Architectural Floodlights

50 - 400 Watt

CFL

AFL10

AFL20

KIM LIGHTING

Architectural Floodlights

Table of Contents

KN! KimNOW! *5-Day Shipping • Quality On Demand*
See Ordering Information Pages

KIM LIGHTING

SITE / AREA
PARKING STRUCTURE
ROADWAY
ARCHITECTURAL FLOOD
ACCENT
LANDSCAPE

MAILING ADDRESS:
P.O. BOX 60080
CITY OF INDUSTRY, CA
91716-0080

BUSINESS ADDRESS:
16555 EAST GALE AVENUE
CITY OF INDUSTRY, CA 91745
U.S.A.
PHONE 626 / 968-5666
FAX 626 / 369-2695

www.kimlighting.com

HUBBELL
HUBBELL LIGHTING, INC.

Printed in U.S.A. Version 10/12

CFL

pages 23-33

50 - 70 watt H.I.D.
13 - 42 watt Compact Fluorescent
60 watt Incandescent
150 watt Halogen

CFL1 Wide Flood
CFL6 Narrow Spot

AFL10

pages 35-55

70 - 175 watt H.I.D.

AFL11 Wide Flood
AFL12 Vertical Flood
AFL13 Medium Flood
AFL14 Narrow Flood
AFL15 Spot
AFL16 Narrow Spot
AFL17 Horizontal Spot

AFL20

pages 57-75

250 - 400 watt H.I.D.

AFL21 Wide Flood
AFL22 Vertical Flood
AFL23 Medium Flood
AFL24 Narrow Flood
AFL25 Spot
AFL26 Narrow Spot
AFL27 Horizontal Spot

Floodlighting Application

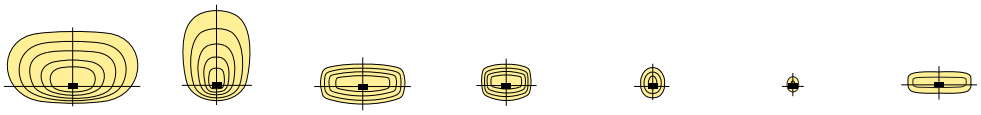
System Approach

Kim Architectural Floodlighting Systems are engineered to produce the specific distributions required to illuminate horizontal and vertical surfaces from minimal set-back distances, or mounting heights. This differs greatly from sports fields, where long distances (tall mounting heights) and considerable distribution overlaps are utilized. In General Floodlighting, cut-off, control of glare and special effects are not considered important design criteria. Neither of these systems produce efficient illumination for the Architectural Environment.

Architectural Floodlighting demands close luminaire-to-surface distances and minimal distribution overlap to reduce the number of fixtures required. Architectural features often dictate luminaire locations that are less than ideal, requiring special optical features.

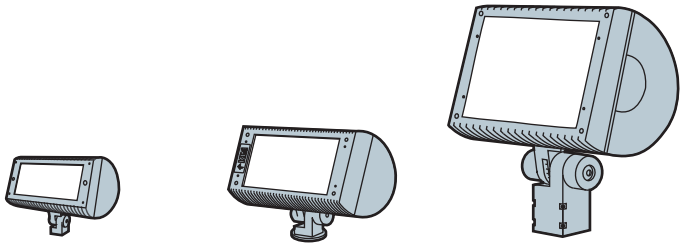
To satisfy these requirements, **Architectural Floodlighting** demands a wide range of beam distributions. Further, the need to control unwanted lamp visibility, or to produce special architectural effects, such as streaking, and surface grazing, require specialized optical systems and accessories.

Seven Distinct Optical Distributions produce the required range to illuminate virtually any surface from very close to long distances.



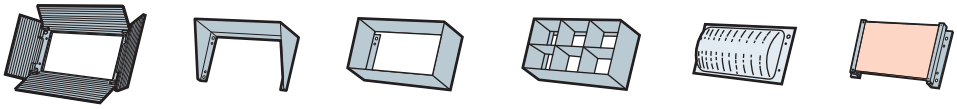
Wide Flood Vertical | **Flood Medium Flood** | **Narrow Flood Spot** | **Narrow Spot** | **Horizontal Spot**

Four Luminaire Sizes provide a range of the most compact fixture scale for the requisite lamp. Fixture sizes range from the smallest (CFL) in Incandescent, Halogen, Compact Fluorescent and H.I.D. lampings to 70 watt, to the largest (AFL20) in H.I.D. lampings up to 400 watt.



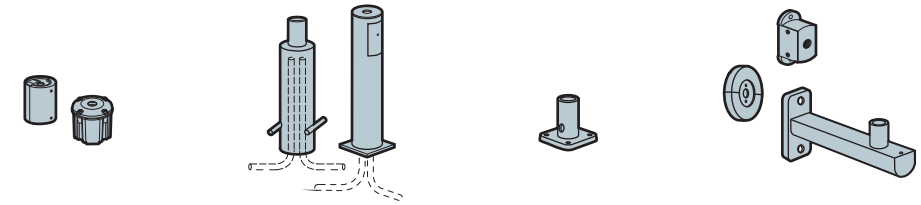
CFL Series | **AFL10 Series** | **AFL20 Series**

Accessories, controlling unwanted lamp visibility, protecting the luminaire from vandalism, or reducing spill light in tight spotlighting distributions, make fine-tuning luminaires to special applications requirements possible. See pages **3-5** for additional details.

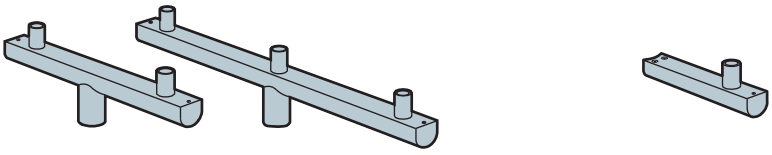


Barn Doors | **Fixed Hood** | **Full Shield** | **Grid Louver** | **Lexan® Shield** | **Color Filters**

Kim provides the widest range of **Mounting Options** to assure that each luminaire can be mounted rigidly, to preserve aiming and provide years of trouble-free service.



Junction Box Mounting | **Stanchion Mounting** | **Horizontal Surface Mounting** | **Wall / Vertical Surface Mounting**

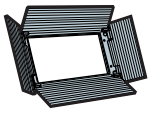


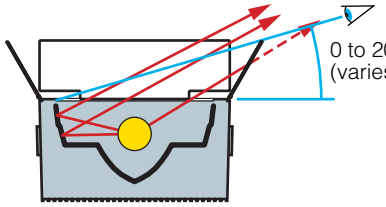
Pole Top Mounting | **Side Pole Mounting**

NOTE: Refer to individual series information for specific option and accessory availability.

Barn Doors

Most effective when used with wide flood or medium flood distributions.

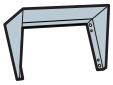


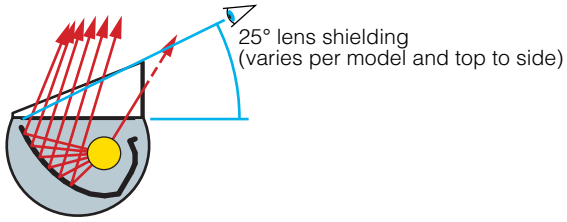


Barn doors provide control of lens visibility from the side and slightly in front of the fixture. Adjustable panels provide a degree of customization to suit field conditions. Barn doors are not used for “shaping” light distributions.

Fixed Hoods

Most effective when used with narrow flood or spot distributions.

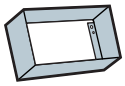


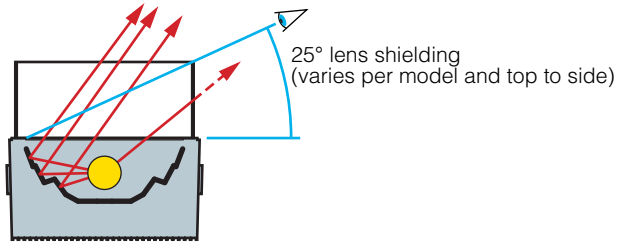


Fixed hoods provide control of visibility from top or bottom views of the lens only, while producing no obstruction in the opposite direction.

Full Shields

Most effective when used with narrow flood or spot distributions where visibility is from all sides of the fixture.

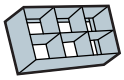


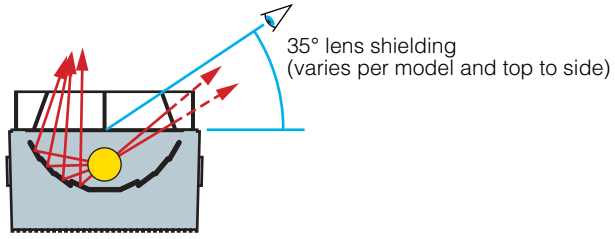


Full shields will provide good control of lens visibility, as well as trimming of side light from the lens surface.

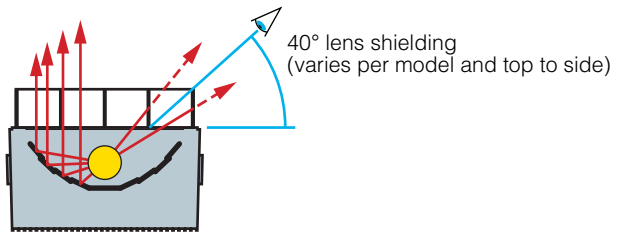
Grid Louvers

Limited to specific optical systems.





Grid louver vanes, specifically designed for **narrow flood** reflectors, are angled to prevent obstruction of reflector output.



Grid louvers for **spot** and **narrow spot** distributions utilize straight vanes and should not be used with other distributions.

Glare Control Accessories

After placing fixtures where they can best illuminate the target, it is necessary to evaluate visibility of the lamp and optical system by site occupants. The use of an appropriate glare control accessory, such as barn doors, fixed hoods, full shields, or grid louvers, reduce objectionable glare.

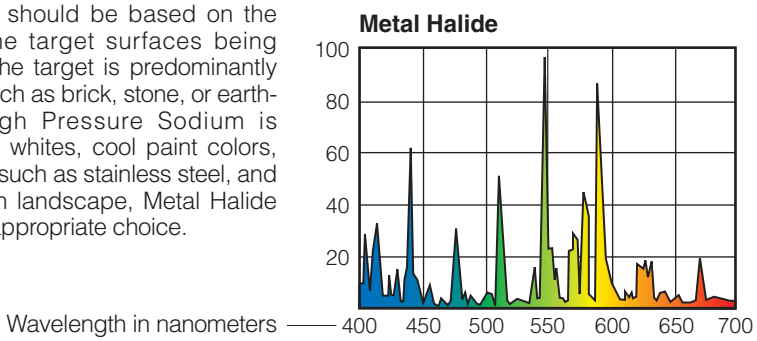
Grid Louvers

Grid louvers include baffles inside a full shield. These additional components cut lens and reflector visibility considerably. However, grid louvers cannot be applied to all optical systems. Grid louver designs are matched to specific optical systems. The characteristics of the optical system dictate how many louvers can be used, and at what angle they must be placed.

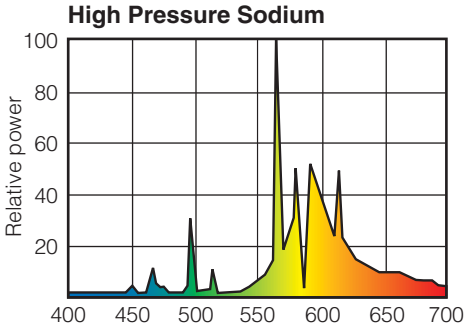
Color Effects and Lamp Selection

Lamp Selection

Lamp selection should be based on the coloration of the target surfaces being lighted. Where the target is predominantly warm in color, such as brick, stone, or earth-tone paint, High Pressure Sodium is appropriate. For whites, cool paint colors, exposed metals such as stainless steel, and for the greens in landscape, Metal Halide may be a more appropriate choice.



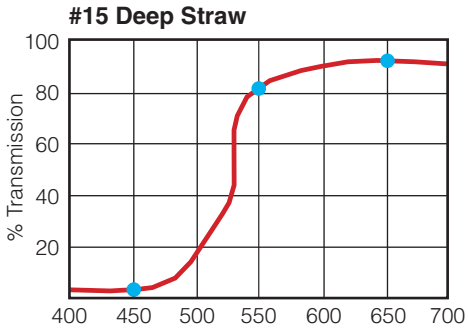
The spectral distribution chart at left shows where Metal Halide lamp output is greatest. Note that its output in the red zone, above 600nm, is very weak. This means that this lamp will not render red color well, and will tend to tint whites to appear blue and blue-green, as this is where the lamps greatest energy is produced.



The spectral distribution chart at left shows where High Pressure Sodium lamp output is greatest. Note that its output below 550nm is very weak. The strong output in the 560nm to 625nm range is what gives this lamp its characteristic yellow-orange color appearance. These lamps will not render blue surface colors well, and will tend to tint whites to a yellow-orange color appearance.

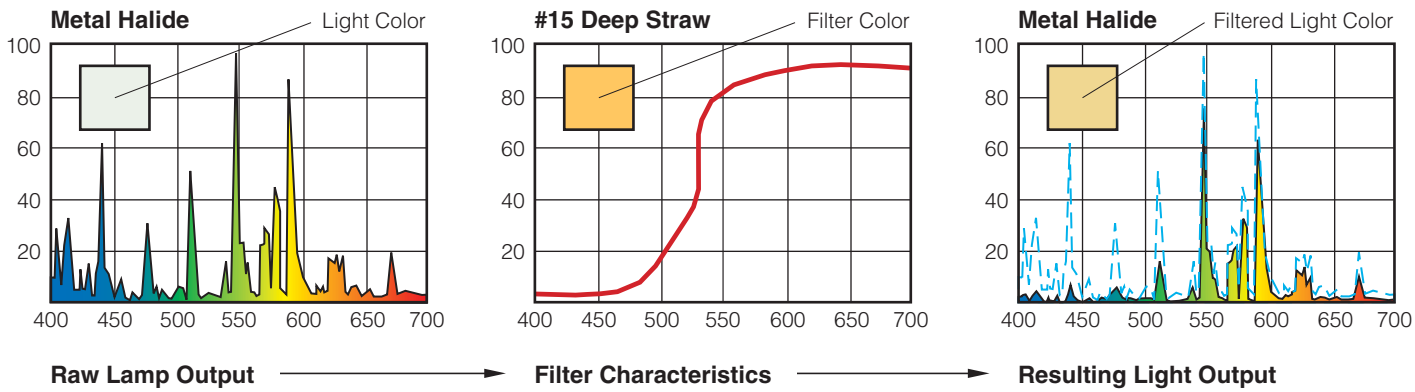
Color Filters

Color filters can be used to modify lamp coloration, or to add a dramatic color effect to a project. Color filters work simply by blocking some wavelengths of light, and transmitting others. Color filters cannot add color to the light passing through them. Therefore, when using color filters with H.I.D. sources, it is important to select an appropriate source, as it will have a dramatic impact on the appearance of the resulting light output.



The color distribution shown for each filter is a representation of the amount of light transmitted at each wavelength. In this example; the filter will transmit approximately (●) 2% of the light passing through it at 450nm, 80% at 550nm, and 90% at 650nm.

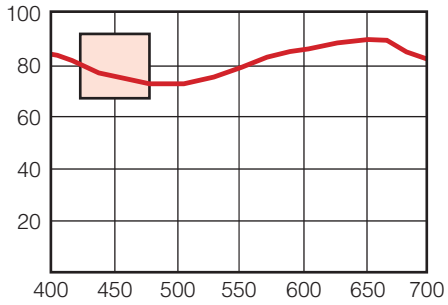
Lamp spectral energy distribution will have a dramatic effect on the color transmitted by the color filter.



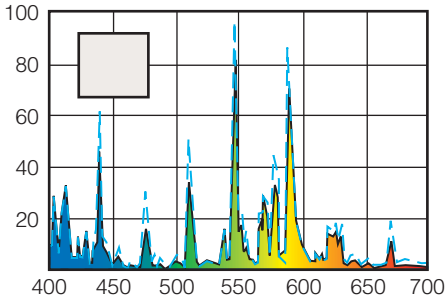
NOTE: The color samples shown are for comparison use only, and do not represent actual field conditions (impossible in a printed format.) Actual performance and colors will change based on lamp and reflector system used. Metal Halide **(MH)**; High Pressure Sodium **(HPS)**.

Color Filters

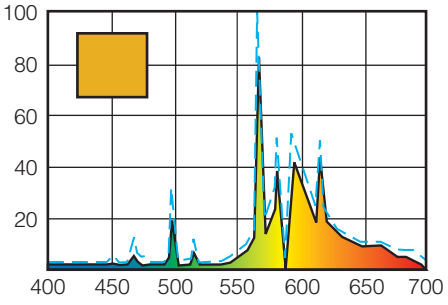
#05 Rose Tint 80% Transmittance



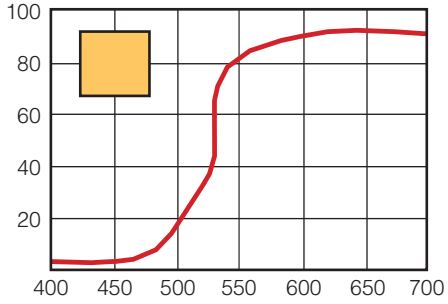
MH 80% Transmittance



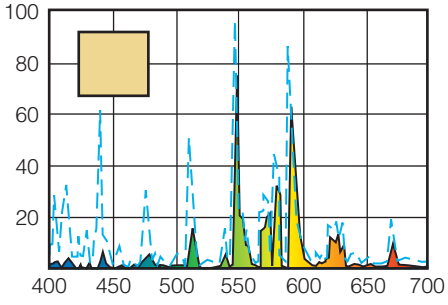
HPS 80% Transmittance



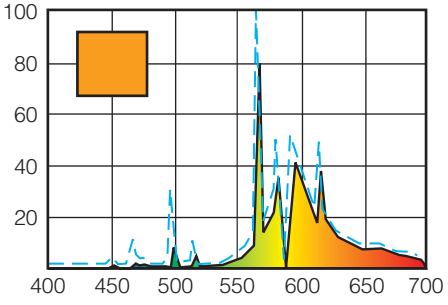
#15 Deep Straw 65% Transmittance



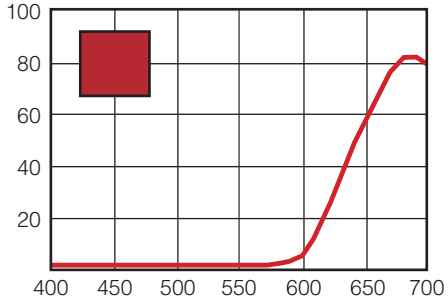
MH 60% Transmittance



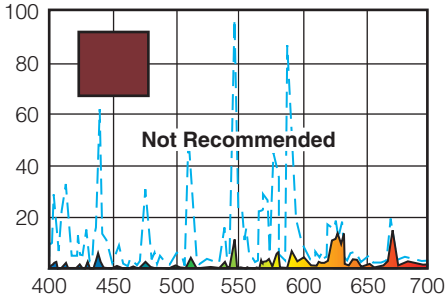
HPS 65% Transmittance



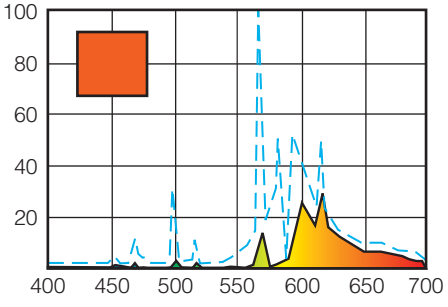
#27 Medium Red 4% Transmittance



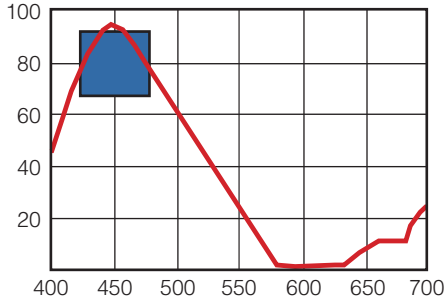
MH 2% Transmittance



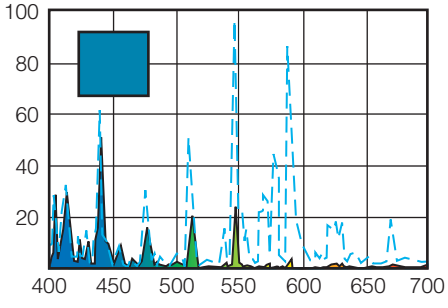
HPS 3% Transmittance



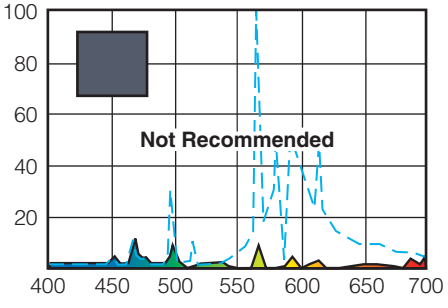
#69 Brilliant Blue 18% Transmittance



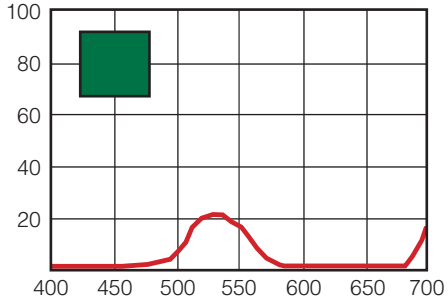
MH 16% Transmittance



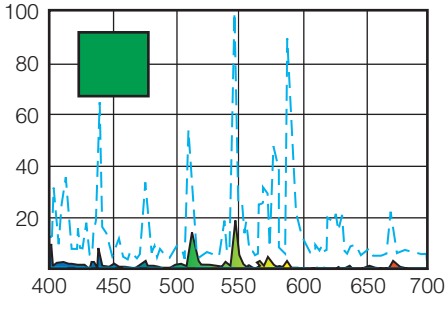
HPS 4% Transmittance



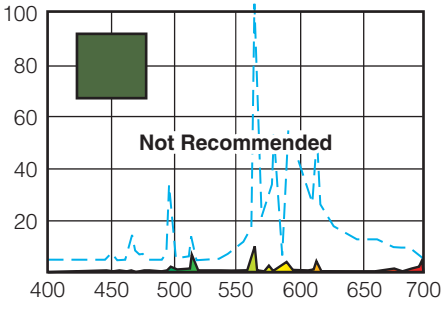
#91 Primary Green 7% Transmittance



MH 5% Transmittance



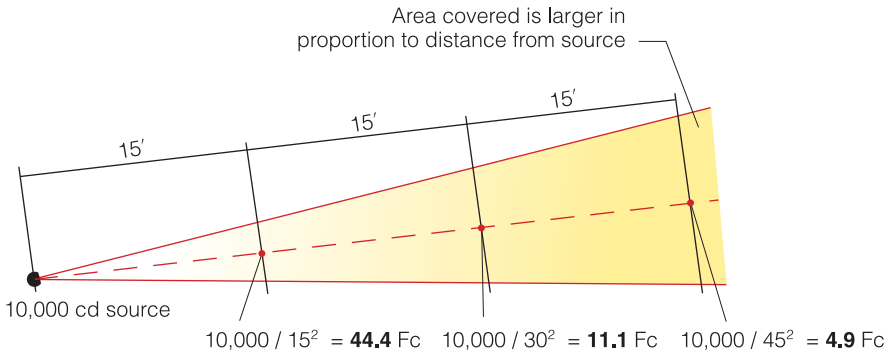
HPS <2% Transmittance



Optical Design Considerations

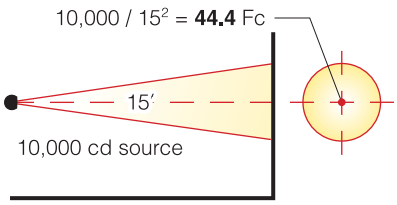
Inverse Square Law
Fc = Candela / D^2

In Floodlighting, the distance from luminaire to the subject has a large impact on optical choices. As distance from the luminaire increases, the width of the beam increases. This means the available light covers a larger area, producing lower overall light levels inside the beam area.

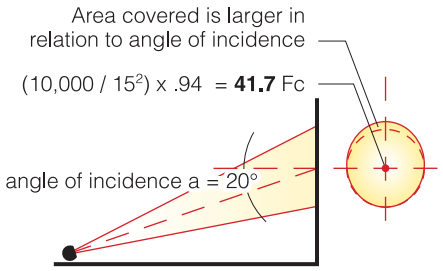


Cosine Law
Fc = (Candela / D^2) x cos a

The inverse square law assumes that a surface is perpendicular to the source. However, in real-world applications, luminaires are generally aimed at an angle to the target surface. This angle increases the area covered by the beam and reduces the corresponding illuminance at any point within the covered area. The cosine law considers this and provides a more accurate calculation of illuminance on the surface.



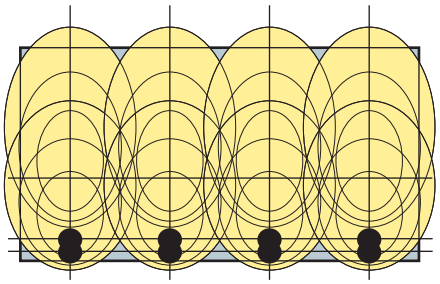
Aiming Perpendicular to Surface



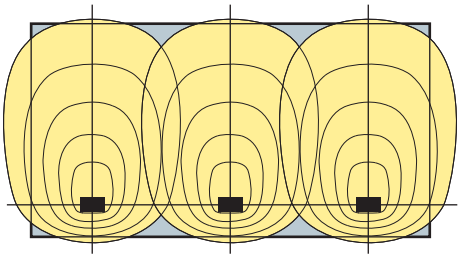
Aiming at an Angle to the Surface

Beam Shape

In architectural floodlighting, the surfaces being illuminated are frequently rectilinear in shape. To create an efficient lighting system, waste light should be eliminated. This requires a range of beam patterns that control illumination, while eliminating waste without resorting to cut-off baffles. By utilizing beam shapes that are more rectangular, and matched to the vertical and horizontal aspect ratio of the surface being lighted, a system can produce even illumination using fewer fixtures.



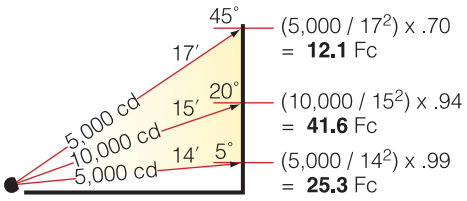
Round Beam Shapes require several fixtures to cover the rectangular surface, producing an inefficient system that provides **uneven surface illumination.**



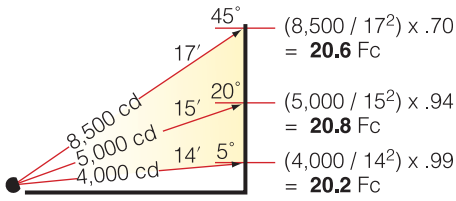
Optimized Beam Shapes, designed to illuminate the rectangular surface, require fewer fixtures, producing an efficient system that provides **uniform surface illumination**.

Optimized Reflector Designs

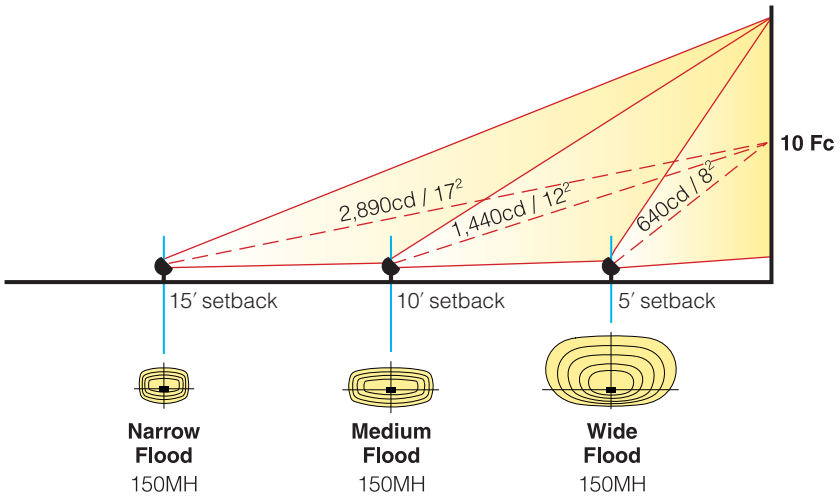
In addition to producing a beam shape better suited to the surface being illuminated, the distribution of light from the optical system must consider the effects of aiming (cosine law). By distributing more energy into zones of higher incident angles, and reducing energy at lower incident angles, a properly designed reflector will produce more uniform surface target illuminance.



Symmetrical Distributions direct more light at the center, resulting in a system that is hindered by the effects of the Inverse Square and Cosine Laws to produce **uneven surface illumination**.



Optimized Distributions direct more light at higher angles, less light at the center and even less light at lower aiming angles, resulting in an optical system that overcomes the effects of the Inverse Square and Cosine Laws to produce **uniform surface illumination.**

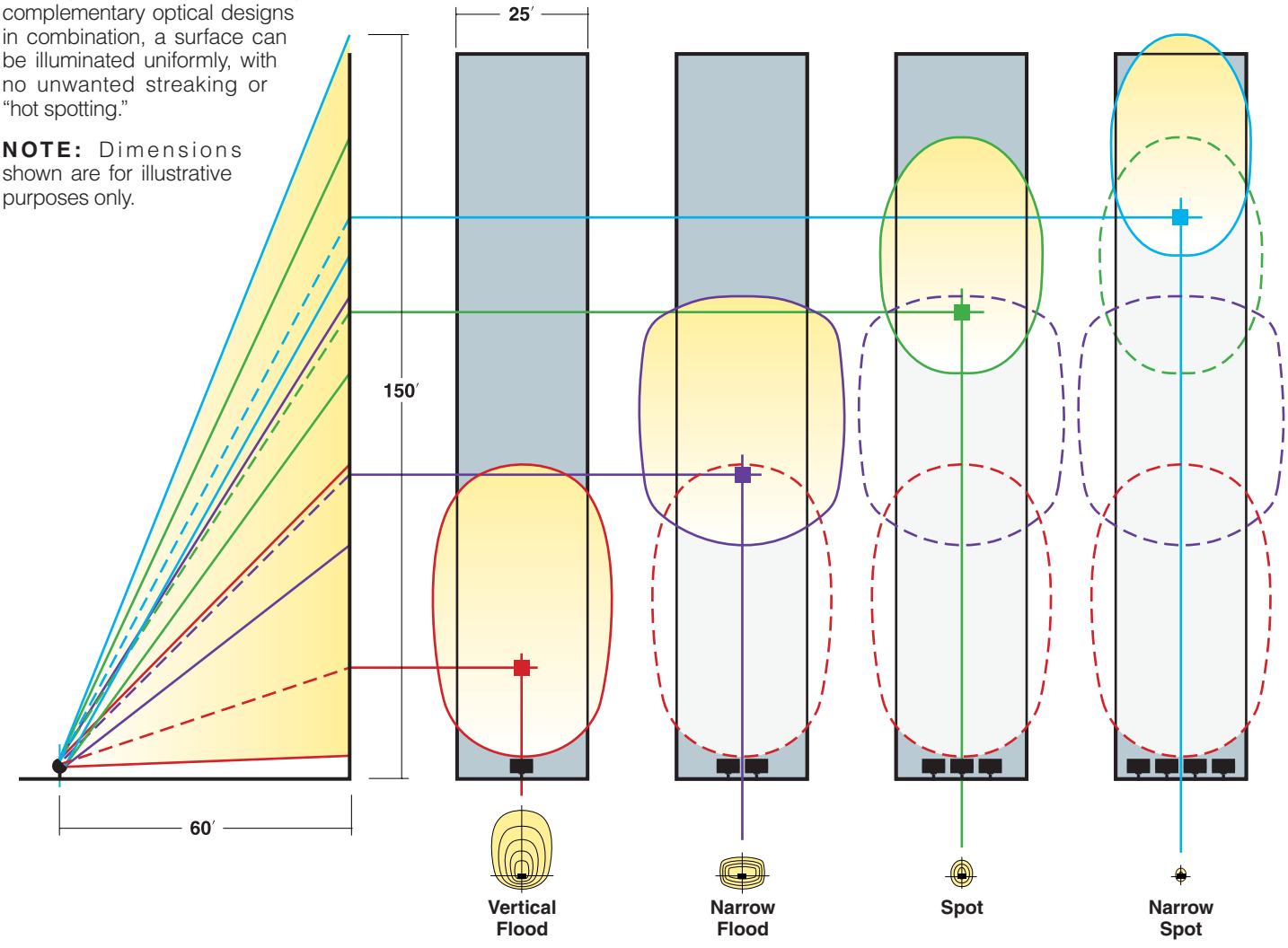


As setback distance increases, the required beam pattern size decreases for the same target area. Further, as the distance from the target increases, the inverse-square law diminishes illumination. However, focusing lamp energy into a tighter beam pattern increases luminous intensity. Therefore, narrowing the beam pattern as the setback increases retains the level of illumination and area of coverage, without increasing luminaire wattage.

Multiple Beam Coverage

To illuminate a large area, multiple fixtures are required to produce satisfactory coverage of the target. By using complementary optical designs in combination, a surface can be illuminated uniformly, with no unwanted streaking or "hot spotting."

NOTE: Dimensions shown are for illustrative purposes only.



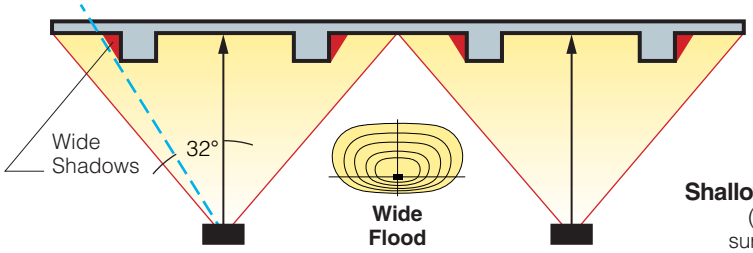
Floodlighting Effects

Setback Distance

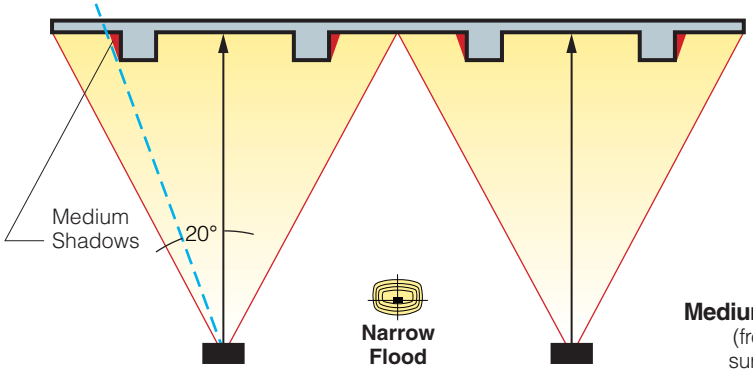
The largest impact of setback distance is on how the surface details of the target will be modeled. The availability of a wide range of complementary optical systems means that the appropriate setback distance can be used to achieve desired shadowing and surface appearance.

Shadow Width and Setback Distance

Shadowing from surface relief is inversely proportional to setback distance. Shallow setback distances render deeper shadows. As setback distances increase, the depth of shadows is reduced.



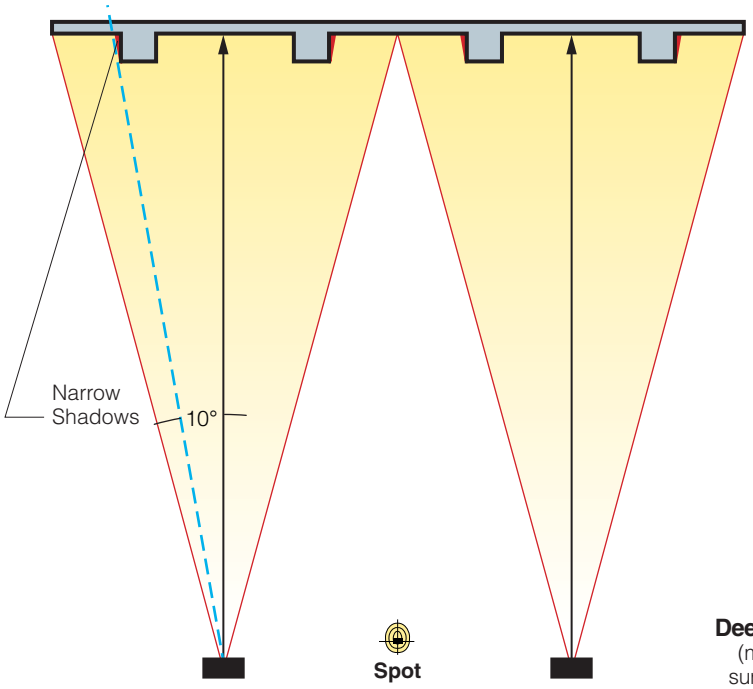
Shallow Setback
(less than 1X surface height)



Medium Setback
(from 1.5 to 3X surface height)

Shadows Define Shape and Depth

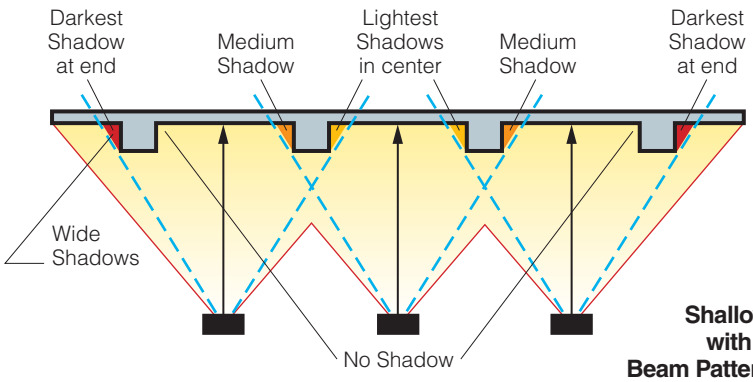
Shadowing defines the shape, surface texture and rendered depth of target surfaces. Elimination of all shadowing will produce a surface that appears flat. Conversely deeper, high contrast shadowing produces dramatic effects. Controlling setback distances, and the overlap of beam patterns is the key to producing a desired result.



Deep Setback
(more than 3X surface height)

Pattern Overlap

Increasing the overlap between adjacent beam patterns will reduce the contrast between illuminated areas and shadowing. However, shadow width will not be reduced, as this is a function of setback distance.

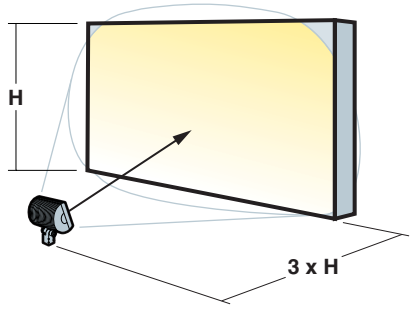


Shallow Setback with increased Beam Pattern Overlap

Flat Lighting

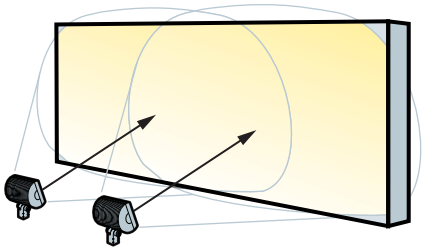
Flat lighting produces a surface that is uniformly illuminated and renders minimal surface texture and shadowing from surface relief. To achieve the best results, maximize setback distances and keep aiming angles to a minimum. For large surfaces, increase pattern overlap to reduce shadowing effects and maintain a Uniformity Ratio of between 3:1 to 4:1. *Watch out for window locations, as this effect can produce offensive glare to building occupants. Additionally, reflected glare from luminaires may be visible in windows located at the same elevation as the observer.*

Single Fixtures



Maximize Setback Distances and minimize aiming angles.

Multiple Fixtures

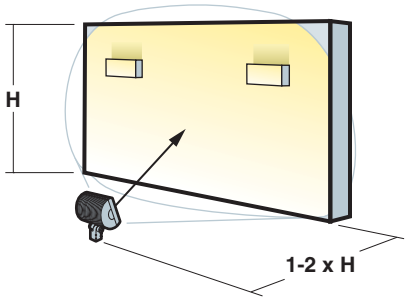


Maximize Pattern Overlap to attain a **3:1 Uniformity Ratio**.

Surface Modeling

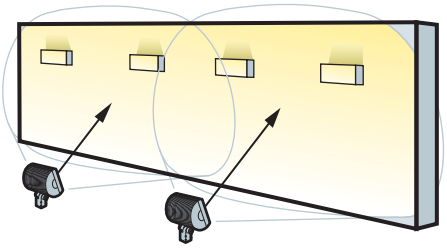
Surface modeling produces subtle to dramatic modeling of surface detail and texture. For surfaces with deep relief, increase setback distances. Use moderate lateral fixture spacings to control cross-lighting. For large surfaces, use moderate spacings between fixtures to attain a uniformity ratio of between 5:1 and 7:1. *Watch out for window locations, as this effect can produce offensive glare to building occupants.*

Single Fixtures



Decreasing Setback Distances will produce deeper shadowing effects.

Multiple Fixtures

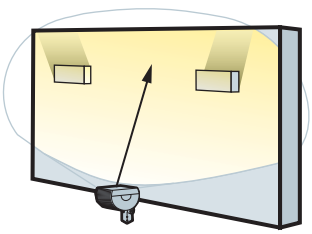


Utilize moderate fixture spacing to control cross-lighting and attain a minimum **6:1 Uniformity Ratio**.

Surface Texturing

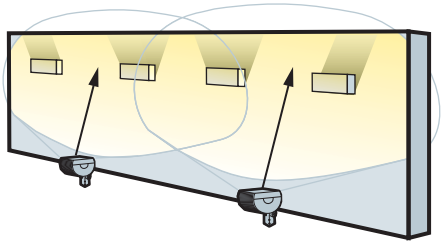
Grazing is used when the desired effect is to dramatically accentuate surface texture and detail. Grazing is accomplished by placing fixtures very close to the surface to be lighted and utilizing very high aiming angles. Kim Horizontal Spot reflectors are specifically designed for this application. To soften the effect, increase setback distances slightly. For large areas, use moderate spacings between fixtures to attain a uniformity ratio of between 5:1 and 7:1. *Watch out for deep reliefs and surface detailing, which can create undesirable shadows on the building surface. Consider using fixed hoods to reduce visibility of the fixture lens(es).*

Single Fixtures



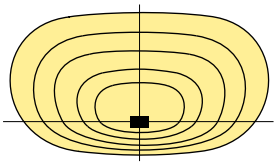
Minimize Setback Distances and maximize aiming angles. The closer the fixtures are to the surface, the greater the surface texture will be accentuated

Multiple Fixtures

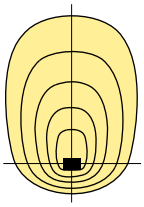


Utilize moderate fixture spacing to control cross-lighting and attain a minimum **6:1 Uniformity Ratio**.

