23	.18	.15	.29	.23	.18	.15	.21	.17	.15	.20	.17	.14	.20	.16	.14	.13
8	.28	.21	.16	.13	.27	.20	.16	.13	.19	.16	.13	.19	.15	.13	.18	.15	.12	.11
9	.26	.19	.15	.12	.25	.18	.14	.11	.18	.14	.11	.17	.13	.11	.16	.13	.11	.10
10	.24	.17	.13	.10	.23	.17	.13	.10	.16	.12	.10	.15	.12	.10	.15	.12	.10	.09

0-DEG / 90-DEG
Spacing Criterion -- SC = 2.0 / 1.6

Illumination on Horizontal Surface

Mounting Height in Feet	FOOTCANDLE CHART (Initial) 200 WATT INCANDESCENT Horizontal Distance From Source in Feet									
	0'	5'	10'	12'	14'	16'	18'	20'	25'	30'
0° 8'	7.00	5.77	2.58	1.91	1.35	.98	.73	.55	.29	.17
10'	4.48	4.22	2.27	1.78	1.41	1.06	.81	.63	.34	.21
12'	3.11	3.04	1.97	1.57	1.30	1.05	.85	.65	.39	.23
14'	2.28	1.98	1.69	1.40	1.16	.97	.82	.69	.42	.27
16'	1.75	1.88	1.44	1.23	1.04	.89	.74	.65	.44	.29
18'	1.38	1.50	1.24	1.08	.94	.81	.70	.61	.44	.30
8'	7.00	4.50	1.55	.94	.46	.24	.14	.09	.04	.02
10'	4.48	3.56	1.63	1.07	.69	.46	.27	.15	.06	.03
12'	3.11	2.69	1.45	1.13	.78	.56	.42	.23	.07	.04
14'	2.28	2.09	1.26	1.03	.83	.63	.44	.34	.14	.05
16'	1.75	1.67	1.12	.92	.77	.64	.49	.39	.19	.10
90° 18'	1.38	1.26	.99	.83	.70	.59	.50	.40	.22	.10

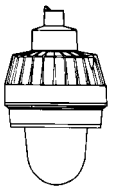
$$FC = \frac{(\text{Candlepower}) (\cos \text{Ø})}{\text{DISTANCE}^2}$$

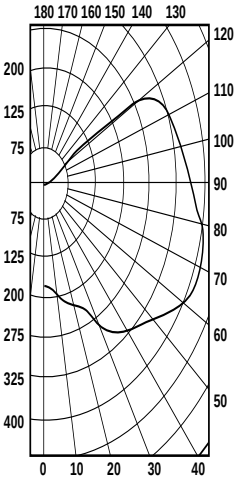
Test No. LTL-00672

EMI20 INCANDESCENT
With Globe Only Reflector
150, 200 and 300 Watt Medium Base

CANDLEPOWER – 300 WATT
PS-25 lamp 6360 lumens

For 150 watt multiply by .421
For 200 watt multiply by .506





ANGLE	CP	ANGLE	CP
.0	165.	95.0	379.
5.0	169.	105.0	348.
15.0	206.	115.0	238.
25.0	257.	125.0	66.
35.0	298.	135.0	6.
45.0	332.	145.0	0.
55.0	380.	155.0	0.
65.0	409.	165.0	0.
75.0	405.	175.0	0.
85.0	396.	180.0	0.
90.0	388.		

Coefficients of Utilization -- Zonal Cavity Method

% Effective Ceiling Cavity Reflectance 1cc	80			70			50		30		10		0
% Wall Reflectance 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance														
0	.58	.58	.58	.58	.55	.55	.55	.55	.49	.49	.49	.43	.43	.43	.38	.38	.38	.35
1	.50	.46	.43	.40	.47	.44	.41	.38	.38	.36	.34	.33	.31	.29	.28	.27	.26	.23
2	.44	.39	.34	.30	.41	.36	.32	.28	.31	.28	.25	.27	.24	.22	.23	.21	.19	.17
3	.40	.33	.28	.23	.37	.31	.26	.22	.27	.23	.19	.23	.20	.17	.19	.17	.15	.13
4	.36	.28	.23	.19	.33	.27	.22	.18	.23	.19	.16	.20	.16	.14	.17	.14	.12	.10
5	.32	.25	.19	.16	.30	.23	.18	.15	.20	.16	.13	.17	.14	.11	.15	.12	.10	.08
6	.30	.22	.17	.13	.27	.20	.16	.12	.18	.14	.11	.15	.12	.09	.13	.10	.08	.06
7	.27	.19	.14	.11	.25	.18	.13	.10	.16	.12	.09	.13	.10	.08	.11	.08	.06	.05
8	.25	.17	.12	.09	.23	.16	.12	.09	.14	.10	.08	.12	.09	.06	.10	.07	.05	.04
9	.23	.16	.11	.08	.21	.15	.10	.07	.13	.09	.06	.11	.08	.06	.09	.07	.05	.03
10	.21	.14	.10	.07	.20	.13	.09	.06	.11	.08	.06	.10	.07	.05	.08	.06	.04	.03

Spacing Criterion -- SC = 2.6

Illumination on Horizontal Surface

	FOOTCANDLE CHART (Initial) 300 WATT INCANDESCENT Horizontal Distance From Source in Feet									
Mounting Height in Feet	0'	5'	10'	12'	14'	16'	18'	20'	25'	30'
8'	2.58	2.24	1.36	1.01	.75	.56	.43	.33	.18	.11
10'	1.65	1.84	1.17	.93	.75	.57	.45	.36	.21	.13
12'	1.15	1.32	.99	.82	.68	.56	.45	.37	.23	.14
14'	.84	.98	.82	.70	.60	.50	.43	.37	.24	.16
16'	.64	.73	.68	.60	.52	.46	.40	.34	.24	.16
18'	.51	.57	.57	.52	.46	.41	.36	.32	.23	.17

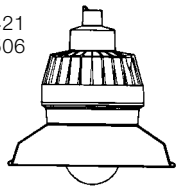
$$FC = \frac{(Candlepower)\ (COS\ \emptyset)}{DISTANCE^2}$$

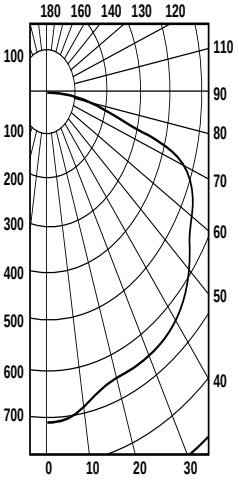
Test No. LTL-00673

EMI20 INCANDESCENT
With Globe and Standard Dome Reflector
150, 200 and 300 Watt Medium Base

CANDLEPOWER – 300 WATT
PS-25 lamp 6360 lumens

For 150 watt multiply by .421
For 200 watt multiply by .506





ANGLE	CP	ANGLE	CP
.0	725.	95.0	0.
5.0	722.	105.0	0.
15.0	675.	115.0	0.
25.0	657.	125.0	0.
35.0	646.	135.0	0.
45.0	605.	145.0	0.
55.0	580.	155.0	0.
65.0	542.	165.0	0.
75.0	255.	175.0	0.
85.0	26.	180.0	0.
90.0	2.		

Coefficients of Utilization -- Zonal Cavity Method

% Effective Ceiling Cavity Reflectance 1cc	80			70			50		30		10		0
% Wall Reflectance 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance														
0	.52	.52	.52	.52	.51	.51	.51	.51	.49	.49	.49	.47	.47	.47	.45	.45	.45	.44
1	.48	.45	.44	.42	.46	.44	.43	.41	.43	.41	.40	.41	.40	.39	.39	.38	.37	.37
2	.43	.39	.36	.34	.42	.38	.36	.33	.37	.35	.32	.35	.33	.32	.34	.32	.31	.30
3	.39	.34	.30	.27	.38	.33	.30	.27	.32	.29	.27	.31	.28	.26	.30	.27	.26	.25
4	.35	.30	.26	.23	.34	.29	.26	.23	.28	.25	.22	.27	.24	.22	.26	.24	.22	.21
5	.32	.26	.22	.19	.31	.26	.22	.19	.25	.21	.19	.24	.21	.18	.23	.20	.18	.17
6	.29	.23	.19	.16	.28	.23	.19	.16	.22	.18	.16	.21	.18	.16	.20	.18	.15	.14
7	.27	.20	.16	.13	.26	.20	.16	.13	.19	.16	.13	.19	.16	.13	.18	.15	.13	.12
8	.25	.18	.14	.12	.24	.18	.14	.12	.18	.14	.12	.17	.14	.12	.16	.14	.11	.11
9	.23	.17	.13	.10	.22	.16	.13	.10	.16	.12	.10	.15	.12	.10	.15	.12	.10	.09
10	.21	.15	.11	.09	.21	.15	.11	.09	.14	.11	.09	.14	.11	.09	.14	.11	.09	.08

Spacing Criterion -- SC = 1.4

Illumination on Horizontal Surface

	FOOTCANDLE CHART (Initial) 300 WATT INCANDESCENT Horizontal Distance From Source in Feet									
Mounting Height in Feet	0'	5'	10'	12'	14'	16'	18'	20'	25'	30'
8'	11.32	6.23	2.16	1.55	1.07	.78	.57	.36	.15	.07
10'	7.25	4.70	2.14	1.49	1.14	.85	.64	.49	.23	.13
12'	5.03	3.60	1.97	1.48	1.09	.88	.69	.53	.31	.16
14'	3.70	2.83	1.78	1.40	1.09	.83	.66	.56	.33	.21
16'	2.83	2.26	1.55	1.29	1.04	.84	.65	.54	.35	.23
18'	2.24	1.86	1.34	1.15	.97	.81	.66	.53	.36	.24

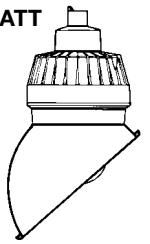
$$FC = \frac{(Candlepower)\ (COS\ \emptyset)}{DISTANCE^2}$$

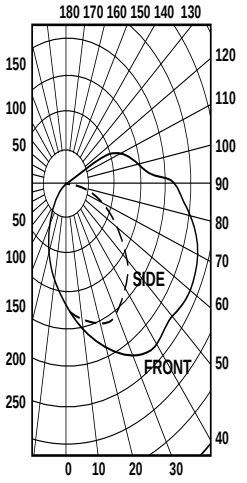
Test No. LTL-00674

EMI20 INCANDESCENT
With Globe and Angle Reflector
150, 200 and 300 Watt Medium Base

CANDLEPOWER – 300 WATT
PS-25 lamp 6360 lumens

For 150 watt multiply by .421
For 200 watt multiply by .506





0° (FRONT) ANGLE	CP	90° (SIDE) ANGLE	CP
.0	536.	.0	536.
5.0	558.	5.0	544.
15.0	633.	15.0	572.
25.0	750.	25.0	602.
35.0	795.	35.0	585.
45.0	797.	45.0	541.
55.0	808.	55.0	432.
65.0	813.	65.0	208.
75.0	778.	75.0	73.
85.0	696.	85.0	22.
90.0	625.	90.0	10.
95.0	501.	95.0	2.
105.0	195.	105.0	0.
115.0	68.	115.0	0.
125.0	15.	125.0	0.
135.0	0.	135.0	0.
145.0	0.	145.0	0.
155.0	0.	155.0	0.
165.0	0.	165.0	0.
175.0	0.	175.0	0.
180.0	0.	180.0	0.

Coefficients of Utilization -- Zonal Cavity Method

% Effective Ceiling Cavity Reflectance 1cc	80			70			50		30		10		0
% Wall Reflectance 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance														
0	.47	.47	.47	.47	.45	.45	.45	.45	.43	.43	.43	.40	.40	.40	.38	.38	.38	.37
1	.41	.39	.37	.35	.40	.38	.36	.34	.36	.34	.33	.34	.32	.31	.32	.31	.30	.29
2	.37	.33	.30	.28	.36	.32	.30	.27	.31	.28	.26	.29	.27	.25	.27	.26	.24	.23
3	.34	.29	.25	.23	.32	.28	.25	.22	.27	.24	.21	.25	.23	.21	.24	.22	.20	.19
4	.31	.26	.22	.19	.30	.25	.21	.19	.24	.21	.18	.22	.20	.18	.21	.19	.17	.16
5	.28	.23	.19	.16	.27	.22	.19	.16	.21	.18	.15	.20	.17	.15	.19	.16	.15	.14
6	.26	.20	.16	.14	.25	.20	.16	.14	.19	.16	.13	.18	.15	.13	.17	.14	.13	.12
7	.24	.18	.14	.12	.23	.18	.14	.12	.17	.14	.11	.16	.13	.11	.15	.13	.11	.10
8	.22	.16	.13	.10	.21	.16	.13	.10	.15	.12	.10	.14	.12	.10	.14	.11	.09	.09
9	.20	.15	.11	.09	.20	.14	.11	.09	.14	.11	.09	.13	.10	.08	.12	.10	.08	.07
10	.19	.13	.10	.08	.18	.13	.10	.08	.13	.10	.08	.12	.09	.07	.11	.09	.07	.07

0-DEG / 90-DEG
Spacing Criterion -- SC = 2.1 / 1.6

Illumination on Horizontal Surface

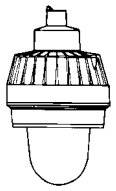
		FOOTCANDLE CHART (Initial) 300 WATT INCANDESCENT Horizontal Distance From Source in Feet									
Mounting Height in Feet		0'	5'	10'	12'	14'	16'	18'	20'	25'	30'
0°	8'	8.38	7.44	3.05	2.15	1.55	1.13	.85	.64	.35	.21
	10'	5.36	5.37	2.82	2.10	1.59	1.20	.93	.73	.41	.25
	12'	3.72	3.90	2.51	1.96	1.54	1.21	.96	.77	.46	.29
	14'	2.73	2.94	2.19	1.78	1.44	1.17	.95	.78	.48	.31
	16'	2.09	2.27	1.86	1.59	1.33	1.10	.92	.76	.50	.33
	18'	1.65	1.75	1.59	1.40	1.21	1.03	.87	.74	.50	.34
90°	8'	8.38	5.63	1.86	1.15	.61	.29	.22	.13	.05	.02
	10'	5.36	4.31	1.91	1.28	.85	.54	.37	.19	.09	.04
	12'	3.72	3.24	1.77	1.33	.93	.62	.51	.30	.12	.06
	14'	2.73	2.50	1.61	1.26	.98	.74	.55	.42	.19	.08
	16'	2.09	1.96	1.41	1.17	.94	.75	.58	.46	.25	.13
	18'	1.65	1.58	1.22	1.05	.87	.72	.59	.47	.27	.13

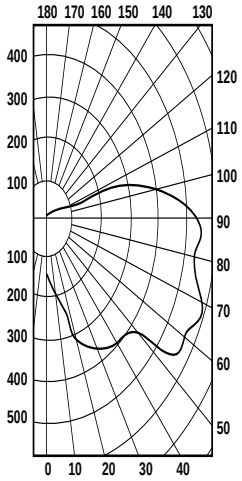
$$FC = \frac{(Candlepower)\ (COS\ \emptyset)}{DISTANCE^2}$$

Test No. LTL-00675

EMI30 INCANDESCENT
With Globe Only
200 – 300 Watt Medium Base

CANDLEPOWER – 300 WATT
PS-25 lamp 6360 lumens
For 200 watt multiply by .597





ANGLE	CP	ANGLE	CP
.0	139.	95.0	485.
5.0	184.	100.0	389.
10.0	213.	105.0	234.
15.0	268.	110.0	80.
20.0	364.	115.0	15.
25.0	371.	120.0	11.
30.0	381.	125.0	7.
35.0	410.	130.0	3.
40.0	402.	.135.0	1.
45.0	434.	140.0	0.
50.0	488.	145.0	0.
55.0	586.	150.0	0.
60.0	573.	155.0	0.
65.0	604.	160.0	0.
70.0	585.	165.0	0.
75.0	567.	170.0	0.
80.0	566.	175.0	0.
85.0	549.	180.0	0.
90.0	515.		

Coefficients of Utilization -- Zonal Cavity Method

% Effective Ceiling Cavity Reflectance 1cc	80			70			50		30		10		0
% Wall Reflectance 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance														
0	.72	.72	.72	.72	.68	.68	.68	.68	.63	.63	.63	.57	.57	.57	.52	.52	.52	.50
1	.61	.57	.52	.49	.58	.54	.50	.47	.49	.46	.43	.44	.42	.39	.40	.38	.36	.33
2	.54	.46	.40	.35	.51	.44	.39	.34	.40	.35	.31	.36	.32	.29	.32	.29	.26	.24
3	.48	.39	.33	.28	.45	.37	.31	.26	.34	.29	.24	.30	.26	.22	.27	.23	.20	.18
4	.43	.34	.27	.22	.41	.32	.26	.21	.29	.24	.19	.26	.21	.18	.23	.19	.16	.14
5	.39	.29	.22	.17	.36	.28	.21	.17	.25	.19	.15	.22	.18	.14	.20	.16	.13	.11
6	.35	.25	.19	.14	.33	.24	.18	.14	.22	.16	.13	.19	.15	.11	.17	.13	.10	.09
7	.32	.23	.16	.12	.30	.21	.16	.11	.19	.14	.10	.17	.13	.09	.15	.11	.08	.07
8	.30	.20	.14	.10	.28	.19	.13	.10	.17	.12	.09	.15	.11	.08	.14	.10	.07	.06
9	.27	.18	.12	.08	.26	.17	.12	.08	.15	.11	.07	.14	.10	.07	.12	.08	.06	.04
10	.25	.16	.11	.07	.24	.16	.10	.07	.14	.09	.06	.13	.08	.06	.11	.08	.05	.04

Spacing Criterion -- SC = 3.5

Illumination on Horizontal Surface

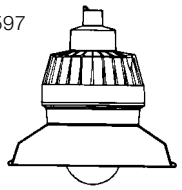
		FOOTCANDLE CHART (Initial) 300 WATT INCANDESCENT Horizontal Distance From Source in Feet									
		0'	5'	10'	12'	14'	16'	18'	20'	25'	30'
Mounting Height in Feet	8'	2.17	3.67	1.86	1.56	1.09	.84	.63	.47	.26	.15
	10'	1.39	2.65	1.53	1.28	1.15	.85	.66	.54	.30	.19
	12'	.96	1.97	1.26	1.06	.93	.80	.69	.54	.34	.21
	14'	.71	1.55	1.13	.90	.78	.69	.66	.56	.34	.23
	16'	.54	1.01	.92	.82	.67	.60	.54	.46	.35	.23
	18'	.43	.74	.79	.67	.62	.52	.47	.43	.36	.24

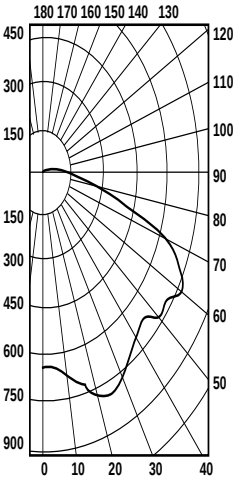
$$FC = \frac{(\text{Candlepower})\ (\cos \varnothing)}{\text{DISTANCE}^2}$$

Test No. BALL-6769.1

EMI30 INCANDESCENT
With Globe and Standard Dome Reflector
200 – 300 Watt Medium Base

CANDLEPOWER – 300 WATT
PS-25 lamp 6360 lumens
For 200 watt multiply by .597





ANGLE	CP	ANGLE	CP
.0	649.	95.0	1.
5.0	647.	100.0	0.
10.0	684.	105.0	0.
15.0	747.	110.0	0.
20.0	825.	115.0	0.
25.0	842.	120.0	0.
30.0	768.	125.0	0.
35.0	754.	130.0	0.
40.0	738.	135.0	0.
45.0	693.	140.0	0.
50.0	705.	145.0	0.
55.0	749.	150.0	0.
60.0	774.	155.0	0.
65.0	735.	160.0	0.
70.0	458.	165.0	0.
75.0	132.	170.0	1.
80.0	82.	175.0	0.
85.0	32.	180.0	1.
90.0	3.		

Coefficients of Utilization -- Zonal Cavity Method

% Effective Ceiling Cavity Reflectance 1cc	80			70			50		30		10		0
% Wall Reflectance 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance														
0	.61	.61	.61	.61	.59	.59	.59	.59	.57	.57	.57	.54	.54	.54	.52	.52	.52	.51
1	.56	.53	.51	.49	.54	.52	.50	.49	.50	.49	.47	.48	.47	.46	.46	.45	.44	.43
2	.51	.46	.43	.40	.49	.46	.42	.40	.44	.41	.39	.42	.40	.38	.40	.39	.37	.36
3	.46	.41	.36	.33	.45	.40	.36	.33	.38	.35	.32	.37	.34	.31	.35	.33	.31	.30
4	.42	.35	.31	.27	.40	.35	.30	.27	.33	.30	.27	.32	.29	.26	.31	.28	.26	.25
5	.37	.30	.25	.22	.36	.30	.25	.22	.29	.25	.21	.28	.24	.21	.27	.23	.21	.20
6	.34	.27	.22	.18	.33	.26	.22	.18	.25	.21	.18	.24	.21	.18	.23	.20	.18	.17
7	.31	.24	.19	.15	.30	.23	.19	.15	.22	.18	.15	.22	.18	.15	.21	.18	.15	.14
8	.28	.21	.16	.13	.28	.21	.16	.13	.20	.16	.13	.19	.16	.13	.19	.15	.13	.12
9	.26	.19	.14	.11	.25	.18	.14	.11	.18	.14	.11	.17	.13	.11	.17	.13	.11	.10
10	.24	.17	.13	.10	.23	.17	.12	.10	.16	.12	.10	.16	.12	.09	.15	.12	.09	.08

Spacing Criterion -- SC = 1.7

Illumination on Horizontal Surface

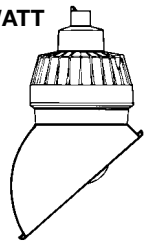
		FOOTCANDLE CHART (Initial) 300 WATT INCANDESCENT Horizontal Distance From Source in Feet									
		0'	5'	10'	12'	14'	16'	18'	20'	25'	30'
Mounting Height in Feet	8'	10.14	7.26	2.68	2.00	1.48	1.06	.77	.42	.16	.03
	10'	6.49	6.02	2.45	1.85	1.47	1.13	.89	.67	.27	.14
	12'	4.51	4.57	2.32	1.70	1.35	1.03	.89	.73	.41	.18
	14'	3.31	3.51	2.07	1.65	1.25	1.02	.86	.72	.46	.28
	16'	2.53	2.63	1.81	1.51	1.23	.96	.80	.67	.47	.32
	18'	2.00	2.06	1.58	1.36	1.14	.95	.76	.64	.46	.32

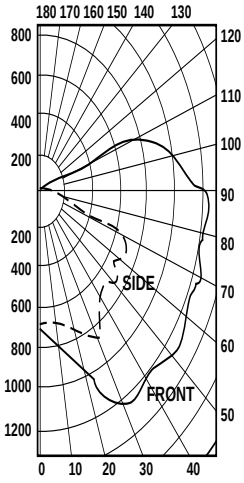
$$FC = \frac{(\text{Candlepower})\ (\cos \varnothing)}{\text{DISTANCE}^2}$$

Test No. BALL-6770.1

EMI30 INCANDESCENT
With Globe and Angle Reflector
200 – 300 Watt Medium Base

CANDLEPOWER – 300 WATT
PS-25 lamp 6360 lumens
For 200 watt multiply by .597





0° (FRONT) ANGLE	CP	90° (SIDE) ANGLE	CP
.0	563.	.0	563.
5.0	714.	5.0	499.
15.0	888.	15.0	608.
25.0	927.	25.0	582.
35.0	853.	35.0	558.
45.0	875.	45.0	538.
55.0	950.	55.0	592.
65.0	998.	65.0	150.
75.0	890.	75.0	68.
85.0	807.	85.0	15.
90.0	561.	90.0	0.
95.0	179.	95.0	0.
105.0	96.	105.0	0.
115.0	33.	115.0	0.
125.0	0.	125.0	0.
135.0	0.	135.0	0.
145.0	0.	145.0	0.
155.0	0.	155.0	0.
165.0	0.	165.0	0.
175.0	0.	175.0	0.
180.0	0.	180.0	0.

Coefficients of Utilization -- Zonal Cavity Method

% Effective Ceiling Cavity Reflectance 1cc	80			70			50		30		10		0
% Wall Reflectance 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance														
0	.52	.52	.52	.52	.51	.51	.51	.51	.48	.48	.48	.45	.45	.45	.42	.42	.42	.41
1	.46	.43	.41	.39	.45	.42	.40	.38	.40	.38	.36	.37	.36	.34	.35	.34	.33	.32
2	.41	.37	.33	.30	.40	.36	.32	.29	.33	.31	.28	.31	.29	.27	.30	.28	.26	.25
3	.37	.32	.28	.24	.36	.31	.27	.24	.29	.26	.23	.27	.25	.22	.26	.23	.21	.20
4	.34	.28	.23	.20	.32	.27	.23	.20	.25	.22	.19	.24	.21	.19	.23	.20	.18	.17
5	.31	.24	.20	.16	.29	.24	.19	.16	.22	.19	.16	.21	.18	.15	.20	.17	.15	.14
6	.28	.22	.17	.14	.27	.21	.17	.14	.20	.16	.13	.19	.15	.13	.18	.15	.13	.12
7	.26	.19	.15	.12	.25	.19	.15	.12	.18	.14	.12	.17	.14	.11	.16	.13	.11	.10
8	.24	.17	.13	.10	.23	.17	.13	.10	.16	.12	.10	.15	.12	.10	.14	.11	.09	.08
9	.22	.16	.12	.09	.21	.15	.11	.09	.14	.11	.09	.14	.11	.08	.13	.10	.08	.07
10	.20	.14	.10	.08	.20	.14	.10	.08	.13	.10	.08	.12	.09	.07	.12	.09	.07	.06

0-DEG / 90-DEG
Spacing Criterion -- SC =2.14 / 1.5

Illumination on Horizontal Surface

		FOOTCANDLE CHART (Initial) 300 WATT INCANDESCENT Horizontal Distance From Source in Feet									
		0'	5'	10'	12'	14'	16'	18'	20'	25'	30'
Mounting Height in Feet	0° 8'	8.80	8.18	3.43	2.53	1.87	1.39	1.04	.79	.43	.24
	10'	5.63	6.63	3.09	2.37	1.86	1.42	1.12	.89	.50	.31
	12'	3.91	5.01	2.77	2.15	1.73	1.41	1.13	.93	.56	.35
	14'	2.87	3.90	2.34	1.96	1.58	1.44	1.08	.91	.58	.38
	16'	2.20	3.03	2.04	1.71	1.46	1.21	1.03	.86	.58	.40
	18'	1.74	2.45	1.77	1.52	1.30	1.13	.95	.83	.58	.41
	8'	8.80	5.18	2.17	1.58	.59	.25	.16	.09	.04	.02
	10'	5.63	4.16	1.90	1.49	1.16	.80	.36	.16	.04	.03
	12'	3.91	3.30	1.73	1.32	1.09	.88	.70	.29	.08	.03
	14'	2.87	2.56	1.53	1.23	.97	.82	.68	.57	.18	.06
	16'	2.20	2.06	1.29	1.12	.91	.74	.64	.54	.36	.13
	90° 18'	1.74	1.68	1.11	.99	.84	.71	.59	.52	.36	.13

$$FC = \frac{(\text{Candlepower})\ (\cos \varnothing)}{\text{DISTANCE}^2}$$

Test No. BALL-6771.1

EBF13/EQF SERIES FLUORESCENT

With Globe Only
One 13 Watt Bi-Pin Base
or one 26/32/42 Quad-Pin

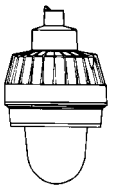
CANDLEPOWER – (1) 13 WATT

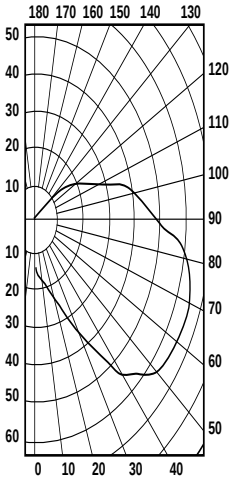
PL lamp 900 lumens

For 26 watt quad-pin multiply by 2.0

For 32 watt quad-pin multiply by 2.66

For 42 watt quad-pin multiply by 3.55





ANGLE	CP	ANGLE	CP
.0	13.	95.0	48.
5.0	14.	105.0	37.
15.0	21.	115.0	24.
25.0	31.	125.0	13.
35.0	48.	135.0	2.
45.0	60.	145.0	0.
55.0	66.	155.0	0.
65.0	66.	165.0	0.
75.0	63.	175.0	0.
85.0	57.	180.0	0.
90.0	52.		

Coefficients of Utilization -- Zonal Cavity Method

% Effective Ceiling Cavity Reflectance 1cc	80			70			50		30		10		0
% Wall Reflectance 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance														
0	.60	.60	.60	.60	.57	.57	.57	.57	.51	.51	.51	.46	.46	.46	.39
1	.52	.48	.44	.41	.49	.45	.42	.39	.40	.38	.35	.36	.34	.32	.26
2	.45	.40	.35	.31	.43	.37	.33	.29	.33	.29	.26	.29	.26	.24	.19
3	.40	.33	.28	.24	.38	.31	.26	.22	.28	.24	.20	.24	.21	.18	.14
4	.37	.29	.23	.19	.34	.27	.22	.18	.24	.20	.16	.21	.17	.14	.11
5	.33	.25	.19	.15	.31	.23	.18	.14	.21	.16	.13	.18	.14	.11	.08
6	.30	.22	.16	.12	.28	.20	.15	.12	.18	.14	.10	.16	.12	.09	.06
7	.27	.19	.14	.10	.25	.18	.13	.10	.16	.12	.08	.14	.10	.07	.05
8	.25	.17	.12	.08	.23	.16	.11	.08	.14	.10	.07	.12	.09	.06	.04
9	.23	.15	.10	.07	.22	.14	.10	.07	.13	.09	.06	.11	.08	.05	.03
10	.21	.14	.09	.06	.20	.13	.09	.06	.11	.08	.05	.10	.07	.04	.02

Spacing Criterion -- SC = 3.8

Illumination on Horizontal Surface

Mounting Height in Feet	FOOTCANDLE CHART (Initial) (1) 13 WATT FLUORESCENT Horizontal Distance From Source in Feet 0'	5'	10'	12'	14'	16'	18'	20'	25'	30'
8'	.20	.40	.24	.18	.12	.09	.07	.05	.03	.02
10'	.13	.22	.21	.16	.13	.10	.07	.06	.03	.02
12'	.09	.15	.17	.15	.12	.10	.07	.06	.04	.02
14'	.07	.11	.13	.12	.11	.09	.07	.06	.04	.02
16'	.05	.08	.10	.10	.09	.08	.07	.06	.04	.03
18'	.04	.06	.08	.07	.07	.07	.06	.06	.04	.03

$$FC = \frac{(\text{Candlepower})\ (\cos \varnothing)}{\text{DISTANCE}^2}$$

Test No. LTL 00667

EBF13/EQF SERIES FLUORESCENT

With Globe and Standard Dome Reflector
One 13 Watt Bi-Pin Base
or one 26/32/42 Quad-Pin

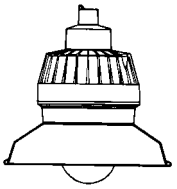
CANDLEPOWER – (1) 13 WATT

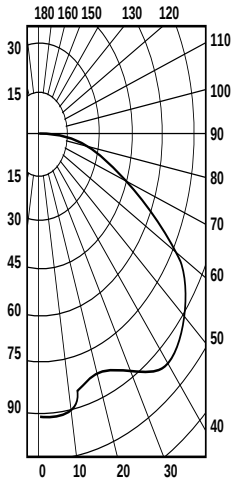
PL lamp 900 lumens

For 26 watt quad-pin multiply by 2.0

For 32 watt quad-pin multiply by 2.66

For 42 watt quad-pin multiply by 3.55





ANGLE	CP	ANGLE	CP
.0	92.	95.0	0.
5.0	93.	105.0	0.
15.0	86.	115.0	0.
25.0	86.	125.0	0.
35.0	95.	135.0	0.
45.0	97.	145.0	0.
55.0	88.	155.0	0.
65.0	64.	165.0	0.
75.0	35.	175.0	0.
85.0	7.	180.0	0.
90.0	1.		

Coefficients of Utilization -- Zonal Cavity Method

% Effective Ceiling Cavity Reflectance 1cc	80			70			50		30		10		0
% Wall Reflectance 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance														
0	.52	.52	.52	.52	.51	.51	.51	.51	.49	.49	.49	.47	.47	.47	.44
1	.48	.45	.43	.42	.46	.44	.43	.41	.42	.41	.40	.41	.39	.38	.36
2	.43	.39	.36	.33	.42	.38	.36	.33	.37	.34	.32	.35	.33	.32	.30
3	.39	.34	.30	.27	.38	.33	.30	.27	.32	.29	.26	.31	.28	.26	.25
4	.35	.30	.26	.23	.34	.29	.26	.23	.28	.25	.22	.27	.24	.22	.21
5	.32	.26	.22	.19	.31	.26	.22	.19	.25	.21	.19	.24	.21	.18	.17
6	.29	.23	.19	.16	.28	.23	.19	.16	.22	.18	.16	.21	.18	.15	.14
7	.27	.20	.16	.13	.26	.20	.16	.13	.19	.16	.13	.19	.15	.13	.12
8	.25	.18	.14	.11	.24	.18	.14	.11	.17	.14	.11	.17	.13	.11	.10
9	.23	.16	.12	.10	.22	.16	.12	.10	.15	.12	.10	.15	.12	.10	.09
10	.21	.15	.11	.08	.20	.14	.11	.08	.14	.11	.08	.13	.10	.08	.07

Spacing Criterion -- SC = 1.6

Illumination on Horizontal Surface

Mounting Height in Feet	FOOTCANDLE CHART (Initial) (1) 13 WATT FLUORESCENT Horizontal Distance From Source in Feet 0'	5'	10'	12'	14'	16'	18'	20'	25'	30'
8'	1.44	.88	.35	.22	.14	.10	.07	.05	.02	.00
10'	.92	.61	.34	.24	.17	.12	.07	.06	.03	.01
12'	.64	.47	.30	.24	.18	.14	.10	.07	.04	.02
14'	.47	.37	.26	.21	.17	.14	.11	.08	.04	.02
16'	.36	.29	.22	.19	.16	.13	.11	.09	.05	.03
18'	.28	.24	.18	.16	.14	.12	.10	.09	.05	.03

$$FC = \frac{(\text{Candlepower})\ (\cos \varnothing)}{\text{DISTANCE}^2}$$

Test No. LTL 00668

EBF13/EQF SERIES FLUORESCENT

With Globe and Angle Reflector
One 13 Watt Bi-Pin Base
or one 26/32/42 Quad-Pin

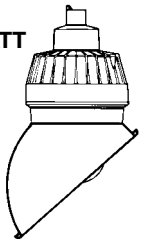
CANDLEPOWER – (1) 13 WATT

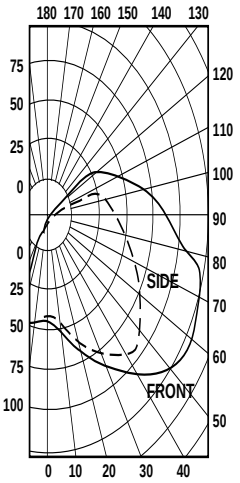
PL lamp 900 lumens

For 26 watt quad-pin multiply by 2.0

For 32 watt quad-pin multiply by 2.66

For 42 watt quad-pin multiply by 3.55





0° (FRONT) ANGLE	CP	90° (SIDE) ANGLE	CP
.0	36.	.0	36.
5.0	27.	5.0	37.
15.0	35.	15.0	46.
25.0	53.	25.0	58.
35.0	81.	35.0	70.
45.0	106.	45.0	81.
55.0	121.	55.0	81.
65.0	126.	65.0	68.
75.0	123.	75.0	60.
85.0	113.	85.0	52.
90.0	106.	90.0	46.
95.0	97.	95.0	41.
105.0	77.	105.0	30.
115.0	54.	115.0	19.
125.0	32.	125.0	8.
135.0	12.	135.0	0.
145.0	1.	145.0	0.
155.0	0.	155.0	0.
165.0	0.	165.0	0.
175.0	0.	175.0	0.
180.0	0.	180.0	0.

Coefficients of Utilization -- Zonal Cavity Method

% Effective Ceiling Cavity Reflectance 1cc	80			70			50		30		10		0
% Wall Reflectance 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance														
0	.50	.50	.50	.50	.48	.48	.48	.48	.44	.44	.44	.40	.40	.40	.35
1	.44	.41	.38	.36	.41	.39	.36	.34	.35	.33	.31	.32	.30	.29	.24
2	.39	.34	.30	.27	.37	.32	.29	.26	.29	.26	.24	.26	.24	.22	.18
3	.35	.29	.25	.21	.33	.28	.24	.20	.25	.22	.19	.22	.20	.17	.14
4	.31	.25	.21	.17	.30	.24	.20	.17	.22	.18	.15	.19	.17	.14	.12
5	.28	.22	.18	.14	.27	.21	.17	.14	.19	.15	.13	.17	.14	.12	.09
6	.26	.19	.15	.12	.24	.18	.14	.11	.17	.13	.11	.15	.12	.10	.08
7	.24	.17	.13	.10	.22	.16	.12	.10	.15	.11	.09	.13	.10	.08	.06
8	.22	.15	.11	.08	.21	.15	.11	.08	.13	.10	.08	.12	.09	.07	.05
9	.20	.14	.10	.07	.19	.13	.10	.07	.12	.09	.06	.11	.08	.06	.04
10	.19	.13	.09	.06	.18	.12	.08	.06	.11	.08	.06	.10	.07	.05	.04

0-DEG / 90-DEG

Spacing Criterion -- SC = 3.2 / 2.7

Illumination on Horizontal Surface

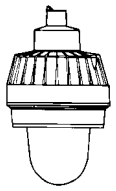
Mounting Height in Feet	FOOTCANDLE CHART (Initial) (1) 13 WATT FLUORESCENT Horizontal Distance From Source in Feet 0'	5'	10'	12'	14'	16'	18'	20'	25'	30'
0° 8'	.56	.69	.43	.32	.24	.17	.13	.10	.05	.03
10'	.36	.38	.37	.30	.24	.18	.14	.11	.06	.04
12'	.25	.26	.29	.26	.22	.18	.14	.12	.07	.04
14'	.18	.19	.22	.21	.19	.16	.14	.12	.07	.05
16'	.14	.13	.17	.16	.15	.15	.13	.11	.07	.05
18'	.11	.10	.14	.13	.13	.12	.11	.10	.07	.04
8'	.56	.63	.31	.22	.14	.10	.07	.05	.03	.02
10'	.36	.41	.29	.21	.16	.12	.08	.06	.03	.02
12'	.25	.29	.24	.20	.15	.12	.10	.07	.04	.02
14'	.18	.22	.19	.17	.15	.12	.09	.08	.04	.03
16'	.14	.17	.16	.14	.12	.11	.09	.08	.05	.03
90° 18'	.11	.13	.13	.12	.11	.10	.09	.07	.05	.03

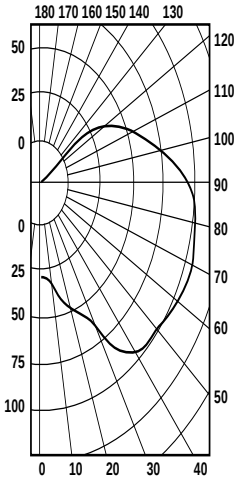
$$FC = \frac{(\text{Candlepower})\ (\cos \varnothing)}{\text{DISTANCE}^2}$$

Test No. LTL 00669

EBF26 FLUORESCENT
With Globe Only
Two 13 Watt Bi-Pin Base

CANDLEPOWER – (2) 13 WATT
PL lamps
900 lumens per lamp





ANGLE	CP	ANGLE	CP
.0	28.	95.0	82.
5.0	29.	105.0	63.
15.0	40.	115.0	44.
25.0	58.	125.0	24.
35.0	82.	135.0	7.
45.0	100.	145.0	1.
55.0	110.	155.0	0.
65.0	111.	165.0	0.
75.0	106.	175.0	0.
85.0	96.	180.0	0.
90.0	90.		

Coefficients of Utilization -- Zonal Cavity Method

% Effective Ceiling Cavity Reflectance 1cc	80			70			50		30		10		0
% Wall Reflectance 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance														
0	.52	.52	.52	.52	.49	.49	.49	.49	.44	.44	.44	.39	.39	.39	.35	.35	.35	.33
1	.44	.41	.38	.36	.42	.39	.36	.34	.34	.32	.30	.30	.29	.27	.27	.25	.24	.22
2	.39	.34	.30	.26	.37	.32	.28	.25	.28	.25	.23	.25	.22	.20	.22	.20	.18	.16
3	.35	.29	.24	.20	.32	.27	.23	.19	.24	.20	.17	.21	.18	.15	.18	.16	.14	.12
4	.31	.25	.20	.16	.29	.23	.19	.16	.21	.17	.14	.18	.15	.13	.16	.13	.11	.09
5	.28	.22	.17	.13	.26	.20	.16	.13	.18	.14	.11	.16	.12	.10	.13	.11	.09	.07
6	.26	.19	.14	.11	.24	.18	.13	.10	.16	.12	.09	.14	.10	.08	.12	.09	.07	.06
7	.23	.17	.12	.09	.22	.16	.11	.08	.14	.10	.07	.12	.09	.07	.10	.08	.06	.04
8	.22	.15	.10	.07	.20	.14	.10	.07	.12	.09	.06	.11	.08	.05	.09	.07	.05	.04
9	.20	.13	.09	.06	.19	.12	.09	.06	.11	.08	.05	.10	.07	.05	.08	.06	.04	.03
10	.18	.12	.08	.05	.17	.11	.08	.05	.10	.07	.04	.09	.06	.04	.07	.05	.03	.02

Spacing Criterion -- SC = 3.5

Illumination on Horizontal Surface

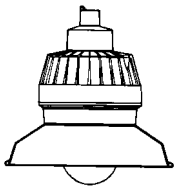
Mounting Height in Feet	FOOTCANDLE CHART (Initial) (2) 13 WATT FLUORESCENT Horizontal Distance From Source in Feet									
	0'	5'	10'	12'	14'	16'	18'	20'	25'	30'
8'	.44	.71	.40	.29	.21	.15	.12	.09	.05	.03
10'	.28	.41	.35	.27	.22	.16	.13	.10	.06	.03
12'	.19	.28	.29	.24	.20	.16	.13	.10	.06	.04
14'	.14	.21	.22	.20	.18	.15	.13	.10	.06	.04
16'	.11	.15	.17	.16	.15	.14	.12	.10	.07	.04
18'	.09	.11	.14	.13	.13	.12	.11	.09	.07	.05

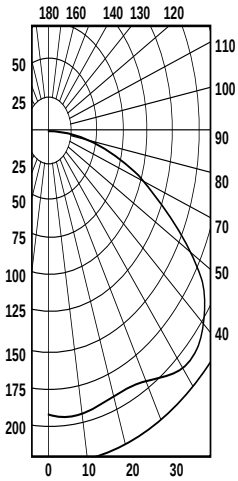
FC = (Candlepower) (COS Ø) / DISTANCE²

Test No. LTL 00682

EBF26 FLUORESCENT
With Globe and Standard Dome Reflector
Two 13 Watt Bi-Pin Base

CANDLEPOWER – (2) 13 WATT
PL lamps
900 lumens per lamp





ANGLE	CP	ANGLE	CP
.0	189.	95.0	0.
5.0	193.	105.0	0.
15.0	191.	115.0	0.
25.0	190.	125.0	0.
35.0	204.	135.0	0.
45.0	205.	145.0	0.
55.0	188.	155.0	0.
65.0	136.	165.0	0.
75.0	74.	175.0	0.
85.0	15.	180.0	0.
90.0	1.		

Coefficients of Utilization -- Zonal Cavity Method

% Effective Ceiling Cavity Reflectance 1cc	80			70			50		30		10		0
% Wall Reflectance 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance														
0	.56	.56	.56	.56	.55	.55	.55	.55	.52	.52	.52	.50	.50	.50	.48	.48	.48	.47
1	.51	.49	.46	.45	.50	.47	.46	.44	.45	.44	.42	.44	.42	.41	.42	.41	.40	.39
2	.46	.42	.39	.36	.45	.41	.38	.36	.39	.37	.35	.38	.36	.34	.36	.35	.33	.32
3	.42	.36	.32	.39	.40	.36	.32	.29	.34	.31	.28	.33	.30	.28	.32	.29	.27	.26
4	.38	.32	.28	.35	.37	.31	.27	.24	.30	.27	.24	.29	.26	.24	.28	.25	.23	.22
5	.35	.28	.24	.20	.33	.28	.23	.20	.27	.23	.20	.26	.22	.20	.25	.22	.20	.19
6	.31	.25	.20	.17	.30	.24	.20	.17	.23	.20	.17	.23	.19	.17	.22	.19	.17	.16
7	.29	.22	.17	.14	.28	.21	.17	.14	.21	.17	.14	.20	.17	.14	.19	.16	.14	.13
8	.26	.20	.15	.12	.26	.19	.15	.12	.19	.15	.12	.18	.15	.12	.17	.14	.12	.11
9	.24	.17	.13	.11	.24	.17	.13	.11	.17	.13	.10	.16	.13	.10	.16	.13	.10	.09
10	.22	.16	.12	.09	.22	.16	.12	.09	.15	.11	.09	.15	.11	.09	.14	.11	.09	.08

Spacing Criterion -- SC = 1.6

Illumination on Horizontal Surface

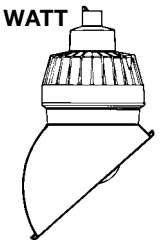
Mounting Height in Feet	FOOTCANDLE CHART (Initial) (2) 13 WATT FLUORESCENT Horizontal Distance From Source in Feet									
	0'	5'	10'	12'	14'	16'	18'	20'	25'	30'
8'	2.95	1.85	.75	.50	.31	.21	.14	.09	.04	.02
10'	1.89	1.36	.72	.52	.37	.28	.18	.13	.06	.03
12'	1.31	1.04	.64	.50	.38	.29	.22	.15	.08	.04
14'	.96	.81	.56	.45	.37	.29	.23	.18	.10	.05
16'	.73	.65	.46	.41	.34	.28	.23	.19	.12	.06
18'	.58	.53	.41	.34	.31	.26	.22	.18	.11	.07

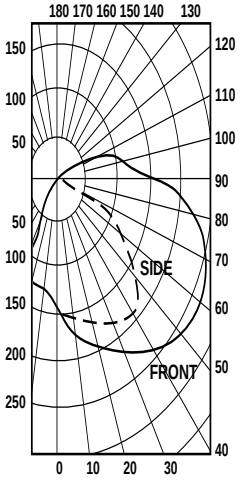
FC = (Candlepower) (COS Ø) / DISTANCE²

Test No. LTL 00683

EBF26 FLUORESCENT
With Globe and Angle Reflector
Two 13 Watt Bi-Pin Base

CANDLEPOWER – (2) 13 WATT
PL lamps
900 lumens per lamp





0° (FRONT) ANGLE	CP	90° (SIDE) ANGLE	CP
.0	155.	.0	155.
5.0	166.	5.0	155.
15.0	190.	15.0	160.
25.0	211.	25.0	171.
35.0	242.	35.0	188.
45.0	264.	45.0	174.
55.0	274.	55.0	130.
65.0	269.	65.0	78.
75.0	238.	75.0	35.
85.0	189.	85.0	10.
90.0	161.	90.0	4.
95.0	132.	95.0	1.
105.0	75.	105.0	0.
115.0	27.	115.0	0.
125.0	4.	125.0	0.
135.0	0.	135.0	0.
145.0	0.	145.0	0.
155.0	0.	155.0	0.
165.0	0.	165.0	0.
175.0	0.	175.0	0.
180.0	0.	180.0	0.

Coefficients of Utilization -- Zonal Cavity Method

% Effective Ceiling Cavity Reflectance 1cc	80			70			50		30		10		0
% Wall Reflectance 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance														
0	.49	.49	.49	.49	.48	.48	.48	.48	.45	.45	.45	.42	.42	.42	.40	.40	.40	.39
1	.44	.41	.39	.37	.42	.40	.38	.36	.38	.36	.35	.36	.34	.33	.33	.32	.31	.30
2	.40	.36	.32	.30	.38	.35	.32	.29	.32	.30	.28	.31	.29	.27	.29	.27	.26	.25
3	.36	.31	.27	.24	.34	.30	.27	.24	.28	.25	.23	.27	.24	.22	.25	.23	.21	.20
4	.33	.27	.23	.20	.31	.27	.23	.20	.25	.22	.19	.24	.21	.19	.22	.20	.18	.17
5	.30	.24	.20	.17	.29	.23	.20	.17	.22	.19	.16	.21	.18	.16	.20	.17	.15	.14
6	.27	.21	.17	.15	.26	.21	.17	.14	.20	.16	.14	.19	.16	.14	.18	.15	.13	.12
7	.25	.19	.15	.12	.24	.19	.15	.12	.18	.14	.12	.17	.14	.12	.16	.13	.11	.10
8	.23	.17	.13	.11	.22	.17	.13	.11	.16	.13	.10	.15	.12	.10	.14	.12	.10	.09
9	.21	.15	.12	.09	.21	.15	.12	.09	.14	.11	.09	.14	.11	.09	.13	.10	.09	.08
10	.20	.14	.10	.08	.19	.14	.10	.08	.13	.10	.08	.12	.10	.08	.12	.09	.07	.07

0-DEG / 90-DEG
Spacing Criterion -- SC = 2.3 / 1.8

Illumination on Horizontal Surface

Mounting Height in Feet		FOOTCANDLE CHART (Initial) (2) 13 WATT FLUORESCENT Horizontal Distance From Source in Feet									
		0'	5'	10'	12'	14'	16'	18'	20'	25'	30'
0°	8'	2.42	3.53	1.02	.73	.52	.38	.28	.21	.11	.06
	10'	1.55	1.51	.93	.70	.54	.41	.28	.24	.13	.08
	12'	1.08	1.11	.80	.65	.51	.41	.32	.26	.15	.09
	14'	.79	.85	.66	.56	.48	.39	.32	.26	.16	.10
	16'	.60	.66	.55	.48	.42	.36	.30	.26	.17	.11
	18'	.48	.30	.46	.34	.37	.33	.29	.25	.17	.11
90°	8'	2.42	1.73	.58	.35	.20	.13	.08	.05	.02	.00
	10'	1.55	1.22	.61	.40	.25	.18	.12	.05	.03	.02
	12'	1.08	.91	.57	.43	.29	.21	.15	.10	.04	.02
	14'	.79	.70	.52	.40	.31	.23	.17	.12	.06	.03
	16'	.60	.55	.43	.38	.30	.24	.18	.14	.07	.04
	18'	.48	.44	.37	.32	.29	.23	.19	.15	.08	.04

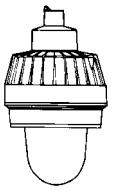
FC = (Candlepower) (COS Ø) / DISTANCE²

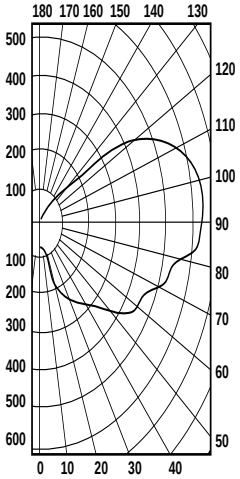
Test No. LTL 00684

EMS HIGH PRESSURE SODIUM
With Globe Only
35 – 100 Watt Medium Base

CANDLEPOWER – 70 WATT
B-17 clear lamp 6300 lumens

For 50 watt multiply by .357
For 50 watt multiply by .635
For 100 watt multiply by 1.508





ANGLE	CP	ANGLE	CP
.0	80.	95.0	651.
5.0	84.	100.0	635.
10.0	108.	105.0	624.
15.0	148.	110.0	581.
20.0	202.	115.0	505.
25.0	262.	120.0	250.
30.0	298.	125.0	23.
35.0	321.	130.0	8.
40.0	352.	135.0	3.
45.0	397.	140.0	3.
50.0	444.	145.0	1.
55.0	467.	150.0	0.
60.0	471.	155.0	0.
65.0	540.	160.0	0.
70.0	562.	165.0	0.
75.0	603.	170.0	0.
80.0	618.	175.0	0.
85.0	633.	180.0	0.
90.0	644.		