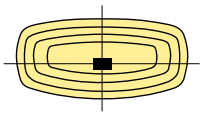
Application Guide



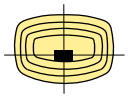
Wide Flood
CFL1
AFL11
AFL21



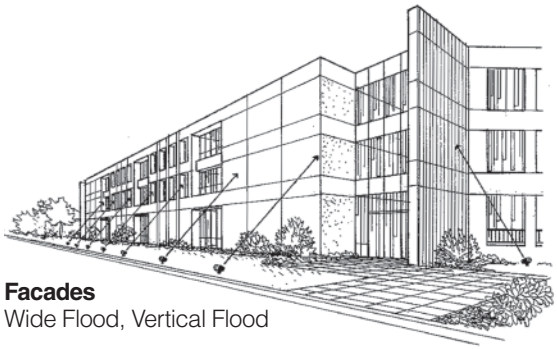
Vertical Flood
AFL12
AFL22



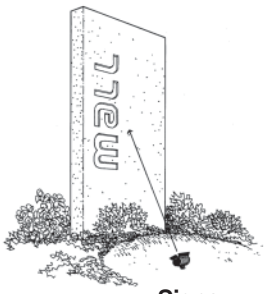
Medium Flood
AFL13
AFL23



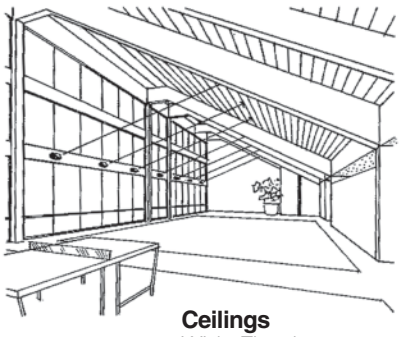
Narrow Flood
AFL14
AFL24



Facades
Wide Flood, Vertical Flood

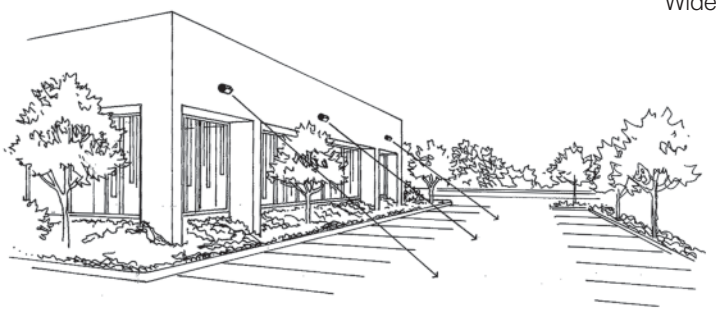


Signs
Vertical Flood

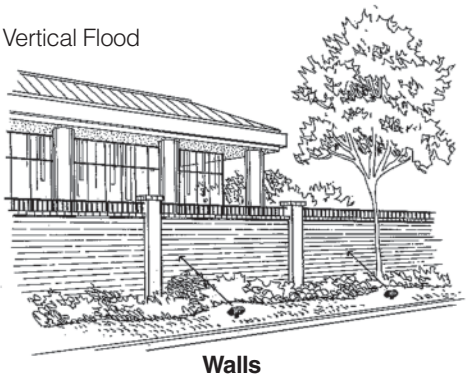


Ceilings
Wide Flood

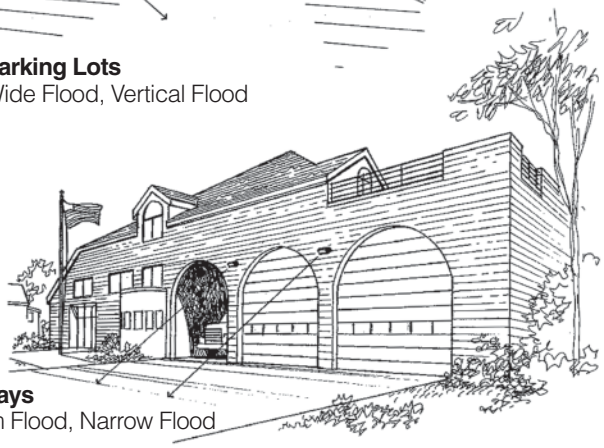
Courtyards
Wide Flood, Vertical Flood



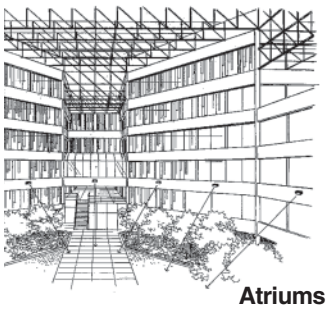
Parking Lots
Wide Flood, Vertical Flood



Walls
Wide Flood, Medium Flood

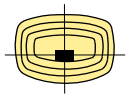


Driveways
Medium Flood, Narrow Flood



Atriums
Medium Flood

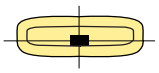
General Areas
Wide Flood, Medium Flood



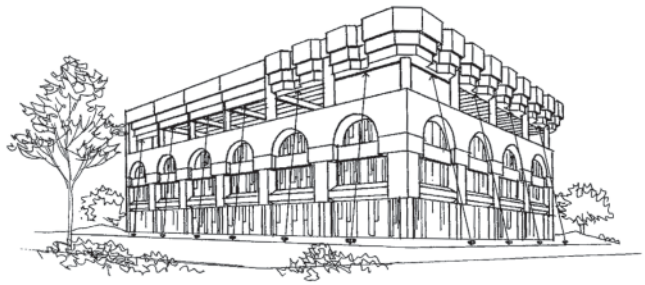
Narrow Flood
AFL14
AFL24

Spot
AFL15
AFL25

Narrow Spot
CFL6
AFL16
AFL26



Horizontal Spot
AFL17
AFL27

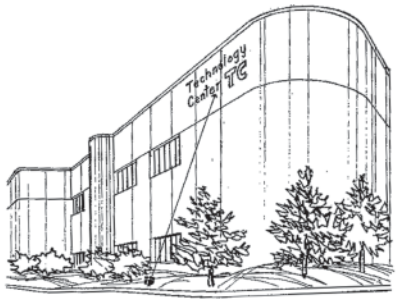


Facades
Narrow Spot, Horizontal Spot

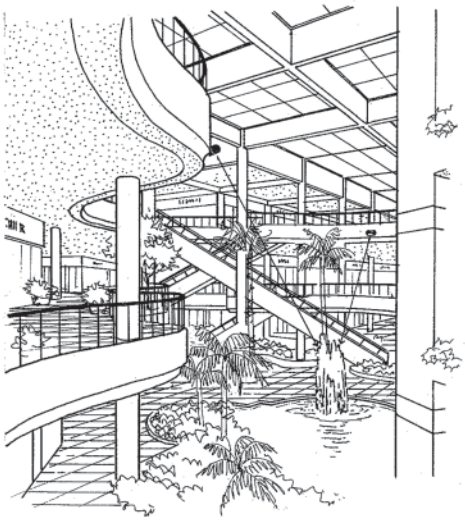
Building Features
Narrow Spot, Horizontal Spot

Building Focal Point
Spot, Narrow Spot

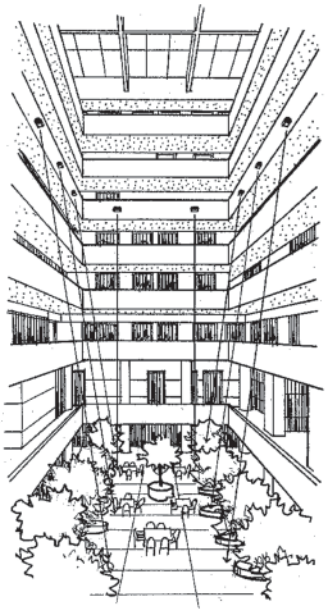
Signs
Narrow Flood, Narrow Spot



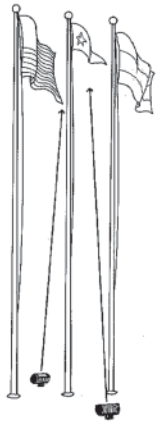
Signage
Narrow Spot, Horizontal Spot



Fountains
Spot, Narrow Spot



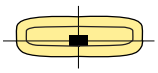
Atriums
Narrow Flood, Narrow Spot



Flags
Spot
Narrow Flood

Trees
Spot
Narrow Flood
Narrow Spot

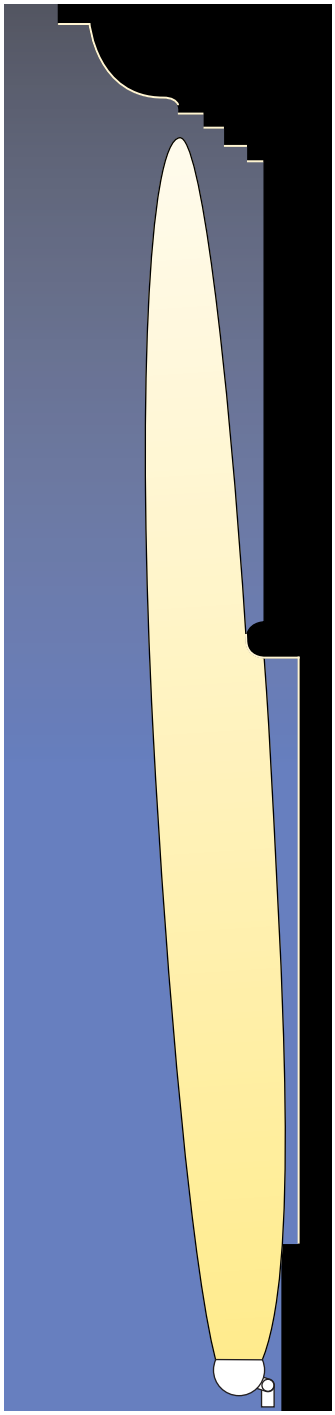
Horizontal Spot used for Wall Grazing



Horizontal Spot
AFL17
AFL27

Wall Grazing

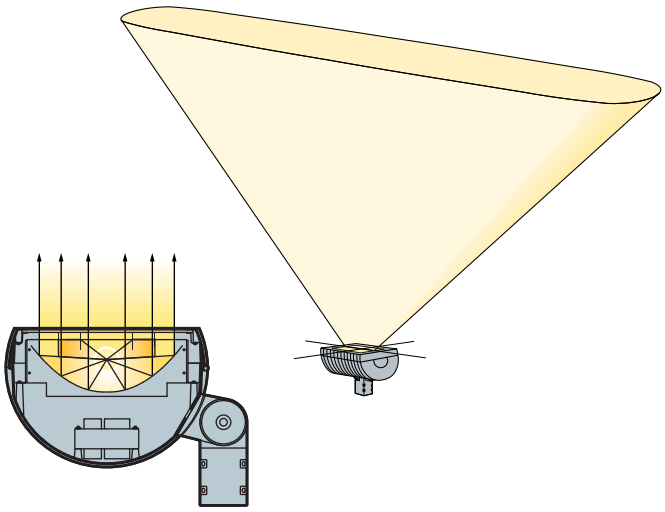
When a building facade includes interesting surface texture, reliefs, projections or other embellishments, grazing the wall with light can produce dramatic effects.

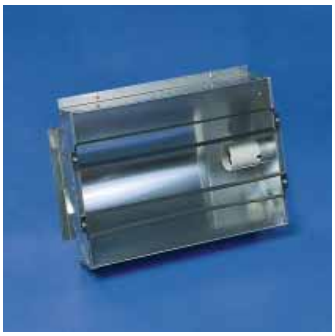


Up Lighting

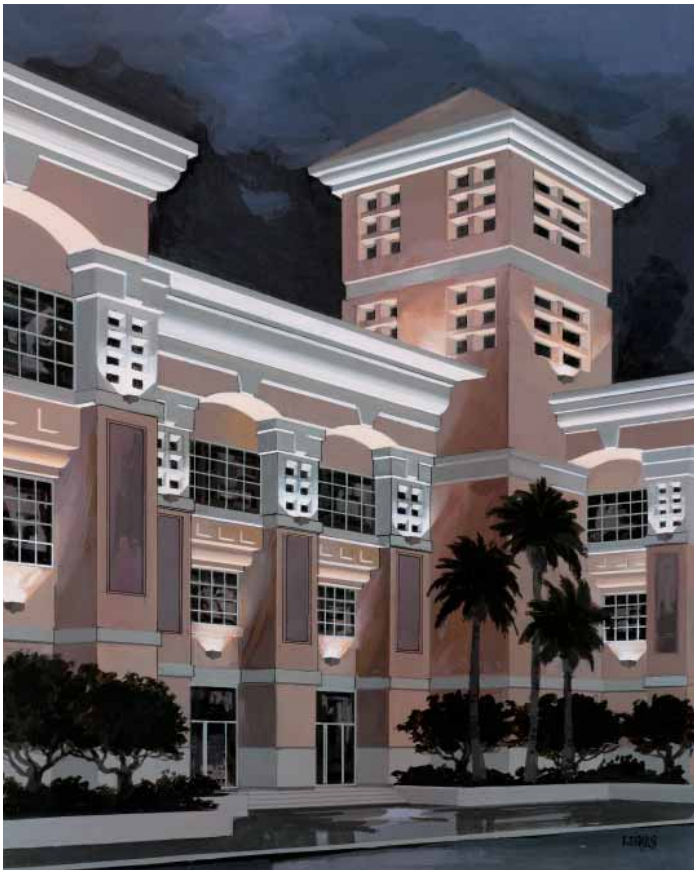
The Horizontal Spot reflector projects an intense sheet of light up the wall for highlighting reliefs, projections and surface textures. This effect is called "Wall Grazing".

Wall grazing should not be confused with facade lighting, which is normally produced by floodlights set back from the wall. Wall grazing will light the wall to a limited degree, but its real purpose is to create surface feature highlights rather than uniform wall washing.





The Horizontal Spot optical system is based on the Wall Grazer Optics available in the **Wall Director®** Series (see separate catalog). This unique distribution is ideal for creating dramatic highlighting effects when mounted very close to building surfaces.



Horizontal Spot / Wall Grazer Optics

Specifically designed to illuminate architectural facias and create dramatic surface effects.

AFL10 Series

with Horizontal Flood optics located in architectural recess to illuminate the roof parapet and facade reveal.

AFL10 and AFL20 Series

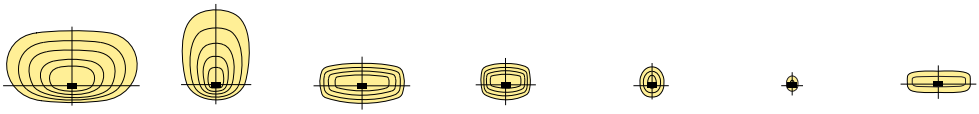
Horizontal Spot optics for Wall Grazing effects.

AFL20 Series

with various optics and color filters to illuminate signage and roof-top features.

Optical Matrix

This page reflects Kim's recommendations regarding the optimum optical system / accessory combinations throughout the Kim Floodlighting Family.



Series	Wide Flood	Vertical Flood	Medium Flood	Narrow Flood	Spot	Narrow Spot	Horizontal Spot
CFL	**CFL1**					**CFL6**	
Lamping							
50 - 70 watt H.I.D.	•					•	
13 - 42 watt Fluorescent	•						
60 watt Incandescent	•					•	
150 watt Halogen	•					•	
Fixture Options							
Barn Doors	•					•	
Fixed Hood						•	
Full Shield						•	
AFL10	**AFL11**	**AFL12**	**AFL13**	**AFL14**	**AFL15**	**AFL16**	**AFL17**
Lamping							
70 - 175 watt H.I.D.	•	•	•	•	•	•	•
Fixture Options							
Barn Doors	•	•	•	•	•	•	•
Fixed Hood		•	•	•	•	•	•
Full Shield			•	•	•	•	•
Lexan® Lens Shield	•	•	•	•	•	•	•
Grid Louver				•	•	•	
Color Filter Assembly		•		•	•	•	•
AFL20	**AFL21**	**AFL22**	**AFL23**	**AFL24**	**AFL25**	**AFL26**	**AFL27**
Lamping							
250 - 400 watt H.I.D.	•	•	•	•	•	•	•
Fixture Options							
Barn Doors	•	•	•	•	•	•	•
Fixed Hood		•	•	•	•	•	•
Full Shield			•	•	•	•	•
Lexan® Lens Shield	•	•	•	•	•	•	•
Grid Louver				•	•	•	
Color Filter Assembly		•		•	•	•	•

Mechanical Highlights

Locking Stop Arm prevents lens frame from swinging free during re-lamping.

Unitized Reflector assembly in Specular Alzak®. Interchangeable with seven beam spreads available.

Lamp Types Available in Metal Halide, High Pressure Sodium, Fluorescent, and Halogen lamping.

Silicone Gaskets used throughout to maintain optical clarity.

Die-cast aluminum door frame mates to housing, forming a continuous cylindrical shape. Secured with captive stainless steel screws

Tempered glass lens is sealed to door frame by a one-piece molded silicone gasket.

Heavy die-cast aluminum swivel utilizes interlocking adjustment teeth to lock-in aiming.

Precision die-cast housing with integral cooling ribs that dissipate heat.

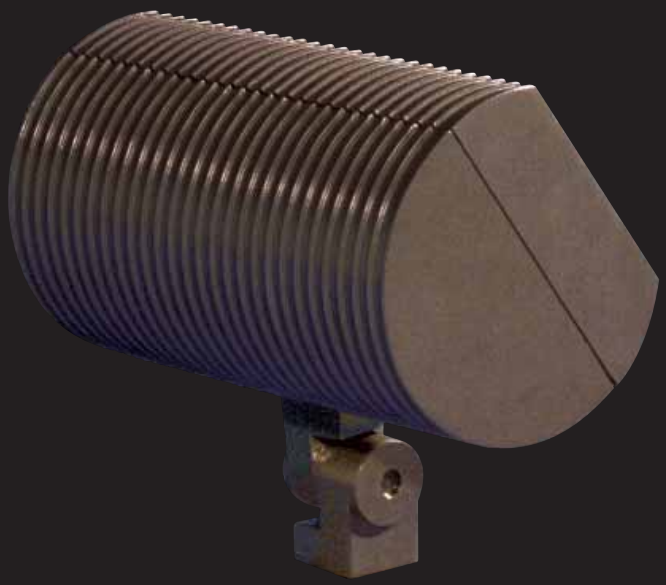
CFL Series

with various optics to illuminate landscape and specimen trees.

CFL

COMPACT FLOOD®

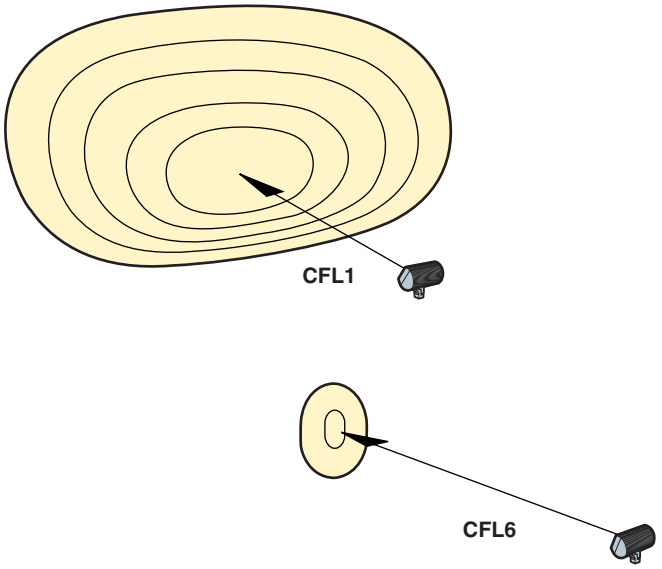
50 - 70 WATT H.I.D.
13 - 42 WATT FLUORESCENT
60 - 150 WATT INCANDESCENT / HALOGEN
27 LED



Important Features

Two Beam Patterns

The nature of floodlighting mandates versatility. The tremendous variety of surfaces and objects to be illuminated is further complicated by variables like fixture location and distance. The **CFL** Series satisfies this need for flexibility: Two available beam patterns can be used individually or in combinations to illuminate any object from distances of 3′ to 30′ using the **CFL1** Wide Flood to the laser-like accuracy of the **CFL6** Narrow Spot reflector. Both beam patterns generate high efficiencies and outstanding uniformity of illumination. See page **26** for beam properties and application guidelines.



Die-Cast Housing with Interchangeable Optics

The **CFL** Series housing and door frame are precision die-castings with integral cooling ribs that dissipate heat allowing the electrical components to operate well below their allowable limits. A single housing will accept both optical systems which are easily interchangeable on the job. Because floodlighting is as much art as it is science - final adjustments to the lighting effect may occasionally require changes of the beam pattern. Changing beam patterns is a simple task, and provides the **CFL** Series with flexibility for fine-tuning projects on the jobsite.

Standard Heavy Duty Swivel

The ingenious **CFL** standard heavy duty swivel is a complement to the housing design. The swivel is precision die-cast aluminum with concealed internal locking teeth. Locking adjustments are at 6° intervals. Adjustments are made by loosening the recessed allen head screw. The swivel's ½″ NPSM has a solid brass locknut for mounting. Swivel components are anodized pre-treated prior to finishing, for maximum corrosion resistance.

Optical Control

The **CFL** Series has a variety of optical accessories to control glare and increase the visual effectiveness of the lighting scheme. Shielding devices are carefully engineered to prevent shadows and preserve beam efficiency while reducing undesirable transient brightness. **Barn Doors** are a familiar accessory that allow for field-adjustable glare shielding. The **Fixed Hood** is a moderate shielding device and the **Full Shield** is a complete shielding device. Both are ideally suited for applications close to walkways, driveways, or roadways. See page **30** for details.

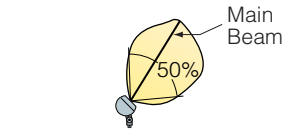
BD-CFL Barn Doors

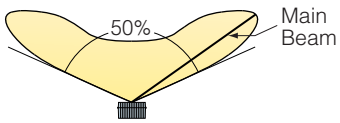
FH-CFL Fixed Hood

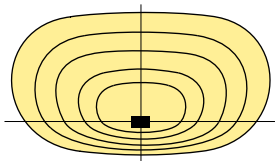
FS-CFL Full Shield

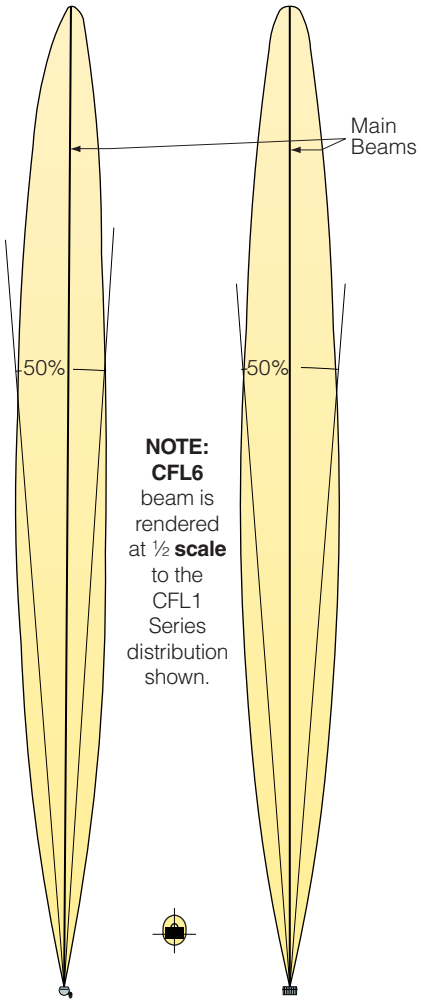
Beam Properties

These illustrations are representations of the beam spreads produced by each optical system. They are intended to help you visualize the performance differences between each model without having to analyze photometric charts. The **CFL6** beam pattern is shown at ½ scale due to page constrictions.







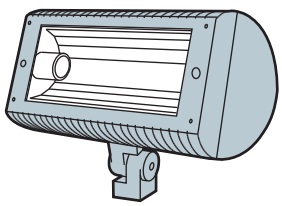


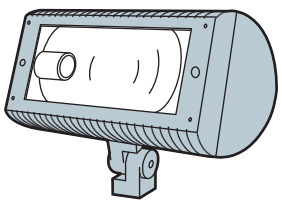
CFL1
Wide Flood

The **CFL1** Wide Flood beam pattern is engineered to illuminate surfaces that are more horizontal than vertical, or wider areas when wall mounted. The **CFL1** is designed for broad illumination with the fixture relatively close to the lighted surface maintaining excellent uniformity throughout its beam pattern. Recommended distance from the lighted surface is 3′ to 15′ depending on lamp and wattage.

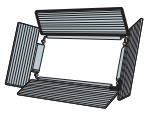
CFL6
Narrow Spot

The **CFL6** Narrow Spot beam pattern is designed to illuminate and highlight small architectural details, tree tops, and parapets from long distances. Recommended distance from the illuminated surface is 10′ to 30′, depending on lamp and wattage.



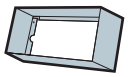


Product Structure

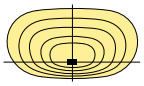


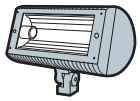
BD-CFL
Barn Doors
for all models
page **30**

FH-CFL
Fixed Hood
for all models
page **30**

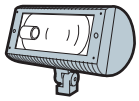


FS-CFL
Full Shield
for all models
page **30**





CFL1
Wide Flood



CFL6
Narrow Spot

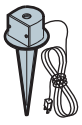
JBR
Architectural
Junction Box
page **31**

JBR30 or JBR32
In-grade Staked
Architectural Junction Box
page **31**

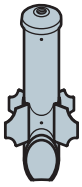
J-27N
Surface Mount
page **31**

JW
Architectural Wall Mount
page **32**

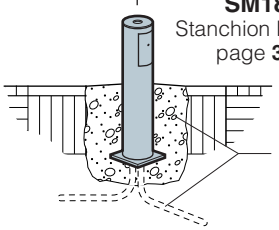
JB1
Architectural
Junction Box
page **32**



J-25N
Portable Spear Mount
page **32**



EP17
PowerPost™
page **32**



SM18
Stanchion Mount
page **31**

By others

Ordering Information

13 to 150 Watt

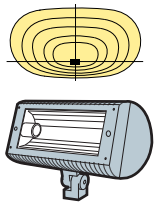
Ordering Example:

Fixture	Electrical Module	Finish	Fixture Options	Mounting Options
CFL1	/50PMH277/	WH	FH-CFL/WH	SM18/WH
1	2	3	4-6	7-14
Standard Fixture			Options Ordered Separately from Fixture	

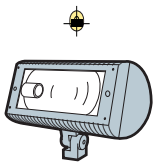
1 Fixture:

Cat. No. designates **CFL** fixture and beam pattern.

Single fixture EPA:
0.3 (45° tilt)
0.5 (Face on)



Beam Pattern: Wide Flood
Cat. No.: **CFL1**



Beam Pattern: Narrow Spot
Cat. No.: **CFL6**

2 Electrical Module:

PMH = Pulse Start Metal Halide
PL = Compact Fluorescent
INC = Incandescent
HAL = Halogen

Lamp Watts	Lamp Type	Line Volts
50	PMH	277

See **lamp and electrical data** on pages **96-98** for ballast types and characteristics.

NOTE: 42PL operates 26, 32, and 42 watt lamps at 120 thru 277 volts (50-60 Hz). G-12 socket available for T-6 bi-pin 70 watt Metal Halide lamp. Consult factory.

50PMH120 50PMH277	70PMH120 70PMH277
13PL120 13PL277	42PL
60INC120	
150HAL120	

50PMH120 50PMH277	70PMH120 70PMH277
60INC120	
150HAL120	

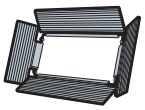
KimNOW! Available Configurations:
KN-CFL1/50PMH/DB*,
KN-CFL1/70PMH/DB*,
KN-CFL1/42PL/DB**
Accessories:
KN-BD-CFL/DB, KN-FH-CFL/DB, KN-FS-CFL/DB, KN-JW/DB
*Dual-tap ballast (120 or 277 volts)
**Variable voltage ballast (120 thru 277 volts)

3 Finish:

Super TGIC powder coat paint over Titanated Zirconium conversion coating.

Color:	Black	Dark Bronze	Light Gray	Platinum Silver	White	Custom Colors
Cat. No.:	**BL**	**DB**	**LG**	**PS**	**WH**	**CC** Consult representative for custom colors.

4 Optional Barn Doors:



Cat. No.: **BD-CFL**
Specify finish:
Example: **BD-CFL/BL**

Extruded aluminum, fully adjustable. Provides beam and glare control.

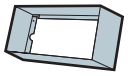
CAUTION: Not recommended for ground mounted fixtures in vandal prone areas.

5 Optional Fixed Hood:

Cat. No.: **FH-CFL**
Specify finish:
Example: **FH-CFL/BL**

Formed .062 thick aluminum. Provides moderate shielding for glare control.

6 Optional Full Shield:



Cat. No.: **FS-CFL**
Specify finish:
Example: **FS-CFL/BL**

Formed .062 thick aluminum. Provides complete shielding for glare control.

CAUTION: Do not use in locations where leaves and trash can collect inside shield.

7 Brass In-grade Architectural Junction Box:

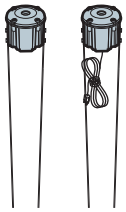
Cat. No.:

JBR-2	(2) ½″ NPT in bottom
JBR-3	(2) ¾″ NPT in bottom
JBR-21	(2) ½″ NPT in sides, (2) ½″ NPT in bottom
JBR-24	(4) ½″ NPT in sides, (2) ½″ NPT in bottom

Die-cast brass with ½″ NPSM fixture mount and die-cast cover. Internal set screw provided for locking position. 21 cu in. internal volume.

NOTE: All side taps provided with plugs.

8 Brass In-grade Staked Junction Box:



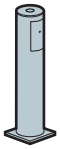
Cat. No.:

JBR30 (2) ½″ NPT in bottom, (2) 19″ long stakes
JBR32 (2) ½″ NPT in bottom, 9′ (SJTW-A) 3 wire cord and plug

Die-cast brass with ½″ NPSM fixture mount and die-cast cover. Internal set screw provided for locking position. 21 cu in. internal volume.

NOTE: JBR32 for use with incandescent, halogen, and fluorescent fixtures only.

9 Stanchion Mount:



Cat. No.: **SM18**

Specify finish:
Example: **SM18/BL**

3″ O.D. by .188″ wall cast low copper (<0.6% Cu) aluminum with ½″ NPSM fixture mount and hand hole with flush cover. Internal set screw fixture lock accessible through hand hole. Internal ground lug supplied with installed lead.

10 Surface Mount:

Cat. No.: **J-27N**

Specify finish:
Example: **J-27N/BL**

Cast low copper (<0.6% Cu) aluminum with mounting ears for wood screw attachment to tree or wood structure. 5.5 cu in. splice compartment with gasketed cover. ½″ NPSM fixture mount and ½″ NPSM conduit or cord seal entry.

NOTE: Surface mount can be connected to conduit or outdoor cord with a waterproof cord seal (by others).

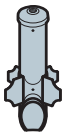
11 Architectural Wall Mount:

Cat. No.: **JW**

Specify finish:
Example: **JW/BL**

Die-cast, low copper (<0.6% Cu) aluminum with ½″ NPSM fixture mount. Internal set screw provided for locking position. Canopy attaches to stainless steel wall plate for mounting to any standard electrical outlet box.

12 PowerPost™ by Engineered Products Co.:



Cat. No.: **EP17**

17½″ post length

PVC fixture molded in black with ½″ NPT mount is corrosion free and UV resistant. Replaces EMT, conduit connectors and weatherproof boxes. 100% shatter resistant against denting and cracking. Angled bottom to eliminate cable congestion.

NOTE: Should be used with a UL listed fixture and grounding means (i.e., third wire) suitable for use in wet locations.

13 Architectural Junction Box:

Cat. No.: **JB1**

Specify finish:
Example: **JB1/BL**

Die-cast, low copper (<0.6% Cu) anodized aluminum cylindrical body and matching cover with ½″ NPSM fixture mount. One piece molded silicone cover gasket. Captive countersunk cover screws. Internal set screw provided for locking position. Two ½″ NPSM in bottom, 17 cu in. internal volume.

CAUTION: Junction Box must be installed high enough to avoid contact with soil or standing water.

14 Portable Spear Mount:

Cat. No.: **J-25N**

9′ (SJTW-A) 3 wire cord and plug

Cast iron with ½″ NPSM fixture mount. Hot dip galvanized finish. 5.5 cu in. splice compartment.

NOTE: For use with incandescent, halogen, and fluorescent fixtures only.

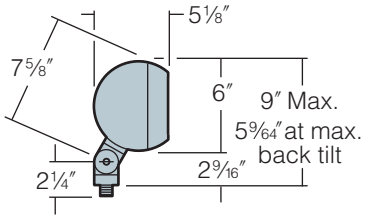
Luminaire Specifications

Dimensions

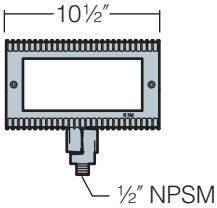
CFL Models
50 to 70 watt H.I.D.
Medium Base Lamps
13 to 42 watt Compact Fluorescent
60 watt Incandescent
150 watt Halogen

EPA: 0.3 (45° tilt)
0.5 (Face on)

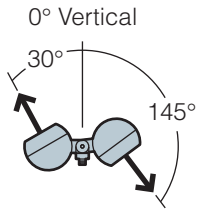
Maximum weight: 13 lb



SIDE



FRONT



AIMING RANGE

Housing: One-piece die-cast, low copper (<0.6% Cu) aluminum in a cylindrical shape with integral cooling fins over the entire length, and .100″ minimum wall thickness. One-piece silicone gasket between housing and lens frame.

Lens Frame: One-piece die-cast, low copper (<0.6% Cu) aluminum with integral cooling fins, .100″ minimum wall thickness, mates with housing to create a continuous cylindrical shape. ⁵⁄₃₂″ thick clear tempered glass lens is sealed to the lens frame by a one-piece stamped silicone gasket. Lens frame secures to housing by two stainless steel recessed captive allen-head screws.

Swivel: Die-cast aluminum with integral locking teeth providing 6° adjustment intervals and ½″ NPSM plus solid brass locknut for mounting. Clear anodized prior to chromate conversion coating for added corrosion resistance.

Fasteners: Stainless steel, recessed captive allen-head screws.
Reflector: Specular Alzak® aluminum optical components mounted to aluminum frame.

Socket: 4KV porcelain medium base (T-10 Incandescent and H.I.D.); T-4 Mini-can base (Halogen); 13w GX23-2 2-pin base, 42w GX24q-3 4-pin base (Fluorescent). (G-12 socket available for T-6 bi-pin 70 watt Metal Halide lamp. Consult factory.)

Ballast: All electrical components are UL and CSA recognized with leads extending out of the swivel splice compartment. Normal power factor ballast rated -32°F starting (13 watt Twin Tube Fluorescent); High power factor ballast rated 0°F starting (42 watt Triple Tube Fluorescent); Reactor - High power factor with starting temperatures of -40°F. for HPS and -20°F. for MH lamp modes. For MH/120 volt, a step-up transformer is provided. For HPS/277 volt, a step-down transformer is provided (H.I.D.). See lamp and electrical data on pages **96-98** for ballast types and characteristics.

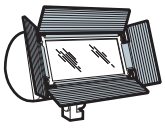
Finish: Super TGIC thermoset polyester powder coat paint, 2.5 mil nominal thickness, applied over a Titanated Zirconium conversion coating; 2500 hour salt spray test endurance rating. Standard colors are Black, Dark Bronze, Light Gray, Platinum Silver or White. Custom colors are available and subject to additional charges, minimum quantities and longer lead times. Consult representative.

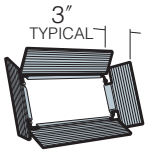
CAUTION: Fixtures must be grounded in accordance with national, state and/or local electrical codes. Failure to do so may result in serious personal injury.

Listings and Ratings	
UL cUL 1598	—
IP66 Rated	CE

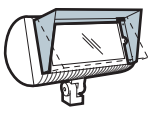
Fixture Option Specifications

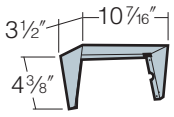
Ordered separately from fixture.
See page **28-29** for complete ordering information.



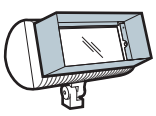


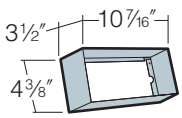
Barn Doors (BD-CFL): Extruded aluminum, fully adjustable doors with anti-reflection baffles. Individually swiveled and secured on a stainless steel frame. Easily attaches to pre-drilled holes in the lens frame with stainless steel screws. Provides beam and glare control.





Fixed Hood (FH-CFL): Formed .062 thick aluminum. Easily attaches to pre-drilled holes in the lens frame with stainless steel screws. Provides moderate shielding for glare control.





Full Shield (FS-CFL): Formed .062 thick aluminum. Easily attaches to pre-drilled holes in the lens frame with stainless steel screws. Provides complete shielding for glare control.

Ordered separately from fixture.
See pages **28-29** for complete ordering information.

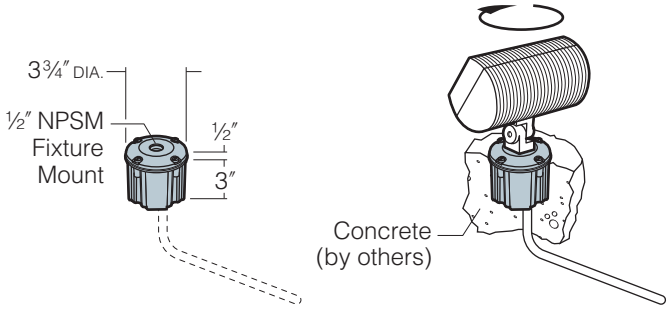
Mounting Option Specifications

Brass In-grade Architectural Junction Box (JBR-2, JBR-3, JBR-21, JBR-24): Die-cast brass with ½″ NPSM fixture mount and die-cast cover. Internal set screw provided for locking position. 21 cu in. internal volume.

Application Notes

- Creates a flush-mounted appearance.
- May be cast in concrete for increased stability.

CAUTION: Fixture stem and swivel must not contact soil or standing water. Provide drainage away from Junction Box.

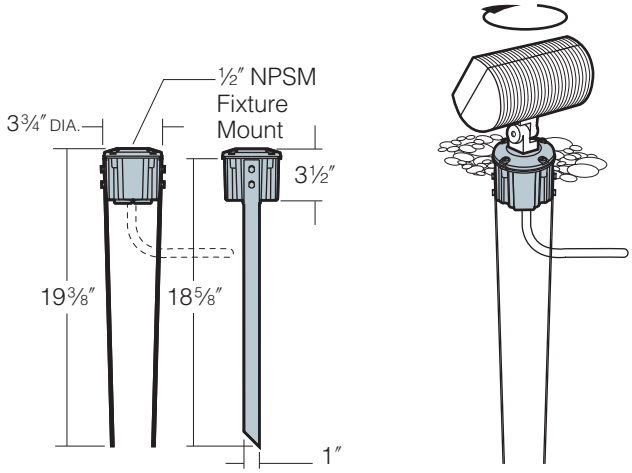


Brass In-grade Staked Architectural Junction Box (JBR30, JBR32): Die-cast brass with ½″ NPSM fixture mount and die-cast cover. Internal set screw provided for locking position. 21 cu in. internal volume. **(JBR32)** 9′ (SJTW-A) 3 wire cord and plug

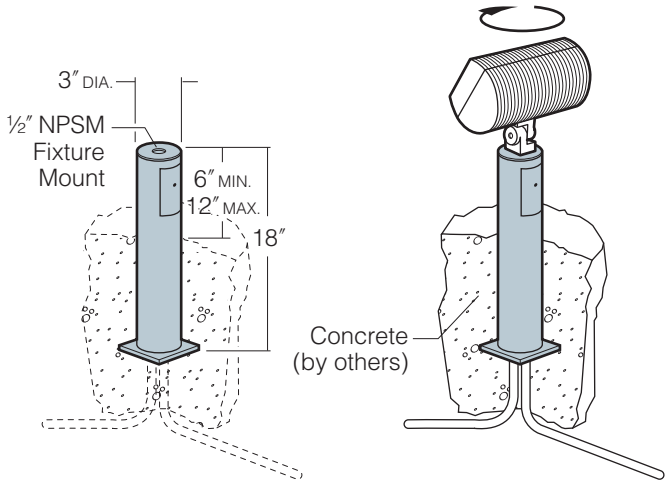
Application Notes

- Creates a flush-mounted appearance.
- May be cast in concrete for increased stability.

CAUTION: Fixture stem and swivel must not contact soil or standing water. Provide drainage away from Junction Box.

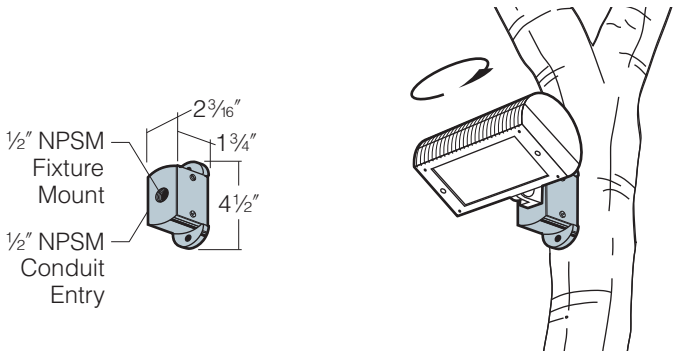


Stanchion Mount (SM18): 3″ O.D. by .188″ wall cast low copper (<0.6% Cu) aluminum with ½″ NPSM fixture mount and hand hole with flush cover. Internal set screw fixture lock accessible through hand hole. Internal ground lug supplied with installed lead.



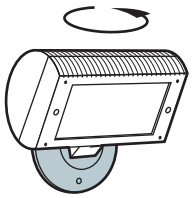
Surface Mount (J-27N): Cast low copper (<0.6% Cu) aluminum with mounting ears for wood screw attachment to tree or wood structure. 5.5 cu in. splice compartment with gasketed cover. ½″ NPSM fixture mount and ½″ NPSM conduit or cord seal entry.

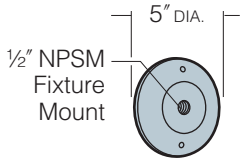
NOTE: Surface mount can be connected to conduit or outdoor cord with a waterproof cord seal (by others).



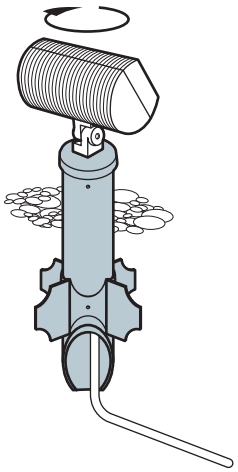
Mounting Option Specifications

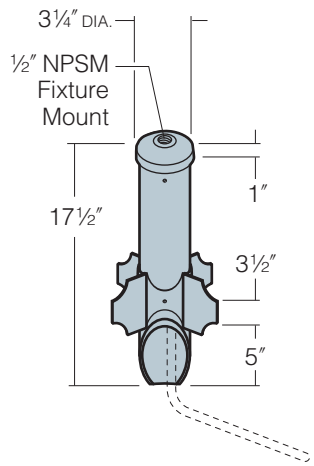
Ordered separately from fixture.
See pages **28-29** for complete ordering information.





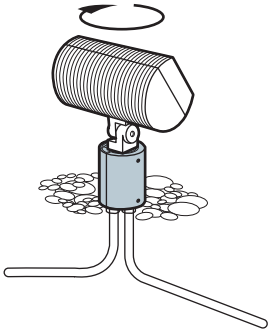
Architectural Wall Mount (JW): Die-cast, low copper (<0.6% Cu) aluminum with ½″ NPSM fixture mount. Internal set screw provided for locking position. Canopy attaches to stainless steel wall plate for mounting to any standard electrical outlet box.

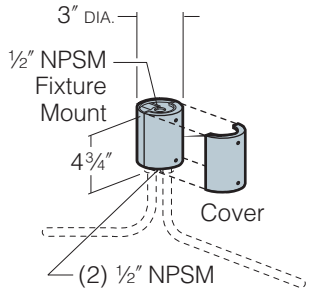




PowerPost™ by Engineered Products Co. **(EP17):** PVC fixture molded in black with ½″ NPT mount is corrosion free and UV resistant. Replaces EMT, conduit connectors and weatherproof boxes. 100% shatter resistant against denting and cracking. Angled bottom to eliminate cable congestion.

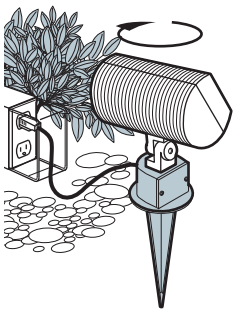
NOTE: Should be used with a UL listed fixture and grounding means (i.e., third wire) suitable for use in wet locations.

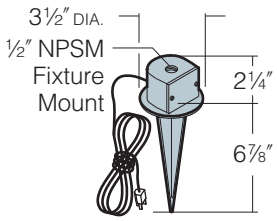




Architectural Junction Box (JB1): Die-cast, low copper (<0.6% Cu) anodized aluminum with ½″ NPSM fixture mount. Internal set screw provided for locking position. Two ½″ NPSM in bottom, 17 cu in. internal volume.

CAUTION: Junction Box must be installed high enough to avoid contact with soil or standing water.





Portable Spear Mount (J-25N): Cast iron with ½″ NPSM fixture mount. Hot dip galvanized finish. 5.5 cu in. splice compartment. 9′ (SJTW-A) 3 wire cord and plug.

CFL1 Wide Flood Beam Spread Chart

Lamp		Lamp Watts	Initial Lumens[1]	I.E.S. Type	Maximum Candlepower	Field Angle (10% of max.)	Beam Angle (50% of max.)	I.T.L. Test No.	Iso Pg.
HIGH PRESSURE SODIUM									
50HPS	**E-17 clear medium base**	50	4,000	6H x 6V	1,359 (1.0°H x -13.0°V)	125.4°H x 106.1°V	85.3°H x 77.4°V	43996	101
70HPS	**E-17 clear medium base**	70	6,300	6H x 6V	2,064 (0.0°H x -13.4°V)	129.4°H x 106.4°V	86.7°H x 74.6°V	43997	101
PULSE START METAL HALIDE									
50PMH	**E-17 clear medium base**	50	3,060	7H x 6V	1,101 (0.0°H x 11.8°V)	130.5°H x 106.8°V	84.3°H x 70.2°V	43999	101
70PMH	**E-17 clear medium base**	70	5,150	7H x 6V	1,640 (0.0°H x -13.0°V)	136.0°H x 108.7°V	90.5°H x 90.5°V	44062	101
COMPACT FLUORESCENT									
13PL	**Twin Tube GX23-2 2-pin base**	13	900	7H x 6V	256 (0.0°H x 14.3°V)	138.3°H x 119.8°V	91.8°H x 88.5°V	44370	101
42PL	**Triple Tube GX24q-3 4-pin base**	42	3,200	7H x 6V	576 (0.0°H x -5.0°V)	142.2°H x 127.3°V	99.2°H x 88.5°V	Kim2146	101
INCANDESCENT									
60INC	**T-10 medium base**	60	745	7H x 6V	186 (0.0°H x 10.3°V)	136.3°H x 120.3°V	90.6°H x 93.1°V	44419	101
HALOGEN									
150HAL	**T-4 mini-can base**	150	2,800	7H x 6V	931 (0.0°H x -11.5°V)	135.1°H x 108.1°V	92.5°H x 74.9°V	44239	101

CFL6 Narrow Spot Beam Spread Chart

Lamp		Lamp Watts	Initial Lumens[1]	I.E.S. Type	Maximum Candlepower	Field Angle (10% of max.)	Beam Angle (50% of max.)	I.T.L. Test No.	Iso Pg.
HIGH PRESSURE SODIUM									
50HPS	**E-17 clear medium base**	50	4,000	4H x 2V	13,968 (0.0°H x 1.0°V)	47.8°H x 18.6°V	24.2°H x 10.4°V	Kim2157	110
70HPS	**E-17 clear medium base**	70	6,300	4H x 2V	22,359 (0.0°H x 1.5°V)	47.7°H x 18.5°V	23.7°H x 10.3°V	50201	110
PULSE START METAL HALIDE									
50PMH	**E-17 clear medium base**	50	3,060	1H x 1V	38,271 (0.0°H x -2.5°V)	16.7°H x 14.8°V	8.6°H x 6.9°V	Kim2158	110
70PMH	**E-17 clear medium base**	70	5,150	1H x 1V	66,642 (0.0°H x -2.4°V)	16.6°H x 14.6°V	8.3°H x 6.7°V	50200	110
INCANDESCENT									
60INC	**T-10 medium base**	60	745	1H x 1V	9,318 (0.0°H x -2.5°V)	16.7°H x 14.8°V	8.6°H x 6.9°V	Kim2159	111
HALOGEN									
150HAL	**T-4 mini-can base**	150	2,800	2H x 1V	35,656 (0.0°H x 0.6°V)	24.5°H x 10.7°V	7.7°H x 5.6°V	50202	111

[1]All **Initial Lumen** values shown are approximate and may vary from one manufacturer to another. Consult lamp manufacturer's data for exact lumen and life data.