Coefficients of Utilization -- Zonal Cavity Method

% Effective Ceiling Cavity Reflectance 1cc	80			70			50		30		10		0
% Wall Reflectance 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance														
0	.85	.85	.85	.85	.79	.79	.79	.79	.69	.69	.69	.60	.60	.60	.51	.51	.51	.47
1	.72	.67	.62	.57	.67	.62	.58	.54	.53	.50	.46	.45	.42	.40	.37	.35	.33	.29
2	.64	.55	.48	.42	.58	.51	.45	.39	.43	.38	.34	.36	.32	.29	.30	.26	.24	.20
3	.57	.47	.39	.33	.52	.43	.36	.31	.37	.31	.26	.30	.26	.22	.25	.21	.18	.15
4	.51	.41	.33	.27	.47	.37	.30	.25	.32	.26	.21	.26	.21	.18	.21	.17	.14	.11
5	.46	.35	.27	.21	.42	.32	.25	.20	.27	.21	.17	.22	.18	.14	.18	.14	.11	.08
6	.42	.31	.23	.18	.39	.28	.21	.16	.24	.18	.14	.20	.15	.11	.16	.12	.09	.07
7	.39	.27	.20	.15	.36	.25	.19	.14	.21	.16	.12	.18	.13	.09	.14	.10	.07	.05
8	.36	.25	.18	.13	.33	.23	.16	.12	.19	.14	.10	.16	.11	.08	.13	.09	.06	.04
9	.33	.22	.15	.11	.30	.20	.14	.10	.17	.12	.08	.14	.10	.07	.11	.08	.05	.03
10	.31	.20	.14	.10	.28	.19	.13	.09	.16	.11	.07	.13	.09	.06	.10	.07	.04	.03

Spacing Criterion -- SC = 4.3

Illumination on Horizontal Surface

Mounting Height in Feet	FOOTCANDLE CHART (Initial) 70 WATT H.P.S. Horizontal Distance From Source in Feet									
	0'	5'	10'	12'	14'	16'	18'	20'	25'	30'
8'	1.25	2.94	1.69	1.24	.90	.73	.56	.43	.25	.16
10'	.80	1.87	1.40	1.16	.92	.70	.54	.47	.28	.18
12'	.55	1.21	1.11	.97	.85	.69	.55	.44	.30	.19
14'	.41	.86	.88	.77	.71	.62	.54	.45	.28	.21
16'	.31	.57	.74	.64	.59	.55	.48	.42	.29	.19
18'	.25	.41	.61	.55	.50	.45	.43	.39	.29	.20

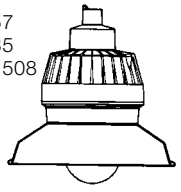
$$FC = \frac{(Candlepower)\ (COS\ \emptyset)}{DISTANCE^2}$$

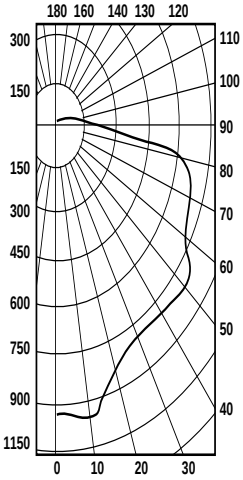
Test No. BALL 6686.0

EMS HIGH PRESSURE SODIUM
With Globe and Standard Dome Reflector
35 – 100 Watt Medium Base

CANDLEPOWER – 70 WATT
B-17 clear lamp 6300 lumens

For 50 watt multiply by .357
For 50 watt multiply by .635
For 100 watt multiply by 1.508





ANGLE	CP	ANGLE	CP
.0	960.	95.0	1.
5.0	933.	100.0	0.
10.0	957.	105.0	0.
15.0	902.	110.0	0.
20.0	856.	115.0	0.
25.0	808.	120.0	0.
30.0	805.	125.0	0.
35.0	789.	130.0	0.
40.0	786.	135.0	0.
45.0	812.	140.0	0.
50.0	804.	145.0	0.
55.0	766.	150.0	0.
60.0	722.	155.0	0.
65.0	740.	160.0	0.
70.0	724.	165.0	0.
75.0	689.	170.0	0.
80.0	170.	175.0	0.
85.0	31.	180.0	0.
90.0	3.		

Coefficients of Utilization -- Zonal Cavity Method

% Effective Ceiling Cavity Reflectance 1cc	80			70			50		30		10		0
% Wall Reflectance 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance														
0	.76	.76	.76	.76	.74	.74	.74	.74	.71	.71	.71	.68	.68	.68	.65	.65	.65	.64
1	.69	.65	.62	.60	.67	.64	.61	.59	.61	.59	.57	.59	.57	.55	.56	.55	.53	.52
2	.61	.55	.50	.46	.59	.54	.49	.45	.52	.48	.44	.49	.46	.43	.47	.45	.42	.41
3	.55	.47	.41	.37	.53	.46	.41	.36	.44	.40	.36	.42	.38	.35	.41	.37	.34	.33
4	.50	.41	.35	.30	.48	.40	.34	.30	.39	.33	.29	.37	.33	.29	.36	.32	.28	.27
5	.45	.36	.29	.24	.43	.35	.29	.24	.33	.28	.24	.32	.27	.24	.31	.27	.23	.22
6	.41	.31	.25	.20	.40	.31	.25	.20	.30	.24	.20	.28	.24	.20	.27	.23	.20	.18
7	.38	.28	.22	.17	.36	.27	.22	.17	.26	.21	.17	.25	.21	.17	.24	.20	.17	.15
8	.34	.25	.19	.15	.33	.24	.19	.15	.24	.18	.15	.23	.18	.14	.22	.18	.14	.13
9	.32	.22	.16	.13	.31	.22	.16	.13	.21	.16	.12	.20	.16	.12	.20	.15	.12	.11
10	.29	.20	.15	.11	.29	.20	.15	.11	.19	.14	.11	.18	.14	.11	.18	.14	.11	.10

Spacing Criterion -- SC = 1.3

Illumination on Horizontal Surface

Mounting Height in Feet	FOOTCANDLE CHART (Initial) 70 WATT H.P.S. Horizontal Distance From Source in Feet									
	0'	5'	10'	12'	14'	16'	18'	20'	25'	30'
8'	15.00	7.63	3.06	2.04	1.38	1.02	.77	.58	.31	.18
10'	9.60	5.78	2.87	2.11	1.50	1.11	.83	.65	.38	.23
12'	6.67	4.54	2.47	1.99	1.54	1.18	.91	.68	.42	.26
14'	4.89	3.65	2.17	1.75	1.46	1.18	.92	.74	.43	.28
16'	3.75	2.97	2.14	1.58	1.31	1.12	.92	.76	.45	.29
18'	2.96	2.49	1.66	1.41	1.19	1.01	.89	.75	.47	.30

$$FC = \frac{(Candlepower)\ (COS\ \emptyset)}{DISTANCE^2}$$

Test No. BALL 6687.0

EMS HIGH PRESSURE SODIUM
With Globe and Angle Reflector
35 – 100 Watt Medium Base

CANDLEPOWER – 70 WATT
B-17 clear lamp 6300 lumens

For 50 watt multiply by .357
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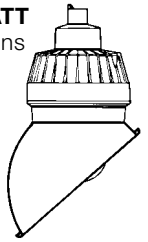
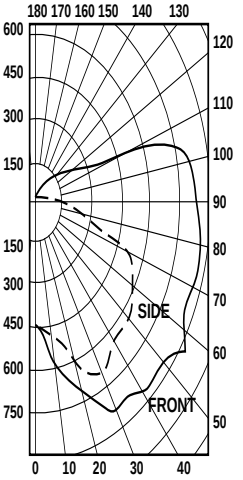




0° (FRONT) ANGLE	CP	90° (SIDE) ANGLE	CP
.0	469.	.0	469.
5.0	520.	5.0	479.
15.0	655.	15.0	543.
25.0	846.	25.0	736.
35.0	937.	35.0	713.
45.0	974.	45.0	677.
55.0	1011.	55.0	614.
65.0	993.	65.0	578.
75.0	994.	75.0	84.
85.0	955.	85.0	21.
90.0	915.	90.0	0.
95.0	786.	95.0	0.
105.0	120.	105.0	0.
115.0	39.	115.0	0.
125.0	0.	125.0	0.
135.0	0.	135.0	0.
145.0	0.	145.0	0.
155.0	0.	155.0	0.
165.0	0.	165.0	0.
175.0	0.	175.0	0.
180.0	0.	180.0	0.

Coefficients of Utilization -- Zonal Cavity Method

% Effective Ceiling Cavity Reflectance 1cc	80			70			50		30		10		0
% Wall Reflectance 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance														
0	.66	.66	.66	.66	.64	.64	.64	.64	.59	.59	.59	.55	.55	.55	.51	.51	.51	.50
1	.58	.54	.51	.48	.55	.52	.49	.46	.48	.46	.43	.44	.42	.40	.41	.39	.38	.36
2	.52	.46	.41	.36	.49	.44	.39	.35	.40	.37	.33	.37	.34	.31	.34	.32	.30	.28
3	.47	.39	.34	.29	.44	.38	.33	.29	.35	.31	.27	.32	.29	.26	.30	.27	.24	.22
4	.42	.34	.29	.24	.40	.33	.28	.24	.31	.26	.22	.28	.24	.21	.26	.23	.20	.19
5	.38	.30	.24	.20	.36	.29	.23	.19	.27	.22	.18	.25	.21	.18	.23	.19	.17	.15
6	.35	.27	.21	.17	.33	.26	.20	.16	.24	.19	.16	.22	.18	.15	.20	.17	.14	.13
7	.32	.24	.18	.14	.31	.23	.18	.14	.21	.17	.13	.20	.16	.13	.18	.15	.12	.11
8	.30	.21	.16	.12	.28	.20	.16	.12	.19	.15	.12	.18	.14	.11	.16	.13	.10	.09
9	.27	.19	.14	.11	.26	.18	.14	.10	.17	.13	.10	.16	.12	.09	.15	.11	.09	.08
10	.25	.17	.12	.09	.24	.17	.12	.09	.16	.11	.09	.14	.11	.08	.13	.10	.08	.07

0-DEG / 90-DEG
Spacing Criterion -- SC = 2.53 / 1.87

Illumination on Horizontal Surface

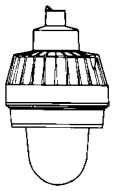
		FOOTCANDLE CHART (Initial) 70 WATT H.P.S. Horizontal Distance From Source in Feet									
		0'	5'	10'	12'	14'	16'	18'	20'	25'	30'
Mounting Height in Feet	0° 8'	7.33	9.07	3.67	2.69	1.89	1.39	1.04	.79	.44	.26
	10'	4.69	6.05	3.44	2.53	1.98	1.50	1.13	.89	.51	.31
	12'	3.26	4.11	3.04	2.39	1.85	1.46	1.20	.94	.56	.35
	14'	2.39	3.11	2.57	2.16	1.76	1.40	1.15	.97	.59	.38
	16'	1.83	2.31	2.27	1.87	1.61	1.34	1.10	.92	.65	.40
	18'	1.45	1.81	1.97	1.69	1.43	1.25	1.03	.89	.62	.42
	8'	7.33	6.88	2.45	1.64	1.12	.81	.60	.34	.15	.02
	10'	4.69	5.27	2.39	1.69	1.20	.90	.67	.52	.17	.12
	12'	3.26	3.59	2.06	1.66	1.23	.93	.73	.55	.32	.13
	14'	2.39	2.72	1.96	1.46	1.22	.95	.75	.59	.35	.22
	16'	1.83	1.91	1.74	1.43	1.09	.93	.74	.61	.37	.24
	90° 18'	1.45	1.50	1.52	1.30	1.06	.84	.74	.59	.38	.25

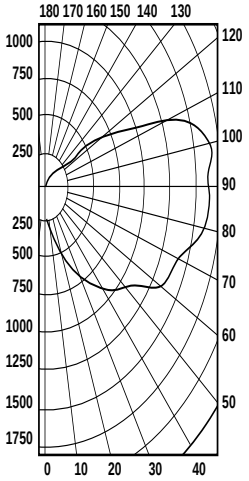
$$FC = \frac{(Candlepower)\ (COS\ \emptyset)}{DISTANCE^2}$$

Test No. BALL 6688.0

EMS HIGH PRESSURE SODIUM
With Globe Only Reflector
150 Watt Medium Base

CANDLEPOWER – 150 WATT
B-17 clear lamp
16000 lumens





ANGLE	CP	ANGLE	CP
.0	195.	95.0	1576.
5.0	212.	100.0	1596.
10.0	267.	105.0	1514.
15.0	362.	110.0	1386.
20.0	480.	115.0	1150.
25.0	611.	120.0	685.
30.0	701.	125.0	245.
35.0	763.	130.0	25.
40.0	864.	135.0	10.
45.0	960.	140.0	3.
50.0	1048.	145.0	2.
55.0	1117.	150.0	0.
60.0	1264.	155.0	0.
65.0	1304.	160.0	0.
70.0	1374.	165.0	0.
75.0	1505.	170.0	0.
80.0	1555.	175.0	0.
85.0	1568.	180.0	0.
90.0	1546.		

Coefficients of Utilization -- Zonal Cavity Method

% Effective Ceiling Cavity Reflectance 1cc	80			70			50		30		10		0
% Wall Reflectance 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance														
0	.82	.82	.82	.82	.76	.76	.76	.76	.66	.66	.66	.57	.57	.57	.49	.49	.49	.45
1	.70	.64	.60	.55	.65	.60	.56	.52	.51	.48	.45	.43	.41	.38	.36	.34	.32	.28
2	.61	.53	.46	.40	.56	.49	.43	.38	.42	.37	.32	.35	.31	.27	.28	.25	.22	.19
3	.55	.45	.38	.32	.50	.42	.35	.29	.35	.30	.25	.29	.25	.21	.24	.20	.17	.14
4	.49	.39	.31	.25	.45	.36	.29	.24	.30	.25	.20	.25	.21	.17	.20	.17	.14	.11
5	.45	.34	.26	.20	.41	.31	.24	.19	.26	.20	.16	.22	.17	.13	.17	.13	.10	.08
6	.41	.30	.22	.17	.37	.27	.21	.16	.23	.17	.13	.19	.14	.11	.15	.11	.08	.06
7	.37	.26	.19	.14	.34	.24	.18	.13	.21	.15	.11	.17	.12	.09	.13	.10	.07	.05
8	.34	.24	.17	.12	.32	.22	.16	.11	.18	.13	.09	.15	.11	.08	.12	.08	.06	.04
9	.32	.21	.15	.10	.29	.20	.14	.10	.17	.12	.08	.14	.09	.06	.11	.07	.05	.03
10	.30	.19	.13	.09	.27	.18	.12	.08	.15	.10	.07	.12	.08	.05	.10	.06	.04	.02

Spacing Criterion -- SC = 4.3

Illumination on Horizontal Surface

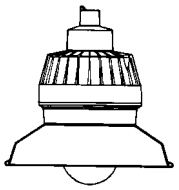
Mounting Height in Feet	FOOTCANDLE CHART (Initial) 150 WATT H.P.S. Horizontal Distance From Source in Feet 0'	5'	10'	12'	14'	16'	18'	20'	25'	30'
8'	3.05	7.35	3.99	2.98	2.41	1.78	1.36	1.09	.62	.40
10'	1.95	4.37	3.39	2.75	2.19	1.71	1.45	1.14	.67	.43
12'	1.35	2.76	2.72	2.36	2.01	1.65	1.32	1.19	.73	.48
14'	.99	2.04	2.10	1.93	1.73	1.50	1.25	1.07	.75	.50
16'	.76	1.31	1.70	1.53	1.44	1.32	1.18	1.00	.70	.51
18'	.60	1.00	1.44	1.27	1.19	1.11	1.05	.95	.69	.53

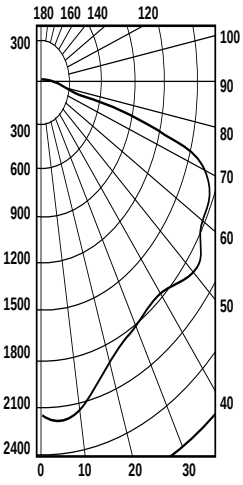
$$FC = \frac{(Candlepower)\ (COS\ Ø)}{DISTANCE^2}$$

Test No. BALL 6683.0

EMS HIGH PRESSURE SODIUM
With Globe and Standard Dome Reflector
150 Watt Medium Base

CANDLEPOWER – 150 WATT
B-17 clear lamp
16000 lumens





ANGLE	CP	ANGLE	CP
.0	2289.	95.0	3.
5.0	2296.	100.0	0.
10.0	2282.	105.0	0.
15.0	2117.	110.0	0.
20.0	1981.	115.0	0.
25.0	1921.	120.0	0.
30.0	1911.	125.0	0.
35.0	1888.	130.0	0.
40.0	1898.	135.0	0.
45.0	1940.	140.0	0.
50.0	1959.	145.0	0.
55.0	1898.	150.0	0.
60.0	1869.	155.0	0.
65.0	1851.	160.0	0.
70.0	1763.	165.0	0.
75.0	1469.	170.0	0.
80.0	601.	175.0	0.
85.0	93.	180.0	0.
90.0	7.		

Coefficients of Utilization -- Zonal Cavity Method

% Effective Ceiling Cavity Reflectance 1cc	80			70			50		30		10		0
% Wall Reflectance 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance														
0	.71	.71	.71	.71	.70	.70	.70	.70	.67	.67	.67	.64	.64	.64	.61	.61	.61	.60
1	.65	.61	.59	.56	.63	.60	.57	.55	.57	.55	.53	.55	.53	.52	.53	.52	.50	.49
2	.58	.52	.47	.43	.56	.51	.47	.43	.49	.45	.42	.47	.44	.41	.45	.42	.40	.39
3	.52	.45	.39	.35	.50	.44	.39	.34	.42	.37	.34	.40	.36	.33	.39	.35	.33	.31
4	.47	.39	.33	.28	.45	.38	.32	.28	.36	.32	.28	.35	.31	.27	.34	.30	.27	.26
5	.42	.34	.27	.23	.41	.33	.27	.23	.31	.26	.23	.30	.26	.22	.29	.25	.22	.21
6	.38	.30	.24	.19	.37	.29	.23	.19	.28	.23	.19	.27	.22	.19	.26	.22	.19	.17
7	.35	.26	.20	.16	.34	.26	.20	.16	.25	.20	.16	.24	.19	.16	.23	.19	.16	.15
8	.32	.23	.18	.14	.31	.23	.18	.14	.22	.17	.14	.21	.17	.14	.21	.17	.14	.12
9	.30	.21	.15	.12	.29	.20	.15	.12	.20	.15	.12	.19	.15	.12	.18	.14	.11	.10
10	.28	.19	.14	.10	.27	.19	.14	.10	.18	.13	.10	.17	.13	.10	.17	.13	.10	.09

Spacing Criterion -- SC = 1.3

Illumination on Horizontal Surface

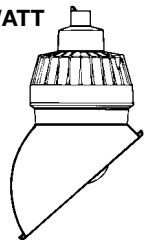
Mounting Height in Feet	FOOTCANDLE CHART (Initial) 150 WATT H.P.S. Horizontal Distance From Source in Feet 0'	5'	10'	12'	14'	16'	18'	20'	25'	30'
8'	35.76	18.03	7.46	5.06	3.57	2.57	1.94	1.42	.75	.39
10'	22.89	13.74	6.86	5.14	3.73	2.82	2.14	1.66	.91	.56
12'	15.89	10.75	5.97	4.76	3.75	2.87	2.25	1.77	1.04	.63
14'	11.68	8.44	5.19	4.24	3.50	2.85	2.33	1.83	1.11	.71
16'	8.94	7.10	4.54	3.78	3.16	2.68	2.24	1.86	1.16	.76
18'	7.06	5.84	3.94	3.36	2.88	2.44	2.12	1.81	1.17	.78

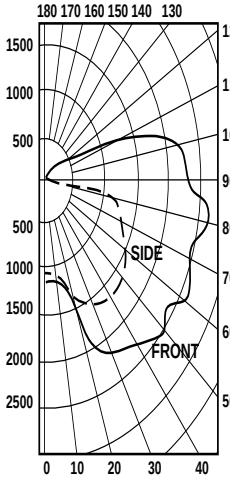
$$FC = \frac{(Candlepower)\ (COS\ Ø)}{DISTANCE^2}$$

Test No. BALL 6684.0

EMS HIGH PRESSURE SODIUM
With Globe and Angle Reflector
150 Watt Medium Base

CANDLEPOWER – 150 WATT
B-17 clear lamp
16000 lumens





0° (FRONT) ANGLE	CP	90° (SIDE) ANGLE	CP
.0	1163.	.0	1163.
5.0	1259.	5.0	1170.
15.0	1590.	15.0	1315.
25.0	2122.	25.0	1676.
35.0	2308.	35.0	1635.
45.0	2478.	45.0	1523.
55.0	2481.	55.0	1469.
65.0	2506.	65.0	1341.
75.0	2540.	75.0	256.
85.0	2431.	85.0	32.
90.0	2307.	90.0	0.
95.0	1868.	95.0	0.
105.0	584.	105.0	0.
115.0	104.	115.0	0.
125.0	3.	125.0	0.
135.0	2.	135.0	0.
145.0	0.	145.0	0.
155.0	0.	155.0	0.
165.0	0.	165.0	0.
175.0	0.	175.0	0.
180.0	0.	180.0	0.

Coefficients of Utilization -- Zonal Cavity Method

% Effective Ceiling Cavity Reflectance 1cc	80			70			50		30		10		0
% Wall Reflectance 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance														
0	.64	.64	.64	.64	.62	.62	.62	.62	.57	.57	.57	.53	.53	.53	.50	.50	.50	.48
1	.56	.52	.49	.46	.54	.50	.47	.44	.46	.44	.42	.43	.41	.39	.40	.38	.36	.35
2	.50	.44	.39	.35	.47	.42	.38	.34	.39	.35	.32	.36	.33	.30	.33	.31	.28	.27
3	.45	.38	.33	.28	.43	.37	.32	.28	.34	.29	.26	.31	.28	.25	.29	.26	.23	.21
4	.41	.33	.28	.23	.39	.32	.27	.23	.29	.25	.22	.27	.23	.20	.25	.22	.19	.18
5	.37	.29	.23	.19	.35	.28	.23	.19	.26	.21	.18	.24	.20	.17	.22	.19	.16	.14
6	.34	.26	.20	.16	.32	.25	.20	.16	.23	.18	.15	.21	.17	.14	.20	.16	.14	.12
7	.31	.23	.18	.14	.30	.22	.17	.14	.20	.16	.13	.19	.15	.12	.18	.14	.12	.10
8	.29	.21	.15	.12	.27	.20	.15	.12	.18	.14	.11	.17	.13	.10	.16	.12	.10	.09
9	.26	.18	.13	.10	.25	.18	.13	.10	.16	.12	.09	.15	.12	.09	.14	.11	.08	.07
10	.25	.17	.12	.09	.23	.16	.12	.09	.15	.11	.08	.14	.10	.08	.13	.10	.07	.06

0-DEG / 90-DEG
Spacing Criterion -- SC = 2.53 / 1.87

Illumination on Horizontal Surface

Mounting Height in Feet	FOOTCANDLE CHART (Initial) 150 WATT H.P.S. Horizontal Distance From Source in Feet 0'	5'	10'	12'	14'	16'	18'	20'	25'	30'
0° 8'	18.17	21.86	9.74	6.62	4.80	3.50	2.62	1.96	1.08	.68
10'	11.63	15.18	8.76	6.71	4.87	3.70	2.88	2.24	1.26	.78
12'	8.08	10.34	7.24	6.08	4.90	3.74	2.94	2.38	1.41	.88
14'	5.93	7.82	6.34	5.13	4.47	3.71	3.00	2.39	1.50	.97
16'	4.54	5.63	5.46	4.62	3.85	3.42	2.89	2.43	1.52	1.02
18'	3.59	4.39	4.72	4.08	3.49	2.96	2.70	2.35	1.53	1.06
8'	18.17	16.06	5.59	3.92	2.78	1.91	1.40	.74	.31	.07
10'	11.63	11.99	5.38	3.85	2.88	2.18	1.67	1.22	.47	.26
12'	8.08	8.62	4.76	3.74	2.81	2.20	1.74	1.38	.75	.33
14'	5.93	6.63	4.49	3.37	2.75	2.15	1.73	1.41	.86	.52
16'	4.54	4.63	4.02	3.27	2.51	2.10	1.67	1.40	.90	.59
90° 18'	3.59	3.63	3.50	2.93	2.44	1.95	1.66	1.37	.90	.61

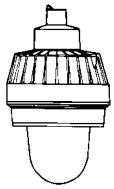
$$FC = \frac{(Candlepower)\ (COS\ Ø)}{DISTANCE^2}$$

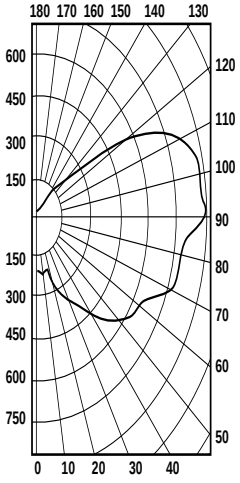
Test No. BALL 6685.0

EMH (MH) AND EMM (MV)
With Globe Only
50 – 100 Watt Medium Base

CANDLEPOWER – 100 WATT
B-17 clear lamp 8500 lumens

For 70 watt M.H. multiply by .647
For 50 watt M.H. multiply by .447
For 100 watt M.V. multiply by .518
For 75 watt M.V. multiply by .353
For 50 watt M.V. multiply by .129





ANGLE	CP	ANGLE	CP
.0	173.	95.0	847.
5.0	206.	100.0	846.
10.0	188.	105.0	832.
15.0	225.	110.0	750.
20.0	290.	115.0	641.
25.0	361.	120.0	440.
30.0	403.	125.0	88.
35.0	452.	130.0	14.
40.0	492.	135.0	5.
45.0	552.	140.0	2.
55.0	610.	145.0	1.
50.0	618.	150.0	0.
65.0	658.	155.0	0.
60.0	731.	160.0	0.
75.0	796.	165.0	0.
70.0	776.	170.0	0.
80.0	787.	175.0	0.
85.0	863.	180.0	0.
90.0	874.		

Coefficients of Utilization -- Zonal Cavity Method

% Effective Ceiling Cavity Reflectance 1cc	80			70			50		30		10		0
% Wall Reflectance 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance														
0	.84	.84	.84	.84	.79	.79	.79	.79	.69	.69	.69	.60	.60	.60	.51	.51	.51	.47
1	.72	.67	.62	.57	.67	.62	.58	.53	.53	.50	.46	.45	.42	.40	.38	.35	.33	.30
2	.63	.55	.48	.42	.58	.51	.45	.39	.43	.38	.34	.36	.32	.29	.30	.27	.24	.20
3	.57	.47	.39	.33	.52	.43	.36	.31	.37	.31	.27	.31	.26	.22	.25	.21	.18	.15
4	.51	.41	.33	.27	.47	.38	.30	.25	.32	.26	.21	.26	.22	.18	.21	.18	.15	.12
5	.46	.35	.27	.22	.42	.32	.25	.20	.27	.22	.17	.23	.18	.14	.18	.14	.11	.09
6	.42	.31	.23	.18	.39	.29	.22	.17	.24	.18	.14	.20	.15	.12	.16	.12	.09	.07
7	.39	.28	.20	.15	.36	.25	.19	.14	.21	.16	.12	.18	.13	.10	.14	.11	.08	.05
8	.36	.25	.18	.13	.33	.23	.16	.12	.19	.14	.10	.16	.11	.08	.13	.09	.06	.04
9	.33	.22	.16	.11	.30	.21	.14	.10	.17	.12	.09	.14	.10	.07	.11	.08	.05	.03
10	.31	.20	.14	.10	.28	.19	.13	.09	.16	.11	.07	.13	.09	.06	.10	.07	.04	.03

Spacing Criterion -- SC = 3.4

Illumination on Horizontal Surface

Mounting Height in Feet	FOOTCANDLE CHART (Initial) 100 WATT METAL HALIDE Horizontal Distance From Source in Feet									
	0'	5'	10'	12'	14'	16'	18'	20'	25'	30'
8'	2.70	3.93	2.32	1.65	1.25	1.00	.76	.59	.35	.21
10'	1.73	2.58	1.95	1.60	1.21	.93	.75	.64	.38	.25
12'	1.20	1.66	1.55	1.35	1.17	.92	.73	.62	.41	.26
14'	.88	1.23	1.24	1.10	.99	.87	.72	.59	.39	.28
16'	.67	.80	.98	.90	.82	.76	.68	.58	.38	.27
18'	.53	.62	.83	.73	.70	.63	.60	.55	.38	.27

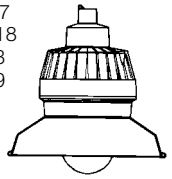
$$FC = \frac{(\text{Candlepower})\ (\cos \varnothing)}{\text{DISTANCE}^2}$$

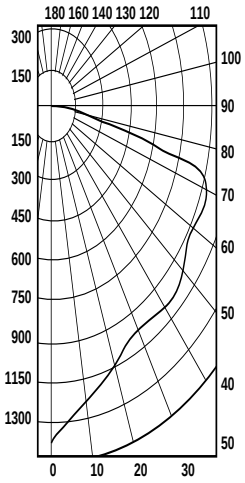
Test No. BALL 6689.0

EMH (MH) AND EMM (MV)
With Globe and Standard Dome Reflector
50 – 100 Watt Medium Base

CANDLEPOWER – 100 WATT
B-17 clear lamp 8500 lumens

For 70 watt M.H. multiply by .647
For 50 watt M.H. multiply by .447
For 100 watt M.V. multiply by .518
For 75 watt M.V. multiply by .353
For 50 watt M.V. multiply by .129





ANGLE	CP	ANGLE	CP
.0	1388.	95.0	2.
5.0	1323.	100.0	1.
10.0	1257.	105.0	0.
15.0	1225.	110.0	0.
20.0	1102.	115.0	0.
25.0	1032.	120.0	0.
30.0	1033.	125.0	0.
35.0	1037.	130.0	0.
40.0	1048.	135.0	0.
45.0	1075.	140.0	0.
50.0	1073.	145.0	0.
55.0	1006.	150.0	0.
60.0	982.	155.0	0.
65.0	999.	160.0	0.
70.0	992.	165.0	0.
75.0	792.	170.0	0.
80.0	210.	175.0	0.
85.0	48.	180.0	0.
90.0	7.		

Coefficients of Utilization -- Zonal Cavity Method

% Effective Ceiling Cavity Reflectance 1cc	80			70			50		30		10		0
% Wall Reflectance 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance														
0	.73	.73	.73	.73	.71	.71	.71	.71	.68	.68	.68	.65	.65	.65	.63	.63	.63	.61
1	.66	.63	.60	.58	.65	.62	.59	.57	.59	.57	.55	.57	.55	.53	.54	.53	.52	.50
2	.59	.53	.49	.45	.57	.52	.48	.44	.50	.46	.43	.48	.45	.42	.46	.43	.41	.40
3	.53	.46	.40	.36	.52	.45	.40	.36	.43	.39	.35	.41	.37	.34	.40	.36	.34	.32
4	.48	.40	.34	.29	.47	.39	.34	.29	.38	.33	.29	.36	.32	.28	.35	.31	.28	.26
5	.43	.35	.28	.24	.42	.34	.28	.24	.32	.27	.23	.31	.27	.23	.30	.26	.23	.21
6	.40	.31	.24	.20	.38	.30	.24	.20	.29	.24	.20	.28	.23	.20	.27	.22	.19	.18
7	.36	.27	.21	.17	.35	.27	.21	.17	.26	.21	.17	.25	.20	.17	.24	.20	.17	.15
8	.33	.24	.18	.15	.32	.24	.18	.14	.23	.18	.14	.22	.18	.14	.21	.17	.14	.13
9	.31	.22	.16	.12	.30	.21	.16	.12	.20	.16	.12	.20	.15	.12	.19	.15	.12	.11
10	.28	.20	.14	.11	.28	.19	.14	.11	.19	.14	.11	.18	.14	.11	.17	.13	.11	.09

Spacing Criterion -- SC = 1.1

Illumination on Horizontal Surface

Mounting Height in Feet	FOOTCANDLE CHART (Initial) 100 WATT METAL HALIDE Horizontal Distance From Source in Feet									
	0'	5'	10'	12'	14'	16'	18'	20'	25'	30'
8'	21.69	9.85	4.09	2.68	1.87	1.39	1.04	.79	.42	.21
10'	13.88	7.38	3.80	2.81	1.97	1.49	1.12	.89	.51	.31
12'	9.64	6.09	3.30	2.64	2.05	1.68	1.19	.93	.56	.35
14'	7.08	4.69	2.85	2.34	1.94	1.56	1.25	.97	.58	.38
16'	5.42	4.08	2.46	2.07	1.74	1.48	1.23	1.02	.61	.40
18'	4.28	3.38	2.13	1.84	1.58	1.35	1.17	.99	.62	.41

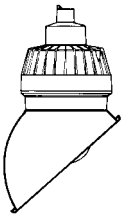
$$FC = \frac{(\text{Candlepower})\ (\cos \varnothing)}{\text{DISTANCE}^2}$$

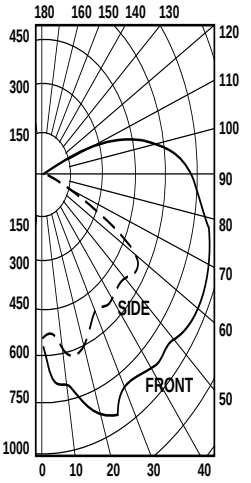
Test No. BALL 6702.0

EMH (MH) AND EMM (MV)
With Globe and Angle Reflector
50 – 100 Watt Medium Base

CANDLEPOWER – 100 WATT
B-17 clear lamp 8500 lumens

For 70 watt M.H. multiply by .647
For 50 watt M.H. multiply by .447
For 100 watt M.V. multiply by .518
For 75 watt M.V. multiply by .353
For 50 watt M.V. multiply by .129





0° (FRONT) ANGLE	CP	90° (SIDE) ANGLE	CP
.0	741.	.0	741.
5.0	775.	5.0	692.
15.0	928.	15.0	744.
25.0	1099.	25.0	895.
35.0	1249.	35.0	776.
45.0	1239.	45.0	776.
55.0	1305.	55.0	764.
65.0	1258.	65.0	454.
75.0	1218.	75.0	70.
85.0	1262.	85.0	2.
90.0	1119.	90.0	0.
95.0	938.	95.0	0.
105.0	163.	105.0	0.
115.0	54.	115.0	0.
125.0	0.	125.0	0.
135.0	0.	135.0	0.
145.0	0.	145.0	0.
155.0	0.	155.0	0.
165.0	0.	165.0	0.
175.0	0.	175.0	0.
180.0	0.	180.0	0.

Coefficients of Utilization -- Zonal Cavity Method

% Effective Ceiling Cavity Reflectance 1cc	80			70			50		30		10		0
% Wall Reflectance 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio RCR	20% Effective Floor Cavity Reflectance														
0	.61	.61	.61	.61	.59	.59	.59	.59	.55	.55	.55	.51	.51	.51	.48	.48	.48	.46
1	.54	.50	.47	.44	.51	.48	.46	.43	.45	.42	.40	.41	.40	.38	.38	.37	.35	.34
2	.48	.42	.38	.34	.46	.41	.37	.33	.38	.34	.31	.35	.32	.29	.32	.30	.28	.26
3	.43	.37	.32	.27	.41	.35	.31	.27	.33	.29	.25	.30	.27	.24	.28	.25	.23	.21
4	.39	.32	.27	.23	.37	.31	.26	.22	.29	.24	.21	.26	.23	.20	.24	.21	.19	.17
5	.36	.28	.23	.19	.34	.27	.22	.18	.25	.21	.17	.23	.19	.16	.21	.18	.16	.14
6	.33	.25	.20	.16	.31	.24	.19	.15	.22	.18	.15	.21	.17	.14	.19	.16	.13	.12
7	.30	.22	.17	.14	.28	.21	.17	.13	.20	.16	.13	.18	.15	.12	.17	.14	.11	.10
8	.28	.20	.15	.12	.26	.19	.15	.11	.18	.14	.11	.17	.13	.10	.15	.12	.10	.09
9	.25	.18	.13	.10	.24	.17	.13	.10	.16	.12	.09	.15	.11	.09	.14	.11	.08	.07
10	.24	.16	.12	.09	.23	.16	.11	.08	.15	.11	.08	.14	.10	.08	.13	.10	.07	.06

0-DEG / 90-DEG
Spacing Criterion -- SC = 2.25 / 1.58

Illumination on Horizontal Surface

Mounting Height in Feet	FOOTCANDLE CHART (Initial) 100 WATT METAL HALIDE Horizontal Distance From Source in Feet									
	0'	5'	10'	12'	14'	16'	18'	20'	25'	30'
0° 8'	11.58	11.82	4.86	3.48	2.39	1.75	1.32	1.01	.55	.32
10'	7.41	7.86	4.38	3.35	2.56	1.93	1.43	1.12	.64	.40
12'	5.14	5.61	3.81	3.04	2.44	1.95	1.55	1.18	.71	.45
14'	3.78	4.31	3.43	2.70	2.23	1.85	1.52	1.26	.74	.48
16'	2.89	3.21	2.96	2.50	2.02	1.71	1.45	1.22	.80	.51
18'	2.29	2.56	2.55	2.22	1.88	1.56	1.35	1.17	.80	.52
8'	11.58	7.52	2.73	2.04	1.32	.62	.47	.16	.04	.02
10'	7.41	6.40	2.74	1.88	1.50	1.12	.79	.40	.11	.04
12'	5.14	4.54	2.38	1.90	1.37	1.13	.90	.65	.25	.07
14'	3.78	3.47	2.13	1.69	1.40	1.03	.86	.73	.41	.17
16'	2.89	2.57	1.88	1.55	1.26	1.07	.84	.68	.46	.28
90° 18'	2.29	2.05	1.62	1.40	1.17	.97	.85	.67	.47	.29

$$FC = \frac{(\text{Candlepower})\ (\cos \varnothing)}{\text{DISTANCE}^2}$$

Test No. BALL 6703.0

Class I, Div. 1 & 2 Groups C,D
Class I, Zone 1 & 2, Groups IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G
Class III, Div. 1 & 2
Suitable for wet locations
Marine
NEMA 3, 4, 4X
Factory Sealed

Listed - File E10514 and E91793

Certified - File LR11713

FEATURES-SPECIFICATIONS

HOSTILE*LITE*®

HOSTILE***LITE***® EZ fixtures are now available with Pulse Start Metal Halide ballasts. Pulse Start systems provide higher and better maintained light output with longer life compared standard metal halide systems. Pulse start and standard Metal Halide lamps and ballasts are not interchangeable.

Applications

HOSTILE***LITE***® EZ Series mogul base fixtures are designed for installations where moisture, dirt, dust, corrosion and vibration may be present, or NEMA 3 and 4x areas where wind, water, snow or high ambients can be expected. They can be used in locations made hazardous due to the presence of flammable or explosive gases, vapors and combustible dusts as defined by the NEC.

Typical applications include classified areas such as paint manufacturing plants, ammunition facilities, oil and gas producing and refining plants, off-shore and dockside installations, tank farms, pipeline pumping stations and marine loading and fuel transfer terminals.

Features

- Four light sources—High Pressure Sodium (50-400W), Metal Halide (70-400W), Pulse Start Metal Halide (175-400W) and Mercury Vapor (100-400W)
- HOSTILE***LITE***® EZ fixtures are now available with Pulse Start Metal Halide ballasts
- Mounting choice—Pendant, ceiling, 25˚ stanchion or 90˚ wall mount, all with "wireless" design that allows fast, easy fixture installation or removal for maintenance. See pages L128-129 for trunnion mounted fixtures
- Factory sealed—No external seal needed. Simply wire mounting cap and thread on fixture to install
- Corrosion resistant—Copper-free aluminum die cast construction. Baked powder epoxy finish, electrostatically applied. Exposed hardware is 316 grade stainless steel
- Accessories—Available with or without guard, standard dome or angle reflector
- Options—EZ Series fixtures can be specified with instant restart for HPS lamps, auxiliary quartz circuit, ballast protector, and fuse kits. (See pages L94 and L56-57 for details)

Compliances

- UL-844 Electric Lighting Fixtures for use in Hazardous Locations
- UL Marine Type Electric Lighting Fixtures
- UL-1572 Standard for HID Lighting Fixtures
- CSA C22.2 no. 137-M1981 Electric Luminaires for use in Hazardous Locations
- CSA C22.2 no. 94-1976 Special purpose enclosure
- NEMA 3, 4, 4x, 7CD, 9EFG

Catalog Number Logic

EZ 0 00 0 00 0 - 00 (CEN*)

Series Constant

Lamp Type
S—High Pressure Sodium
H—Metal Halide
M—Mercury Vapor
P—Pulse Start Metal Halide

Lamp Wattage
05—50 Watt HPS
07—70 Watt HPS/MH
10—100 Watt HPS/MH/MV
15—150 Watt HPS/MH
17—175 Watt MH/MV/MHP
25—250 Watt HPS/MH/MV/MHP
32—320 Watt MHP
35—350 Watt MHP
40—400 Watt HPS/MH/MV/MHP

Voltage
0—Quadri-Volt, 60 Hz. (120, 208, 240, 277)
5—480 Volts, 60 Hz.
6—TriTap Canada (120, 277, 347), 60 Hz.
8—220/240 Volt, 50 Hz.
9—Special (Specify)

Options
Q—Auxiliary Quartz Standby
R—Instant Restrike (150W HPS Max)
BP—Ballast Protector
PS—Paint Spray (50, 70, 100W HPS, 100W MV, 70, 100, MH)

Guard
G—Omit G if guard is not required

Mounting Type
A2—3/4" Pendant
A3—1" Pendant
X2—3/4" Ceiling
X3—1" Ceiling
B2—3/4" Bracket
B3—1" Bracket
D4—1-1/4"/1-1/2" Stanchion

*CEN (CENELEC) Approved option available. See page L153 for more information.

HUBBELL
KILLARK®

Class I, Div. 1 & 2 Groups C,D
Class I, Zone 1 & 2, Groups IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G
Class III, Div. 1 & 2
Suitable for wet locations
Marine
NEMA 3, 4, 4X
Factory Sealed

Listed - File E10514 and E91793 (Marine)

Certified - File LR11713

ORDERING INFORMATION


Pendant


Ceiling


Wall


Stanchion

EZ 50-400 WATT, HIGH PRESSURE SODIUM ①④

WATTS	ANSI LAMP	VOLTAGE @ 60Hz	CATALOG NUMBER			
			PENDANT 3/4"②	CEILING 3/4"②	WALL 3/4"②	STANCHION 1-1/4"③
50	S-68	120, 208, 240, 277	EZS050A2G	EZS050X2G	EZS050B2G	EZS050D4G
		120, 277, 347	—	—	—	—
		480	—	—	—	—
70	S-62	120, 208, 240, 277	EZS070A2G	EZS070X2G	EZS070B2G	EZS070D4G
		120, 277, 347	EZS076A2G	EZS076X2G	EZS076B2G	EZS076D4G
		480	EZS075A2G	EZS075X2G	EZS075B2G	EZS075D4G
100	S-54	120, 208, 240, 277	EZS100A2G	EZS100X2G	EZS100B2G	EZS100D4G
		120, 277, 347	EZS106A2G	EZS106X2G	EZS106B2G	EZS106D4G
		480	EZS105A2G	EZS105X2G	EZS105B2G	EZS105D4G
150	S-55	120, 208, 240, 277	EZS150A2G	EZS150X2G	EZS150B2G	EZS150D4G
		120, 277, 347	EZS156A2G	EZS156X2G	EZS156B2G	EZS156D4G
		480	EZS155A2G	EZS155X2G	EZS155B2G	EZS155D4G
250	S-50	120, 208, 240, 277	EZS250A2G	EZS250X2G	EZS250B2G	EZS250D4G
		120, 277, 347	EZS256A2G	EZS256X2G	EZS256B2G	EZS256D4G
		480	EZS255A2G	EZS255X2G	EZS255B2G	EZS255D4G
400	S-51	120, 208, 240, 277	EZS400A2G	EZS400X2G	EZS400B2G	EZS400D4G
		120, 277, 347	EZS406A2G	EZS406X2G	EZS406B2G	EZS406D4G
		480	EZS405A2G	EZS405X2G	EZS405B2G	EZS405D4G

① *See Hazardous Location Application Data on pages L98-99 for specific suitabilities.*
② *For 1 inch pendant, ceiling and wall hubs, substitute "**3**" for "**2**" in catalog number; example: **EZS070A3G**.*
③ *Stanchion conduit hub size supplied is 1-1/2" with 1-1/2" to 1-1/4" reducer for 1-1/4" mounting. (Refer to catalog logic).*
④ *Luminaire catalog numbers include guards. To order luminaire without guard, omit last letter "**G**" from catalog number.*
NOTE: Reflectors must be ordered separately (see page L96).
All luminaires are designed for mounting with lamp in base up position.

HUBBELL
KILLARK®

Class I, Div. 1 & 2 Groups C,D
Class I, Zone 1 & 2, Groups IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G
Class III, Div. 1 & 2
Suitable for wet locations
Marine
NEMA 3, 4, 4X
Factory Sealed

Listed - File E10514 and E91793 (Marine)

Certified - File LR11713

ORDERING INFORMATION


Pendant


Ceiling


Wall


Stanchion

EZ 70-400 WATT, METAL HALIDE ①④

WATTS	ANSI LAMP	VOLTAGE @ 60Hz	CATALOG NUMBER			
			PENDANT 3/4"②	CEILING 3/4"②	WALL 3/4"②	STANCHION 1-1/4"③
70	M-98	120, 208, 240, 277	EZH070A2G	EZH070X2G	EZH070B2G	EZH070D4G
		120, 277,347	EZH076A2G	EZH076X2G	EZH076B2G	EZH076D4G
		480	EZH075A2G	EZH075X2G	EZH075B2G	EZH075D4G
100	M-90	120, 208, 240, 277	EZH100A2G	EZH100X2G	EZH100B2G	EZH100D4G
		120, 277,347	EZH106A2G	EZH106X2G	EZH106B2G	EZH106D4G
		480	EZH105A2G	EZH105X2G	EZH105B2G	EZH105D4G
175	M-57⑤	120, 208, 240, 277	EZH170A2G	EZH170X2G	EZH170B2G	EZH170D4G
		120, 277,347	EZH176A2G	EZH176X2G	EZH176B2G	EZH176D4G
		480	EZH175A2G	EZH175X2G	EZH175B2G	EZH175D4G
250	M-58	120, 208, 240, 277	EZH250A2G	EZH250X2G	EZH250B2G	EZH250D4G
		120, 277,347	EZH256A2G	EZH256X2G	EZH256B2G	EZH256D4G
		480	EZH255A2G	EZH255X2G	EZH255B2G	EZH255D4G
400	M-59	120, 208, 240, 277	EZH400A2G	EZH400X2G	EZH400B2G	EZH400D4G
		120, 277,347	EZH406A2G	EZH406X2G	EZH406B2G	EZH406D4G
		480	EZH405A2G	EZH405X2G	EZH405B2G	EZH405D4G

① See Hazardous Location Application Data on pages L98-99 for specific suitabilities.
*② For 1 inch pendant, ceiling and wall hubs, substitute "**3**" for "**2**" in catalog number; example: **EZH070A3G**.*
③ Stanchion conduit hub size supplied is 1-1/2" with 1-1/2" to 1-1/4" reducer for 1-1/4" mounting. (Refer to catalog logic).
*④ Luminaire catalog numbers include guards. To order luminaire without guard, omit last letter "**G**" from catalog number.*
⑤ Will also operate 150W M107 Metal Halide Lamps.
NOTE: Reflectors must be ordered separately (see page L96).
All luminaires are designed for mounting with lamp in base up position.

Class I, Div. 1 & 2 Groups C,D
Class I, Zone 1 & 2, Groups IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G
Class III, Div. 1 & 2
Suitable for wet locations
Marine
NEMA 3, 4, 4X
Factory Sealed

Listed - File E10514 and E91793 (Marine)

Certified - File LR11713

ORDERING INFORMATION


Pendant


Ceiling


Wall


Stanchion

EZ 175-400 WATT, PULSE START METAL HALIDE ①④						
WATTS	ANSI LAMP	VOLTAGE @ 60Hz	CATALOG NUMBER			
			PENDANT 3/4"②	CEILING 3/4"②	WALL 3/4"②	STANCHION 1-1/4"③
175	M-137	120, 208, 240, 277	EZP170A2G	EZP170X2G	EZP170B2G	EZP170D4G
		120,277,347	EZP176A2G	EZP176X2G	EZP176B2G	EZP176D4G
		480	EZP175A2G	EZP175X2G	EZP175B2G	EZP175D4G
250	M-138	120, 208, 240, 277	EZP250A2G	EZP250X2G	EZP250B2G	EZP250D4G
		120,277,347	EZP256A2G	EZP256X2G	EZP256B2G	EZP256D4G
		480	EZP255A2G	EZP255X2G	EZP255B2G	EZP255D4G
320	M-132	120, 208, 240, 277	EZP320A2G	EZP320X2G	EZP320B2G	EZP320D4G
		120,277,347	EZP326A2G	EZP326X2G	EZP326B2G	EZP326D4G
		480	EZP325A2G	EZP325X2G	EZP325B2G	EZP325D4G
350	M-131	120, 208, 240, 277	EZP350A2G	EZP350X2G	EZP350B2G	EZP350D4G
		120,277,347	EZP356A2G	EZP356X2G	EZP356B2G	EZP356D4G
		480	EZP355A2G	EZP355X2G	EZP355B2G	EZP355D4G
400	M-135	120, 208, 240, 277	EZP400A2G	EZP400X2G	EZP400B2G	EZP400D4G
		120,277,347	EZP406A2G	EZP406X2G	EZP406B2G	EZP406D4G
		480	EZP405A2G	EZP405X2G	EZP405B2G	EZP405D4G

① *See Hazardous Location Application Data on pages L98-99 for specific suitabilities.*
② *For 1 inch pendant, ceiling and wall hubs, substitute "**3**" for "**2**" in catalog number; example: **EZP170A3G**.*
③ *Stanchion conduit hub size supplied is 1-1/2" with 1-1/2" to 1-1/4" reducer for 1-1/4" mounting. (Refer to catalog logic).*
④ *Luminaire catalog numbers include guards. To order luminaire without guard, omit last letter "**G**" from catalog number.*
NOTE: Reflectors must be ordered separately (see page L96).
All luminaires are designed for mounting with lamp in base up position.

Class I, Div. 1 & 2 Groups C,D
Class I, Zone 1 & 2, Groups IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G
Class III, Div. 1 & 2
Suitable for wet locations
Marine
NEMA 3, 4, 4X
Factory Sealed

Listed - File E10514 and E91793 (Marine)

Certified - File LR11713

ORDERING INFORMATION

Pendant

Ceiling

Wall

Stanchion

EZ 175-400 WATT, MERCURY VAPOR ① ④

WATTS	ANSI LAMP	VOLTAGE @ 60Hz	CATALOG NUMBER			
			PENDANT 3/4"②	CEILING 3/4"②	WALL 3/4"②	STANCHION 1-1/4"③
100	H-38	120, 208, 240, 277	EZM100A2G	EZM100X2G	EZM100B2G	EZM100D4G
		120, 277, 347	EZM106A2G	EZM106X2G	EZM106B2G	EZM106D4G
		480	EZM105A2G	EZM105X2G	EZM105B2G	EZM105D4G
175	H-39	120, 208, 240, 277	EZM170A2G	EZM170X2G	EZM170B2G	EZM170D4G
		120, 277, 347	EZM176A2G	EZM176X2G	EZM176B2G	EZM176D4G
		480	EZM175A2G	EZM175X2G	EZM175B2G	EZM175D4G
250	H-37	120, 208, 240, 277	EZM250A2G	EZM250X2G	EZM250B2G	EZM250D4G
		120, 277, 347	EZM256A2G	EZM256X2G	EZM256B2G	EZM256D4G
		480	EZM255A2G	EZM255X2G	EZM255B2G	EZM255D4G
400	H-33	120, 208, 240, 277	EZM400A2G	EZM400X2G	EZM400B2G	EZM400D4G
		120, 277, 347	EZM406A2G	EZM406X2G	EZM406B2G	EZM406D4G
		480	EZM405A2G	EZM405X2G	EZM405B2G	EZM405D4G

① *See Hazardous Location Application Data on pages L98-99 for specific suitabilities.*
② *For 1 inch pendant, ceiling and wall hubs, substitute "**3**" for "**2**" in catalog number. Example: **EZM070A3G**.*
③ *Stanchion conduit hub size supplied is 1-1/2" with 1-1/2" to 1-1/4" reducer for 1-1/4" mounting. (Refer to catalog logic).*
④ *Luminaire catalog numbers include guards. To order luminaire without guard, omit last letter "**G**" from catalog number.*
NOTE: Reflectors must be ordered separately (see page L96).
All luminaires are designed for mounting with lamp in base up position.

Mounting Boxes

Pendant

Ceiling

EAC①

Wall Bracket

25° Stanchion

Replacement Globe
& Support Assemblies

MOUNTING BOXES				
HUB SIZE	CATALOG NUMBER			
	PENDANT	CEILING	BRACKET	STANCHION
3/4"	EZA2	EZX2	EZB2	—
1"	EZA3	EZX3	EZB3	—
1-1/4"/1-1/2"	—	—	—	EZD4*

** Supplied as 1-1/2" NPT with 1-1/2" x 1-1/4" reducer*

REPLACEMENT GLOBE & GLOBE SUPPORT ASSEMBLY			
SERIES	LAMP TYPE	WATTAGE	CATALOG NUMBER
EZS	HPS	50-150	EZGS1
EZH	MH	70-250	
EZP	MHP	175, 250	
EZM	MV	100-250	
EZS	HPS	250, 400	EZGS2
EZH	MH	400	
EZP	MHP	320-400	
EZM	MV	400	

EZ Options

Instant Restart Option

Factory installed special ignitor provides hot lamp instant restart of HPS lamps after power interruption of up to 1 minute. Available for 50, 70, 100 and 150 watt HPS lamps only. Add suffix "**R**" to fixture catalog number (50/60 Hz).

Quartz Emergency Lamp

Factory installed special auxiliary quartz relay and D.C. bayonet base socket installed to accept 100 watt, 120 volt quartz (100Q/DC) lamps only. Lamps not supplied. Refer to Hazardous Location Application Data chart to verify suitability. Add suffix "**Q**" to fixture catalog number.

Ballast Protection Cutout

Optional factory installed special ballast protector replaces the standard HPS ignitor and applies starting pulse to the lamp for 10 to 15 seconds each time voltage is supplied to the ballast. If the lamp has not ignited by the end of the time period, the starter will cease pulsing. Used to eliminate the continuous high voltage pulsing of the ignitor when end of life, lamp cycling, or missing lamp conditions exist. Available for 70, 100, 150, 250 and 400 watt HPS fixtures. Add suffix "**BP**" to fixture catalog number.

Notes:
BP & R cannot be used together.
Q & R cannot be used together.

① *Adapters for discontinued Killark "H" Series & Crouse-Hinds®.*
See page L148 for more information.

Housing Globe & Globe Support Assemblies

NOTE: See pages L56-57 for ballast data & fuse kit information.

HPS HOUSING GLOBE & GLOBE SUPPORT ASSEMBLIES①

WATTS	ANSI LAMP TYPE	VOLTAGE	CATALOG NUMBER
50	S-68/HPS	120, 208, 240, 277/60Hz	EZS050
		220, 240V/50Hz	EZS058
70	S-62/HPS	120, 208, 240, 277/60Hz	EZS070
		480 60Hz	EZS075
		120, 277, 347/60Hz	EZS076
		220, 240V/50Hz	EZS078
100	S-54/HPS	120, 208, 240, 277/60Hz	EZS100
		480 60Hz	EZS105
		120, 277, 347/60Hz	EZS106
		220, 240V/50Hz	EZS108
150	S-55/HPS	120, 208, 240, 277/60Hz	EZS150
		480 60Hz	EZS155
		120, 277, 347/60Hz	EZS156
		220, 240V/50Hz	EZS158
250	S-50/HPS	120, 208, 240, 277/60Hz	EZS250
		480 60Hz	EZS255
		120, 277, 347/60Hz	EZS256
		220, 240V/50Hz	EZS258
400	S-51/HPS	120, 208, 240, 277/60Hz	EZS400
		480 60Hz	EZS405
		120, 277, 347/60Hz	EZS406
		220, 240V/50Hz	EZS408

MERCURY VAPOR HOUSING GLOBE & GLOBE SUPPORT ASSEMBLIES①

WATTS	ANSI LAMP TYPE	VOLTAGE	CATALOG NUMBER
100	H-38/MV	120, 208, 240, 277/60Hz	EZM100
		480V/60Hz	EZM105
		120, 277, 347/60Hz	EZM106
		220, 240V/50 Hz	EZM108
175	H-39/MV	120, 208, 240, 277/60Hz	EZM170
		480 60Hz	EZM175
		120, 277, 347/60Hz	EZM176
		220, 240V/50Hz	EZM178
250	H-37/MV	120, 208, 240, 277/60Hz	EZM250
		480V/60Hz	EZM255
		120, 277, 347/60Hz	EZM256
		220, 240V/50Hz	EZM258
400	H-33/MV	120, 208, 240, 277/60Hz	EZM400
		480 60Hz	EZM405
		120, 277, 347/60Hz	EZM406
		220, 240V/50Hz	EZM408

① Assemblies may be ordered with the CEN (CENELEC) suffix; see page L153 for more information.
② Will also operate 150W M107 Metal Halide Lamps.

METAL HALIDE HOUSING GLOBE & GLOBE SUPPORT ASSEMBLIES①

WATTS	ANSI LAMP TYPE	VOLTAGE	CATALOG NUMBER
70	M-98/MH	120, 208, 240, 277/60Hz	EZH070
		120, 277, 347V/60Hz	EZH076
		480 60Hz	EZH075
		220/240V/50Hz	EZH078
100	M-90/MH	120, 208, 240, 277/60Hz	EZH100
		120, 347V/60Hz	EZH106
		120, 220, 240V/50Hz	EZH108
		480 60Hz	EZH105
175	M-57/MH②	120, 208, 240, 277/60Hz	EZH170
		480 60Hz	EZH175
		120, 277, 347V/60Hz	EZH176
		220, 240V/50Hz	EZH178
250	M-58/MH	120, 208, 240, 277/60Hz	EZH250
		480 60Hz	EZH255
		120, 277, 347V/60Hz	EZH256
		220, 240V/50Hz	EZH258
400	M-59/MH	120, 208, 240, 277/60Hz	EZH400
		480 60Hz	EZH405
		120, 277, 347V/60Hz	EZH406
		220, 240V/50Hz	EZH408

PULSE START HOUSING GLOBE & GLOBE SUPPORT ASSEMBLIES①

WATTS	ANSI LAMP TYPE	VOLTAGE	CATALOG NUMBER
175	M137/MHP	120, 208, 240, 277/60Hz	EZP170
		480	EZP175
		120, 277, 347V/60Hz	EZP176
		220, 240V/50 Hz	EZP178
250	M138/MHP	120, 208, 240, 277/60Hz	EZP250
		480	EZP255
		120, 277, 347V/60Hz	EZP256
		220, 240V/50Hz	EZP258
320	M132/MHP	120, 208, 240, 277/60Hz	EZP320
		480	EZP325
		120, 277, 347V/60Hz	EZP326
		220, 240V/50Hz	EZP328
350	M131/MHP	120, 208, 240, 277/60Hz	EZP350
		480	EZP355
		120, 277, 347V/60Hz	EZP356
		220, 240V/50Hz	EZP358
400	M135/MHP	120, 208, 240, 277/60Hz	EZP400
		480	EZP405
		120, 277, 347V/60Hz	EZP406
		220, 240V/50Hz	EZP408

EZG1

VMAG-40

GUARDS				
CATALOG NUMBER	SERIES	LAMP TYPE	WATTAGE	DESCRIPTION
EZG1	EZS EZH EZP EZM	HPS MH MHP MV	50-150 70-250 175, 250 100-250	Painted cast aluminum
VMAG-40	EZS EZH EZP EZM	HPS MH MHP MV	250, 400 400 320-400 400	Cadmium plated steel

VMPSD-40

EZTB

VMPA-40

HRD-400 (pictured)
HRD-400ALZ

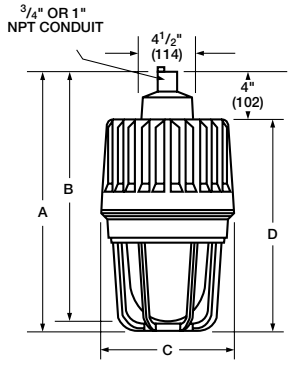
EZCB

EZMO

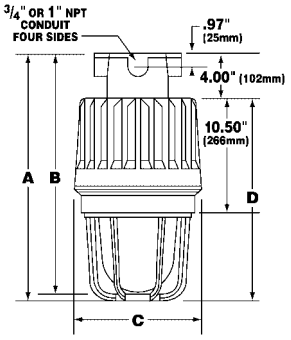
REFLECTORS	
CATALOG NUMBER	DESCRIPTION
VMPSD-40	Standard dome. Polyester reinforced fiberglass
VMPA-40	Angle Polyester reinforced fiberglass
HRD-400	Deep dome. Aluminum with white finish
HRD-400ALZ	Deep dome with Alzak finish (tm Alcoa)

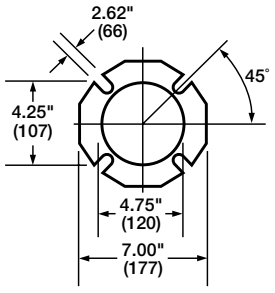
REPLACEMENT CONNECTION BLOCKS AND LAMP SOCKET	
CATALOG NUMBER	DESCRIPTION
EZTB	Female (goes in splice box)
EZCB	Male (goes in top of fixture body)
EZMO	Replacement lamp socket

Pendant

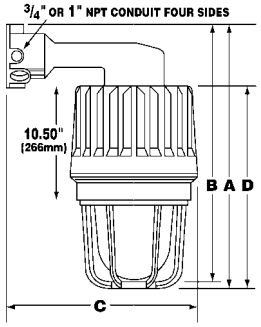


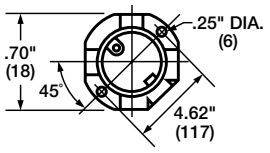
Ceiling

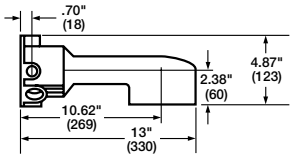




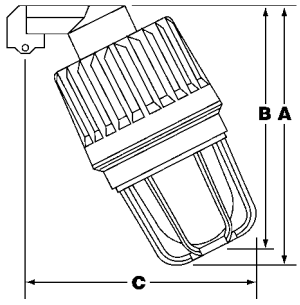
Wall Bracket

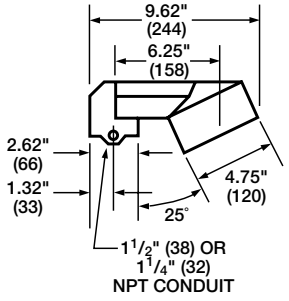






25° Stanchion





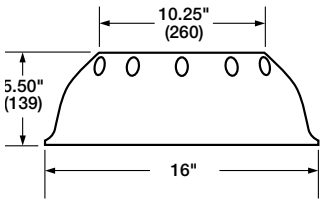
MOUNTING DIMENSIONS

	PENDANT				CEILING				BRACKET				STANCHION		
	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C
50-250W*	22" (558)	21-1/4" (539)	11-1/4" (285)	18" (457)	22" (558)	21-1/4" (539)	11-1/4" (285)	18" (457)	22-7/8" (580)	22-1/8" (561)	16-3/4" (425)	18" (457)	24-7/8" (631)	24" (609)	19-13/16" (503)
250-400W**	26-1/4" (666)	24-1/4" (615)	11-1/4" (285)	22-1/4" (565)	26-1/4" (666)	24-1/4" (615)	11-1/4" (285)	22-1/4" (565)	26-7/8" (682)	24-7/8" (631)	16-3/4" (425)	22-1/4" (565)	28-1/2" (724)	26-11/16" (678)	21-1/2" (546)

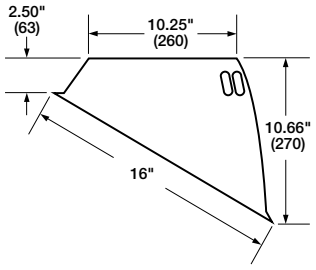
** 50, 70, 100, and 150W HPS; 70, 100, 175 and 250W MH; 100, 175, 250W MV; 175, 250W MHP.*
*** 250 and 400W HPS, 400W MH and MV; 320, 350, 400W MHP.*

Reflector Dimensions

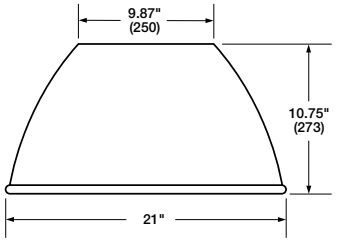
Standard Dome



Angle



Deep Dome



EZ HAZARDOUS LOCATION DATA—CLASS I, DIVISIONS 1 & 2①②④

LAMP			RATED AMBIENT °C	SUPPLY WIRE SUITABLE FOR °C MIN.	CLASS I, DIVISIONS 1 & 2 MAXIMUM SURFACE TEMPERATURE UL/CSA		
SERIES	TYPE	WATTS			TEMP. I.D. W/O QTZ.	TEMP. I.D. W/QTZ.③	UL/CSA GROUPS
EZS	HPS	50	40	85	T4A	T4	C,D
			55	85	T4A	N/A	C,D
			65	85	T4A	N/A	C,D
		70	40	85	T4A	T4	C,D
			55	85	T4A	N/A	C,D
			65	85	T4A	N/A	C,D
		100	40	85	T4A	T4	C,D
			55	85	T4A	N/A	C,D
			65	85	T4A	N/A	C,D
		150	40	85	T4A	T4	C,D
			55	85	T4A	N/A	C,D
			65	85	T4	N/A	C,D
		250	40	85	T3C	T3C	C,D
			55	85	T3C	N/A	C,D
		400	40	85	T3C	T3C	C,D
EZH	MH	70	40	85	T4A	N/A	C,D
			55	85	T4A	N/A	C,D
			65	85	T4A	N/A	C,D
		100	40	85	T4A	N/A	C,D
			55	85	T4A	N/A	C,D
			65	85	T4A	N/A	C,D
		150	40	85	T4A	N/A	C,D
			55	85	T4A	N/A	C,D
		175	40	85	T4	T3C	C,D
			55	85	T4	N/A	C,D
		250	40	85	T3C	T3C	C,D
			55	85	T3C	N/A	C,D
		400	40	85	T3A	T3A	C,D
EZP	MHP	175	40	85	T4	T3C	C,D
			55	85	T4	N/A	C,D
		250	40	85	T3C	T3C	C,D
			55	25	T3C	N/A	C,D
		320	40	85	T3A	T3A	C,D
		350	40	85	T3A	T3A	C,D
		400	40	85	T3A	T3A	C,D
EZM	MV	100	40	85	T4	T3C	C,D
			55	85	T4	N/A	C,D
		175	40	85	T4	T3C	C,D
			55	85	T4	N/A	C,D
		250	40	85	T3C	T3C	C,D
		400	40	85	T3A	T3A	C,D

TABLE N.E.C. 500-5 (d)

I.D. NUMBER	MAXIMUM TEMPERATURE	
	DEGREES C	DEGREES F
T1	450	842
T2	300	572
T2A	280	536
T2B	260	500
T2C	230	446
T2D	215	419
T3	200	392
T3A	180	356
T3B	165	329
T3C	160	320
T4	135	275
T4A	120	248
T5	100	212
T6	85	185

Notes for Class I, II, III Application Data Tables.

①Instant restrike limited to 55°C ambient maximum.

**②Temperature code ID marked with an asterisk on Class II table are listed for simultaneous use in Class I, Groups C, D, and Class II, Groups E, F, G or Groups E, F.*

③Fixtures marked "N/A" not suitable for Class I applications when supplied with auxiliary quartz.

④See Class II table for fixtures suitable for locations having deposits of readily combustible paint residue (paint spray booths).

Do not install where marked operating temperature exceeds ignition temperature of hazardous atmosphere.

See page L99 for Class II, III tables.

EZ HAZARDOUS LOCATION DATA①–CLASS II & III, DIVISIONS 1 & 2①②

LAMP			RATED AMBIENT °C	SUPPLY WIRE SUITABLE FOR C°	CLASS II, DIV. 1 & 2, MAX. SURFACE TEMP. UL/CSA SUITABILITY				CLASS III, DIV. 1 & 2 UL/CSA SUITABILITY		UL-595 MARINE	U.L. PAINT SPRAY SUITABILITY④	UL/CSA TYPE 3 (RAINTIGHT)	UL/CSA TYPE 4 (HOSEDOWN)
					TEMP. I.D.	TEMP. I.D.	GROUPS							
SERIES	TYPE	WATTS			W/O QTZ.	W/O QTZ.③	W/O QTZ.	W/O QTZ.③	W/O QTZ.	W/QTZ.③				
EZS	HPS	50	40	85	T3C*	T3B*	E,F,G	E,F,G	YES	YES	YES	YES	YES	YES
			55	85	T3C*	N/A	E,F,G	N/A	YES	NO	YES	NO	YES	YES
			65	85	T3B*	N/A	E,F,G	N/A	YES	NO	YES	NO	YES	YES
EZS	HPS	70	40	85	T3C*	T3B*	E,F,G	E,F,G	YES	NO	YES	YES	YES	YES
			55	85	T3C*	N/A	E,F,G	N/A	YES	NO	YES	NO	YES	YES
			65	85	T3B*	N/A	E,F,G	N/A	YES	YES	YES	NO	YES	YES
EZS	HPS	100	40	85	T3C*	T3B*	E,F,G	E,F,G	YES	NO	YES	YES	YES	YES
			55	85	T3C*	N/A	E,F,G	N/A	YES	NO	YES	NO	YES	YES
			65	85	T3B	N/A	E,F,G	N/A	YES	YES	YES	NO	YES	YES
EZS	HPS	150	40	85	T3C*	T3B*	E,F,G	E,F,G	YES	YES	YES	NO	YES	YES
			55	85	T3C*	N/A	E,F,G	N/A	YES	YES	YES	NO	YES	YES
			65	85	T3B*	N/A	E,F,G	N/A	YES	YES	YES	NO	YES	YES
EZS	HPS	250	40	85	T3	T3	E,F	E,F	NO	NO	YES	NO	YES	YES
EZS	HPS	400	40	85	N/A	N/A	N/A	N/A	NO	NO	YES	NO	YES	YES
EZH	MH	70	40	85	T4A	N/A	E,F,G	N/A	YES	NO	YES	YES	YES	YES
			55	85	T4	N/A	E,F,G	N/A	YES	NO	YES	NO	YES	YES
			65	85	T3C	N/A	E,F,G	N/A	YES	NO	YES	NO	YES	YES
EZH	MH	100	40	85	T4A	N/A	E,F,G	N/A	YES	NO	YES	YES	YES	YES
			55	85	T4	N/A	E,F,G	N/A	YES	NO	YES	NO	YES	YES
			65	85	T3C	N/A	E,F,G	N/A	YES	NO	YES	NO	YES	YES
EZH	MH	150	40	85	T4	N/A	E,F,G	N/A	YES	NO	YES	NO	YES	YES
			55	85	T3C	N/A	E,F,G	EF	YES	NO	YES	NO	YES	YES
EZH	MH	175	40	85	T3C*	T3A*	E,F,G	N/A	YES	NO	YES	NO	YES	YES
			55	85	T3C*	N/A	E,F,G	N/A	YES	NO	YES	NO	YES	YES
EZH	MH	250	40	85	N/A	N/A	N/A	N/A	NO	NO	YES	NO	YES	YES
EZH	MH	400	40	85	N/A	N/A	N/A	N/A	NO	NO	YES	NO	YES	YES
EZP	MHP	175	40	85	T3C*	T3A*	E,F,G	EF	YES	NO	YES	NO	YES	YES
			55	85	T3C*	N/A	E,F,G	N/A	YES	NO	YES	NO	YES	YES
EZP	MHP	250	40	85	N/A	N/A	N/A	N/A	NO	NO	YES	NO	YES	YES
EZP	MHP	320, 350	40	85	N/A	N/A	N/A	N/A	NO	NO	YES	NO	YES	YES
EZP	MHP	400	40	85	N/A	N/A	N/A	N/A	NO	NO	YES	NO	YES	YES
EZM	MV	100	40	85	T3C*	T3A*	E,F,G	EF	YES	NO	YES	YES	YES	YES
			55	85	T3C*	N/A	E,F,G	N/A	YES	NO	YES	NO	YES	YES
EZM	MV	175	40	85	T3C	T3A*	E,F,G	EF	YES	NO	YES	NO	YES	YES
			55	85	T3C	N/A	E,F,G	N/A	YES	NO	YES	NO	YES	YES
EZM	MV	250	40	85	N/A	N/A	N/A	N/A	NO	NO	YES	NO	YES	YES
EZM	MV	400	40	85	N/A	N/A	N/A	N/A	NO	NO	YES	NO	YES	YES

Notes for Class I, II, III Application Data Tables.

①Instant restrike limited to 55°C ambient maximum.

**②Temperature code ID marked with an asterisk on Class II table are listed for simultaneous use in Class I, Groups C, D, and Class II, Groups E, F, G or Groups E, F.*

③Fixtures marked "NO" or "N/A" are not suitable for Class II or II applications when supplied with auxiliary quartz.

④Suitability for locations having deposits of readily combustible paint residue (paint spray booths).

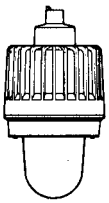
Do not install where marked operating temperature exceeds ignition temperature of hazardous atmosphere.

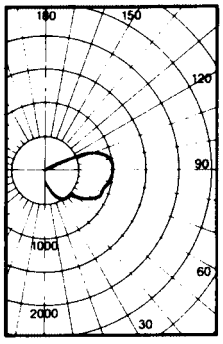
See page L98 for Class I data.

HIGH PRESSURE SODIUM
With Globe Only
50 – 150 Watt Mogul Base

CANDLEPOWER – 100 WATT
E-23½ clear lamp
9500 lumens

For 50 watt multiply by .42
For 70 watt multiply by .67
For 150 watt multiply by 1.68





ANGLE	CP	ANGLE	CP
0	184.	90.0	1012.
5.0	197.	95.0	1012.
10.0	236.	100.0	983.
15.0	319.	105.0	921.
20.0	395.	110.0	732.
25.0	451.	115.0	406.
30.0	499.	120.0	106.
35.0	523.	125.0	14.
40.0	526.	130.0	3.
45.0	527.	135.0	1.
50.0	623.	140.0	0.
55.0	732.	145.0	0.
60.0	838.	150.0	0.
65.0	908.	155.0	0.
70.0	928.	160.0	0.
75.0	948.	165.0	0.
80.0	988.	170.0	0.
85.0	1004.	175.0	0.
		180.0	0.

Efficiency 75.7%

COEFFICIENTS OF UTILIZATION — ZONAL CAVITY METHOD

% EFFECTIVE CEILING CAVITY REFLECTANCE 1cc	80			70			50		30		10		0
% WALL REFLECTANCE 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance														
0	84	84	84	84	79	79	79	79	70	70	70	61	61	61	53	53	53	50
1	71	66	61	56	66	61	57	52	53	49	46	46	43	40	39	36	34	31
2	63	54	47	41	58	50	44	38	43	38	34	37	33	29	31	27	25	21
3	56	46	38	32	51	42	35	30	36	30	26	30	26	22	25	22	18	15
4	50	40	32	26	46	37	30	24	31	25	21	26	22	18	22	18	15	12
5	46	34	27	21	42	32	25	19	27	21	17	23	18	14	19	15	12	09
6	42	30	23	17	38	28	21	16	24	18	14	20	15	12	17	12	09	07
7	38	27	19	14	35	25	18	13	21	15	11	18	13	09	15	11	08	06
8	35	24	17	12	32	22	16	11	19	14	10	16	11	08	13	09	06	05
9	33	22	15	10	30	20	14	10	17	12	08	15	10	07	12	08	05	04
10	30	20	13	09	28	18	12	08	16	11	07	13	09	06	11	07	05	03

SPACING TO MOUNTING HEIGHT RATIO — S/MH = 3.7
SPACING CRITERION — SC = 3.6

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 100 WATT H.P.S.
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	0′	5′	10′	15′	20′	25′	30′	35′	40′	45′
10′	1.84	3.23	1.86	1.25	.81	.48	.29	.20	.14	.10
12′	1.28	2.46	1.66	1.05	.79	.51	.33	.22	.16	.11
14′	.94	1.68	1.44	1.01	.70	.50	.35	.24	.17	.13
16′	.72	1.34	1.19	.80	.59	.51	.34	.25	.19	.14
18′	.57	.88	1.03	.74	.58	.45	.35	.27	.19	.15
20′	.46	.73	.81	.67	.47	.38	.31	.26	.20	.15
25′	.29	.35	.51	.50	.40	.30	.26	.23	.20	.15
30′	.20	.25	.38	.40	.34	.27	.21	.19	.18	.14

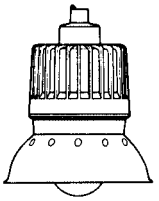
$FC = \frac{(\text{Candlepower}) (\cos \theta)}{\text{DISTANCE}^2}$

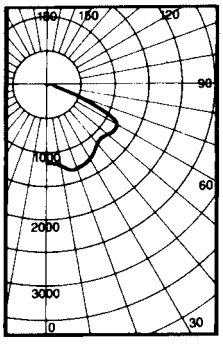
Test No. LSI-9182

HIGH PRESSURE SODIUM
With Globe and Standard Dome Reflector
50 – 150 Watt Mogul Base

CANDLEPOWER – 100 WATT
E-23½ clear lamp
9500 lumens

For 50 watt multiply by .42
For 70 watt multiply by .67
For 150 watt multiply by 1.68





ANGLE	CP	ANGLE	CP
0	1199.	90.0	13.
5.0	1214.	95.0	48.
10.0	1268.	100.0	96.
15.0	1345.	105.0	84.
20.0	1363.	110.0	29.
25.0	1354.	115.0	1.
30.0	1320.	120.0	0.
35.0	1268.	125.0	0.
40.0	1201.	130.0	0.
45.0	1151.	135.0	0.
50.0	1198.	140.0	0.
55.0	1227.	145.0	0.
60.0	1243.	150.0	0.
65.0	949.	155.0	0.
70.0	466.	160.0	0.
75.0	243.	165.0	0.
80.0	136.	170.0	0.
85.0	51.	175.0	0.
		180.0	0.

Efficiency 55.9%

COEFFICIENTS OF UTILIZATION — ZONAL CAVITY METHOD

% EFFECTIVE CEILING CAVITY REFLECTANCE 1cc	80			70			50		30		10		0
% WALL REFLECTANCE 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance														
0	66	66	66	66	64	64	64	64	61	61	61	58	58	58	56	56	56	54
1	61	58	56	54	59	57	55	53	54	52	51	52	50	49	49	48	47	46
2	55	51	47	44	54	50	46	43	47	45	42	46	43	41	44	42	40	39
3	50	44	40	36	49	43	39	36	42	38	35	40	37	34	38	36	34	32
4	46	39	34	31	45	38	34	30	37	33	30	35	32	29	34	31	29	27
5	42	34	29	26	40	34	29	25	32	28	25	31	27	24	30	27	24	23
6	38	30	25	22	37	30	25	21	29	24	21	27	24	21	26	23	20	19
7	35	27	22	18	34	26	21	18	25	21	18	24	20	17	23	20	17	16
8	32	24	19	16	31	24	19	16	23	18	15	22	18	15	21	18	15	14
9	30	22	17	14	29	21	17	14	21	16	13	20	16	13	19	16	13	12
10	27	20	15	12	27	19	15	12	19	15	12	18	14	12	17	14	11	10

SPACING TO MOUNTING HEIGHT RATIO — S/MH = 1.6
SPACING CRITERION — SC = 1.6

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 100 WATT H.P.S.
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	0′	5′	10′	15′	20′	25′	30′	35′	40′	45′
10′	12.00	9.69	4.07	2.09	.85	.24	.15	.05	.03	.01
12′	8.33	7.40	3.78	2.03	1.18	.53	.17	.11	.04	.03
14′	6.12	5.81	3.49	1.87	1.18	.74	.37	.12	.09	.03
16′	4.68	4.57	3.14	1.75	1.14	.76	.51	.27	.09	.07
18′	3.70	3.71	2.72	1.68	1.11	.76	.52	.28	.20	.07
20′	3.00	3.07	2.42	1.54	1.02	.73	.52	.38	.21	.16
25′	1.92	1.91	1.75	1.33	.92	.65	.50	.39	.30	.23
30′	1.33	1.35	1.29	1.08	.81	.61	.45	.37	.29	.23

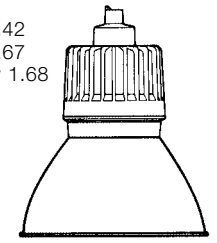
$FC = \frac{(\text{Candlepower}) (\cos \theta)}{\text{DISTANCE}^2}$

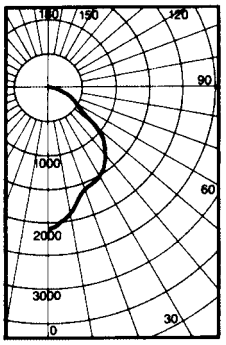
Test No. LSI-9228

HIGH PRESSURE SODIUM
With Globe and Deep Dome HRD-400 Reflector
50 – 150 Watt Mogul Base

CANDLEPOWER – 100 WATT
E-23½ clear lamp
9500 lumens

For 50 watt multiply by .42
For 70 watt multiply by .67
For 150 watt multiply by 1.68





ANGLE	CP
0	2177.
5.0	2114.
10.0	1974.
15.0	1801.
20.0	1658.
25.0	1619.
30.0	1593.
35.0	1499.
40.0	1348.
45.0	1221.
50.0	937.
55.0	601.
60.0	453.
65.0	343.
70.0	246.
75.0	157.
80.0	83.
85.0	24.
90.0	0.

Efficiency 46.8%

COEFFICIENTS OF UTILIZATION — ZONAL CAVITY METHOD

% EFFECTIVE CEILING CAVITY REFLECTANCE 1cc	80			70			50		30		10		0
% WALL REFLECTANCE 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance														
0	56	56	56	56	54	54	54	54	52	52	52	50	50	50	48	48	48	47
1	52	50	49	47	51	49	48	46	47	46	45	45	44	44	44	43	42	41
2	48	45	43	40	47	44	42	40	43	41	39	41	40	38	40	39	37	36
3	45	41	37	35	44	40	37	35	39	36	34	37	35	33	36	35	33	32
4	42	37	33	31	41	36	33	31	35	32	30	34	32	30	33	31	29	29
5	39	33	30	27	38	33	29	27	32	29	27	31	28	26	30	28	26	25
6	36	30	26	24	35	30	26	24	29	26	24	28	25	23	27	25	23	22
7	33	27	24	21	32	27	23	21	26	23	21	25	23	20	25	22	20	20
8	31	25	21	19	30	24	21	18	24	21	18	23	20	18	23	20	18	17
9	28	23	19	16	28	22	19	16	22	19	16	21	18	16	21	18	16	15
10	26	21	17	15	26	20	17	15	20	17	15	19	16	14	19	16	14	14

SPACING TO MOUNTING HEIGHT RATIO — S/MH = 1.1
SPACING CRITERION — SC = 1.1

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 100 WATT H.P.S.
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	0′	5′	10′	15′	20′	25′	30′	35′	40′	45′
10′	21.77	11.51	4.32	1.03	.31	.13	.06	.03	.02	.01
12′	15.12	8.93	4.24	1.59	.43	.19	.09	.04	.03	.02
14′	11.11	7.07	4.12	1.80	.58	.27	.13	.08	.05	.03
16′	8.50	5.81	3.70	1.85	.89	.32	.16	.10	.05	.04
18′	6.72	4.97	3.28	1.89	.87	.37	.19	.12	.07	.04
20′	5.44	4.11	2.90	1.83	1.08	.57	.26	.14	.09	.06
25′	3.48	2.86	2.09	1.61	1.03	.69	.39	.19	.11	.08
30′	2.42	2.11	1.62	1.28	.96	.68	.48	.29	.18	.11

$FC = \frac{(\text{Candlepower}) (\cos \theta)}{\text{DISTANCE}^2}$

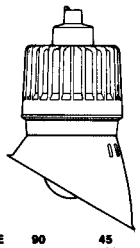
Test No. LSI-9230

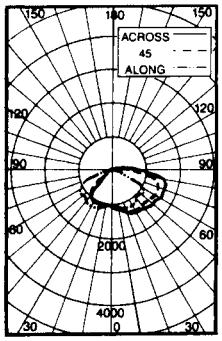
HUBBELL®
KILLARK®

HIGH PRESSURE SODIUM
With Globe and Angle Reflector
50 – 150 Watt Mogul Base

CANDLEPOWER – 100 WATT
E-23½ clear lamp
9500 lumens

For 50 watt multiply by .42
For 70 watt multiply by .67
For 150 watt multiply by 1.68





ANGLE	90	45	0
0	1089.	1089.	1089.
5.0	1089.	1128.	1148.
15.0	1207.	1285.	1281.
25.0	1268.	1392.	1421.
35.0	1252.	1484.	1500.
45.0	1104.	1439.	1562.
55.0	1166.	1511.	1638.
65.0	516.	1530.	1722.
75.0	176.	1415.	1649.
85.0	19.	578.	1135.
90.0	0.	310.	803.
95.0	0.	196.	435.
105.0	0.	51.	146.
115.0	0.	0.	30.
125.0	0.	0.	0.
135.0	0.	0.	0.
145.0	0.	0.	0.
155.0	0.	0.	0.
165.0	0.	0.	0.
175.0	0.	0.	0.
180.0	0.	0.	0.

Efficiency 57.4%

COEFFICIENTS OF UTILIZATION — ZONAL CAVITY METHOD

% EFFECTIVE CEILING CAVITY REFLECTANCE 1cc	80			70			50		30		10		0
% WALL REFLECTANCE 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance														
0	.68	.68	.68	.68	.66	.66	.66	.66	.62	.62	.62	.59	.59	.59	.56	.56	.56	.55
1	.60	.57	.54	.51	.58	.56	.53	.50	.52	.50	.48	.50	.48	.46	.47	.46	.44	.43
2	.54	.49	.45	.41	.53	.48	.44	.40	.45	.42	.39	.43	.40	.37	.41	.38	.36	.35
3	.49	.42	.37	.33	.47	.41	.36	.33	.39	.35	.32	.37	.34	.31	.35	.32	.30	.28
4	.45	.38	.32	.28	.43	.37	.32	.28	.35	.30	.27	.33	.29	.26	.31	.28	.26	.24
5	.41	.33	.28	.23	.40	.32	.27	.23	.31	.26	.23	.29	.25	.22	.28	.25	.22	.20
6	.38	.29	.24	.20	.36	.29	.24	.20	.27	.23	.19	.26	.22	.19	.25	.21	.19	.17
7	.34	.26	.21	.17	.33	.26	.20	.17	.24	.20	.17	.23	.19	.16	.22	.19	.16	.15
8	.32	.24	.18	.15	.31	.23	.18	.15	.22	.18	.14	.21	.17	.14	.20	.17	.14	.13
9	.29	.21	.16	.13	.28	.21	.16	.13	.20	.16	.13	.19	.15	.12	.18	.15	.12	.11
10	.27	.19	.14	.11	.26	.19	.14	.11	.18	.14	.11	.17	.13	.11	.17	.13	.11	.10

SPACING TO MOUNTING HEIGHT RATIO — S/MH = 2.0
SPACING CRITERION (Along) — SC = 1.6
SPACING CRITERION (Across) — SC = 2.0

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial)
100 WATT H.P.S.
HORIZONTAL DISTANCE FROM SOURCE (Front) IN FEET

MOUNTING HEIGHT IN FEET	0'	5'	10'	15'	20'	25'	30'
10'	10.89	10.17	5.52	2.80	1.54	86	53
12'	7.56	7.76	4.83	2.78	1.64	97	60
14'	5.56	5.82	4.12	2.53	1.58	1.03	66
16'	4.25	4.35	3.52	2.37	1.56	1.00	71
18'	3.36	3.54	3.05	2.15	1.52	1.01	73
20'	2.72	2.92	2.54	1.92	1.38	1.00	70
25'	1.74	1.80	1.75	1.49	1.17	88	69

FOOTCANDLE CHART (Initial)
100 WATT H.P.S.
HORIZONTAL DISTANCE FROM SOURCE (Side) IN FEET

MOUNTING HEIGHT IN FEET	0'	5'	10'	15'	20'	25'	30'
10'	10.89	9.07	3.90	1.99	46	14	06
12'	7.56	6.77	3.69	1.95	93	29	10
14'	5.56	5.28	3.44	1.79	1.12	58	20
16'	4.25	4.10	3.06	1.67	1.10	71	40
18'	3.36	3.33	2.66	1.64	1.07	72	41
20'	2.72	2.76	2.27	1.60	98	70	50
25'	1.74	1.70	1.59	1.30	89	53	48

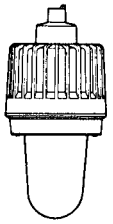
$$FC = \frac{\text{(Candlepower) (COS } \theta)}{\text{DISTANCE}^2}$$

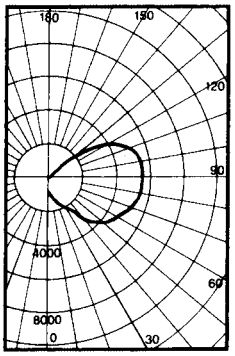
Test No. LSI-9229

HIGH PRESSURE SODIUM
With Globe Only
250 – 400 Watt Mogul Base

CANDLEPOWER – 400 WATT
E-18 clear lamp
50000 lumens

For 250 watt multiply by .60





ANGLE	CP	ANGLE	CP
0	853.	90.0	5345.
5.0	855.	95.0	5305.
10.0	1089.	100.0	5222.
15.0	1458.	105.0	5065.
20.0	1754.	110.0	4801.
25.0	1907.	115.0	4382.
30.0	2041.	120.0	3744.
35.0	2261.	125.0	2869.
40.0	2967.	130.0	1868.
45.0	3500.	135.0	965.
50.0	3934.	140.0	357.
55.0	4323.	145.0	82.
60.0	4602.	150.0	8.
65.0	4807.	155.0	0.
70.0	5023.	160.0	0.
75.0	5187	165.0	0.
80.0	5288.	170.0	0.
85.0	5333.	175.0	0.
		180.0	0

Efficiency 88.6%

COEFFICIENTS OF UTILIZATION — ZONAL CAVITY METHOD

% EFFECTIVE CEILING CAVITY REFLECTANCE 1cc	80			70			50		30		10		0
% WALL REFLECTANCE 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance														
0	.97	.97	.97	.97	.90	.90	.90	.90	.78	.78	.78	.66	.66	.66	.56	.56	.56	.51
1	.83	.76	.71	.66	.76	.71	.66	.61	.60	.56	.52	.50	.47	.44	.41	.38	.36	.32
2	.73	.63	.55	.49	.67	.58	.51	.45	.49	.43	.38	.40	.36	.32	.32	.29	.26	.22
3	.65	.54	.45	.38	.59	.49	.41	.35	.41	.35	.30	.33	.29	.24	.26	.23	.19	.15
4	.59	.46	.37	.31	.54	.43	.35	.28	.36	.29	.24	.29	.24	.20	.23	.19	.15	.12
5	.53	.40	.31	.25	.48	.37	.29	.23	.31	.24	.19	.25	.20	.16	.20	.15	.12	.09
6	.48	.35	.27	.21	.44	.32	.25	.19	.27	.21	.16	.22	.17	.13	.17	.13	.10	.07
7	.44	.31	.23	.17	.40	.29	.21	.16	.24	.17	.13	.19	.14	.10	.15	.11	.08	.05
8	.41	.28	.20	.14	.37	.26	.18	.13	.21	.15	.11	.18	.12	.09	.14	.10	.06	.04
9	.38	.25	.18	.12	.34	.23	.16	.11	.19	.13	.09	.16	.11	.07	.12	.08	.05	.03
10	.35	.23	.15	.11	.32	.21	.14	.10	.18	.12	.08	.14	.10	.06	.11	.07	.04	.03

SPACING TO MOUNTING HEIGHT RATIO — S/MH = 4.0
SPACING CRITERION — SC = 3.8

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 400 WATT H.P.S.
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	0'	5'	10'	15'	20'	25'	30'	35'	40'	45'
10'	8.53	13.65	12.37	7.38	4.30	2.57	1.59	1.08	.74	53
12'	5.92	10.42	9.34	6.66	4.35	2.71	1.79	1.19	85	61
14'	4.35	7.47	6.22	5.67	4.16	2.74	1.85	1.31	92	69
16'	3.33	4.95	4.86	5.31	3.75	2.65	1.87	1.35	1.01	74
18'	2.63	4.03	4.21	4.15	3.64	2.66	1.93	1.42	1.03	79
20'	2.13	3.33	3.41	2.89	3.09	2.40	1.85	1.41	1.08	81
25'	1.37	1.64	2.25	2.06	2.26	1.98	1.65	1.36	1.10	84
30'	.95	1.16	1.66	1.52	1.45	1.49	1.37	1.21	1.04	82

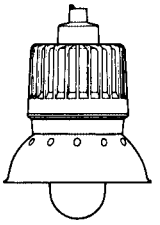
$$FC = \frac{\text{(Candlepower) (COS } \theta)}{\text{DISTANCE}^2}$$

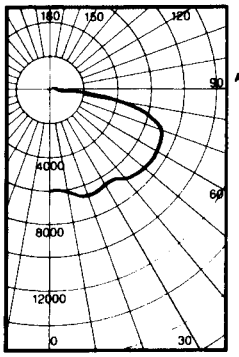
Test No. LSI-9055

HIGH PRESSURE SODIUM
With Globe and Standard Dome Reflector
250 – 400 Watt Mogul Base

CANDLEPOWER – 400 WATT
E-18 clear lamp
50000 lumens

For 250 watt multiply by .60





ANGLE	CP	ANGLE	CP
0	5968	90.0	427.
5.0	5968	95.0	241.
10.0	6174	100.0	165.
15.0	6468.	105.0	192.
20.0	6624.	110.0	250.
25.0	6582	115.0	282.
30.0	6484.	120.0	268.
35.0	6438	125.0	206.
40.0	6859.	130.0	113.
45.0	7119.	135.0	32.
50.0	7281.	140.0	0.
55.0	7374.	145.0	0.
60.0	7306.	150.0	0.
65.0	7169.	155.0	0.
70.0	6805.	160.0	0.
75.0	5414.	165.0	0.
80.0	3750.	170.0	0.
85.0	1936.	175.0	0.
		180.0	0.

Efficiency 75.1%

COEFFICIENTS OF UTILIZATION — ZONAL CAVITY METHOD

% EFFECTIVE CEILING CAVITY REFLECTANCE 1cc	80			70			50		30		10		0
% WALL REFLECTANCE 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance														
0	.89	.89	.89	.89	.87	.87	.87	.87	.82	.82	.82	.78	.78	.78	.75	.75	.75	.73
1	.79	.74	.70	.67	.77	.73	.69	.65	.69	.66	.63	.65	.63	.60	.62	.60	.58	.56
2	.70	.63	.57	.51	.68	.61	.55	.50	.58	.53	.49	.55	.51	.47	.52	.49	.46	.44
3	.63	.53	.46	.40	.60	.52	.45	.40	.49	.43	.39	.47	.42	.38	.44	.40	.37	.35
4	.57	.46	.39	.33	.55	.45	.38	.33	.43	.37	.32	.41	.36	.31	.39	.34	.31	.29
5	.51	.40	.33	.27	.49	.39	.32	.27	.37	.31	.26	.36	.30	.26	.34	.29	.25	.23
6	.47	.35	.28	.22	.45	.35	.27	.22	.33	.27	.22	.31	.26	.21	.30	.25	.21	.19
7	.43	.31	.24	.19	.41	.30	.23	.18	.29	.23	.18	.28	.22	.18	.27	.21	.17	.16
8	.39	.28	.21	.16	.38	.27	.21	.16	.26	.20	.16	.25	.19	.15	.24	.19	.15	.13
9	.36	.25	.18	.14	.35	.25	.18	.14	.24	.18	.13	.23	.17	.13	.22	.17	.13	.11
10	.34	.23	.16	.12	.33	.22	.16	.12	.21	.16	.12	.21	.15	.11	.20	.15	.11	.10

SPACING TO MOUNTING HEIGHT RATIO — S/MH = 1.7
SPACING CRITERION — SC = 1.7

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 400 WATT H.P.S.
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	0'	5'	10'	15'	20'	25'	30'	35'	40'	45'
10'	59.68	47.10	25.17	12.59	6.41	3.49	2.15	1.12	.77	.38
12'	41.44	35.95	21.60	12.33	6 91	4.03	2.42	1.61	.89	.64
14'	30.45	28.23	17.70	11.54	7 10	4.35	2.77	1.78	1.25	.72
16'	23.31	21.97	15.45	10.80	6.93	4.51	2.97	2.01	1.36	1.00
18'	18.42	17.86	13.37	9.60	6.73	4.54	3.07	2.12	1.53	1.08
20'	14.92	14.76	11.77	8.24	6.29	4.44	3.15	2.23	1.60	1.20
25'	9.54	9.31	8.48	6.54	5.23	4.03	3.06	2.32	1.74	1.34
30'	6.63	6.58	6.28	5.23	4.12	3.46	2.80	2.23	1.77	1.40

$$FC = \frac{\text{(Candlepower) (COS } \theta)}{\text{DISTANCE}^2}$$

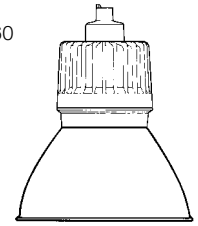
Test No. LSI-9056

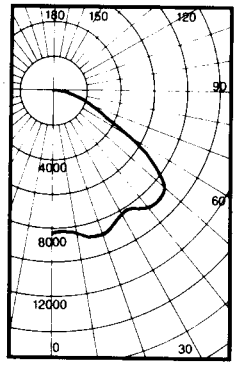
HIGH PRESSURE SODIUM

With Globe and Deep Dome HRD-400 Reflector
250 and 400 Watt Mogul Base

CANDLEPOWER – 400 WATT

E-18 clear lamp
50000 lumens
For 250 watt multiply by .60





0	8203.
5.0	8137.
10.0	8355.
15.0	8730.
20.0	8725.
25.0	8420.
30.0	8140.
35.0	8129.
40.0	8634.
45.0	8683.
50.0	8413.
55.0	6574.
60.0	4258.
65.0	2556.
70.0	1794.
75.0	1132.
80.0	606.
85.0	169.
90.0	0.

Efficiency 58.1%

COEFFICIENTS OF UTILIZATION — ZONAL CAVITY METHOD

% EFFECTIVE CEILING CAVITY REFLECTANCE 1cc	80			70			50			30			10			0
% WALL REFLECTANCE 1w	70	50	30	70	50	30	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance															
0	.69	.69	.69	.69	.68	.68	.68	.65	.65	.65	.62	.62	.62	.59	.59	.58
1	.64	.62	.59	.57	.62	.60	.58	.56	.58	.56	.55	.56	.54	.53	.54	.52	.51	.50
2	.59	.55	.51	.48	.58	.54	.50	.48	.52	.49	.47	.50	.48	.46	.48	.46	.45	.43
3	.54	.48	.44	.41	.53	.48	.44	.40	.46	.43	.40	.44	.42	.39	.43	.41	.38	.37
4	.50	.43	.39	.35	.49	.43	.38	.35	.41	.37	.34	.40	.37	.34	.39	.36	.33	.32
5	.46	.39	.34	.30	.44	.38	.33	.30	.37	.33	.30	.36	.32	.29	.35	.31	.29	.28
6	.42	.34	.29	.26	.41	.34	.29	.25	.33	.28	.25	.32	.28	.25	.31	.27	.25	.24
7	.38	.30	.25	.22	.37	.30	.25	.22	.29	.24	.21	.28	.24	.21	.27	.24	.21	.20
8	.35	.27	.22	.19	.34	.27	.22	.19	.26	.22	.19	.25	.21	.18	.25	.21	.18	.17
9	.32	.24	.20	.16	.31	.24	.19	.16	.23	.19	.16	.23	.19	.16	.22	.18	.16	.15
10	.30	.22	.17	.14	.29	.22	.17	.14	.21	.17	.14	.20	.17	.14	.20	.16	.14	.13

SPACING TO MOUNTING HEIGHT RATIO — S/MH = 1.6
SPACING CRITERION — SC = 1.6

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 400 WATT H.P.S.
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	0′	5′	10′	15′	20′	25′	30′	35′	40′	45′
10′	82.03	60.25	30.70	11.22	2.83	1.10	.57	.24	.16	.09
12′	56.97	45.99	27.18	14.24	4.03	1.44	.77	.43	.24	.14
14′	41.85	37.18	22.35	13.93	6.33	2.53	.99	.56	.33	.19
16′	32.04	29.90	19.19	13.20	8.01	3.32	1.29	.72	.43	.26
18′	25.32	24.10	16.78	12.06	7.94	4.05	1.79	.93	.55	.34
20′	20.51	19.93	14.79	10.68	7.68	5.13	2.81	1.30	.57	.43
25′	13.13	12.60	11.00	8.13	6.58	4.91	3.53	2.07	1.01	.78
30′	9.11	8.91	8.35	6.57	5.20	4.35	3.41	2.58	1.86	1.25

$FC = \frac{(\text{Candlepower}) (\cos \theta)}{\text{DISTANCE}^2}$

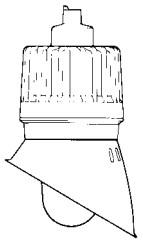
Test No. LSI-9058

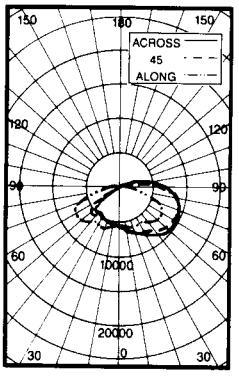
HIGH PRESSURE SODIUM

With Globe and Angle Reflector
250 – 400 Watt Mogul Base

CANDLEPOWER – 400 WATT

E-18 clear lamp
50000 lumens
For 250 watt multiply by .60





ANGLE	90	45	0
0	5430.	5430.	5430.
5.0	5382.	5623.	5722.
15.0	5925.	6556.	6720.
25.0	6075.	7155.	7346.
35.0	5916.	7462.	8007.
45.0	6837.	8514.	9222.
55.0	7123.	9049.	9457.
65.0	6492.	9031.	9185.
75.0	3578.	8606.	8796.
85.0	594.	6928.	7789.
90.0	194.	5522.	7177.
95.0	118.	3995.	5749.
105.0	25.	1074.	2663.
115.0	4.	97.	549.
125.0	0.	0.	27.
135.0	0.	0.	0.
145.0	0.	0.	0.
155.0	0.	0.	0.
165.0	0.	0.	0.
175.0	0.	0.	0.
180.0	0.	0.	0.