NOTE: For lamp/ballast information outside of the U.S.A. and Canada, please consult your local Kim representative.

WARNING: All fixtures must be grounded in accordance with local codes or the National Electrical Code. Failure to do so may result in serious personal injury. Lamps by others.

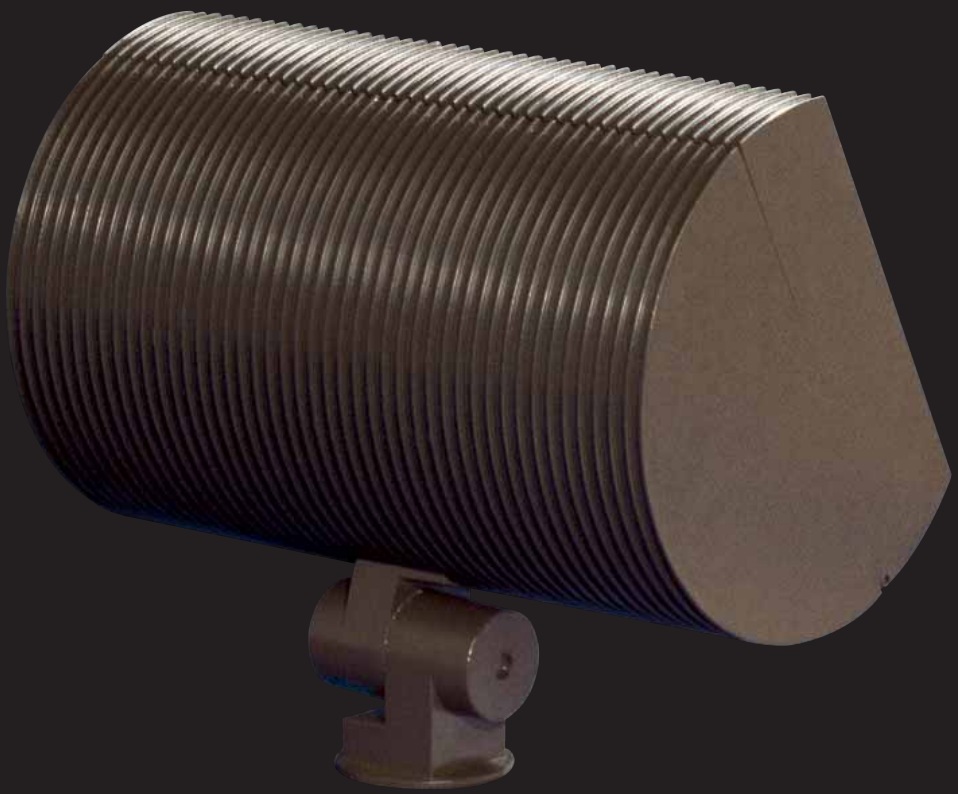
AFL10 Series

Wall mounted with Horizontal Flood optics to illuminate ceiling surface and detail.

AFL10

ARCHITECTURAL FLOODLIGHTS

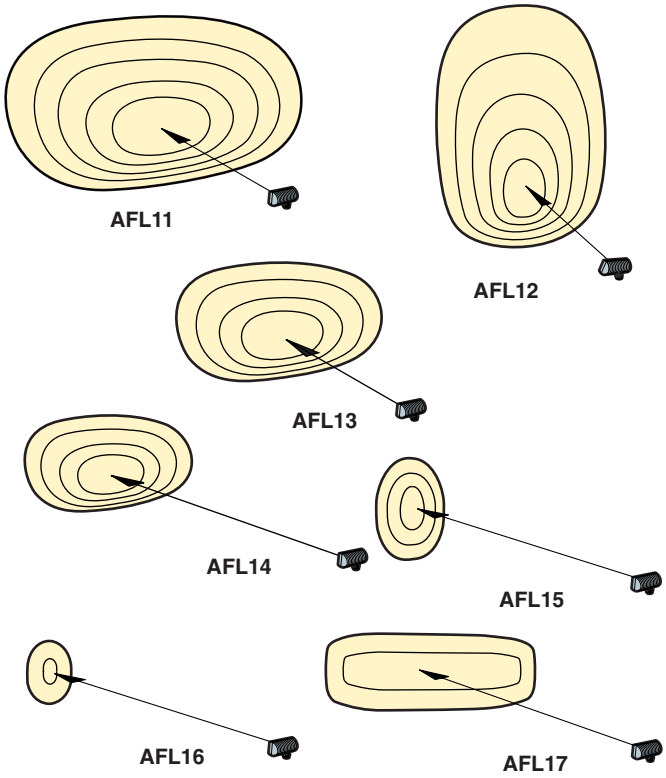
70 - 150 WATT H.I.D.



Important Features

Seven Beam Patterns

The nature of floodlighting mandates versatility. The tremendous variety of surfaces and objects to be illuminated is further complicated by variables like fixture location and distance. The **AFL10** Series satisfies this need for flexibility: Seven available beam patterns can be used individually or in combinations to illuminate any object from distances of 3′ to 100′ - from the **AFL11** Wide Flood to the laser-like accuracy of the **AFL16** Narrow Spot reflector. The **AFL12** Vertical Flood has a unique optical design that is ideal for lighting both vertical and horizontal surfaces with very low brightness above the main beam. All seven beam patterns are the result of precision Kim reflector systems that generate high efficiencies and outstanding uniformity of illumination. See pages **38-39** for beam properties and application guidelines.

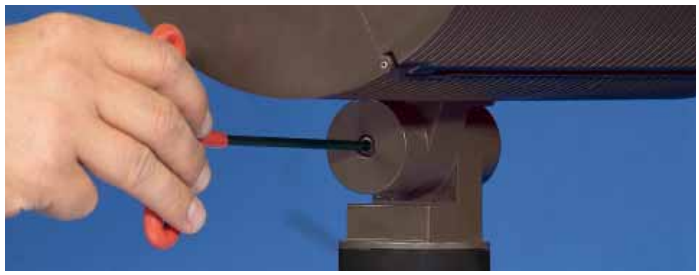


Die-Cast Housing with Interchangeable Optics

The **AFL10** Series housing and door frame are precision die-castings with integral cooling ribs that dissipate heat allowing the electrical components to operate well below their allowable limits. A single housing will accept any of the seven optical systems which are easily interchangeable on the job. Because floodlighting is as much art as it is science - final adjustments to the lighting effect may occasionally require changes of the beam pattern. To accomplish this, the door frame is opened and removed with slip hinges allowing easy access to the reflector module. Each reflector module is a one-piece assembly held in place by four pressure fit retainers and easily removed without tools for access to the ballast compartment. Changing beam patterns is a simple task, and provides the **AFL10** Series with flexibility for fine-tuning projects on the jobsite.

Standard Swivel with ½″ NPSM Mount

The **AFL10** standard swivel is a complement to the housing design. The swivel is precision die-cast with concealed internal locking teeth. Locking adjustments are at 5° intervals. Adjustments are made by loosening the recessed allen head screw on the swivel. For added strength at the ½″ NPSM mount, the aluminum swivel transitions to a heavy stainless steel nipple.



Optional Heavy Duty Swivel

Specifically designed for installations where the fixture is mounted close to the ground or susceptible to vandalism. The Heavy Duty Swivel is constructed of heavy cast low copper aluminum with locking teeth providing adjustability in 5° increments and a full 360° horizontal rotation.The swivel mounts directly to a 2″ pipe-size tenon, with heavy duty ⅜″ stainless steel set screws provided to firmly lock the fixture in place. See page **46** for details.

Vandal Protection

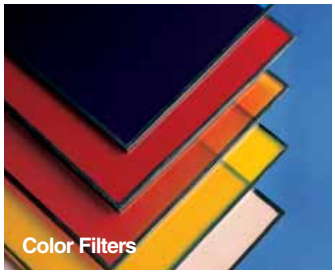
An optional Lexan® vandal resistant lens shield is available for applications where vandalism is anticipated.

NOTE: The lens shield is made from an advanced polymer, Lexan® Resin from GE Advanced Materials. Lexan® dramatically reduces lens yellowing and becomes stable within the first 100 hours of operation. Lexan® offers significantly greater retained impact and vandal resistance during the life of the lens.

CAUTION: Use only when vandalism is anticipated.

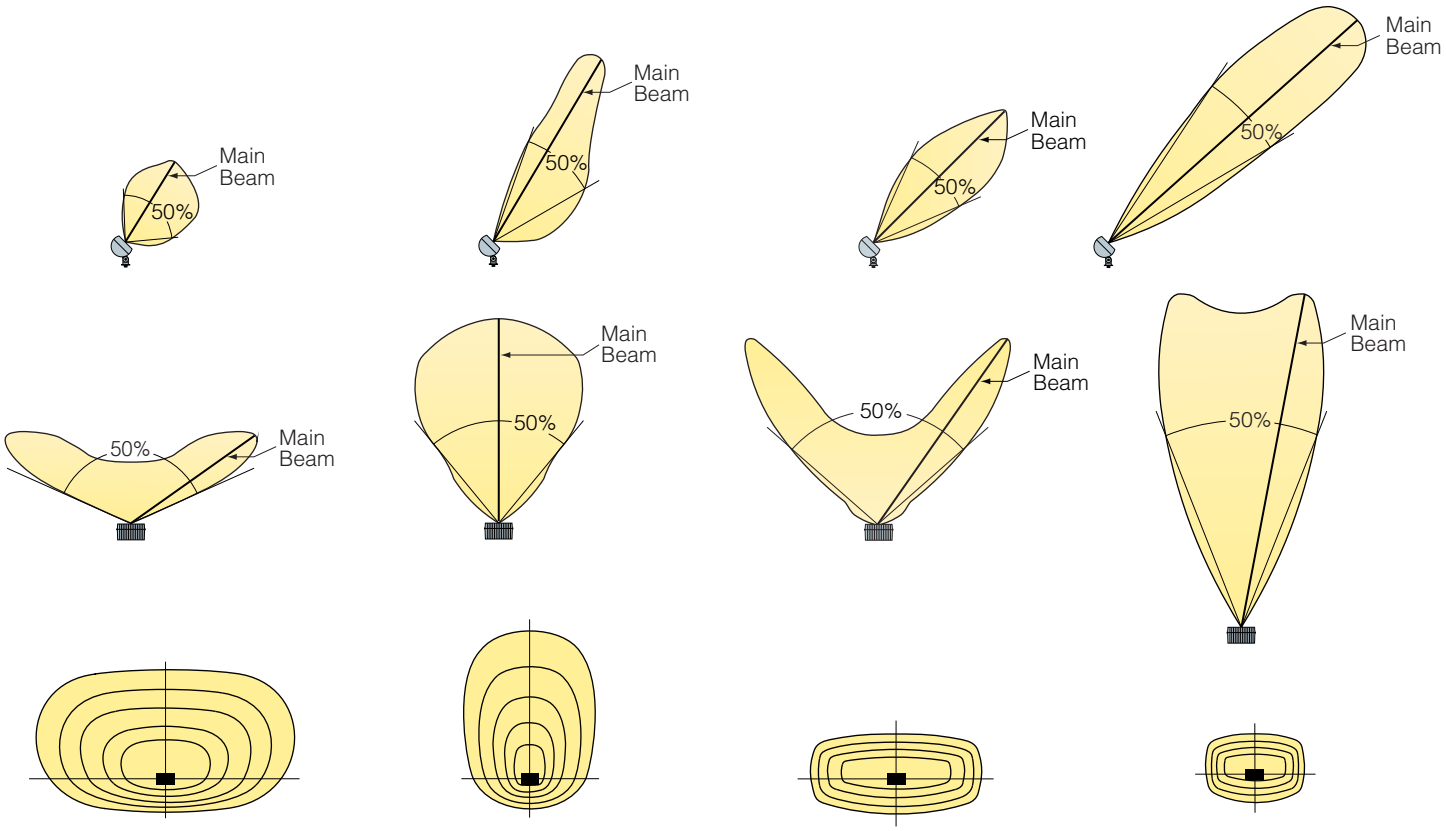
Optical Control

The **AFL10** Series has a variety of optical accessories to control glare and increase the visual effectiveness of the lighting scheme. Shielding devices are carefully engineered to prevent shadows and preserve beam efficiency while reducing undesirable transient brightness. **Barn Doors** are a familiar accessory that allow for field-adjustable glare shielding. The **Fixed Hood** is a moderate shielding device and the **Full Shield** is a complete shielding device. Both are ideally suited for applications close to walkways, driveways, or roadways. The **Grid Louver** is engineered to maximize beam efficiency while minimizing glare and shadows from the internal vanes.The **GL4** louver is available for use with the **AFL15** and **AFL16**. The **Lexan® Lens Shield** is available for applications where vandalism is anticipated. The **Color Filter Assembly** is designed to be used alone or in conjunction with the **Barn Doors**, **Fixed Hood**, or **Full Shield**. Dynamic floodlighting effects are possible by utilizing any of the color filters specifically engineered for use in high temperature floodlighting applications. See page **47** for details.



Beam Properties

These illustrations are representations of the beam spreads produced by each optical system. They are intended to help you visualize the performance differences between each model without having to analyze photometric charts. **AFL11** through **AFL15**, and the **AFL17** beam patterns are shown in identical scale. The **AFL16** beam pattern is shown at ½ scale due to page constrictions.



AFL11 Wide Flood

The **AFL11** horizontal beam pattern is engineered to illuminate surfaces that are more horizontal than vertical, or wider areas when wall mounted. The **AFL11** is designed for broad illumination with the fixture relatively close to the lighted surface and maintains excellent uniformity throughout its beam pattern. Recommended distance from the lighted surface is 3′ to 20′ depending on lamp and wattage.

AFL12 Vertical Flood

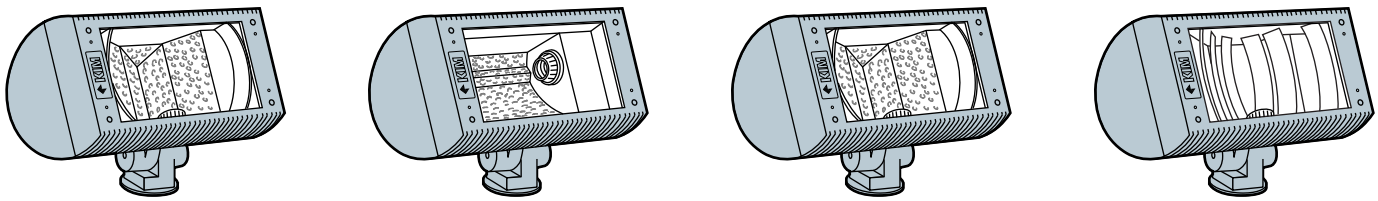
The **AFL12** vertical beam pattern is engineered to illuminate taller surfaces when grade mounted or deeper areas when wall mounted. Recommended distance from the lighted surface is 6′ to 20′ depending on lamp and wattage.

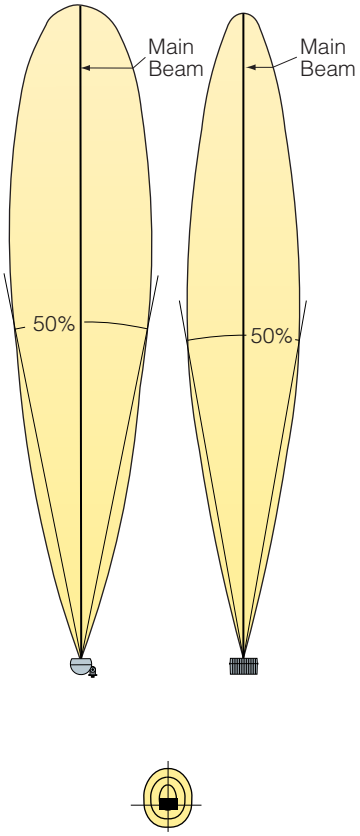
AFL13 Medium Flood

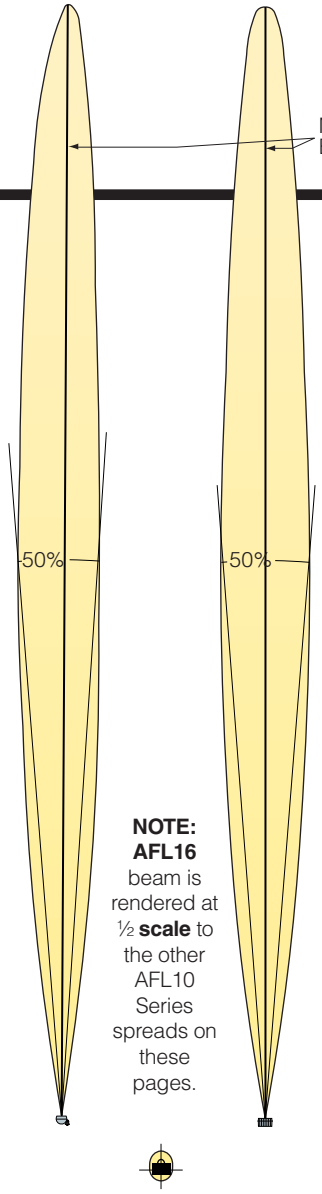
The **AFL13** is designed to bridge the gap between wide and narrow flood distributions. It is a mid-range luminaire designed for lighting surfaces from distances of 6′ to 20′, with low aiming angles generating excellent uniformity of illumination.

AFL14 Narrow Flood

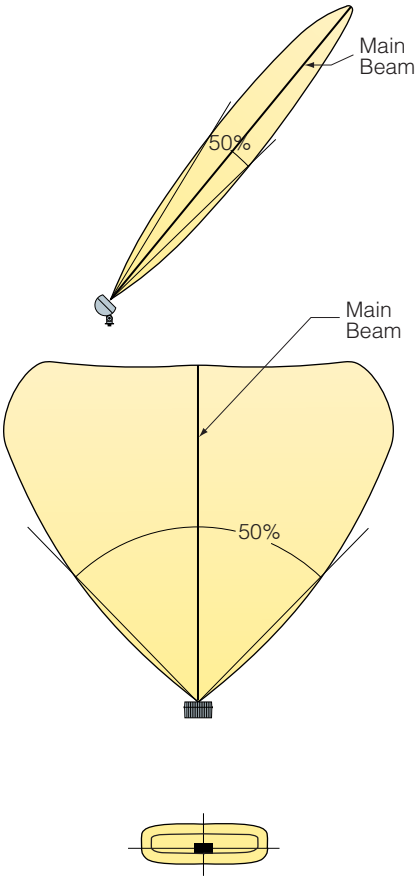
The **AFL14** bridges the gap between medium flood and spot distributions. It is a mid-range luminaire designed for lighting architecture from distances of 15′ to 40′, with low aiming angles generating excellent uniformity of illumination. It can also be used in combination with other **AFL10** Series models to extend their range or reshape the overall light pattern.







NOTE:
AFL16 beam is rendered at ½ **scale** to the other AFL10 Series spreads on these pages.



AFL15 Spot

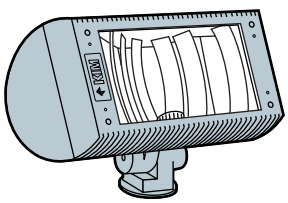
The **AFL15** spot reflector is a concentrated beam designed to light objects which are 20′ to 50′ from the fixture. It may also be located close to a building where the effect of grazing light is desired to show surface texture, or to highlight reliefs and projections.

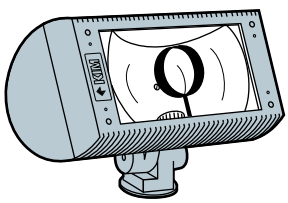
AFL16 Narrow Spot

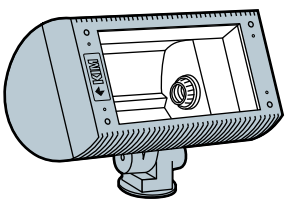
The **AFL16** narrow spot beam pattern is designed to illuminate and highlight small architectural details, tree tops, and parapets from long distances. Recommended distance from the illuminated surface is 20′ to 100′, depending on lamp and wattage.

AFL17 Horizontal Spot

The **AFL17** horizontal spot reflector is ideal for illuminating surfaces with wide horizontal and relatively short vertical dimensions to intensities similar to the AFL15 Spot reflector. Its wide horizontal pattern also allows the **AFL17** to be located close to a building where the effect of grazing light is desired to show surface texture, or to highlight reliefs and projections. It can also be used in combination with other **AFL10** Series models to extend their range or reshape overall beam patterns.

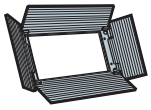




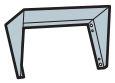


AFL10

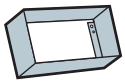
Product Structure



BD
Barn Doors
for all models
page **47**



FH
Fixed Hood
for all models
page **47**



FS
Full Shield for
for all models
page **47**

AFL11
Wide Flood

AFL12
Vertical Flood

AF13
Medium Flood

AFL14
Narrow Flood

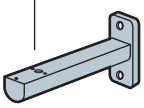
JBR-2 or JBR-3
Architectural
Junction Box
page **48**

JBR30
In-grade Staked
Architectural Junction Box
page **49**

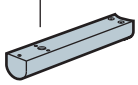
J-27N
Surface Mount
page **49**

WM
Wall or Ceiling Mount
page **49**

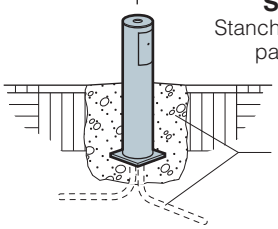
JB1
Architectural
Junction Box
page **50**



WM1
Wall Mount
page **50**

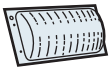


SPM
Side Pole Mount
page **50**

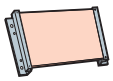


SM18
Stanchion Mount
page **49**

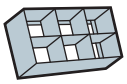
By others



AFL-LS
Lexan® SLX Lens Shield
for all models
page **47**

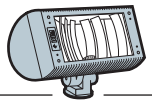


CFA1
Color Filter Assembly
for all models
page **47**

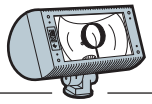


GL4
Grid Louver
for AFL15 and 16 only
page **47**

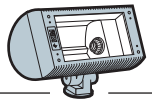
Heavy Duty Mounting
The **HDS** Heavy Duty Swivel and Post Top **PT/PT2** mounts are for 2″ tenon mounting.
HDS Heavy Duty Swivel must be included in fixture order number. All other options are ordered separate of fixture. Do not add options and mounting to fixture order numbers. (See page **46** for more information.)



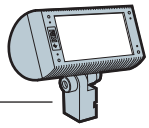
AFL15
Spot



AFL16
Narrow Spot



AFL17
Horizontal Spot

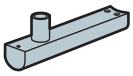


HDS
Optional Heavy Duty Swivel
for all models.

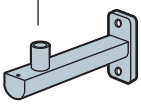
PT2
Twin Post Top Mount
page **51**

PT
Post Top Mount
page **51**

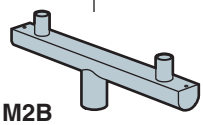
SMT
Surface Mount
Tenon
page **51**



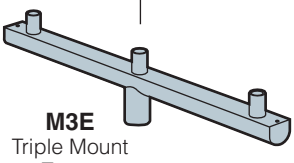
SPT
Side Pole Mount
Tenon
for Round Pole
page **52**



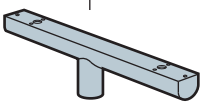
WM2
Wall Mount
Tenon
page **52**



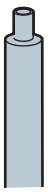
M2B
Twin Mount
Tenon
page **52**



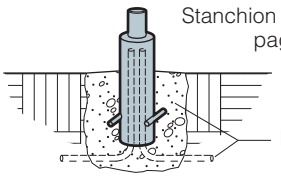
M3E
Triple Mount
Tenon
page **52**



TM2
Twin Mount
page **50**



Pole with 2″ pipe
size tenon by
Kim or others.
Steel tenon
required for two
or more fixtures.



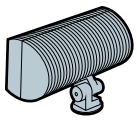
SM2
Stanchion Mount Tenon
page **51**

By others

AFL10

Ordering Information

Medium Base
70 to 175 Watt



Ordering Example:

Fixture	Electrical Module	Finish	Optional Heavy Duty Swivel	Optional Photocell	Fixture Options	Mounting Options
AFL11 /	150HPS277 /	WH	/ HPS	/ A-30	BD/WH	SM18/WH
1	2	3	4	5	6-11	12-28

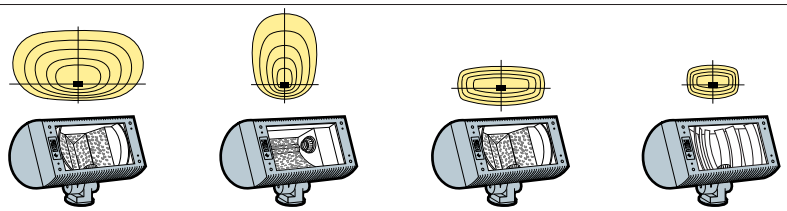
Standard Fixture and Options Ordered Assembled with Fixture

Options Ordered Separately from Fixture

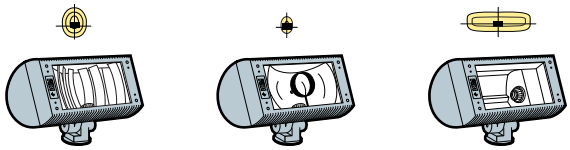
1 Fixture:

Cat. No. designates **AFL10** fixture and beam pattern.

Single fixture EPA with standard swivel:
0.7 (45° tilt)
1.0 (Face on)



Beam Pattern:	Wide Flood	Vertical Flood	Medium Flood	Narrow Flood
Cat. No.:	**AFL11**	**AFL12**	**AFL13**	**AFL14**



Beam Pattern:	Spot	Narrow Spot	Horizontal Spot
Cat. No.:	**AFL15**	**AFL16**	**AFL17**

2 Electrical Module:

HPS = High Pressure Sodium
PMH = Pulse Start Metal Halide

See **lamp and electrical data** on pages **96-98** for ballast types and characteristics.

Lamp Watts	Lamp Type	Line Volts
150	**HPS**	**277**

70PMH120	**100PMH120**	**150PMH120**
70PMH208	**100PMH208**	**150PMH208**
70PMH240	**100PMH240**	**150PMH240**
70PMH277	**100PMH277**	**150PMH277**
70PMH347	**100PMH347**	**150PMH347**
70PMH480	**100PMH480**	**150PMH480**

70HPS120	**100HPS120**	**150HPS120**
70HPS208	**100HPS208**	**150HPS208**
70HPS240	**100HPS240**	**150HPS240**
70HPS277	**100HPS277**	**150HPS277**
70HPS347	**100HPS347**	**150HPS347**
70HPS480	**100HPS480**	**150HPS480**

NOTE: G-12 socket available for T-6 bi-pin 70 and 150 watt Pulse Start Metal Halide lamps. Consult factory.

NOTE: Due to the Energy Independence and Security Act (EISA) of 2007, Kim Lighting can no longer supply probe start metal halide ballasts with its luminaires, effective January 1, 2009. Contact Kim Lighting for availability of replacement ballasts for warranty service claims.

(Visit www.aboutlightingcontrols.org or the Library of Congress website for more details).

KN!

KimNOW! Available Configurations:

KN-AFL11/150PMH/HD/DB*,
KN-AFL12/150PMH/HD/DB*,
KN-AFL15/150PMH/HD/DB*

Accessories:
KN-BD/DB, KN-FH/DB, KN-AFL-LS, KN-JB1/DB, KN-SM2/DB, KN-SMT/DB

*Multi-tap ballast (120, 208, 240, or 277 volts)

3 Finish:

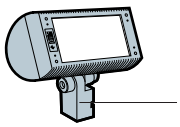
Super TGIC powder coat paint over Titanated Zirconium conversion coating.

Color:	Black	Dark Bronze	Light Gray	Platinum Silver	White	Custom Colors
Cat. No.:	**BL**	**DB**	**LG**	**PS**	**WH**	**CC**

Consult representative for custom colors.

4 Optional Heavy Duty Swivel:

Single fixture EPA with heavy duty swivel:
0.8 (45° tilt)
1.1 (Face on)



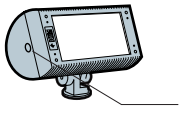
Heavy Duty Swivel

Cat. No.: **HDS**

Finished to match fixture.

Recommended for vandal resistant requirements. Heavy cast low copper (<0.6% Cu) aluminum with locking teeth, aiming range of 200° vertical in 5° increments and 360° horizontal rotation. The swivel mounts directly to a 2″ pipe-size tenon, with heavy duty ⅜″ stainless steel set point screws provided to firmly lock the fixture in place.

5 Optional Photocell:

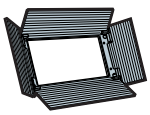


Photocell Sensor

Line Volts:	120V	208V	240V	277V	480V	347V
Cat. No.:	**A-30**	**A-31**	**A-32**	**A-33**	**A-34**	**A-35**

CAUTION: Use only in locations where adjacent lighting will not affect operation of photocell.

6 Optional Barn Doors:



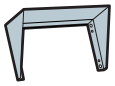
Cat. No.: **BD**

Specify finish:
Example: **BD/BL**

Extruded aluminum doors with anti-reflection baffles. Each door is hinged to a cast low copper (<0.6% Cu) aluminum frame, and locks by set screws. Doors are individually removable. Barn Door assembly mounts to predrilled door frame holes.

CAUTION: Not recommended for ground mounted fixtures in vandal prone areas.

7 Optional Fixed Hood:

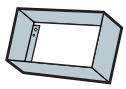


Cat. No.: **FH**

Specify finish:
Example: **FH/BL**

Formed 1/16″ thick aluminum. Mounts to predrilled door frame holes. Can be mounted along the top or bottom of the fixture to shield the lamp and lens from view.

8 Optional Full Shield:



Cat. No.: **FS**

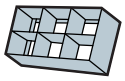
Specify finish:
Example: **FS/BL**

Formed 1⁄16″ thick aluminum. Mounts to predrilled door frame holes.

CAUTION: Do not use in locations where leaves and trash can collect inside shield.

9 Optional Grid Louver:

For use with **AFL15** and **AFL16** only.



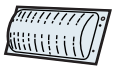
Cat. No.: **GL4**

Specify finish:
Example: **GL4/BL**

Formed 1⁄16″ thick aluminum. Mounts to predrilled door frame holes. Provides glare control for **AFL15** and **AFL16** Spots while maintaining beam efficiency and uniformity.

10 Optional Lexan® Lens Shield:

Not for use with **GL4** Louver or **CFA1** color filter options.



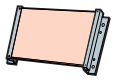
Cat. No.: **AFL-LS**

Clear finish.

3⁄16″ thick, clear convex, vacuum formed, advanced polymer (Lexan® from GE Advanced Materials) lens shield with gasket. Mounts over lens to predrilled door frame holes and may be used with **BD** Barn Door, **FH** Fixed Hood, or **FS** Full Shield option.

CAUTION: Use only when vandalism is anticipated.

11 Optional Color Filter Assembly:



Cat. No.: **CFA1-XX**

Color Filter Assembly Cat. No. includes color filter and channel finish. Specify filter, substituting **XX** for color filter number (See below) and add finish.

Heavy wall aluminum extrusion with anti-reflection baffles and vertical channels that hold the color filter 2″ away from the fixture lens. Quick change-out of the color filter is possible by the removal of two channel screws. Support mounts to predrilled holes in fixture door frame. May be used in conjunction with **BD** Barn Doors, **FH** Fixed Hood, or **FS** Full Shield option.

Color Filter:	Deep Straw	Rose Tint	Medium Red	Brilliant Blue	Primary Green
XX:	**15**	**05**	**27**	**69**	**91**

Example: **CFA1-05/DB**

12 Brass In-grade Architectural Junction Box:

Standard Swivel Mount.

Cat. No.:

JBR-2 (2) ½″ NPT in bottom
JBR-3 (2) ¾″ NPT in bottom
JBR-21 (2) ½″ NPT in sides, (2) ½″ NPT in bottom
JBR-24 (4) ½″ NPT in sides, (2) ½″ NPT in bottom

Die-cast brass with ½″ NPSM fixture mount and die-cast cover. Internal set screw provided for locking position. 21 cu in. internal volume. All side taps provided with plugs.

13 Brass In-grade Staked Junction Box:

Standard Swivel Mount.

Cat. No.:

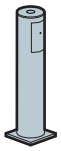
JBR30 (2) ½″ NPT in bottom, (2) 19″ long stakes

Die-cast brass with ½″ NPSM fixture mount and die-cast cover. Internal set screw provided for locking position. 21 cu in. internal volume.

CAUTION: To assure a rigid installation, Staked Junction Box must be set in concrete (by others).

14 Stanchion Mount for Single Fixture:

Standard Swivel Mount.



Cat. No.: **SM18**

Specify finish:
Example: **SM18/BL**

3″ O.D. by .188″ wall cast low copper (<0.6% Cu) aluminum with ½″ NPSM fixture mount and hand hole with flush cover. Internal set screw fixture lock accessible through hand hole. Internal ground lug supplied with installed lead.

CAUTION: To assure a rigid installation, stanchion must be set in concrete (by others).

15 Surface Mount:

Standard Swivel Mount.

Cat. No.: **J-27N**

Specify finish:
Example: **J-27N/BL**

Cast low copper (<0.6% Cu) aluminum with mounting ears for wood screw attachment to tree or wood structure. 5.5 cu in. splice compartment with gasketed cover. ½″ NPSM fixture mount and ½″ NPSM conduit or cord seal entry.

NOTE: Surface mount can be connected to conduit or outdoor cord with a waterproof cord seal (by others).

16 Wall or Ceiling Mount:

Standard Swivel Mount.

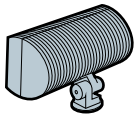
Cat. No.: **WM**

Specify finish:
Example: **WM/BL**

Electro zinc steel mounting plate adapts to standard 4″ square or octagonal Junction Boxes. Fixture mounts to cast low copper (<0.6% Cu) aluminum upper cover which attaches to mounting plate. Lower cover half provides splice access. Dielectric sealing compound provided for wall interface.

Ordering Information

Medium Base
70 to 175 Watt



17 Architectural Junction Box:

Standard Swivel Mount.

Cat. No.: **JB1**

Specify finish:
Example: **JB1/BL**

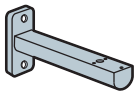
Die-cast, low copper (<0.6% Cu) anodized aluminum cylindrical body and matching cover with ½″ NPSM fixture mount. One-piece molded silicone cover gasket. Captive countersunk cover screws. Internal set screw provided for locking position. Two ½″ NPSM in bottom, 17 cu in. internal volume.

CAUTION: Junction Box must be installed high enough to avoid contact with soil or standing water.

18 Wall Mount:

Standard Swivel Mount.

Component EPA: 0.3

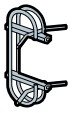


Cat. No.: **WM1**

Specify finish:
Example: **WM1/BL**

Extruded aluminum arm with a removable end cap for wiring access. Arm is welded to a cast aluminum plate with two ½″ dia. mounting holes.

18b Wall Embedment Bracket:



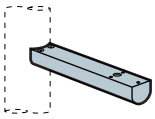
Cat. No.: **WEB**

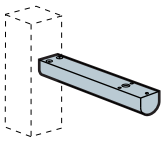
The wall embedment bracket provides ⅜-16 bolt receptacles welded in a galvanized re-bar cage for casting into poured-in-place concrete walls. Bolt receptacles receive fixture attachment bolts.

19 Side Pole Mount:

Standard Swivel Mount.

Component EPA: 0.3





Cat. No.: **SPM-X**

Side Pole Mount Cat. No. includes pole dia. and finish.

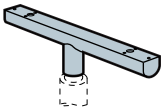
For round poles, specify **X** pole dia. and add finish. Mounts to 3″, 3½″, 4″, 5″, or 6″ O.D. round poles.
Example: **SPM-4/BL** for 4″ Round Pole
For square poles, omit **-X** and add finish.
Example: **SPM/B** for Square Pole

Extruded aluminum arm. Internal set screw fixture lock. Removable end cap for wiring access. For use with other Kim Site/Roadway Luminaires as an additional mid-pole floodlight.

20 Twin Mount:

Standard Swivel Mount.

Component EPA: 0.6



Cat. No.: **TM2**

Specify finish:
Example: **TM2/BL**

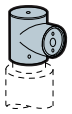
Extruded aluminum arm. Internal set screw fixture locks. Can be mounted on a **SM2, SMT,** or **Steel Kim Pole** with steel 2″ pipe-size tenon (2⅜″ O.D. x 3½″ min. length). Removable end caps for wiring access.

CAUTION: Approved for mounting to poles with steel tenons only.

21 Post Top Mount:

Standard Swivel Mount.

Component EPA: 0.7



Cat. No.: **PT**

Specify finish:
Example: **PT/BL**

Cast aluminum mount for pole or other mounting option with 2″ pipe-size tenon (2⅜″ O.D. x 3½″ minimum length). Fixture attaches with concealed internal studs, mounting is with ¼-20 allen set screws. Top cap provides splice access.

22 Twin Post Top Mount:

Standard Swivel Mount.

Component EPA: 0.1

Not for use with **SMT, SPT, WM2, M2B,** or **M3E** options.

Cat. No.: **PT2**

Specify finish:
Example: **PT2/BL**

Cast aluminum mount for pole or other mounting option with 2″ pipe-size tenon (2⅜″ O.D. x 3½″ minimum length). Fixture attaches with concealed internal studs, mounting is with ¼-20 allen set screws. Top cap provides splice access.

23 Surface Mount Tenon:

2″ Tenon - For Optional Heavy Duty Swivel Only.

Not for use with **PT2, M2B,** or **M3E** options.

Cat. No.: **SMT/BL**

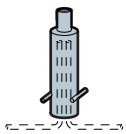
Black finish.

2″ pipe-size tenon welded to a cast aluminum plate. Plate has four ½″ mounting holes, and tenon has one ½″ NPT for side conduit entry.

NOTE: May be wall mounted if horizontal fixture adjustment is not required. For wall mounting with horizontal fixture adjustment, use **WM2**.

24 Stanchion Mount Tenon:

2″ Tenon - For Optional Heavy Duty Swivel Only.



Cat. No.: **SM2/BL**

Black finish.

4″ O.D. cast low copper (<0.6% Cu) aluminum stanchion with 2″ pipe-size tenon (2⅜″ O.D., 1⅜″ I.D.) for mounting a single fixture or multiple top-mounts.

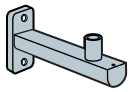
CAUTION: Multiple top-mounts must not be used in locations where people can climb on fixtures and mounting arms. To assure a rigid installation, Stanchion must be set in concrete (by others).

25 Wall Mount Tenon:

2″ Tenon - For Optional Heavy Duty Swivel Only.

Not for use with **PT2** option.

Component EPA: 0.3

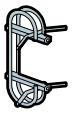


Cat. No.: **WM2**

Specify finish:
Example: **WM2/BL**

2″ pipe-size tenon (2⅜″ O.D., 2″ I.D.) welded to an extruded aluminum arm with a removable end cap for wiring access. Arm is welded to a cast aluminum plate with two ½″ mounting holes.

25b Wall Embedment Bracket:



Cat. No.: **WEB**

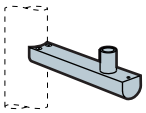
The wall embedment bracket provides ⅜-16 bolt receptacles welded in a galvanized re-bar cage for casting into poured-in-place concrete walls. Bolt receptacles receive fixture attachment bolts.

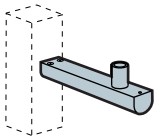
26 Side Pole Mount Tenon:

2″ Tenon - For Optional Heavy Duty Swivel Only.

Not for use with **PT2** option.

Component EPA: 0.3





Cat. No.: **SPT-X**

Side Pole Mount Cat. No. includes pole dia. and finish.

For round poles, specify **X** pole dia. and add finish. Mounts to 3″, 3½″, 4″, 5″, or 6″ O.D. round poles.
Example: **SPT-4/BL** for 4″ Round Pole

For square poles, omit **-X** and add finish.
Example: **SPT/BL** for Square Pole

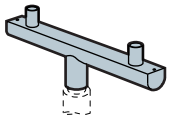
Extruded aluminum arm with one 2″ pipe-size tenon. Removable end cap for wiring access. For use with other Kim Site/Roadway Luminaires as an additional mid-pole floodlight.

27 Twin Mount Tenon:

2″ Tenon - For Optional Heavy Duty Swivel Only.

Not for use with **PT2** option.

Component EPA: 0.6



Cat. No.: **M2B**

Specify finish:
Example: **M2B/BL**

Extruded aluminum arm with two 2″ pipe-size tenons. Can be mounted on a **SM2, SMT,** or **Steel Kim Pole** with steel 2″ pipe-size tenon (2⅜″ O.D. x 3½″ min. length). Removable end caps for wiring access.

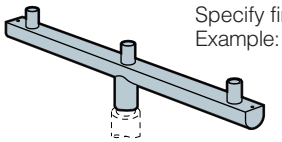
CAUTION: Approved for mounting to poles with steel tenons only.

28 Triple Mount Tenon:

2″ Tenon - For Optional Heavy Duty Swivel Only.

Not for use with **PT2** option.

Component EPA: 1.0



Cat. No.: **M3E**

Specify finish:
Example: **M3E/BL**

Extruded aluminum arm with three 2″ pipe-size tenons. Can be mounted on a **SM2, SMT,** or **Steel Kim Pole** with steel 2″ pipe-size tenon (2⅜″ O.D. x 3½″ min. length). Removable end caps for wiring access.

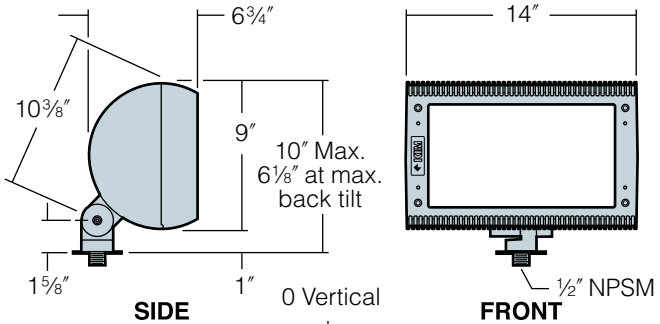
CAUTION: Approved for mounting to poles with steel tenons only.

Luminaire Specifications

Dimensions

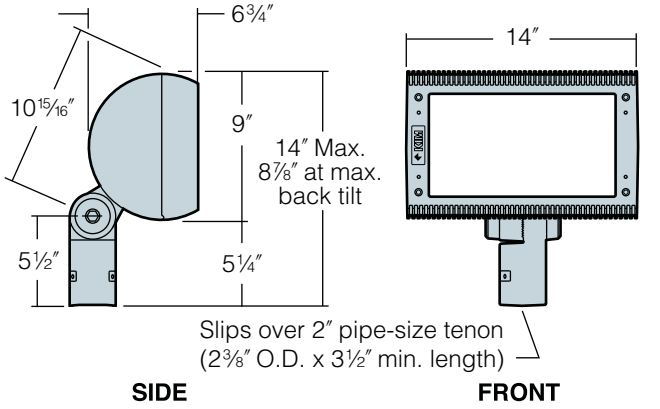
AFL10 Models
70 to 150 watt H.I.D.
Medium Base Lamps

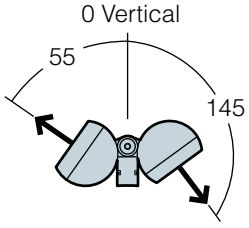
with **STANDARD SWIVEL**
EPA: 0.7 (45 tilt)
1.0 (Face on)
Maximum weight: 24 lb



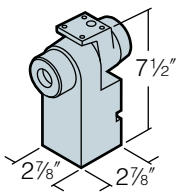
AIMING RANGE
May be limited by selected mounting option as shown on pages **48-51**

with **OPTIONAL HEAVY DUTY SWIVEL**
EPA: 0.8 (45 tilt)
1.1 (Face on)
Maximum weight: 25 lb





AIMING RANGE
May be limited by selected mounting option as shown on pages **51-52**



HEAVY DUTY SWIVEL

Housing: One-piece die-cast, low copper (<0.6% Cu) aluminum in a cylindrical shape with integral cooling fins over the entire length, and ⅛″ minimum wall thickness. One-piece silicone gasket between housing and door frame concealed when fixture is closed. Concealed integral cast slip hinges with stainless steel pins.

Door Frame: One-piece die-cast, low copper (<0.6% Cu) aluminum with integral cooling fins, ⅛″ minimum wall thickness, mates with housing to create a continuous cylindrical shape. Concealed integral cast slip hinges allow removal without tools. Stop-arm provided to limit door frame opening. 3⁄16″ thick clear tempered glass lens is sealed to the lens frame by a one-piece silicone gasket. Door frame secures to housing by four stainless steel recessed captive allen-head screws. Four tapped and plugged holes provided for attachment of options.

Standard Swivel: Die-cast aluminum with integral locking teeth providing 5° adjustment intervals. Stainless steel allen-head locking screw and ½″ NPSM. Clear anodized prior to chromate conversion coating for added corrosion resistance.

Reflector Assemblies: Interchangeable in all seven AFL10 models. Specular Alzak® aluminum optical components mounted to aluminum frame. Reflector assembly snaps into fixture housing with spring clips. Sockets are 4KV porcelain medium base. (G-12 socket available for T-6 bi-pin 70 and 150 watt Metal Halide lamps. Consult factory.)

Electrical Components: All electrical components are UL and CSA recognized with leads extending out of the swivel. High power factor ballast rated -40°F starting for HPS and -20°F for MH lamp modes. Optional photocell mounted with sensor on side of housing. See lamp and electrical data on pages **96-98** for ballast types and characteristics.

Finish: Super TGIC thermoset polyester powder coat paint, 2.5 mil nominal thickness, applied over a Titanated Zirconium conversion coating; 2500 hour salt spray test endurance rating. Standard colors are Black, Dark Bronze, Light Gray, Platinum Silver or White. Custom colors are available and subject to additional charges, minimum quantities and longer lead times. Consult representative.