Efficiency 71.7%

COEFFICIENTS OF UTILIZATION — ZONAL CAVITY METHOD

% EFFECTIVE CEILING CAVITY REFLECTANCE 1cc	80			70			50			30			10			0
% WALL REFLECTANCE 1w	70	50	30	70	50	30	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance															
0	.84	.84	.84	.84	.81	.81	.81	.81	.76	.76	.76	.72	.72	.72	.67	.67	.67	.65
1	.74	.69	.65	.62	.71	.67	.63	.60	.63	.60	.57	.59	.56	.54	.55	.53	.51	.49
2	.66	.59	.53	.48	.64	.57	.51	.47	.53	.49	.45	.50	.46	.43	.47	.44	.41	.39
3	.59	.50	.44	.38	.57	.49	.43	.37	.46	.40	.36	.43	.38	.34	.40	.36	.33	.31
4	.54	.44	.37	.32	.52	.43	.36	.31	.40	.34	.30	.38	.33	.29	.35	.31	.28	.26
5	.49	.39	.32	.26	.47	.38	.31	.26	.35	.29	.25	.33	.28	.24	.31	.27	.23	.21
6	.45	.34	.27	.22	.43	.33	.26	.22	.31	.25	.21	.29	.24	.20	.27	.23	.19	.18
7	.41	.30	.23	.19	.39	.29	.23	.18	.27	.22	.17	.26	.21	.17	.24	.20	.16	.15
8	.38	.27	.20	.16	.36	.26	.20	.15	.25	.19	.15	.23	.18	.14	.22	.17	.14	.12
9	.35	.24	.18	.13	.33	.24	.18	.13	.22	.17	.13	.21	.16	.12	.20	.15	.12	.11
10	.32	.22	.16	.12	.31	.21	.16	.12	.20	.15	.11	.19	.14	.11	.18	.14	.10	.09

SPACING TO MOUNTING HEIGHT RATIO — S/MH = 2.3
SPACING CRITERION (Along) — SC = 1.8
SPACING CRITERION (Across) — SC = 2.3

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 400 WATT H.P.S.
HORIZONTAL DISTANCE FROM SOURCE (Front) IN FEET

MOUNTING HEIGHT IN FEET	0′	5′	10′	15′	20′	25′	30′
10′	54.30	52.56	32.61	16.14	8.22	4.64	2.87
12′	37.71	40.12	27.61	15.99	8.88	5.17	3.22
14′	27.70	30.40	22.01	14.95	9.10	5.59	3.54
16′	21.21	22.83	18.07	13.99	9.00	5.79	3.82
18′	16.76	18.55	15.64	12.27	8.73	5.82	3.94
20′	13.58	15.34	13.14	10.25	8.15	5.76	4.04
25′	8.69	9.38	9.14	7.66	6.68	5.22	3.97

FOOTCANDLE CHART (Initial) 400 WATT H.P.S.
HORIZONTAL DISTANCE FROM SOURCE (Side) IN FEET

MOUNTING HEIGHT IN FEET	0′	5′	10′	15′	20′	25′	30′
10′	54.30	43.47	24.17	12.16	5.81	2.69	1.66
12′	37.71	33.18	20.40	11.91	6.67	3.65	1.87
14′	27.70	25.98	16.26	11.08	6.85	4.20	2.50
16′	21.21	20.13	14.30	10.37	6.70	4.36	2.87
18′	16.76	16.36	12.38	9.06	6.50	4.39	2.95
20′	13.58	13.53	10.87	7.57	6.04	4.29	3.04
25′	8.69	8.47	7.81	6.05	4.94	3.87	2.95

$FC = \frac{(\text{Candlepower}) (\cos \theta)}{\text{DISTANCE}^2}$

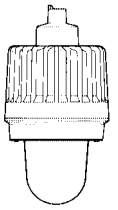
Test No. LSI-9057

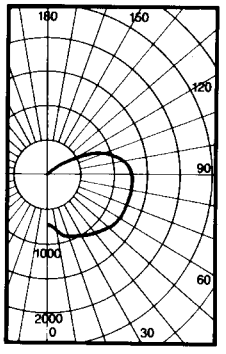
MERCURY VAPOR, METAL HALIDE, PULSE START METAL HALIDE

With Globe and Standard Dome Reflector
70 – 250 Watt Mogul Base

CANDLEPOWER – 175 WATT MH

E-28 coated MH (14000 lumens)
For CP of 70W MH multiply by .40
For CP of 100W MH multiply by .56
For CP of 150W MH multiply by .96
For CP of 250W MH multiply by 1.46
For CP of 100W MV multiply by .30
For CP of 175W MV multiply by .61
For CP of 250W MV multiply by .86
For CP of 175W MHP multiply by 1.14
For CP of 250W MHP multiply by 1.69





ANGLE	CP	ANGLE	CP
0	755.	90.0	1275.
5.0	786.	95.0	1246.
10.0	853.	100.0	1169.
15.0	933.	105.0	1046.
20.0	983.	110.0	892.
25.0	1008.	115.0	714.
30.0	1036.	120.0	504.
35.0	1075.	125.0	307.
40.0	1126.	130.0	143.
45.0	1167.	135.0	34.
50.0	1199.	140.0	2.
55.0	1228.	145.0	0.
60.0	1258.	150.0	0.
65.0	1279.	155.0	0.
70.0	1291.	160.0	0.
75.0	1299.	165.0	0.
80.0	1293.	170.0	0.
85.0	1282.	175.0	0.
		180.0	0.

Efficiency 78.5%

COEFFICIENTS OF UTILIZATION — ZONAL CAVITY METHOD

% EFFECTIVE CEILING CAVITY REFLECTANCE 1cc	80			70			50			30			10			0
% WALL REFLECTANCE 1w	70	50	30	70	50	30	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance															
0	.88	.88	.88	.88	.83	.83	.83	.83	.73	.73	.73	.65	.65	.65	.57	.57	.57	.54
1	.76	.70	.65	.61	.71	.66	.61	.57	.58	.54	.51	.50	.48	.45	.44	.41	.39	.36
2	.67	.59	.52	.46	.62	.55	.49	.43	.48	.43	.39	.42	.38	.34	.36	.33	.30	.26
3	.60	.50	.42	.36	.56	.47	.40	.34	.41	.35	.30	.35	.31	.27	.30	.26	.23	.20
4	.54	.44	.36	.30	.51	.41	.34	.28	.36	.30	.25	.31	.26	.22	.26	.22	.19	.16
5	.49	.38	.30	.24	.46	.36	.28	.23	.31	.25	.21	.27	.22	.18	.23	.19	.16	.13
6	.45	.34	.26	.20	.42	.31	.24	.19	.27	.22	.17	.24	.19	.15	.20	.16	.13	.11
7	.41	.30	.22	.17	.38	.28	.21	.16	.24	.18	.14	.21	.16	.12	.18	.14	.11	.09
8	.38	.27	.20	.15	.35	.25	.18	.14	.22	.16	.12	.19	.14	.11	.16	.12	.09	.07
9	.35	.24	.17	.13	.33	.23	.16	.12	.20	.14	.11	.17	.13	.09	.15	.11	.08	.06
10	.33	.22	.15	.11	.31	.21	.15	.10	.18	.13	.09	.16	.11	.08	.14	.10	.07	.05

SPACING TO MOUNTING HEIGHT RATIO — S/MH = 2.1
SPACING CRITERION — SC = 2.1

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 175 WATT M.H.
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	0′	5′	10′	15′	20′	25′	30′	35′	40′	45′
10′	7.55	7.21	4.13	2.10	1.14	.66	.41	.27	.19	.13
12′	5.24	5.51	3.54	2.03	1.19	.72	.46	.31	.21	.15
14′	3.85	4.19	2.96	1.89	1.18	.75	.49	.34	.24	.17
16′	2.95	3.34	2.47	1.77	1.14	.75	.51	.36	.26	.19
18′	2.33	2.58	2.14	1.58	1.11	.76	.53	.38	.27	.20
20′	1.89	2.13	1.80	1.38	1.03	.73	.52	.38	.29	.21
25′	1.21	1.29	1.26	1.05	.86	.66	.50	.39	.30	.23
30′	.84	.91	.93	.80	.69	.57	.46	.37	.30	.23

$FC = \frac{(\text{Candlepower}) (\cos \theta)}{\text{DISTANCE}^2}$

Test No. LSI-9183

HUBBELL®
KILLARK®

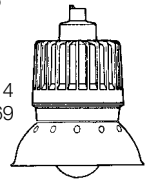
MERCURY VAPOR, METAL HALIDE, PULSE START METAL HALIDE

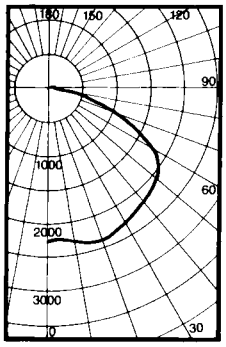
With Globe and Standard Dome Reflector
70 – 250 Watt Mogul Base

CANDLEPOWER – 175 WATT MH

E-28 coated MH (14000 lumens)

For CP of 70W MH multiply by .40
For CP of 100W MH multiply by .56
For CP of 150W MH multiply by .96
For CP of 250W MH multiply by 1.46
For CP of 100W MV multiply by .30
For CP of 175W MV multiply by .61
For CP of 250W MV multiply by .86
For CP of 175W MHP multiply by 1.14
For CP of 250W MHP multiply by 1.69





ANGLE	CP	ANGLE	CP
0	2324.	90.0	30.
5.0	2353.	95.0	37.
10.0	2417.	100.0	56.
15.0	2464.	105.0	69.
20.0	2477.	110.0	64.
25.0	2440.	115.0	41.
30.0	2374.	120.0	19.
35.0	2311.	125.0	4.
40.0	2248.	130.0	0.
45.0	2184.	135.0	0.
50.0	2114.	140.0	0.
55.0	1988.	145.0	0.
60.0	1711.	150.0	0.
65.0	1299.	155.0	0.
70.0	851.	160.0	0.
75.0	493.	165.0	0.
80.0	234.	170.0	0.
85.0	94.	175.0	0.
		180.0	0.

Efficiency 64.6%

COEFFICIENTS OF UTILIZATION — ZONAL CAVITY METHOD

% EFFECTIVE CEILING CAVITY REFLECTANCE 1cc	80			70			50		30		10		0
% WALL REFLECTANCE 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance														
0	.77	.77	.77	.77	.75	.75	.75	.75	.71	.71	.71	.68	.68	.68	.65	.65	.65	.64
1	.70	.68	.65	.63	.69	.66	.64	.61	.63	.61	.59	.60	.59	.57	.58	.57	.55	.54
2	.64	.59	.55	.52	.63	.58	.54	.51	.55	.52	.50	.53	.51	.48	.51	.49	.47	.46
3	.59	.52	.47	.43	.57	.51	.46	.42	.49	.45	.42	.47	.44	.41	.45	.42	.40	.38
4	.54	.46	.41	.36	.52	.45	.40	.36	.43	.39	.35	.42	.38	.35	.40	.37	.34	.33
5	.49	.41	.35	.31	.48	.40	.34	.31	.38	.34	.30	.37	.33	.30	.36	.32	.29	.28
6	.45	.36	.30	.26	.43	.35	.30	.26	.34	.29	.26	.33	.29	.25	.32	.28	.25	.24
7	.41	.32	.26	.22	.40	.31	.26	.22	.30	.25	.22	.29	.25	.21	.28	.24	.21	.20
8	.38	.29	.23	.19	.37	.28	.23	.19	.27	.22	.19	.26	.22	.19	.26	.22	.19	.17
9	.35	.26	.20	.17	.34	.26	.20	.17	.25	.20	.17	.24	.19	.16	.23	.19	.16	.15
10	.32	.24	.18	.15	.31	.23	.18	.15	.22	.18	.14	.22	.17	.14	.21	.17	.14	.13

SPACING TO MOUNTING HEIGHT RATIO — S/MH = 1.5
SPACING CRITERION — SC = 1.5

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 175 WATT M.H.
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	0′	5′	10′	15′	20′	25′	30′	35′	40′	45′
10′	23.24	17.46	7.72	3.39	1.16	.44	.27	.10	.07	.02
12′	16.14	13.33	7.08	3.58	1.62	.73	.30	.20	.08	.06
14′	11.86	10.56	6.35	3.54	1.91	1.02	.50	.22	.16	.07
16′	9.08	8.37	5.65	3.31	2.01	1.22	.70	.37	.17	.13
18′	7.17	6.80	4.90	3.15	1.95	1.22	.72	.38	.28	.14
20′	5.81	5.62	4.37	2.96	1.93	1.29	.85	.52	.29	.22
25′	3.72	3.65	3.17	2.40	1.71	1.24	.89	.63	.41	.31
30′	2.58	2.58	2.35	1.94	1.48	1.13	.86	.65	.48	.38

$FC = \frac{(\text{Candlepower}) (\cos \theta)}{\text{DISTANCE}^2}$

Test No. LSI-9231

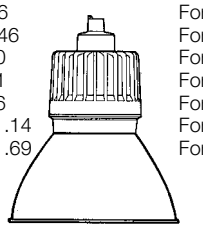
MERCURY VAPOR, METAL HALIDE, PULSE START METAL HALIDE

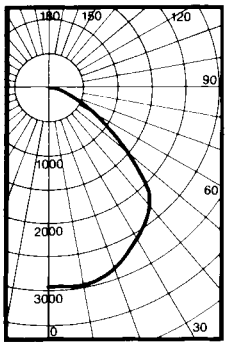
With Globe and Deep Dome HRD-400 Reflector
70 – 250 Watt Mogul Base

CANDLEPOWER – 175 WATT MH

E-28 coated MH (14000 lumens)

For CP of 70W MH multiply by .40
For CP of 100W MH multiply by .56
For CP of 150W MH multiply by .96
For CP of 250W MH multiply by 1.46
For CP of 100W MV multiply by .30
For CP of 175W MV multiply by .61
For CP of 250W MV multiply by .86
For CP of 175W MHP multiply by 1.14
For CP of 250W MHP multiply by 1.69





ANGLE	CP
0	3034
5.0	3041
10.0	3050
15.0	3005
20.0	2897
25.0	2769
30.0	2636
35.0	2486
40.0	2343
45.0	2034
50.0	1489
55.0	1006
60.0	682
65.0	502
70.0	366
75.0	233
80.0	125
85.0	31
90.0	0

Efficiency 51.9%

COEFFICIENTS OF UTILIZATION — ZONAL CAVITY METHOD

% EFFECTIVE CEILING CAVITY REFLECTANCE 1cc	80			70			50		30		10		0
% WALL REFLECTANCE 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance														
0	.62	.62	.62	.62	.60	.60	.60	.60	.58	.58	.58	.55	.55	.55	.53	.53	.53	.XX
1	.58	.56	.54	.52	.56	.55	.53	.52	.52	.51	.50	.50	.49	.48	.49	.48	.47	.XX
2	.54	.50	.48	.45	.52	.49	.47	.45	.48	.45	.44	.46	.44	.43	.45	.43	.42	.XX
3	.50	.45	.42	.39	.49	.44	.41	.39	.43	.40	.38	.42	.39	.37	.40	.39	.38	.XX
4	.46	.41	.37	.34	.45	.40	.37	.34	.39	.36	.34	.38	.35	.33	.37	.35	.33	.XX
5	.43	.37	.33	.30	.42	.37	.33	.30	.36	.32	.30	.35	.32	.30	.34	.31	.29	.XX
6	.40	.34	.30	.27	.39	.33	.29	.27	.32	.29	.26	.31	.28	.26	.31	.28	.26	.XX
7	.37	.30	.26	.24	.36	.30	.26	.23	.29	.26	.23	.28	.25	.23	.28	.25	.23	.XX
8	.34	.28	.24	.21	.33	.27	.23	.21	.27	.23	.21	.26	.23	.20	.25	.22	.20	.XX
9	.32	.25	.21	.18	.31	.25	.21	.18	.24	.21	.18	.24	.20	.18	.23	.20	.18	.XX
10	.29	.23	.19	.16	.29	.23	.19	.16	.22	.19	.16	.22	.18	.16	.21	.18	.16	.XX

SPACING TO MOUNTING HEIGHT RATIO — S/MH = 1.3
SPACING CRITERION — SC = 1.3

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 175 WATT M.H.
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	0′	5′	10′	15′	20′	25′	30′	35′	40′	45′
10′	30.34	19.81	7.19	1.72	.52	.22	.09	.05	.03	.02
12′	21.07	15.12	7.38	2.52	.65	.28	.15	.09	.05	.03
14′	15.48	12.35	6.83	2.88	.97	.41	.19	.11	.07	.04
16′	11.85	10.05	6.12	3.38	1.42	.50	.24	.14	.09	.05
18′	9.36	8.30	5.44	3.28	1.64	.62	.29	.17	.11	.07
20′	7.59	6.86	4.83	3.09	1.80	.91	.43	.21	.13	.08
25′	4.85	4.60	3.63	2.66	1.79	1.15	.63	.32	.20	.13
30′	3.37	3.25	2.81	2.20	1.59	1.18	.80	.46	.29	.19

$FC = \frac{(\text{Candlepower}) (\cos \theta)}{\text{DISTANCE}^2}$

Test No. LSI-9233

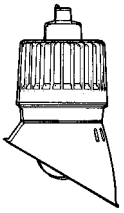
MERCURY VAPOR, METAL HALIDE, PULSE START METAL HALIDE

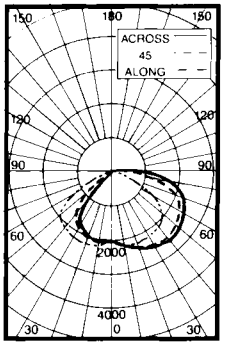
With Globe and Angle Reflector
70 – 250 Watt Mogul Base

CANDLEPOWER – 175 WATT MH

E-28 coated MH (14000 lumens)

For CP of 70W MH multiply by .40
For CP of 100W MH multiply by .56
For CP of 150W MH multiply by .96
For CP of 250W MH multiply by 1.46
For CP of 100W MV multiply by .30
For CP of 175W MV multiply by .61
For CP of 250W MV multiply by .86
For CP of 175W MHP multiply by 1.14
For CP of 250W MHP multiply by 1.69





ANGLE	90	45	0
0	2119.	2119.	2119.
5.0	2161.	2211.	2184.
15.0	2295.	2386.	2402.
25.0	2261.	2522.	2565.
35.0	2208.	2610.	2678.
45.0	2116.	2545.	2711.
55.0	1717.	2405.	2590.
65.0	915.	2211.	2412.
75.0	300.	1675.	2077.
85.0	32.	873.	1452.
90.0	0.	636.	1146.
95.0	0.	432.	845.
105.0	0.	72.	263.
115.0	4.	0.	49.
125.0	0.	0.	0.
135.0	2.	0.	0.
145.0	0.	0.	0.
155.0	0.	0.	0.
165.0	3.	0.	0.
175.0	4.	0.	0.
180.0	0.	0.	0.

Efficiency 63.6%

COEFFICIENTS OF UTILIZATION — ZONAL CAVITY METHOD

% EFFECTIVE CEILING CAVITY REFLECTANCE 1cc	80			70			50		30		10		0
% WALL REFLECTANCE 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance														
0	.75	.75	.75	.75	.73	.73	.73	.73	.69	.69	.69	.66	.66	.66	.62	.62	.62	.61
1	.68	.64	.61	.58	.66	.63	.60	.57	.59	.57	.55	.56	.54	.53	.54	.52	.51	.46
2	.61	.56	.51	.47	.60	.54	.50	.47	.52	.48	.45	.49	.46	.44	.47	.44	.42	.41
3	.56	.49	.43	.39	.54	.48	.43	.39	.45	.41	.38	.43	.40	.37	.41	.38	.36	.34
4	.51	.43	.38	.33	.50	.42	.37	.33	.40	.36	.32	.39	.35	.32	.37	.34	.31	.29
5	.47	.39	.33	.28	.45	.38	.32	.28	.36	.31	.28	.34	.30	.27	.33	.29	.26	.25
6	.43	.34	.29	.24	.42	.34	.28	.24	.32	.27	.24	.31	.27	.23	.30	.26	.23	.24
7	.39	.31	.25	.21	.38	.30	.25	.21	.29	.24	.20	.27	.23	.20	.26	.23	.20	.18
8	.37	.28	.22	.18	.35	.27	.22	.18	.26	.21	.18	.25	.21	.17	.24	.20	.17	.16
9	.34	.25	.20	.16	.33	.25	.19	.16	.23	.18	.15	.22	.18	.15	.22	.18	.15	.14
10	.31	.23	.17	.14	.30	.22	.17	.14	.21	.17	.14	.21	.16	.13	.20	.16	.13	.12

SPACING TO MOUNTING HEIGHT RATIO — S/MH = 1.9
SPACING CRITERION (Along) — SC = 1.6
SPACING CRITERION (Across) — SC = 1.9

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 175 WATT M.H.
HORIZONTAL DISTANCE FROM SOURCE (Front) IN FEET

MOUNTING HEIGHT IN FEET	0′	5′	10′	15′	20′	25′	30′
10′	21.19	18.35	9.59	4.42	2.16	1.18	.73
12′	14.72	14.01	8.54	4.50	2.36	1.36	.82
14′	10.81	10.54	7.36	4.39	2.49	1.49	.93
16′	8.28	8.16	6.31	4.11	2.53	1.59	1.02
18′	6.54	6.63	5.46	3.80	2.45	1.60	1.06
20′	5.30	5.48	4.59	3.43	2.40	1.62	1.11
25′	3.39	3.53	3.17	2.67	2.07	1.53	1.11

FOOTCANDLE CHART (Initial)
175 WATT M.H.
HORIZONTAL DISTANCE FROM SOURCE (Side) IN FEET

MOUNTING HEIGHT IN FEET	0′	5′	10′	15′	20′	25′	30′
10′	21.19	16.18	7.48	2.93	.82	.28	.18
12′	14.72	12.35	6.81	3.33	1.28	.52	.20
14′	10.81	9.84	6.07	3.43	1.65	.80	.35
16′	8.28	7.80	5.37	3.21	1.88	1.05	.55
18′	6.54	6.34	4.65	3.03	1.82	1.06	.57
20′	5.30	5.24	4.05	2.83	1.67	1.20	.73
25′	3.39	3.38	2.96	2.27	1.65	1.20	.83

$FC = \frac{(\text{Candlepower}) (\cos \theta)}{\text{DISTANCE}^2}$

Test No. LSI-9232

HUBBELL®
KILLARK®

MERCURY VAPOR, METAL HALIDE, PULSE START METAL HALIDE

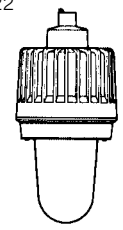
With Globe Only
320 - 400 Watt Mogul Base

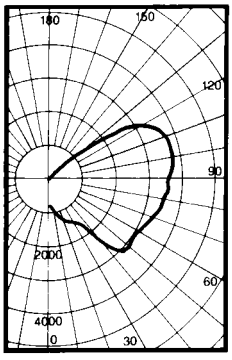
CANDLEPOWER – 400 WATT MH

E-37 coated MH
36000 lumens

For 400 watt mercury vapor lamp multiply by .625

For CP of MHP320 multiply by .87
For CP of MHP350 multiply by 1.05
For CP of MHP400 multiply by 1.22





ANGLE	CP	ANGLE	CP
0	812.	90.0	3511.
5.0	872.	95.0	3591.
10.0	1029.	100.0	3634.
15.0	1187.	105.0	3626.
20.0	1295.	110.0	3551.
25.0	1376.	115.0	3397.
30.0	1471.	120.0	3063.
35.0	1778.	125.0	2392.
40.0	2519.	130.0	1443.
45.0	3028.	135.0	592.
50.0	3051.	140.0	136.
55.0	3016.	145.0	8.
60.0	3076.	150.0	0.
65.0	3180.	155.0	0.
70.0	3299.	160.0	0.
75.0	3389.	165.0	0.
80.0	3419.	170.0	0.
85.0	3452.	175.0	0.
		180.0	0.

Efficiency 87.3%

COEFFICIENTS OF UTILIZATION — ZONAL CAVITY METHOD

% EFFECTIVE CEILING CAVITY REFLECTANCE 1cc	80			70			50		30		10		0
% WALL REFLECTANCE 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance														
0	95	95	95	95	88	88	88	88	76	76	76	65	65	65	54	54	54	49
1	82	76	70	66	75	70	65	61	59	55	52	49	46	44	40	38	36	31
2	72	63	56	49	66	58	51	46	49	43	39	40	36	32	32	29	26	22
3	64	54	45	39	59	49	42	36	41	35	30	34	29	25	27	23	20	16
4	58	47	38	31	53	43	35	29	36	29	25	29	24	20	23	19	16	13
5	53	40	32	26	48	37	29	24	31	25	20	25	20	16	20	16	13	10
6	48	36	27	21	44	33	25	19	27	21	16	22	17	13	17	13	10	07
7	44	31	23	18	40	29	21	16	24	18	13	19	14	11	15	11	08	06
8	40	28	20	15	37	26	19	14	21	16	11	18	13	09	14	10	07	05
9	37	25	18	13	34	23	16	12	19	14	10	16	11	08	12	08	06	04
10	35	23	16	11	32	21	14	10	18	12	08	14	10	06	11	07	05	03

SPACING TO MOUNTING HEIGHT RATIO — S/MH = 3.4
SPACING CRITERION — SC = 3.3

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 400 WATT M.H.
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	0′	5′	10′	15′	20′	25′	30′	35′	40′	45′
10′	8.12	9.85	10.71	5.15	2.84	1.69	1.04	.70	.48	.35
12′	5.64	7.52	7.93	5.17	2.91	1.79	1.17	.78	.56	.40
14′	4.14	5.52	4.89	4.91	2.90	1.83	1.23	.86	.61	.45
16′	3.17	4.03	3.50	4.59	2.91	1.85	1.25	.89	.66	.49
18′	2.51	3.28	3.03	3.53	2.82	1.86	1.29	.94	.68	.52
20′	2.03	2.71	2.46	2.28	2.68	1.86	1.29	.94	.71	.53
25′	1.30	1.55	1.66	1.48	1.92	1.71	1.28	.95	.73	.56
30′	.90	1.10	1.23	1.19	1.14	1.27	1.19	.93	.72	.57

$FC = \frac{(\text{Candlepower}) (\cos \theta)}{\text{DISTANCE}^2}$

Test No. LSI-9051

MERCURY VAPOR, METAL HALIDE, PULSE START METAL HALIDE

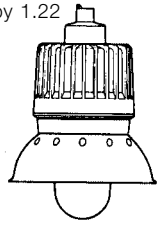
With Globe and Standard Dome Reflector
320 - 400 Watt Mogul Base

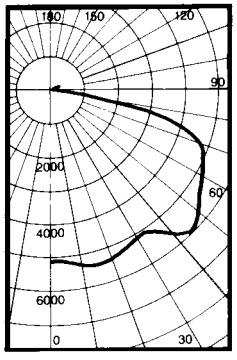
CANDLEPOWER – 400 WATT MH

E-37 coated MH
36000 lumens

For 400 watt mercury vapor lamp multiply by .625

For CP of MHP320 multiply by .87
For CP of MHP350 multiply by 1.05
For CP of MHP400 multiply by 1.22





ANGLE	CP	ANGLE	CP
0	5056.	90.0	121.
5.0	5108.	95.0	90.
10.0	5242.	100.0	83.
15.0	5305.	105.0	118.
20.0	5263.	110.0	203.
25.0	5173.	115.0	280.
30.0	5051.	120.0	258.
35.0	5085.	125.0	145.
40.0	5577.	130.0	36.
45.0	5819.	135.0	0.
50.0	5578.	140.0	0.
55.0	5270.	145.0	0.
60.0	5043.	150.0	0.
65.0	4836.	155.0	0.
70.0	4477.	160.0	0.
75.0	3216.	165.0	0.
80.0	1382.	170.0	0.
85.0	444.	175.0	0.
		180.0	0.

Efficiency 72.5%

COEFFICIENTS OF UTILIZATION — ZONAL CAVITY METHOD

% EFFECTIVE CEILING CAVITY REFLECTANCE 1cc	80			70			50		30		10		0
% WALL REFLECTANCE 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance														
0	86	86	86	86	84	84	84	84	80	80	80	76	76	76	72	72	72	71
1	78	74	70	67	75	72	69	66	68	66	63	65	63	61	62	61	59	57
2	70	63	58	53	68	61	56	52	58	54	51	56	52	49	53	50	48	46
3	62	54	47	42	60	53	47	42	50	45	41	48	44	40	46	42	39	37
4	57	47	40	35	55	46	40	35	44	38	34	42	37	33	40	36	33	31
5	52	41	34	29	50	40	34	29	38	33	28	37	32	28	35	31	27	25
6	47	36	29	24	45	35	29	24	34	28	24	32	27	23	31	26	23	21
7	43	32	25	20	41	31	25	20	30	24	20	29	23	19	28	23	19	17
8	39	29	22	17	38	28	22	17	27	21	17	26	21	17	25	20	16	15
9	36	26	19	15	35	25	19	15	24	19	15	23	18	14	22	18	14	13
10	34	23	17	13	33	23	17	13	22	16	13	21	16	12	20	16	12	11

SPACING TO MOUNTING HEIGHT RATIO — S/MH = 1.7
SPACING CRITERION — SC = 1.7

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 400 WATT M.H.
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	0′	5′	10′	15′	20′	25′	30′	35′	40′	45′
10′	50.56	37.02	20.57	9.00	4.33	2.29	1.42	.67	.46	.14
12′	35.11	28.26	17.56	9.44	4.77	2.72	1.59	1.06	.53	.38
14′	25.80	22.43	13.98	9.43	5.07	3.00	1.87	1.17	.82	.43
16′	19.75	18.02	12.03	8.83	5.31	3.23	2.05	1.36	.90	.66
18′	15.61	14.65	10.41	7.80	5.15	3.25	2.12	1.43	1.03	.71
20′	12.64	12.11	9.25	6.51	5.14	3.40	2.25	1.54	1.08	.81
25′	8.09	7.91	6.74	5.10	4.25	3.29	2.34	1.66	1.20	.92
30′	5.62	5.59	4.99	4.11	3.26	2.81	2.29	1.71	1.27	1.00

$FC = \frac{(\text{Candlepower}) (\cos \theta)}{\text{DISTANCE}^2}$

Test No. LSI-9052

MERCURY VAPOR, METAL HALIDE, PULSE START METAL HALIDE

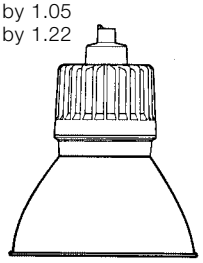
With Globe and Deep Dome Reflector
320 - 400 Watt Mogul Base

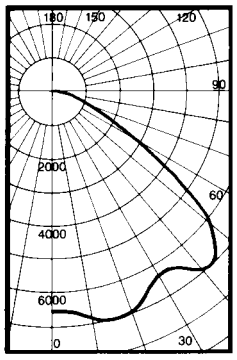
CANDLEPOWER – 400 WATT MH

E-37 coated MH
36000 lumens

For 400 watt mercury vapor lamp multiply by .625

For CP of MHP320 multiply by .87
For CP of MHP350 multiply by 1.05
For CP of MHP400 multiply by 1.22





ANGLE	CP
0	6505.
5.0	6587.
10.0	6777.
15.0	6930.
20.0	6884.
25.0	6636.
30.0	6269.
35.0	6329.
40.0	6870.
45.0	6682.
50.0	5778.
55.0	3859.
60.0	2305.
65.0	1704.
70.0	1190.
75.0	743.
80.0	397.
85.0	100.
90.0	0.

Efficiency 58.2%

COEFFICIENTS OF UTILIZATION — ZONAL CAVITY METHOD

% EFFECTIVE CEILING CAVITY REFLECTANCE 1cc	80			70			50		30		10		0
% WALL REFLECTANCE 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance														
0	69	69	69	69	68	68	68	68	65	65	65	62	62	62	59	59	59	58
1	64	62	60	58	63	61	59	57	58	57	55	56	55	54	54	53	52	51
2	59	56	52	49	58	54	51	49	52	50	48	51	48	47	49	47	46	44
3	55	49	45	42	53	49	45	42	47	44	41	45	43	40	44	42	40	38
4	51	44	40	36	49	44	40	36	42	39	36	41	38	35	40	37	35	34
5	47	40	35	31	45	39	35	31	38	34	31	37	33	31	36	33	30	29
6	43	36	31	27	42	35	30	27	34	30	27	33	29	27	32	29	26	25
7	39	32	27	23	38	31	27	23	30	26	23	29	26	23	29	25	23	22
8	36	28	24	20	35	28	23	20	27	23	20	27	23	20	26	22	20	19
9	33	26	21	18	32	25	21	18	24	20	17	24	20	17	23	20	17	16
10	31	23	18	15	30	23	18	15	22	18	15	22	18	15	21	18	15	14

SPACING TO MOUNTING HEIGHT RATIO — S/MH = 1.6
SPACING CRITERION — SC = 1.6

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial) 400 WATT M.H.
HORIZONTAL DISTANCE FROM SOURCE IN FEET

MOUNTING HEIGHT IN FEET	0′	5′	10′	15′	20′	25′	30′	35′	40′	45′
10′	65.05	47.48	23.62	6.59	1.79	.74	.30	.15	.11	.06
12′	45.17	37.06	21.63	9.78	2.18	.96	.51	.28	.16	.09
14′	33.19	29.33	17.40	10.16	3.71	1.37	.66	.38	.22	.13
16′	25.41	23.57	14.77	10.42	5.50	1.78	.81	.48	.29	.18
18′	20.08	19.13	12.93	9.61	5.79	2.38	.97	.59	.36	.23
20′	16.26	15.82	11.53	8.48	5.91	3.52	1.65	.70	.45	.29
25′	10.41	10.22	8.69	6.32	5.23	3.78	2.43	1.21	.69	.42
30′	7.23	7.23	6.58	5.13	4.05	3.46	2.63	1.77	1.18	.73

$FC = \frac{(\text{Candlepower}) (\cos \theta)}{\text{DISTANCE}^2}$

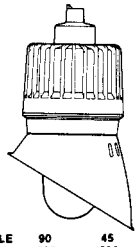
Test No. LSI-9054

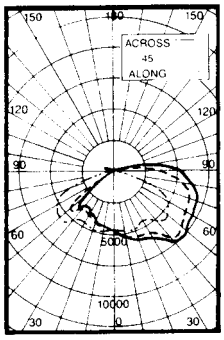
MERCURY VAPOR, METAL HALIDE, PULSE START
With Globe and Angle Reflector
320 - 400 Watt Mogul Base

CANDLEPOWER – 400 WATT MH
E-37 coated MH
36000 lumens

For 400 watt mercury vapor lamp multiply by .625

For CP of MHP320 multiply by .87
For CP of MHP350 multiply by 1.05
For CP of MHP400 multiply by 1.22





ANGLE	90	45	0
0	4595.	4595.	4595.
5.0	4618.	4919.	4939.
15.0	4793.	5333.	5517.
25.0	4570.	5472.	5935.
35.0	4805.	5945.	6540.
45.0	5494.	7013.	7441.
55.0	5056.	6497.	7083.
65.0	4155.	6198.	6846.
75.0	1238.	5725.	6557.
85.0	227.	4475.	5586.
90.0	85.	3287.	5204.
95.0	48.	2003.	4052.
105.0	8.	337.	1296.
115.0	0.	24.	163.
125.0	0.	0.	0.
135.0	0.	0.	0.
145.0	0.	0.	0.
155.0	0.	0.	0.
165.0	0.	0.	0.
175.0	0	0	0.
180.0	0.	0.	0.

Efficiency 70.2%

COEFFICIENTS OF UTILIZATION — ZONAL CAVITY METHOD

% EFFECTIVE CEILING CAVITY REFLECTANCE 1cc	80			70			50		30		10		0
% WALL REFLECTANCE 1w	70	50	30	10	70	50	30	10	50	30	10	50	30	10	0
ROOM CAVITY RATIO RCR	20% Effective Floor Cavity Reflectance														
0	.82	.82	.82	.82	.80	.80	.80	.80	.75	.75	.75	.71	.71	.71	.67	.67	.67	.65
1	.73	.69	.65	.62	.71	.67	.63	.60	.63	.60	.57	.59	.57	.55	.56	.54	.52	.50
2	.66	.59	.54	.49	.63	.57	.52	.48	.54	.50	.46	.51	.47	.44	.48	.45	.42	.40
3	.59	.51	.44	.39	.57	.49	.43	.39	.47	.41	.37	.44	.40	.36	.41	.38	.35	.33
4	.54	.45	.38	.33	.52	.44	.37	.32	.41	.36	.31	.39	.34	.30	.37	.33	.29	.28
5	.49	.39	.33	.27	.47	.38	.32	.27	.36	.31	.26	.34	.29	.26	.32	.28	.25	.23
6	.45	.35	.28	.23	.43	.34	.27	.23	.32	.26	.22	.30	.25	.22	.29	.24	.21	.19
7	.41	.31	.24	.20	.40	.30	.24	.19	.28	.23	.19	.27	.22	.18	.25	.21	.18	.16
8	.38	.28	.21	.17	.36	.27	.21	.17	.25	.20	.16	.24	.19	.16	.23	.19	.15	.14
9	.35	.25	.19	.14	.34	.24	.18	.14	.23	.18	.14	.22	.17	.13	.21	.16	.13	.12
10	.32	.22	.16	.12	.31	.22	.16	.12	.21	.16	.12	.20	.15	.12	.19	.14	.11	.10

SPACING TO MOUNTING HEIGHT RATIO — S/MH = 2.2
SPACING CRITERION (Along) — SC = 1.7
SPACING CRITERION (Across) — SC = 2.2

ILLUMINATION ON HORIZONTAL SURFACE

FOOTCANDLE CHART (Initial)
400 WATT M.H.
HORIZONTAL DISTANCE FROM SOURCE (Front) IN FEET

MOUNTING HEIGHT IN FEET	0°	5°	10°	15°	20°	25°	30°
10'	45.95	42.47	26.31	12.06	5.12	3.47	2.14
12'	31.91	32.42	23.08	12.36	6.57	3.85	2.41
14'	23.44	24.40	17.98	12.06	6.82	4.14	2.64
16'	17.95	18.74	14.52	11.29	6.95	4.33	2.83
18'	14.18	15.23	12.66	10.26	6.73	4.36	2.92
20'	11.49	12.59	10.62	8.37	6.58	4.45	3.06
25'	7.35	8.01	7.33	6.19	5.58	4.21	3.07

FOOTCANDLE CHART (Initial)
400 WATT M.H.
HORIZONTAL DISTANCE FROM SOURCE (Side) IN FEET

	0°	5°	10°	15°	20°	25°	30°
10'	45.95	32.70	19.42	8.63	3.72	1.42	.87
12'	31.91	24.96	16.07	9.13	4.51	2.34	.98
14'	23.44	20.07	12.66	8.90	4.87	2.84	1.60
16'	17.95	16.28	10.74	8.33	5.14	3.09	1.94
18'	14.18	13.23	9.25	7.14	4.96	3.11	2.01
20'	11.49	10.94	8.18	5.89	4.86	3.25	2.16
25'	7.35	7.12	6.03	4.55	3.89	3.11	2.26

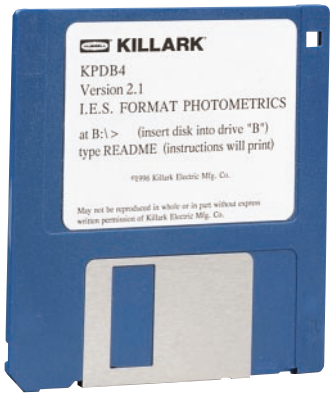
$FC = \frac{(\text{Candlepower}) (\cos \theta)}{\text{DISTANCE}^2}$

Test No. LSI-9053

PHOTOMETRIC FILES in IES Format AVAILABLE ON COMPUTER DISKS

The Illuminating Engineering Society (IES) has developed a recommended standard file format for the electronic transfer of photometric data (Standard IES LM-63-1986).

Photometric files for all EZ series fixture configurations are available on a single 3½" floppy disk.



Use of this disk will eliminate the time and effort required to manually key in photometric data. Included on each disk is a "README" file and an "INDEX" file. The README file provides instructions on how to access data while the INDEX file lists all fixture catalog numbers cross referenced to their appropriate IES format photometric database file name and other descriptive data.

To obtain a registered EZ series photometric disk, contact you local Killark sales representative, Regional Manager or Specification Engineer and ask for disk KPDB4.

Additional disks for other fixture series can also be provided on request.

Class I, Div. 2, Groups A,B,C,D①
Class I, Zone 2, Groups IIC,IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G
Class III, Div. 1 & 2
Suitable for wet locations
NEMA 3, 4

Listed - File E12976

Certified - File LR11713

FEATURES-SPECIFICATIONS

LINEARLITE™

Applications

LINEAR***LITE***™ DBF fluorescent fixtures are designed for general and task lighting of areas where flammable gases or vapors or combustible dusts may exist due to abnormal conditions resulting in the creation of a Class I, Division 2 or Class II or III, Div. 1 or 2, hazardous location as defined in the NEC. Also for lighting non-hazardous wet locations indoors and outdoors.

UL/CSA applies only to Class I, Division 2 and Class II, Division 2 applications. (Class II, Div. 1 pending).

Features

- Sheet steel 20 ga. housing with continuous weld prevents foreign matter from entering enclosure
- Lens frame assembly has silicon rubber gasketing and heat tempered glass lens
- Electrostatically applied polyester finish

DBF FLUORESCENT FIXTURES

CATALOG NUMBER	CONDUIT SIZE③	NUMBER OF LAMPS	LINE VOLTAGE 60 HERTZ	DESCRIPTION
DBF3212	3/4"	2	120VAC	32W T8 electronic ballast 265 MA 0°F start
DBF3242			277VAC	
DBF4012			120VAC	40W rapid start electronic F40T12 medium bi-pin 430MA
DBF4042			277VAC	
DBF6012			120VAC	60W rapid start high output F48T12/HO recessed double contact 800MA
DBF6042			277VAC	
DBF3213	3/4"	3	120VAC	32W T8 electronic ballast 265 MA 0°F start
DBF3243			277VAC	
DBF4013			120VAC	40W rapid start electronic F40T12 medium bi-pin 430MA
DBF4043			277VAC	
DBF6013			120VAC	60W rapid start high output F48T12/HO recessed double contact 800MA
DBF6043			277VAC	

- *Standard ballast starting temperature for 40 watt is 50°F. Optional cold weather electromagnetic ballast. (0°F starting 40 Watt) add suffix **CW** to catalog number. Note 60 watt high output ballasts are standard -20°F start.*
- *Ballasts are Class P Type with internal, automatic, thermally-activated protective device.*
- *Optional external ballast fusing availability by adding suffix **FB.***
- *For other voltages consult factory.*

*Fixtures are supplied without lamps. To order with lamps installed add suffix **WL.***

③ Hubs can be relocated in field to fixture end for feed-thru wiring.

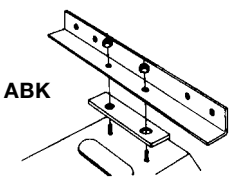
MOUNTING HARDWARE②

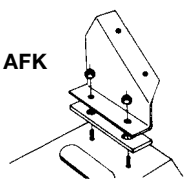
CATALOG NUMBER	DESCRIPTION
ABK	Angle bar chain bracket
AFK	45° fixed angle bracket
AAK	45° adjustable angle bracket
DBF-HUB	Replacement hub

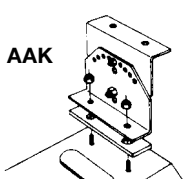
②Must be ordered separately. Brackets sold as sets.

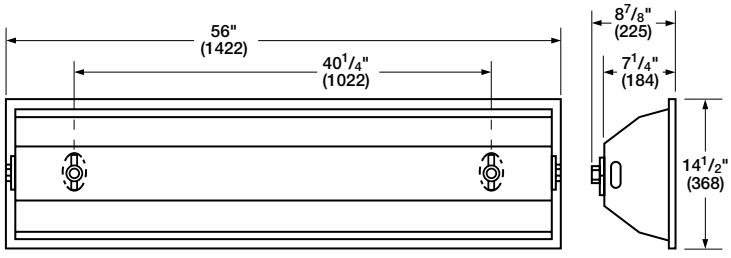
DBF HAZARDOUS LOCATION APPLICATION DATA①

NUMBER OF LAMPS	LAMP WATTS	RATED AMBIENT °C	SUPPLY WIRE SUITABLE FOR °C MIN.	CLASS I, DIV. 2, GROUPS A, B, C, D MAX. LAMP TEMP.°C UL/CSA TEMP/I.D.	CLASS II, DIV. 1 & 2, GROUPS E, F, G MAX. SURFACE TEMP. °CSUITABILITY UL/CSA TEMP/I.D.	CLASS III DIV. 1 & 2 UL/CSA	NEMA TYPE 3 (RAINTIGHT)	NEMA TYPE 4 (HOSEDOWN)
2	32/40	40	90	T6 (85°C/185°F)	T6 (85°C/185°F)	YES	YES	YES
3	32/40	40	90	T5 (100°C/212°F)	T6 (85°C/185°F)	YES	YES	YES
2	60	40	90	T4A (120°C/248°F)	T6 (85°C/185°F)	YES	YES	YES
3	60	40	90	T4 (138°C/275°F)	T6 (85°C/185°F)	YES	YES	YES









HUBBELL
KILLARK®

Class I, Div. 2, Groups A,B,C,D①
Class I, Zone 2, Groups IIC, IIB, IIA
Class II, Div. 2, Group G
Class III
Suitable for wet locations

UL 1570, UL 844
Listed - File E58677

Certified - File LR97692

FEATURES-SPECIFICATIONS

LINEAR*LITE*™

Applications

LINEAR***LITE***™ SSHZ fluorescent fixtures are of stainless steel construction for corrosion resistance.

SSHZ series fixtures are intended for general and task lighting in areas where flammable gases or vapors or combustible dusts may exist due to abnormal conditions resulting in the creation of a Class I, Division 2 or Class II, Div. 2 hazardous location as defined by the NEC with glass or optional acrylic lens. The SSHZ series is also suitable for wet locations.

Features

- Housings are formed from a single seamless piece of 20 ga. 304 grade stainless steel
- All external hardware is stainless steel
- Lens frame has continuous silicone gasket to provide positive seal when captive latches are securely fastened
- Heat tempered and impact resistant glass lens is standard — 5/32"
- Acrylic lens option maintains hazardous suitability **-71** suffix (.117")
- Fixture can be mounted horizontally or vertically
- Interior reflector is secured by safety cables for servicing

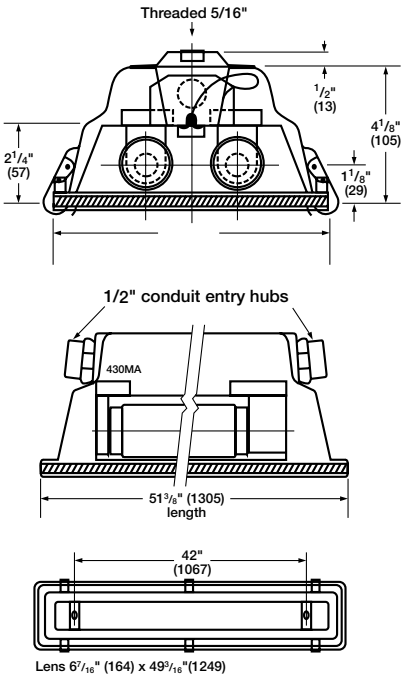
SSHZ STAINLESS STEEL FLUORESCENT FIXTURES				
CATALOG NUMBER	CONDUIT SIZE	NUMBER OF LAMPS	LINE VOLTAGE 60 HERTZ	DESCRIPTION
SSHZ-4240R-E1	1/2"	2	120VAC	40W rapid start F40T12 medium bi-pin 430MA
SSHZ-4240R-E4			277VAC	
SSHZ-4340R-E1	1/2"	3	120VAC	40W rapid start F40T12 medium bi-pin 430MA
SSHZ-4340R-E4			277VAC	

①*Do not install where marked operating temperature exceeds ignition temperature of hazardous atmosphere Temperature code of T3C 160ºC at 40ºC. Max ambient operating temperature: 25°C.*

Energy saving ballasts are supplied as standard with 50°F starting temperature
*Change **E** in catalog number to **L** for 0° starting temperature*
***A** for T-12 50°F electronic ballast*
***B** for T-8 32W 50°F electronic ballast*

*Add **-71** suffix for Acrylic lens.*
For other voltages, consult factory.

Dimensions

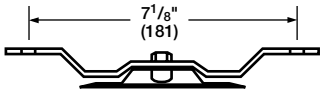


Mounting Methods

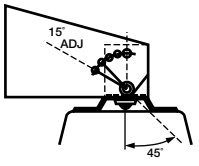
Luminaire can be suspended by eye bolts or 5/16" stem hangers. With suspension bracket, it can be secured directly to ceiling or vertical surface.

MOUNTING METHODS	
CATALOG NUMBER	DESCRIPTION
SBR-27	Suspension wall or ceiling bracket
SSHZ-45	Adjustable Wall bracket

SBR-27 or SSHZ-45 consists of two brackets (1 set). Mounting brackets must be ordered separately



Suspension Bracket



Wall Bracket

HUBBELL
KILLARK®

Class I, Div. 1 & 2 Groups C,D
Class I, Zones 1 & 2, Groups IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G
Class III, Div. 1 & 2
NEMA 3, 4X, 7(C,D) 9(E,F,G)
Suitable for wet locations
Suitable for paint spray booths

Listed - File E12976 and E89665 (Marine)

Certified - File LR11713

FEATURES-SPECIFICATIONS

Applications
HFX Series fluorescent fixtures are designed for installations where moisture, dirt, dust, corrosion and vibration may be present, or NEMA 3 and 4x areas where wind, water and snow can be expected. They can also be used in locations made hazardous due to the presence of flammable or explosive gases, vapors and combustible ducts as defined by the NEC.

Typical applications include classified areas such as inside paint spray booths, paint manufacturing plants, ammunition facilities, oil and gas producing and refining plants, off-shore and dockside installations, tank farms, pipeline pumping stations and marine loading and fuel transfer terminals.

Features
- UL Listed and labeled for use inside paint spray booths and rooms
- Construction is strong lightweight corrosion resistant copper-free aluminum alloy, less than 4/10 of 1%
- Class P ballast(s) with internal automatic thermally activated protective device
- All external hardware is corrosion resistant 316 stainless steel to provide maintenance free long life
- UL factory sealed construction (no external seals required). Saves installation time and cost
- Electronic energy efficient ballasts are standard on 430 MA fixtures and meet the requirements of many states
- Extruded aluminum reflectors are easily removable for cleaning. Ultra white baked enamel finish
- Optional 316 stainless steel wire guard for added protection
- Threaded O-Ring gasketed covers provide easy access to lamp chambers, ballast and wiring compartment
- UL Listed externally fused ballast option; protects fixture on line side of ballast, prevents ballast burnout
- Suitable for use in both indoor and outdoor wet locations
- Relamping from either end permits easy access, speed and flexibility in relamping
- Spring loaded sockets on both lamp ends provide positive electrical contact and improved vibration resistance

Compliances
- UL-1570, Standard for Fluorescent Lighting Fixtures
- UL Marine Type Lighting Fixtures
- UL-844, Standard for Lighting Fixtures for Hazardous Locations
- CSA C22.2 137-M1981
- Meets requirements of NFPA 70-1987 Article 516 and NFPA standard 33

Catalog Number Logic

HFX - 000 - 00 - 00

Constant for HFX Series

Lamp Current
265—265 MA, 32W T8 (0°F Starting, Electronic)
430—430 MA, 40W RS (50°F Starting Electronic)②
800—800 MA, 60W RS HO (-20°F Starting)
1500—1500 MA, 110W RS VHO (-20°F Starting)

Voltage
1—120V, 60 Hz.
4—277, 60 Hz.
7—220V, 60 Hz.
8—220/240V, 50 Hz., 430 MA
9—Special (consult factory)

Options
CW—0°F ballast for 40W (430 MA) fixtures (not available with energy efficient ballast)
FB—Individually in-line fused ballast (external)
WL—With lamps supplied

Number of Lamps
2—2 lamps
3—3 lamps
4—4 lamps

HFX HAZARDOUS LOCATION APPLICATION DATA①

FIXTURE SERIES	LAMP WATTS	RATED AMBIENT °C	SUITABLE FOR °C SUPPLY WIRE	CLASS I, DIV. 1 & 2 MAX. SURFACE TEMP.			CLASS II, DIV. 1 & 2 MAX. SURFACE TEMP.			CLASS III DIV. 1 & 2 SUITABILITY	UL MARINE	PAINT SPRAY SUITABLE	NEMA 3 & 4
				TEMP.	T-CODE	GROUPS	TEMP.	T-CODE	GROUPS				
HFX	32	40	90	100°C	T5	C, D	120°C	T4A	E, F, G	Yes	Yes	Yes	Yes
HFX	40	40	90	100°C	T5	C, D	120°C	T4A	E, F, G	Yes	Yes	Yes	Yes
HFX	60	40	90	100°C	T5	C, D	120°C	T4A	E, F, G	Yes	Yes	Yes	Yes
HFX	110	40	90	100°C	T5	C, D	120°C	T4A	E, F, G	Yes	Yes	Yes	Yes

①*Ratings apply to all 2, 3, and 4 lamp models.*
②*430 MA ballasts 60°F start with 34watt lamps.*

HUBBELL
KILLARK®

Class I, Div. 1 & 2 Groups C,D
Class I, Zones 1 & 2, Groups IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G
Class III, Div. 1 & 2
NEMA 3, 4X, 7(C,D) 9(E,F,G)
Suitable for wet locations
Suitable for paint spray booths

Listed - File E12976 and E89665 (Marine)

Certified - File LR11713

ORDERING INFORMATION

HFX FLUORESCENT LIGHT FIXTURES

CATALOG NUMBER①②		CONDUIT SIZE	LINE VOLTAGE @60 HERTZ	DESCRIPTION	NUMBER OF LAMPS
	③				
HFX-265-12 HFX-265-42	HFX-265-12-C HFX-265-42-C	3/4"	120V 277V	32W T8 electronic ballast 265MA	Two Lamp
HFX-430-12 HFX-430-42	HFX-430-12-C HFX-430-42-C		120V 277V	40W rapid start electronic F40T12 medium Bi-Pin 430MA	
HFX-800-12 HFX-800-42	HFX-800-12-C HFX-800-42-C		120V 277V	60W rapid start high output F48T12/HO recessed double contact 800MA	
HFX-1500-12 HFX-1500-42	HFX-1500-12-C HFX-1500-42-C		120V 277V	110W rapid start VHO F48T12/VHO recessed double contact 1500MA	
HFX-265-13 HFX-265-43	HFX-265-13-C HFX-265-43-C	3/4"	120V 277V	32W T8 electronic ballast 265MA	Three Lamp
HFX-430-13 HFX-430-43	HFX-430-13-C HFX-430-43-C		120V 277V	40W rapid start electronic F40T12 medium Bi-Pin 430MA	
HFX-800-13 HFX-800-43	HFX-800-13-C HFX-800-43-C		120V 277V	60W rapid start high output F48T12/HO recessed double contact 800MA	
HFX-1500-13 HFX-1500-43	HFX-1500-13-C HFX-1500-43-C		120V 277V	110w rapid start VHO F48T12/VHO recessed double contact 1500MA	
HFX-265-14 HFX-265-44		3/4"	120V 277V	32W T8 electronic ballast 265MA	Four Lamp④
HFX-430-14 HFX-430-44			120V 277V	40W rapid start electronic F40T12 medium Bi-Pin 430MA	
HFX-800-14 HFX-800-44			120V 277V	60W rapid start high output F48T12/HO recessed double contact 800MA	
HFX-1500-14 HFX-1500-44			120V 277V	110W rapid start VHO F48T12/VHO recessed double contact 1500MA	

① *Standard ballasts starting temperatures:*
32 Watt (265MA) Electronic 0°F
40 Watt (430MA) Electronic 50°F, 60°F with 34 Watt lamps
60 Watt (800MA) Electronic -20°F
110 Watt (1500MA) Electronic -20°F

*Optional cold weather electromagnetic ballast (0°F starting 40 Watt 430MA) add suffix **CW** to catalog number.*

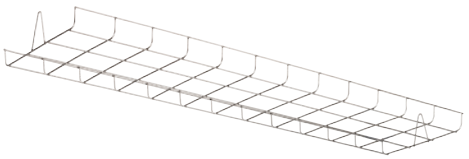
② *Optional UL listed in-line ballast fusing is available by adding suffix **FB** to catalog number (UL only).*

③ *For Canadian version of 2 & 3 lamp fixtures, includes factory poured seal per Canadian installation code. Not required for 4-lamp fixtures (separate ballast and wiring chambers). Available only from Hubbell Canada or its authorized distributors.*

④ *Safety chain accessory catalog number **HFX-SC** available, supplied standard with 4 lamp fixtures.*

WIRE GUARD

CATALOG NUMBER	DESCRIPTION
2HFX-G4	2-Lamp 316 grade stainless steel
3HFX-G4	3-Lamp 316 grade stainless steel



4 lamp fixture requires two 2HFX-G4 guards.