CAUTION: Fixtures must be grounded in accordance with national, state and/or local electrical codes. Failure to do so may result in serious personal injury.

Listings and Ratings	
UL cUL 1598	—
IP67 Rated	CE

Optional Heavy Duty Swivel (HDS): Ordered assembled with fixture.

Cast low copper (<0.6% Cu) aluminum with locking teeth providing 5° adjustment intervals. ⅜″ stainless steel locking bolt. Two ⅜″ stainless steel set point screws secure swivel to any 2″ pipe-size tenon (2⅜″ O.D. x 3½″ min. length). Clear anodized prior to chromate conversion coating for added corrosion resistance.

CAUTION: Recommended for vandal resistant requirements.

Optional Photocell (A30 - A35): Ordered assembled with fixture. Factory installed with flush sensor on side of housing. Select photocell with same line volts as fixture.

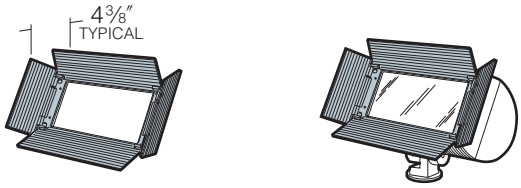
CAUTION: Use only in locations where adjacent lighting will not affect operation of photocell.

Ordered separately from fixture.
See pages **42-45** for complete ordering information.

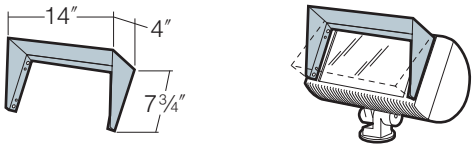
Fixture Option Specifications

Barn Doors (BD): Extruded aluminum doors with anti-reflection baffles. Each door is hinged to a cast low copper (<0.6% Cu) aluminum frame, and locks by set screws. Doors are individually removable. Barn Door assembly mounts to predrilled door frame holes.

CAUTION: Not recommended for ground mounted fixtures in vandal prone areas.

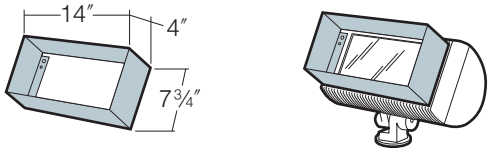


Fixed Hood (FH): Formed 1⁄16″ thick aluminum. Mounts to predrilled door frame holes. Can be mounted along the top or bottom of the fixture to shield the lamp and lens from view.



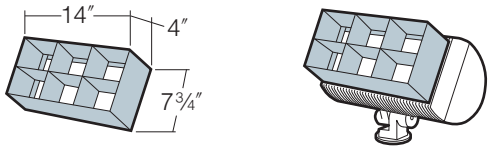
Full Shield (FS): Formed 1⁄16″ thick aluminum. Mounts to predrilled door frame holes.

CAUTION: Do not use full shield in locations where leaves and trash can collect inside shield.



Grid Louver for AFL15 and AFL16 (GL4): Formed 1⁄16″ thick aluminum. Mounts to predrilled door frame holes. Provides glare control for **AFL15** and **AFL16** Spots while maintaining beam efficiency and uniformity.

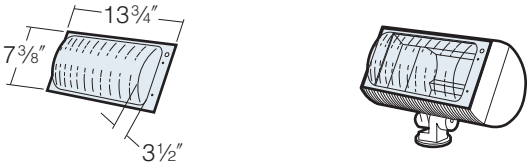
NOTE: For use with **AFL15** and **AFL16** only.



Lexan® Lens Shield (AFL-LS): 3⁄16″ thick, clear convex, vacuum formed, advanced polymer (Lexan® from GE Advanced Materials) lens shield with gasket. Mounts over lens to predrilled door frame holes and may be used with **BD** Barn Door, **FH** Fixed Hood, or **FS** Full Shield option.

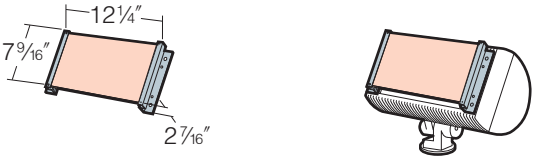
CAUTION: Use only when vandalism is anticipated.

NOTE: Not for use with **GL4** Louver or **CFA1** color filter options.



Color Filter Assembly (CFA1-XX): Heavy wall aluminum extrusion with anti-reflection baffles and vertical channels that hold the color filter 2″ away from the fixture lens. Quick change-out of the color filter is possible by the removal of two channel screws. Support mounts to predrilled holes in fixture door frame. May be used with **BD** Barn Door, **FH** Fixed Hood, or **FS** Full Shield option.

Color Filter Assembly includes color filter.



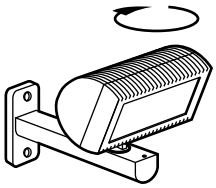
Sample	Color[1]	XX Filter # [2]	Description
	Deep Straw	15	Warms metal halide color. Deepens high pressure sodium color to yellow/orange.
	Rose Tint	05	Warms metal halide color. Deepens high pressure sodium color to pink/orange.
	Medium Red	27	Deep color accent. Best used with high pressure sodium lamps. **NOTE:** Very low output with metal halide lamps.
	Brilliant Blue	69	Deep color accent. Best used with metal halide lamps. **NOTE:** Not recommended for high pressure sodium lamps.
	Primary Green	91	Deep color accent. Blue shift with metal halide lamps. Yellow shift with high pressure sodium lamps.

NOTE: Color samples shown for reference only and will not represent actual illumination color rendered by H.I.D. lamps.

[1]Exact color output is highly dependent on lamp used, (i.e. HPS vs. MH, specific lamp color temperature and other factors).
[2]**XX** Color filter number corresponds with Roscolux color filter numbers.

Aiming Ranges

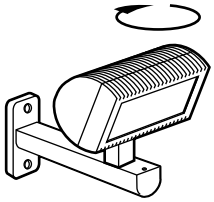
Reference symbol for fixture aiming range when mounted on the option as shown. This range is in the vertical plane and does not necessarily apply to all conditions. See page **46** for full aiming range without mounting options.



Standard Swivel

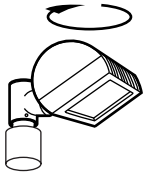
The standard swivel mounted on either the **JBR-2, JBR-3, JBR30, WM1, SPM,** or **TM2** provides aiming between **-15° to 125°** off vertical.

The standard swivel mounted on either the **SM18** or **JB1** provides full aiming between **-35° to 125°** off vertical.



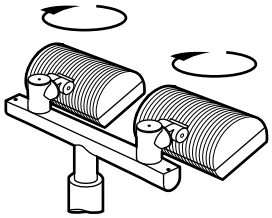
Heavy Duty Swivel

The heavy duty swivel **(HDS)**, mounted on either the **SMT, SM2, WM2, SPT, M2B, M3E,** or **pole top tenon**, provides aiming between **-55° to 145°** off vertical.



Standard Swivel and PT Mount

The combination of the standard swivel and the **PT** or **PT2** post top mount, provides aiming between **55° to 215°** off vertical **for maximum downlight adjustability.**

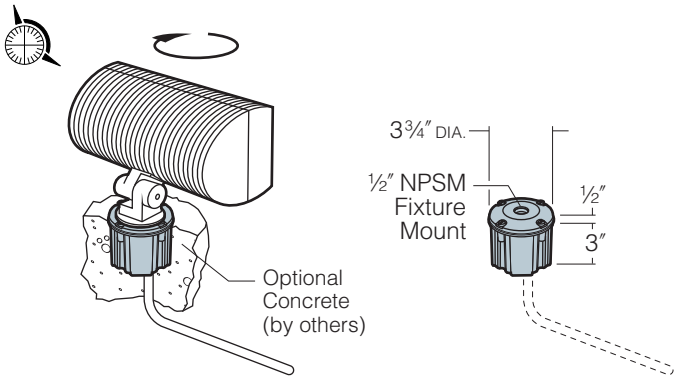


PT Mounting

The **PT** post top mount may be used on any 2″ tenon mount, including the **SMT, SM2, WM2, SPT, M2B, M3E,** or post top tenon. The **PT2** twin post top mount is for use on the **SM2** or 2″ post top tenon only.

Mounting Option Specifications

Ordered separately from fixture.
See pages **42-45** for complete ordering information.



Brass In-grade Architectural Junction Box (JBR-2, JBR-3, JBR-21, JBR-24): Die-cast brass with ½″ NPSM fixture mount and die-cast cover. Internal set screw provided for locking position. 21 cu in. internal volume.

Standard Swivel Mount

Application Notes

- Creates a flush-mounted appearance.
- May be cast in concrete for increased stability.

CAUTION: Fixture stem and swivel must not contact soil or standing water. Provide drainage away from Junction Box.

Ordered separately from fixture.
See pages **42-45** for complete ordering information.

Mounting Option Specifications

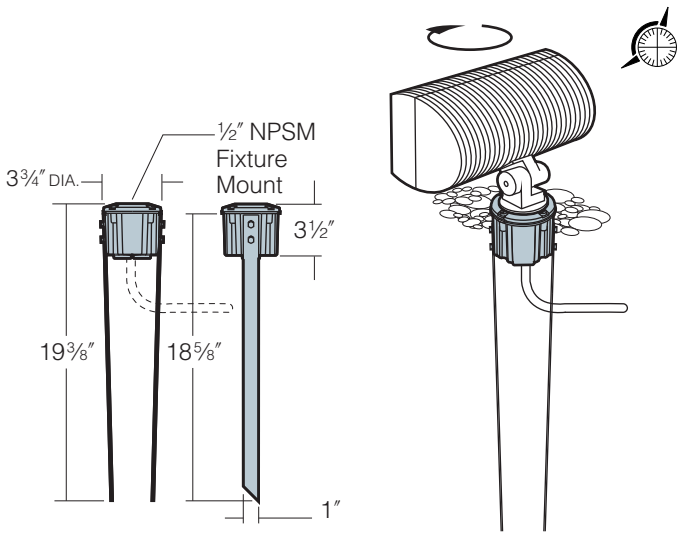
Brass In-grade Staked Architectural Junction Box (JBR30): Die-cast brass with ½″ NPSM fixture mount and die-cast cover. Internal set screw provided for locking position. 21 cu in. internal volume.

Standard Swivel Mount

Application Notes

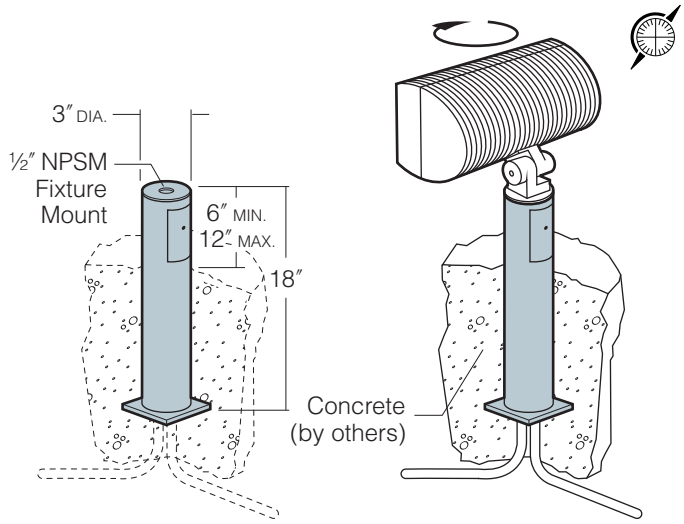
- Creates a flush-mounted appearance.
- May be cast in concrete for increased stability.

CAUTION: Fixture stem and swivel must not contact soil or standing water. Provide drainage away from Junction Box.



Stanchion Mount (SM18): 3″ O.D. by .188″ wall cast low copper (<0.6% Cu) aluminum with ½″ NPSM fixture mount and hand hole with flush cover. Internal set screw fixture lock accessible through hand hole. Internal ground lug supplied with installed lead.

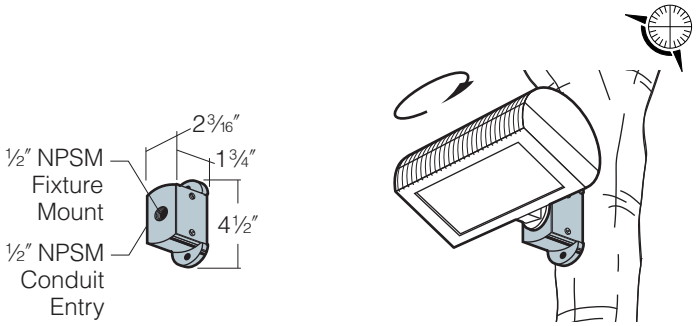
Standard Swivel Mount



Surface Mount (J-27N): Cast low copper (<0.6% Cu) aluminum with mounting ears for wood screw attachment to tree or wood structure. 5.5 cu in. splice compartment with gasketed cover. ½″ NPSM fixture mount and ½″ NPSM conduit or cord seal entry.

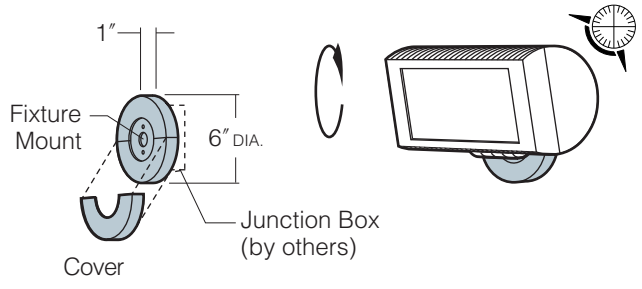
Standard Swivel Mount

NOTE: Surface mount can be connected to conduit or outdoor cord with a waterproof cord seal (by others).



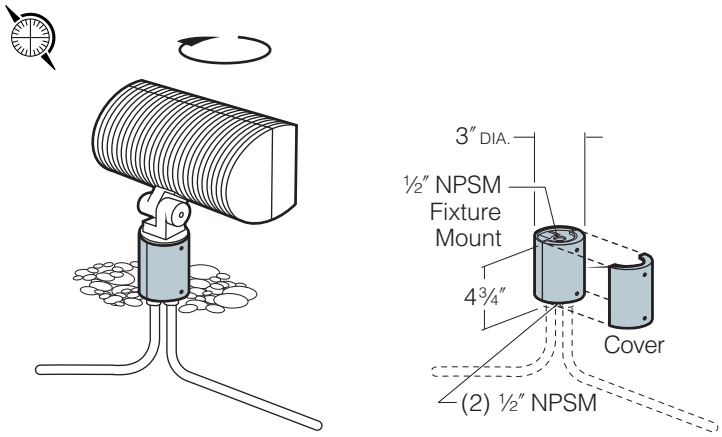
Wall or Ceiling Mount (WM): Electro zinc steel mounting plate adapts to standard 4″ square or octagonal Junction Boxes. Fixture mounts to cast aluminum upper cover which attaches to mounting plate. Lower cover half provides splice access. Dielectric sealing compound provided for wall interface.

Standard Swivel Mount



Mounting Option Specifications

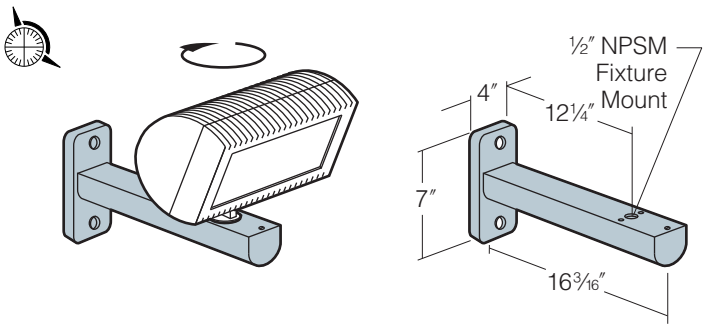
Ordered separately from fixture.
See pages **42-45** for complete ordering information.



Architectural Junction Box (JB1): Die-cast, low copper (<0.6% Cu) anodized aluminum with ½″ NPSM fixture mount. Internal set screw provided for locking position. Two ½″ NPSM in bottom, 17 cu in. internal volume.

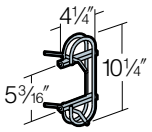
Standard Swivel Mount

CAUTION: Junction Box must be installed high enough to avoid contact with soil or standing water.



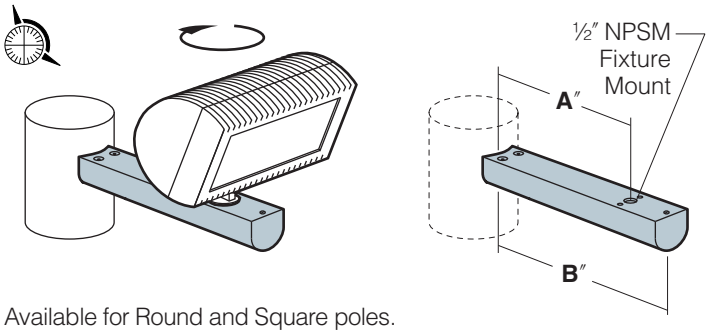
Wall Mount (WM1): Extruded aluminum arm with a removable end cap for wiring access. Arm is welded to a cast aluminum plate with two ½″ dia. mounting holes.

Standard Swivel Mount



Optional Wall Embedment Bracket (WEB) provides ⅜-16 bolt receptacles welded in a galvanized re-bar cage for casting into poured-in-place concrete walls. Bolt receptacles receive fixture attachment bolts.

Component EPA: 0.3



Available for Round and Square poles.

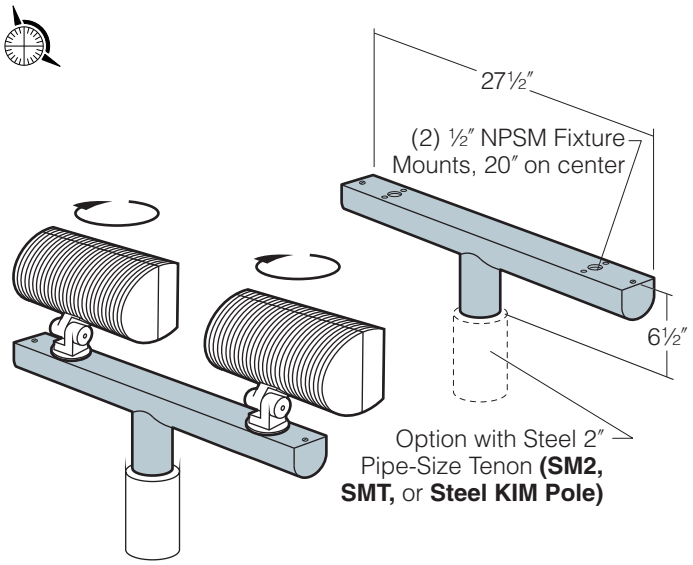
Side Pole Mount (SPM): Extruded aluminum arm. Internal set screw fixture lock. Removable end cap for wiring access. For use with other Kim Site/Roadway Luminaires as an additional mid-pole floodlight.

Standard Swivel Mount

A 11½″ For Round Poles
12″ For Square Poles

B 15⅜″ For Round Poles
15⅞″ For Square Poles

Component EPA: 0.3



Twin Mount (TM2): Extruded aluminum arm. Internal set screw fixture locks. Can be mounted on a **SM2, SMT,** or **Steel Kim Pole** with steel 2″ pipe-size tenon (2⅜″ O.D. x 3½″ min. length). Removable end caps for wiring access.

Standard Swivel Mount

CAUTION: Approved for mounting to poles with steel tenons only.

Component EPA: 0.6

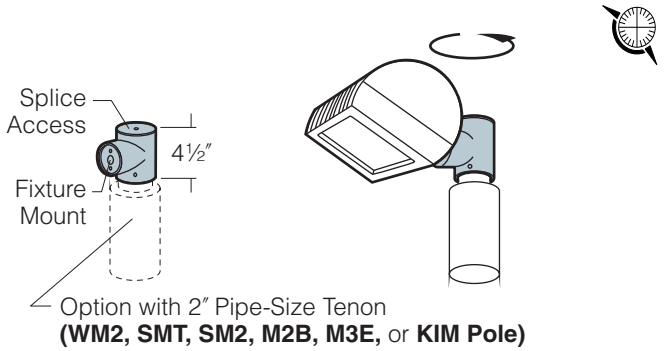
Ordered separately from fixture.
See pages **42-45** for complete ordering information.

Mounting Option Specifications

Post Top Mount (PT): Cast aluminum mount for pole or other mounting option with 2″ pipe-size tenon (2⅜″ O.D. x 3½″ minimum length). Fixture attaches with concealed internal studs, mounting is with ¼-20 allen set screws. Top cap provides splice access.

Standard Swivel Mount

Component EPA: 0.7

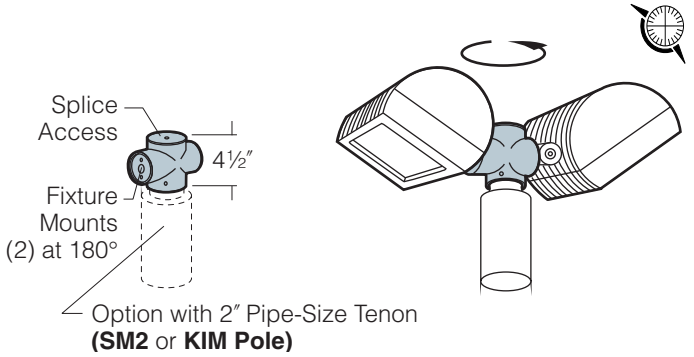


Twin Post Top Mount (PT2): Cast aluminum mount for pole or other mounting option with 2″ pipe-size tenon (2⅜″ O.D. x 3½″ minimum length). Fixture attaches with concealed internal studs, mounting is with ¼-20 allen set screws. Top cap provides splice access.

Standard Swivel Mount

NOTE: Not for use with **SMT, SPT, WM2, M2B,** or **M3E** options.

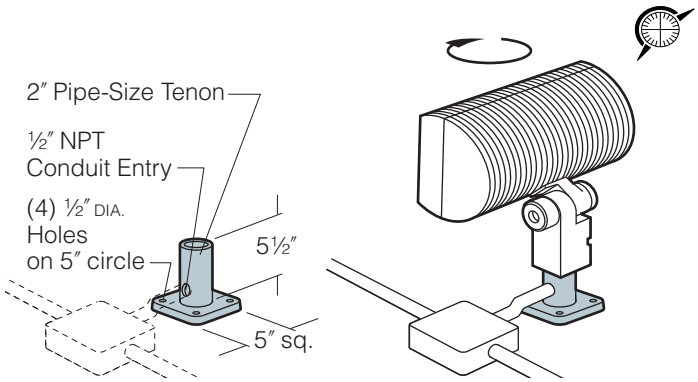
Component EPA: 0.1



Surface Mount Tenon (SMT): 2″ pipe-size tenon (2⅜″ O.D., 2″ I.D.) welded to a cast aluminum plate. Plate has four ½″ mounting holes, and tenon has one ½″ NPT for side conduit entry.

2″ Tenon - For Optional Heavy Duty Swivel Mount Only

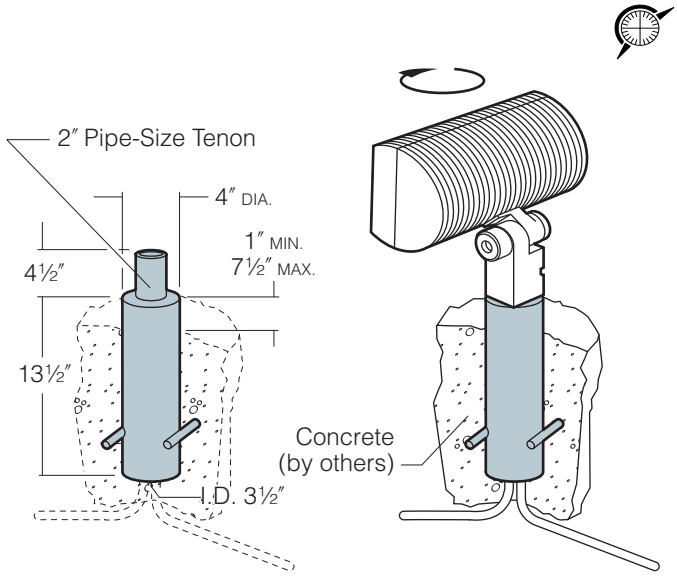
NOTE: Not for use with **PT2, M2B,** or **M3E** options. May be wall mounted if horizontal fixture adjustment is not required. For wall mounting with horizontal fixture adjustment, use **WM2** (see page **45**).



Stanchion Mount Tenon (SM2): 4″ O.D. cast low copper (<0.6% Cu) aluminum stanchion with 2″ pipe-size tenon (2⅜″ O.D., 1⅜″ I.D.) for mounting a single fixture or multiple top-mounts.

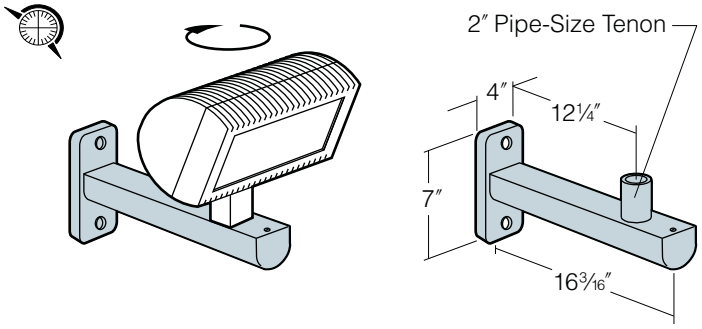
2″ Tenon - For Optional Heavy Duty Swivel Mount Only

CAUTION: Multiple top-mounts must not be used in locations where people can climb on fixtures and mounting arms. To assure a rigid installation, stanchion must be set in concrete (by others).



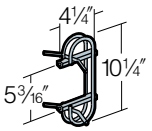
Mounting Option Specifications

Ordered separately from fixture.
See pages **42-45** for complete ordering information.



Wall Mount Tenon (WM2): 2″ pipe-size tenon (2⅜″ O.D., 2″ I.D.) welded to an extruded aluminum arm with a removable end cap for wiring access. Arm is welded to a cast aluminum plate with two ½″ mounting holes.

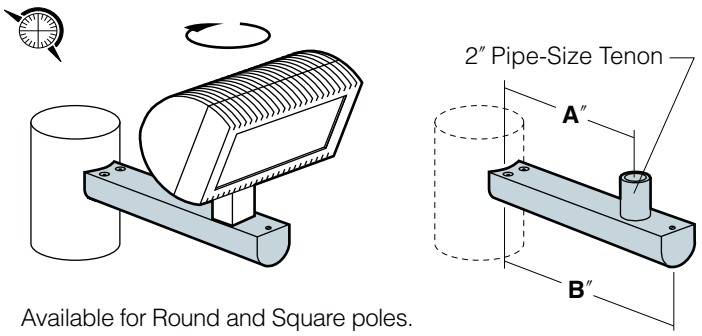
2″ Tenon - For Optional Heavy Duty Swivel Mount Only



Optional Wall Embedment Bracket (WEB) provides ⅜-16 bolt receptacles welded in a galvanized re-bar cage for casting into poured-in-place concrete walls. Bolt receptacles receive fixture attachment bolts.

NOTE: Not for use with **PT2** option.

Component EPA: 0.3



Available for Round and Square poles.

Side Pole Mount Tenon (SPT): Extruded aluminum arm with one 2″ pipe-size tenon (2⅜″ O.D., 2″ I.D.). Removable end cap for wiring access. For use with other Kim Site/Roadway Luminaires as an additional mid-pole floodlight.

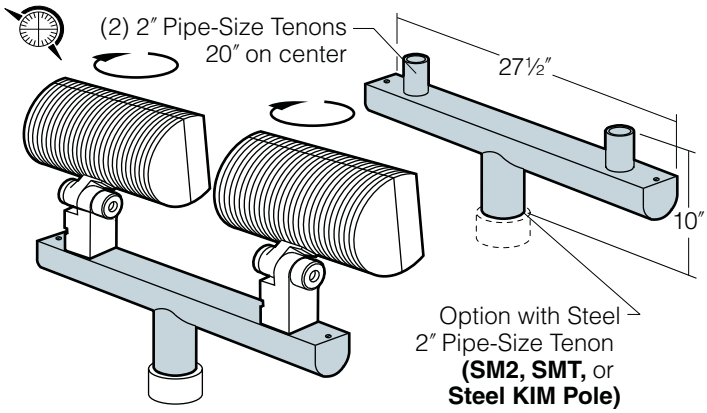
2″ Tenon - For Optional Heavy Duty Swivel Mount Only

NOTE: Not for use with **PT2** option.

A 11½″ For Round Poles
12″ For Square Poles

B 15⅜″ For Round Poles
15⅞″ For Square Poles

Component EPA: 0.3



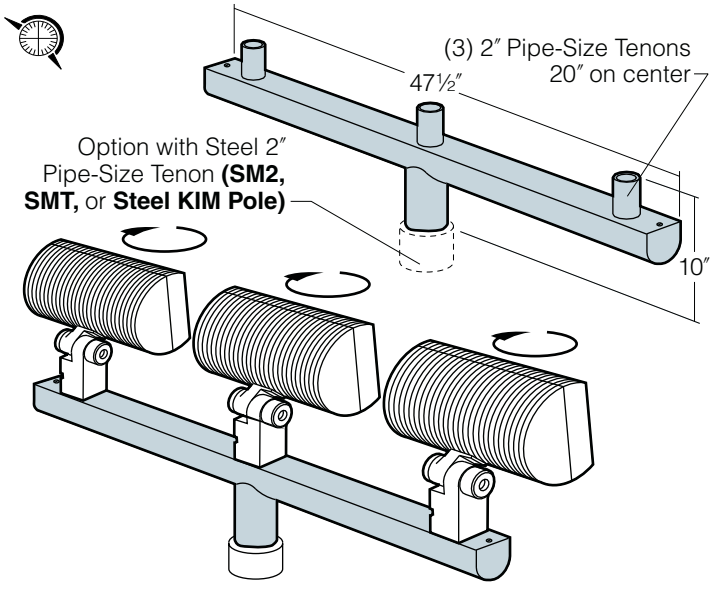
Twin Mount Tenon (M2B): Extruded aluminum arm with two 2″ pipe-size tenons (2⅜″ O.D., 2″ I.D.). Can be mounted on a **SM2, SMT,** or **Steel Kim Pole** with a steel 2″ pipe-size tenon (2⅜″ O.D. x 3½″ min. length). Removable end caps for wiring access.

2″ Tenon - For Optional Heavy Duty Swivel Mount Only

NOTE: Not for use with **PT2** option.

CAUTION: Approved for mounting to poles with steel tenons only.

Component EPA: 0.6



Triple Mount Tenon (M3E): Extruded aluminum arm with three 2″ pipe-size tenons (2⅜″ O.D., 2″ I.D.). Can be mounted on a **SM2, SMT,** or **Steel Kim Pole** with steel 2″ pipe-size tenon (2⅜″ O.D. x 3½″ min. length). Removable end caps for wiring access.

2″ Tenon - For Optional Heavy Duty Swivel Mount Only

NOTE: Not for use with **PT2** option.

CAUTION: Approved for mounting to poles with steel tenons only.

Component EPA: 1.0

AFL11 Wide Flood Beam Spread Chart

Lamp	Lamp Watts	Initial Lumens[1]	I.E.S. Type	Maximum Candlepower	Field Angle (10% of max.)	Beam Angle[2] (50% of max.)	Test No.	Iso Pg.
HIGH PRESSURE SODIUM								
70HPS ED-17 clear medium base	70	6,300	7H x 7V	1,620 (47.5°H x -15.0°V)	160°H x 138.5°V	139.5°H x 94.5°V	KL00548	119
100HPS ED-17 clear medium base	100	9,500	7H x 7V	2,443 (47.5°H x -5.0°V)	160°H x 138.5°V	139.5°H x 94.5°V	KL00509	119
150HPS ED-17 clear medium base	150	16,000	7H x 6V	4,444 (47.5°H x -13.0°V)	148.8°H x 126°V	135.3°H x 80.3°V	KL00544	119
PULSE START METAL HALIDE								
70PMH ED-17 clear medium base	70	6,200	7H x 6V	1,887 (47.5°H x -15.0°V)	147.9°H x 125.5°V	131.5°H x 73.0°V	KL00546	119
100PMH ED-17 clear medium base	100	9,300	7H x 6V	2,830 (47.5°H x -15.0°V)	147.9°H x 125.5°V	131.5°H x 73.0°V	KL00543	119
150PMH ED-17 clear medium base	150	14,000	7H x 6V	4,285 (47.5°H x -13.0°V)	148.5°H x 127.0°V	133.5°H x 79.6°V	KL00545	119

[1]All **Initial Lumen** values shown are approximate and may vary from one manufacturer to another. Consult lamp manufacturer's data for exact lumen and life data.
[2]**Beam Angle:** Horizontal and vertical beam spreads interpolated due to no valid I.E.S. standard.

AFL12 Vertical Flood Beam Spread Chart

Lamp	Lamp Watts	Initial Lumens[3]	I.E.S. Type	Maximum Candlepower	Field Angle[4] (10% of max.)	Beam Angle[5] (50% of max.)	Test No.	Iso Pg.
HIGH PRESSURE SODIUM								
70HPS ED-17 clear medium base	70	6,300	6H x 5V	3,182 (3.0°H x 11.0°V)	121.9°H x 96.2°V	77.3°H x 39.1°V	KL00491	125
100HPS ED-17 clear medium base	100	9,500	6H x 5V	4,799 (3.0°H x 11.0°V)	121.9°H x 96.2°V	77.3°H x 39.0°V	KL00403	125
150HPS ED-17 clear medium base	150	16,000	6H x 5V	7,586 (3.0°H x 13.0°V)	123.3°H x 98.9°V	79.2°H x 59.4°V	KL00515	125
PULSE START METAL HALIDE								
70PMH ED-17 clear medium base	70	5,900	6H x 5V	3,041 (1.0°H x 11.0°V)	125.0°H x 99.2°V	82.9°H x 70.3°V	KL00489	125
100PMH ED-17 clear medium base	100	8,800	6H x 5V	4,536 (1.0°H x 11.0°V)	125.0°H x 99.2°V	82.9°H x 70.3°V	KL00391	125
150PMH ED-17 clear medium base	150	12,600	6H x 6V	5,415 (3.0°H x 7.0°V)	124.9°H x 100.8°V	84.7°H x 76.0°V	KL00400	125

[3]All **Initial Lumen** values shown are approximate and may vary from one manufacturer to another. Consult lamp manufacturer's data for exact lumen and life data.
[4]**Field Angle:** Horizontal and vertical field spreads interpolated due to no valid I.E.S. standard.
[5]**Beam Angle:** Horizontal and vertical beam spreads interpolated due to no valid I.E.S. standard.

AFL13 Medium Flood Beam Spread Chart

Lamp	Lamp Watts	Initial Lumens[6]	I.E.S. Type	Maximum Candlepower	Field Angle (10% of max.)	Beam Angle[7] (50% of max.)	Test No.	Iso Pg.
HIGH PRESSURE SODIUM								
70HPS ED-17 clear medium base	70	6,300	7H x 6V	1,854 (47.5°H x 13.0°V)	148.4°H x 125.2°V	133.9°H x 77.1°V	KL00554	131
100HPS ED-17 clear medium base	100	9,500	7H x 6V	2,795 (47.5°H x 13.0°V)	148.3°H x 125.2°V	133.9°H x 77.1°V	KL00508	131
150HPS ED-17 clear medium base	150	16,000	7H x 6V	7,384 (42.5°H x 0.0°V)	145.3°H x 116.9°V	111.7°H x 48.5°V	KL00369	131
PULSE START METAL HALIDE								
70PMH ED-17 clear medium base	70	6,200	7H x 6V	1,941 (47.5°H x -15.0°V)	148.1°H x 126.2°V	132.2°H x 74.4°V	KL00552	131
100PMH ED-17 clear medium base	100	9,300	7H x 6V	2,911 (47.5°H x -15.0°V)	148.1°H x 126.1°V	132.2°H x 74.4°V	KL00417	131
150PMH ED-17 clear medium base	150	14,000	7H x 6V	3,965 (47.5°H x -11.0°V)	148.2°H x 127.1°V	131.5°H x 79.5°V	KL00551	131

[6]All **Initial Lumen** values shown are approximate and may vary from one manufacturer to another. Consult lamp manufacturer's data for exact lumen and life data.
[7]**Beam Angle:** Horizontal and vertical beam spreads interpolated due to no valid I.E.S. standard.

NOTE: For lamp/ballast information outside of the U.S.A. and Canada, please consult your local Kim representative.

WARNING: All fixtures must be grounded in accordance with local codes or the National Electrical Code. Failure to do so may result in serious personal injury. Lamps by others.

AFL14 Narrow Flood Beam Spread Chart

Lamp	Lamp Watts	Initial Lumens[8]	I.E.S. Type	Maximum Candlepower	Field Angle (10% of max.)	Beam Angle[9] (50% of max.)	Test No.	Iso Pg.
HIGH PRESSURE SODIUM								
70HPS ED-17 clear medium base	70	6,300	7H x 6V	2,625 (5.0°H x -3.0°V)	143.8°H x 113.6°V	103.1°H x 45.9°V	KL00560	137
100HPS ED-17 clear medium base	100	9,500	7H x 6V	3,958 (5.0°H x -3.0°V)	143.8°H x 113.6°V	103.1°H x 45.9°V	KL00507	137
150HPS ED-17 clear medium base	150	16,000	7H x 6V	7,003 (22.5°H x -7.0°V)	141.9°H x 108.9°V	102.3°H x 46.6°V	KL00370	137
PULSE START METAL HALIDE								
70PMH ED-17 clear medium base	70	6,200	7H x 6V	2,880 (5.0°H x -5.0°V)	143.2°H x 110.1°V	100.8°H x 40.1°V	KL00558	137
100PMH ED-17 clear medium base	100	9,300	7H x 6V	4,320 (5.0°H x -5.0°V)	143.2°H x 110.1°V	100.8°H x 40.1°V	KL00418	137
150PMH ED-17 clear medium base	150	14,000	7H x 6V	5,685 (7.0°H x -5.0°V)	144.3°H x 119.2°V	109.7°H x 50.0°V	KL00557	137

[8]All **Initial Lumen** values shown are approximate and may vary from one manufacturer to another. Consult lamp manufacturer's data for exact lumen and life data.
[9]**Beam Angle:** Horizontal and vertical beam spreads interpolated due to no valid I.E.S. standard.

AFL15 Spot Beam Spread Chart

Lamp	Lamp Watts	Initial Lumens[10]	I.E.S. Type	Maximum Candlepower	Field Angle (10% of max.)	Beam Angle[11] (50% of max.)	Test No.	Iso Pg.
HIGH PRESSURE SODIUM								
70HPS ED-17 clear medium base	70	6,300	3H x 3V	14,526 (0.0°H x 3.0°V)	45.9°H x 30.1°V	21.7°H x 13.3°V	KL00566	143
100HPS ED-17 clear medium base	100	9,500	3H x 3V	21,904 (0.0°H x 3.0°V)	45.9°H x 30.1°V	21.7°H x 13.3°V	KL00510	143
150HPS ED-17 clear medium base	150	16,000	5H x 4V	21,337 (1.0°H x 1.0°V)	79.1°H x 52.6°V	28.1°H x 24.2°V	KL00372	143
PULSE START METAL HALIDE								
70PMH ED-17 clear medium base	70	6,200	3H x 2V	17,077 (0.0°H x 0.0°V)	43.4°H x 23.6°V	22.5°H x 11.6°V	KL00564	143
100PMH ED-17 clear medium base	100	9,300	3H x 2V	25,615 (0.0°H x 0.0°V)	43.4°H x 23.6°V	22.5°H x 11.6°V	KL00419	143
150PMH ED-17 clear medium base	150	14,000	3H x 3V	31,464 (0.0°H x 0.0°V)	42.9°H x 33.9°V	23.8°H x 14.5°V	KL00563	143

[10]All **Initial Lumen** values shown are approximate and may vary from one manufacturer to another. Consult lamp manufacturer's data for exact lumen and life data.
[11]**Beam Angle:** Horizontal and vertical beam spreads interpolated due to no valid I.E.S. standard.

AFL16 Narrow Spot Beam Spread Chart

Lamp	Lamp Watts	Initial Lumens[12]	I.E.S. Type	Maximum Candlepower	Field Angle (10% of max.)	Beam Angle[13] (50% of max.)	Test No.	Iso Pg.
HIGH PRESSURE SODIUM								
70HPS ED-17 clear medium base	70	6,300	1H x 2V	31,937 (0.0°H x 7.0°V)	16.8°H x 26.3°V	10.6°H x 13.5°V	KL00572	149
100HPS ED-17 clear medium base	100	9,500	1H x 2V	48,159 (0.0°H x 7.0°V)	16.8°H x 26.3°V	10.6°H x 13.5°V	KL00511	149
150HPS ED-17 clear medium base	150	16,000	1H x 3V	111,233 (0.0°H x 3.0°V)	13.2°H x 31.4°V	5.5°H x 14.7°V	KL00436	149
PULSE START METAL HALIDE								
70PMH ED-17 clear medium base	70	6,200	1H x 1V	110,572 (0.0°H x 3.0°V)	9.8°H x 17.9°V	4.8°H x 8.7°V	KL00570	149
100PMH ED-17 clear medium base	100	9,300	1H x 1V	165,858 (0.0°H x 3.0°V)	9.8°H x 17.9°V	4.8°H x 8.7°V	KL00420	149
150PMH ED-17 clear medium base	150	14,000	1H x 1V	138,750 (0.0°H x 3.0°V)	13.9°H x 24.8°V	6.2°H x 12.8°V	KL00569	149

[12]All **Initial Lumen** values shown are approximate and may vary from one manufacturer to another. Consult lamp manufacturer's data for exact lumen and life data.
[13]**Beam Angle:** Horizontal and vertical beam spreads interpolated due to no valid I.E.S. standard.

NOTE: For lamp/ballast information outside of the U.S.A. and Canada, please consult your local Kim representative.

WARNING: All fixtures must be grounded in accordance with local codes or the National Electrical Code. Failure to do so may result in serious personal injury. Lamps by others.

AFL17 Horizontal Spot Beam Spread Chart

Lamp	Lamp Watts	Initial Lumens[14]	I.E.S. Type	Maximum Candlepower	Field Angle (10% of max.)	Beam Angle[15] (50% of max.)	Test No.	Iso Pg.
HIGH PRESSURE SODIUM								
70HPS ED-17 clear medium base	70	6,300	6H x 5V	6,640 (0.0°H x 5.0°V)	107.2°H x 89.6°V	75.1°H x 9.1°V	KL00575	155
100HPS ED-17 clear medium base	100	9,500	6H x 5V	10,013 (0.0°H x 5.0°V)	107.2°H x 89.6°V	75.0°H x 9.1°V	KL00512	155
150HPS ED-17 clear medium base	150	16,000	6H x 5V	19,425 (1.0°H x 3.0°V)	103.3°H x 85.9°V	74.0°H x 7.2°V	KL00377	155
PULSE START METAL HALIDE								
70PMH ED-17 clear medium base	70	5,900	6H x 5V	7,240 (1.0°H x 3.0°V)	107.9°H x 85.3°V	76.9°H x 7.6°V	KL00497	155
100PMH ED-17 clear medium base	100	8,800	6H x 5V	10,799 (1.0°H x 3.0°V)	107.9°H x 85.3°V	76.9°H x 7.6°V	KL00392	155
150PMH ED-17 clear medium base	150	12,600	6H x 5V	12,334 (0.0°H x 1.0°V)	106.9°H x 89.7°V	80.1°H x 11.8°V	KL00401	155

[14]All **Initial Lumen** values shown are approximate and may vary from one manufacturer to another. Consult lamp manufacturer's data for exact lumen and life data.
[15]**Beam Angle:** Horizontal and vertical beam spreads interpolated due to no valid I.E.S. standard.

NOTE: For lamp/ballast information outside of the U.S.A. and Canada, please consult your local Kim representative.

WARNING: All fixtures must be grounded in accordance with local codes or the National Electrical Code. Failure to do so may result in serious personal injury. Lamps by others.

AFL20 Series
with various optics used in combination to illuminate key building features.

AFL20

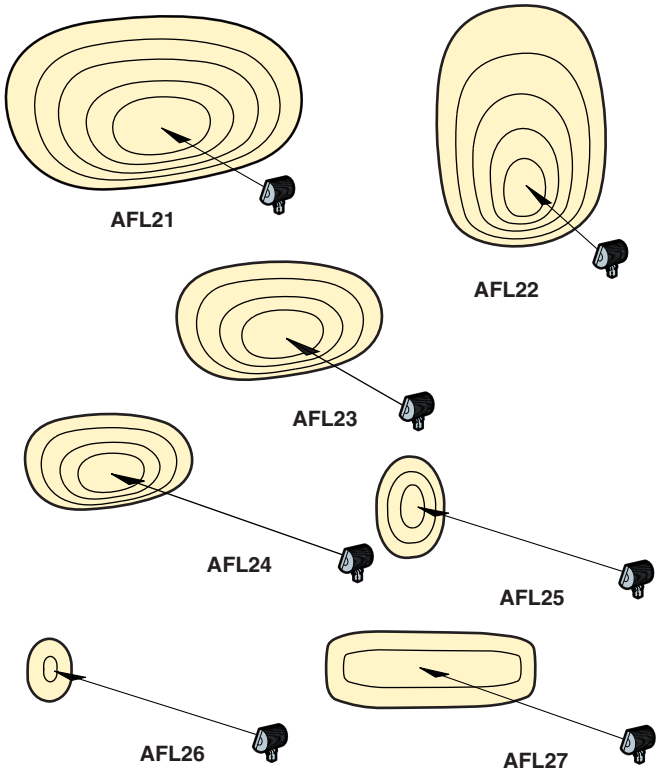
ARCHITECTURAL FLOODLIGHTS

250 - 400 WATT H.I.D.