HUBBELL®
KILLARK®

BALLAST DATA

Class I, Div. 1 & 2 Groups C,D
Class I, Zones 1 & 2, Groups IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G
Class III, Div. 1 & 2
NEMA 3, 4X, 7(C,D) 9(E,F,G)
Suitable for wet locations
Suitable for paint spray booths

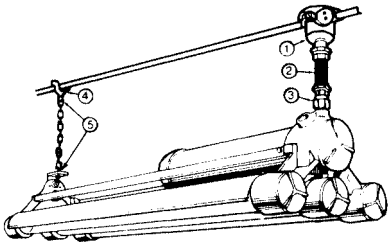
Listed - File E12976 and E89665 (Marine)

Certified - File LR11713

HFX BALLAST DATA					
CATALOG NUMBER	NO. OF LAMPS	VOLTAGE	LINE CURRENT AMPS	INPUT WATTS	STARTING TEMPERATURE
32 WATT T-8 ELECTRONIC 48" 265MA					
HFX-265-12	2	120	.62	71	0°F (-18°C)
HFX-265-42	2	277	.27	71	0°F (-18°C)
HFX-265-13①	3	120	.75	88	0°F (-18°C)
HFX-265-43①	3	277	.32	88	0°F (-18°C)
HFX-265-14	4	120	1.24	142	0°F (-18°C)
HFX-265-44	4	277	.54	142	0°F (-18°C)
40 WATT RAPID START ELECTRONIC T-12 MEDIUM BI-PIN 48" 430MA③					
HFX-430-12	2	120	.51②	60	60°F (16°C)
HFX-430-42	2	277	.22②	60	60°F (16°C)
HFX-430-13	3	120	.69②	91	60°F (16°C)
HFX-430-43	3	277	.30②	91	60°F (16°C)
HFX-430-14	4	120	1.02②	120	60°F (16°C)
HFX-430-44	4	277	.44②	120	60°F (16°C)
HFX-430-12-CW	2	120	.75	90	0°F (-18°C)
HFX-430-42-CW	2	277	.33	90	0°F (-18°C)
HFX-430-13-CW	3	120	1.21	143	0°F (-18°C)
HFX-430-43-CW	3	277	.53	143	0°F (-18°C)
HFX-430-14-CW	4	120	1.50	180	0°F (-18°C)
HFX-430-44-CW	4	277	.66	180	0°F (-18°C)
60 WATT RAPID START HIGH OUTPUT T-12 RECESSED DOUBLE CONTACT 48" 800MA					
HFX-800-12	2	120	1.40	135	-20°F (-29°C)
HFX-800-42	2	277	.61	145	-20°F (-29°C)
HFX-800-13	3	120	2.40	260	-20°F (-29°C)
HFX-800-43	3	277	1.03	235	-20°F (-29°C)
HFX-800-14	4	120	2.80	270	-20°F (-29°C)
HFX-800-44	4	277	1.22	290	-20°F (-29°C)
110 WATT RAPID START VERY HIGH OUTPUT T-12 RECESSED DOUBLE CONTACT 48" 1500MA					
HFX-1500-12	2	120	2.10	242	-20°F (-29°C)
HFX-1500-42	2	277	.92	242	-20°F (-29°C)
HFX-1500-13	3	120	3.38	376	-20°F (-29°C)
HFX-1500-43	3	277	1.48	377	-20°F (-29°C)
HFX-1500-14	4	120	4.20	484	-20°F (-29°C)
HFX-1500-44	4	277	1.84	484	-20°F (-29°C)

① *T8 3 lamp fixtures use a single ballast.*
② *Line current using 34 Watt lamps. Start temperature for 40 Watt lamps 50°F (10°C). 40 Watt lamps current approximately 24% higher.*
③ *430MA "CW" cold weather ballasts are electromagnetic.*

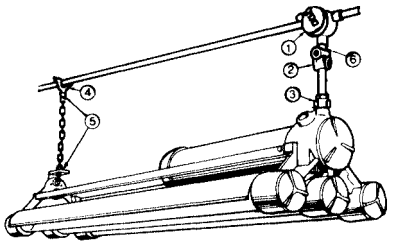
Typical installation using conduit hardware.



Dummy (non-powered) end lowers for relamping clearance, which is required when fixtures are mounted in close proximity. Flexible mounting provides free swing and impact protection.

1. Splice Box/Fixture Hanger (HXB)
2. Flexible Pendant Hanger (EKJ)
3. Union (GUM)
4. Rigid Support Saddle Bracket (KFHS)
5. Support Hook (KEFHM)

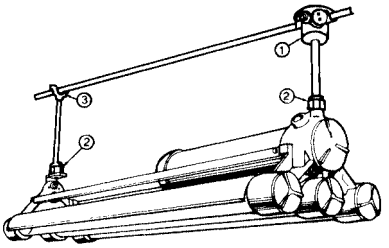
Note: Leave extra links to support fixture in relamping position. Chain furnished by others.



Dummy (non-powered) end lowers for relamping clearance, which is required when fixtures are mounted in close proximity.

1. Splice Box/Fixture Hanger (XFH)
2. Swivel Hanger (KESD)
3. Union (GUM)
4. Rigid Support Saddle Bracket (KFHS)
5. Support Hook (KEFHM)

Note: Leave extra links to support fixture in relamping position. Chain furnished by others.



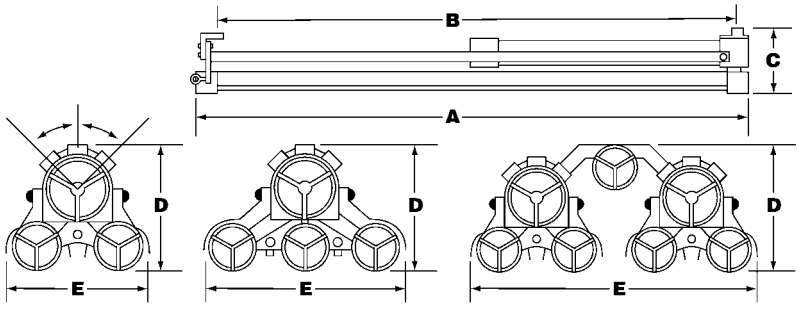
Rigid mounted—for installations where relamping can be accomplished without lowering dummy end.

1. Splice Box/Fixture Hanger (HXB)
2. Union (GUM)
3. Rigid Support Saddle Bracket (KHFS)

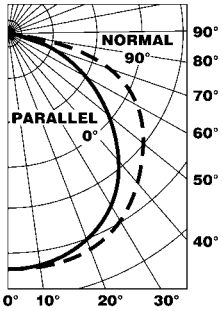
For wall mounting, use securely fastened 3/4" pipe 6" or less in length. Floor flange (furnished by others) recommended for dummy end as well as chain or cable providing vertical strain relief from above fixture. Chain furnished by others.

MOUNTING HARDWARE			
CATALOG NUMBER	HUB SIZE	LENGTH	DESCRIPTION
HXB-12 HXB-22	1/2" 3/4"	— —	**HXB SERIES** Splice Box/ 3/4" Fixture Hanger
EKJ-24	3/4"	4	**EKJ SERIES** Flexible Pendant Hanger
EKJ-26	3/4"	6	
EKJ-28	3/4"	8	
EKJ-210	3/4"	10	
EKJ-212	3/4"	12	
EKJ-215	3/4"	15	
EKJ-218	3/4"	18	
GUM-2	3/4"		**GU SERIES** Male Union

MOUNTING HARDWARE		
CATALOG NUMBER	HUB SIZE	DESCRIPTION
XFH-22	3/4"	**XFH SERIES** Splice box/fixture hanger
KESD-75	3/4"	**KESD SERIES** Swivel Hanger 15° swivel drop from center and full 360° free swing
KFHS-5075	3/4"	**KFHS5075 SERIES** Rigid support saddle bracket for fluorescent fixtures (dummy end) Will support 350 lbs. and straddle Max. 1-1/4" conduit
KEFHM-75	3/4"	**KEFHM SERIES** Safety support hook with 3/4" male end For dummy end of fixture Will support 200 lbs. screw closed 3/8" jaw opening
HFX-SC	—	**HFX SERIES** Safety chain (36" length), standard on 4-lamp fixture



HFX DIMENSIONS							
HFX ANGLE	CONDUIT SIZE	DIMENSIONS					NET WEIGHT
		A	B	C	D	E	
2-Lamp	3/4-14 NPT	52-13⁄16" (1367)	48-3/8" (1229)	9-3/32" (231)	9-3/32" (231)	11" (279)	47.7 Lbs.
3-Lamp	3/4-14 NPT	52-13⁄16" (1367)	48-3/8" (1229)	9-3/32" (231)	9-3/32" (231)	15-5/8" (397)	63.0 Lbs.
4-Lamp	3/4-14 NPT	52-13⁄16" (1367)	48-3/8" (1229)	9-3/32" (231)	10-1/8" (257)	23" (584)	99.9 Lbs.



Total Bare Lamp Lumens 6400
All data provided is for F40T12RS/WW lamps 40W rapid start warm white. For Candlepower/Lumen multipliers of other lamps use the following:

32W T8 (2850 lumen lamp) .89

34W T12 (2700 lumen lamp) .84

60W F48T12/WW/HO Warm White High Output 1.35

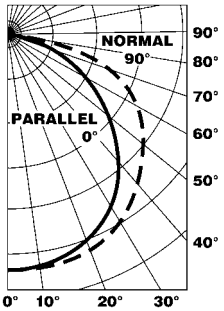
110W F48T12/WW/VHO Warm White Very High Output 1.97

ZONAL LUMENS

ZONE	LUMENS
0-30	1076
0-40	1769
0-60	3194
0-90	4189

CANDLEPOWER 2-40/T12 RAPID START

VERTICAL ANGLE	HORIZONTAL ANGLE					ZONAL LUMENS
	0	22.5	45	67.5	90	
0.0	1325.	1325.	1325.	1325.	1325.	—
5.0	1359.	1366.	1366.	1369.	1365.	130
10.0	1313.	1321.	1328.	1338.	1325.	—
15.0	1309.	1315.	1323.	1333.	1333.	375
20.0	1288.	1302.	1318.	1331.	1333.	—
25.0	1196.	1213.	1238.	1252.	1259.	571
30.0	1147.	1169.	1198.	1229.	1236.	—
35.0	1037.	1065.	1104.	1145.	1160.	693
40.0	961.	1000.	1047.	1105.	1126.	—
45.0	819.	857.	921.	990.	1019.	714
50.0	737.	784.	867.	950.	982.	—
55.0	634.	690.	796.	899.	937.	711
60.0	518.	584.	711.	821.	836.	—
65.0	412.	498.	645.	693.	699.	594
70.0	263.	363.	465.	485.	487.	—
75.0	172.	281.	326.	339.	343.	318
80.0	80.	168.	189.	215.	223.	—
85.0	25.	75.	89.	89.	84.	84
90.0	6.	11.	14.	20.	22.	—



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34W T12 (2700 lumen lamp) .84

60W F48T12/WW/HO Warm White High Output 1.35

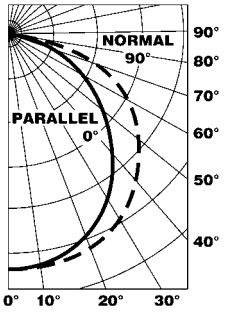
110W F48T12/WW/VHO Warm White Very High Output 1.97

ZONAL LUMENS

ZONE	LUMENS
0-30	1583
0-40	2613
0-60	4743
0-90	6194

CANDLEPOWER 3-40/T12 RAPID START

VERTICAL ANGLE	HORIZONTAL ANGLE					ZONAL LUMENS
	0	22.5	45	67.5	90	
0.0	1971.	1971.	1971.	1971.	1971.	—
5.0	1988.	1985.	1987.	1994.	1990.	190
10.0	1946.	1949.	1953.	1960.	1962.	—
15.0	1929.	1934.	1944.	1959.	1963.	552
20.0	1897.	1907.	1926.	1947.	1961.	—
25.0	1773.	1788.	1817.	1850.	1866.	842
30.0	1688.	1713.	1758.	1802.	1819.	—
35.0	1551.	1580.	1640.	1701.	1722.	1030
40.0	1427.	1467.	1545.	1626.	1661.	—
45.0	1232.	1281.	1376.	1487.	1528.	1070
50.0	1101.	1159.	1284.	1417.	1463.	—
55.0	952.	1027.	1188.	1340.	1395.	1061
60.0	780.	871.	1068.	1233.	1254.	—
65.0	620.	735.	961.	1042.	1049.	887
70.0	403.	540.	706.	739.	742.	—
75.0	247.	414.	486.	512.	520.	475
80.0	120.	253.	290.	323.	323.	—
85.0	30.	93.	92.	84.	81.	89
90.0	3.	9.	12.	19.	19.	—



Total Bare Lamp Lumens 12800
All data provided is for F40T12RS/WW lamps 40W rapid start warm white. For Candlepower/Lumen multipliers of other lamps use the following:

32W T8 (2850 lumen lamp) .89

34W T12 (2700 lumen lamp) .84

60W F48T12/WW/HO Warm White High Output 1.35

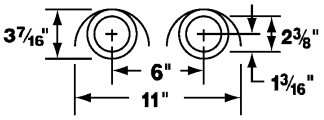
110W F48T12/WW/VHO Warm White Very High Output 1.97

ZONAL LUMENS

ZONE	LUMENS
0-30	2152
0-40	3538
0-60	6388
0-90	8379

CANDLEPOWER 2-40/T12 RAPID START

VERTICAL ANGLE	HORIZONTAL ANGLE					ZONAL LUMENS
	0	22.5	45	67.5	90	
0.0	2650.	2650.	2650.	2650.	2650.	—
5.0	2718.	2733.	2733.	2738.	2730.	261
10.0	2627.	2641.	2656.	2677.	2650.	—
15.0	2617.	2630.	2646.	2665.	2665.	750
20.0	2577.	2604.	2635.	2663.	2666.	—
25.0	2393.	2427.	2476.	2504.	2518.	1141
30.0	2294.	2338.	2396.	2458.	2472.	—
35.0	2074.	2131.	2207.	2290.	2321.	1386
40.0	1922.	2000.	2095.	2209.	2252.	—
45.0	1637.	1713.	1843.	1980.	2037.	1427
50.0	1474.	1567.	1734.	1901.	1963.	—
55.0	1269.	1381.	1592.	1798.	1874.	1422
60.0	1035.	1168.	1422.	1643.	1672.	—
65.0	823.	997.	1291.	1386.	1398.	1187
70.0	526.	726.	929.	970.	973.	—
75.0	343.	562.	652.	678.	686.	636
80.0	159.	336.	378.	431.	446.	—
85.0	50.	149.	177.	177.	168.	167
90.0	13.	22.	28.	41.	44.	—

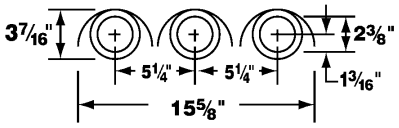


HFX-430-12
Lamp Type F40T12RS/WW
2 – 48" 40 Watt 3200 Lumen
Warm White Lamps

2 LAMP

% EFFECTIVE CEILING CAVITY REFLECTANCE	rcc	20% EFFECTIVE FLOOR CAVITY REFLECTANCE																	
		.80				.70				.50			.30			.10			.00
% WALL REFLECTANCE	rw	.70	.50	.30	.10	.70	.50	.30	.10	.50	.30	.10	.50	.30	.10	.50	.30	.10	.00
ROOM CAVITY RATIOS	0	.78	.78	.78	.78	.76	.76	.76	.76	.73	.73	.73	.70	.70	.70	.67	.67	.67	.65
	1	.71	.68	.66	.63	.70	.67	.64	.62	.64	.62	.60	.62	.60	.58	.59	.58	.57	.55
	2	.65	.60	.56	.52	.63	.59	.55	.51	.56	.53	.50	.54	.51	.49	.52	.50	.48	.46
	3	.60	.53	.48	.43	.58	.52	.47	.43	.50	.46	.42	.48	.45	.42	.46	.43	.41	.39
	4	.54	.47	.41	.37	.53	.46	.41	.36	.44	.40	.36	.43	.39	.35	.41	.38	.35	.34
	5	.50	.41	.35	.31	.48	.40	.35	.31	.39	.34	.30	.38	.33	.30	.36	.33	.30	.28
	6	.45	.37	.31	.26	.44	.36	.30	.26	.35	.30	.26	.34	.29	.26	.33	.29	.26	.24
	7	.42	.33	.27	.23	.41	.32	.27	.23	.31	.26	.23	.30	.26	.22	.29	.25	.22	.21
	8	.38	.29	.24	.20	.37	.29	.33	.20	.28	.23	.20	.27	.23	.19	.26	.22	.19	.18
	9	.35	.26	.21	.17	.34	.26	.21	.21	.17	.25	.20	.17	.24	.20	.17	.24	.20	.17
	10	.33	.24	.19	.15	.32	.24	.18	.15	.23	.18	.15	.22	.18	.15	.22	.18	.15	.14

Spacing Criteria: End = 1.3 Diagonal = 1.3 Cross = 1.4

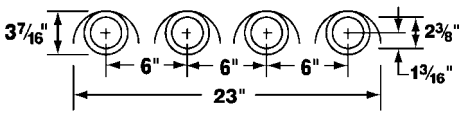


HFX-430-13
Lamp Type F40T12RS/WW
3 – 48" 40 Watt 3200 Lumen
Warm White Lamps

3 LAMP

% EFFECTIVE CEILING CAVITY REFLECTANCE	rcc	20% EFFECTIVE FLOOR CAVITY REFLECTANCE																	
		.80				.70				.50			.30			.10			.00
% WALL REFLECTANCE	rw	.70	.50	.30	.10	.70	.50	.30	.10	.50	.30	.10	.50	.30	.10	.50	.30	.10	.00
ROOM CAVITY RATIOS	0	.77	.77	.77	.77	.75	.75	.75	.75	.72	.72	.72	.69	.69	.69	.66	.66	.66	.65
	1	.71	.68	.65	.63	.69	.66	.64	.62	.63	.61	.60	.61	.59	.58	.59	.57	.56	.55
	2	.64	.59	.55	.51	.63	.58	.54	.51	.56	.52	.49	.54	.51	.48	.52	.49	.47	.46
	3	.59	.52	.47	.43	.57	.51	.46	.43	.49	.45	.42	.47	.44	.41	.46	.43	.40	.39
	4	.54	.46	.41	.36	.52	.45	.40	.36	.44	.39	.36	.42	.38	.35	.41	.37	.35	.33
	5	.49	.41	.35	.30	.47	.40	.34	.30	.38	.34	.30	.37	.33	.30	.36	.32	.29	.28
	6	.45	.36	.30	.26	.44	.36	.30	.26	.34	.29	.26	.33	.29	.26	.32	.28	.25	.24
	7	.41	.32	.27	.23	.40	.32	.26	.23	.31	.26	.22	.30	.25	.22	.29	.25	.22	.21
	8	.38	.29	.23	.19	.37	.28	.23	.19	.28	.23	.19	.27	.22	.19	.26	.22	.19	.18
	9	.35	.26	.20	.17	.34	.26	.20	.17	.25	.20	.17	.24	.20	.17	.23	.19	.16	.15
	10	.32	.24	.18	.15	.32	.23	.18	.15	.23	.18	.15	.22	.18	.15	.21	.17	.14	.13

Spacing Criteria: End = 1.3 Diagonal = 1.3 Cross = 1.4



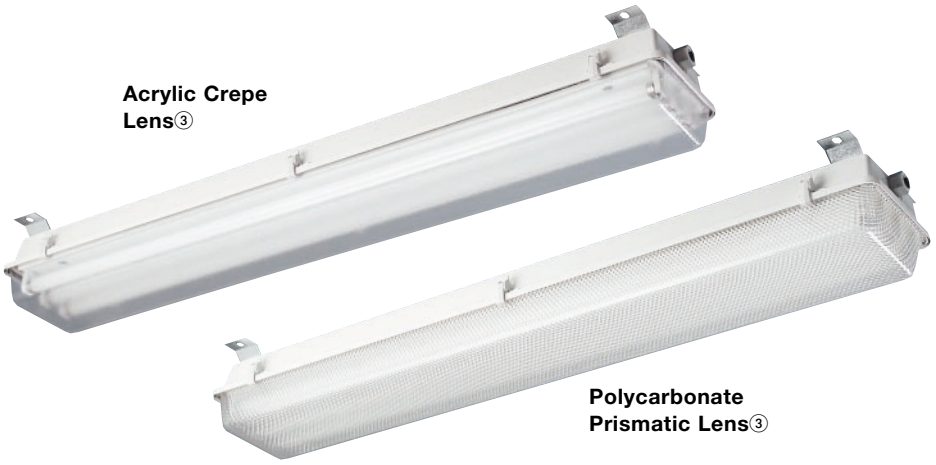
HFX-430-14
Lamp Type F40T12RS/WW
4 – 48" 40 Watt 3200 Lumen
Warm White Lamps

4 LAMP

% EFFECTIVE CEILING CAVITY REFLECTANCE	rcc	20% EFFECTIVE FLOOR CAVITY REFLECTANCE																	
		.80				.70				.50			.30			.10			.00
% WALL REFLECTANCE	rw	.70	.50	.30	.10	.70	.50	.30	.10	.50	.30	.10	.50	.30	.10	.50	.30	.10	.00
ROOM CAVITY RATIOS	0	.78	.78	.78	.78	.76	.76	.76	.76	.73	.73	.73	.70	.70	.70	.67	.67	.67	.65
	1	.71	.68	.66	.63	.70	.67	.64	.62	.64	.62	.60	.62	.60	.58	.59	.58	.57	.55
	2	.65	.60	.56	.52	.63	.59	.55	.51	.56	.53	.50	.54	.51	.49	.52	.50	.48	.46
	3	.60	.53	.48	.43	.58	.52	.47	.43	.50	.46	.42	.48	.45	.42	.46	.43	.41	.39
	4	.54	.47	.41	.37	.53	.46	.41	.36	.44	.40	.36	.43	.39	.35	.41	.38	.35	.34
	5	.50	.41	.35	.31	.48	.40	.35	.31	.39	.34	.30	.38	.33	.30	.36	.33	.30	.28
	6	.45	.37	.31	.26	.44	.36	.30	.26	.35	.30	.26	.34	.29	.26	.33	.29	.26	.24
	7	.42	.33	.27	.23	.41	.32	.27	.23	.31	.26	.23	.30	.26	.22	.29	.25	.22	.21
	8	.38	.29	.24	.20	.37	.29	.23	.20	.28	.23	.20	.27	.23	.19	..26	.22	.19	.18
	9	.35	.26	.21	.17	.34	.26	.21	.17	.25	.20	.17	.24	.20	.17	.24	.20	.17	.15
	10	.33	.24	.19	.15	.32	.24	.18	.15	.23	.18	.15	.22	.18	.15	.22	.18	.15	.14

Spacing Criteria: End = 1.3 Diagonal = 1.3 Cross = 1.4

NWL SERIES • WET LOCATION FLUORESCENT LIGHTING
NHL SERIES • HAZARDOUS LOCATION FLUORESCENT LIGHTING



NWL
Wet Locations
IP65

NHL
Class I Div. 2 A,B,C,D
Class I Zone 2 IIC, IIB, IIA
Class II Div. 2 F,G
Wet Locations
IP65

ABS **"Indoor Drip-Proof"**

FEATURES-SPECIFICATIONS

LINEARLITE™

Applications
LINEAR*LITE*™ Non-Metallic Wet Location Fluorescent fixtures are suitable for locations where enclosed and gasketed fixtures are required because of exposure to moisture, dust, and corrosives. Applications include food processing, meat - poultry plants, car washes, tunnels, warehouses and waste water & sewage treatment facilities. NHL Series additionally can be used where exposed to Division 2 hazardous vapors or dusts as defined by the NEC.

Features
- Wet Location Suitability
- 2 - 3/4" NPT stainless steel hubs - one each end
- Housing - one piece fiberglass reinforced polyester, corrosion resistant
- Lens - Impact Resistant Acrylic Crepe (standard) or Polycarbonate Prismatic
- Suitability up to 50°C ambient - see chart page L115
- Rust-free heavy duty Celcon (tm Hoechst Celanese) acetal plastic latches

Options
- Fused ballasts, suffix **F1** for 120V, **F4** for 277V
- Battery Backup for single 32 to 86 watt lamp only, suffix **BB** (see note⑤ page L115 for more information)
- Stainless Steel Latch, suffix **SS**

Compliances
NWL & NHL Series
Wet Locations, IP65

ABS (American Bureau of Shipping)
Type approval, "Indoor Drip-Proof"

NHL Series
Class I Div. 2, A,B,C,D
Class I Zone 2 IIC, IIB, IIA
Class II Div. 2, E,F,G

NWL WET LOCATION/NHL HAZARDOUS LOCATION FLUORESCENT

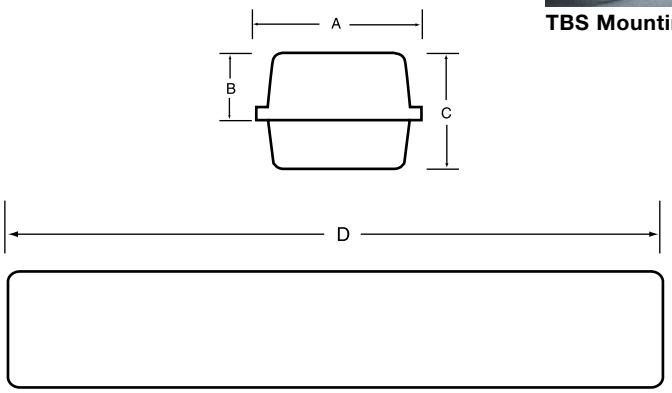
NUMBER OF LAMP/WATTS	VOLTAGE AC 60HZ①	DESCRIPTION	CATALOG NUMBER②	
			NWL WET LOCATION	NHL HAZARDOUS LOCATION
2 - 17W	120 277	2' 2-lamp T-8 Electronic 50°F Start Medium Bi-Pin	**NWL2173ACB1** **NWL2173ACB4**	**NHL2173ACB1** **NHL2173ACB4**
2 - 20W	120 277	2' 2-lamp T-12 Energy Saving 50°F Start Medium Bi-Pin	**NWL2203ACE1** **NWL2203ACE4**	**NHL2203ACE1** **NHL2203ACE4**
2 - 28W	120 277	4' 2-lamp T-5 Electronic 0°F Start Miniature Bi-Pin	**NWL2283ACD1** **NWL2283ACD4**	**NHL2283ACD1** **NHL2283ACD4**
3 - 28W	120 277	4' 3-lamp T-5 Electronic 0°F Start Miniature Bi-Pin	**NWL3283ACD1** **NWL3283ACD4**	**NHL3283ACD1** **NHL3283ACD4**
4 - 28W	120 277	4' 4-lamp T-5 Electronic 0°F Start Miniature Bi-Pin	**NWL4283ACD1** **NWL4283ACD4**	**NHL4283ACD1** **NHL4283ACD4**
2 - 32W	120 277	4' 2-lamp T-8 Electronic 0°F Start Medium Bi-Pin	**NWL2323ACT1** **NWL2323ACT4**	**NHL2323ACT1** **NHL2323ACT4**
3 - 32W	120 277	4' 3-lamp T-8 Electronic 0°F Start Medium Bi-Pin	**NWL3323ACT1** **NWL3323ACT4**	**NHL3323ACT1** **NHL3323ACT4**
2 - 34W	120 277	4' 2-lamp T-12 Electronic 60°F Start Medium Bi-Pin (50° Start With 40Watt Lamps)	**NWL2343ACA1** **NWL2343ACA4**	**NHL2343ACA1** **NHL2343ACA4**
2 - 44W	120 277	4' 2-lamp T-8 Electronic 50°F Start High Output Recessed Double Contact	**NWL2443ACT1** **NWL2443ACT4**	**NHL2443ACT1** **NHL2443ACT4**
2 - 60W	120 277	4' 2-lamp T-12 Electronic 50°F Start High Output Recessed Double Contact	**NWL2603ACA1** **NWL2603ACA4**	**NHL2603ACA1** **NHL2603ACA4**
2 - 59W	120 277	8' 2-lamp T-8 Electronic -20°F Start Single Pin	**NWL2593ACH1** **NWL2593ACH4**	**NHL2593ACH1** **NHL2593ACH4**
2 - 86W	120 277	8' 2-lamp T-8 Electronic -20°F Start High Output Recessed Double Contact	**NWL2863ACH1** **NWL2863ACH4**	**NHL2863ACH1** **NHL2863ACH4**

① Consult Factory for other available voltages.
② Standard lens is Acrylic Crepe, change AC to PP for Polycarbonate Prismatic Lens.
③ Fixtures shown with included TBS accessory mounting brackets. See Page L115 for other available styles.

See next page for accessories, ambient temperature ratings and hazardous location suitabilities.

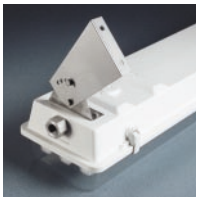
LINEARLITE™

Dimensions



Accessories


TBS Mounting Kit


TBA Angle Kit


EBU13


EBA13


NWL Switch/LED⑤


Breather⑤


Celcon™ Latches

DIMENSIONS				
LENGTH	A	B	C	D
2'	6.63"	3.13"	4.88"	25.88"
4'/8'	7.38"	2.98"	5.18"	49.95"/97.75"

ACCESSORIES - MOUNTING BRACKETS④	
CATALOG NUMBER	DESCRIPTION
TBS2*	Top bracket surface mount kit. 2', 4' (3/8" bolt dia.)
TBS3*	Top bracket surface mount kit. 8' (3/8" bolt dia.)
TBA2	Top bracket wall/angle kit. 2', 4' (3/8" bolt dia.)
TBA3	Top bracket wall/angle kit. 8' (3/8" bolt dia.)
EBU13	End bracket universal surface mount kit (1/4" bolt dia.) for U-bolt, anchor bolt, lag bolt
EBA13	End bracket wall/angle surface mount kit (3/16" bolt dia.)

**TBS brackets included as standard.*

NWL AND NHL AMBIENT & SUPPLY WIRE DATA					NHL HAZARDOUS LOCATION APPLICATION DATA②③	
NUMBER OF LAMPS	WATTAGE	AMBIENT SUITABILITY①	SUPPLY WIRE MINIMUM	IP65-WET LOCATION	CLASS I, DIV. 2 GROUPS A,B,C,D	CLASS II, DIV. 2 GROUPS E,F,G
2	17	25ºC	90ºC	Y		
2	20	25ºC	90ºC	Y		
2	28	40ºC	75ºC	Y		
3	28	40ºC	75ºC	Y		
4	28	40ºC	75ºC	Y		
2	32	50ºC	90ºC	Y		
3	32	35ºC	90ºC	Y		
2	34	35ºC	75ºC	Y		
2	44	40ºC	90ºC	Y		
2	60	25ºC	75ºC	Y		
2	59	40ºC	90ºC	Y		
2	86	40ºC	90ºC	Y		

①Ambient reflects fixture and component maximum environment operation temperature.
②T-Code temperatures for hazardous locations measured at or above testing lab minimum of 40ºC.
③Consult factory for NHL series availability and temperature codes.
④TBS/TBA brackets are 304 stainless steel and include attachment-to-fixture screws; EBA/EBU brackets. are galvanized steel and attach to fixture via conduit hubs. EBU brackets can be used with 1/4" diameter U-bolts (FBO) for suspension mounting. Hardware to attach to walls or ceilings not included.
⑤Battery backup notes:
- *Batteries operate a single lamp for 90 minutes at reduced lumen level.*
- ***NWL** and **NHL** furnished with a wet location suitable breather (Div. 2 rated for NHL).*
- ***NWL** units have an internal LED charging indicator and test switch. Cover must be opened for testing.*
- ***NHL** units have an internal LED changing unit indicator and will be furnished with a hazardous location test station for remote mounting similar to the unit shown on page L138.*

2' Lamp Style

4' Lamp Style

Class I, Div. 2, Groups A,B,C,D
Class I, Zone 2, Groups IIC, IIB, IIA
Class II, Div. 1 & 2, Groups E,F,G
Class III
Enclosure Type 3, 4, 4X, IP66

FM APPROVED File J.I.3D2A9.AE

CSA Pending

FEATURES-SPECIFICATIONS

LINEARLITE™

Applications

Hazardous and corrosive environments where reliability and rugged performance are critical.

Features

- Housing constructed of heavy-duty fiber reinforced polyester (FRP) with a single piece, low glare polycarbonate lens
- Single point latching mechanism
- Electronic ballast
- Fixture entry includes threaded openings with grounded backplates to accept 3/4"NPT hubs or cable fittings
- For use with T-8 medium Bi-Pin lamps

LINEARLITE™

Emergency Fixture

Additional Features

- Self-contained electronic emergency ballast with NiCad batteries
- LED charging indicator
- Set up for 1-lamp emergency operation (2-lamp operation is possible)

See parts and accessories on page L119.

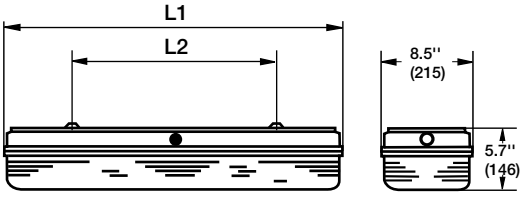
LLN SERIES FOR NORTH AMERICAN ZONE 2	
CATALOG NUMBER	**DESCRIPTION**
LLN23012FN	17 Watt 2-lamp fixture, 120VAC 60Hz, 3/4" feed-through wiring
LLN23042FN	17 Watt 2-lamp fixture, 277VAC 60Hz, 3/4" feed-through wiring
LLN26012FN	32 Watt 2-lamp fixture, 120VAC 60Hz, 3/4" feed-through wiring
LLN26042FN	32 Watt 2-lamp fixture, 277VAC 60Hz, 3/4" feed-through wiring

For additional voltage, consult factory.

LLNE SERIES BATTERY BACK-UP FOR NORTH AMERICAN ZONE 2	
CATALOG NUMBER	**DESCRIPTION**
LLNE23012FN	17 Watt Emergency 2-lamp fixture, 120VAC 60Hz, 3/4" NPT feed-through wiring
LLNE23042FN	17 Watt Emergency 2-lamp fixture, 277VAC 60Hz, 3/4" NPT feed-through wiring
LLNE26012FN	32 Watt Emergency 2-lamp fixture, 120VAC 60Hz, 3/4" NPT feed-through wiring
LLNE26042FN	32 Watt Emergency 2-lamp fixture, 277VAC 60Hz, 3/4" NPT feed-through wiring

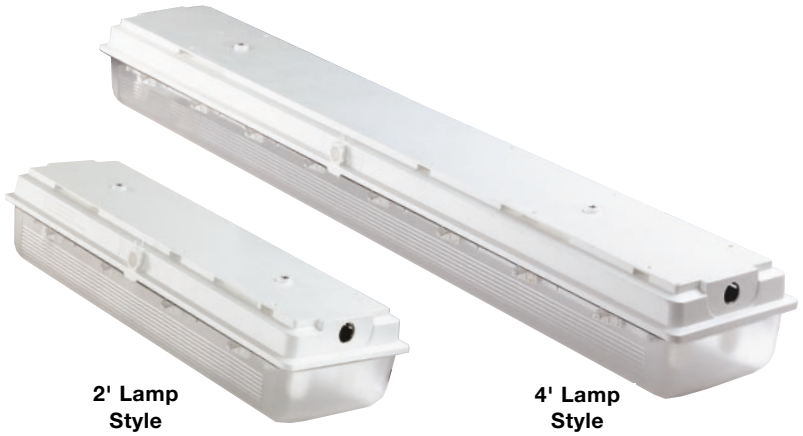
For additional voltage, consult factory.

Dimensions



LLN,LLNE SERIES		
	17W	**32W**
L1	27.5"(700)	51.5"(1310)
L2	15.7"(400)	31.5"(800)

HUBBELL® KILLARK®



2' Lamp Style

4' Lamp Style

Class I, Div. 2, Groups A,B,C,D
Class I, Zones 1 & 2, Groups IIC, IIB, IIA
Class II, Div. 1 & 2, Groups E,F,G
Class III
Enclosure Type 3, 4, 4X, IP66

FM APPROVED File J.I.3D2A9.AE

SP Pending

FEATURES-SPECIFICATIONS

LINEARLITE™

Applications

Hazardous and corrosive environments where reliability and rugged performance are critical.

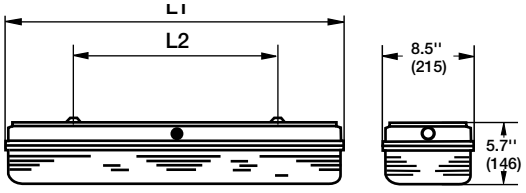
Features

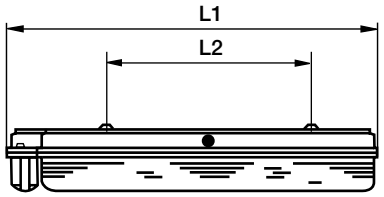
- Housing constructed of heavy-duty fiber reinforced polyester (FRP) with a single piece, low glare polycarbonate lens
- Single point latching mechanism (which disconnects power) makes relamping safe and easy
- Electronic ballasts are encapsulated in a self-contained explosion protected enclosure with increased safety terminals
- Increased safety terminal blocks for easy wiring
- Fixture entry includes threaded openings with grounded backplates to accept 3/4" NPT hubs or cable fittings
- For use with T-8 medium Bi-Pin lamps

LLN SERIES FOR NORTH AMERICAN ZONES 1 & 2	
CATALOG NUMBER	DESCRIPTION
LLN13312FN	17 Watt 2-lamp fixture, 120VAC 50/60Hz, 125VDC, 3/4" feed-though wiring
LLN16312FN	32 Watt 2-lamp fixture, 120VAC 50/60Hz, 125VDC, 3/4" feed-though wiring

LLNE SERIES BATTERY BACKUP FOR NORTH AMERICAN ZONES 1 & 2	
CATALOG NUMBER	DESCRIPTION
LLNE13211FN	17 Watt, Auto/Manual Testing 1-lamp fixture, 120VAC 50/60Hz, 3/4" feed-though wiring
LLNE16212FN	32 Watt, Auto/Manual Testing 2-lamp fixture 120VAC 50/60Hz, 3/4" feed-through wiring

Dimensions





LLN SERIES		
	17W	32W
L1	27.5"(700)	51.5"(1310)
L2	15.7"(400)	31.5"(800)

LLNE SERIES		
	17W	32W
L1	30.8"(782)	54.8"(1392)
L2	15.7"(400)	31.5"(800)

SMART-E™

Emergency Fixture

Additional Features

- Self-contained NiCad battery (in case of power failure) provides minimum 1-1/2 hours of emergency lighting
- New charging technology extends battery life to 5 or more years
- Self-testing/Self-diagnostic electronics with LED status display eliminates need for manual tests and record keeping. Unit performs weekly functional test and quarterly discharge test
- LED status of green indicates properly functioning unit. Red status alerts need for service
- One lamp emergency operation

See parts and accessories on page L119.

HUBBELL KILLARK®

Fixture with Clear Lens

Fixture with EXIT Sign

Class I, Div. 2, Groups A,B,C,D
Class I, Zone 2, Groups IIC, IIB, IIA
Class II, Div. 1 & 2, Groups E,F,G
Class III
CSA Enclosures 3, 4, 4X, IP66

Certified - File L.R. 99480.15
Other Certification Pending

FEATURES-SPECIFICATIONS

LINEARLITE™
COMPACT

Applications

Hazardous and corrosive environments where reliability and rugged performance are critical.

Ideal for exit sign applications.

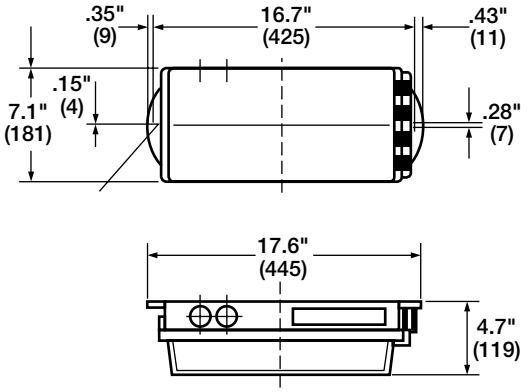
Features

- Housing constructed of heavy-duty fiber reinforced polyester (FRP) with a single piece, low glare polycarbonate lens
- Single point latching mechanism
- Fixture includes threaded opening to accept 3/4" NPT hub
- Clear lens supplied as standard
- Order exit signs separately from chart at right. Signs are adhesive foil type
- For use with F8T5 lamps

See parts and accessories on page L119.

LLC SERIES FOR NORTH AMERICAN ZONE 2	
CATALOG NUMBER	**DESCRIPTION**
LLC22312DN	2 x F8 T5 lamp fixture, 120V 50/60Hz; 125VDC, 3/4" NPT threaded entry

LLC SERIES EXIT SIGN DECALS			
CATALOG NUMBER	**ILLUSTRATION**	**SIGN COLOR**	**BACKGROUND**
LL-EXIT-80	EXIT	Red	White
LL-EXIT-81	EXIT	Red	White
LL-EXIT-82	EXIT	Red	White
LL-EXIT-83	EXIT	Red	White



HUBBELL
KILLARK®

LINEARLITE™

Applications
Hazardous and corrosive environments where reliability and rugged performance are critical.

Features
- A variety of fixture mounting methods, such as suspension and ceiling mounting, can be achieved using accessories shown here
- For pole mounting, technical assistance and photometrics, contact factory

ACCESSORIES		
CATALOG NUMBER	**PRODUCT**	**DESCRIPTION**
8198005400		**Socket Wrench,** 1/2"(13mm) to operate central lock
LL803900		**Ring Bolts,** 1 pair can directly be screwed into the fixture
LL807750		**Mounting Brackets,** 1 pair, adjustable, with suspension lugs
LL803750		**Ceiling Mounting Brackets,** 1 pair, adjustable
LL801260		**Stainless Steel Pipe Clamps,** 1 pair with adjustable mounting brackets for EMT 1-1/2" conduit
LL802260		EMT 2" conduit
LL802440		**90° Stainless Steel Wall-Mounting Brackets,** 1 pair
LL801440		**50° Stainless Steel Wall-Mounting Brackets,** 1 pair
HUBIG		**1/2" NPT, PVC Coated Gray Hub**
HUB2G		**3/4" NPT, PVC Coated Gray Hub**
MCX050		**1/2" NPT, Cable Fitting (Zone 1 fixture)** for MC-HL or ITC-HL cable
MCR050		**1/2" NPT, Cable Fitting (Zone 2 fixture)**
MCX075		**3/4" NPT, Cable Fitting (Zone 1 fixture)** for MC-HL or ITC-HL cable
MCR075		**3/4" NPT, Cable Fitting (Zone 2 fixture)**
NCS1		**1/2" NPT Sealing Ring** for MCX 050 cable fitting
NCS2		**3/4" NPT, Sealing Ring** for MCX 075 cable fitting

QL-500K

QL-1505K

QM-500K

Listed - File E112274

Certified

FEATURES-SPECIFICATIONS

Applications

Provides maximum light output with low initial cost. Designed for instant turn-on and high illumination levels where H.I.D. costs are prohibitive. Used to illuminate construction sites, security areas, sports areas, sign lighting and other applications.

QL Series Features

- Tempered Glass Lens Assembly—Thermal shock-and impact-resistant glass lens mounted in a die cast aluminum door frame
- Cast Aluminum Housing—The cast aluminum body is designed with a specialized heat dissipating fin system for cooler operation
- Versatile Mounting—The standard unit has a 1⁄2 inch swivel knuckle with cast construction for strength and durability
- High Temperature Gasketing—A weathertight seal is provided by a high temperature silicone door gasket
- Exclusive Socket System—This two-piece, high temperature socket allows easy relamping and prevents socket from binding
- Reflector—Linear parabolic reflector system provides maximum light output and control

QM Series Features

- Factory Installed Lamp—Save on fixture installation with lamp installed and shipped in socket. Provides the right lamp and less packaging
- Cast Aluminum Housing—One-piece, die cast aluminum body is designed with specialized heat dissipating fins for cooler operation and long lamp life
- Tempered Glass Lens—Thermal shock, impact resistant glass lens held in place by (4) corrosion resistant retaining clips with stainless steel screws
- High Temperature Gasketing—A weathertight seal is provided by a high temperature silicone gasket attached to the housing. Four lens clips positively seal the lens to the gasket with consistent pressure to assure a weathertight seal
- Versatile Mounting—The standard unit has a 1⁄2 inch swivel knuckle with cast construction for strength and universal aiming

See photometric data for QL and QM Series fixtures on page L121.

QL QUARTZ FLOODLIGHTS

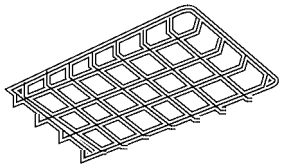
CATALOG NUMBER	LAMP AND WATTAGE	BEAM SPREAD	WEIGHT	E.P.A. SQ. FT.
QL-500K①	300/500	Wide	4 Lbs. (1.8)	.53
QL-500K-WQ②	300/500	Wide	4 Lbs. (1.8)	.53
QL-1500K①	1000/1500	Wide	6 Lbs. (2.7)	.86
QL-1500K-WQ②	1000/1500	Wide	6 Lbs. (2.7)	.86

①*Lamps not included.*
②*Lamps supplied-shipped separately.*

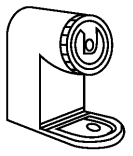
QL ACCESSORIES (FIELD INSTALLED)

SERIES	GUARD	CROSSARM TRUNNION BOX
QL-500K	QL-5G③	QL-TB③
QL-1505K	QL-15G	QL-TB

③ *May also be used with QM Series.*



Guard



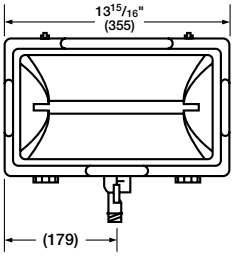
Trunnion Box

QM QUARTZ FLOODLIGHTS

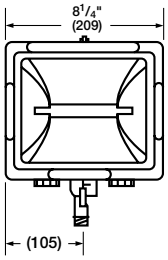
CATALOG NUMBER	WATTAGE	BEAM SPREAD H° X V°	WEIGHT	E.P.A. SQ. FT.
QM-500K④	500	6 (103°) x 5 (98°)	3.2 Lbs. (1.5)	.6

④ *Includes lamp mounted in fixture.*

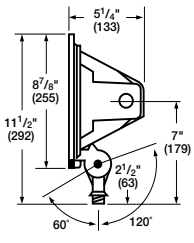
Dimensions



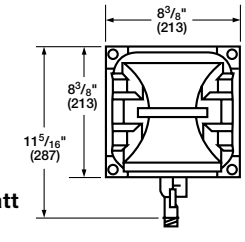
QL-1500 Watt



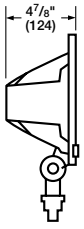
QL-500 Watt



QL-1500 and QL-500 Watt



QM-500 Watt



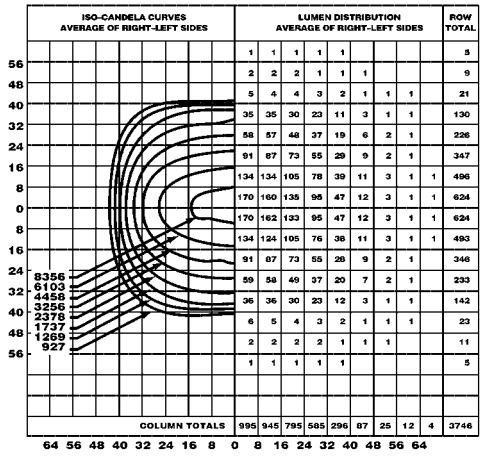
QM-500 Watt

HUBBELL
KILLARK®

QL SERIES

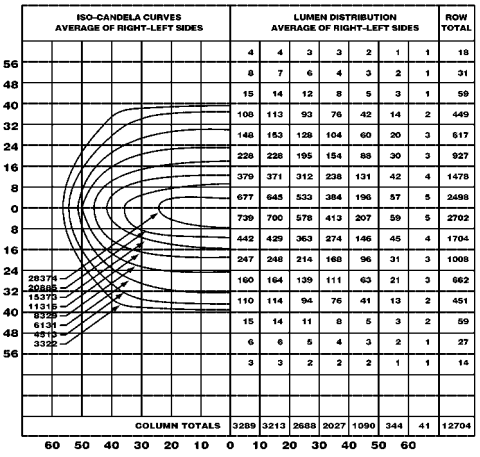
QL-500K

Test No:	HP-00930	**IES/NEMA Type:**	5H X 5V
Source:	Incandescent	**Beam Spread Horiz:**	88°
Lamp:	Q500T3/CL	**Beam Spread Vert:**	82°
Watts:	500	**Beam Efficiency:**	65%
LCL:	—	**Beam Lumens:**	7060
Lumens:	10950	**Max. Beam Candle:**	9265
		Avg. Max. Candle:	8356



QL-1505K

Test No:	HP-00854	**IES/NEMA Type:**	6H X 5V
Source:	Incandescent	**Beam Spread Horiz:**	115°
Lamp:	Q1500T3/CL	**Beam Spread Vert:**	78°
Watts:	1500	**Beam Efficiency:**	68%
LCL:	—	**Beam Lumens:**	24306
Lumens:	35800	**Max. Beam Candle:**	33219
		Avg. Max. Candle:	28374

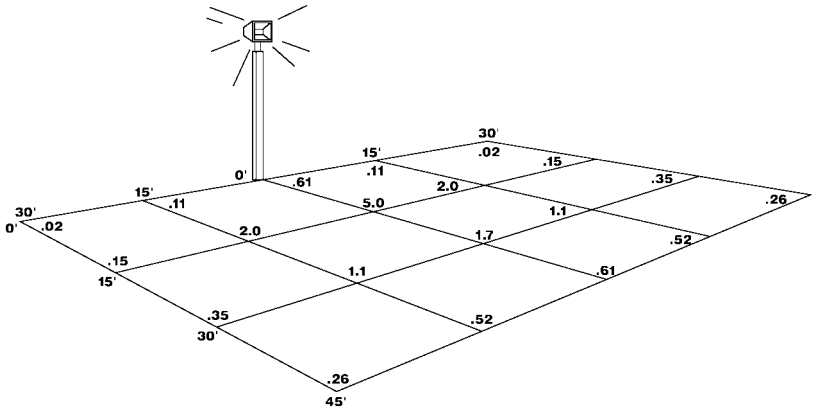


QM SERIES

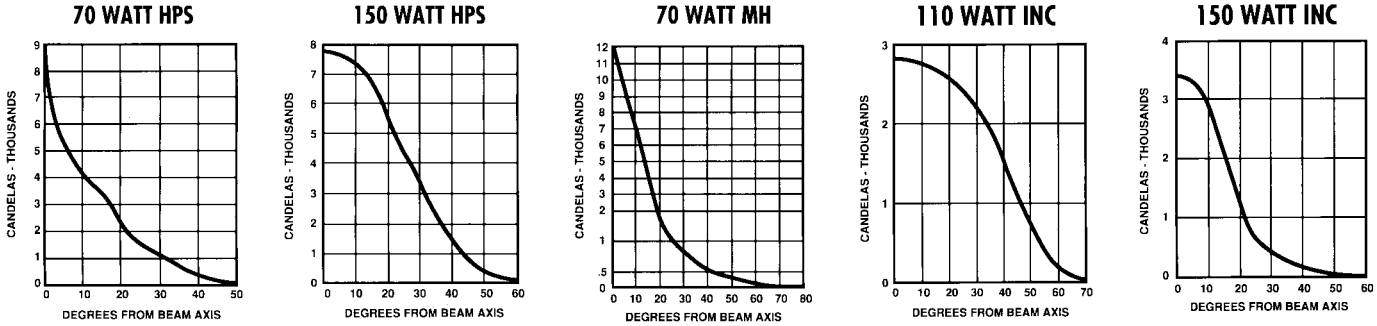
500 Watt Tungsten Halogen

Footcandle Array Based on:

- 15' Mounting Height
- Aimed at 30° below horizontal
- Not to scale. All values are initial footcandles.
- Data calculated from Test No. HP-02305.