Important Features

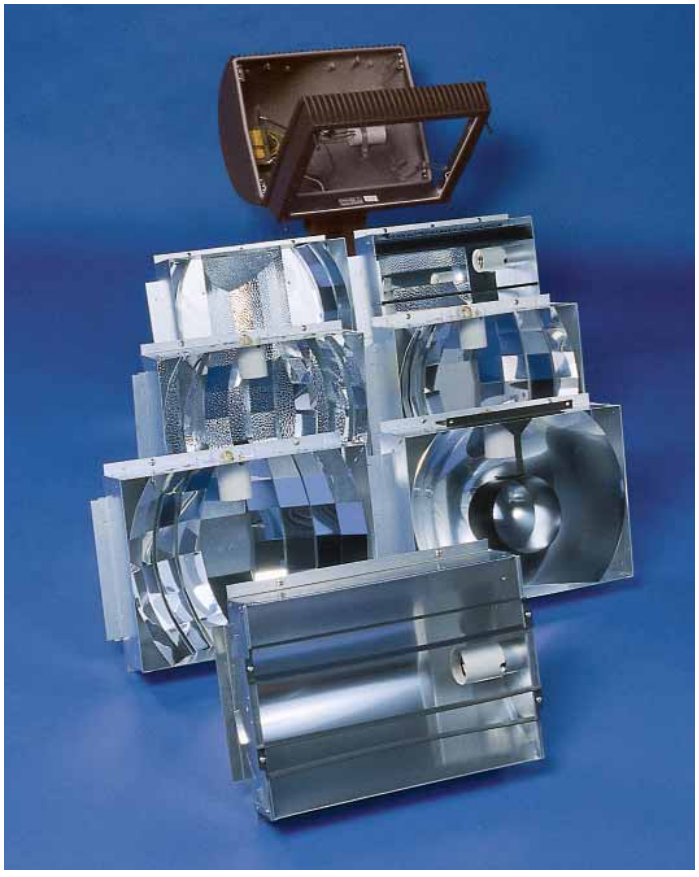
Seven Beam Patterns

The nature of floodlighting mandates versatility. The tremendous variety of surfaces and objects to be illuminated is further complicated by variables like fixture location and distance. The **AFL20** Series satisfies this need for flexibility: Seven available beam patterns can be used individually or in combinations to illuminate any object from distances of 10′ to 150′ - from the **AFL21** Wide Flood to the laser-like accuracy of the **AFL26** Narrow Spot reflector. The **AFL22** Vertical Flood has a unique optical design that is ideal for lighting both vertical and horizontal surfaces with very low brightness above the main beam. All seven beam patterns are the result of precision Kim reflector systems that generate high efficiencies and outstanding uniformity of illumination.
See pages **60-61** for beam properties and application guidelines.



Die-Cast Housing with Interchangeable Optics

The **AFL20** Series housing and door frame are precision die-castings with integral cooling ribs that dissipate heat allowing the electrical components to operate well below their allowable limits. A single housing will accept any of the seven optical systems which are easily interchangeable on the job. Because floodlighting is as much art as it is science - final adjustments to the lighting effect may occasionally require changes of the beam pattern. To accomplish this, the door frame is opened and removed with slip hinges allowing easy access to the reflector module. Each reflector module is a one-piece assembly retained by four captive screws around a perimeter flange. Changing beam patterns is a simple task, and provides the **AFL20** Series with flexibility for fine-tuning projects on the jobsite.



Multi-Function Swivel

The **AFL20** swivel is constructed of heavy cast aluminum with locking teeth, and accomplishes three tasks: First it allows fixture aiming in the vertical plane by loosening a single recessed stainless steel bolt and setting locking teeth with 5° intervals. Second, it provides a field-splice compartment accessible through the opposite knob from the aiming adjustment. Third, the swivel slipfits a standard 2″ tenon (see page **68**), and is secured with four heavy duty stainless steel socket head set screws.

Field-splice compartment integrated into swivel design.

Vandal Protection

An optional Lexan® vandal resistant lens shield is available for applications where vandalism is anticipated.

NOTE: The lens shield is made from an advanced polymer, Lexan® Resin from GE Advanced Materials. Lexan® dramatically reduces lens yellowing and becomes stable within the first 100 hours of operation. Lexan® offers significantly greater retained impact and vandal resistance during the life of the lens.

CAUTION: Use only when vandalism is anticipated.

AFL-LS2 Lexan® Lens Shield

Optical Control

The **AFL20** Series has a variety of optical accessories to control glare and increase the visual effectiveness of the lighting scheme. Shielding devices are carefully engineered to prevent shadows and preserve beam efficiency while reducing undesirable transient brightness. **Barn Doors** are a familiar accessory that allow for field-adjustable glare shielding. The **Fixed Hood** is a moderate shielding device and the **Full Shield** is a complete shielding device. Both are ideally suited for applications close to walkways, driveways, or roadways. **Grid Louvers** are engineered to maximize beam efficiency while minimizing glare and shadows from the internal vanes. Two types of louvers are available, one for use with the **AFL24**, and the other for use with the **AFL25** and **AFL26**. The **Lexan® Lens Shield** is available for applications where vandalism is anticipated. The **Color Filter Assembly** is designed to be used alone or in conjunction with the **Barn Doors**, **Fixed Hood**, or **Full Shield**. Dynamic floodlighting effects are possible by utilizing any of the color filters specifically engineered for use in high temperature floodlighting applications. See page **69** for details.

BD2 Barn Doors

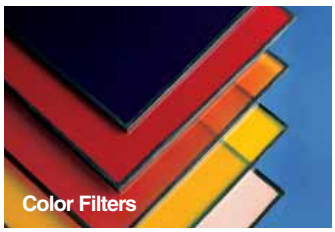
FH2 Fixed Hood

GL8 Grid Louver

GL9 Grid Louver

FS2 Full Shield

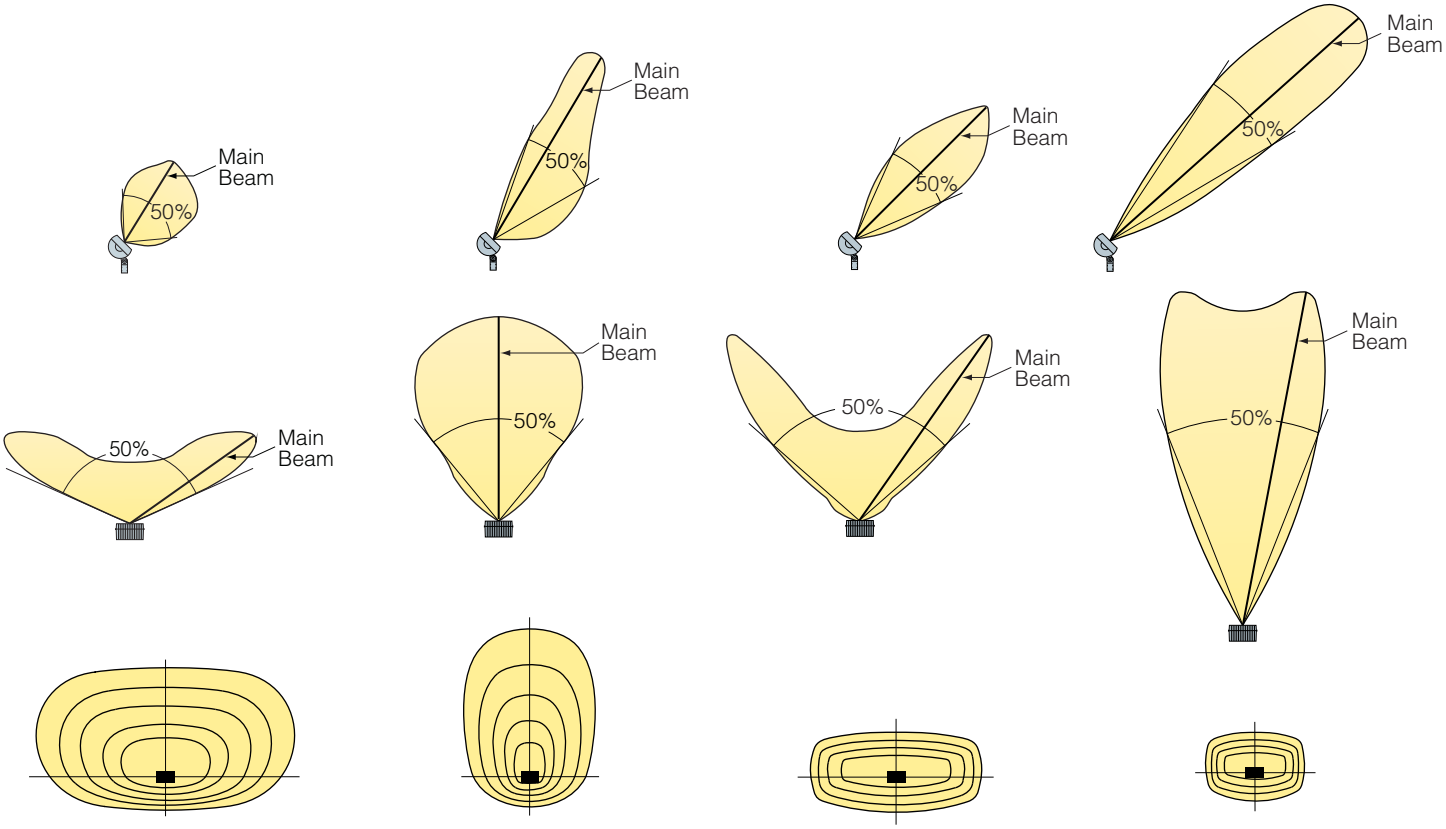
AFL24 w/Color Filter Assembly



Color Filters

Beam Properties

These illustrations are representations of the beam spreads produced by each optical system. They are intended to help you visualize the performance differences between each model without having to analyze photometric charts. **AFL21** through **AFL25**, and the **AFL27** beam patterns are shown in identical scale. The **AFL26** beam pattern is shown at ½ scale due to page constrictions.



AFL21 Wide Flood

The **AFL21** produces a very wide horizontal beam pattern designed to yield maximum fixture spacings and exceptionally uniform illumination when the units must be located close to the lighted surface. As a ground mounted fixture for facade lighting, the ideal fixture-to-surface distance is 10′ to 30′, or two-thirds the height of the illuminated surface, depending on the desired light level.

AFL22 Vertical Flood

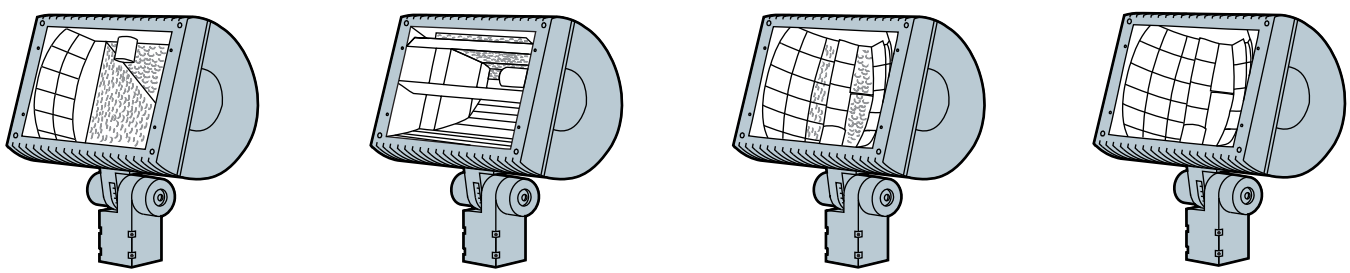
The **AFL22** produces a unique distribution in which the peak intensity occurs above the aiming line and rapidly reduces below the aiming line to generate outstanding uniformity of illumination on vertical surfaces when the fixture is at optimum 50° tilt. As a pole or wall mounted luminaire, the **AFL22** has very low brightness at high angles for increased visibility.

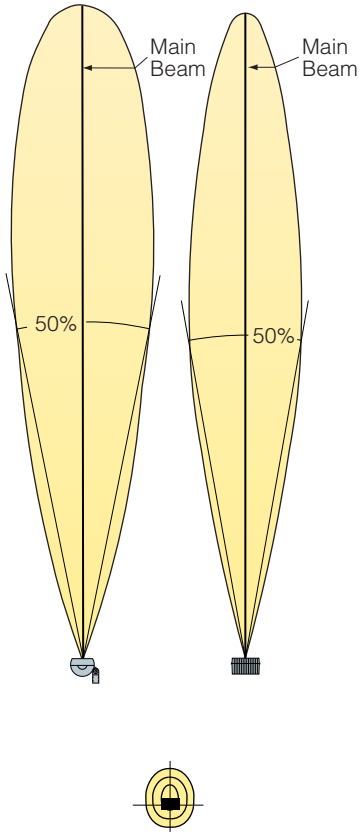
AFL23 Medium Flood

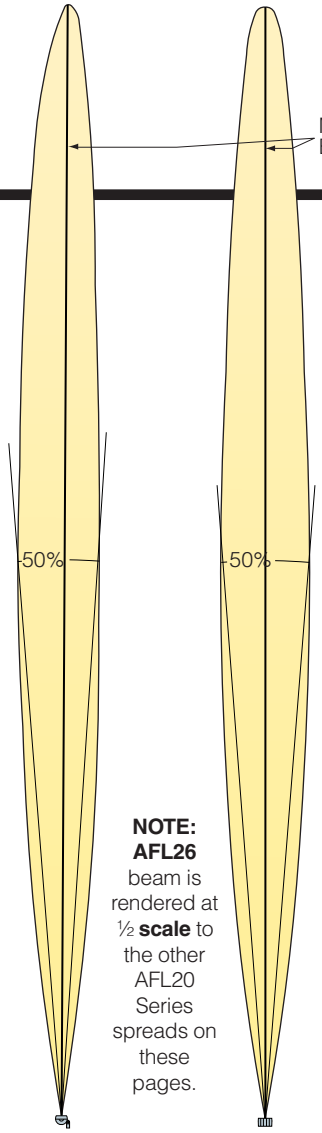
The **AFL23** is designed to bridge the gap between wide and narrow flood distributions. It is a mid-range luminaire designed for lighting surfaces from distances of 20′ to 60′, with low aiming angles generating excellent uniformity of illumination.

AFL24 Narrow Flood

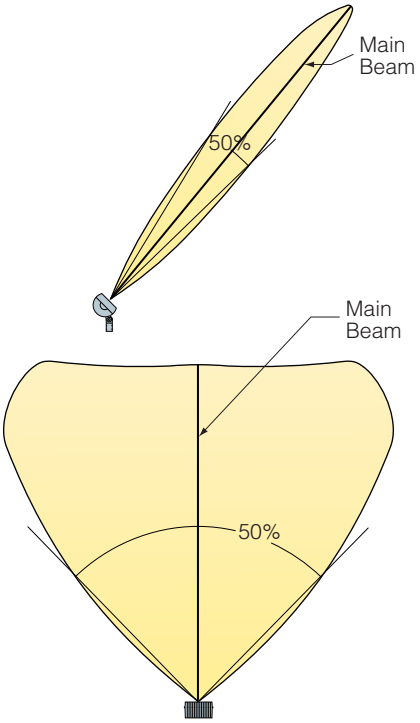
The **AFL24** bridges the gap between medium flood and spot distributions. It is a mid-range luminaire designed for lighting architecture from distances of 20′ to 80′, with low aiming angles generating excellent uniformity of illumination. It can also be used in combination with other **AFL20** Series models to extend their range or reshape the overall light pattern.





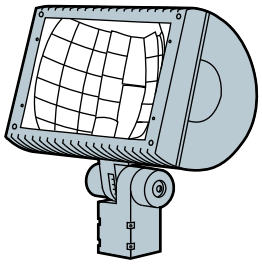


NOTE:
AFL26 beam is rendered at ½ **scale** to the other AFL20 Series spreads on these pages.



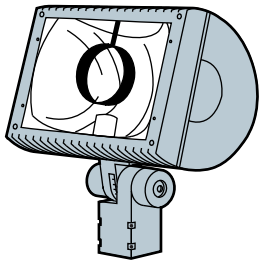
AFL25 Spot

The **AFL25** produces a very concentrated beam capable of lighting architecture from distances up to 120′, or creating very high light levels to highlight building features or flags from mid-range distances of 40′ to 80′. The **AFL25** may also be located close to structures using a high grazing angle to highlight building reliefs and projections, or to accentuate surface texture. It can also be used used in combination with other **AFL20** Series models to extend their range or reshape the overall light pattern.



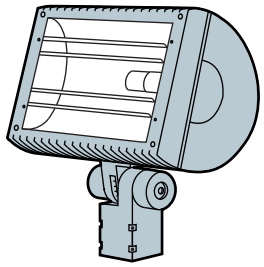
AFL26 Narrow Spot

The **AFL26** narrow spot beam pattern is designed to illuminate and highlight small architectural details, tree tops, and parapets from long distances. This pencil thin beam is further refined by an arc tube glare shield which reduces spill light outside of the beam width. Recommended distance from the illuminated surface is 60′ to 150′, depending on lamp and wattage.

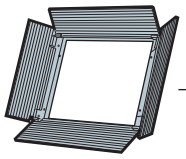


AFL27 Horizontal Spot

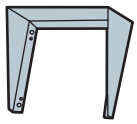
The **AFL27** horizontal spot reflector is ideal for illuminating surfaces with wide horizontal and relatively short vertical dimensions to intensities similar to the AFL25 Spot reflector. Its wide horizontal pattern also allows the **AFL27** to be located close to a building where the effect of grazing light is desired to show surface texture, or to highlight reliefs and projections. It can also be used in combination with other **AFL20** Series models to extend their range or reshape overall beam patterns.



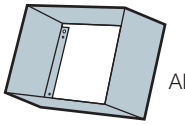
Product Structure



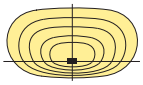
BD2
Barn Doors
for all models
page **69**

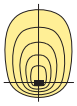


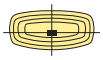
FH2
Fixed Hood
for all models
page **69**

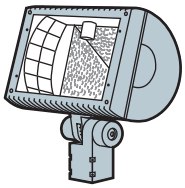


FS2
Full Shield for
AFL23, 24, 25, and 26
page **69**

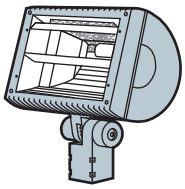




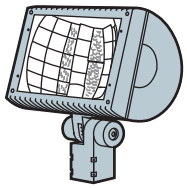




AFL21
Wide Flood

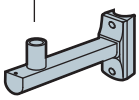


AFL22
Vertical Flood

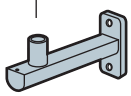


AFL23
Medium Flood

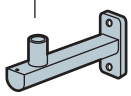
SMT
Surface Mount Tenon
page **70**



SPR2
Side Pole Mount Tenon
for Round Pole
page **71**

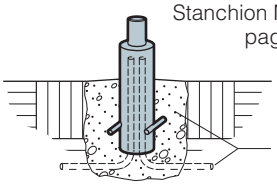


WM2
Wall Mount Tenon
page **71**

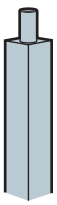


SPS2
Side Pole Mount Tenon
for Square Pole
page **71**

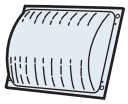
SM2
Stanchion Mount Tenon
page **70**



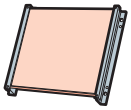
By others



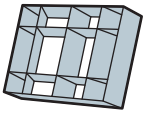
Pole with 2″ pipe
size tenon by
Kim or others.
Steel tenon
required for two
or more fixtures.



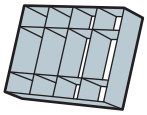
AFL-LS2
Lexan® SLX Lens Shield
for all models
page **69**



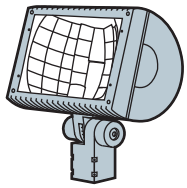
CFA2
Color Filter Assembly
for all models
page **69**



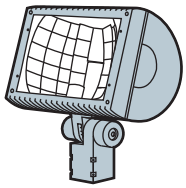
GL8
Grid Louver
for AFL24 only
page **69**



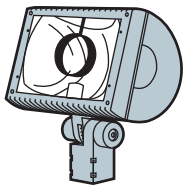
GL9
Grid Louver
for AFL25 and 26 only
page **69**



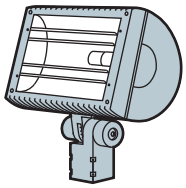
AFL24
Narrow Flood



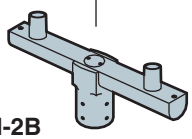
AFL25
Spot



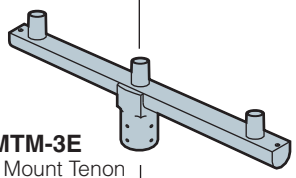
AFL26
Narrow Spot



AFL27
Horizontal Spot



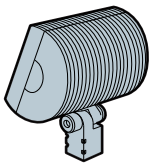
MTM-2B
Twin Mount Tenon
page **72**



MTM-3E
Triple Mount Tenon
page **72**

AFL20

Ordering Information



Mogul Base
250 to 400 Watt

Ordering Example:

Fixture	Electrical Module	Finish	Optional Photocell	Fixture Options	Mounting Options
AFL21 /	400HPS277 /	WH	/ A-33	BD2/WH	SMT/WH
1	2	3	4	5-11	12-18

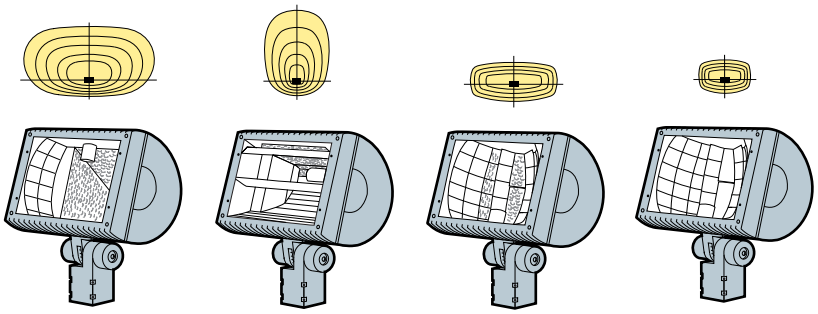
Standard Fixture and Option Ordered Assembled with Fixture

Options Ordered Separately from Fixture

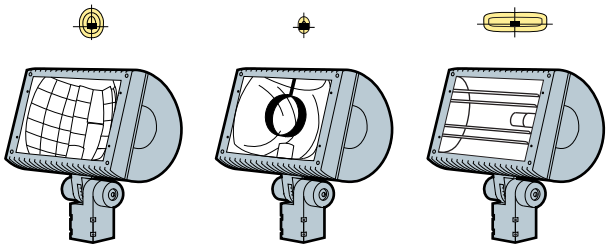
1 Fixture:

Cat. No. designates **AFL20** fixture and beam pattern.

Single fixture EPA:
1.3 (45° tilt)
2.3 (Face on)



Beam Pattern:	Wide Flood	Vertical Flood	Medium Flood	Narrow Flood
Cat. No.:	**AFL21**	**AFL22**	**AFL23**	**AFL24**



Beam Pattern:	Spot	Narrow Spot	Horizontal Spot
Cat. No.:	**AFL25**	**AFL26**	**AFL27**

2 Electrical Module:

HPS = High Pressure Sodium
PMH = Pulse Start Metal Halide

See **lamp and electrical data** on pages **96-98** for ballast types and characteristics.

Lamp Watts	Lamp Type	Line Volts
400	**HPS**	**277**

250PMH120	**320PMH120**	**350PMH120**	**400PMH120**	**250HPS120**	**400HPS120**
250PMH208	**320PMH208**	**350PMH208**	**400PMH208**	**250HPS208**	**400HPS208**
250PMH240	**320PMH240**	**350PMH240**	**400PMH240**	**250HPS240**	**400HPS240**
250PMH277	**320PMH277**	**350PMH277**	**400PMH277**	**250HPS277**	**400HPS277**
250PMH347	**320PMH347**	**350PMH347**	**400PMH347**	**250HPS347**	**400HPS347**
250PMH480	**320PMH480**	**350PMH480**	**400PMH480**	**250HPS480**	**400HPS480**

NOTE: Due to the Energy Independence and Security Act (EISA) of 2007, Kim Lighting can no longer supply probe start metal halide ballasts with its luminaires, effective January 1, 2009. Contact Kim Lighting for availability of replacement ballasts for warranty service claims.

(Visit www.aboutlightingcontrols.org or the Library of Congress website for more details).

KimNOW! Available Configurations:

KN-AFL21/250PMH/DB*, KN-AFL22/250PMH/DB*, KN-AFL22/400PMH/DB*, KN-AFL25/250PMH/DB*, KN-AFL25/400PMH/DB*

Accessories:
KN-BD2/DB, KN-FH2/DB, KN-AFL-LS2, KN-SM2/DB, KN-SMT/DB, KN-WM2/DB

*Multi-tap ballast (120, 208, 240, or 277 volts)

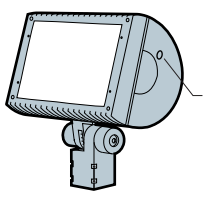
3 Finish:

Super TGIC powder coat paint over Titanated Zirconium conversion coating.

Color:	Black	Dark Bronze	Light Gray	Platinum Silver	White	Custom Colors
Cat. No.:	**BL**	**DB**	**LG**	**PS**	**WH**	**CC**

Consult representative for custom colors.

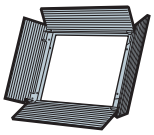
4 Optional Photocell:



Photocell Sensor

Line Volts:	120V	208V	240V	277V	480V	347V
Cat. No.:	**A-30**	**A-31**	**A-32**	**A-33**	**A-34**	**A-35**

5 Optional Barn Doors:



Cat. No.: **BD2**

Specify finish:
Example: **BD2/BL**

Extruded aluminum doors with anti-reflection baffles. Each door is hinged to a cast aluminum frame, and locks by set screws. Doors are individually removable. Barn Door assembly mounts to predrilled door frame holes.

CAUTION: Not recommended for ground mounted fixtures in vandal prone areas.

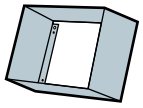
6 Optional Fixed Hood:

Cat. No.: **FH2**

Specify finish:
Example: **FH2/BL**

Formed 1/16″ thick aluminum. Mounts to predrilled door frame holes. May be used with **AFL-LS2** option. Can be mounted along the top or bottom of the fixture to shield the lamp and lens from view. Provides moderate shielding for ground mounted fixtures next to walkways, drive-ways or roadways. Best suited for **AFL21** and **AFL22**.

7 Optional Full Shield:



Cat. No.: **FS2**

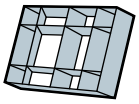
Specify finish:
Example: **FS2/BL**

Formed 1/16″ thick x 8″ deep aluminum. Mounts to predrilled lens frame holes and provides complete shielding around the perimeter of lens opening. Best suited for **AFL23, AFL24, AFL25,** and **AFL26**.

CAUTION: Do not use full shield in locations where leaves and trash can collect inside shield.

8 Optional Grid Louver:

For use with **AFL24** only.



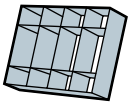
Cat. No.: **GL8**

Specify finish:
Example: **GL8/BL**

Formed 1/16″ thick aluminum. Mounts to predrilled door frame holes. Provides glare control for **AFL24** while maintaining beam efficiency and uniformity.

9 Optional Grid Louver:

For use with **AFL25** and **AFL26** only.



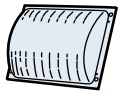
Cat. No.: **GL9**

Specify finish:
Example: **GL9/BL**

Formed 1/16″ thick aluminum. Mounts to predrilled door frame holes. Provides glare control for **AFL25** and **AFL26** while maintaining beam efficiency and uniformity.

10 Optional Lexan® Lens Shield:

Not for use with **GL8, GL9** Louvers or **CFA2** color filter options.



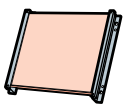
Cat. No.: **AFL-LS2**

Clear finish.

3/16″ thick, clear convex, vacuum formed, advanced polymer (Lexan® from GE Advanced Materials) lens shield with gasket. Mounts over lens to predrilled door frame holes and may be used with **BD2** Barn Door, **FH2** Fixed Hood, or **FS2** Full Shield option.

CAUTION: Use only when vandalism is anticipated.

11 Optional Color Filter Assembly:



Cat. No.: **CFA2-XX**

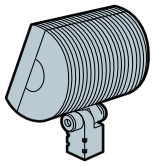
Color Filter Assembly Cat. No. includes color filter and channel finish. Specify filter, substituting **XX** for color filter number (See below) and add finish.

Example: **CFA2-05/DB**

Heavy wall aluminum extrusion with anti-reflection baffles and vertical channels that hold the color filter 2″ away from the fixture lens. Quick change-out of the color filter is possible by the removal of two channel screws. Support mounts to predrilled holes in fixture door frame. May be used in conjunction with **FH2** or **BD2** options.

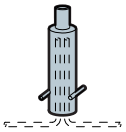
Color Filter:	Deep Straw	Rose Tint	Medium Red	Brilliant Blue	Primary Green
XX:	**15**	**05**	**27**	**69**	**91**

Ordering Information



Mogul Base
250 to 400 Watt

12 Stanchion Mount Tenon:



Cat. No.: **SM2/BL**

Black finish.

4″ O.D. cast low copper (<0.6% Cu) aluminum stanchion with 2″ pipe-size tenon for mounting a single fixture or multiple top-mounts.

CAUTION: Multiple top-mounts must not be used in locations where people can climb on fixtures and mounting arms. To assure a rigid installation, Stanchion must be set in concrete (by others).

13 Surface Mount Tenon:

Not for use with **MTM-2B** or **MTM-3E** options.

Cat. No.: **SMT/BL**

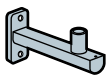
Black finish.

2″ pipe-size tenon welded to a cast aluminum plate. Plate has four ½″ mounting holes, and tenon has one ½″ NPT for side conduit entry.

NOTE: May be wall mounted if horizontal fixture adjustment is not required. For wall mounting with horizontal fixture adjustment, use **WM2**.

14 Wall Mount Tenon:

Component EPA: 0.3

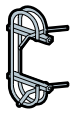


Cat. No.: **WM2**

Specify finish:
Example: **WM2/BL**

2″ pipe-size tenon welded to an extruded aluminum arm with a removable end cap for wiring access. Arm is welded to a cast aluminum plate with two ½″ mounting holes.

14b Wall Embedment Bracket:

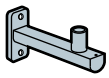


Cat. No.: **WEB**

The wall embedment bracket provides ⅜-16 bolt receptacles welded in a galvanized re-bar cage for casting into poured-in-place concrete walls. Bolt receptacles receive fixture attachment bolts.

15 Side Pole Mount Tenon for Square Poles:

Component EPA: 0.3



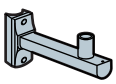
Cat. No.: **SPS2**

Specify finish:
Example: **SPS2/BL**

2″ pipe-size tenon welded to an extruded aluminum arm with a removable end cap for wiring access. Arm is welded to a cast aluminum plate with two ½″ mounting holes. Zinc plated steel backing plate is provided for insertion inside the pole for structural support.

16 Side Pole Mount Tenon for Round Poles:

Component EPA: 0.3



Cat. No.: **SPR2-X**

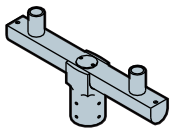
Side Pole Mount Cat. No. includes pole dia. and finish.

For round poles, specify **X** pole dia. and add finish. Mounts to 3″, 3½″, 4″, 5″, or 6″ O.D. round poles.
Example: **SPR2-4/BL** for 4″ Round Pole

2″ pipe-size tenon welded to an extruded aluminum arm with a removable end cap for wiring access. Arm is welded to a cast aluminum plate with two ½″ mounting holes. Zinc plated steel backing plate is provided for insertion inside the pole for structural support.

17 Twin Mount Tenon:

Component EPA: 1.0



Cat. No.: **MTM-2B**

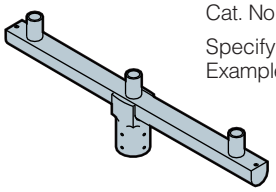
Specify finish:
Example: **MTM-2B/BL**

Extruded aluminum support continuously welded to a heavy cast aluminum slipfitter hub which cradles the arm for strength. The slipfitter hub contains four recessed ⅜″ stainless steel allen head set point screws for mounting to steel pole with steel 2″ pipe size tenon (2⅜″ O.D. x 4¼″). Cast aluminum end caps and center cap provide access to field splice connections.

CAUTION: Approved for mounting to poles with steel tenons only.

18 Triple Mount Tenon:

Component EPA: 1.5



Cat. No.: **MTM-3E**

Specify finish:
Example: **MTM-3E/BL**

Extruded aluminum support continuously welded to a heavy cast aluminum slipfitter hub which cradles the arm for strength. The slipfitter hub contains four recessed ⅜″ stainless steel allen head set point screws for mounting to steel pole with steel 2″ pipe size tenon (2⅜″ O.D. x 4¼″). Cast aluminum end caps and center cap provide access to field splice connections.

CAUTION: Approved for mounting to poles with steel tenons only.

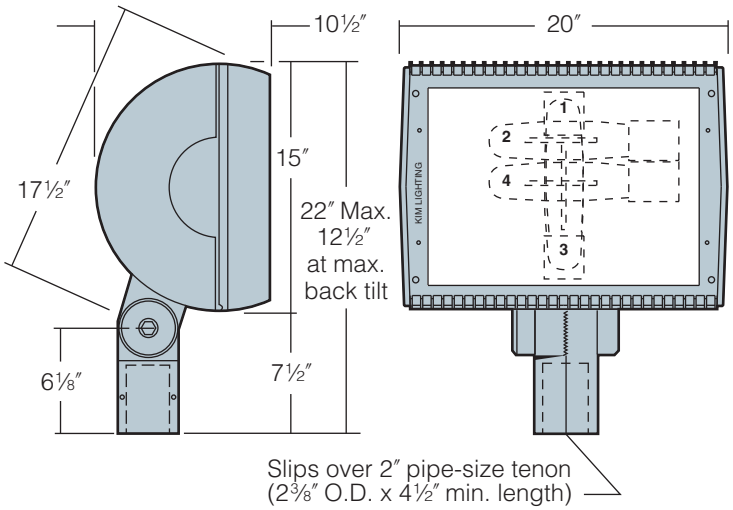
AFL20

Luminaire Specifications

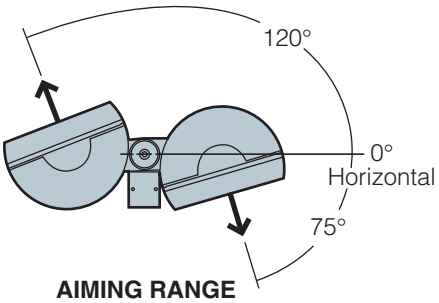
Dimensions

AFL20 Models
250 to 400 watt H.I.D.
Mogul Base Lamps

EPA: 1.3 (45° tilt)
2.3 (Face on)
Maximum weight: 49 lb



SIDE **FRONT**



AIMING RANGE
with swivel clamp down

Aiming line is always perpendicular to front face of fixture

[1] **AFL21** lamp position (base up)

[2] **AFL22** lamp position

[3] **AFL23, 24, 25, 26** lamp position (base down)

[4] **AFL27** lamp position

Housing: One-piece die-cast, low copper (<0.6% Cu) aluminum in a cylindrical shape with integral cooling fins over the entire length, and ⅛″ minimum wall thickness. One-piece extruded and vulcanized silicone gasket between housing and door frame concealed when fixture is closed. Concealed integral cast slip hinges with stainless steel pins.

Door Frame: One-piece die-cast, low copper (<0.6% Cu) aluminum with integral cooling fins, ⅛″ minimum wall thickness, mates with housing to create a continuous cylindrical shape. Concealed integral cast slip hinges allow removal without tools. Removable stop-arm provided to limit door frame opening. 3⁄16″ thick clear tempered glass lens is sealed to the lens frame by a one-piece molded silicone gasket. Door frame secures to housing by four stainless steel recessed captive allen-head screws. Four tapped and plugged holes provided for attachment of options.

Swivel: Heavy cast aluminum twin knob configuration with integral field-splice compartment, and mounts to a 2″ pipe size tenon (2⅜″ O.D. x 4½″ min. length). One stainless steel bolt, recessed in knob, locks swivel teeth at 5° increments. Opposite knob is removable for access to the field-splice compartment. Swivel is fully gasketed. Clear anodized prior to chromate conversion coating for added corrosion resistance.

Reflector Assemblies: Interchangeable in all seven AFL20 models. Specular Alzak® aluminum optical components rigidly mounted in a clear anodized aluminum frame which attaches to housing as a one-piece assembly. Sockets are 4KV porcelain mogul base.

Electrical Components: All electrical components are UL and CSA recognized with leads extending out of the swivel splice compartment. High power factor ballast rated -40°F starting for HPS and -20°F for MH lamp modes. See lamp and electrical data on pages **96-98** for ballast types and characteristics.

Finish: Super TGIC thermoset polyester powder coat paint, 2.5 mil nominal thickness, applied over a Titanated Zirconium conversion coating; 2500 hour salt spray test endurance rating. Standard colors are Black, Dark Bronze, Light Gray, Platinum Silver or White. Custom colors are available and subject to additional charges, minimum quantities and longer lead times. Consult representative.

CAUTION: Fixtures must be grounded in accordance with national, state and/or local electrical codes. Failure to do so may result in serious personal injury.

Listings and Ratings	
UL cUL 1598	—
IP66 Rated	CE

Optional Photocell (A30 - A35): Ordered assembled with fixture. Factory installed with flush sensor on side of housing. Select photocell with same line volts as fixture.

CAUTION: Use only in locations where adjacent lighting will not affect operation of photocell.

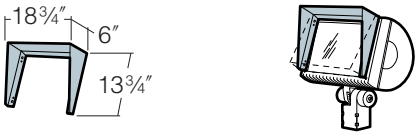
Ordered separately from fixture.
See pages **64-67** for complete ordering information.

Fixture Option Specifications

Barn Doors (BD2): Extruded aluminum doors with anti-reflection baffles. Each door is hinged to cast aluminum frame, and locks by set screws. Doors individually removable. Barn Door assembly mounts to predrilled door frame holes. May be used with **AFL-LS2** or **CFA2** option.

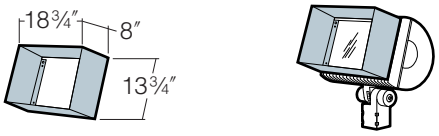
CAUTION: Not recommended for ground mounted fixtures in vandal prone areas.

Fixed Hood (FH2): Formed 1⁄16″ thick aluminum. Mounts to predrilled door frame holes. May be used with **AFL-LS2** or **CFA2** option. Can be mounted along the top or bottom of the fixture to shield the lamp and lens from view. Provides moderate shielding for ground mounted fixtures next to walkways, drive-ways or roadways.



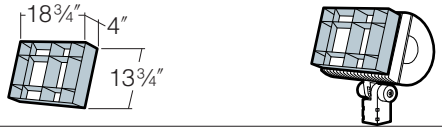
Full Shield (FS2): Formed 1⁄16″ thick x 8″ deep aluminum. Mounts to predrilled lens frame holes and provides complete shielding around the perimeter of lens opening. May be used with **AFL-LS2** or **CFA2** option.

CAUTION: Do not use full shield in locations where leaves and trash can collect inside shield.



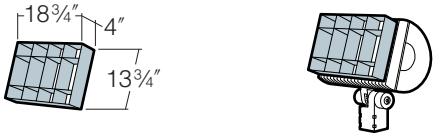
Grid Louver for AFL24 (GL8): Formed 1⁄16″ thick aluminum. Mounts to predrilled door frame holes. Provides glare control for **AFL24** while maintaining beam efficiency and uniformity.

NOTE: For use with **AFL24** only.



Grid Louver for AFL25 and **AFL26 (GL9):** Formed 1⁄16″ thick aluminum. Mounts to predrilled door frame holes. Provides glare control for **AFL25** and **AFL26** while maintaining beam efficiency and uniformity.

NOTE: For use with **AFL25** and **AFL26** only.



Lexan® Lens Shield (AFL-LS2): 3⁄16″ thick, clear convex, vacuum formed, advanced polymer (Lexan® from GE Advanced Materials) lens shield with gasket. Mounts over lens to predrilled door frame holes and may be used with **BD2** Barn Door, **FH2** Fixed Hood, or **FS2** Full Shield option.

CAUTION: Use only when vandalism is anticipated.

NOTE: Not for use with **GL8, GL9** Louver, or **CFA2** color filter options.

Color Filter Assembly (CFA2-XX): Heavy wall aluminum extrusion with anti-reflection baffles and vertical channels that hold the color filter 2″ away from the fixture lens. Quick change-out of the color filter is possible by the removal of two channel screws. Support mounts to predrilled holes in fixture door frame. May be used with **BD2** Barn Door, **FH2** Fixed Hood, or **FS2** Full Shield option.

Color Filter Assembly includes color filter.

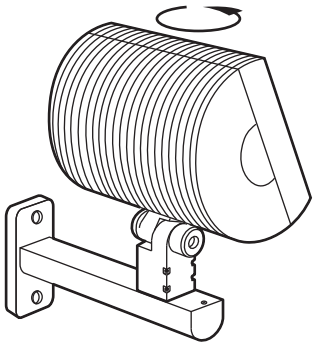
Sample	Color[1]	XX Filter #[2]	Description
	Deep Straw	15	Warms metal halide color. Deepens high pressure sodium color to yellow/orange.
	Rose Tint	05	Warms metal halide color. Deepens high pressure sodium color to pink/orange.
	Medium Red	27	Deep color accent. Best used with high pressure sodium lamps. **NOTE:** Very low output with metal halide lamps.
	Brilliant Blue	69	Deep color accent. Best used with metal halide lamps. **NOTE:** Not recommended for high pressure sodium lamps.
	Primary Green	91	Deep color accent. Blue shift with metal halide lamps. Yellow shift with high pressure sodium lamps.

NOTE: Color samples shown for reference only and will not represent actual illumination color rendered by H.I.D. lamps.

[1]Exact color output is highly dependent on lamp used, (i.e. HPS vs. MH, specific lamp color temperature and other factors).
[2]**XX** Color filter number corresponds with Roscolux color filter numbers.

Aiming Ranges

Reference symbol for fixture aiming range when mounted on the option as shown. This range is in the vertical plane and does not necessarily apply to all conditions. See page **68** for full aiming range without mounting options.

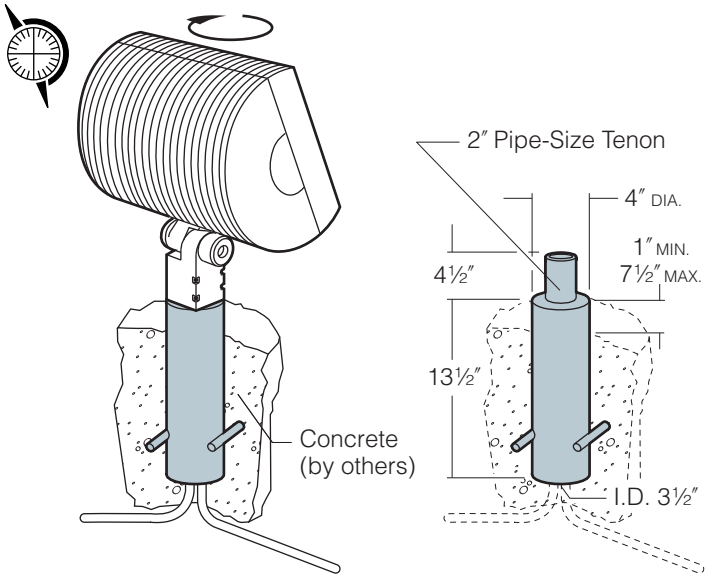


Swivel

The standard heavy duty swivel mounted on either the **SM2, SMT, WM2, SPS2, SPR2-X, MTM-2B, MTM-3E,** or **pole top tenon**, provides aiming between **-120° to 75°** off horizontal.

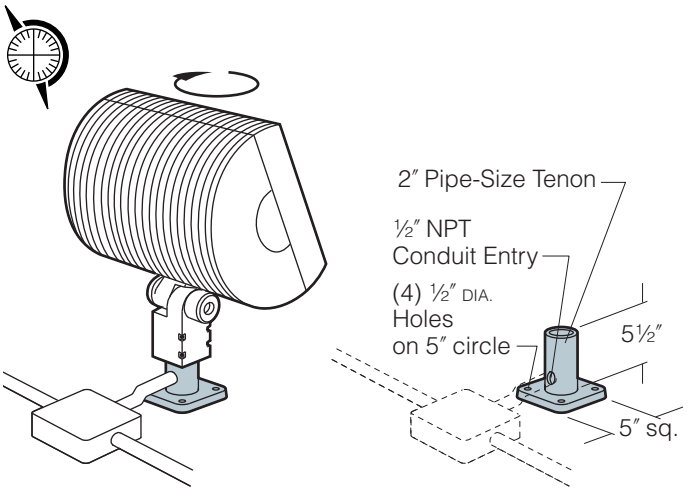
Mounting Option Specifications

Ordered separately from fixture.
See pages **64-67** for complete ordering information.



Stanchion Mount Tenon (SM2): 4″ O.D. cast low copper (<0.6% Cu) aluminum stanchion with 2″ pipe-size tenon (2⅜″ O.D., 1⅜″ I.D.) for mounting a single fixture or multiple top-mounts.

CAUTION: Multiple top-mounts must not be used in locations where people can climb on fixtures and mounting arms. To assure a rigid installation, Stanchion must be set in concrete (by others).



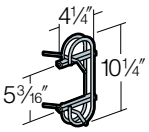
Surface Mount Tenon (SMT): 2″ pipe-size tenon (2⅜″ O.D., 2″ I.D.) welded to a cast aluminum plate. Plate has four ½″ mounting holes, and tenon has one ½″ NPT for side conduit entry.

NOTE: Not for use with **MTM-2B** or **MTM-3E** options. May be wall mounted if horizontal fixture adjustment is not required. For wall mounting with horizontal fixture adjustment, use **WM2** (see page **66**).

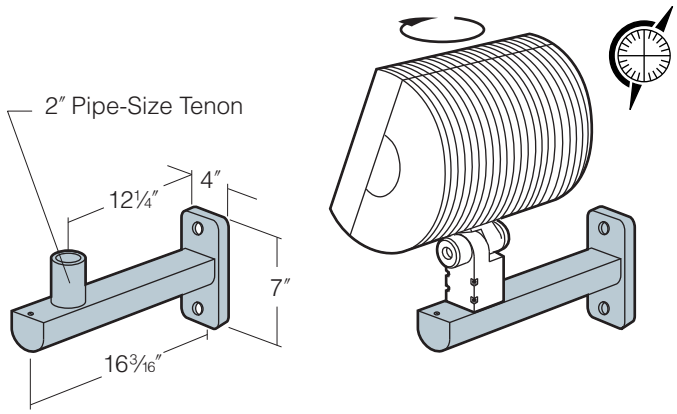
Ordered separately from fixture.
See pages **64-67** for complete ordering information.

Mounting Option Specifications

Wall Mount Tenon (WM2): 2″ pipe-size tenon (2⅜″ O.D., 2″ I.D.) welded to an extruded aluminum arm with a removable end cap for wiring access. Arm is welded to a cast aluminum plate with two ½″ mounting holes.

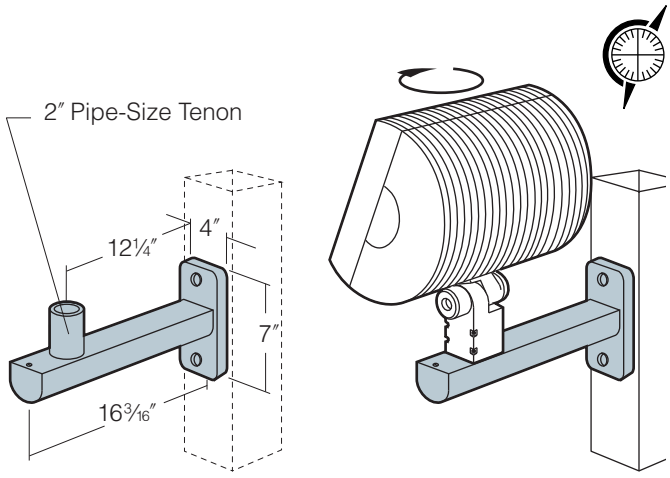


Optional Wall Embedment Bracket (WEB) provides ⅜-16 bolt receptacles welded in a galvanized re-bar cage for casting into poured-in-place concrete walls. Bolt receptacles receive fixture attachment bolts.



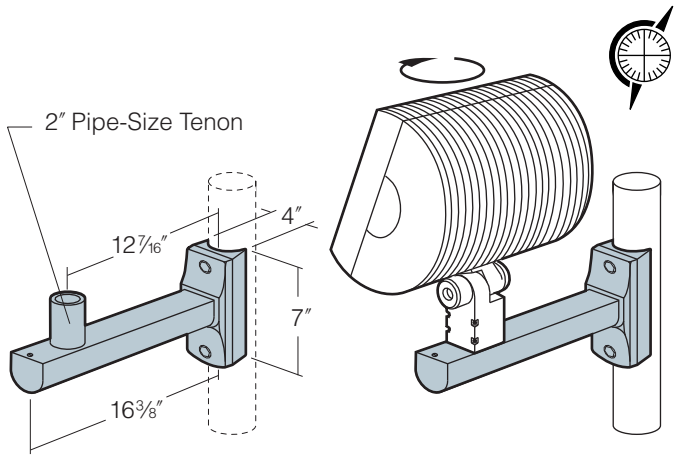
Component EPA: 0.3

Side Pole Mount Tenon for Square Poles (SPS2): 2″ pipe-size tenon (2⅜″ O.D., 2″ I.D.) welded to an extruded aluminum arm with a removable end cap for wiring access. Arm is welded to a cast aluminum plate with two ½″ mounting holes. Zinc plated steel backing plate is provided for insertion inside the pole for structural support.



Component EPA: 0.3

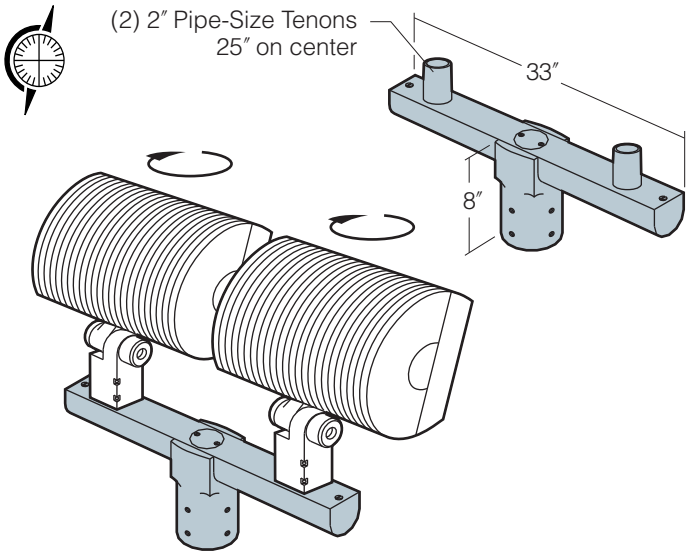
Side Pole Mount Tenon for Round Poles (SPR2): 2″ pipe-size tenon (2⅜″ O.D., 2″ I.D.) welded to an extruded aluminum arm with a removable end cap for wiring access. Arm is welded to a cast aluminum plate with two ½″ mounting holes. Zinc plated steel backing plate is provided for insertion inside the pole for structural support.



Component EPA: 0.3

Mounting Option Specifications

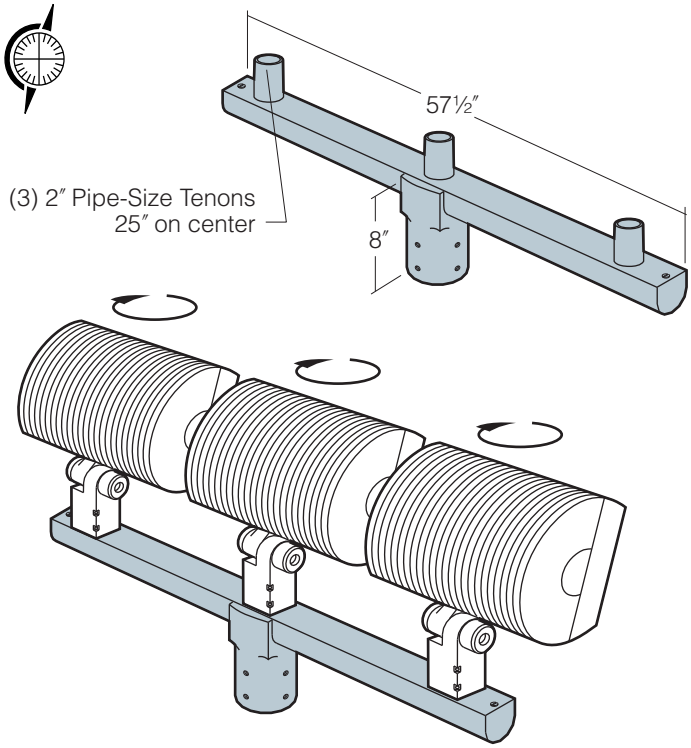
Ordered separately from fixture.
See pages **64-67** for complete ordering information.



Twin Mount Tenon (MTM-2B): Extruded aluminum support continuously welded to a heavy cast aluminum slipfitter hub which cradles the arm for strength. The slipfitter hub contains four recessed ⅜″ stainless steel allen head set point screws for mounting to steel pole with steel 2″ pipe size tenon (2⅜″ O.D. x 4¼″). Cast aluminum end caps and center cap provide access to field splice connections.

CAUTION: Approved for mounting to poles with steel tenons only.

Component EPA: 1.0



Triple Mount Tenon (MTM-3E): Extruded aluminum support continuously welded to a heavy cast aluminum slipfitter hub which cradles the arm for strength. The slipfitter hub contains four recessed ⅜″ stainless steel allen head set point screws for mounting to steel pole with steel 2″ pipe size tenon (2⅜″ O.D. x 4¼″). Cast aluminum end caps and center cap provide access to field splice connections.

CAUTION: Approved for mounting to poles with steel tenons only.

Component EPA: 1.5

AFL21 Wide Flood Beam Spread Chart

Lamp	Lamp Watts	Initial Lumens[1]	I.E.S. Type	Maximum Candlepower	Field Angle (10% of max.)	Beam Angle[2] (50% of max.)	I.T.L. Test No.	Iso Pg.
HIGH PRESSURE SODIUM								
250HPS E-18 clear mogul base	250	30,000	7H x 6V	11,580 (55.0°H x 15.0°V)	146.8°H x 124.0°V	132.0°H x 93.0°V	34659	161
400HPS E-18 clear mogul base	400	50,000	7H x 6V	17,596 (56.3°H x 12.8°V)	147.8°H x 128.0°V	136.0°H x 100.0°V	34660	161
PULSE START METAL HALIDE								
250PMH ED-28 clear mogul base	250	20,500	7H x 6V	8,074 (55.0°H x 15.0°V)	146.6°H x 126.0°V	126.0°H x 87.0°V	34661	161
400PMH ED-28 clear mogul base	400	36,000	7H x 6V	14,021 (55.0°H x 15.0°V)	147.1°H x 126.0°V	136.0°H x 101.0°V	34662	161

[1]All **Initial Lumen** values shown are approximate and may vary from one manufacturer to another. Consult lamp manufacturer's data for exact lumen and life data.
[2]**Beam Angle:** Horizontal and vertical beam spreads interpolated due to no valid I.E.S. standard.

AFL22 Vertical Flood Beam Spread Chart

Lamp	Lamp Watts	Initial Lumens[3]	I.E.S. Type	Maximum Candlepower	Field Angle (10% of max.)	Beam Angle[4] (50% of max.)	I.T.L. Test No.	Iso Pg.
HIGH PRESSURE SODIUM								
250HPS E-18 clear mogul base	250	30,000	6H x 4V	20,000 (14.7°H x 15.8°V)	118.0°H x 71.0°V	80.0°H x 16.0°V	34535	167
400HPS E-18 clear mogul base	400	50,000	6H x 5V	32,192 (11.6°H x 16.1°V)	116.0°H x 71.0°V	80.0°H x 28.0°V	34541	167
PULSE START METAL HALIDE								
250PMH ED-28 clear mogul base	250	19,500	6H x 5V	12,567 (18.0°H x 14.5°V)	128.0°H x 80.8°V	76.0°H x 33.0°V	34543	167
400PMH ED-28 clear mogul base	400	36,000	6H x 5V	19,896 (21.8°H x 14.7°V)	128.0°H x 80.0°V	86.0°H x 42.0°V	34697	167

[3]All **Initial Lumen** values shown are approximate and may vary from one manufacturer to another. Consult lamp manufacturer's data for exact lumen and life data.
[4]**Beam Angle:** Horizontal and vertical beam spreads interpolated due to no valid I.E.S. standard.

AFL23 Medium Flood Beam Spread Chart

Lamp	Lamp Watts	Initial Lumens[5]	I.E.S. Type	Maximum Candlepower	Field Angle (10% of max.)	Beam Angle (50% of max.)	I.T.L. Test No.	Iso Pg.
HIGH PRESSURE SODIUM								
250HPS E-18 clear mogul base	250	30,000	7H x 5V	22,808 (41.6°H x -9.0°V)	135.4°H x 99.9°V	98.0°H x 43.0°V	46389	173
400HPS E-18 clear mogul base	400	51,000	7H x 6V	35,215 (38.9°H x -8.9°V)	137.1°H x 107.0°V	100.0°H x 48.0°V	46390	173
PULSE START METAL HALIDE								
250PMH ED-28 clear mogul base	250	21,000	7H x 5V	18,251 (39.2°H x 0.3°V)	132.3°H x 87.8°V	96.0°H x 40.0°V	46387	173
400PMH ED-28 clear mogul base	400	36,000	7H x 5V	30,468 (39.3°H x -1.6°V)	134.1°H x 98.6°V	96.0°H x 38.0°V	46388	173

[5]All **Initial Lumen** values shown are approximate and may vary from one manufacturer to another. Consult lamp manufacturer's data for exact lumen and life data.

NOTE: For lamp/ballast information outside of the U.S.A. and Canada, please consult your local Kim representative.

WARNING: All fixtures must be grounded in accordance with local codes or the National Electrical Code. Failure to do so may result in serious personal injury. Lamps by others.

AFL24 Narrow Flood Beam Spread Chart

Lamp	Lamp Watts	Initial Lumens[6]	I.E.S. Type	Maximum Candlepower	Field Angle (10% of max.)	Beam Angle (50% of max.)	I.T.L. Test No.	Iso Pg.
HIGH PRESSURE SODIUM								
250HPS E-18 clear mogul base	250	30,000	6H x 5V	30,557 (10.4°H x -9.4°V)	122.3°H x 82.0°V	44.0°H x 37.0°V	34536	179
400HPS E-18 clear mogul base	400	50,000	7H x 5V	42,560 (11.3°H x -11.6°V)	132.0°H x 101.0°V	46.0°H x 43.0°V	34539	179
PULSE START METAL HALIDE								
250PMH ED-28 clear mogul base	250	20,500	5H x 4V	23,171 (12.0°H x -2.5°V)	74.4°H x 69.0°V	48.0°H x 28.0°V	34544	179
400PMH ED-28 clear mogul base	400	36,000	5H x 4V	38,650 (14.9°H x -0.1°V)	104.0°H x 76.0°V	48.0°H x 30.0°V	34548	179

[6]All **Initial Lumen** values shown are approximate and may vary from one manufacturer to another. Consult lamp manufacturer's data for exact lumen and life data.

AFL25 Spot Beam Spread Chart

Lamp	Lamp Watts	Initial Lumens[7]	I.E.S. Type	Maximum Candlepower	Field Angle (10% of max.)	Beam Angle (50% of max.)	I.T.L. Test No.	Iso Pg.
HIGH PRESSURE SODIUM								
250HPS E-18 clear mogul base	250	30,000	3H x 4V	61,460 (0.0°H x -7.3°V)	44.0°H x 53.0°V	20.0°H x 27.0°V	34537	185
400HPS E-18 clear mogul base	400	50,000	4H x 4V	84,570 (0.0°H x -8.8°V)	48.2°H x 63.0°V	22.0°H x 31.0°V	34540	185
PULSE START METAL HALIDE								
250PMH ED-28 clear mogul base	250	20,500	3H x 3V	46,920 (0.0°H x -1.4°V)	41.0°H x 45.0°V	21.0°H x 24.0°V	34545	185
400PMH ED-28 clear mogul base	400	36,000	3H x 3V	76,220 (0.0°H x -1.8°V)	44.3°H x 48.0°V	22.0°H x 25.0°V	34549	185

[7]All **Initial Lumen** values shown are approximate and may vary from one manufacturer to another. Consult lamp manufacturer's data for exact lumen and life data.

AFL26 Narrow Spot Beam Spread Chart

Lamp	Lamp Watts	Initial Lumens[8]	I.E.S. Type	Maximum Candlepower	Field Angle (10% of max.)	Beam Angle (50% of max.)	I.T.L. Test No.	Iso Pg.
HIGH PRESSURE SODIUM								
250HPS E-18 clear mogul base	250	30,000	2H x 4V	113,120 (4.2°H x -1.2°V)	24.5°H x 48.2°V	13.9°H x 20.0°V	46689	191
400HPS E-18 clear mogul base	400	51,000	2H x 4V	203,760 (3.3°H x -1.4°V)	24.0°H x 52.6°V	14.0°H x 18.3°V	46690	191
PULSE START METAL HALIDE								
250PMH ED-28 clear mogul base	250	21,000	2H x 2V	236,087 (0.0°H x -0.9°V)	18.6°H x 20.0°V	9.0°H x 8.3°V	46687	191
400PMH ED-28 clear mogul base	400	36,000	1H x 2V	365,237 (0.0°H x 0.0°V)	17.9°H x 25.0°V	7.1°H x 10.7°V	46901	191

[8]All **Initial Lumen** values shown are approximate and may vary from one manufacturer to another. Consult lamp manufacturer's data for exact lumen and life data.

NOTE: For lamp/ballast information outside of the U.S.A. and Canada, please consult your local Kim representative.

WARNING: All fixtures must be grounded in accordance with local codes or the National Electrical Code. Failure to do so may result in serious personal injury. Lamps by others.

AFL27 Horizontal Spot Beam Spread Chart

Lamp	Lamp Watts	Initial Lumens[9]	I.E.S. Type	Maximum Candlepower	Field Angle (10% of max.)	Beam Angle (50% of max.)	I.T.L. Test No.	Iso Pg.
HIGH PRESSURE SODIUM								
250HPS E-18 clear mogul base	250	30,000	6H x 4V	31,714 (0.0°H x 1.2°V)	109.1°H x 64.9°V	90.1°H x 13.1°V	48415	197
400HPS E-18 clear mogul base	400	51,000	6H x 4V	53,318 (0.0°H x 1.0°V)	108.9°H x 64.5°V	88.2°H x 13.4°V	48416	197
PULSE START METAL HALIDE								
250PMH ED-28 clear mogul base	250	21,000	6H x 5V	20,602 (5.0°H x 0.5°V)	112.8°H x 75.1°V	95.8°H x 15.8°V	48414	197
400PMH ED-28 clear mogul base	400	36,000	6H x 5V	35,158 (0.0°H x 0.0°V)	122.7°H x 74.0°V	97.4°H x 14.9°V	47773	197

[9]All **Initial Lumen** values shown are approximate and may vary from one manufacturer to another. Consult lamp manufacturer's data for exact lumen and life data.

NOTE: For lamp/ballast information outside of the U.S.A. and Canada, please consult your local Kim representative.

WARNING: All fixtures must be grounded in accordance with local codes or the National Electrical Code. Failure to do so may result in serious personal injury. Lamps by others.

AFL10 and AFL20 Series

used in combination to highlight signature architectural details.

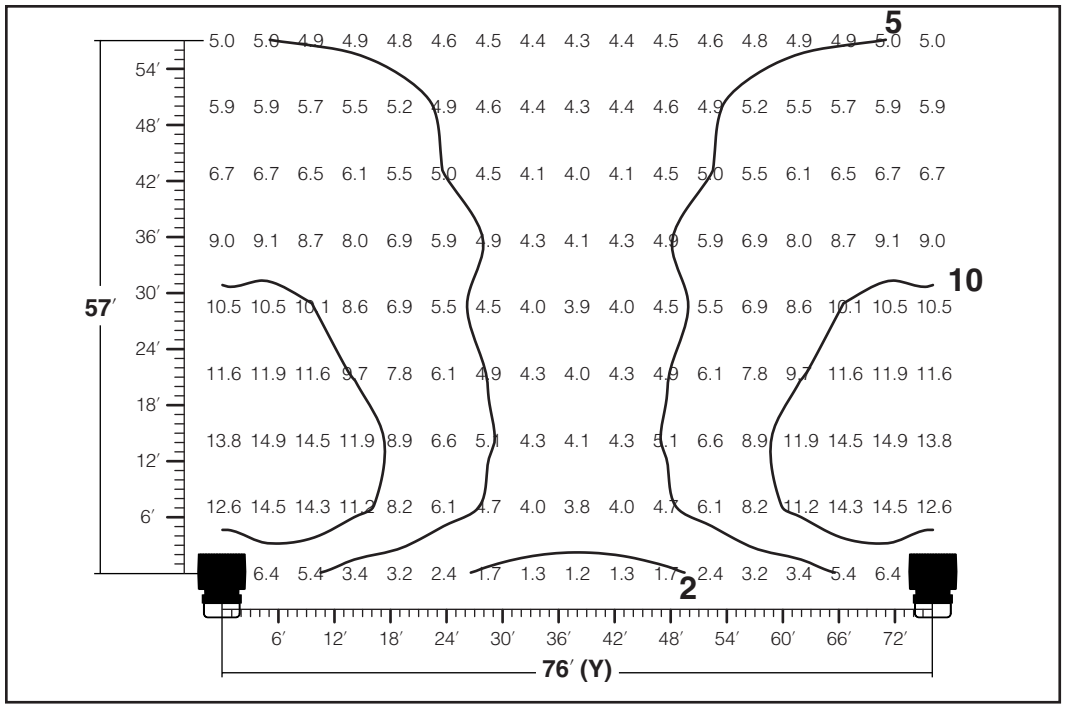
Architectural Floodlights
Photometrics

50 - 400 Watt

CFL

AFL10

AFL20



KIM LIGHTING

Lamp and Electrical Guide

High Pressure Sodium

Lamp	Lamp Watts	ANSI Ballast Type	Life (Hours)	Initial Lumens[1]	Voltage	Operating Amps.	Open Circuit	Starting Amps.	Max. Amps.
HIGH PRESSURE SODIUM									
50HPS ED-17 Clear Medium Base (CFL)	50	S-68	24,000	4,000	120	0.55	0.90	0.95	0.95
					-	-	-	-	-
					-	-	-	-	-
					277	0.33	0.34	0.50	0.50
70HPS ED-17 Clear Medium Base (CFL)	70	S-62	24,000	6,300	120	0.75	1.30	0.90	1.30
					-	-	-	-	-
					-	-	-	-	-
					277	0.43	0.51	0.60	0.60
70HPS ED-17 Clear Medium Base (AFL10)	70	S-62	24,000	6,300	120	0.81	1.45	0.75	1.45
					208	0.47	0.85	0.45	0.85
					240	0.40	0.75	0.37	0.75
					277	0.35	0.65	0.35	0.65
					347	0.30	0.55	0.30	0.55
					480	0.21	0.36	0.21	0.36
100HPS ED-17 Clear Medium Base (AFL10)	100	S-54	24,000	9,500	120	1.15	2.20	1.30	2.20
					208	0.67	1.25	0.75	1.25
					240	0.58	1.10	0.65	1.10
					277	0.50	0.85	0.60	0.85
					347	0.39	0.70	0.45	0.70
					480	0.22	0.34	0.21	0.34
150HPS ED-17 Clear Medium Base (AFL10)	150	S-55	24,000	16,000	120	1.65	2.80	2.00	2.80
					208	0.95	1.60	1.15	1.60
					240	0.83	1.40	1.00	1.40
					277	0.72	1.25	0.85	1.25
					347	0.56	0.92	0.52	0.92
					480	0.42	0.70	0.50	0.70
250HPS E-18 Clear Mogul Base (AFL20)	250	S-50	24,000	29,000	120	2.50	1.70	1.65	2.50
					208	1.50	1.00	0.95	1.50
					240	1.30	0.85	0.80	1.30
					277	1.10	0.75	0.70	1.10
					347	0.93	0.70	0.60	0.93
					480	0.63	0.45	0.40	0.63
400HPS E-18 Clear Mogul Base (AFL20)	400	S-51	24,000	51,000	120	3.80	2.00	3.30	3.80
					208	2.20	1.20	1.80	2.20
					240	1.90	0.95	1.50	1.90
					277	1.70	0.85	1.40	1.70
					347	1.32	0.70	1.00	1.32
					480	0.97	0.55	0.75	0.97

Pulse Start Metal Halide

	Lamp Watts	ANSI Ballast Type	Life (Hours)	Initial Lumens[1]	Voltage	Operating Amps.	Open Circuit	Starting Amps.	Max. Amps.
PULSE START METAL HALIDE [2]									
70PMH					120	0.97	1.58	1.04	1.58
ED-17 Clear	70	M-98	15,000V	5,600V	-	-	-	-	-
Medium Base			11,000H	5,000H	-	-	-	-	-
(CFL)					277	0.32	0.80	0.50	0.80
70PMH					120	0.85	1.70	0.80	1.70
ED-17 Clear	70	M-98	15,000V	5,600V	208	0.52	1.04	0.50	1.04
Medium Base			11,000H	5,000H	240	0.44	0.87	0.43	0.87
(AFL10)					277	0.39	0.78	0.39	0.78
					347	0.28	0.65	0.20	0.65
					480	0.23	0.50	0.26	0.50
100PMH					120	1.15	2.30	1.20	2.30
ED-17 Clear	100	M-90	15,000V	9,000V	208	0.66	1.40	0.80	1.40
Medium Base			11,000H	8,100H	240	0.58	1.15	0.65	1.15
(AFL10)					277	0.50	1.00	0.60	1.00
					347	0.40	1.00	0.40	1.00
					480	0.30	0.55	0.30	0.55
250PMH					120	2.50	1.40	2.30	2.50
ED-28 Clear	250	M-138	15,000V	25,000V	208	1.45	0.80	1.30	1.45
Mogul Base			11,250H	22,500H	240	1.25	0.70	1.15	1.25
(AFL20)					277	1.10	0.60	1.00	1.10
					347	0.95	0.75	0.45	0.95
					480	0.57	0.48	0.21	0.57
320PMH					120	3.25	2.30	1.80	3.25
ED-28 Clear	320	M-132	20,000	31,000V	208	1.90	1.35	1.05	1.90
Mogul Base		M-154		27,000H	240	1.65	1.15	0.90	1.65
(AFL20)		M-170			277	1.40	1.00	0.80	1.40
					347	1.10	0.80	0.70	1.10
					480	0.80	0.60	0.45	0.80
350PMH					120	3.40	2.20	2.20	3.40
ED-28 Clear	350	M-131	15,000V	25,000V	208	2.00	1.30	1.30	2.00
Mogul Base		M-171	11,250H	22,500H	240	1.70	1.10	1.10	1.70
(AFL20)					277	1.50	1.00	1.00	1.50
					347	1.20	0.80	0.85	1.20
					480	0.85	0.60	0.60	0.85
400PMH					120	4.00	3.00	3.50	4.00
ED-28 Clear	400	M-135	20,000	42,000	208	2.30	1.75	2.00	2.30
Mogul Base					240	2.00	1.50	1.75	2.00
(AFL20)					277	1.75	1.30	1.50	1.75
					347	1.35	0.75	1.10	1.35
					480	1.00	0.60	0.75	1.00

[1]All initial lumen values shown may vary, due to operating orientation (vertical / horizontal), and from one manufacturer to another. Consult lamp manufacturer's data for exact lumen and life data.
[2]Data provided is extracted from Venture Uni-Form product information.

NOTE: For lamp/ballast information outside of the U.S.A. and Canada, please consult your local Kim representative.

WARNING: All fixtures must be grounded in accordance with local codes or the National Electrical Code. Failure to do so may result in serious personal injury.

Lamps by others.

Lamp and Electrical Guide

Fluorescent, Incandescent and Halogen

Lamp	Lamp Watts	ANSI Ballast Type	Life (Hours)	Initial Lumens[1]	Voltage	Operating Amps.	Open Circuit	Starting Amps.	Max. Amps.
COMPACT FLUORESCENT									
13PL Coated GX23-2 2-pin Base (CFL)	13	-	10,000	810	120	-	-	-	0.26
					-	-	-	-	-
					-	-	-	-	-
					277	-	-	-	0.11
42PL Coated GX24q-3 4-pin Base (CFL)	42	-	10,000	3,200	120	-	-	-	0.38
					208	-	-	-	0.22
					240	-	-	-	0.18
					277	-	-	-	0.15
INCANDESCENT									
60INC T-10 Coated Medium Base (CFL)	60	-	1,000	740	120	-	-	-	0.50
HALOGEN									
150HAL T-4 Clear Mini-can Base (CFL)	150	-	2,000	2,800	120	-	-	-	1.25

[1]All initial lumen values shown may vary, due to operating orientation (vertical / horizontal), and from one manufacturer to another. Consult lamp manufacturer's data for exact lumen and life data.
[2]Data provided is extracted from Venture Uni-Form product information.

NOTE: For lamp/ballast information outside of the U.S.A. and Canada, please consult your local Kim representative.

WARNING: All fixtures must be grounded in accordance with local codes or the National Electrical Code. Failure to do so may result in serious personal injury.

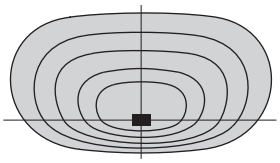
Lamps by others.

AFL Beam Properties at a Glance

System Approach

Wide Flood

CFL1 **pages 101-109**
AFL11 **pages 119-123**
AFL21 **pages 161-165**



Beam Shape

At 1 Fc, ratio of **W** to **H** at the indicated aiming angles

@ 10° Aiming Angle

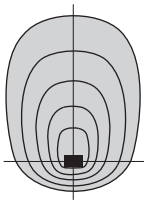
Ratio
1W : .68H

Applications

For illumination of walls and building facades that are wider than they are tall. Well suited for wall lighting from medium setback distances. Also, excellent for area lighting from perimeter pole or wall mount locations.

Vertical Flood

AFL12 **pages 125-129**
AFL22 **pages 167-171**



Beam Shape

@ 40° Aiming Angle

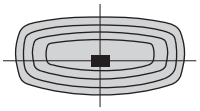
Ratio
1W : 1.63H

Applications

For illumination of walls and building facades that are taller than they are wide. Well suited for wall lighting from medium setback distances. Also, excellent for area lighting from perimeter pole or wall mount locations.

Medium Flood

AFL13 **pages 131-135**
AFL23 **pages 173-177**



Beam Shape

@ 10° Aiming Angle

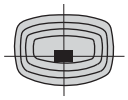
Ratio
1W : .72H

Applications

For illumination of walls and building facades that are short in height and wide laterally. Well suited for wall and sign lighting from medium setback distances.

Narrow Flood

AFL14 **pages 137-141**
AFL24 **pages 179-183**



Beam Shape

@ 10° Aiming Angle

Ratio
1W : .85H

Applications

For illumination of surfaces from deeper setback distances. Well suited for highlighting signage and illumination of atriums from high ceiling locations, as well as large areas from high building mounted installation.

Spot

AFL15 **pages 143-147**
AFL25 **pages 185-189**

Beam Shape

@ 5° Aiming Angle

Ratio
1W : 1.1H

Applications

For accent and highlighting of architectural features. Also, used for illumination of facades from great distances or extreme setback distances.

Narrow Spot

CFL6 **pages 110-116**
AFL16 **pages 149-153**
AFL26 **pages 191-195**

Beam Shape

@ 0° Aiming Angle

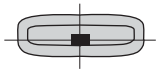
Ratio
1W : 1.2H

Applications

For highlighting and key spotlighting of selected architectural and landscape features. Well suited for illuminating very tall structures, grazing columns, and highlighting small objects from great distances.

Horizontal Spot

AFL17 **pages 155-159**
AFL27 **pages 197-201**



Beam Shape

@ 0° Aiming Angle

Ratio
1W : .33H

Applications

Wide lateral and very narrow vertical pattern is specifically designed for grazing wall surfaces, as well as highlighting linear architectural detail.

Photometric System Design

Illuminance level required

Charts below show I.E.S. recommended illuminance in Average Maintained Footcandles. These values correspond to the values on each Isofootcandle diagram on the following "Isofootcandle Diagram" pages. Refer to the beam spread charts on page **26**.

Floodlighting			Parking Lot Lighting		
Surface Material Examples See page **244** for average surface reflectance values.	Surrounding Light Level		Level of Activity	Vehicular Traffic	Pedestrian Security
	Bright	Dark		Avg. Maintained Footcandles	
	Avg. Maintained Footcandles				
Light marble, white or cream terra cotta, white plaster	**15**	**5**	Low	**0.5**	**0.8**
Concrete, tinted stucco, light gray and buff limestone, buff face brick	**20**	**10**	Medium	**1**	**2**
Common tan brick, sandstone, medium gray limestone	**30**	**15**	High	**2**	**4**
Common red brick, stained wood, dark gray brick	**50**	**20**			

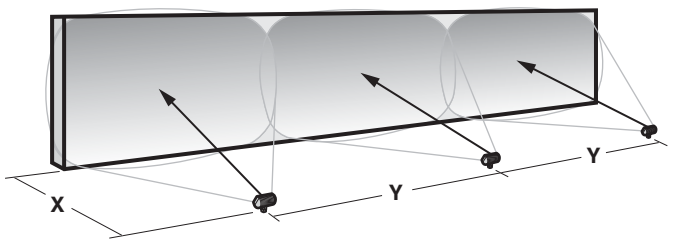
Uniformity of Illumination

Dimension **X** is obtained directly from the isofootcandle diagram. Listed **X** dimensions represent the optimum range for that lamp and wattage. Dimension **Y** (fixture spacing) is simply a multiple of **X** obtained by figuring the longitudinal distance to the next fixture. The next fixture is located where its light pattern intersects the previous fixture as illustrated above.

Refer to individual lateral spacing information for specific fixtures for details on determining spacing **Y** for various mounting distances **X**.

NOTE: All areas of uniformity are based on a lighting system, not individual fixtures. Therefore areas of uniformity are calculated assuming contributions from adjacent fixtures.

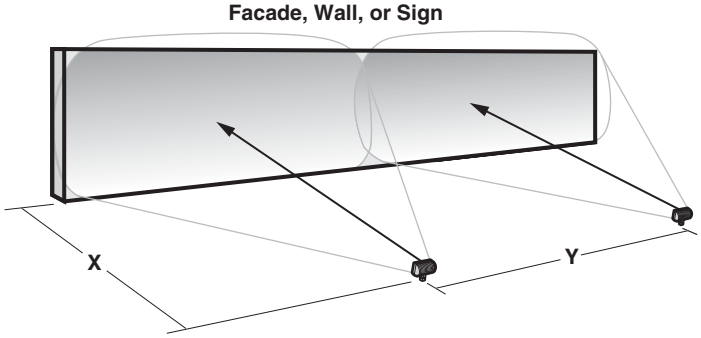
Facade, Wall, or Sign



For facade, wall, or sign lighting, optimum visual uniformity is achieved when the maximum-to-minimum illumination is no greater than **3:1**.

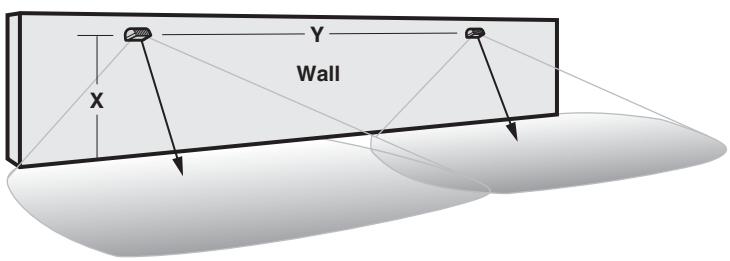
Example:
If **X** = 10′, **Y** would = 30′

Facade, Wall, or Sign



For facade, wall, or sign lighting where a slight noticeable drop in illumination between fixtures is acceptable, use **6:1** uniformity.

Example:
If **X** = 10′, **Y** would = 60′



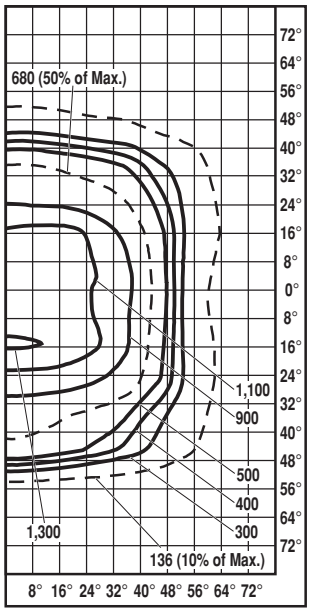
For parking lot or area lighting, a **12:1** maximum-to-minimum uniformity will provide excellent results.

Example:
If **X** = 10′, **Y** would = 120′

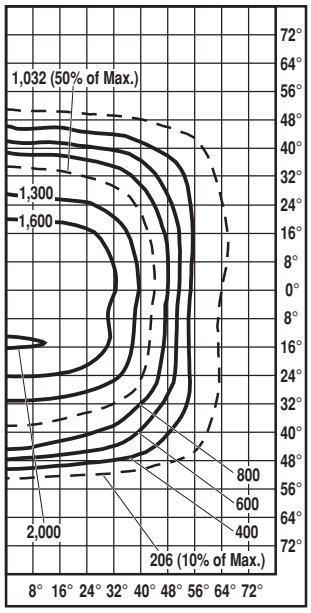
Isocandela Diagrams

Wide Flood

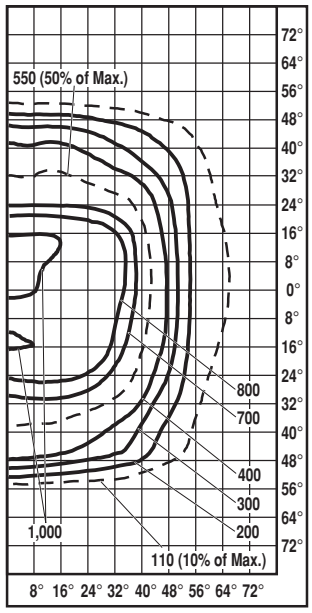
50 watt High Pressure Sodium
E-17 clear medium base
I.T.L. Test No. 43996
4,000 initial lumens
ANSI Code S-68
I.E.S. Type: 6H x 6V
Field Angle: 125.4° H x 106.1° V (10% max.)
Beam Angle: 85.3° H x 77.4° V (50% max.)



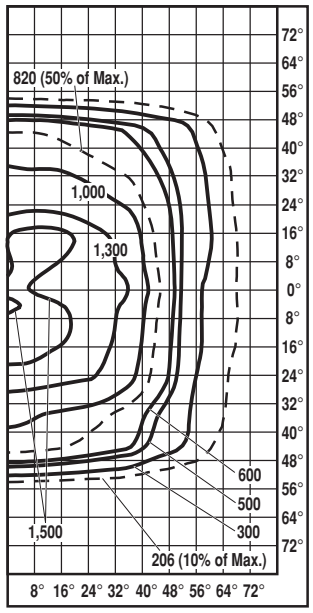
70 watt High Pressure Sodium
E-17 clear medium base
I.T.L. Test No. 43997
6,300 initial lumens
ANSI Code S-62
I.E.S. Type: 6H x 6V
Field Angle: 129.4° H x 106.4° V (10% max.)
Beam Angle: 86.7° H x 74.6° V (50% max.)



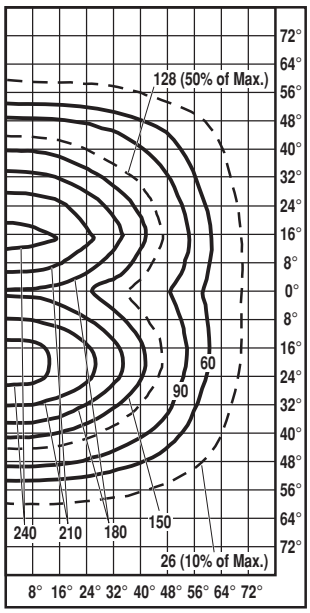
50 watt Pulse Start Metal Halide
E-17 clear medium base
I.T.L. Test No. 43999
3,060 initial lumens
ANSI Code M-110
I.E.S. Type: 7H x 6V
Field Angle: 130.5° H x 106.8° V (10% max.)
Beam Angle: 84.3° H x 70.2° V (50% max.)



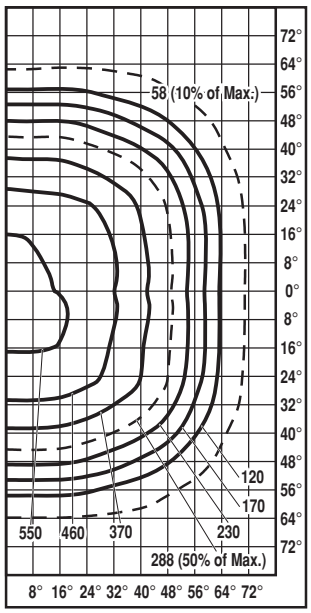
70 watt Pulse Start Metal Halide
E-17 clear medium base
I.T.L. Test No. 44062
5,150 initial lumens
ANSI Code M-98
I.E.S. Type: 7H x 6V
Field Angle: 136.0° H x 108.7° V (10% max.)
Beam Angle: 90.5° H x 90.5° V (50% max.)



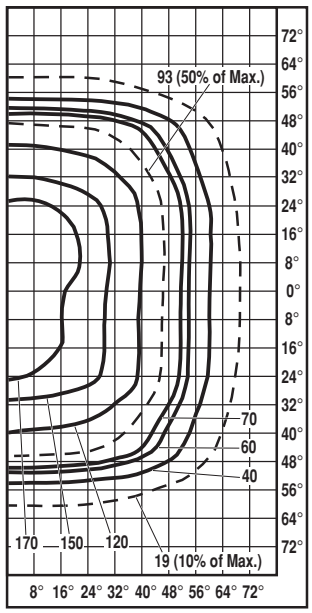
13 watt Compact Fluorescent
Twin tube GX23-2 2-pin base
I.T.L. Test No. 44370
900 initial lumens
I.E.S. Type: 7H x 6V
Field Angle: 138.3° H x 119.8° V (10% max.)
Beam Angle: 91.8° H x 88.5° V (50% max.)



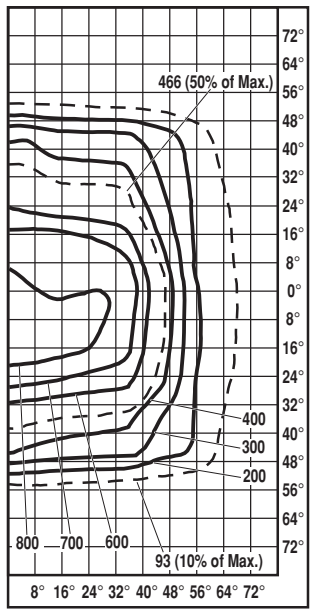
42 watt Compact Fluorescent
GX24q-3 4-pin base
Test No. Kim2146
3,200 initial lumens
I.E.S. Type: 7H x 6V
Field Angle: 142.2° H x 127.3° V (10% max.)
Beam Angle: 99.2° H x 88.5° V (50% max.)



60 watt Incandescent
T-10 I.F. medium base
I.T.L. Test No. 44419
745 initial lumens
I.E.S. Type: 7H x 6V
Field Angle: 136.3° H x 120.3° V (10% max.)
Beam Angle: 90.6° H x 93.1° V (50% max.)



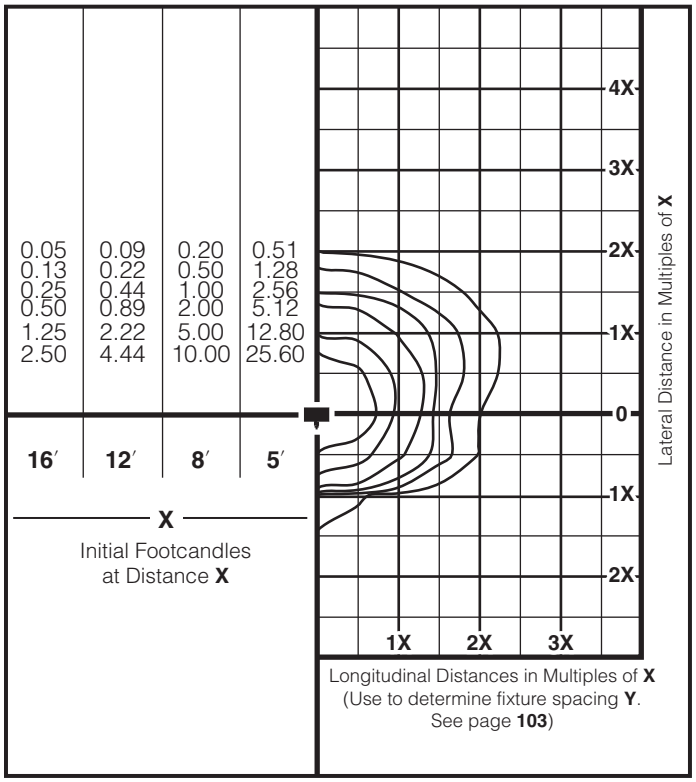
150 watt Halogen
T-4 Mini-can base
I.T.L. Test No. 44239
2,800 initial lumens
I.E.S. Type: 7H x 6V
Field Angle: 135.1° H x 108.1° V (10% max.)
Beam Angle: 92.5° H x 74.9° V (50% max.)