EM/DM SERIES



See page L127 for catalog data.

Class I, Div. 2 Groups A,B,C,D①②
Class I, Zone 2, Groups IIC,IIB,IIA

Listed - File E12976/E106427
Marine

ABS Type approval for shipboard use⑤

Suitable for wet locations

FEATURES-SPECIFICATIONS

Applications

KF series floodlights can be used in industrial installations where flammable gases or vapors may exist due to abnormal conditions resulting in the creation of a Class I, Div. 2 hazardous location as defined by the NEC. Also can be used where general corrosive atmospheric conditions exist such as ocean piers, marinas and costal areas.

Designed for heavy duty applications where long life and maintenance-free service are essential.

Features

- Rugged weathertight housing of copper-free aluminum with corrosion resistant bronze finish
- Wide beam distribution
- Thermal shock, impact-resistant lens
- Continuous silicone gasketing
- All external hardware is stainless steel
- Trunnion mounting-heavy gauge, hot dip galvanized steel mounting with stainless steel hardware
- Photometric data & accessories—see page L123

KF HID FLOODLIGHTS

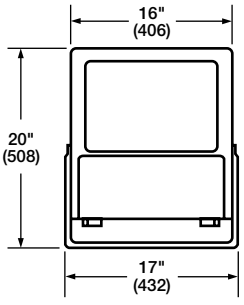
CATALOG NUMBER	LAMP AND WATTAGE	** VOLTS	BEAM SPREAD Hº X Vº
KFS150-76 KFS155-76	150 HPS	QUAD 480	7 (144°) X 6 (113°)
KFS250-76 KFS255-76	250 HPS	QUAD 480	7 (144°) X 6 (113°)
KFS400-76 KFS405-76	400 HPS	QUAD 480	7 (144°) X 6 (113°)
KFS1000-76 KFS1005-76	1000 HPS ②③	QUAD 480	7 (144°) X 6 (113°)
KFH250-76 KFH255-76	250 MH*	QUAD 480	7 (145°) X 6 (115°)
KFH400-76 KFH405-76	400 MH*	QUAD 480	7 (146°) X 6 (119°)
KFH1000-76 KFH1005-76	1000 MH ②④	QUAD 480	7 (144°) X 6 (113°)
K800-2918-0135	Replacement Lens and Door Assembly		

** Mercury lamps may be used if desired. Lamps not included.*
*** Consult factory for other available voltages.*
③ Use Phillips C1000S52/ED37 11-1/2" lamp.
④ Use 11-1/2" BT37 lamp available from GE, Venture or Phillips.
⑤ Not suitable for submersion or wave impact applications.

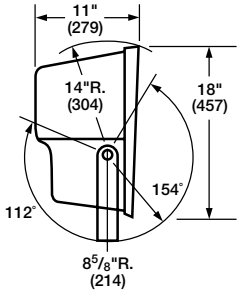
TEMPERATURE DATA

LAMP AND WATTAGE	CLASS I, DIV. 2①② MAX. LAMP TEMP. RATING ºC	TEMP. CODE
HIGH PRESSURE SODIUM		
150	260	T2B
250	325	T1
400	350	T1
1000 ②	378	T1
METAL HALIDE		
250	325	T1
400	325	T1
1000 ②	442	T1
MERCURY		
250	350	T1
400	350	T1

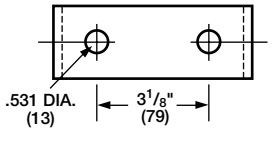
①150-400 watt lamp temperature data was obtained in 40°C ambient. UL listed for 25°C ambient operation.
②1000 watt fixture aiming angle limited to 45°-135° (no straight up or down). 1000 watt fixtures are rated and listed for 40° ambient.



Front



Side



Trunnion Mounting Detail

HUBBELL
KILLARK®


KFS-6


KFS-67


KFCB


KFWB


K4040

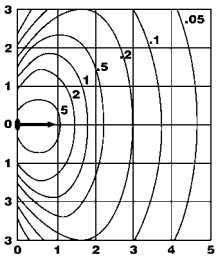

4041

FEATURES-SPECIFICATIONS

KF MOUNTING ACCESSORIES①	
CATALOG NUMBER	**DESCRIPTION**
KFS-6	Steel slipfitter for 2" pipe (2-3/8" o.d.) tenon
KFS-67	Heavy duty cast aluminum slipfitter for 2" pipe (2-3/8" o.d.) and 2-1/2" pipe (2-7/8" o.d.) tenon
KFCB	Heavy duty cast-iron crossarm fitting for horizontal trunnion
KFWB	Heavy duty wall mount and/or pipe clamp fitting Clamps 2" pipe (2-3/8" o.d.) thru 2-1/2" pipe (2-7/8" o.d.)
K4040	Heavy duty steel wall/pole bracket. (Must use with **KFCB** crossarm fitting)
4041	Heavy duty steel wall/pole bracket 2" pipe (2-3/8" o.d.) tenon fitting

① *Fittings available to adapt trunnion mount floodlights to crossarms, poles and walls. Must be ordered separately.*

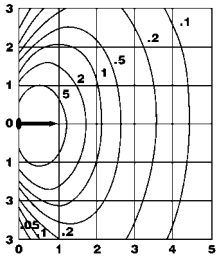
KF SERIES



KFH-XXX-76

IES Type—7H x 6V (146° x 119°)
Source—Metal Halide (Clear) 34000 Lumens
Wattage—400 (ANSI M59)
For 250W MH multiply by .6
For 1000W MH multiply by 3.1
Mounting Height (Grid Value)—25 feet
Aiming Angle—45°
Test Number—HP-00738

CONVERSION CHART					
MOUNTING HEIGHT (FEET)	20	25	28	30	35
CORRECTION FACTOR	1.56	1.00	.80	.69	.51



KFS-XXX-76

IES Type—7H x 6V (144° x 117°)
Source—High Pressure Sodium (Clear) 50000 Lumens
Wattage—400 (ANSI S51)
For 150W HPS multiply by .32
For 250W HPS multiply by .6
For 1000W HPS multiply by 2.5
Mounting Height (Grid Value)—25 feet
Aiming Angle—45°
Test Number—HP-00740

CONVERSION CHART					
MOUNTING HEIGHT (FEET)	23	25	30	35	40
CORRECTION FACTOR	1.18	1.00	.69	.51	.39

① *In converting to a different mounting height, multiply all footcandle values by the correction factor and convert the grid size to the mounting height selected. Example: to convert 25 foot to 30 foot mounting height, multiply all footcandle values by .69. (Grid now becomes 30 replacing 25). To convert footcandles to Lux, multiply values by 10.76. To convert feet to meters, divide values by 3.281.*

KFSS SERIES • LIGHTING
MARINE FLOODLIGHTS, 150-400W HID

Steel Slipfitter (includes bolts)

Steel Wall/Pole Bracket

Cross Arm Fitting

Class I Div. 2, Groups A,B,C,D*
AEx nR/Ex nR**
Class I Zone 2, IIC, IIB, IIA*

UL 1572 HID Marine for Wet Locations
UL 844 Hazardous Locations

CSA C22.2 9.9-9.6 General Requirements
CSA C22.2 137-M1981 Hazardous Locations
CSA Enclosure type IP66/67

ABS Type Approval for Shipboard Use

** Consult temperature data table on next page to determine application suitability.*

FEATURES-SPECIFICATIONS

MARIGARD™

Applications
- Offshore production platforms
- Refineries
- Offshore drilling rigs and barges
- Ocean-going vessels
- Commercial fishing vessels
- Ports, wharfs and jetties
- Waste water and sewage treatment facilities
- Any type of washdown, corrosive, abrasive, or dirty environment

Features and Benefits
- Type 316 Stainless Steel Housing. 16-gauge housing ensures low corrosion and long life, reducing maintenance costs
- Rugged quick-release 316 SS Lens Latches. No hardware seizing on disassembly saves maintenance time and money. Only tool needed is a screwdriver
- 316 SS Safety Lens Door Chains. Enables hands-free safe re-lamping
- 316 SS Mounting Yoke Reliable and safe installation
- Highly efficient photometrics and excellent asymmetrical distribution. Photometrics above 85%. Minimizes the number of required fixtures to deliver desired light levels. Saves in energy costs
- Hot-dipped Galvanized Steel Mounting Accessories. Corrosion resistant in marine and corrosive environments, assuring reliable installation
- 316 SS 3/4" Conduit Hub. Maintains grounding continuity. Watertight seal. Corrosion resistant
- Silicone Gasketed Lens Door Frame. Provides watertight seal, protecting interior from moisture and corrosives

KFSS STAINLESS STEEL FLOOD LIGHTS

CATALOG NUMBER	LAMP TYPE AND CIRCUIT	VOLTAGE①	BEAM SPREAD H° X V°
KFS150SS	150 HPS	120/208/240/277 @60Hz	6 (118) x 6 (118)
KFS156SS	S-55	120/277/347 @60 Hz	
KFS250SS	250 HPS	120/208/240/277 @60Hz	6 (118) x 6 (118)
KFS256SS	S-50	120/277/347 @60 Hz	
KFS400SS	400 HPS	120/208/240/277 @60Hz	6 (118) x 6 (118)
KFS406SS	S-51	120/277/347 @60 Hz	
KFH250SS	250 MH②	120/208/240/277 @60Hz	6 (118) x 6 (118)
KFH256SS	M-58	120/277/347 @60 Hz	
KFP250SS	250 MHP③	120/208/240/277 @60Hz	6 (118) x 6 (118)
KFP256SS	M-138	120/277/347 @60 Hz	
KFH400SS	400 MH②	120/208/240/277 @60Hz	6 (118) x 6 (118)
KFH406SS	M-59	120/277/347 @60 Hz	
KFP400SS	400 MHP③	120/208/240/277 @60Hz	6 (118) x 6 (118)
KFP406SS	M-135	120/277/347 @60 Hz	

① *Voltage: 6th character in the catalog number denotes voltage. See "Catalog Number Logic" for details; e.g. **KFS155SS** = 480 Volt 60Hz.*
② *Mercury Vapor Lamps of the same wattage may be used if desired.*
③ *Use a Pulse Start Metal Halide Lamp rated for Horizontal Position.*

KFSS ACCESSORIES

CATALOG NUMBER	DESCRIPTION
KFS-6G	Steel slipfitter for 2" pipe (2-3/8" O.D.) tenon. Hot-dipped galvanized (bolts included)
K4040G	Steel wall/pole bracket. Hot-dipped galvanized (bolts included)
KFCBG	Cross arm fitting for horizontal trunnion. Hot-dipped galvanized (bolts included)

Catalog Number Logic

KF 0 00 0 SS (NR)**

Series Constant — **KF**

Lamp Type
S—High Pressure Sodium
H—Metal Halide
P—Pulse Start Metal Halide

Lamp Wattage
15—150 Watt, HPS
25—250 Watt, HPS, MH, MHP
40—400 Watt, HPS, MH, MHP

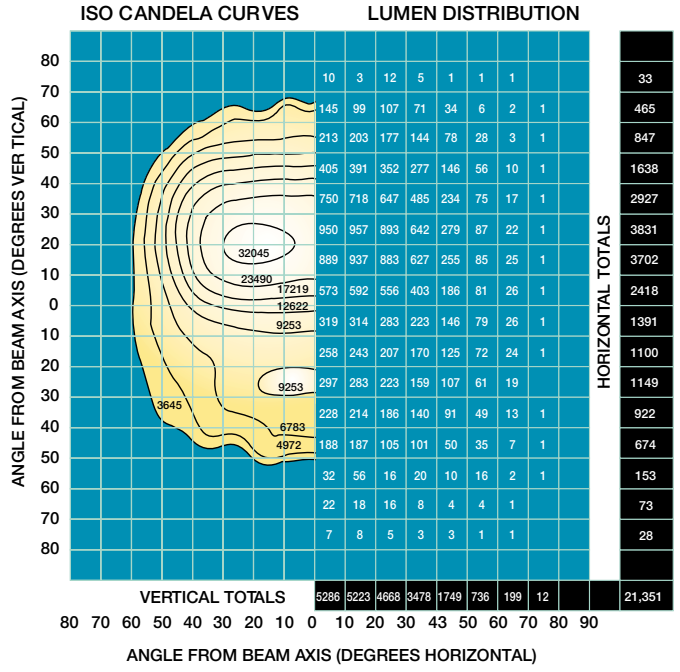
Voltage
0—Quad; 120/208/240/277 60 Hz.
5—480 60 Hz.
6—Tritap 120/277/347 60 Hz. (Canada)
7—220 60 Hz. (S. America), MHP250 & MHP 400 N/A
8—220/240 50 Hz. (Europe & S. America), MHP250 N/A

Series Constant — **SS (NR)****

***Restricted Breathing option-see next page.*

HUBBELL
KILLARK®

AVERAGE OF RIGHT-LEFT SIDES



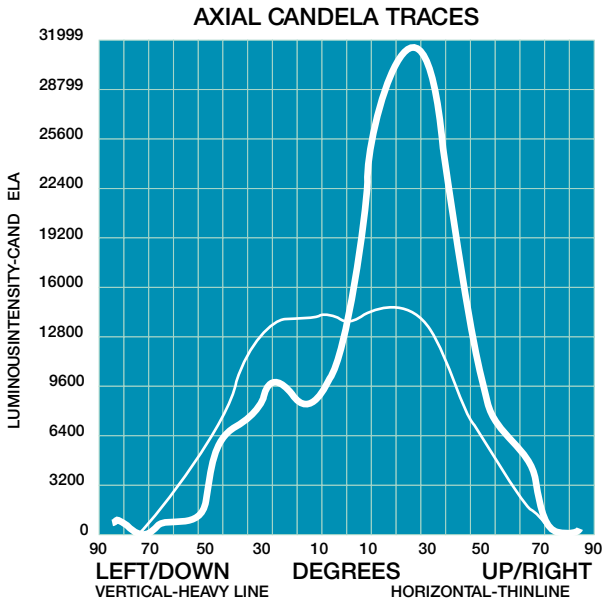
MARIGARD™

ANGLE FROM BEAM AXIS (DEGREES HORIZONTAL)

Test Number: HP-07477
Source: HPS
Lamp: ED-18
Lamp Watts: 400
LCL: 5.75"
Lumens: 50,000
IES/NEMA Type: 6H x 6V
Maximum Beam Candlepower: 36,447
Average Maximum Candlepower: 32,045
Total Efficiency: 85.41%

	HORIZONTALLY	VERTICALLY	LUMENS	EFFICIENCY
BEAM	81.8	41.0	22,196	44.39%
FIELD	118.4	118.6	40,591	81.18%

AXIAL CANDELA TRACES



MARIGARD TEMPERATURE CODES

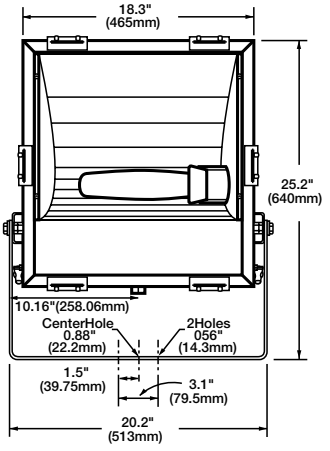
LAMP TYPE	LAMP WATTAGE	RATED AMBIENT C°	CLASS 1 DIV. 2 TEMP. (CODE)	CLASS 1 ZONE 2 TEMP. (CODE)	Ex nR ①	SUPPLY WIRE C°
HPS	150	40	270°C (T2A)	270°C (T2)	T4	90°C
HPS	150	55	285°C (T2)	285°C (T2)	T4	90°C
HPS	150	65	295°C (T2)	295°C (T2)	T3	110°C
HPS	250	40	380°C (T1)	380°C (T1)	T3	90°C
HPS	250	55	395°C (T1)	395°C (T1)	T3	110°C
HPS	400	40	380°C (T1)	380°C (T1)	T3	110°C
MH-MHP-MV	250	40	365°C (T1)	365°C (T1)	T3	110°C
MH-MHP-MV	250	55	380°C (T1)	380°C (T1)	T2	110°C
MH-MHP-MV	400	40	365°C (T1)	365°C (T1)	T3	110°C

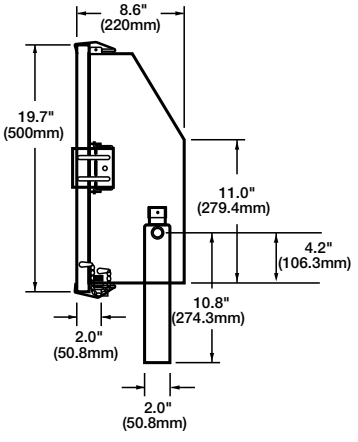
①*Ex nR with NR adder. Allows lower T-CODE approvals through the use of sealed cable entrance fittings. See pages F75, F87 or select other gland/connector as appropriate for type of cable used.*

Rugged yet easy-to-open 316 SS Latches require no special tools!

Two 316 SS Lens Chains allow for hands-free maintenance!

Dimensions





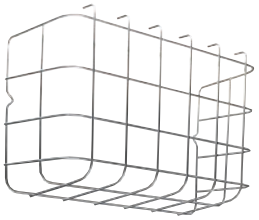
HUBBELL®
KILLARK®

KWP SERIES • LIGHTING
WALLPACK, 70-175W HID

Wall Pack Luminaires

Clear Shield

Glare Shield



Wire Guard

Class I, Div. 2, Groups A,B,C,D
Class I, Zone 2, Groups IIC, IIB, IIA
NEMA 4

UL 844 Listed

CSA Certified

FEATURES-SPECIFICATIONS

CERTILITE®

Applications

KWP Wall Luminaires are ideally suited for applications requiring a pleasing aesthetic appearance or hazardous location suitability in a compact energy saving fixture. Units are of aluminum construction for cool operation with a bronze electrostatically applied finish. Suitable locations include perimeter security lighting, parking areas, factories and parking garages.

Features

- Aluminum with Bronze finish 1/2" hub on either side for conduit entry
- Mogul Porcelain Socket
- Specular aluminum precision formed reflector for optimal performance
- Suitability for 40°C ambient, 90°C supply wire required
- Lens thermal shock and impact resistant glass
- Front access for lamp or ballast service

KWP WALL PACK

CATALOG NUMBER	LAMP TYPE AND CIRCUIT	VOLTAGE①	WEIGHT LBS.	T-CODE AT 40°C
KWPS070 **KWPS075**	70 HPS S-62	QUAD 480	23	215°C (T2D)
KWPS100 **KWPS105**	100 HPS S-54	QUAD 480	24	215°C (T2D)
KWPS150 **KWPS155**	150 HPS S-55	QUAD 480	25	260°C (T2B)
KWPH070 **KWPH075**	70 MH M-98	QUAD 480	24	200°C (T3)
KWPH100 **KWPH105**	100 MH M-90	QUAD 480	25	200°C (T3)
KWPH170 **KWPH175**	175 MH M-57	QUAD 480	25	260°C (T2B)

① Voltage Change 7th character in catalog number for voltage

Example **KWPS075** = 480 Volt 60Hz

0=QUAD - 120/208/240/277 60Hz

5=480 60Hz

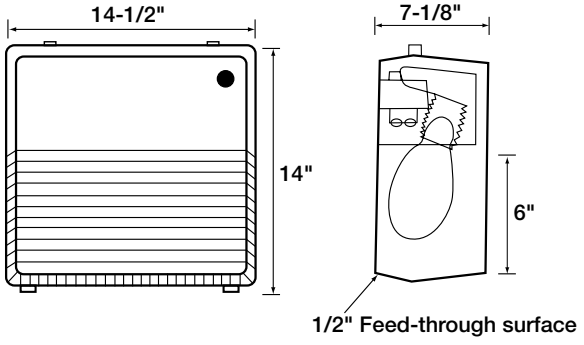
6=TRI - 120/277/347 60Hz (Canada)

7=220 60Hz (S. America)

8=220/240 50Hz (Europe / S. America)

KWP ACCESSORIES

CATALOG NUMBER	DESCRIPTION
PGPS	Clear Shield (Polycarbonate) for Protecting Lens
PGWG	Wire Guard, Cadmium Plated Steel
PVPL	Glare Shield Cutoff Visor - Formed Bronze Aluminum. Forces Light to Walkway



HUBBELL®
KILLARK®

EMHPO71

Class I, Div. 1 & 2 Groups C,D
Class I, Zones 1 & 2 Groups IIB,IIA
Class II, Div. 1 & 2, Groups F,G
Class III, Div. 1 & 2
NEMA 3, 4X, 7(C,D) 9(F,G)
Suitable for wet locations
Suitable for paint spray booths

Listed - File E89665 and E97760

Certified - File LR11713

FEATURES-SPECIFICATIONS

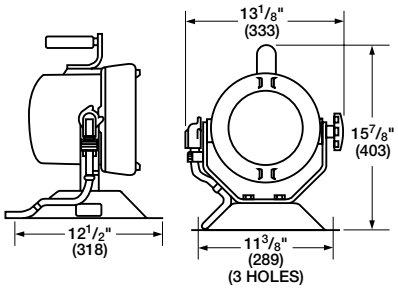
Applications
EM & DM Series portable floodlights provide emergency or maintenance lighting in wet locations or areas made hazardous due to the presence of flammable gases or vapors and combustible dusts as defined by the NEC.

Typical uses are in manufacturing plants, chemical, petrochemical and other industrial process facilities, oil refineries, grain storage sights, aircraft maintenance and refueling areas, tank farms and pipeline pumping stations.

Features
- Factory sealed 100 foot 16/3 SOW cord supplied as standard. See catalog section PR for Acceptor® plugs and receptacles
- Corrosion resistant, rain tight, copper-free cast aluminum housing helps assure safe, reliable operation
- Light weight, strong spun aluminum base provides stability, permits hanging fixture temporarily on wall or lowering it inverted
- Aluminum specular reflector directs light beam for concentrated illumination
- Tempered glass lens resists heat and shock
- Nitrile rubber O-ring gasketing provides an excellent seal for use in wet locations
- Photometric data—see page L121
- Lamps included on all models

Compliances
- UL-781 portable electric lighting units for use in hazardous locations
- UL-1571 standard for incandescent lighting fixtures
- UL-1572 standard for HID lighting fixtures
- UL Marine type electric lighting fixtures
- CSA-C22.2 nos. 12 & 137
- NEMA 3, 4

Dimensions



EM/DM HPS PORTABLE FLOODLIGHTS			
CATALOG NUMBER	LAMP WATTS	VOLTAGE @60 HERTZ	DESCRIPTION①
EMSP151	150	120	Class I, Div. 1 & 2, Groups C & D
DMSP101*	100	120	Class I, Div. 1 & 2, Groups C & D; Class II, Div. 1 & 2, Groups F & G; Class III
EM MH			
EMHP071	70	120	Class I, Div. 1 & 2, Groups C & D; Class II, Div. 1 & 2, Group F
EM INCANDESCENT			
EMIP111	110	120	Class I, Div. 1 & 2, Groups C & D; Class II, Div. 1 & 2, Group F

①Refer to hazardous location application data below for specific T codes and temperatures.

②EMIP111 can be used with PAR 38 150 Watt incandescent lamp. See hazardous location application data.

** DMS series units have a limiting device to prevent positioning of the fixture head in an orientation where dust could build up on the lens. Any attempt to defeat its purpose can be dangerous.*

EM INCANDESCENT①								
SERIES	LAMP TYPE	LAMP WATTS	RATED AMBIENT DEGREES °F/°C	CLASS I, DIV. 1 & 2 MAX. SURFACE TEMP.		CLASS II, DIV. 1 & 2 MAX. SURFACE TEMP.		CLASS III, DIV. 1 & 2 MAX. SURFACE TEMP.
				UL/CSA TEMP. I.D. °F/°C	UL/CSA GROUPS	UL/CSA TEMP. I.D. °F/°C	UL/CSA GROUPS	UL/CSA TEMP. I.D. °F/°C
EMS	HPS	150	77°/25°	T3C (320°/160°)	CD	—	—	—
DMS	HPS	100	104°/40°	T4A (248°/120°)	CD	T3C (320°-160°)	FG	T3C (320°-160°)
EMH	MH	70	104°/40°	T4 (275°/135°)	CD	T3 (392°-200°)	F	—
EMI	INC	110	104°/40°	T3A (356°/180°)	CD	T3 (392°-200°)	F	—
EMI	INC	150	104°/40°	T3A (356°/180°)	CD	—	—	—

①Do not install where marked operating temperature exceeds ignition temperature of Hazardous Atmosphere.

Shown with optional VMPSD-40 reflector

Class I, Div. 1 & 2, Groups C,D
Class I, Zones 1 & 2, Groups IIB,IIA
NEMA 3, 4, 4X, 7(C,D)
Factory Sealed

Listed - file E10514

CSA LR11713

FEATURES-SPECIFICATIONS

Applications

HOSTILE***LITE***® EZ series trunnion mount luminaires provide directional lighting in both vertical and horizontal planes when used with floodlight mounting hardware.

Typical applications include refineries, drilling rigs and platforms, loading docks, bulk fuel loading terminals, and pipeline pumping stations.

Features

- Three light sources
  - – High Pressure Sodium (50-400W)
  - – Metal Halide (70-400)
  - – Mercury Vapor (100-400)
- Trunnion mounted–Trunnion yoke of 316 grade stainless steel attaches via mounting blocks to fixture ballast housing
- Factory sealed–No external seal needed
- Corrosion resistant–Fixture of copper-free aluminum die cast construction. Baked powder epoxy finish, electro-statically applied. Exposed hardware of 316 grade stainless steel
- Accessories–Guards, reflectors and mounting hardware available. Must be ordered separately, see illustration
- Mounting method–See page L129 for typical installation using mounting accessories

Compliances

- UL-844 Electric Lighting Fixtures for use in Hazardous Locations
- UL-1572 Standard for HID Lighting Fixtures
- CSA C22.2 no. 137-M1981 Electric Luminaires for use in Hazardous Locations
- NEMA 3, 4, 4X, 7CD

EZ HAZARDOUS LOCATION APPLICATION DATA

FIXTURE SERIES	LAMP TYPE	LAMP WATTS	SUITABLE AMBIENT °C	SUPPLY WIRE MIN. °C	CLASS I, DIV. 1 & 2 MAX. SURFACE TEMP.		TYPE 3 (RAINTIGHT)	TYPE 4 (HOSEDOWN)	TYPE 4X (CORROSION RESISTANT)
					TEMP. I.D. (ACTUAL TEMP.)	GROUPS			
EZS	HPS	50	40	85	T4 (135°C)	C,D	YES	YES	YES
EZS	HPS	70	40	85	T4 (135°C)	C,D	YES	YES	YES
EZS	HPS	100	40	85	T4 (135°C)	C,D	YES	YES	YES
EZS	HPS	150	40	85	T4 (135°C)	C,D	YES	YES	YES
EZS	HPS	250	40	85	T3C (160°C)	C,D	YES	YES	YES
EZS	HPS	400	40	85	T3 (200°C)	C,D	YES	YES	YES
EZH	MH	70	40	85	T4A (120°C)	C,D	YES	YES	YES
EZH	MH	100	40	85	T4A (120°C)	C,D	YES	YES	YES
EZH	MH	150	40	85	T4A (120°C)	C,D	YES	YES	YES
EZH	MH	175	40	85	T3B (165°C)	C,D	YES	YES	YES
EZH	MH	250	40	85	T3A (180°C)	C,D	YES	YES	YES
EZH	MH	400	40	85	T2D (215°C)	C,D	YES	YES	YES
EZM	MV	100	40	85	T3B (165°C)	C,D	YES	YES	YES
EZM	MV	175	40	85	T3B (165°C)	C,D	YES	YES	YES
EZM	MV	250	40	85	T3A (180°C)	C,D	YES	YES	YES
EZM	MV	400	40	85	T2D (215°C)	C,D	YES	YES	YES

Shown with optional VMPSD-40 reflector③

Class I, Div. 1 & 2, Groups C,D
Class I, Zones 1 & 2, Groups IIB,IIA
NEMA 3, 4, 4X, 7(C,D)
Factory Sealed

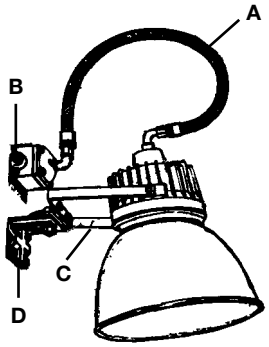
Listed - E10514

LR 11713

ORDERING INFORMATION

Installation Method

Typical EZ Series trunnion mounted luminaire using conduit hardware.



A. Flexible coupling. See page L145 for EKJ series
B. Splice box. See page L146 for JL/JAL series
C. Trunnion yoke supplied with EZ-T series floodlight fixture
D. Mounting accessory wall mount (KFWB) shown. See page L123 for this and other fittings available to adapt trunnion mount floodlights to crossarms, poles or walls

③ *Accessories may be ordered with fixture as a single catalog number with the following logic. Components shipped separately.*

④ ④
EZH400A2G-TS

Base Catalog Number (INC/"T")
Guard
Trunnion

S-Standard Dome **Cat. No. VMPSD-40**
D-Deep Dome **Cat. No. HRD-400**
Z-Deep Dome **Cat. No. HRD-400ALZ**

④ Optional Accessory

EZ 50–400W HPS FLOODLIGHTS ①②③

WATTS	ANSI LAMP TYPE	VOLTAGE @60 HERTZ	HUB SIZE	CATALOG NUMBER
50 HPS	S-68	120, 208, 240, 277	3/4"①	**EZS050A2-T**
70 HPS	S-62	120, 208, 240, 277		**EZS070A2-T**
		480		**EZS075A2-T**
100 HPS	S-54	120, 208, 240, 277		**EZS100A2-T**
		480		**EZS105A2-T**
150 HPS	S-55	120, 208, 240, 277		**EZS150A2-T**
		480		**EZS155A2-T**
250 HPS	S-50	120, 208, 240, 277		**EZS250A2-T**
		480		**EZS255A2-T**
400 HPS	S-51	120, 208, 240, 277		**EZS400A2-T**
		480		**EZS405A2-T**

EZ 70–400W MH FLOODLIGHTS ①②③

70 MH	M-98	120, 208, 240, 277	3/4"①	**EZH070A2G-T**
100 MH	M-90	120, 208, 240, 277		**EZH100A2G-T**
175 MH	M-57	120, 208, 240, 277		**EZH170A2-T**
		480		**EZH175A2-T**
250 MH	M-58	120, 208, 240, 277		**EZH250A2-T**
		480		**EZH255A2-T**
400 MH	M-59	120, 208, 240, 277		**EZH400A2-T**
		480		**EZH405A2-T**

EZ 70–400W MV FLOODLIGHTS ①②③

70 MV	H-38	120, 208, 240, 277	3/4"①	**EZM100A2-T**
		480		**EZM105A2-T**
175 MV	H-39	120, 208, 240, 277		**EZM170A2-T**
		480		**EZM175A2-T**
250 MV	H-37	120, 208, 240, 277		**EZM250A2-T**
		480		**EZM255A2-T**
400 MV	H-33	120, 208, 240, 277		**EZM400A2-T**
		480		**EZM405A2-T**

①*Luminaire catalog numbers provide for a single 3/4" NPT flexible conduit connection only. For 1" NPT conduit connection, substitute "**3**" for "**2**" in catalog number; example: **EZS050A3-T***

②*Consult factory for other available voltage.*

*(tm Alcoa)

EZ ACCESSORIES③

CATALOG NUMBER	DESCRIPTION	
EZG1	HPS 50-150 MH 175-250 MV 100-250	Guard
VMAG-40	HPS 250-400 MH, MV 400	
VMPSD-40	Standard dome	Reflector
HRD-400	Deep dome white	
HRD-400ALZ	Deep dome Alzak*	

HUBBELL
KILLARK®

UCL Series
Canopy Lighting

Listed Wet Locations
Certified
25°C Ambient

FEATURES-SPECIFICATIONS

PETROBRIGHT™

Applications

The UCL is a modular, two component luminaire (UCB and UCO) and is designed for single or double deck canopies. The canopy decking must be constructed of a non-combustible, flat sheet material (aluminum or steel). The UCL Series projects excellent vertical and horizontal light with eye catching high angle sparkle. Field adjustment of one or both internal reflectors downward with a screwdriver will reduce high angle glare, where needed. For cut-off shielding requirements (e.g. local regulations), optional (UCL-HS) shield/reflectors can be easily added to the reflector system to produce 8 different patterns.

Features and Benefits

- Modular design for flexibility and availability
- Diecast aluminum construction for durability
- White Lektrocote® powder paint for durability
- Self-aligning installation
- Easy Optical Assembly replacement from below
- Below canopy installation capability
- Tool-less, positive optical latching for reliable sealing
- Tool-less, hinged ballast cover
- Adjustable reflectors standard
- Self-centering optical hinges
- Custom, tool-less cutoff shielding creates up to 8 combinations (UCL-HS)
- Pre-wired lamp socket
- Wet Locations; 25°C
- Two 1/2" NPT hubs for feed-thru wiring

UCL SERIES CANOPY LIGHTING

CATALOG NUMBER④	LAMP TYPE AND ANSI CODE①	VOLTAGE③	WEIGHT LBS.	CONSISTS OF: ④	
				BALLAST	LENS & FRAME ASSEMBLY
UCL250P8-LL	250 MHP (M138)	120/208/240/277	33	UCB250P8	UCO1
UCL320P8-LL②	320 MHP (M131)	120/208/240/277	35	**UCB320P8**	**UCO1**
UCL400P8-LL	400 MHP (M135)	120/208/240/277	35	UCB400P8	UCO1

① *All fixtures for use with ED-28 Pulse Start Metal Halide lamps suitable for base up orientation. Pulse Start Metal Halide lamps and ballasts are NOT interchangeable with standard Metal Halide components.*
② ***320 watt quad-tap models are the industry standard and stocked for quick shipment.***
③ *Voltage* ***UCL320PX-LL****: the 8th character designates voltage, change per below as required:*
5 = 480
6 = Tri-Tap (120/277/347)
***8** = Quad-Tap (120/208/240/277) industry standard*
E = 50Hz 220/240
④ *Fixture assembly numbers are for ordering convenience and units are shipped as components.*

ACCESSORIES

CATALOG NUMBER	DESCRIPTION
UCK-1	Support Rail Set (for single fixture) For support in weak/old canopies or when installing from below
UCL-HS	1 Internal House-side "Cut-off" Shield: order 1 ea. For 190° or 2 ea. For 280° or 360° shielding (via overlap)
UCL-TEMPLATE	Order one free template per standard canopy installation

The UCL Modular System

UCB: Ballast Assembly
14" x 7.5" x 5" High

UCO: Optical Assembly
14.25" x 14.25" x 6.12" High

HUBBELL
KILLARK®

PETROBRIGHT™

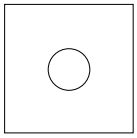
Typical PetroBright application

FEATURES-SPECIFICATIONS

The Under Canopy **Retrofit Trim System** is used to upgrade existing installations of old competitive fixtures to the new PETRO***BRIGHT***™. These UCT trims are used in conjunction with standard UCL luminaries (UCO optical assembly & UCB ballast assembly) to provide flexible solutions for a variety of needs. UCL fixtures can also easily be re-used for a new installation when old canopies are replaced.

Retrofit Trims

UCL-CP White 23.5" square Cover Panel for removed 2' X 2' luminaries; attaches to UCO unit to cover canopy blemishes around new fixtures.



2' x 2' RetroTrims (Hinged type):

- **UCT-1** Fixture size: 21-1/8" square; minimum 6" above flange Whiteway® Riviera II/Thunderbird/Vision/LaSabre III; Cooper® CLS①
- **UCT-2** Fixture size: 23" square; minimum 6" above flange LSI® Master/Dakota; Jet-Philips® Houstonian (old style); Whiteway Riviera①
- **UCT-3** Fixture size: 21-3/4" square or 22" square; minimum 6" above flange Jet-Philips Houstonian SHO/RHO; Guardian® MC-1411①

Recessed RetroTrims:

- **UCT-4** Fixture size: LSI Richmond® Series 21-1/2" X 11-15/16" outside frame
- **UCT-5** Fixture size: Whiteway Civic Series 20-3/4" X 11-1/16" outside frame

Surface Mount Enclosure:

- **UCT-6** 16-1/4" square X 8" high surface mount housing trim. Mounting hardware not included

UCB

UCT

UCL

Existing Enclosure (2' x 2' type shown)

UCB ballast assemblies attach to top of UCT retrofit trim allowing attachment inside old existing mounting box. UCO optical assembly attaches to UCB through UCT trim.

HUBBELL®
KILLARK®

Class II, Div. 1 & 2, Groups E,F,G
Class III
NEMA 3, 4, 4X

UL844; UL1570; UL924 (File E162407)
UL Wet Location Listed (Indoor & Outdoor)
UL Listed (Indoor & Outdoor)
Rated for 40C° ambient. Minimum start 0°C.

FEATURES-SPECIFICATIONS

CERTILITE® E EMERGENCY

Applications

CERTI***LITE***® DEB Emergency Lighting fixtures provide continuous illumination under normal power and switch to emergency battery backup during power outages. Emergency Units ONLY are available that operate only when normal power fails.

Units contain battery unit(s) that provides the OSHA required 90 minutes of illumination for egress.

Units are designed for general and task lighting in indoor or outdoor wet locations or where **combustible dusts** may exist and create a hazardous location, as defined by the NEC.

Use Push-To-Test station suitable for area of use for testing purposes. FXCS series control stations should be used for hazardous locations.

Features

- Bi-Pin Twin long-life compact fluorescent lamps **included**
- Choice of Pendant, Ceiling, Wall or Stanchion mount
- Corrosion resistant-Copper-free aluminum die-cast construction (less than 4/10 of 1%) with Baked-on epoxy/polyester powder finish
- Exposed hardware is 316 grade stainless steel
- LED charging indicator light visible through lens

Accessories

- Exit sign: Model **VEXA-100** (Note: omit 2nd "**G**" in catalog number for globe-only fixture)
- Reflectors: Use standard dome **VMPSD-17** or angle model **VMPA-17** (see page L54)

Options

- For Factory Fusing add **-F** to catalog number, e.g. **DEB2613E1A2GGN4-F**
- For Red Painted Fixtures, add **-R** to catalog number, e.g. **DEB2613E1A2GGN4-R**

DEB 26-39 WATT NORMAL & EMERGENCY MODE FIXTURES

COMPACT FLUORESCENT LAMPS INCLUDED	LINE VOLTAGE	CATALOG NUMBER③④			
		PENDANT 3/4"①	CEILING 3/4"①	WALL 3/4"①	STANCHION 1-1/4"②
26W (2x13) Normal	120VAC 60Hz	DEB2613E1A2GGN4	DEB2613E1X2GGN4	DEB2613E1B2GGN4	DEB2613E1D4GGN4
13W (1x13) Emergency	277VAC 60Hz	DEB2613E4A2GGN4	DEB2613E4X2GGN4	DEB2613E4B2GGN4	DEB2613E4D4GGN4
26W (2x13) Normal	120VAC 60Hz	DEB2626E1A2GGN4	DEB2626E1X2GGN4	DEB2626E1B2GGN4	DEB2626E1D4GGN4
26W (2x13) Emergency	277VAC 60Hz	DEB2626E4A2GGN4	DEB2626E4X2GGN4	DEB2626E4B2GGN4	DEB2626E4D4GGN4
39W (3x13) Normal	120VAC 60Hz	DEB3913E1A2GGN4	DEB3913E1X2GGN4	DEB3913E1B2GGN4	DEB3913E1D4GGN4
13W (1x13) Emergency	277VAC 60Hz	DEB3913E4A2GGN4	DEB3913E4X2GGN4	DEB3913E4B2GGN4	DEB3913E4D4GGN4
39W (3x13) Normal	120VAC 60Hz	DEB3926E1A2GGN4	DEB3926E1X2GGN4	DEB3926E1B2GGN4	DEB3926E1D4GGN4
26W (2x13) Emergency	277VAC 60Hz	DEB3926E4A2GGN4	DEB3926E4X2GGN4	DEB3926E4B2GGN4	DEB3926E4D4GGN4

① *Pendant, Ceiling & Wall models may be changed to 1" hubs by changing the 11th character from **2** to **3**; e.g. **DEB2613E1A3GGN4**.*
② *For 1-1/2" angle Stanchion, change **D4** to **D5** in catalog number. Change **D4** to **S5** for 1-1/2" Straight (90°) Stanchion.*
③ *Omit 2nd "**G**" for globe-only fixture for use with **VEXA-100** Exit Accessory.*
④ *Standard color for fixtures is Killark beige. Add **-R** for RED adder.*
NOTES: See page L135 for ballast data.
For fixture dimensions use small tank VM series page L55.

HUBBELL® KILLARK®

Class II, Div. 1 & 2, Groups E,F,G
Class III
NEMA 3, 4, 4X

UL844; UL1570; UL924 (File E162407)
UL Wet Location Listed (Indoor & Outdoor)
UL Listed (Indoor & Outdoor)
Rated for 40C° ambient. Minimum start 0°C.

FEATURES-SPECIFICATIONS

DEB 13-26 WATT EMERGENCY-ONLY MODE FIXTURES					
COMPACT FLUOR. LAMP INCL.	LINE VOLTAGE	CATALOG NUMBER③④			
		PENDANT 3/4①	CEILING 3/4①	WALL 3/4①	STANCHION 1-1/4②
13W (1x13) Emergency	120 or 277VAC 60Hz	DEB0013E10A2GGN4	DEB0013E10X2GGN4	DEB0013E10B2GGN4	DEB0013E10D4GGN4
26W (2x13) Emergency	120 or 277VAC 60Hz	DEB0026E10A2GGN4	DEB0026E10X2GGN4	DEB0026E10B2GGN4	DEB0026E10D4GGN4

① *Pendant, Ceiling & Wall models may be changed to 1" hubs by changing the 12th character from **2** to **3** e.g. **DEB0013E10A3GGN4**. 1-1/2" angle Stanchion, change **D4** to **D5** in catalog number. Change **D4** to **S5** for 1-1/2" Straight (90°) Stanchion.*
③ *Omit 2nd "**G**" for globe-only fixture for use with **VEXA-100** Exit Accessory.*
④ *Standard color for fixtures is Killark beige. Add **-R** for RED adder.*

REPLACEMENT PARTS	
CATALOG NUMBER	DESCRIPTION
MPL13	Replacement Lamp
KFBP6	Replacement Battery Units*

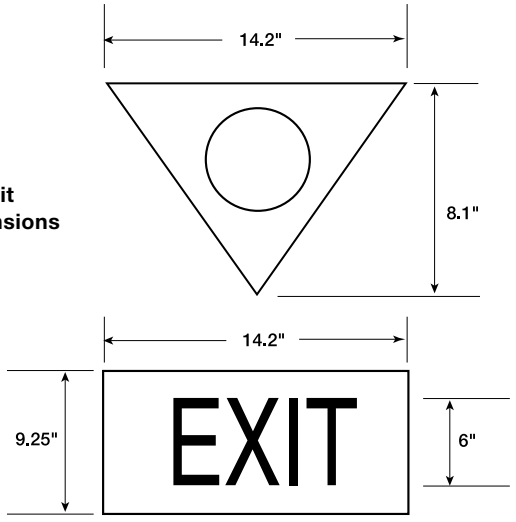
**One used per "Emergency" lamp.*

LUMEN OUTPUT⑤		
LAMP SOURCE	NORMAL POWER	EMERGENCY POWER
13Watt (1X13)	—	625
26Watt (2x13)	1800	1250
39Watt (3X13)	2700	—

⑤ *Photometric characteristics similar to 39 watt MBF pages L31-33, except adjusted for lumen output.*

HAZARDOUS LOCATION APPLICATION DATA FOR GLOBE & GUARD AND WITH REFLECTOR			
LAMP SOURCE	CLASS II DIV 1 & 2 E,F,G	CLASS III SUITABILITY	SUPPLY WIRE
13Watt (1X13)	85°C (T6)	YES	85°C
26Watt (2x13)	85°C (T6)	YES	85°C
39Watt (3X13)	85°C (T6)	YES	85°C

VEXA-100 Exit Accessory Dimensions



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Class I, Div. 2, Groups A,B,C,D
Class I, Zone 2, Groups IIC, IIB, IIA
Class II, Div. 1 & 2, Groups E,F,G
Class III
NEMA 3, 4, 4X

UL844; UL1570; UL924 (File E162407)
UL Wet Location Listed (Indoor & Outdoor)
UL Listed (Indoor & Outdoor)
Rated for 40C° ambient. Minimum start 0°C.

FEATURES-SPECIFICATIONS

CERTILITE® E EMERGENCY

Applications

CERTI***LITE***® VEB and VEQ Emergency Lighting fixtures provide continuous illumination under normal power and switch to emergency battery backup during power outages. Emergency Units ONLY are available that operate only when normal power fails.

Units contain battery unit(s) that provides the OSHA required 90 minutes of illumination for egress.

Units are designed for general and task lighting indoors or outdoors where **flammable gases or vapors, combustible dusts, or simultaneous presence** may exist and create a hazardous location, as defined by the NEC

Use Push-To-Test station suitable for area of use for testing purposes. FXCS series control stations should be used for hazardous locations.

Features

- Bi-Pin Twin (VEB) or Quad-Pin triple-tube (VEQ) long-life compact fluorescent lamps **included**
- **World Voltage on Quad-Pin VEQ Series: 120 through 277VAC; 50 through 60 Hz**
- Choice of Pendant, Ceiling, Wall or Stanchion mount
- Corrosion resistant-Copper-free aluminum die-cast construction with Baked-on epoxy/polyester powder finish
- Exposed hardware is 316 grade stainless steel
- LED charging indicator light visible through lens

Accessories

- Exit sign: Model **VEXA-100** (Note: omit 2nd "**G**" in catalog number for globe-only fixture)
- Reflectors: Use standard dome **VMPSD-17** or angle model **VMPA-17** (see page L54)

Options

- For Factory Fusing on VEB and for VEQ to be used on 120V or 277V systems, add **-F** to catalog number e.g. **VEB2613E1A2GGN4-F.** For VEQ to be used on 208V, 220V, 230V, 240V systems, add **-FF** to catalog number, e.g. **VEQ2626E30A2GGN4-FF**
- For Red Painted Fixtures, add **-R** to catalog number, e.g. **VEB2613E1A2GGN4-R**

VEB/VEQ SERIES 26 - 84WATT NORMAL & EMERGENCY MODE FIXTURES

COMPACT FLUORESCENT LAMP INCLUDED	LINE VOLTAGE	CATALOG NUMBER ③ ④			
		PENDANT 3/4"①	CEILING 3/4"①	WALL 3/4"①	STANCHION 1-1/4"②
26W (2x13) Normal 13W (1x13) Emergency	120VAC 60Hz 277VAC 60Hz	**VEB2613E1A2GGN4** **VEB2613E4A2GGN4**	**VEB2613E1X2GGN4** **VEB2613E4X2GGN4**	**VEB2613E1B2GGN4** **VEB2613E4B2GGN4**	**VEB2613E1D4GGN4** **VEB2613E4D4GGN4**
26W (2x13) Normal 26W (2x13) Emergency	120VAC 60Hz 277VAC 60Hz	**VEB2626E1A2GGN4** **VEB2626E4A2GGN4**	**VEB2626E1X2GGN4** **VEB2626E4X2GGN4**	**VEB2626E1B2GGN4** **VEB2626E4B2GGN4**	**VEB2626E1D4GGN4** **VEB2626E4D4GGN4**
39W (3x13) Normal 13W (1x13) Emergency	120VAC 60Hz 277VAC 60Hz	**VEB3913E1A2GGN4** **VEB3913E4A2GGN4**	**VEB3913E1X2GGN4** **VEB3913E4X2GGN4**	**VEB3913E1B2GGN4** **VEB3913E4B2GGN4**	**VEB3913E1D4GGN4** **VEB3913E4D4GGN4**
39W (3x13) Normal 26W (2x13) Emergency	120VAC 60Hz 277VAC 60Hz	**VEB3926E1A2GGN4** **VEB3926E4A2GGN4**	**VEB3926E1X2GGN4** **VEB3926E4X2GGN4**	**VEB3926E1B2GGN4** **VEB3926E4B2GGN4**	**VEB3926E1D4GGN4** **VEB3926E4D4GGN4**
26W (1x26) Normal 26W (1x26) Emergency	120 through 277 50-60Hz	**VEQ2626E30A2GGN4**	**VEQ2626E30X2GGN4**	**VEQ2626E30B2GGN4**	**VEQ2626E30D4GGN4**
52W (2x26) Normal 26W (1x26) Emergency	120 through 277 50-60Hz	**VEQ5226E30A2GGN4**	**VEQ5226E30X2GGN4**	**VEQ5226E30B2GGN4**	**VEQ5226E30D4GGN4**
64W (2x32) Normal 32W (1x32) Emergency	120 through 277 50-60Hz	**VEQ6432E30A2GGN4**	**VEQ6432E30X2GGN4**	**VEQ6432E30B2GGN4**	**VEQ6432E30D4GGN4**
84W (2x42) Normal 42W (1x42) Emergency	120 through 277 50-60Hz	**VEQ8442E30A2GGN4**	**VEQ8442E30X2GGN4**	**VEQ8442E30B2GGN4**	**VEQ8442E30D4GGN4**

HUBBELL® KILLARK®

*① Pendant, Ceiling & Bracket models may be changed to 1" hubs by changing the 11th character from **2** to **3**; e.g. **VEB2613E1A3GGN4** (12th character in VEQ series).*
*② For 1-1/2" angle Stanchion, change **D4** to **D5** in catalog number. Change **D4** to **S5** for 1-1/2" Straight (90°) Stanchion.*
*③ Omit 2nd "**G**" for globe-only fixture for use with **VEXA-100** Exit Accessory.*
*④ Standard color for fixtures is Killark beige. Add **-R** for RED adder.*

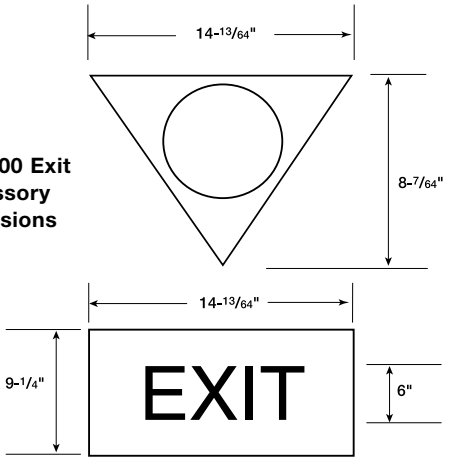
VEB/VEQ 13 - 42WATT EMERGENCY-ONLY MODE FIXTURES					
COMPACT FLUOR. LAMP INCLUDED	LINE VOLTAGE	CATALOG NUMBER ③④			
		PENDANT 3/4"①	CEILING 3/4"①	WALL 3/4"①	STANCHION 1-1/4"②
13W (1x13) Emergency	120 or 277VAC 60Hz	VEB0013E10A2GGN4	VEB0013E10X2GGN4	VEB0013E10B2GGN4	VEB0013E10D4GGN4
26W (2x13) Emergency	120 or 277VAC 60Hz	VEB0026E10A2GGN4	VEB0026E10X2GGN4	VEB0026E10B2GGN4	VEB0026E10D4GGN4
26W (1x26) Emergency	120 through 277 50-60Hz	VEQ0026E30A2GGN4	VEQ0026E30X2GGN4	VEQ0026E30B2GGN4	VEQ0026E30D4GGN4
32W (1x32) Emergency	120 through 277 50-60Hz	VEQ0032E30A2GGN4	VEQ0032E30X2GGN4	VEQ0032E30B2GGN4	VEQ0032E30D4GGN4
42W (1x42) Emergency	120 through 277 50-60Hz	VEQ0042E30A2GGN4	VEQ0042E30X2GGN4	VEQ0042E30B2GGN4	VEQ0042E30D4GGN4

① *Pendant, Ceiling & Wall models may be changed to 1" hubs by changing the 12th character from "**2**" to "**3**"; e.g.* VEB0013E10A3GGN4.
② *For 1-1/2" angle Stanchion, change "**D4**" to "**D5**" in catalog number.*
*Change "**D4**" to "**S5**" for 1-1/2" Straight (90°) Stanchion.*
③ *Omit 2nd "**G**" for globe-only fixture for use with **VEXA-100** Exit Accessory.*
④ *Standard color for fixtures is Killark beige. Add **-R** for RED adder.*

LUMEN OUTPUT⑤		
LAMP SOURCE	NORMAL POWER	EMERGENCY POWER
13Watt (1X13)	—	625
26Watt (2x13)	1650	1250
39Watt (3X13)	2475	—
26Watt (1x26)	1800	425
32Watt (1X32)	—	525
42Watt (1X42)	—	700
52Watt (2x26)	3600	—
64Watt (2X32)	4800	—
84Watt (2X42)	6400	—

⑤ *Photometric characteristics similar to 39 watt MBF pages L31-33, except adjusted for lumen output.*

VEXA-100 Exit Accessory Dimensions



HAZARDOUS LOCATION APPLICATION DATA FOR GLOBE & GUARD (SAME WITH REFLECTOR OR EXIT ACCESSORY)⑥				
LAMP SOURCE	CLASS I DIV. 2 A,B,C,D	CLASS II DIV. 1 & 2 E,F,G	CLASS III SUITABILITY	SUPPLY WIRE
13Watt (1X13)	180°C (T3A)	85°C (T6)	YES	75°C
26Watt (2x13)	180°C (T3A)	85°C (T6)	YES	75°C
39Watt (3X13)	180°C (T3A)	85°C (T6)	YES	75°C
26Watt (1x26)	215°C (T2D)	120°C (T4A)	YES	75°C
32Watt (1X32)	215°C (T2D)	120°C (T4A)	YES	75°C
42Watt (1X42)	215°C (T2D)	120°C (T4A)	YES	75°C
52Watt (2x26)	215°C (T2D)	120°C (T4A)	YES	75°C
64Watt (2X32)	215°C (T2D)	120°C (T4A)	YES	75°C
84Watt (2X42)	215°C (T2D)	120°C (T4A)	YES	75°C

⑥ *VEB/VEQ units are rated for simultaneous presence.*

REPLACEMENT PARTS			
CATALOG NUMBER	REPLACEMENT LAMPS	CATALOG NUMBER	REPLACEMENT BATTERY UNITS
MPL13	13W Bi-Pin	**KFBP5**	13W Bi-Pin*
MQL26	26W Quad-Pin	**KFBP7**	26/32/42W Quad-Pin
MQL32	32W Quad-Pin		
MQL42	42W Quad-Pin		

**One used per "Emergency" lamp.*

BALLAST DATA NORMAL POWER						
LAMP WATTS	VOLTAGE AC	START AMPS	OPERATING AMPS	INPUT WATTS	BALLAST CIRCUIT	REGULATION
26Watt (2x13)	120 / 277	0.78/.70	0.6	32	NPF	—
39Watt (3X13)	120 / 277	1.17/1.05	0.9	48	NPF	—
26Watt (1x26)	120 through 277	—	.27@120V /.13 @277V	29	HPF	Electronic
32Watt (1X32)	120 through 277	—	.31@120V /.15 @277V	36	HPF	Electronic
42Watt (1X42)	120 through 277	—	.37@120V /.17 @277V	46	HPF	Electronic
52Watt (2x26)	120 through 277	—	.54@120V /.26 @277V	58	HPF	Electronic
64Watt (2X32)	120 through 277	—	.62@120V /.30 @277V	72	HPF	Electronic
84Watt (2X42)	120 through 277	—	.74@120V /.34 @277V	92	HPF	Electronic

For fixture dimensions use small tank VM series page L55.