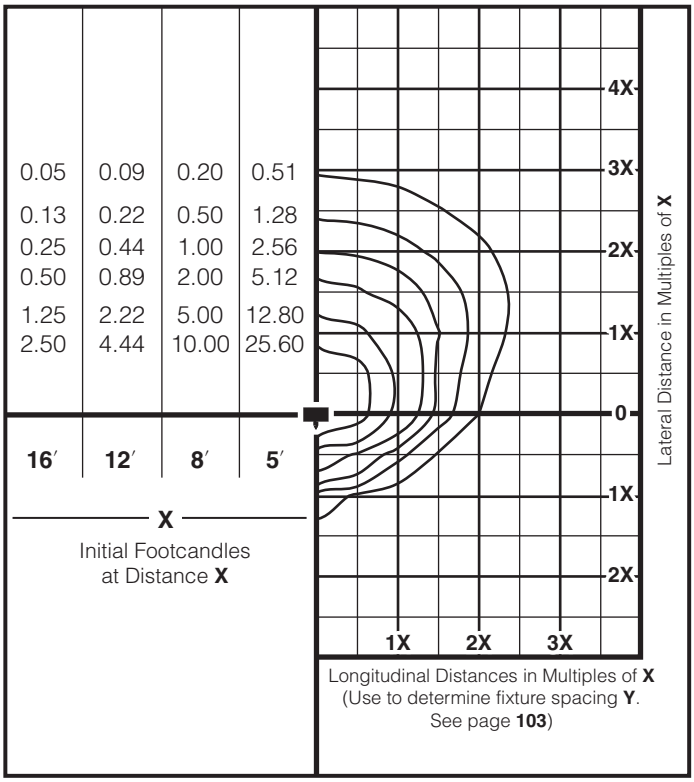
Wide Flood

70HPS Isofootcandle Diagrams

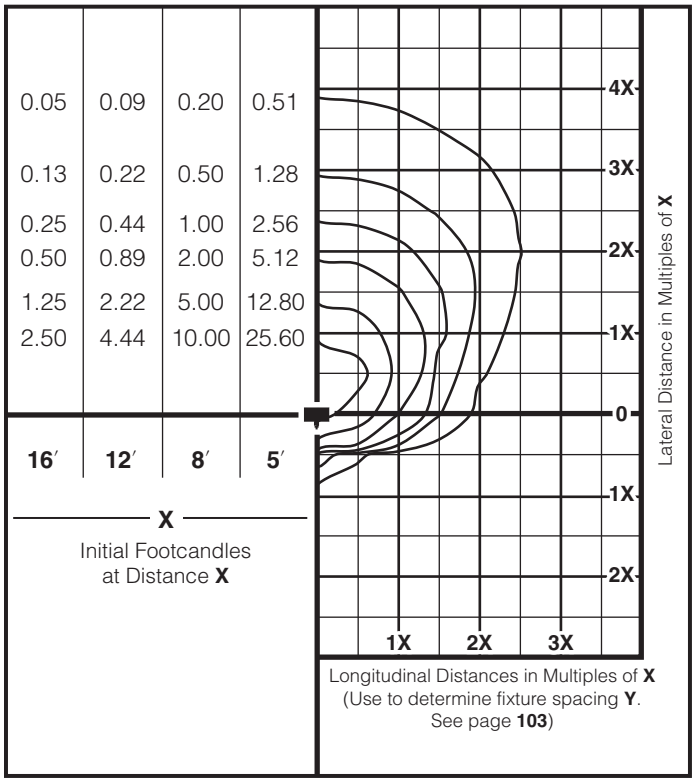
70 watt High Pressure Sodium @ 10° Aiming Angle



70 watt High Pressure Sodium @ 25° Aiming Angle



70 watt High Pressure Sodium @ 40° Aiming Angle

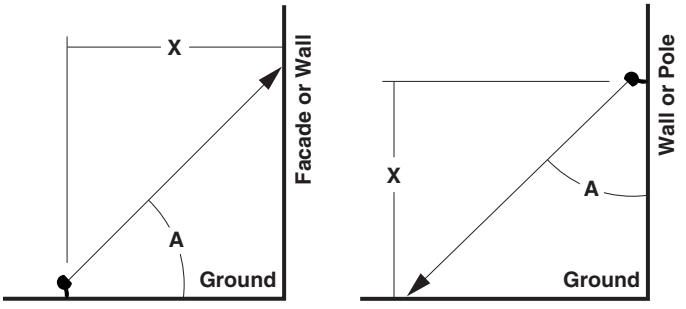


PRORATING CHART

Isofootcandle diagrams shown with 70 watt High Pressure Sodium lamp use the following prorating multipliers for other wattages:

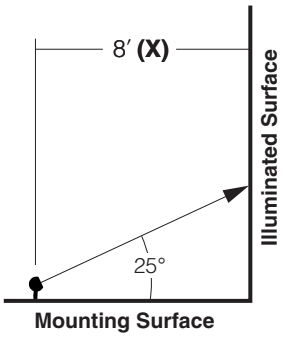
Lamp	Initial Lumens	Factor
70HPS	6,300	1.000
50HPS	4,000	0.635

Aiming Angle (A) see individual diagrams



70HPS Lateral Spacing

Wide Flood



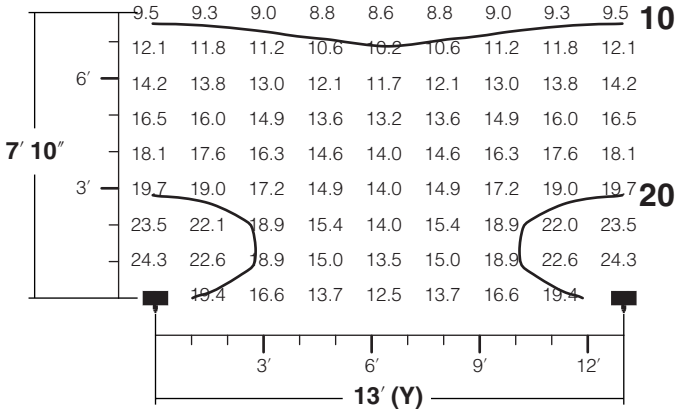
CFL1/70HPS
E-17 clear medium base
I.T.L. Test No. 43997
6,300 initial lumens
ANSI Code S-62

To calculate spacing **(Y)** for Setback Distances other than 8′ shown, multiply actual Setback Distance **(X)** by the following:

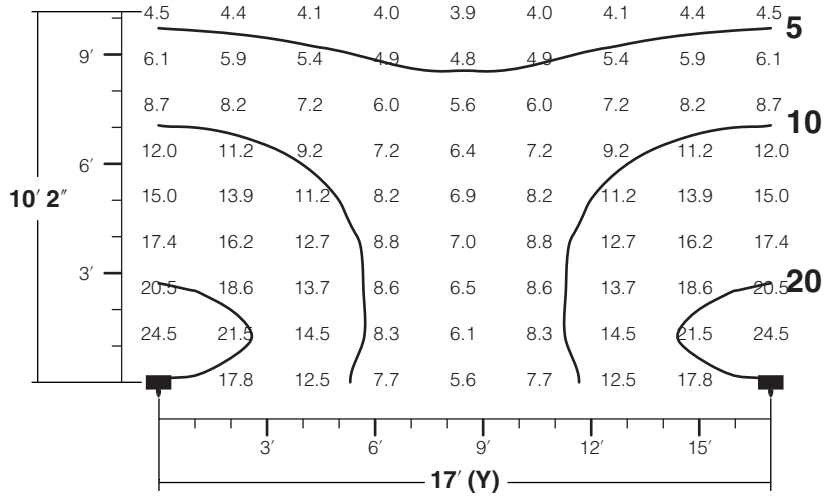
Uniformity Ratio	Factor
3:1	1.63
6:1	2.13
12:1	2.59

Example: 9′ Setback, **6:1** desired uniformity, **Y** = 9′ x 2.13 or **19.17′ (19′ 2″)**

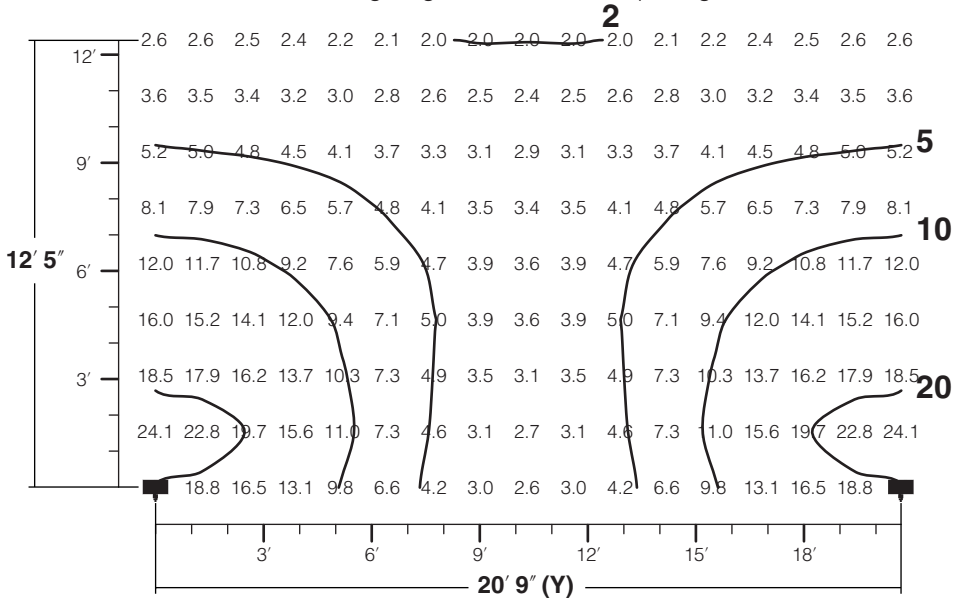
Use for optimum visual uniformity on facades, walls or signs **3:1**



Use where a slightly noticeable drop in uniformity is acceptable **6:1**



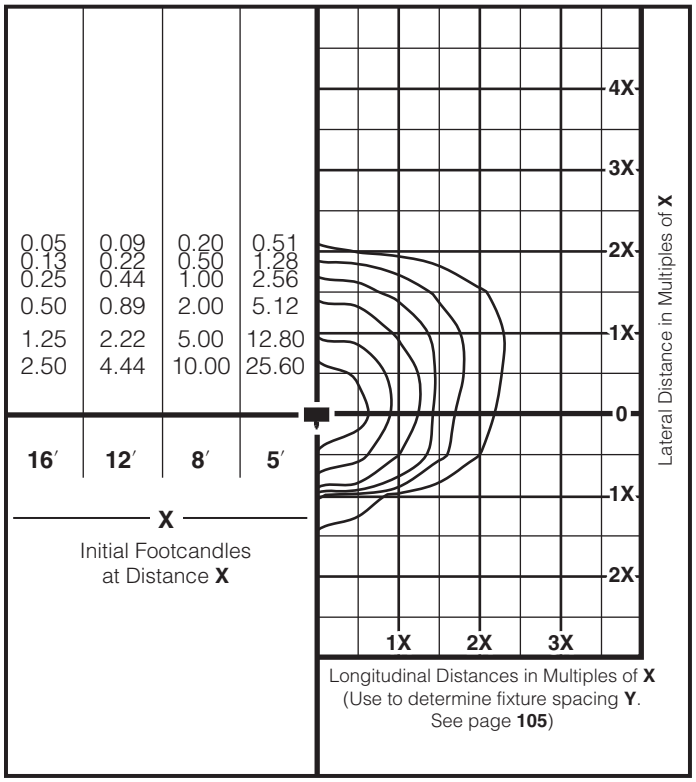
Use for area lighting where maximum spacing is desired **12:1**



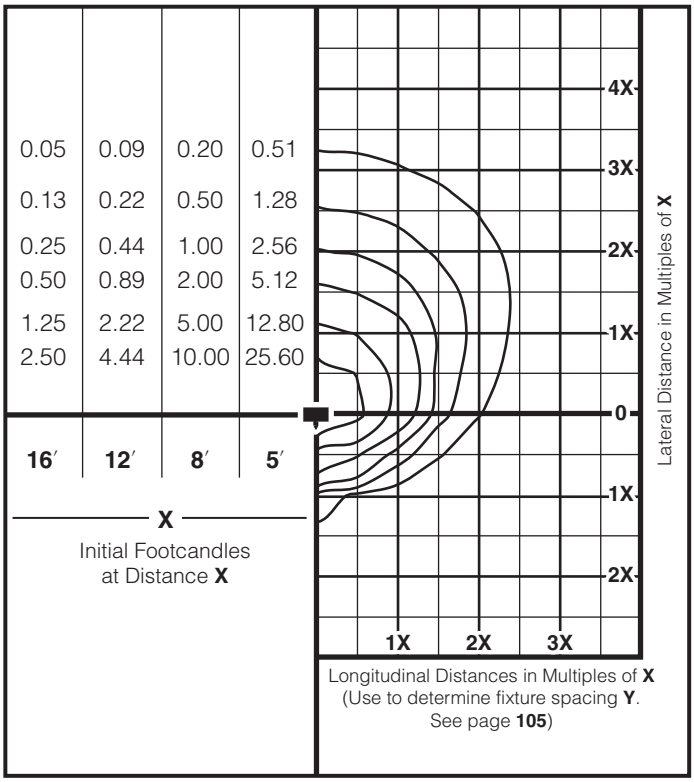
Wide Flood

70MH Isofootcandle Diagrams

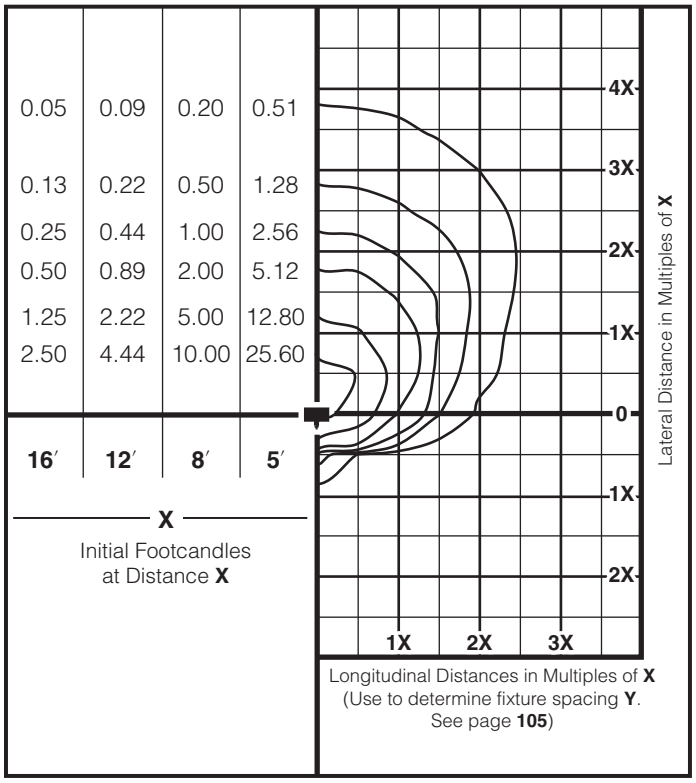
70 watt Metal Halide @ 10° Aiming Angle



70 watt Metal Halide @ 25° Aiming Angle



70 watt Metal Halide @ 40° Aiming Angle

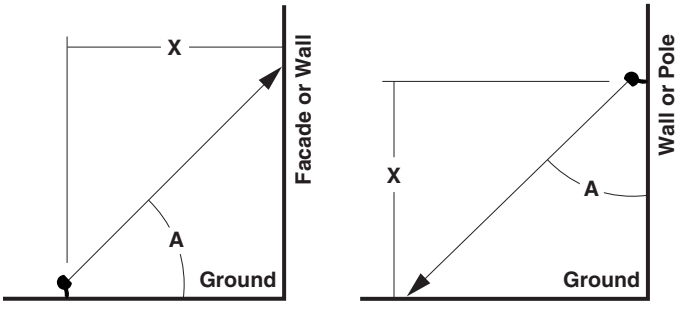


PRORATING CHART

Isofootcandle diagrams shown with 70 watt Metal Halide lamp use the following prorating multipliers for other wattages:

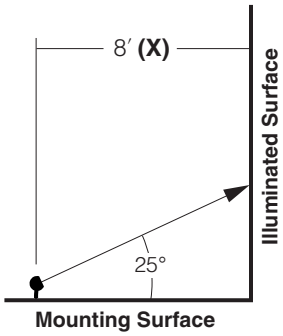
Lamp	Initial Lumens	Factor
70MH	5,150	1.000
50MH	3,060	0.594

Aiming Angle (A) see individual diagrams



70MH Lateral Spacing

Wide Flood



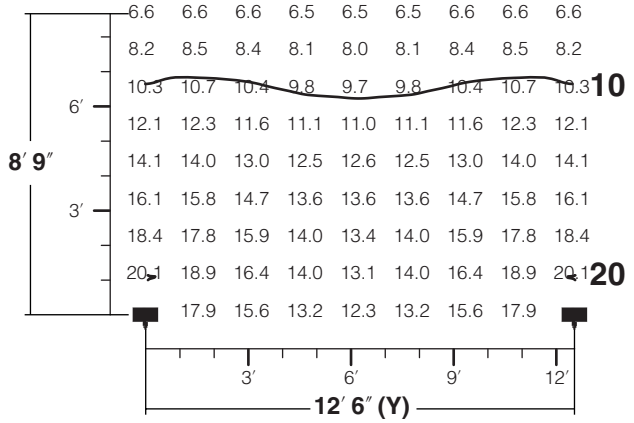
CFL1/70MH
E-17 clear medium base
I.T.L. Test No. 44062
5,150 initial lumens
ANSI Code S-62

To calculate spacing **(Y)** for Setback Distances other than 8′ shown, multiply actual Setback Distance **(X)** by the following:

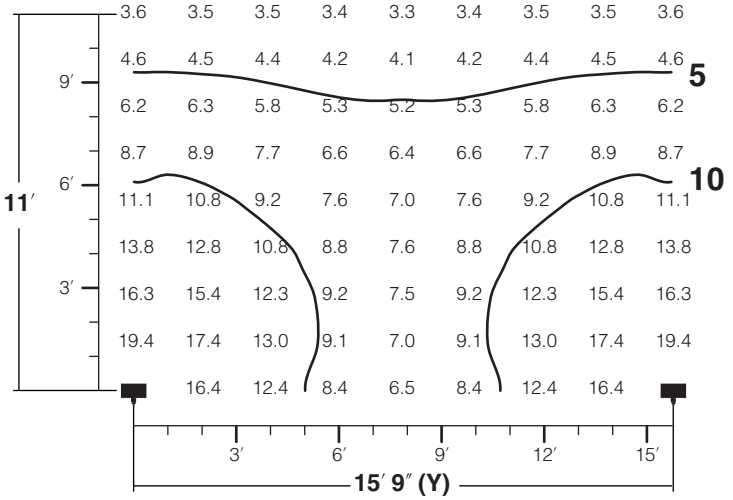
Uniformity Ratio	Factor
3:1	1.56
6:1	1.97
12:1	2.56

Example: 9′ Setback, **6:1** desired uniformity, **Y** = 9′ x 1.97 or **17.73′ (17′ 9″)**

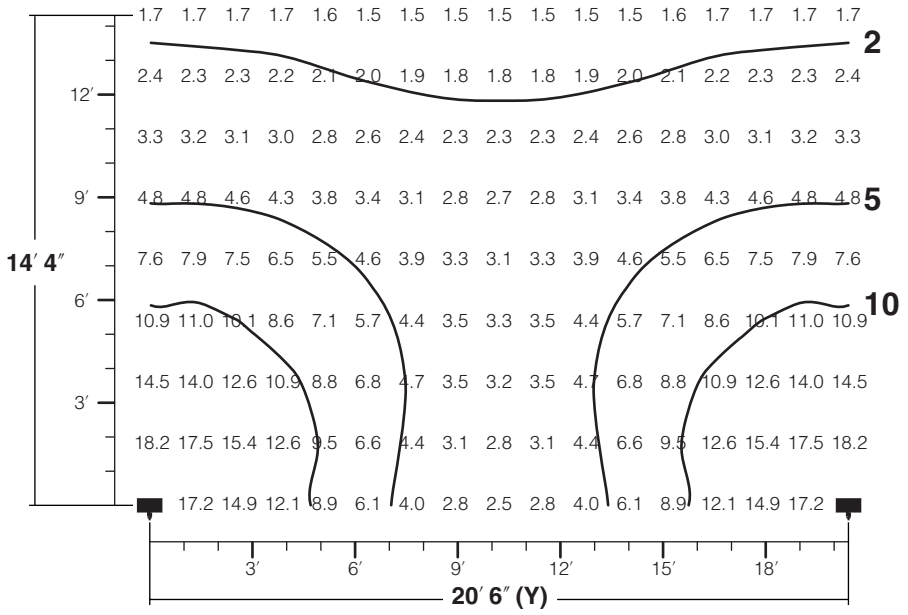
Use for optimum visual uniformity on facades, walls or signs **3:1**



Use where a slightly noticeable drop in uniformity is acceptable **6:1**



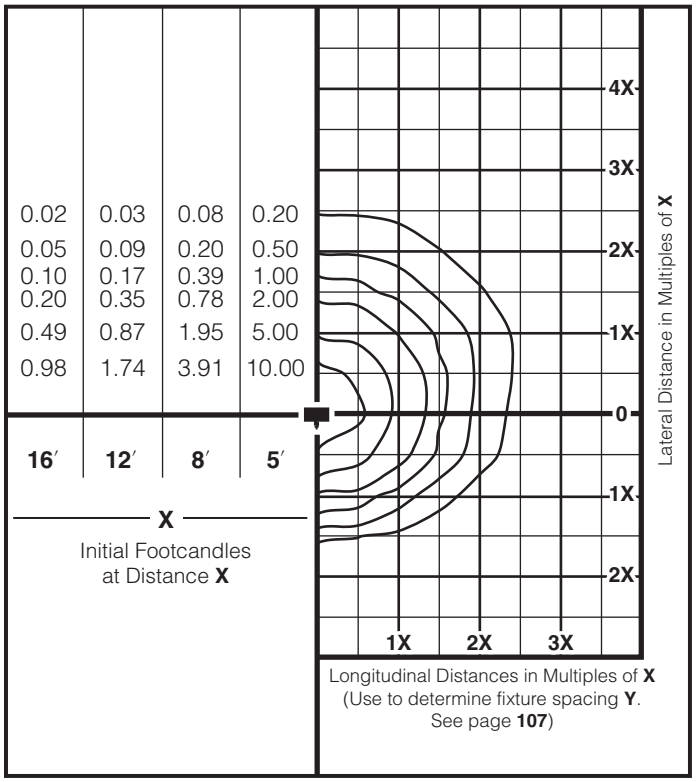
Use for area lighting where maximum spacing is desired **12:1**



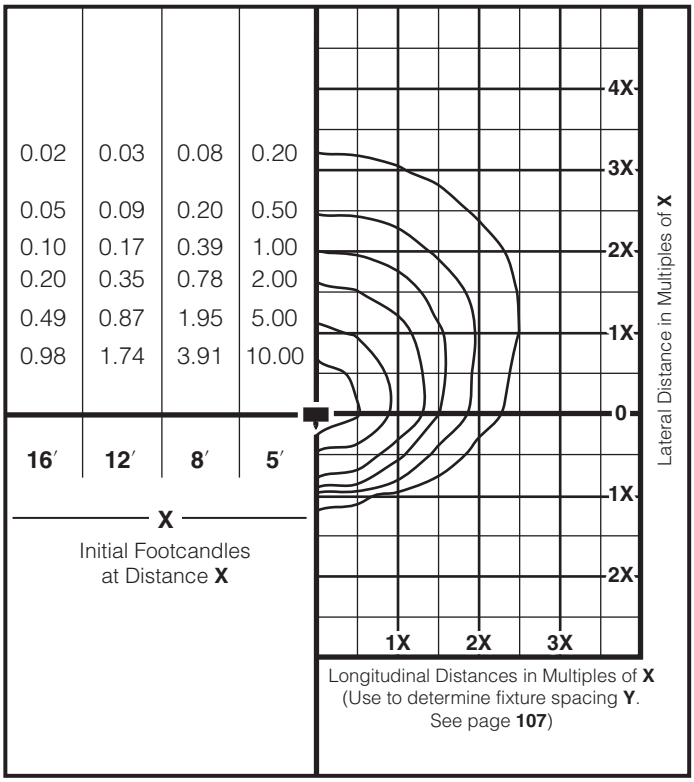
Wide Flood

42PL Isofootcandle Diagrams

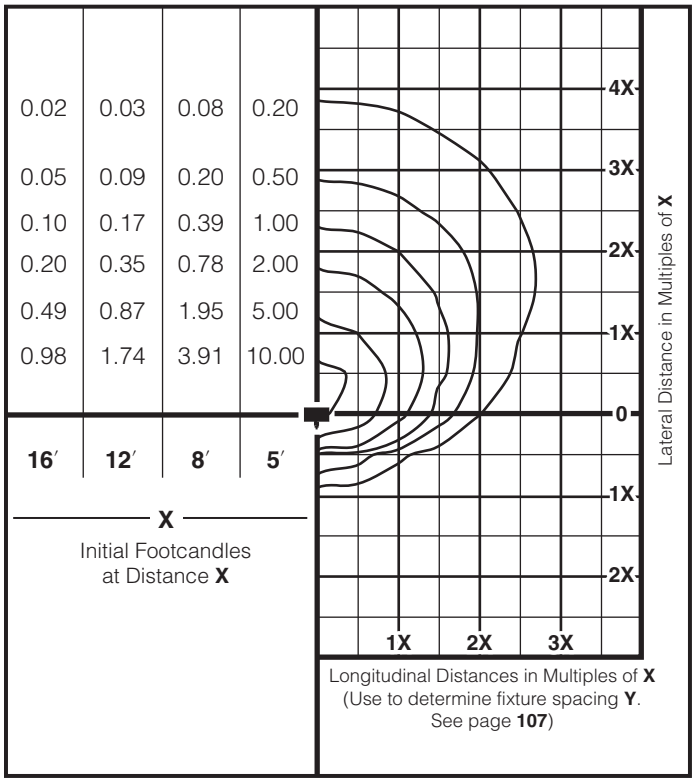
42 watt Compact Fluorescent @ 10° Aiming Angle



42 watt Compact Fluorescent @ 25° Aiming Angle



42 watt Compact Fluorescent @ 40° Aiming Angle

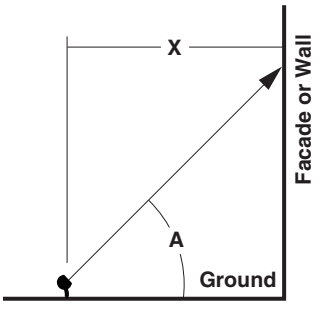


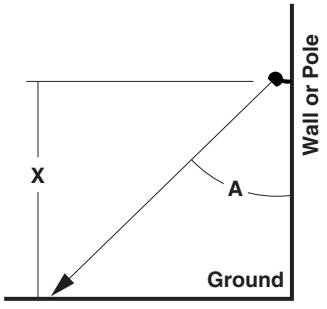
PRORATING CHART

Isofootcandle diagrams shown with 42 watt Compact Fluorescent lamp use the following prorating multipliers for other wattages:

Lamp	Initial Lumens	Factor
42PL	3,200	1.000
32PL	2,400	0.750
28PL	1,600	0.500
13PL	900	0.281

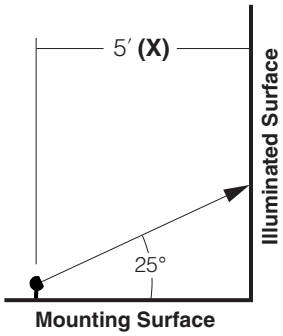
Aiming Angle (A) see individual diagrams





42PL Lateral Spacing

Wide Flood



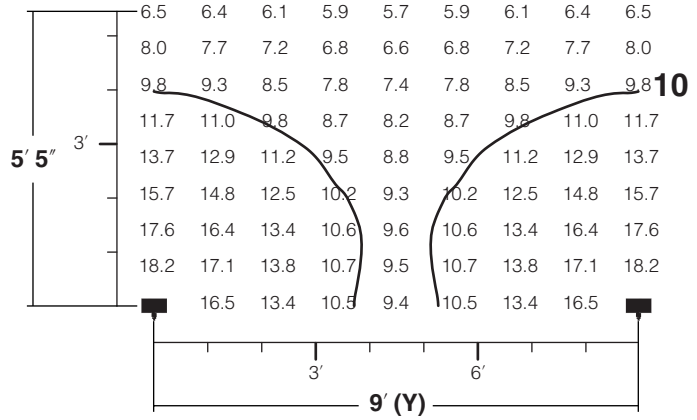
CFL1/42PL
GX24q-3 4-pin base
Test No. Kim2146
3,200 initial lumens

To calculate spacing **(Y)** for Setback Distances other than 5′ shown, multiply actual Setback Distance **(X)** by the following:

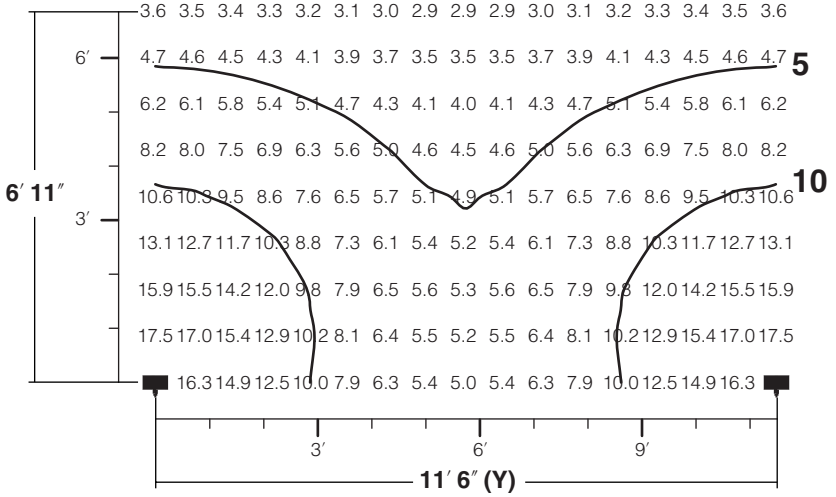
Uniformity Ratio	Factor
3:1	1.80
6:1	2.30
12:1	2.90

Example: 6′ Setback, **6:1** desired uniformity, **Y** = 6′ x 2.30 or **13.8′ (13′ 10″)**

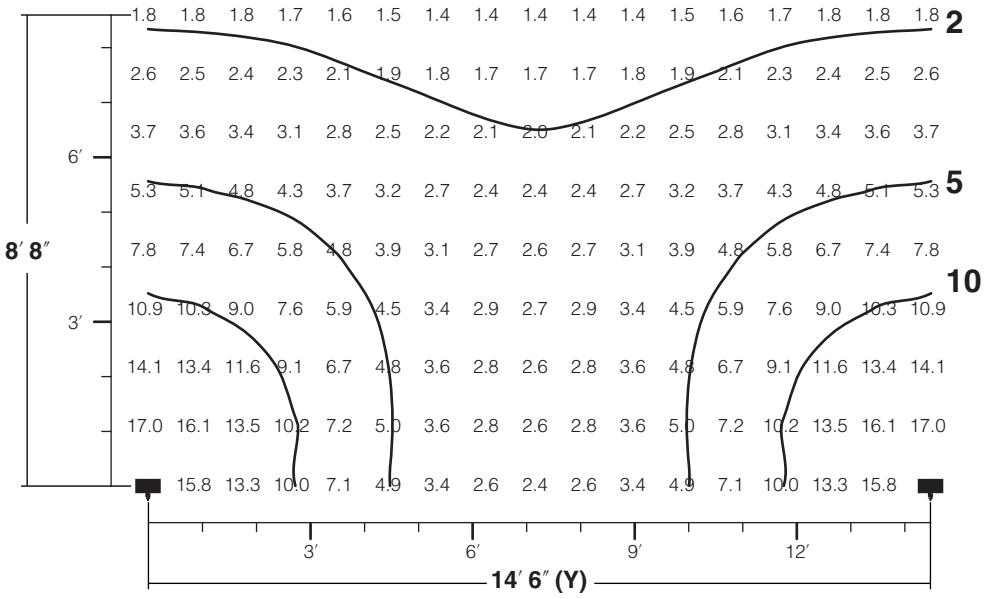
Use for optimum visual uniformity on facades, walls or signs **3:1**



Use where a slightly noticeable drop in uniformity is acceptable **6:1**



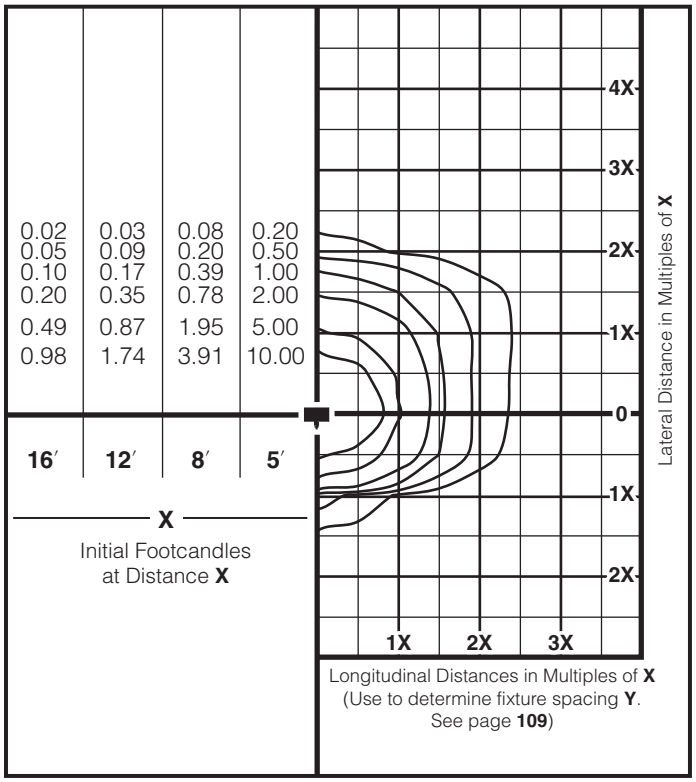
Use for area lighting where maximum spacing is desired **12:1**



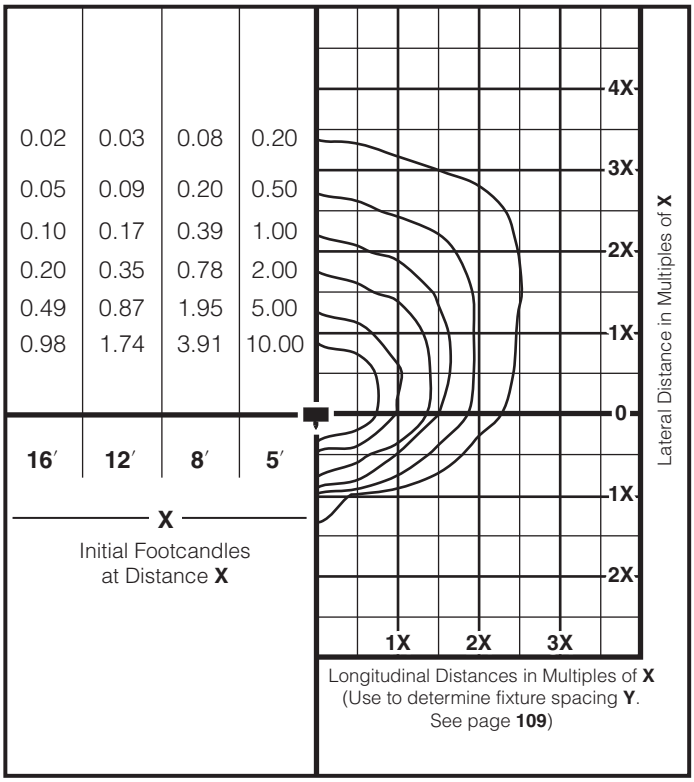
Wide Flood

150HAL Isofootcandle Diagrams

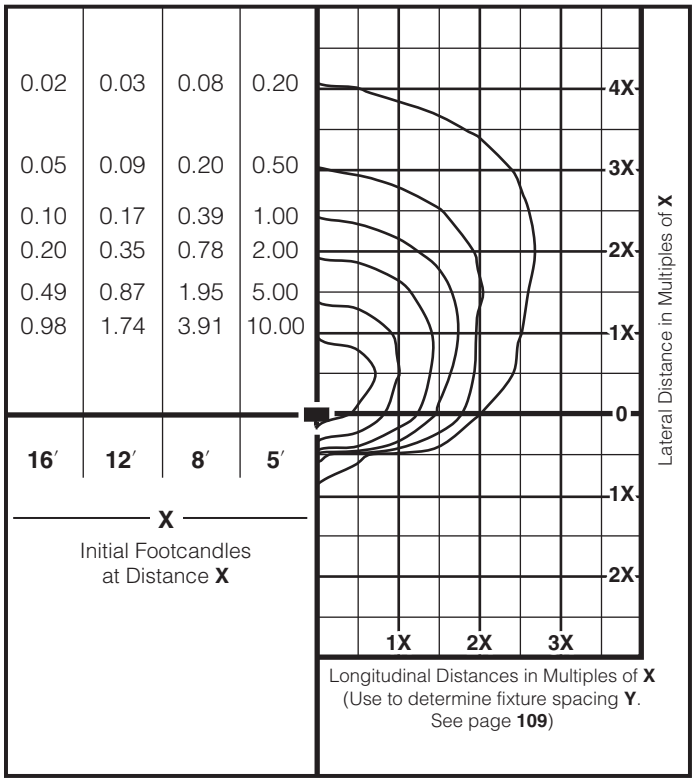
150 watt Halogen @ 10° Aiming Angle



150 watt Halogen @ 25° Aiming Angle



150 watt Halogen @ 40° Aiming Angle

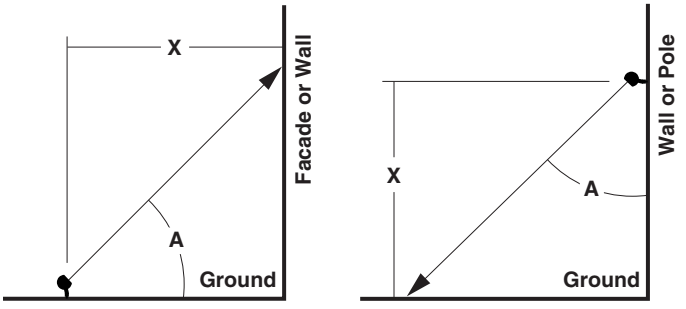


PRORATING CHART

Isofootcandle diagrams shown with 150 watt Halogen lamp use the following prorating multipliers for other wattages:

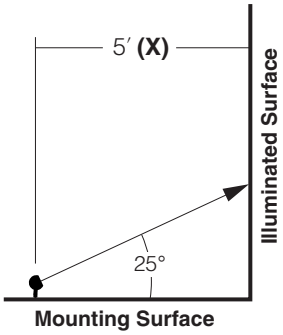
Lamp	Initial Lumens	Factor
150HAL	2,800	1.000
100HAL	2,500	0.893

Aiming Angle (A) see individual diagrams



150HAL Lateral Spacing

Wide Flood



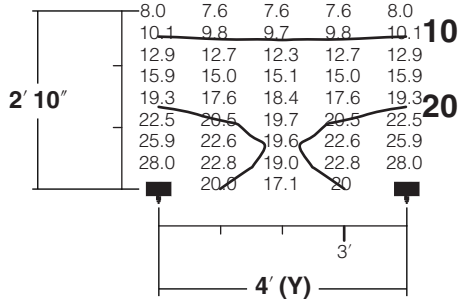
CFL1/150HAL
T-4 Mini-can base
I.T.L. Test No. 44239
2,800 initial lumens

To calculate spacing **(Y)** for Setback Distances other than 5′ shown, multiply actual Setback Distance **(X)** by the following:

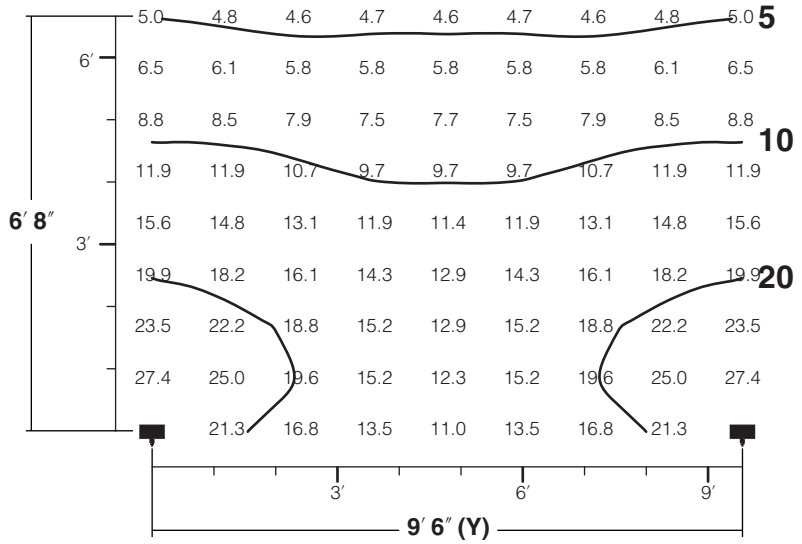
Uniformity Ratio	Factor
3:1	0.80
6:1	1.90
12:1	2.50

Example: 6′ Setback, **6:1** desired uniformity, **Y** = 6′ x 1.90 or **11.4′ (11′ 5″)**

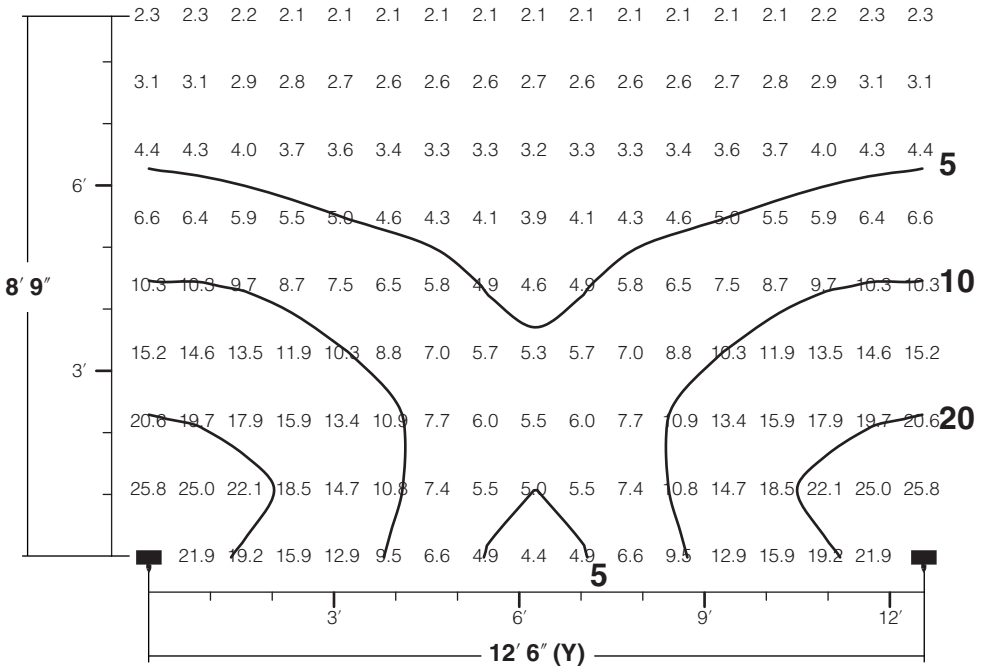
Use for optimum visual uniformity on facades, walls or signs **3:1**



Use where a slightly noticeable drop in uniformity is acceptable **6:1**



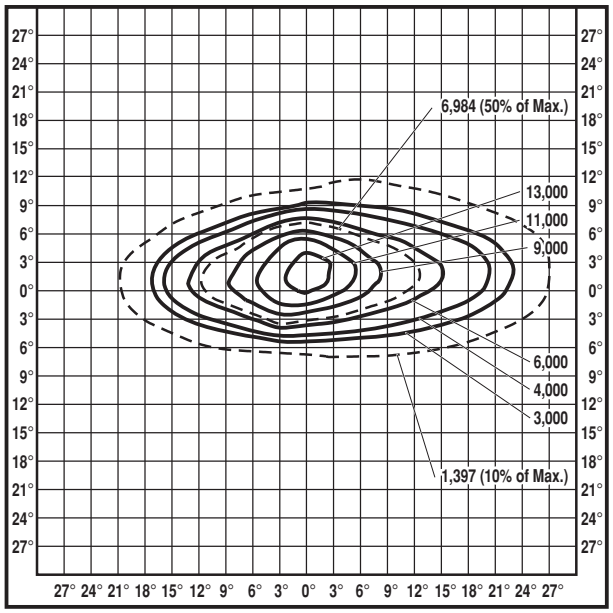
Use for area lighting where maximum spacing is desired **12:1**



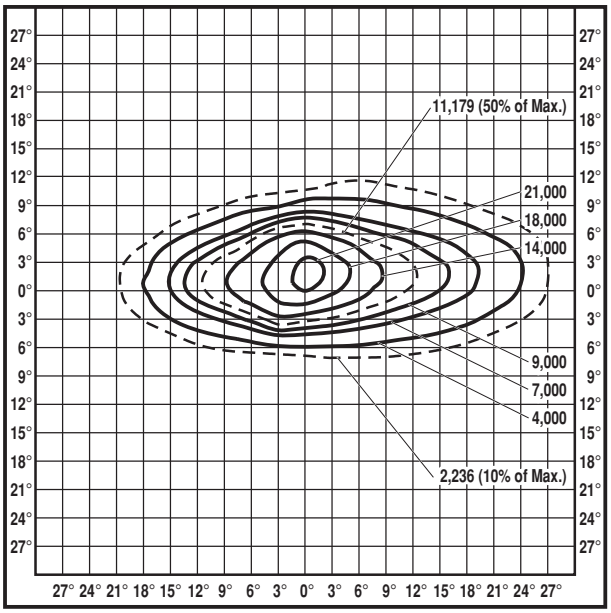
Narrow Spot

Isocandela Diagrams

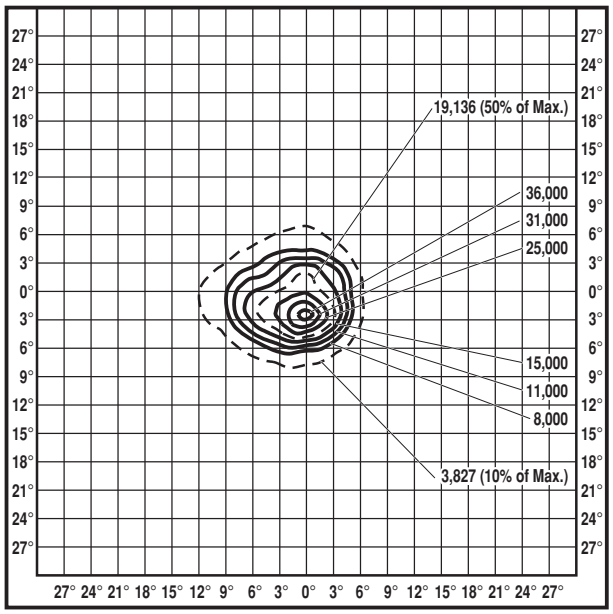
50 watt High Pressure Sodium
E-17 clear medium base
Test No. Kim2157
4,000 initial lumens
ANSI Code S-68
I.E.S. Type: 4H x 2V
Field Angle: 47.8° H x 18.6° V
(10% max.)
Beam Angle: 24.2° H x 10.4° V
(50% max.)