Class I, Div. 1 & 2, Groups C,D
Class I, Zones 1 & 2, Groups IIB, IIA
Class II, Div. 1 & 2, Groups E,F,G
Class III
NEMA 3

Compliances: UL 844; UL 1570, UL924 (File E162407)

UL Wet Location Listed (Indoor & Outdoor)

Rated for 40C° ambient. Minimum start 0° C

Temperature codes:
Class I C,D **T6**;
Class II E,F,G **T4**;
Suitable for Class III

FEATURES-SPECIFICATIONS

HOSTILE*LITE*® E
EMERGENCY

Applications

HOSTILE***LITE***® EEQ Emergency Lighting fixtures provide continuous illumination under normal power and switch to emergency battery backup during power outages. Emergency Units ONLY are available that operate only when normal power fails.

Units contain battery unit that provides the OSHA required 90 minutes of illumination (same lamp) for egress.

Units are designed for general and task lighting indoors or outdoors where flammable gases or vapors or combustible dusts exist and create a hazardous location, as defined by the NEC.

Use Push-To-Test station suitable for area of use for testing purposes. FXCS series control stations should be used for hazardous locations.

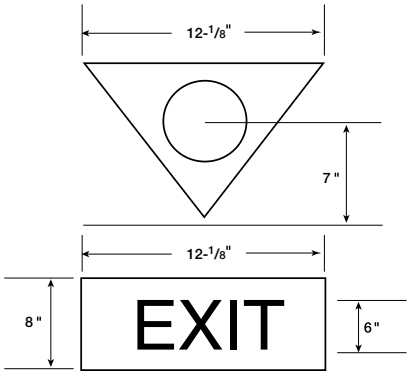
Features

- Quad-Pin long-life triple-tube compact fluorescent lamps **included**
- Choice of Pendant, Ceiling, Wall or Stanchion mount
- Factory Sealed - No external seal required
- Corrosion resistant-Copper-free aluminum (less than 4/10 of 1%) die-cast construction w/Baked-on epoxy/polyester powder finish
- Exposed hardware is 316 grade stainless steel
- LED charging indicator light visible through lens

Accessories

Exit sign: Model **HEXA-100** (note omit 2nd "**G**" in catalog number for globe-only fixture) see page L74.

Reflectors: Use standard dome **ERSD15** or angle model **ERA15** (see page L73).



EEQ 26, 32 & 42WATT NORMAL & EMERGENCY MODE FIXTURES

QUAD-PIN FLUOR. LAMP INCLUDED	LINE VOLTAGE @ 60 HZ	CATALOG NUMBER ③⑤⑥			
		PENDANT 3/4" ①	CEILING 3/4" ①	BRACKET 3/4" ①	STANCHION 1-1/4" ②
26Watt	120VAC④	EEQ2626E1A2GG	EEQ2626E1X2GG	EEQ2626E1B2GG	EEQ2626E1D4GG
32Watt	120VAC④	EEQ3232E1A2GG	EEQ3232E1X2GG	EEQ3232E1B2GG	EEQ3232E1D4GG
42Watt	120VAC④	EEQ4242E1A2GG	EEQ4242E1X2GG	EEQ4242E1B2GG	EEQ4242E1D4GG

EEQ 26, 32 & 42WATT EMERGENCY-ONLY MODE FIXTURES

QUAD-PIN FLUOR. LAMP INCLUDED	LINE VOLTAGE @ 60 HZ	CATALOG NUMBER ③⑤⑥			
		PENDANT 3/4" ①	CEILING 3/4" ①	BRACKET 3/4" ①	STANCHION 1-1/4" ②
26Watt	120 or 277VAC④	EEQ0026E10A2GG	EEQ0026E10X2GG	EEQ0026E10B2GG	EEQ0026E10D4GG
32Watt	120 or 277VAC④	EEQ0032E10A2GG	EEQ0032E10X2GG	EEQ0032E10B2GG	EEQ0032E10D4GG
42Watt	120 or 277VAC④	EEQ0042E10A2GG	EEQ0042E10X2GG	EEQ0042E10B2GG	EEQ0042E10D4GG

① *Pendant, Ceiling & Bracket models may be changed to 1" hubs by changing the 11th character from **2** to **3**; e.g. **EEQ2626E1A3GG** (12th character in EMERGENCY-ONLY MODE).*
② *Stanchion fixtures are 1-1/2" with a 1-1/2 to 1-1/4" reducer.*
③ *Omit 2nd "**G**" for globe-only fixture for use with **HEXA-100** Exit Accessory.*
④ *Normal and Emergency Mode Models are available in 277Volt; change the **1** in the catalog number to **4**. Emergency-Only Models are factory set to 120V and can be changed to 277Volt in field.*
⑤ *Standard color for fixtures is Killark beige. Add **-R** for RED adder.*
⑥ *EEQ fixtures use a tank extension ring and are 2-1/2" taller than EBF fixtures (see page L76).*
⑦ *Photometric characteristics similar to EBF26 page L85, except adjusted for lumen output.*

LUMEN OUTPUT⑦

LAMP SOURCE	NORMAL POWER	EMERG. POWER
26Watt	1800	450
32Watt	2400	575
42Watt	3200	750

BALLAST DATA

LAMP WATTS	VOLTAGE	OPERATING AMPS	INPUT WATTS	BALLAST CIRCUIT	REGULATION
26Watt (1x26)	120 / 277 VAC	.24@120V /.11 @277V	29	HPF	Electronic
32Watt (1X32)	120 / 277 VAC	.31@120V /.13 @277V	36	HPF	Electronic
42Watt (1x42)	122 / 277 VAC	.38@120V /.17 @277V	46	HPF	Electronic

HUBBELL®
KILLARK®

Class I, Div. 2, Groups A,B,C,D
Class I, Zone 2, Groups IIC, IIB, IIA
Class II, Div. 2 Groups F,G
NEMA 3, 4

UL Listed
Compliances: UL 44; UL 81570, UL924"
UL Wet Location Listed (Indoor & Outdoor)
Pending

FEATURES-SPECIFICATIONS

LINEAR*LITE*™ E
EMERGENCY

Applications

LINEAR*LITE*™ DBFE Emergency Lighting fixtures provide continuous illumination under normal power and switch to emergency battery backup during power outages. Units contain a battery unit that provides the OSHA required 90 minutes of illumination for egress.

Units are designed for general and task lighting in areas where flammable gases or vapors or combustible dusts may exist due to abnormal conditions, and create a Division 2 hazardous location, as defined by the NEC.

Features

- Sheet steel 20 ga. housing with continuous weld prevents foreign matter from entering enclosure
- Lens frame assembly has silicon rubber gasketing and heat tempered glass lens
- Electrostatically applied polyester finish
- NEMA 4 construction for wet locations
- LED charging indicator light visible through lens
- Push-To-Test Button mounted on sloping side of fixture - allows end-to-end mounting of fixtures

DBFE FLUORESCENT EMERGENCY LIGHTING

CATALOG NUMBER	CONDUIT SIZE	NUMBER OF LAMPS	LINE VOLTAGE 60 HERTZ	DESCRIPTION
DBFE23212	3/4"	2	120VAC	32W T8 electronic ballast 0°F start
DBFE23242			277VAC	Medium bi-pin base
DBFE24012			120VAC	40W T12 bi-pin 50°F start electronic
DBFE24042			277VAC	Medium bi-pin base
DBFE16012			120VAC	60W rapid start high output F48T12/HO
DBFE16042			277VAC	Recessed double contact 800MA
DBFE23213	3/4"	3	120VAC	32W T8 electronic ballast 0°F start
DBFE23243			277VAC	Medium bi-pin base
DBFE24013			120VAC	40W T12 bi-pin 50°F start electronic
DBFE24043			277VAC	Medium bi-pin base
KFBP3	(32/40 or 60 Watt)			Replacement battery unit

Notes: Emergency unit will start lamps at 0°F
32W T8 Electronic ballast minimum start is 0°F;
40W ballast is electronic with 50°F start (add CW for electromagnetic 0°F);
60W electromagnetic ballast start -20°F
32W & 40W units operate 2 Lamps in emergency mode for maximum illumination
60W units operate a single lamp. 3 Lamp 60W emergency units not available.
For dimensional data and mounting accessories, see DBF series page L106.

EMERGENCY LUMEN CHART

LAMPS	INITIAL LUMENS	AFTER 90 MINUTES
2 32W Lamps	850	455
2 40W Lamps	610	420
1 60W Lamp	780	460

DBFE HAZARDOUS LOCATION APPLICATION DATA

NO. OF LAMPS	LAMP WATTS	RATED AMBIENT °C	SUPPLY WIRE SUITABLE FOR °C MIN.	CLASS I, DIV. 2, GROUPS A,B,C,D MAX. LAMP TEMP.°C UL/CSA TEMP./I.D.	CLASS II, DIV. 2, GROUPS E.F,G MAX. SURF. TEMP.°C UL/CSA TEMP./I.D.	NEMA TYPE 3 (RAINTIGHT)	NEMA TYPE 4 (HOSEDOWN)
2	32/40	40	90	T6 (85°C/185°F)	T6 (85°C/185°F)	YES	YES
3	32/40	40	90	T5 (100°C/212°F)	T6 (85°C/185°F)	YES	YES
2	60	40	90	T4A (120°C/248°F)	T6 (85°C/185°F)	YES	YES

Class I, Div. 1 & 2, Groups C,D
Class I, Zones 1 & 2, Groups IIB, IIA
Class II, Div. 1 & 2 Groups E,F,G
Class III, Div. 1 & 2
NEMA 7CD, 9EFG

Listed File E162407
UL-844 Electric Lighting Fixtures for use in Hazardous Locations
UL-924 Emergency Lighting & Power Equipment
Certified File LR11713

FEATURES-SPECIFICATIONS

HOSTILE*LITE*® E
EMERGENCY

Applications

Where required by NEC, Life Safety Code, etc., to provide illumination during interruption of normal power to lighting system.

Hazardous Locations (gas, vapor, dust), include such areas as: Oil & Gas Refining, Production & Storage, Grain Processing, Paint Manufacture.

Features

- Three high intensity lamps can be independently adjusted to provide custom emergency lighting to a specific area
- Three 20 watt MR16 lamps included
- Pendant, bracket and ceiling mounting styles for a mounting arrangement that suits any lighting layout
- Remote hazardous location test station **(included)** allows testing of fixture at a convenient ground level location
- Dual voltage transformer can be connected to 120V or 277V systems
- Four tough, long life lead-acid batteries require no maintenance and have a 12 VDC output of 60 watts for 90 minutes
- Safety disconnect feature automatically disconnects lamps from battery if globe is removed
- Solid state battery charger has a low voltage disconnect feature
- Red pilot light, easily visible inside globe, indicates AC power is being supplied to batter charger
- Fixture housings are factory sealed by the electro-mechanical connection block
- The only wiring required is attaching supply wires to the integral female connection block in the mounting cap. Threading fixture onto mounting cap makes the electrical connection
- Electrical continuity is not made during assembly or disassembly without five or more threads secured to insure a flame path

EBB HALOGEN EMERGENCY LIGHTING

ANSI LAMP TYPE	WATTS	VOLTAGE①	HUB SIZE	CATALOG NUMBER		
				PENDANT	WALL	CEILING
MR16	3x20W	Dual 120, 277	3/4"	EBB32010A2	—	—
			1"	EBB32010A3	EBB32010B3	EBB32010X3

①*For 220V/50Hz, change 8th character to "**7**"; eg.* **EBB32017A2**.

EBB ACCESSORIES

CATALOG NUMBER	DESCRIPTION
EZG1	Guard (die cast aluminum)
VMPSD-40	Reflector (standard dome)
EBB-L12	MR16 12 volt lamp
17505AAAB	MR16 lamp socket
EBB-RB	Rechargeable battery (4 used per unit)
EBB-BC	Battery charger (circuit board)
17506AAAB	120 / 277V transformer
EBB-PL	LED pilot light

Remote test station allows "Push-To-Test" at a location convenient to the user, ***included****.*

HAZARDOUS LOCATION APPLICATION DATA

LAMP TYPE	LAMP WATTS	RATED AMBIENT DEGREES	MAX SURFACE TEMPERATURE		
			CLASS I	CLASS II	SIMULTANEOUS CLASS I & II
MR16 Halogen	60W Total	40°C	T6 (85°C)	T5 (100°C)	T5 (100°C)

Note: EBB Series fixtures should not be stored for extended periods before energizing.

Pendant

Ceiling

Wall Mount

Class I, Div. 1 & 2, Groups C,D
Class I, Zones 1 & 2, Groups IIB, IIA
Class II, Div. 1 & 2 Groups E,F,G
Class III, Div. 1 & 2
NEMA 7CD, 9EFG

Listed File E162407
UL-844 Electric Lighting Fixtures for use in Hazardous Locations
UL-924 Emergency Lighting & Power Equipment
Certified File LR11713

FEATURES-SPECIFICATIONS

Dimensions: See EZ 50-250 Watt dimensions on page L97

Factory sealed; external seals not required

Cast of copper-free Aluminum (Less than 0.4% copper)

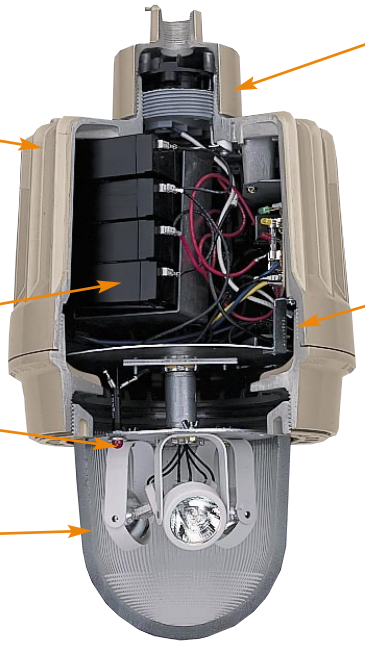
Electrostatically applied epoxy polyester finish is baked on for high density corrosion protection

*Four lead-acid batteries are maintenance free and provide 60 watts to the lamps for 90 minutes**

Red pilot light indicates AC power flow to battery charger

Lamps automatically disconnect from battery if globe is disengaged

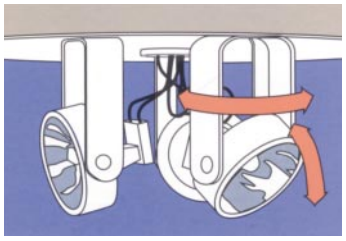
Glass globe prestressed for heat and impact resistance - Globe is internally fluted on sides and prismatic on bottom



Wireless assembly of fixture tank to mounting cap — Electro-mechanical male/female block allows fast, easy installation and bench top servicing without disconnecting supply wires

Nameplate displays Third Party Certifications and ratings in English and French (large red plate identifies it as an emergency fixture)

Acme double lead threads assure quick and trouble free assembly



Lamps adjustable on 2 axis for maximum aiming flexibility.

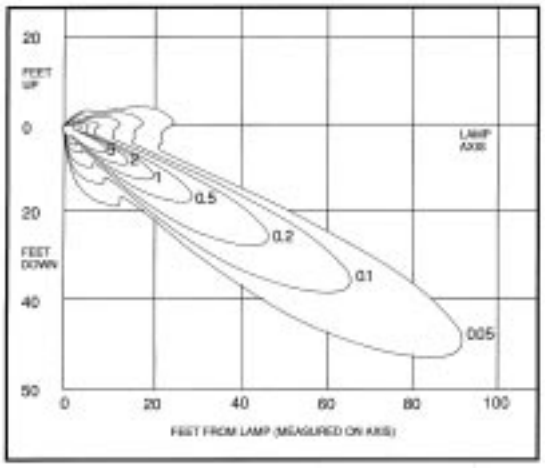
** EBB Series fixtures should not be stored for extended periods before energizing.*

Photometrics

Typical vertical ISO foot candle distribution.

One 20 watt lamp aimed at 20° below horizontal.

Note: Some minor variations in light spread will occur as each lamp is rotated up/down within the glass globe.



HUBBELL
KILLARK®

STROBE SIGNAL LIGHT

Class I, Div. 1 & 2, Groups C,D
Class I, Zones 1 & 2, Groups IIB, IIA
Class II, Div. 1 & 2, Groups E,F,G
Class III, Div. 1 & 2
Suitable for wet locations
UL Marine
NEMA 3, 4X
Factory sealed

Listed - File E84609

Certified - File LR11713

FEATURES-SPECIFICATIONS

HOSTILE*LITE*®

Applications

HOSTILE***LITE***® ESX Series strobe fixtures can be an excellent warning device in hazardous, hostile or wet locations where hearing is impaired due to high ambient noise conditions.

Compliances

- UL-1203 explosion-proof and dust ignition-proof electrical equipment for use in hazardous (classified) locations
- UL-1638 visual signaling appliances
- UL Marine-type electric lighting fixtures
- NEMA 3, 4, 4X, 7CD, 9EFG

Specifications

- Ambient Temperature range –40˚C to +55˚C
- NEC temperature code, T6 (<85°C)
- Flash rate–85 flashes per minute
- Voltage and amperage:
  12-74 VDC:
  Draws 1.25A avg. @ 12 VDC
  tapering to 0.2A avg. @ 74 VDC

  .75A avg. @ 24 VDC

  120/240 VAC (50/60 HZ):
  Draws 0.30A avg. @ 120 VAC
  Draws 0.17A avg. @ 240 VAC
- Power supply output:
  13 watts standard
  11 watts for 12-74 VDC
- Intensity:

Clear	200 candela effective
Amber	170 candela effective
Blue	90 candela effective
Red	40 candela effective
Green	70 candela effective

Catalog Number Logic

ES X 0 0000 00 0 (CEN)*

Series Constant

Signal Type
X—Strobe

Lens Color
A—Amber
B—Blue
C—Clear
G—Green
R—Red

Voltage
120A—120 VAC 50/60 Hz.
240A—240 VAC 50/60 Hz.
1274—12 through 74 VDC

Guard
G—Guard
Add letter "**G**" to end of catalog number if guard is required.

Mounting Style
A2—3⁄4" Pendant
A3—1" Pendant
X2—3⁄4" Ceiling
X3—1" Ceiling
B2—3⁄4" Bracket
B3—1" Bracket
D4—1-1⁄4"/1-1⁄2" Stanchion

**CEN (CENELEC) approved option available. See pages L156 for more information. ESX Series strobes with CENELEC labeling are rated T6 by PTB.*

REPLACEMENT POWER SUPPLY	
CATALOG NUMBER	VOLTAGE
ESX120PS	120VAC, 50/60 HZ.
ESX240PS	240VAC, 50/60 HZ.
ESX1274PS	12-74 VDC

REPLACEMENT LENS & LAMP ASSEMBLY	
CATALOG NUMBER	DESCRIPTION
ESXAL	Amber
ESXBL	Blue
ESXCL	Clear
ESXGL	Green
ESXRL	Red

HUBBELL®
KILLARK®

Class I, Div. 1 & 2, Groups C,D
Class I, Zones 1 & 2, Groups IIB, IIA
Class II, Div. 1 & 2, Groups E,F,G
Class III, Div. 1 & 2
Suitable for wet locations
Marine
NEMA 3, 4X
Factory sealed

Listed - File E84609

Certified - File LR11713

FEATURES-SPECIFICATIONS

PENDANT

CEILING

WALL

STANCHION

PENDANT EXS STROBE SIGNAL LIGHT①②			
LAMP TYPE	HUB SIZE③	VOLTAGE @60 HERTZ	CATALOG NUMBER GLOBE AND GUARD
STROBE	3/4"	120 VAC, 50/60 HZ.	ESXR120AA2
		240 VAC, 50/60 HZ.	ESXR240AA2
		12-74 VDC	ESXR1274A2

CEILING EXS STROBE SIGNAL LIGHT①②			
LAMP TYPE	HUB SIZE③	VOLTAGE @60 HERTZ	CATALOG NUMBER GLOBE AND GUARD
STROBE	3/4"	120 VAC, 50/60 HZ.	ESXR120AX2
		240 VAC, 50/60 HZ.	ESXR240AX2
		12-74 VDC	ESXR1274X2

WALL EXS STROBE SIGNAL LIGHT①②			
LAMP TYPE	HUB SIZE③	VOLTAGE @60 HERTZ	CATALOG NUMBER GLOBE AND GUARD
STROBE	3/4"	120 VAC, 50/60 HZ.	ESXR120AB2
		240 VAC, 50/60 HZ.	ESXR240AB2
		12-74 VDC	ESXR1274B2

STANCHION EXS STROBE SIGNAL LIGHT①②			
LAMP TYPE	HUB SIZE④	VOLTAGE @60 HERTZ	CATALOG NUMBER GLOBE AND GUARD
STROBE	1-1/4"	120 VAC, 50/60 HZ.	ESXR120AD4
		240 VAC, 50/60 HZ.	ESXR240AD4
		12-74 VDC	ESXR1274D4

① *Catalog numbers do not include guards. To order add letter "**G**" to end of catalog number or order **EMG2** separately.*
② *Catalog numbers include Red lens. To specify different colored lens, change fourth character in catalog number to one of the following: "**B**"=Blue, "**C**"=Clear, "**A**"=Amber, "**G**"=Green.*
③ *Standard hub size is 3/4" NPT. To order 1" NPT, change last character of catalog number from "**2**" to "**3**".*
④ *Stanchion mount is standard with 1-1/2" NPT and a 1-1/2" NPT to 1-1/4" NPT reducer installed.*

NOTE: See EM series for dimensions, page L76.

GSH SERIES • LIGHTING

STROBE SIGNAL FOR HAZARDOUS AND WET LOCATIONS

Class I, Div. 2, Groups C,D
Class I, Zone 2, Groups IIB, IIA
Class II, Div. 2, Group G
NEMA 3
Suitable for Indoor and Outdoor Use

UL-1638 Visual Signaling Appliances
UL File No. E121305
CSA File No. LR-97692

FEATURES-SPECIFICATIONS

Applications

With an all aluminum housing and polycarbonate lens assembly, the GSH Series Strobe Signal Light will withstand the rigors of everyday harsh usage - even in locations that are classified as "Hazardous". The GSH's helix shaped Xenon lamp produces 400 effective candela, making it visible over broad distances. This warning light can be used for plant evacuation or any other communication need.

Hazardous and Wet Locations in industrial facilities where high ambient noise levels prevent the use of audible signaling devices.

As a visual warning of a fault, leak, accident or other condition.

To indicate the status of a particular process or operation.

Features

- High-intensity strobe produces 400 candela with 60 flashes per minute
- Reliable solid state components
- All aluminum housing is compact in size and light in weight
- Polycarbonate Lexan lens resists breakage and impacts
- Available in four different globe colors and two voltages
- Designed for mounting with globe in up or down position

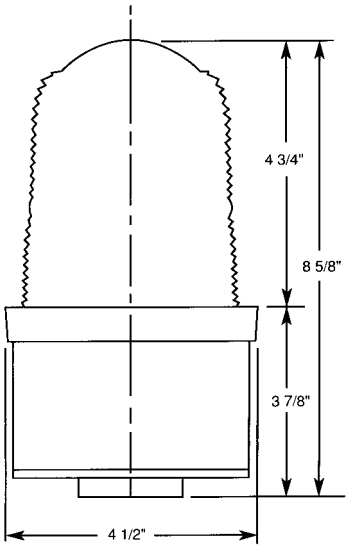
GSH STROBE SIGNAL LIGHT

VOLTAGE	HUB SIZE	CATALOG NUMBER			
		RED LENS	AMBER LENS	BLUE LENS	CLEAR LENS
120VAC. 50/60Hz.	1"	GSH-2-RA1	GSH-2-AA1	GSH-2-BA1	GSH-2-CA1
24VDC	1"	GSH-2-RD2	GSH-2-AD2	GSH-2-BD2	GSH-2-CD2
Replacement Lamp		ST77C			

Specifications:

Lamp Life	2,000 hours
Style/Lamp	Xenon flash lamp
Shipping Weight	4 lbs.
Height	8-5/8"
Diameter	4-1/2"
Electrical Ratings	
120 VAC 50/60Hz	.28 Amps
24 VDC	.35 Amps

Temperature Code T4A (120°C/248°F)



HUBBELL
KILLARK

FKA

FH

Hook/Loop

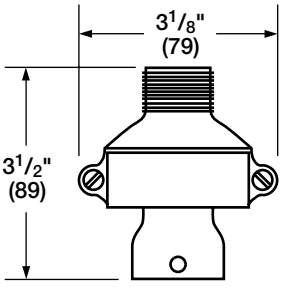
FEATURES-SPECIFICATIONS

FKA

Features

- Ball joint permits fixture to hang plumb. Fixture may swing up to 20° from vertical in any direction
- Cast of aluminum alloy (copper-free aluminum; less than 4/10 of 1%)
- Set screw locks fixture stem in place. Cannot accidently loosen
- Joint cannot twist conductor
- Suitable for fixtures up to 125 pounds

FKA		
CATALOG NUMBER	MALE THREAD	FIXTURE STEM SIZE
FKA-22	3/4"	3/4"



Listed - File E27731

Certified - File LR11851

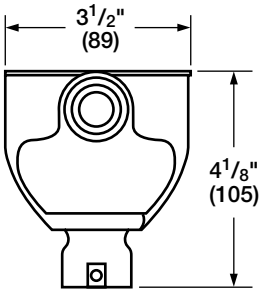
See files for details or call Killark.

FH

Features

- Combination splice box and flexible fixture hanger
- Ball joint permits fixture to hang plumb. Fixture may swing up to 20° from vertical
- Cast of aluminum alloy (copper-free aluminum; less than 4/10 of 1%)
- Set screw locks fixture stem in place
- Joint cannot twist conductors
- Cover may be removed for easy wiring
- Mounts directly to conduit
- Suitable for fixtures up to 125 pounds

FH			
TWO HUBS FEED THRU	THREE HUBS T	CONDUIT SIZE	FIXTURE STEM SIZE
FHC-11	—	1/2"	1/2"
FHC-12	—	1/2"	3/4"
FHC-21	FHT-21	3/4"	1/2"
FHC-22	FHT-22	3/4"	3/4"



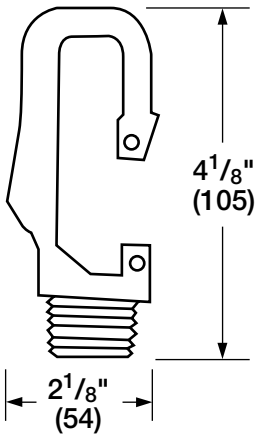
Listed - File E27731

HOOK/LOOP

Features

- Pendant fixture hanger consists of a "HOOK" and safety bar which allows conversion to a "LOOP" configuration as necessary
- 3/4" male thread
- Maximum load 125 pounds

HOOK/LOOP
CATALOG NUMBER
HOOK/LOOP



Listed - File E27731

Certified - File LR11851

See files for details or call Killark.

L

HUBBELL
KILLARK®

FH

Hook

V Hanger Boxes

VGA

VGC

VGH

VGX

Covers

Flexible Hanger Covers

Hub Covers
(for Rigid Mounting)

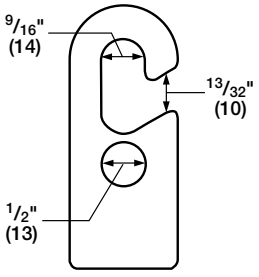
FEATURES-SPECIFICATIONS

FH HOOK

Features

- Economical hanger for pendant fixtures
- Fixtures may absorb minor bumps and vibration through free swinging action
- Hub provided with a set screw to prevent accidental loosening of fixture stem
- A 1/2 inch hole in body is for flexible cable. Cord may be assembled with plug for quick removal of fixtures
- Cast of aluminum alloy (copper-free—less than 4/10 of 1%)
- FH supports up to 125 pounds

FH HOOK, LOOP		
CATALOG NUMBER	DESCRIPTION	FIXTURE STEM SIZE
FH-2	Hook	3/4"



Listed - File E27731 or E3397
See files for details or call Killark.

V SERIES

Features

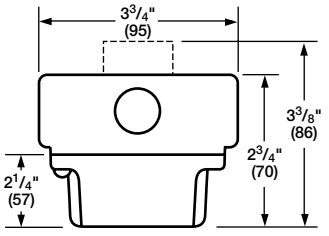
- Flexible fixture hanger for threaded fixture stem
- Enclosed and gasketed, suitable for wet locations
- Permits angular displacement of fixture without twisting wires
- Cushioned—absorbs shock and vibration. Internal strap assures ground continuity
- Combines splice box and hanger in one unit. Splice box available in four configurations
- Cast of corrosion resistant aluminum alloy (copper-free—less than 4/10 of 1%)
- Supports up to 125 pounds

Listed - File E27731 or E3397

FLEXIBLE HANGERS, V SERIES ENCLOSED AND GASKETED			
CATALOG NUMBER		HUB SIZE	FIXTURE STEM SIZE
HANGER W/SPLICE BOX	SPLICE BOX ONLY		
VPFHA-12	VGA-1	1/2"	3/4"
VPFHA-22	VGA-2	3/4"	3/4"
VPFHC-12	VGC-1	1/2"	3/4"
VPFHC-22	VGC-2	3/4"	3/4"
VPFHH-12	VGH-1	1/2"	3/4"
VPFHH-22	VGH-2	3/4"	3/4"
VPFHX-12	VGX-1	1/2"	3/4"
VPFHX-22	VGX-2	3/4"	3/4"

FIXTURE HANGERS ONLY		
CATALOG NUMBER	DESCRIPTION	FIXTURE STEM SIZE
VPFH-2	Flexible hanger cover, maximum load 125 Lbs.	3/4"
VG-2	Hub cover for rigid mounting	3/4"

See page L11 for other box configurations.



Flexible cover with box, dotted line is VGA pendant.

HUBBELL
KILLARK

HXB

XFH

EKJ

FEATURES-SPECIFICATIONS

HXB

Class I, Div. 1 & 2, Groups C,D
Class I, Zones 1 & 2, Groups IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G
Class III

Features

- Fixture hanger for hazardous locations combining splice box and hanger
- Set screws in female hub prevents accidental loosening of fixture stem; set screws in hub cover lock cover to the splice box
- Four hubs in "X" configuration up to 3/4"
- Flange mounting ring cast as integral part of box
- Splice box wiring hole with cover for access to box interior
- Cast of corrosion resistant aluminum alloy (copper-free aluminum; less than 4/10 of 1%)
- Supports to 125 pounds

Listed - File E10514

Certified - File LR11716

HXB SPLICE BOX AND HANGER		
CATALOG NUMBER	CONDUIT HUB SIZE	FIXTURE STEM SIZE
HXB-11	1/2"	1/2"
HXB-12	1/2"	3/4"
HXB-21	3/4"	1/2"
HXB-22	3/4"	3/4"
HXBC	Blank Cover	

XFH

Class I, Div. 1 & 2, Groups C,D
Class I, Zones 1 & 2, Groups IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G
Class III

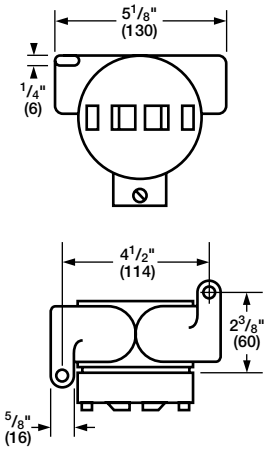
Features

- Fixture hanger for hazardous locations combining splice box and hanger
- Set screws in female hub prevents accidental loosening of fixture
- Straight through conduit hubs for through feed
- Mounting lugs are standard
- Cast of corrosion resistant aluminum alloy (copper-free aluminum; less than 4/10 of 1%)
- Supports to 125 pounds

Listed - File E10514

Certified - File LR11716

XFH SPLICE BOX AND HANGER		
CATALOG NUMBER	CONDUIT HUB SIZE	FIXTURE STEM SIZE
XFH-21	3/4"	1/2"
XFH-22	3/4"	3/4"



EKJ

Class I, Div. 1 & 2, Groups A,B,C,D
Class I, Zones 1 & 2, Groups IIC,IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G
Class III

Features

- Fixture pendant hanger for hazardous locations
- Permits free swing and plumb hang
- Set screws in each hub prevents accidental loosening of fixture
- Constructed of seamless bronze hose with brass outer braid. Asphaltum impregnated jute inner insulates and protects wire from abrasion. Brass female end fittings are supplied with short nipples
- Electrical ground continuity without bonding jumper
- Suitable for wet locations as well as hazardous locations
- Flexible lengths 4 to 18 inches
- Supports to 125 pounds

Listed - File E10514

Certified - File LR11716

EKJ FLEXIBLE PENDANT HANGER*		
CATALOG NUMBER	CONDUIT HUB SIZE	FIXTURE STEM SIZE
EKJ-14	1/2"	4"
EKJ-24	3/4"	
EKJ-16	1/2"	6"
EKJ-26	3/4"	
EKJ-18	1/2"	8"
EKJ-28	3/4"	
EKJ-110	1/2"	10"
EKJ-210	3/4"	
EKJ-112	1/2"	12"
EKJ-212	3/4"	
EKJ-115	1/2"	15"
EKJ-215	3/4"	
EKJ-118	1/2"	18"
EKJ-218	3/4"	

*See page F65 for EKJ 1" sizes

HUBBELL
KILLARK®

JL

JAL

ENY Pendant Seal

FEATURES-SPECIFICATIONS

JL/JAL

Class I, Div. 1 & 2, Groups C,D
Class I, Zones 1 & 2, Groups IIC,IIB
Class II, Div. 1 & 2, Groups E,F,G
Class III

Features

- Splice box and hub cover for mounting pendant fixtures in hazardous locations
- Conduit openings in two configurations
- Flange type cover. Set screw in hub prevents accidental loosenings of fixture stem
- Integral lugs for mounting box to ceiling
- Cast of corrosion resistant aluminum alloy (copper-free aluminum; less than 4/10 of 1%)
- Supports up to 125 pounds

Listed - File E10514

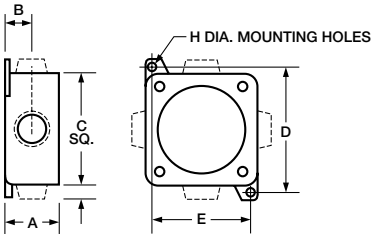
Certified - File LR11716

JL/JAL SPLICE BOX AND HUB COVER FIXTURE HANGER

CATALOG NUMBER		CONDUIT BOX	COVER	TYPE
JL SERIES W/HUB COVER	JAL SERIES W/HUB COVER			
JLC-11	—	1/2"	1/2"	C Straight Through
JLC-12	—	1/2"	3/4"	
JLC-21	—	3/4"	1/2"	
JLC-22	—	3/4"	3/4"	
JLX-11	JALX-11	1/2"	1/2"	X Four Hubs
JLX-12	JALX-12	1/2"	3/4"	
JLX-21	JALX-21	3/4"	1/2"	
JLX-22	JALX-22	3/4"	3/4"	
—	JALX-31	1"	1/2"	
—	JALX-32	1"	3/4"	

JL/JAL DIMENSIONS

SERIES	A	B	C	D	E	H
JL	1-15/16" (49)	11/16" (17)	3-1/4" (95)	4-7/32" (107)	2-3/8" (60)	5/16" (8)
JAL	2-3/8" (60)	15/32" (12)	4-5/8" (117)	5-1/4" (133)	4-1/8" (105)	5/16" (8)



ENY PENDANT SEALS

Class I, Div. 1 & 2, Groups A,B,C,D
Class I, Zones 1 & 2, Groups IIC,IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G
Class III

Features

- ENY Pendant Seals are designed for hazardous locations and meet code requirements for a safety set-screw when hanging fixtures. Common applications are for Class I Division I Group B or Class I Zone 2 Ex nR restricted breathing fixtures
- Cast of corrosion resistant aluminum alloy (copper-free aluminum; less than 4/10 of 1%)
- Supports up to 125 pounds

See page F46 for sealing compound and packing fiber

CATALOG NUMBER	SIZE
ENY-2SET	3/4"
ENY-3SET	1"

HUBBELL
KILLARK

Class I, Div. 2, Groups A,B,C,D
Class I, Zone 2, Groups IIC, IIB, IIA
Class II, Div. 1 & 2, Groups E,F,G
Class III
NEMA 3, 4, 4X

UL 844 Listed

CSA Certified

FEATURES-SPECIFICATIONS

CERTILITE®

Applications

VMCHVM adapters are designed to ease upgrading of existing Crouse-Hinds® "**VM**, **LM**, **DM**" series fixtures to Killark "**VM**" CERTI***LITE***® fixtures. Units are primarily designed to aid replacement of old ceiling or wall mount units where removal of the existing mounting box and conduit would be difficult or time consuming. Adapter & Killark fixtures rated NEMA 4.

Adapters allow the upgrade of older Mercury Vapor fixtures to newer HID lamp sources, Compact Fluorescent Lamps, or to Emergency Lighting such as VEB or VEQ series.

Note: Adapters are used with Fixture Ballast Tanks (plus globes & guards), e.g. VMLO-0-900, VMG-17, VMAG-17. Complete fixture with mounting splice box is not required. Adapters are painted to match Killark beige fixture finish.

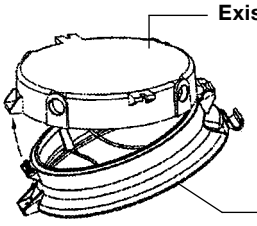
Features

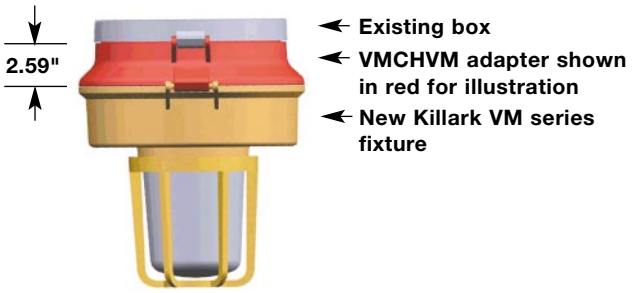
- Attachment screws permit secure adapter attachment to old mounting box and to new fixture
- Patented design

Temperature codes:

See VM series product pages L36-60 or as listed with other desired product series.

VM COMPETITIVE ADAPTER		
CATALOG NUMBER	DESCRIPTION	EXAMPLE OF MODEL UTILIZED OR REPLACED
VMCHVM	Crouse ceiling mount or wall mount splice box. Adapter allows simple attachment of Killark ballast tank to existing mount.	Ceiling mounts CM2, CM3 Wall mounts TWM2, TWM3





EAC/EACH

EZBA12

Class I, Div. 1 & 2, Group D
Class I, Zones 1 & 2, Groups IIA
Class II, Div. 1 & 2, Groups E,F,G
Class III

UL 844 Listed

CSA Certified

FEATURES-SPECIFICATIONS

HOSTILE*LITE*®

Applications

EAC Series adapters are designed to ease upgrading of existing Crouse-Hinds® "EV" series or existing Killark "H" series to Killark HOSTILE***LITE***® EM or EZ series. Units are primarily designed to aid replacement of old ceiling or wall mount units where removal of the existing mounting box and conduit would be difficult or time consuming. Adapter & Killark fixtures rated NEMA 4.

Adapters allow the upgrade of older incandescent fixtures to newer Fluorescent or HID lamp sources, or to Emergency Lighting including ESX strobes or EEQ emergency series.

Note: Adapters are used with Fixture Housing, Globe, Globe Support assemblies, e.g. EBF261 & EMG1; EMS151 & EMG2; or EZH100 & EZG1. Complete fixture with mounting box is not required. Adapters are painted to match Killark beige fixture finish.

Features

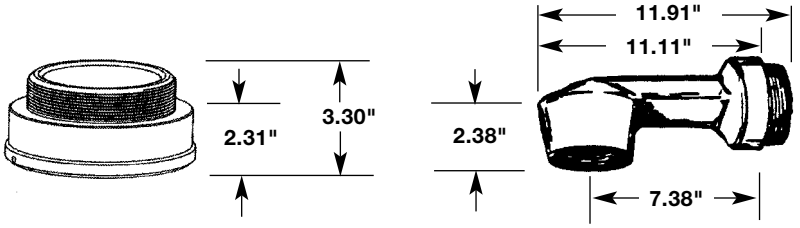
- Setscrews permit secure adapter attachment into old mounting box and to new fixture
- Converted fixtures may be easily removed for service using the Killark EZ mounting system. Wire terminals are included in the adapter (EZTB Terminal Block)

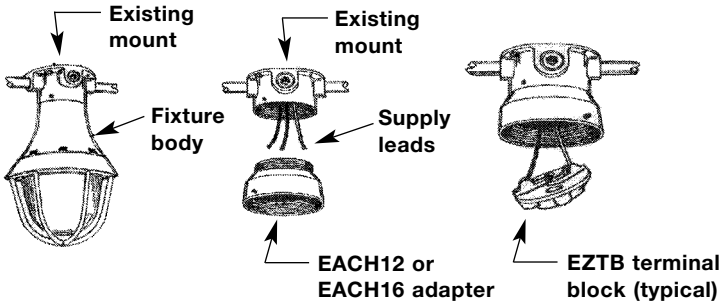
Temperature codes:

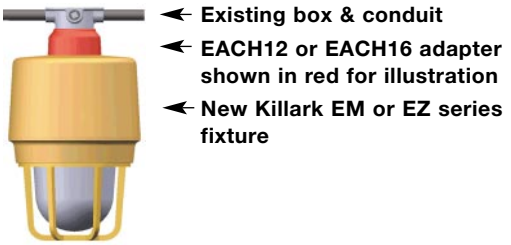
See EM/EB/EQ series pages L70 to L78
EZ series pages L89 to L99
ESX series pages L140 to L141
EEQ series page L136

EAC/EZBA FIXTURE ADAPTERS

CATALOG NUMBER	DESCRIPTION	EXAMPLE OF MODEL UTILIZED OR REPLACED
EAC	Killark "H" series Ceiling or Wall	HXG-2-125 Fixture
EACH12	Crouse old style Ceiling Mount with lamp socket in adapter ring between fixture body and a GUF 12 pitch box	"GUF" box w/Set Screw
EZBA12	Crouse old style Wall Mount, old style Arm with integral lamp socket (socket in fixture in newer models) attached to GUF 12 pitch mounting box. EZBA12 includes arm	"GUF" box w/Set Screw
EACH16	Crouse newer style ceiling or wall fixtures w/lamp socket in fixture body; mounted to EV series 16 pitch threaded box; adapter fits in ceiling box or existing arm attached to wall fixture	EVA26/EV22 Box; EVBX240







HUBBELL®
KILLARK®

CENELEC

II 3 G Ex nAR II
Ex nAR (non-sparking restricted breathing enclosure)
Zone 2 areas to EN60079-14
IP66 to EN60529

FEATURES-SPECIFICATIONS

Application

Ex nAR wellglass luminaire with high IP rating. Suitable for high pressure sodium, metal halide and GLS lamps in Zone 2 applications.

A lightweight wellglass luminaire which incorporates a restricted breathing lamp chamber and a non-restricted breathing, control gear housing. This eases access and maintenance of the control gear enclosure and removes the need for special cable or glands. The luminaire is tested to IP66 and is suitable for use in harsh environments.

All screws and brackets are manufactured from stainless steel or corrosive resistant aluminum, ensuring the reliability of this versatile luminaire.

Features

- Compact size and low weight
- Easy access for wiring and control gear
- Unrestricted breathing control gear enclosure removes the need for special glands or cable
- Corrosion resistant construction
- Excellent light distribution

Specifications

Enclosure—Painted copper-free aluminum, glass prometric globe (heat resistant). Silicone rubber gasket. Stainless steel fasteners

Entry—2xM20 tapped entries (M25 available, add M25 suffix)

Termination—Suitable for looping 6mm^2, 3 core cable to 16A max. current rating

Installation—Ceiling mount standard

Control Gear—Internal, contained within unrestricted breathing enclosure. Standard with cutout for protection from overheating on HID models

Power Factor Correction—Incorporated to 0.85 min for discharge lamps

Relamping—Via sealed lamp chamber

Burning Position—Lamp base up ±25° off vertical

Compliance

Apparatus Standard—EN50021

Certificate—ATEX Type examination EECS BAS98ATEX3197X (BASEEFA)

ECLIPSE JUNIOR - CEILING MOUNT① WITH GLOBE

CATALOG NUMBER	LAMPS	WATTS	LAMP BASE	RATED SUPPLY	AMBIENT RATING C°	T CLASS
ECJN/70/MS/CM/50Hz ECJN/70/MS/CM/60Hz	SON; MBI	70	E27	220-254V 50Hz② 220-254V 60Hz②	50	T4
ECJN/100/HS/CM/50Hz ECJN/100/HS/CM/60Hz	SON	100	E27	220-254V 50Hz② 220-254V 60Hz②	45	T3
ECJN/80/MV/CM/50Hz ECJN/80/MV/CM/60Hz	MV	80	E27	220-254V 50Hz② 220-254V 60Hz②	50	T3
ECJN/150/GL/CM/50Hz	GLS③	150	E27	250V MAX AC/DC	55	T4
ECJN/26/CF/CM/50Hz ECJN/26/CF/CM/60Hz	CFL	26	G24q	240V 50Hz④ 240 60Hz④	40	T3

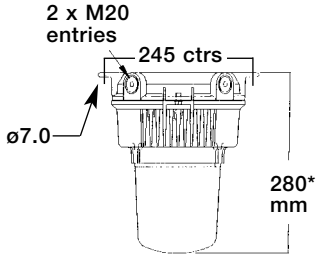
① *All fixtures are "**CM**" ceiling mount.*
*For pole mount change **CM** in catalog number to **P***
*For wall mount change **CM** in catalog number to **W***
*For pendant mount change **CM** in catalog number to **PD***
② *Ballasts are multitap for 220, 230, 240, 254.*
③ *Incandescent type.*
④ *For other voltages consult factory.*

ECL OPTIONS

CATALOG NUMBER	DESCRIPTION
ECJ-CG	Cast guard (painted aluminum)
ECJ-DR	Dome reflector*
ECJ-AR	30° Angle reflector*

**White Fiberglass*

Dimensions



Prismatic Globe

**ECJN/100 is 300mm*

Chalmit lighting

HOSTILELITE MEDIUM BASE ZONE 1

CENELEC

EEx d IIB T6 (or T5-T2)
PTB No. Ex-98.E.1076
Apparatus for atmospheres
Class I, Div. 1 & 2 Groups C,D
Class I, Zone 1 & 2, Groups IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G
Class III, Div. 1 & 2
Suitable for wet locations
Marine
NEMA 3, 4, 4X, 7CD, 9EFG
Factory Sealed

Listed - File E10514 and E91793

Certified - File LR11713

FEATURES-SPECIFICATIONS

HOSTILELITE®

Applications

Killark EM/EB/ESX HOSTILE*LITE*® series fixtures are available with a European "Certificate of Conformity" from PTB (Physikalisch-Technische Bundesanstalt), the approval agency based in Germany. Fixtures with this rating will be useful for Original Equipment Manufacturers and others who build and ship apparatus into European markets.

This approval is granted by PTB with the use of a special ground lug and label. Fixtures carrying an EEx d IIB approval are automatically granted an IP54 (ingress protection) rating. See separate Temperature Code chart for PTB certified ratings. Killark EM/EB/ESX fixtures with the PTB rating and labels still carry all UL & CSA ratings.

Fixture housing/globe/globe support assemblies (e.g. EM120 CEN) may be ordered with the CEN suffix. Complete fixture numbers, with the CEN suffix, will be shipped with the mounting boxes, guards and accessories as component parts. Reflectors and other accessory parts, as listed on pages L73-74, may be used. Killark fixtures are NPT tapped and plugged with at least one conduit hole open; Metric to NPT adapters are available from Killark. Contact the factory for specific part numbers.

See standard EM/EB/EQ section for:

- Photometric details
- Replacement component parts
- Accessories
- Dimensional information

Compliances

- EN 50014:1992
- EN 50018:1994
- UL-844 Electric Lighting Fixtures for use in Hazardous Locations
- UL Marine Type Electric Lighting Fixtures
- UL-1572 Standard for HID Lighting Fixtures
- CSA C22.2 no. 137-M1981 Electric Luminaires for use in Hazardous Locations
- CSA C22.2 no. 94-1976 Special purpose enclosure
- NEMA 3, 4, 4x, 7CD, 9EFG

Catalog Number Logic

E 0 0 00 0 00 0 - 00 CEN

Series Constant

Lamp Base
M—Medium Base (E26)
B—Bi-Pin Base
Q—Quad-Pin Base

Lamp Type
I—Incandescent (250VAC Max)
F—Fluorescent
S—HPS
H—MH
M—MV

Lamp Wattage
15—150W, A-21, INC
20—300W, PS-25, INC
30—300W, PS-30, INC
13—(1) 13W, PL FLUOR
26—(2) 13W Bi-Pin or (1) Quad-Pin 26Watt FLUOR
32—Quad-Pin FLUOR
35—35W, HPS
42—Quad-Pin FLUOR
05—50W, HPS, MH, MV
07—70W, HPS, MH
75—75W, MV
10—100W, HPS, MH, MV
15—150W, HPS

Voltage @ 60 Hertz
0—Quadri-Volt
1—120
4—277
5—480
30—120-277 50/60 Hz EQF Quad-Pin Only

Mounting Type
A2—3/4" Pendant
A3—1" Pendant
X2—3/4" Ceiling
X3—1" Ceiling
B2—3/4" Bracket
B3—1" Bracket
D4—1-1/4"/1-1/2" Stanchion

Guard
G—Omit G if guard is not required

Options
ML—UL Marine Listing for EMI Standard on EMS, EMM and EMH) Not available on EBF, EQF

HUBBELL
KILLARK®

CENELEC

EEx d IIB T6 (or T5-T2)
PTB No. Ex-98.E.1076
Apparatus for atmospheres
Class I, Div. 1 & 2 Groups C,D
Class I, Zone 1 & 2, Groups IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G
Class III, Div. 1 & 2
Suitable for wet locations
Marine
NEMA 3, 4, 4X, 7CD, 9EFG
Factory Sealed

Listed - File E10514 and E91793

Certified - File LR11713

ORDERING INFORMATION

EM 60–300W MEDIUM BASE INCANDESCENT①

LAMP TYPE	LAMP/WATTS	LAMP SIZE	CATALOG NUMBER④			
			PENDANT 3/4"②	CEILING 3/4"②	WALL 3/4"②	STANCHION 1-1/4"③
INC	60, 75, 100, 150	A-19, A-21	EMI15A2G CEN	EMI15X2G CEN	EMI15B2G CEN	EMI15D4G CEN
	100, 150, 200, 300	A-23, PS-25	EMI20A2G CEN	EMI20X2G CEN	EMI20B2G CEN	EMI20D4G CEN
	200, 300	PS-25, PS-30	EMI30A2G CEN	EMI30X2G CEN	EMI30B2G CEN	EMI30D4G CEN

EBF 13-26W Bi-Pin FLUORESCENT

LAMP TYPE	Bi-Pin FLUORESCENT⑤		CATALOG NUMBER④			
	LAMP/WATTS	VOLTAGE @60 HERTZ	PENDANT 3/4"②	CEILING 3/4"②	WALL 3/4"②	STANCHION 1-1/4"③
COMPACT FLUOR.	13 (1 X 13)	120	EBF131A2G CEN	EBF131X2G CEN	EBF131B2G CEN	EBF131D4G CEN
	13 (1 X 13)	277	EBF134A2G CEN	EBF134X2G CEN	EBF134B2G CEN	EBF134D4G CEN
	13 (2 X 13)	120	EBF261A2G CEN	EBF261X2G CEN	EBF261B2G CEN	EBF261D4G CEN
	13 (2 X 13)	277	EBF264A2G CEN	EBF264X2G CEN	EBF264B2G CEN	EBF264D4G CEN

EQF 26-42W WORLD VOLTAGE QUAD-PIN COMPACT FLUORESCENT①

LAMP TYPE	QUAD-PIN FLUORESCENT⑤		CATALOG NUMBER④ ⑥			
	LAMP INCLUDED	VOLTAGE @60 HERTZ	PENDANT 3/4"②	CEILING 3/4"②	WALL 3/4"②	STANCHION 1-1/4"③
COMPACT FLUOR.	26 Watt	120-277VAC 50-60Hz	EQF2630A2G CEN	EQF2630X2G CEN	EQF2630B2G CEN	EQF2630D4G CEN
	32 Watt	120-277VAC 50-60Hz	EQF3230A2G CEN	EQF3230X2G CEN	EQF3230B2G CEN	EQF3230D4G CEN
	42 Watt	120-277VAC 50-60Hz	EQF4230A2G CEN	EQF4230X2G CEN	EQF4230B2G CEN	EQF4230D4G CEN

① See Hazardous Location Application Data on page L156 for specific suitabilities.
*② For 1" pendant, ceiling and wall hubs, substitute "**3**" for "**2**" in catalog number; example: **EMI15A3G CEN**.*
③ Stanchion conduit hub size supplied is 1-1/2" with 1-1/2" to 1-1/4" reducer for 1-1/4" mounting. (refer to catalog logic).
*④ Luminaire catalog numbers include guards. To order luminaire without guard, omit last letter "**G**" from catalog number.*
⑤ Minimum starting temperature is 0°F. Lamps supplied with fixture.
⑥ EQF fixtures use a tank extension ring and are 2.5" taller than EBF fixtures.
NOTE: Reflectors must be ordered separately (see page L73). All luminaires are designed for mounting with lamp in base up position.

HOSTILELITE MEDIUM BASE HID

CENELEC

EEx d IIB T6 (or T5-T2)
PTB No. Ex-98.E.1076
Apparatus for atmospheres
Class I, Div. 1 & 2 Groups C,D
Class I, Zone 1 & 2, Groups IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G
Class III, Div. 1 & 2
Suitable for wet locations
Marine
NEMA 3, 4, 4X, 7CD, 9EFG
Factory Sealed

Listed - File E10514 and E91793

Certified - File LR11713

ORDERING INFORMATION

EM 35-150W MEDIUM BASE HIGH PRESSURE SODIUM① ④

LAMP TYPE	LAMP WATTS	ANSI LAMP TYPE	VOLTAGE @60 HERTZ	CATALOG NUMBER④			
				PENDANT 3/4"②	CEILING 3/4"②	WALL 3/4"②	STANCHION 1-1/4"③
HPS	35	S-76	120	EMS351A2G CEN	EMS351X2G CEN	EMS351B2G CEN	EMS351D4G CEN
	50	S-68	120, 208, 240, 277	EMS050A2G CEN	EMS050X2G CEN	EMS050B2G CEN	EMS050D4G CEN
	70	S-62	120, 208, 240, 277	EMS070A2G CEN	EMS070X2G CEN	EMS070B2G CEN	EMS070D4G CEN
	70	S-62	480	EMS075A2G CEN	EMS075X2G CEN	EMS075B2G CEN	EMS075D4G CEN
	100	S-54	120, 208, 240, 277	EMS100A2G CEN	EMS100X2G CEN	EMS100B2G CEN	EMS100D4G CEN
	100	S-54	480	EMS105A2G CEN	EMS105X2G CEN	EMS105B2G CEN	EMS105D4G CEN
	150	S-55	120	EMS151A2G CEN	EMS151X2G CEN	EMS151B2G CEN	EMS151D4G CEN

EM 50-100W MEDIUM BASE METAL HALIDE① ④

LAMP TYPE	LAMP WATTS	ANSI LAMP TYPE	VOLTAGE @60 HERTZ	CATALOG NUMBER④			
				PENDANT 3/4"②	CEILING 3/4"②	WALL 3/4"②	STANCHION 1-1/4"③
MH	50	M-110	120, 208, 240, 277	EMH050A2G CEN	EMH050X2G CEN	EMH050B2G CEN	EMH050D4G CEN
	70	M-98	120, 208, 240, 277	EMH070A2G CEN	EMH070X2G CEN	EMH070B2G CEN	EMH070D4G CEN
	100	M-90	120, 208, 240, 277	EMH100A2G CEN	EMH100X2G CEN	EMH100B2G CEN	EMH100D4G CEN

EM 50-100W MEDIUM BASE MERCURY VAPOR① ④

LAMP TYPE	LAMP WATTS	ANSI LAMP TYPE	VOLTAGE @60 HERTZ	CATALOG NUMBER④			
				PENDANT 3/4"②	CEILING 3/4"②	WALL 3/4"②	STANCHION 1-1/4"③
MV	50	H-46	120, 277	EMM0510A2G CEN	EMM0510X2G CEN	EMM0510B2G CEN	EMM0510D4G CEN
	75	H-43	120	EMM751A2G CEN	EMM751X2G CEN	EMM751B2G CEN	EMM751D4G CEN
	75	H-43	277	EMM754A2G CEN	EMM754X2G CEN	EMM754B2G CEN	EMM754D4G CEN
	100	H-43	120, 208, 240, 277	EMM100A2G CEN	EMM100X2G CEN	EMM100B2G CEN	EMM100D4G CEN
	100	H-43	480	EMM105A2G CEN	EMM105X2G CEN	EMM105B2G CEN	EMM105D4G CEN

① See Hazardous Location Application Data on page L156 for specific suitabilities.
*② For 1" pendant, ceiling and wall hubs, substitute "**3**" for "**2**" in catalog number; example: **EMS351A3G CEN**.*
③ Stanchion conduit hub size supplied is 1-1/2" with 1-1/2" to 1-1/4" reducer for 1-1/4" mounting. (refer to catalog logic).
*④ Luminaire catalog numbers include guards. To order luminaire without guard, omit last letter "**G**" from catalog number.*
NOTE: Reflectors must be ordered separately (see page L73). All luminaires are designed for mounting with lamp in base up position.

CENELEC

EEx d IIB T6 (or T5-T2)
PTB No. Ex-98.E.1076
Apparatus for atmospheres
Class I, Div. 1 & 2 Groups C,D
Class I, Zone 1 & 2, Groups IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G
Class III, Div. 1 & 2
Suitable for wet locations
Marine
NEMA 3, 4, 4X, 7CD, 9EFG
Factory Sealed

Listed - File E10514 and E91793

Certified - File LR11713

FEATURES-SPECIFICATIONS

HOSTILE*LITE*®

Applications

Killark EZ HOSTILE*LITE*® EZ Series fixtures are available with a European "Certificate of Conformity" from PTB (Physikalisch-Technische Bundesanstalt), the approval agency based in Germany. Fixtures with this rating will be useful for Original Equipment Manufacturers and others who build and ship apparatus into European markets.

This approval is granted by PTB with the use of a special external ground lug and label. Fixtures carrying an EEx d IIB approval are automatically granted an IP54 (ingress protection) rating. See separate Temperature Code chart for PTB certified ratings. Killark EZ fixtures with the PTB rating and labels still carry all UL & CSA ratings.

Fixture housing/globe/globe support assemblies may be ordered with the CEN suffix (e.g. EZSO50 CEN). Complete fixture numbers, with the CEN suffix, will be shipped with the mounting boxes, guards and accessories as component parts. Reflectors and other accessory parts, as listed on page L96, may be used. Killark fixtures are NPT tapped and plugged with at least one conduit hole open; Metric to NPT adapters are available from Killark and are listed in the fittings section.

See standard EZ section for:

- Photometric Details
- Replacement component parts
- Accessories
- Dimension information

Features

- Four light sources:
  —High Pressure Sodium, 50-400W
  —Metal Halide, 70-400W
  —Pulse Start Metal Halide, 175-400W
  —Mercury Vapor, 100-400W
- E-39 mogul Lamp Holder
- Mounting choice—Pendant, ceiling, 25˚ stanchion or 90˚ wall mount, all with "wireless" design that allows fast, easy fixture installation or removal for maintenance
- Factory sealed—No external seal needed. Simply wire mounting cap and thread on fixture to install
- Corrosion resistant—Copper-free aluminum die cast construction. Baked powder epoxy finish, electrostatically applied. Exposed hardware is 316 grade stainless steel
- Accessories—Available with or without guard, standard dome or angle reflector
- Options—EZ Series fixtures can be specified with instant restart for HPS lamps, auxiliary quartz circuit, ballast protector, and fuse kits. (See pages L94-96 for details.)

Compliances

- EN 50014:1992
- EN 50018:1994
- UL-844 Electric Lighting Fixtures for use in Hazardous Locations
- UL Marine Type Electric Lighting Fixtures
- UL-1572 Standard for HID Lighting Fixtures
- CSA C22.2 no. 137-M1981 Electric Luminaires for use in Hazardous Locations
- CSA C22.2 no. 94-1976 Special purpose enclosure
- NEMA 3, 4, 4X, 7CD, 9EFG

Catalog Number Logic

EZ 0 00 0 00 0 - 00 CEN

Series Constant

Lamp Type
S—High Pressure Sodium
H—Metal Halide
M—Mercury Vapor
P—MHP

Lamp Wattage
05—50 Watt HPS
07—70 Watt HPS/MH
10—100 Watt HPS/MH/MV
15—150 Watt HPS/MH
17—175 Watt MH/MV/MHP
25—250 Watt HPS/MH/MV/MHP
32—320 Watt MHP
35—350 Watt MHP
40—400 Watt HPS/MH/MV/MHP

Voltage
0—Quadri-Volt, 60 Hz. (120, 208, 240, 277)
5—480 Volts, 60 Hz.
6—TriTap Canada (120, 277, 347), 60 Hz.
8—220/240 Volt, 50 Hz.
9—Special (Specify)

Mounting Type
A2—3/4" Pendant
A3—1" Pendant
X2—3/4" Ceiling
X3—1" Ceiling
B2—3/4" Bracket
B3—1" Bracket
D4—1-1/4"/1-1/2" Stanchion

Guard
G—Guard (Omit G if guard is not required)

Options
Q—Auxiliary Quartz Stanby
R—Instant Restrike (150W HPS Max)
BP—Ballast Protector
PS—Paint Spray (50, 70, 100W HPS, 100W MV, 70, 100, MH)

HUBBELL
KILLARK®

HOSTILELITE HIGH PRESSURE SODIUM/METAL HALIDE 50-400W

CENELEC

EEx d IIB T6 (or T5-T2)
PTB No. Ex-98.E.1076
Apparatus for atmospheres EN 50014:1992
EN 50018:1994
Class I, Div. 1 & 2 Groups C,D
Class I, Zone 1 & 2, Groups IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G
Class III, Div. 1 & 2
Suitable for wet locations
Marine
NEMA 3, 4, 4X, 7CD, 9EFG
Factory Sealed

Listed - File E10514 and E91793

Certified - File LR11713

ORDERING INFORMATION

CENELEC 50-400 WATT, HIGH PRESSURE SODIUM①④

WATTS	ANSI LAMP	VOLTAGE	CATALOG NUMBER			
			PENDANT 3/4"②	CEILING 3/4"②	WALL 3/4"②	STANCHION 1-1/4"③
50	S-68	120/208/240/277 60Hz	EZS050A2G CEN	EZS050X2G CEN	EZS050B2G CEN	EZS050D2G CEN
		220/240 50Hz	EZS058A2G CEN	EZS058X2G CEN	EZS058B2G CEN	EZS058D4G CEN
		480	—	—	—	—
70	S-62	120/208/240/277 60Hz	EZS070A2G CEN	EZS070X2G CEN	EZS070B2G CEN	EZS070D4G CEN
		220/240 50Hz	EZS078A2G CEN	EZS078X2G CEN	EZS078B2G CEN	EZS078D4G CEN
		480	EZS075A2G CEN	EZS075X2G CEN	EZS075B2G CEN	EZS075D4G CEN
100	S-54	120/208/240/277 60Hz	EZS100A2G CEN	EZS100X2G CEN	EZS100B2G CEN	EZS100D4G CEN
		220/240 50Hz	EZS108A2G CEN	EZS108X2G CEN	EZS108B2G CEN	EZS108D4G CEN
		480	EZS105A2G CEN	EZS105X2G CEN	EZS105B2G CEN	EZS105D4G CEN
150	S-55	120/208/240/277 60Hz	EZS150A2G CEN	EZS150X2G CEN	EZS150B2G CEN	EZS150D4G CEN
		220/240 50Hz	EZS158A2G CEN	EZS158X2G CEN	EZS158B2G CEN	EZS158D4G CEN
		480	EZS155A2G CEN	EZS155X2G CEN	EZS155B2G CEN	EZS155D4G CEN
250	S-50	120/208/240/277 60Hz	EZS250A2G CEN	EZS250X2G CEN	EZS250B2G CEN	EZS250D4G CEN
		220/240 50Hz	EZS258A2G CEN	EZS258X2G CEN	EZS258B2G CEN	EZS258D4G CEN
		480	EZS255A2G CEN	EZS255X2G CEN	EZS255B2G CEN	EZS255D4G CEN
400	S-51	120/208/240/277 60Hz	EZS400A2G CEN	EZS400X2G CEN	EZS400B2G CEN	EZS400D4G CEN
		220/240 50Hz	EZS408A2G CEN	EZS408X2G CEN	EZS408B2G CEN	EZS408D4G CEN
		480	EZS405A2G CEN	EZS405X2G CEN	EZS405B2G CEN	EZS405D4G CEN

CENELEC 70-400 WATT, METAL HALIDE①④

WATTS	ANSI LAMP	VOLTAGE	CATALOG NUMBER			
			PENDANT 3/4"②	CEILING 3/4"②	WALL 3/4"②	STANCHION 1-1/4"③
70	M-98	120/208/240/277 60Hz	EZH070A2G CEN	EZH070X2G CEN	EZH070B2G CEN	EZH070D4G CEN
		220/240 50Hz	EZH078A2G CEN	EZH078X2G CEN	EZH078B2G CEN	EZH078D4G CEN
		480	EZH075A2G CEN	EZH075X2G CEN	EZH075B2G CEN	EZH075D4G CEN
100	M-90	120/208/240/277 60Hz	EZH100A2G CEN	EZH100X2G CEN	EZH100B2G CEN	EZH100D4G CEN
		220/240 50Hz	EZH108A2G CEN	EZH108X2G CEN	EZH108B2G CEN	EZH108D4G CEN
		480	EZH105A2G CEN	EZH105X2G CEN	EZH105B2G CEN	EZH105D4G CEN
175	M-57⑤	120/208/240/277 60Hz	EZH170A2G CEN	EZH170X2G CEN	EZH170B2G CEN	EZH170D4G CEN
		220/240 50Hz	EZH178A2G CEN	EZH178X2G CEN	EZH178B2G CEN	EZH178D4G CEN
		480	EZH175A2G CEN	EZH175X2G CEN	EZH175B2G CEN	EZH175D4G CEN
250	M-58	120/208/240/277 60Hz	EZH250A2G CEN	EZH250X2G CEN	EZH250B2G CEN	EZH250D4G CEN
		220/240 50Hz	EZH258A2G CEN	EZH258X2G CEN	EZH258B2G CEN	EZH258D4G CEN
		480	EZH255A2G CEN	EZH255X2G CEN	EZH255B2G CEN	EZH255D4G CEN
400	M-59	120/208/240/277 60Hz	EZH400A2G CEN	EZH400X2G CEN	EZH400B2G CEN	EZH400D4G CEN
		220/240 50Hz	EZH408A2G CEN	EZH408X2G CEN	EZH408B2G CEN	EZH408D4G CEN
		480	EZH405A2G CEN	EZH405X2G CEN	EZH405B2G CEN	EZH405D4G CEN

① See Hazardous Location Application Data on page L156 for specific suitabilities.
*② For 1 inch pendant, ceiling and wall hubs, substitute "**3**" for "**2**" in catalog number; example: **EZH070A3G CEN**.*
③ Stanchion conduit hub size supplied is 1-1/2" with 1-1/2" to 1-1/4" reducer for 1-1/4" mounting. (Refer to catalog logic).
*④ Luminaire catalog numbers include guards. To order luminaire without guard, omit last letter "**G**" from catalog number.*
⑤ Will also operate 150W M107 Metal Halide Lamps.
NOTE: Reflectors must be ordered separately (see page L96).
All luminaires are designed for mounting with lamp in base up position.

HUBBELL
KILLARK®

CENELEC

EEx d IIB T6 (or T5-T2)
PTB No. Ex-98.E.1076
Apparatus for atmospheres EN 50014:1992
EN 50018:1994
Class I, Div. 1 & 2 Groups C,D
Class I, Zone 1 & 2, Groups IIB,IIA
Class II, Div. 1 & 2, Groups E,F,G
Class III, Div. 1 & 2
Suitable for wet locations
Marine
NEMA 3, 4, 4X, 7CD, 9EFG
Factory Sealed

Listed - File E10514 and E91793

Certified - File LR11713

ORDERING INFORMATION

CENELEC 175-400 WATT, PULSE START METAL HALIDE①④

WATTS	ANSI LAMP	VOLTAGE	CATALOG NUMBER			
			PENDANT 3/4"②	CEILING 3/4"②	WALL 3/4"②	STANCHION 1-1/4"③
175	M-137	120/208/240/277 60Hz	EZP170A2G CEN	EZP170X2G CEN	EZP170B2G CEN	EZP170D4G CEN
		—	—	—	—	—
		480	EZP175A2G CEN	EZP175X2G CEN	EZP175B2G CEN	EZP175D4G CEN
250	M-138	120/208/240/277 60Hz	EZP250A2G CEN	EZP250X2G CEN	EZP250B2G CEN	EZP250D4G CEN
		—	—	—	—	—
		480	EZP255A2G CEN	EZP255X2G CEN	EZP255B2G CEN	EZP255D4G CEN
320	M-132	120/208/240/277 60Hz	EZP320A2G CEN	EZP320X2G CEN	EZP320B2G CEN	EZP320D4G CEN
		220/240 50Hz	EZP328A2G CEN	EZP328X2G CEN	EZP328B2G CEN	EZP328D4G CEN
		480	EZP325A2G CEN	EZP325X2G CEN	EZP325B2G CEN	EZP325D4G CEN
350	M-131	120/208/240/277 60Hz	EZP350A2G CEN	EZP350X2G CEN	EZP350B2G CEN	EZP350D4G CEN
		220/240 50Hz	EZP358A2G CEN	EZP358X2G CEN	EZP358B2G CEN	EZP358D4G CEN
		480	EZP355A2G CEN	EZP355X2G CEN	EZP355B2G CEN	EZP355D4G CEN
400	M-135	120/208/240/277 60Hz	EZP400A2G CEN	EZP400X2G CEN	EZP400B2G CEN	EZP400D4G CEN
		220/240 50Hz	EZP408A2G CEN	EZP408X2G CEN	EZP408B2G CEN	EZP408D4G CEN
		480	EZP405A2G CEN	EZP405X2G CEN	EZP405B2G CEN	EZP405D4G CEN

CENELEC 100-400 WATT, MERCURY VAPOR①④

WATTS	ANSI LAMP	VOLTAGE	CATALOG NUMBER			
			PENDANT 3/4"②	CEILING 3/4"②	WALL 3/4"②	STANCHION 1-1/4"③
100	H-38	120/208/240/277 60Hz	EZM100A2G CEN	EZM100X2G CEN	EZM100B2G CEN	EZM100D4G CEN
		220/240 50Hz	EZM108A2G CEN	EZM106X2G CEN	EZM106B2G CEN	EZM108D4G CEN
		480	EZM105A2G CEN	EZM105X2G CEN	EZM105B2G CEN	EZM105D4G CEN
175	H-39	120/208/240/277 60Hz	EZM170A2G CEN	EZM170X2G CEN	EZM170B2G CEN	EZM170D4G CEN
		220/240 50Hz	EZM178A2G CEN	EZM178X2G CEN	EZM178B2G CEN	EZM178D4G CEN
		480	EZM175A2G CEN	EZM175X2G CEN	EZM175B2G CEN	EZM175D4G CEN
250	H-37	120/208/240/277 60Hz	EZM250A2G CEN	EZM250X2G CEN	EZM250B2G CEN	EZM250D4G CEN
		220/240 50Hz	EZM258A2G CEN	EZM258X2G CEN	EZM258B2G CEN	EZM258D4G CEN
		480	EZM255A2G CEN	EZM255X2G CEN	EZM255B2G CEN	EZM255D4G CEN
400	H-33	120/208/240/277 60Hz	EZM400A2G CEN	EZM400X2G CEN	EZM400B2G CEN	EZM400D4G CEN
		220/240 50Hz	EZM408A2G CEN	EZM408X2G CEN	EZM408B2G CEN	EZM408D4G CEN
		480	EZM405A2G CEN	EZM405X2G CEN	EZM405B2G CEN	EZM405D4G CEN

① See Hazardous Location Application Data on page L156 for specific suitabilities.
*② For 1 inch pendant, ceiling and wall hubs, substitute "**3**" for "**2**" in catalog number; example: **EZP170A3G**.*
③ Stanchion conduit hub size supplied is 1-1/2" with 1-1/2" to 1-1/4" reducer for 1-1/4" mounting. (Refer to catalog logic)
*④ Luminaire catalog numbers include guards. To order luminaire without guard, omit last letter "**G**" from catalog number.*
NOTE: Reflectors must be ordered separately (see page L96).
All luminaires are designed for mounting with lamp in base up position.

PTB CENELEC APPLICATION DATA

MAXIMUM AMBIENT TEMPERATURE RANGE -20°C TO 40°C				
TYPE OF LUMINAIRE	TYPE OF ENCLOSURE	FORM OF THE LAMP	MAXIMUM WATTAGE	TEMPERATURE CLASS
EMI15	EMO20	A-19/A-21	150W	T4
EMI20	EMO20	A-23/PS-25	300W	T3
EMI30	EMO30	PS-25/PS-30	300W	T2
EMH05	EMO30	BD17/M-110	50W	T6
EMH07	EMO30	BD17/M-98	70W	T5
EMH10	EMO30	BD17/M-90	100W	T4
EMM05	EMO30	ED17/H-46	50W	T5
EMM75	EMO30	ED17/H-43	75W	T4
EMM10	EMO30	ED17/H-38	100W	T4
EMS35	EMO30	ED17/S-76	35W	T6
EMS05	EMO30	ED17/S-68	50W	T6
EMS07	EMO30	ED17/S-62	70W	T5
EMS10	EMO30	ED17/S-54	100W	T5
EMS15	EMO30	ED17/S-55	150W	T4
EZH50	EZO25	ED28/M-110	50W	T4
EZH70	EZO25	ED28/M-98	70W	T4
EZH10	EZO25	ED28/M-90	100W	T4
EZH15	EZO25	ED28/M-102	150W	T4
EZH17	EZO25	ED28/M-57	175W	T4
EZH25	EZO25	ED28/M-58	250W	T3
EZH40	EZO40	ED37/M-59	400W	T3
EZP175①	EZP025	ED-28/M137	175W	T4
EZP250①	EZP025	ED-28/M138	250W	T3
EZP320①	EZP040	ED-28/M132	320W	T3
EZP350①	EZP040	ED-28/M131	350W	T3
EZP400①	EZP040	ED-28/M135	400W	T3
EZM10	EZO25	ED23-1/2/H-38	100W	T4
EZM17	EZO25	ED28/H-39	175W	T3
EZM25	EZO25	ED28/H-37	250W	T3
EZM40	EZO40	ED37/H-33	400W	T3
EZS50	EZO25	ED23-1/2/S-68	50W	T4
EZS70	EZO25	ED23-1/2/S-62	70W	T4
EZS10	EZO25	ED23-1/2/S-54	100W	T4
EZS15	EZO25	ED23-1/2/S-55	150W	T4
EZS25	EZO40	ED18/S-50	250W	T3
EZS40	EZO40	ED18/S-51	400W	T3
EBF13	EMO20	PL13	13W	T6
EBF26	EMO20	PL13	26W	T6
EQF26①	EMO20	PL26	26W	T6
EQF32①	EMO20	PL32	32W	T6
EQF42①	EMO20	PL42	42W	T6
ESX( )120	EMO30	120V AC	0.17 A	T6
ESX( )240	EMO30	240V AC	0.12 A	T6
ESX( )1274	EMO30	12 TO 74 V DC	1.25 TI 0.2 A	T6

Fixtures with CEN suffix for PTB (German test lab) CENELEC Approval.
① EQF & EZP series PTB approvals pending.
See standard product pages for North American ratings/approvals.

CENELEC

HOSTILELITE®

CENELEC

Ex II 3 G Ex nR II
Ex nR (non-sparking)
(restricted breathing)
Zone 2 areas to EN60079-10
IP66/67 to EN 60529

FEATURES-SPECIFICATIONS

Applications

A range of two Asymmetric Floodlights, one for 70W double ended High Pressure Sodium or Metal Halide lamps and the larger for 150W to 400W tubular High Pressure Sodium or Metal Halide lamps for use in areas designated ATEX category 3 (Zone 2).

The compact design features of these floodlights ensures reduced weight and low windage. This helps lower installation costs as it allows for lighter mounting systems.

Features

- Highly efficient asymmetric reflector design
- Aluminum body with all stainless steel fasteners for high corrosion resistance
- Light weight and low windage
- Choice of metal halide or high pressure sodium lamps
- Wide beam reflector
- Hinged front cover for easy access to control gear or lamp

Specifications

Enclosure—Aluminum Body (copper-free), Glass lens, Stainless steel fasteners

Entry—1 x M20 cable entry on Micronex, 2 x M20 on Maxinex

Termination—6mm^2 3 core cable

Control Gear—Internal

P F Correction—Incorporated to 0.85 min

Burning Position—Universal

Compliance

Apparatus Standard—EN50021

Certificate—ATEX Type Examination (BASEEFA) BAS97ATEX4368(Maxinex) ATEX Type Examination BAS98ATEX3054(Micronex)

MIC/MAX FLOODLIGHTS WIDE BEAM

CATALOG NUMBER	LAMPS	WATTS	LAMP BASE	RATED SUPPLY①	AMBIENT RATING C°		T CLASS
MICN/70/MS/50Hz MICN/70/MS/60Hz	MBI-TD;SON-TD	70W	Rx7s	220-254V 50Hz 220-254V 60Hz	40		T3
MAXN/150/MS/50Hz MAXN/150/MS/60Hz	MBI/T;SON/T	150W	E40	220-254V 50Hz 220-254V 60Hz	55		T4
MAXN/250/MS/50Hz MAXN/250/MS/60Hz	MBI/T;SON/T	250W	E40	220-254V 50Hz 220-254V 60Hz	55		T3
MAXN/400/MS/50Hz MAXN/400/MS/60Hz	MBI/T;SON/T	400W	E40	220-254V 50Hz 220-254V 60Hz	MBI 30	SON 45	T3

① *Ballasts are multitap for 220, 230, 240, 254.*

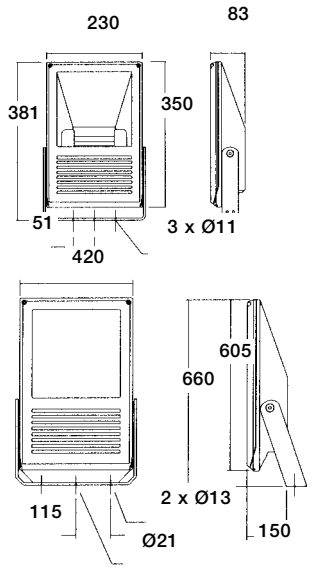
TYPE	MAX400	MAX250	MAX150	MIC70
WEIGHT	17.0kg	15.5kg	14.5kg	5.1kg
WINDAGE	0.25m2	0.25m^2	0.25m^2	0.08m^2

MIC/MAX ACCESSORIES

CATALOG NUMBER	DESCRIPTION
MIC-PMG2	Pole mount bracket*
MAX-PMG2	Pole mount bracket*

**Saddle clamp style for pipe O.D. 1-7/8" - 2-3/8".*

Dimensions



Chalmit lighting

STAINLESS STEEL ASYMMETRICAL BEAM FLOODLIGHTS

CENELEC

II 3G Ex nR II
Ex nR non-sparking
(restricted breathing enclosure)
Zone 2 areas to EN 60079-14
IP66/67 to EN60529

FEATURES-SPECIFICATIONS

Application

A range of stainless steel asymmetrical beam floodlights certified for use in Zone 2 areas, suitable for tubular discharge lamps from 150W to 400W.

The range of two asymmetrical floodlights offers the best floodlighting solution where low weight and exposure to hostile and corrosive environments is a problem. The construction offers low windage and mounting options suitable for most floodlighting applications. The asymmetrical beam distribution enables more efficient lighting with less glare or light pollution.

Features

- Highly corrosion resistant 316 stainless steel construction
- Ingress protection to IP66/67
- Quick release fasteners for ease of relamping, and access to mains terminals and internal control gear
- High efficiency asymmetric reflector
- Body is painted black on 864 series for heat dissipation
- Chain suspended lens cover for easy re-lamping

Specifications

Enclosure—Marine grade stainless steel body. Toughened safety glass. Silicone rubber gasket. Body is painted black on 864 Series for heat dissipation

Entry—2 x M20 tapped entries M25 available with M25 suffix

Termination—3 core 6mm² max conductor with looping

Control Gear—Internal

Power Factor Correction—Incorporated to 0.85 min.

Relamping—Via front cover using quick release clamps

Compliance

Apparatus Standard—EN50021 Section 102.51: 1986

Certificate—ATEX Type Examination (BASEEFA) BAS98ATEX3378

800N FLOODLIGHT WIDE BEAM

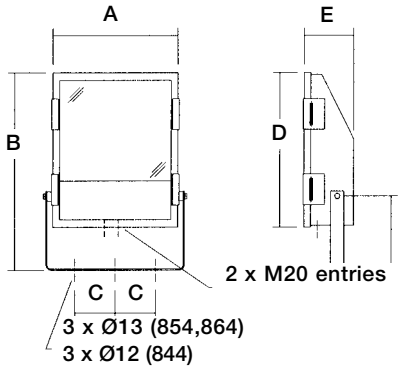
CATALOG NUMBER	LAMPS	WATTS	LAMP BASE	RATED SUPPLY	AMBIENT RATING C°		T CLASS
854N/150/MS/50Hz 854N/150/MS/60Hz	MBI-T;SON-T	150W	E40	220-254V 50Hz① 220-254V 60Hz①	55		T3
854N/250/MS/50Hz 854N/250/MS/60Hz	MBI/T;SON/T	250W	E40	220-254V 50Hz① 220-254V 60Hz①	40		T4
864N/400/MS/50Hz 864N/400/MS/60Hz	MBI/T;SON/T	400W	E40	220-254V 50Hz① 220-254V 60Hz①	MBI 45	SON 50	T3

① *Ballasts are multitap for 220, 230, 240, 254V.*

800N OPTIONS

CATALOG NUMBER	DESCRIPTION
800N-PM2	Pole mounting bracket

**Saddle clamp style for pipe O.D. 1-7/8" - 2-3/4".*



CAT. NO.	DIMENSIONS					
	A	B	C	D	E	F
854	415	630	150	490	185	260
864	456	640	150	490	219	260

Chalmit lighting

CENELEC

II 2G EEx de IIC
Zone 1 & 2, Gas Groups IIC,IIB,IIA to EN 60079-14
Ex de, flameproof and increased safety.
IP66/67 to EN60529

FEATURES-SPECIFICATIONS

Application
Evolution Ex de Floodlight with internal control gear for discharge lamps up to 400W and tungsten halogen lamps up to 500W.

A revolutionary new concept in flame-proof floodlighting offering optimum lighting levels while keeping maintenance costs to a minimum by virtue of having no exposed flamepaths. The main flamepath, surrounding the lamp-holder is contained within the increased safety control gear chamber on the end of the main housing.

The main terminal block and control gear is accessed via one central screw which is captive within the hinged cover. The control gear enclosure is certified Ex e which removes the need for expensive Ex d cable glands.

Features
- No external flame path
- Installation in gas groups IIC, IIB and IIA
- Easy and quick access for reduced maintenance
- Simple, rapid lamp replacement and flamepath inspection
- Effective light distribution

Specifications
Enclosure—Aluminum alloy LM6 to BS 1490 (marine grade copper-free). All fastenings stainless steel. Toughened glass window

Entry—2 x M20 tapped entries (M25 option)

Termination—3 core 6mm² max conductor with looping

Installation—Yoke mounting bracket with aiming marking

Control Gear—Internal

Power Factor Correction—Incorporated to 0.85 min for HID lamps

Burning Position—Universal

Compliances
Apparatus Standard—EN50014, EN50018, EN50019

Certificate—ATEX Type Examination (BASEEFA) BAS98ATEX2373

800N FLOODLIGHT WIDE BEAM

CATALOG NUMBER	LAMPS	WATTS	LAMP BASE	RATED SUPPLY	AMBIENT RATING C°	T CLASS	WEIGHT KGS.
EVOD/150/MS/50Hz EVOD/150/MS/60Hz	SON;MBI	150W	E40	220-254V 50Hz① 220-254V 60Hz①	40 55	T4 T3	28 28
EVOD/250/MS/50Hz EVOD/250/MS/60Hz	SON;MBI	250W	E40	220-254V 50Hz① 220-254V 60Hz①	40 55	T4 T3	28 28
EVOD/400/MS/50Hz EVOD/400/MS/60Hz	SON;MBI	400W	E40	220-254V 50Hz① 220-254V 60Hz①	55 55	T4 T4	28 28
EVOD/500/TH/50Hz	Tungsten Halogen	500W	E40	250V MAX AC/DC	40	T3	26

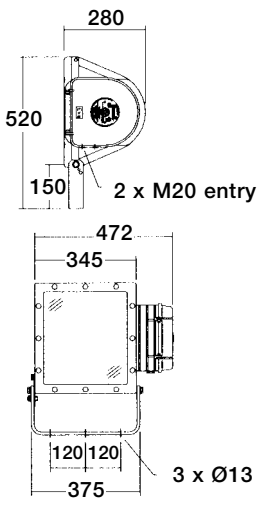
① *Ballasts are multitap for 220, 230, 240, 254V.*

EVO OPTIONS

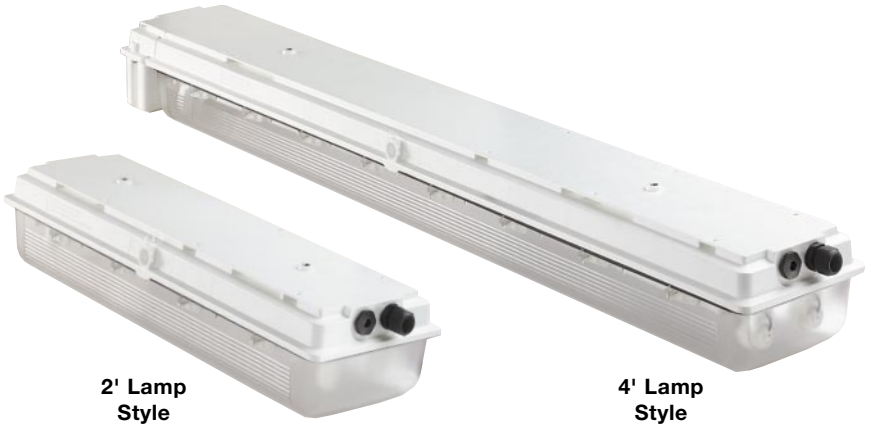
CATALOG NUMBER	DESCRIPTION
EVO-WG	Wire Guard 316 stainless
EVO-PMG2	Pole mount bracket.*

**Saddle clamp style for pipe O.D. 1-7/8" - 2-3/4".*

Dimensions



Chalmit lighting



2' Lamp Style

4' Lamp Style

CENELEC

CENELEC-Ex n A II T4 IP66
Zone 2, Groups IIC, IIB, IIA

Ex TüV No. 08/220/1038/5

FEATURES-SPECIFICATIONS

LINEARLITE™

Applications
Hazardous and corrosive environments where reliability and rugged performance are critical.

Features
- Housing constructed of heavy-duty fiber reinforced polyester (FRP) with a single piece, low glare polycarbonate lens
- Single point latching mechanism
- Electronic ballast
- Increased safety terminal blocks for easy wiring
- IEC installation fixture, feed through type, with M25 polyamide compression glands and M25 close-up plugs

LINEARLITE SMART-E™

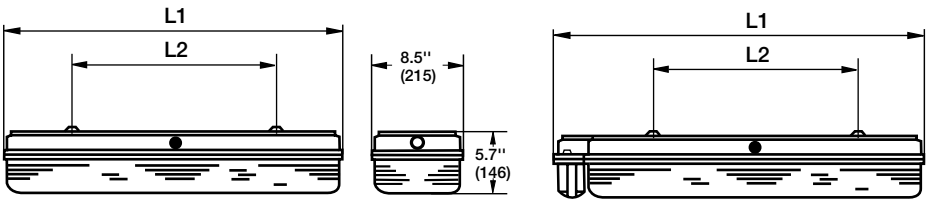
Emergency Fixture

Additional Features
- Self-contained NiCad battery (in case of power failure) provides minimum 1-1/2 hours of emergency lighting
- New charging technology extends battery life to 5 or more years
- Self-testing/Self-diagnostic electronics with LED status display eliminates need for manual tests and record keeping. Unit performs weekly functional test and quarterly discharge test
- LED status of green indicates properly functioning unit. Red status alerts need for service
- One lamp emergency operation

LLI SERIES FOR CENELEC ZONE 2	
CATALOG NUMBER	**DESCRIPTION**
LLI24282FI	18/20 Watt 2-lamp fixture, 220V-254V 50/60Hz, M25 5-wire feed-through wiring
LLI27282FI	36/40 Watt 2-lamp fixture, 220V-254V 50/60Hz, M25 5-wire feed-through wiring

LLIE SERIES BATTERY BACK-UP FOR CENELEC ZONE 2	
CATALOG NUMBER	**DESCRIPTION**
LLIE24282FI	18/20 Watt Emergency 2-lamp fixture, 220V-254V 50/60Hz, M25 6-wire feed-through wiring
LLIE27282FI	36/40 Watt Emergency 2-lamp fixture, 220V-254V 50/60Hz, M25 6-wire feed-through wiring

Dimensions



LLI SERIES		
	18/20W	**36/40W**
L1	27.5"(700)	51.5"(1310)
L2	15.7"(400)	31.5"(800)

LLIE SERIES		
	18/20W	**36/40W**
L1	30.8"(782)	54.8"(1392)
L2	15.7"(400)	31.5"(800)

See Accessories page L119.

HUBBELL
KILLARK®

2' Lamp Style

4' Lamp Style

CENELEC

CENELEC-EEx ed IIC T4 IP66
Zones 1 & 2, Groups IIC, IIB, IIA

Ex PTB 97 ATEX 2031

FEATURES-SPECIFICATIONS

LINEARLITE™

Applications

Hazardous and corrosive environments where reliability and rugged performance are critical.

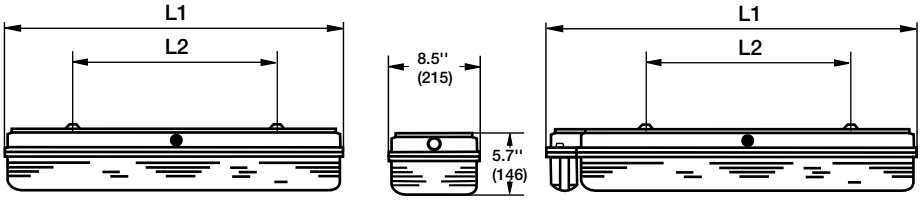
Features

- Housing constructed of heavy-duty fiber reinforced polyester (FRP) with a single piece, low glare polycarbonate lens
- Single point latching mechanism (which disconnects power) makes relamping safe and easy
- Electronic ballasts are encapsulated in a self-contained explosion protected enclosure with increased safety terminals
- Increased safety terminal blocks for easy wiring
- IEC installation fixture, feed through type, with M25 polyamide compression glands and M25 close-up plugs

LLI SERIES FOR CENELEC ZONES 1 & 2	
CATALOG NUMBER	**DESCRIPTION**
LLI14292FI	18/20 Watt 2-lamp fixture, 220-254VAC 50/60Hz+198-250VDC, M25 5-wire feed-through wiring
LLI17292FI	36/40 Watt 2-lamp fixture, 220-254VAC 50/60Hz+198-250VDC, M25 5-wire feed-through wiring

LLIE SERIES BATTERY BACK-UP FOR CENELEC ZONES 1 & 2	
CATALOG NUMBER	**DESCRIPTION**
LLIE14282FI	18/20 Watt Auto/Manual Testing 2-lamp fixture, 220V-254V 50/60Hz, M25 6-wire feed-through wiring
LLIE17282FI	36/40 Watt Auto/Manual Testing 2-lamp fixture, 220V-254V 50/60Hz, M25 6-wire feed-through wiring

Dimensions



LLI SERIES		
	18/20W	**36/40W**
L1	27.5"(700)	51.5"(1310)
L2	15.7"(400)	31.5"(800)

LLIE SERIES		
	18/20W	**36/40W**
L1	30.8"(782)	54.8"(1392)
L2	15.7"(400)	31.5"(800)

LINEARLITE SMART-E™

Emergency Fixture

Additional Features

- Self-contained NiCad battery (in case of power failure) provides minimum 1-1/2 hours of emergency lighting
- New charging technology extends battery life to 5 or more years
- Self-testing/Self-diagnostic electronics with LED status display eliminates need for manual tests and record keeping. Unit performs weekly functional test and quarterly discharge test
- LED status of green indicates properly functioning unit. Red status alerts need for service
- One lamp emergency operation

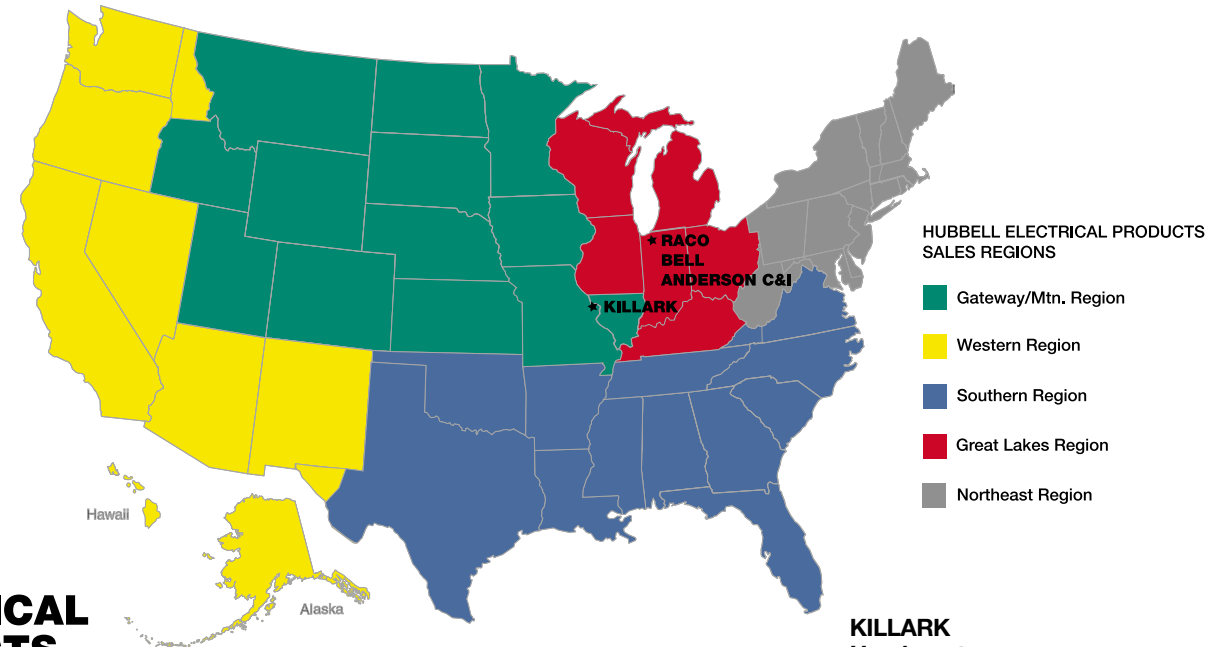
See Accessories page L119.

HUBBELL INC. Corporate Headquarters 584 Derby Milford Rd. Orange, CT 06477

HUBBELL INC. GROUPS AND SUBSIDIARIES

Domestic

ELECTRICAL PRODUCTS			
Anderson C&I	(219) 234-7151	3902 West Sample Street	South Bend, Indiana 46634-4002
Bell	(219) 234-7151	3902 West Sample Street	South Bend, Indiana 46634-4002
Killark	(314) 531-0460	3940 Martin Luther King Drive	St. Louis, Missouri 63113
Raco	(219) 234-7151	3902 West Sample Street	South Bend, Indiana 46634-4002
COMMUNICATION TECHNOLOGY			
Hubbell Premise Wiring, Inc.	(860) 535-8326	14 Lord's Hill Road	Stonington, Connecticut 06378-0901
Pulse Communications	(703) 471-2900	2900 Towerview Road	Herndon, Virginia 20171
LIGHTING			
Devine Lighting	(816) 221-9440	One Design Way	North Kansas City, Missouri 64116
Hubbell Lighting, Inc.	(540) 382-6111	2000 Electric Way	Christiansburg, Virginia 24073-2500
Sterner Corporation	(952) 906-7300	7575 Corporate Way	Eden Prairie, Minnesota 55344-2022
POWER SYSTEMS			
A.B. Chance Co.	(573) 682-5521	210 North Allen Street	Centralia, Missouri 65240
Anderson Electrical Products, Inc.	(205) 699-2411	940 Moores Street, N.E.	Leeds, Alabama 35094
Ohio Brass Co.	(330) 335-2361	8711 Wadsworth Road, State Rte. 57	Wadsworth, Ohio 44281
HUBBELL INDUSTRIAL TECHNOLOGY			
GAI-Tronics Corporation	(610) 777-1374	400 E. Wyomissing Ave.	Mohnton, Pennsylvania 19540
Gleason Reel Corporation	(920) 387-4120	600 South Clark Street	Maryville, Wisconsin 53050-0026
Hipotronics, Inc.	(845) 279-8091	Route 22 (North)	Brewster, New York 10509
Hubbell Industrial Controls	(440) 428-1161	50 Edwards Street	Madison, Ohio 44057
Wiegmann	(618) 539-3193	501 West Apple Street	Freeburg, Illinois 62243
WIRING SYSTEMS			
Wiring Device - Kellems	(203) 882-4800	185 Plains Road	Milford, Connecticut 06460-2465
Bryant	(203) 876-3600	185 Plains Road	Milford, Connecticut 06460-2465
Unenco	(800) 245-9135	185 Plains Road	Milford, Connecticut 06460-2465
Wirecon	(203) 876-3625	185 Plains Road	Milford, Connecticut 06460-2465
INTERNATIONAL			
Chalmit	011-44-141-882-5555	388 Hillington Road	Glasgow G524BL, UK
Haefely Test AG	011-61-373-4111	Ch-4028	Basel, Switzerland
Hubbell Canada, Inc.	(905) 839-1138	870 Brock Road South	Pickering, Ontario L1W 1Z8
Hubbell China	011-86-21-6217-3478	Room 2307, Westgate Mall	1038 Nanjing West Road, Shanghi, China
Hubbell de Mexico, S.A. De C.V.	011-525-575-2022	Ave. Coyoacan 1051	Col. del Valle, 03100 Mexico, D.F. Mexico
Hubbell Incorporated Middle East	011-971-4 393-4194	Office #505, Al Waleed Bldg.	Rolla Street, P.O. Box 23529, Dubai, U.A.E.
Hubbell-International, Inc., Korea	011-82-2-607-1363	2nd Floor Jungwon Bldg.	1115-8 Hwagok-Dong, Kangseo-Ku Seoul, Korea 157-010
Hubbell, Ltd.	011-441-234-855444	Woburn Road Industrial Estate	Kempston, Bedford, England MK427SH
Hubbell S.E. Asia Pte., Ltd.	011-65-454-4772	159 Sin Ming Road, #05-08 Amtech Bldg.	Singapore 575625 - Rep. of Singapore
Hubbell-Taian Co. Ltd.	011-886-2-515-0855	12th Floor, 66, Sec. 2, Chien-Koo North Rd.	Taipei, Taiwan R.O.C.
Hubbell Turkey	011-90-216-4148147	Sogutlucesme Cad., Firdevs Hand, No: 38/4	81300 Kadikoy Istanbul, Turkey



ELECTRICAL PRODUCTS
A Division of Hubbell Incorporated (Delaware)

KILLARK
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BRANDS: ANDERSON C&I/BELL/BRYANT/CHALMIT/KILLARK/RACO/WIEGMANN