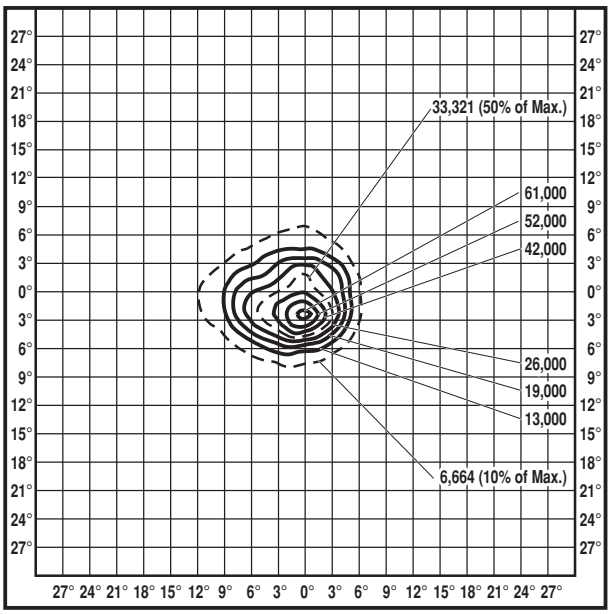
70 watt High Pressure Sodium
E-17 clear medium base
I.T.L. Test No. 50201
6,300 initial lumens
ANSI Code S-62
I.E.S. Type: 4H x 2V
Field Angle: 47.7° H x 18.5° V
(10% max.)
Beam Angle: 23.7° H x 10.3° V
(50% max.)



50 watt Metal Halide
E-17 clear medium base
Test No. Kim2158
3,060 initial lumens
ANSI Code M-110
I.E.S. Type: 1H x 1V
Field Angle: 16.7° H x 14.8° V
(10% max.)
Beam Angle: 8.6° H x 6.9° V
(50% max.)



70 watt Metal Halide
E-17 clear medium base
I.T.L. Test No. 50200
5,150 initial lumens
ANSI Code M-98
I.E.S. Type: 1H x 1V
Field Angle: 16.6° H x 14.6° V
(10% max.)
Beam Angle: 8.3° H x 6.7° V
(50% max.)

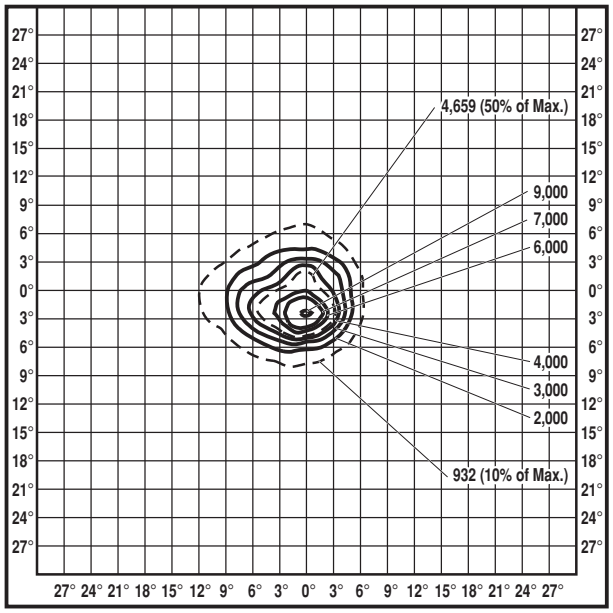


Isocandela Diagrams

Narrow Spot

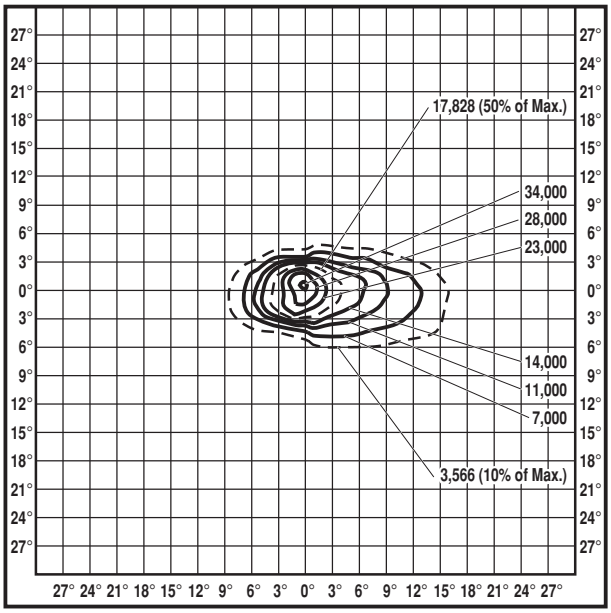
60 watt Incandescent
T-10 I.F. medium base
Test No. Kim2159
745 initial lumens

I.E.S. Type: 1H x 1V
Field Angle: 16.7° H x 14.8° V
(10% max.)
Beam Angle: 8.6° H x 6.9° V
(50% max.)



150 watt Halogen
T-4 Mini-can base
I.T.L. Test No. 50202
2,800 initial lumens

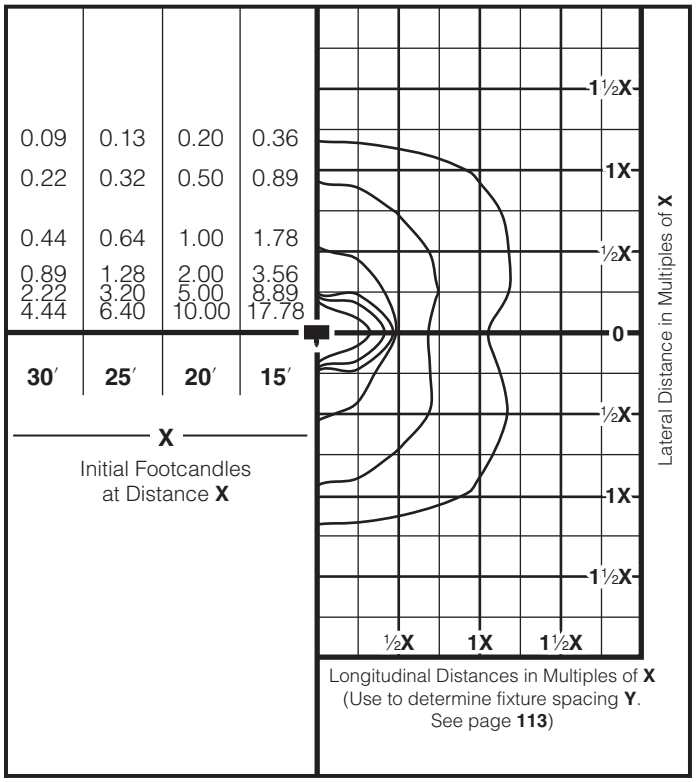
I.E.S. Type: 2H x 1V
Field Angle: 24.5° H x 10.7° V
(10% max.)
Beam Angle: 7.7° H x 5.6° V
(50% max.)



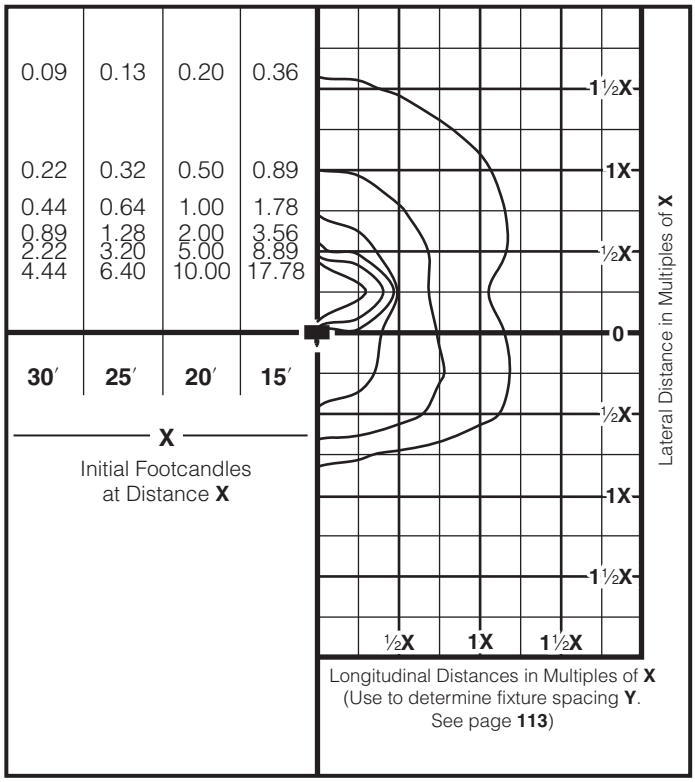
Narrow Spot

70HPS Isofootcandle Diagrams

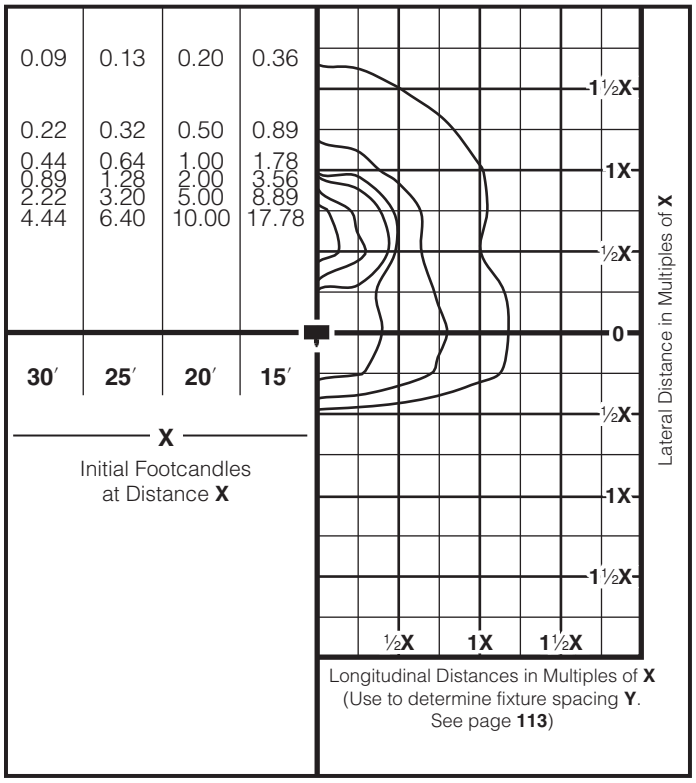
70 watt High Pressure Sodium @ 0° Aiming Angle



70 watt High Pressure Sodium @ 15° Aiming Angle



70 watt High Pressure Sodium @ 30° Aiming Angle

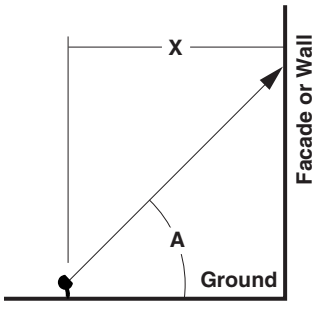


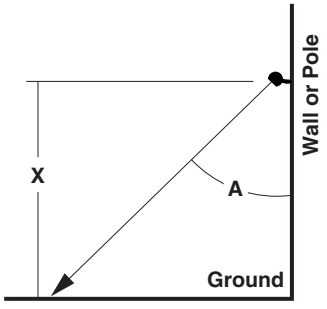
PRORATING CHART

Isofootcandle diagrams shown with 70 watt High Pressure Sodium lamp use the following prorating multipliers for other wattages:

Lamp	Initial Lumens	Factor
70HPS	6,300	1.000
50HPS	4,000	0.635

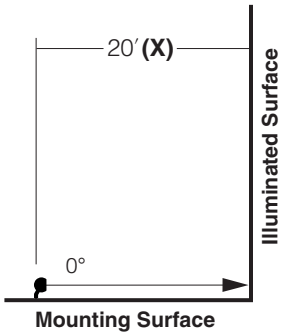
Aiming Angle (A) see individual diagrams





70HPS Lateral Spacing

Narrow Spot



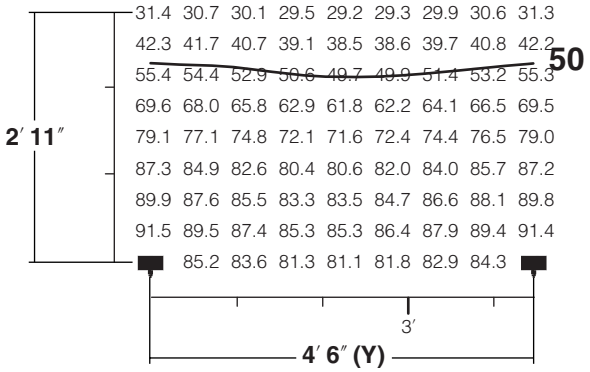
CFL6/70HPS
E-17 clear medium base
I.T.L. Test No. 50201
6,300 initial lumens
ANSI Code S-62

To calculate spacing **(Y)** for Setback Distances other than 20′ shown, multiply actual Setback Distance **(X)** by the following:

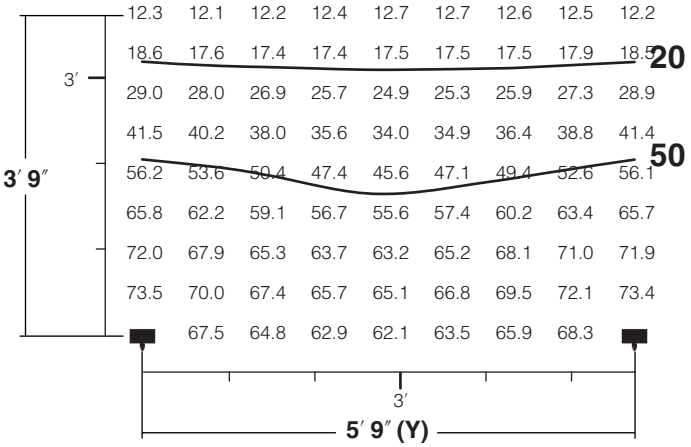
Uniformity Ratio	Factor
3:1	0.23
6:1	0.29
12:1	0.50

Example: 21′ Setback, **6:1** desired uniformity, **Y** = 21′ x 0.29 or **6.09′ (6′ 1″)**

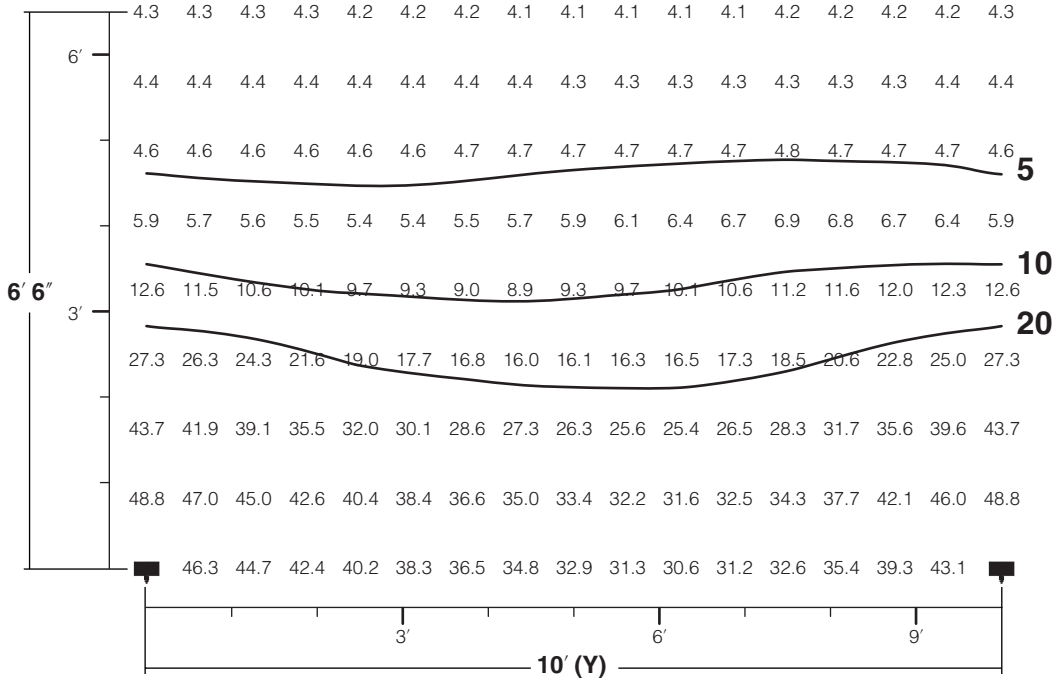
Use for optimum visual uniformity on facades, walls or signs **3:1**



Use where a slightly noticeable drop in uniformity is acceptable **6:1**



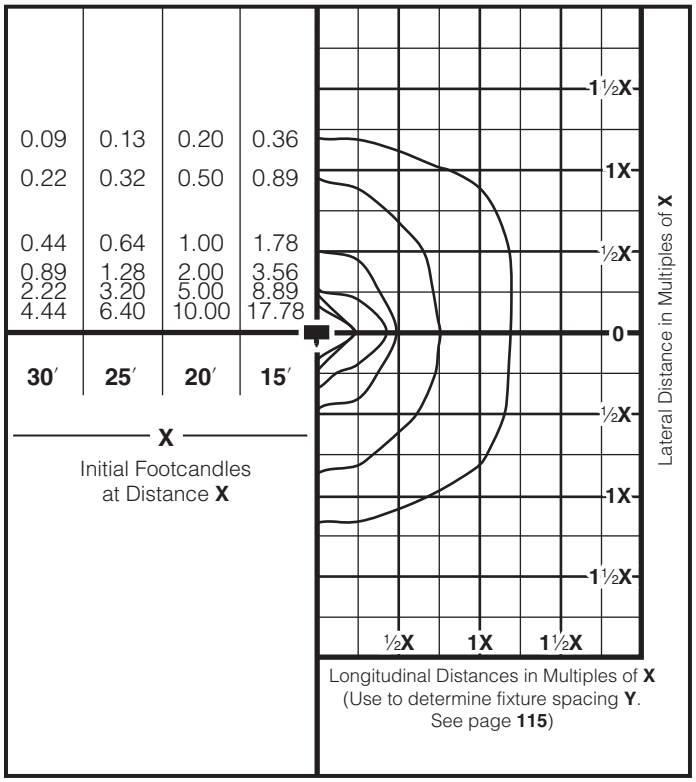
Use for area lighting where maximum spacing is desired **12:1**



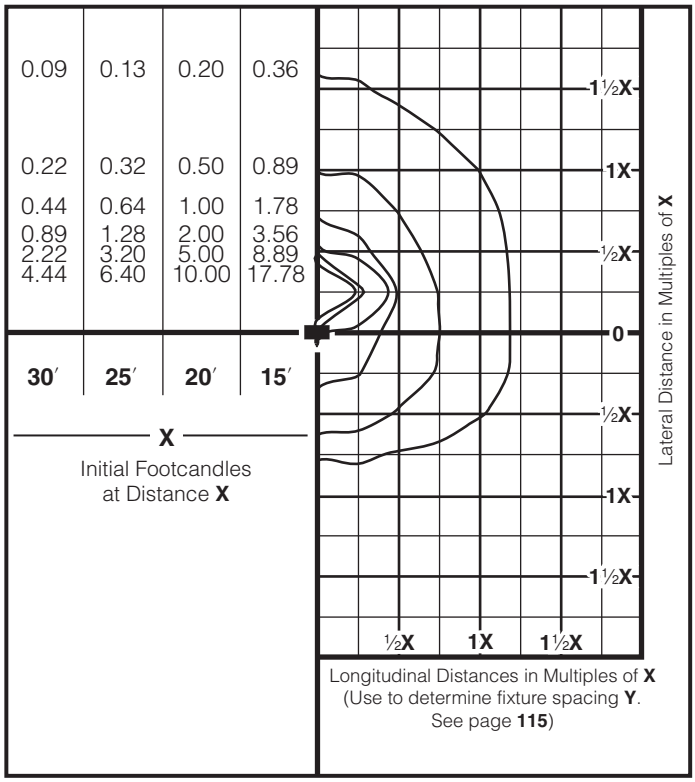
Narrow Spot

70MH Isofootcandle Diagrams

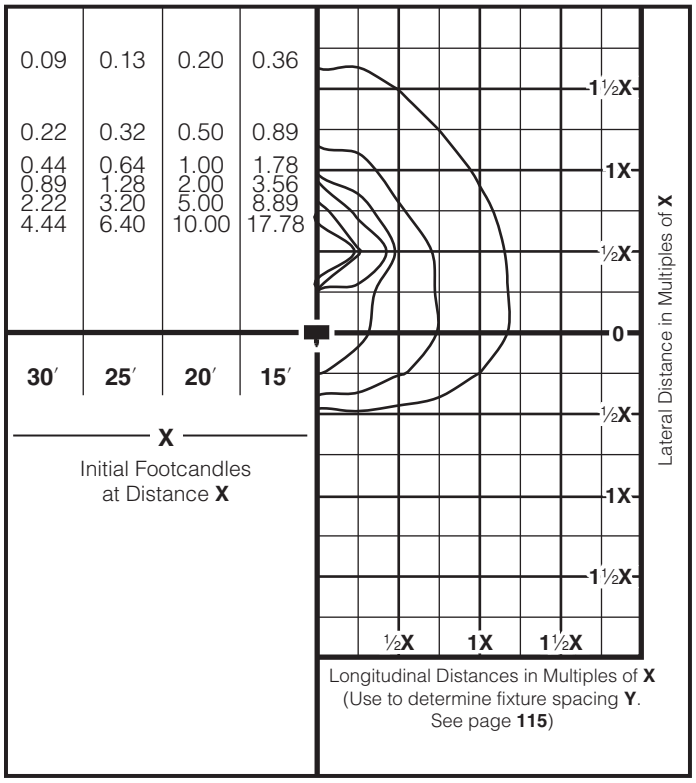
70 watt Metal Halide @ 0° Aiming Angle



70 watt Metal Halide @ 15° Aiming Angle



70 watt Metal Halide @ 30° Aiming Angle

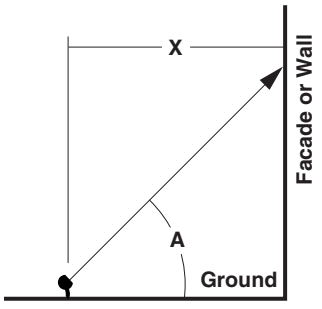


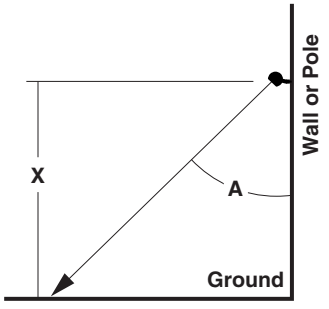
PRORATING CHART

Isofootcandle diagrams shown with 70 watt Metal Halide lamp use the following prorating multipliers for other wattages:

Lamp	Initial Lumens	Factor
70MH	5,150	1.000
50MH	3,060	0.594

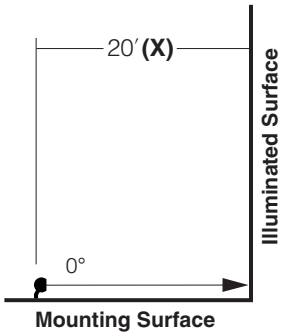
Aiming Angle (A) see individual diagrams





70MH Lateral Spacing

Narrow Spot



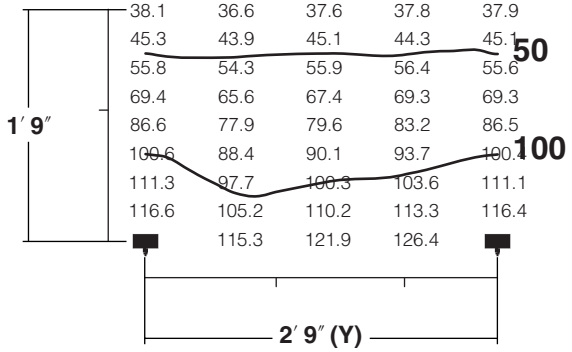
CFL6/70MH
E-17 clear medium base
I.T.L. Test No. 50201
5,150 initial lumens
ANSI Code M-98

To calculate spacing **(Y)** for Setback Distances other than 20′ shown, multiply actual Setback Distance **(X)** by the following:

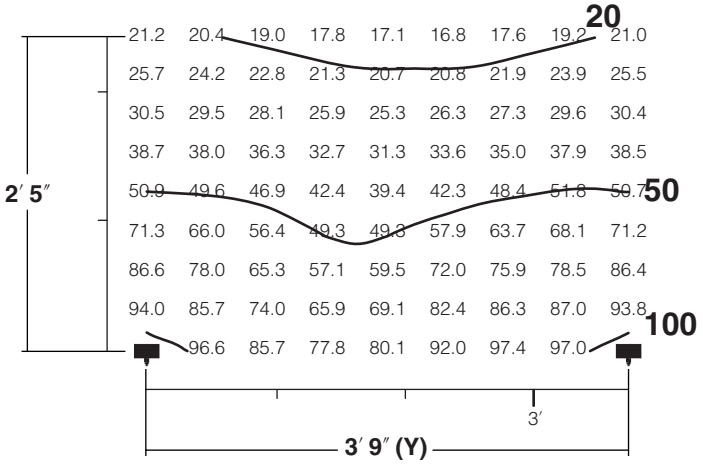
Uniformity Ratio	Factor
3:1	0.14
6:1	0.19
12:1	0.29

Example: 21′ Setback, **6:1** desired uniformity, **Y** = 21′ x 0.19 or **3.99′ (4′)**

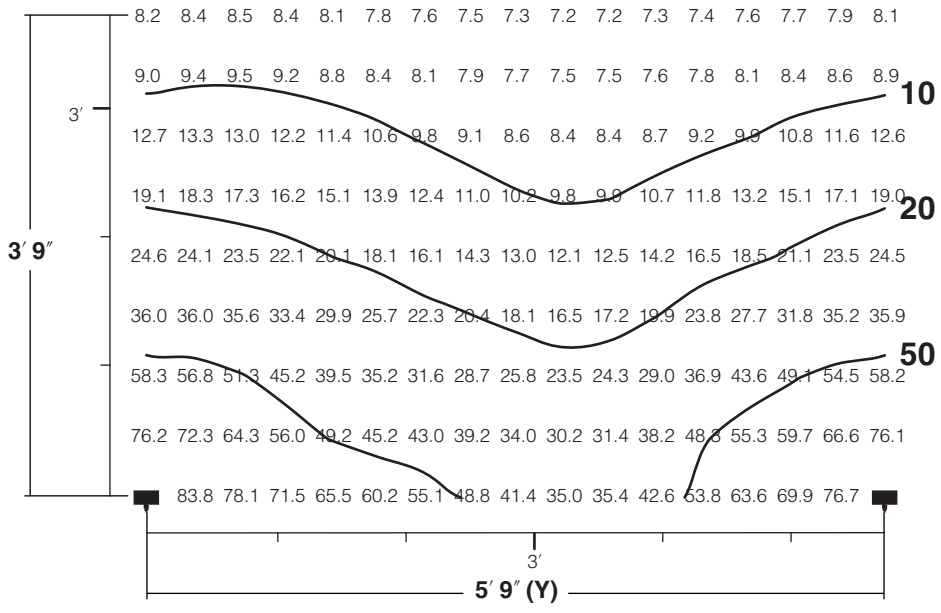
Use for optimum visual uniformity on facades, walls or signs **3:1**



Use where a slightly noticeable drop in uniformity is acceptable **6:1**



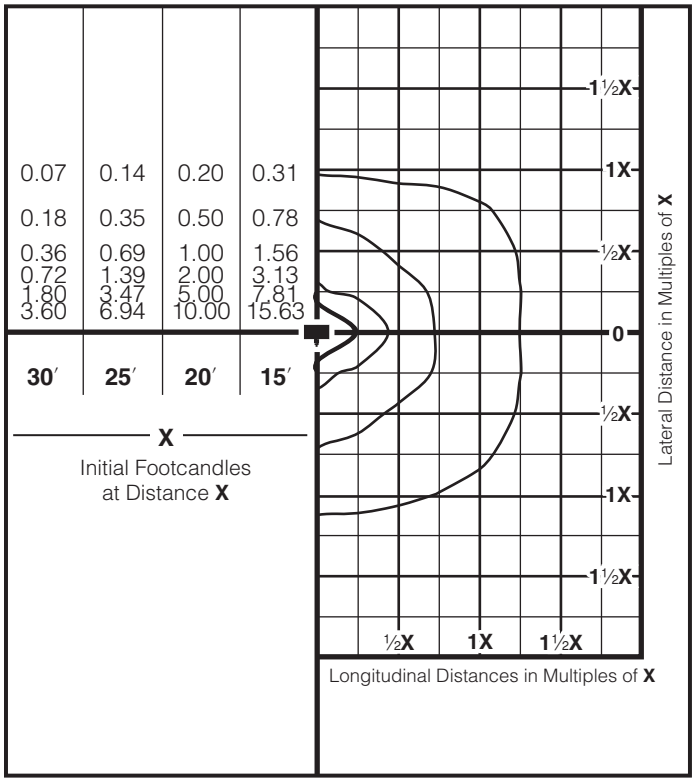
Use for area lighting where maximum spacing is desired **12:1**



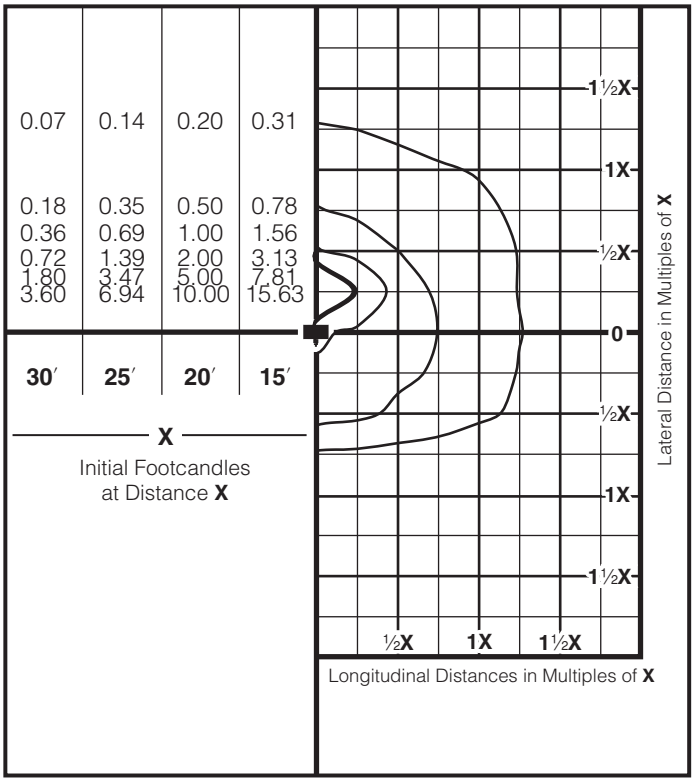
Narrow Spot

150HAL Isofootcandle Diagrams

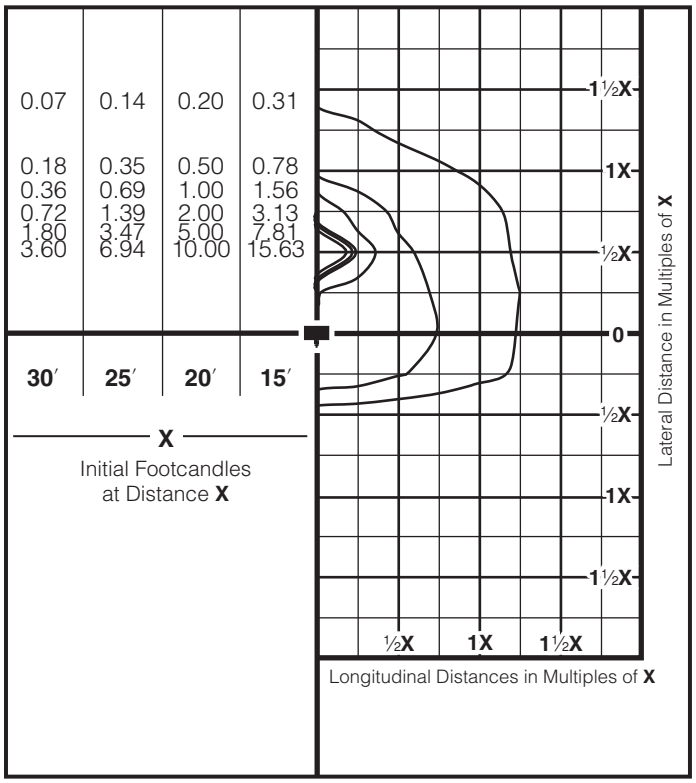
150 watt Halogen @ 0° Aiming Angle



150 watt Halogen @ 15° Aiming Angle



150 watt Halogen @ 30° Aiming Angle

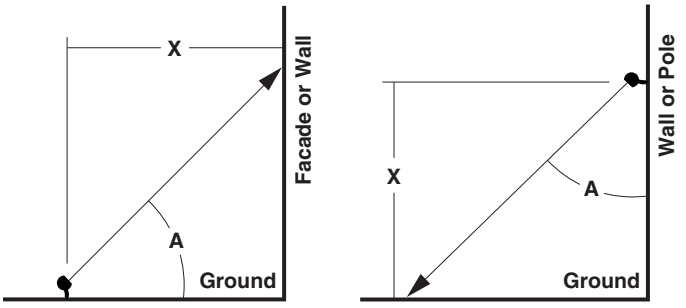


PRORATING CHART

Isofootcandle diagrams shown with 150 watt Halogen lamp use the following prorating multipliers for other wattages:

Lamp	Initial Lumens	Factor
150HAL	2,800	1.000
100HAL	2,500	0.893

Aiming Angle (A) see individual diagrams



Photometric System Design

Illuminance level required

Charts below show I.E.S. recommended illuminance in Average Maintained Footcandles. These values correspond to the values on each Isofootcandle diagram on the following "Isofootcandle Diagram" pages. Refer to the beam spread charts on pages **38-39**.

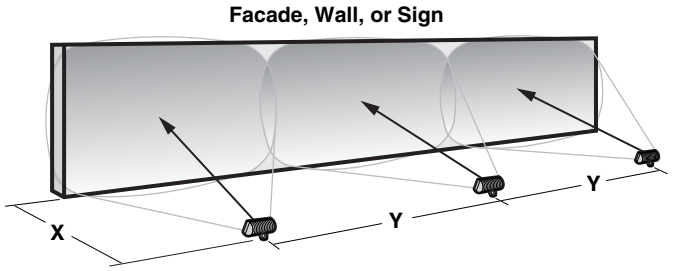
Floodlighting			Parking Lot Lighting		
Surface Material Examples See page **244** for average surface reflectance values.	Surrounding Light Level		Level of Activity	Vehicular Traffic	Pedestrian Security
	Bright	Dark		Avg. Maintained Footcandles	
	Avg. Maintained Footcandles				
Light marble, white or cream terra cotta, white plaster	**15**	**5**	Low	0.5	0.8
Concrete, tinted stucco, light gray and buff limestone, buff face brick	**20**	**10**	Medium	**1**	**2**
Common tan brick, sandstone, medium gray limestone	**30**	**15**	High	**2**	**4**
Common red brick, stained wood, dark gray brick	**50**	**20**			

Uniformity of Illumination

Dimension **X** is obtained directly from the isofootcandle diagram. Listed **X** dimensions represent the optimum range for that lamp and wattage. Dimension **Y** (fixture spacing) is simply a multiple of **X** obtained by figuring the longitudinal distance to the next fixture. The next fixture is located where its light pattern intersects the previous fixture as illustrated above.

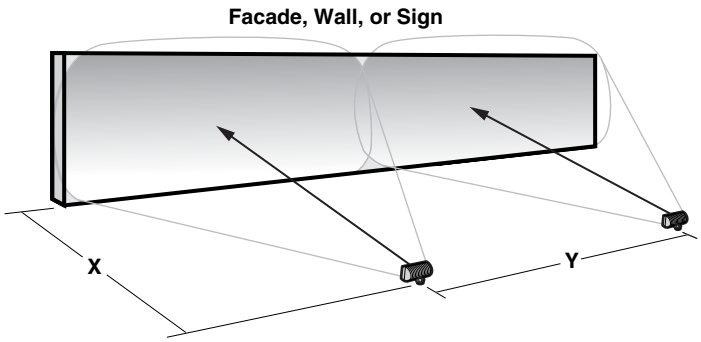
Refer to individual lateral spacing information for specific fixtures for details on determining spacing **Y** for various mounting distances **X**.

NOTE: All areas of uniformity are based on a lighting system, not individual fixtures. Therefore areas of uniformity are calculated assuming contributions from adjacent fixtures.



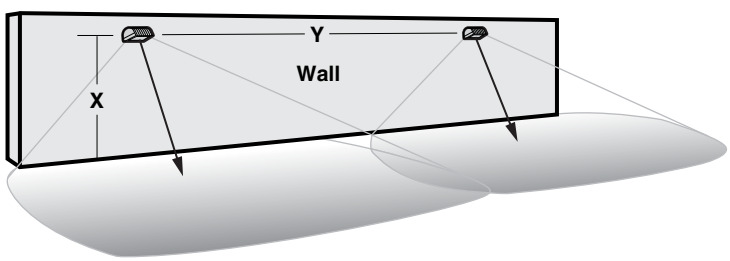
For facade, wall, or sign lighting, optimum visual uniformity is achieved when the maximum-to-minimum illumination is no greater than **3:1**.

Example:
If **X** = 10′, **Y** would = 30′



For facade, wall, or sign lighting where a slight noticeable drop in illumination between fixtures is acceptable, use **6:1** uniformity.

Example:
If **X** = 10′, **Y** would = 60′



For parking lot or area lighting, a **12:1** maximum-to-minimum uniformity will provide excellent results.

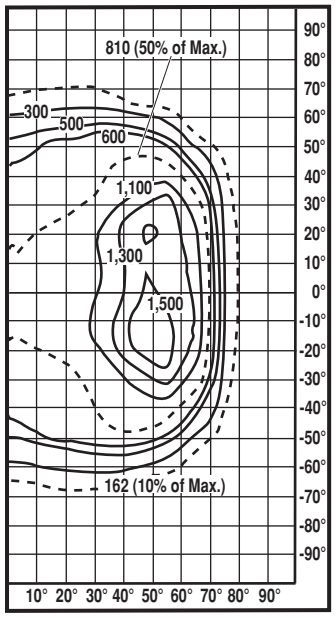
Example:
If **X** = 10′, **Y** would = 120′

[1] All **Initial Lumen** values shown are approximate and may vary from one manufacturer to another. Consult lamp manufacturer's data for exact lumen and life data.
[2] **Beam Angle:** Horizontal and vertical beam spreads interpolated due to no valid I.E.S. standard.

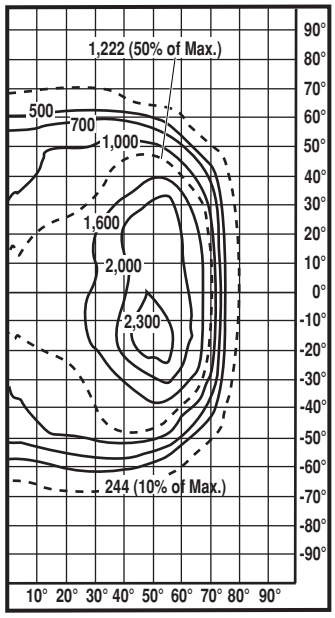
Isocandela Diagrams

Wide Flood

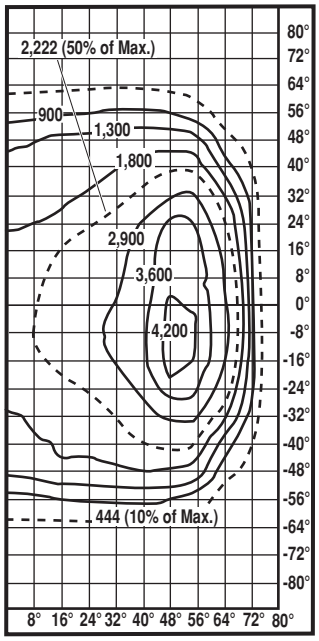
70 watt High Pressure Sodium
ED-17 clear medium base
Test No. kl00548
6,300 initial lumens[1]
ANSI Code S-62
I.E.S. Type: 7H x 7V
Field Angle: 160.0° H x 138.5° V (10% max.)
Beam Angle[2]: 139.5° H x 94.5° V (50% max.)



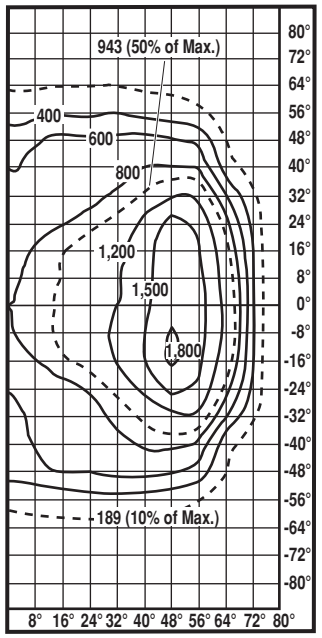
100 watt High Pressure Sodium
ED-17 clear medium base
Test No. kl00509
9,500 initial lumens[1]
ANSI Code S-54
I.E.S. Type: 7H x 7V
Field Angle: 160.0° H x 138.5° V (10% max.)
Beam Angle[2]: 139.5° H x 94.5° V (50% max.)



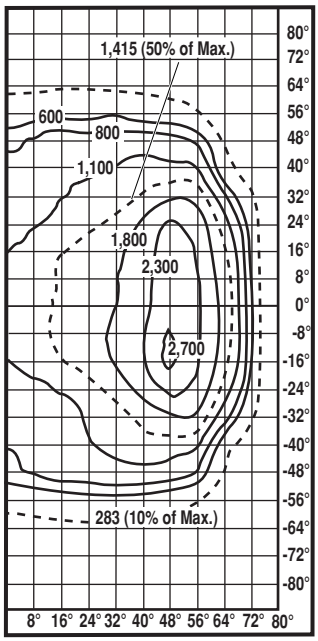
150 watt High Pressure Sodium
ED-17 clear medium base
Test No. kl00544
16,000 initial lumens[1]
ANSI Code S-55
I.E.S. Type: 7H x 6V
Field Angle: 148.8° H x 126.0° V (10% max.)
Beam Angle[2]: 135.3° H x 80.3° V (50% max.)



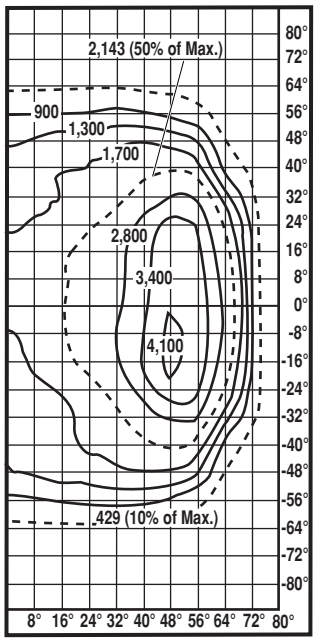
70 watt Pulse Start Metal Halide
ED-17 clear medium base
Test No. kl00546
6,200 initial lumens[1]
ANSI Code M-98
I.E.S. Type: 7H x 6V
Field Angle: 147.9° H x 125.5° V (10% max.)
Beam Angle[2]: 131.5° H x 73.0° V (50% max.)



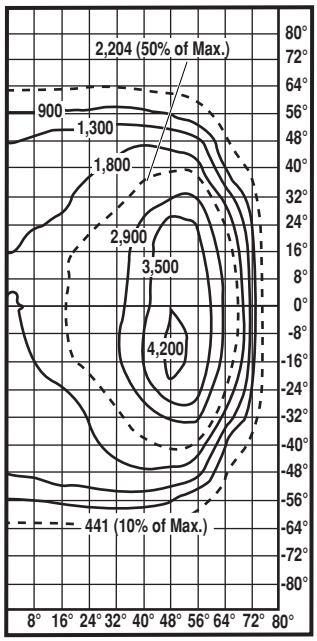
100 watt Pulse Start Metal Halide
ED-17 clear medium base
Test No. kl00543
9,300 initial lumens[1]
ANSI Code M-90
I.E.S. Type: 7H x 6V
Field Angle: 147.9° H x 125.5° V (10% max.)
Beam Angle[2]: 131.5° H x 73.0° V (50% max.)



150 watt Pulse Start Metal Halide
ED-17 clear medium base
Test No. kl00545
14,000 initial lumens[1]
ANSI Code M-102
I.E.S. Type: 7H x 6V
Field Angle: 148.5° H x 127.0° V (10% max.)
Beam Angle[2]: 133.5° H x 79.6° V (50% max.)



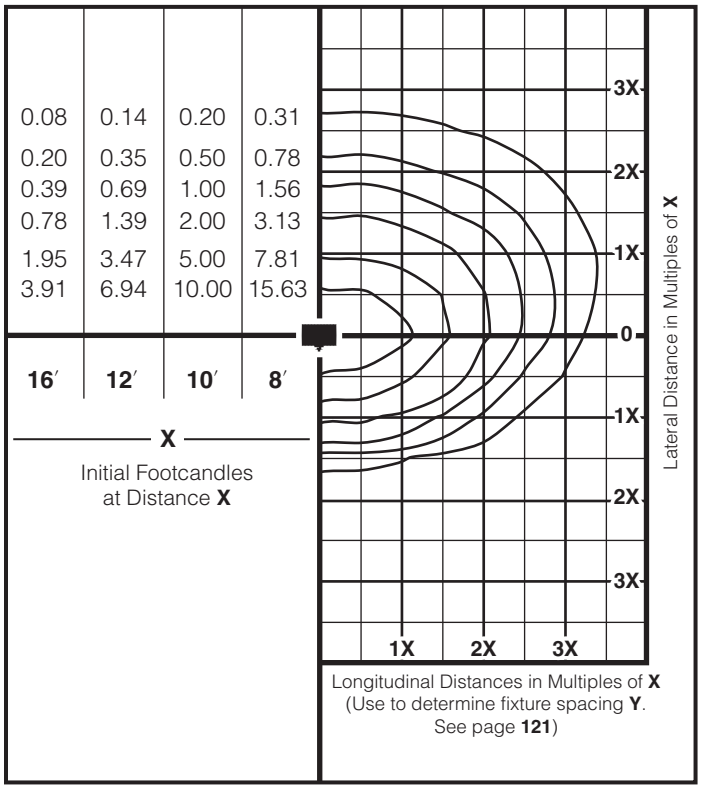
175 watt Metal Halide
ED-17 clear medium base
Test No. kl00542
14,400 initial lumens[1]
ANSI Code M-57
I.E.S. Type: 7H x 6V
Field Angle: 148.5° H x 127.0° V (10% max.)
Beam Angle[2]: 133.5° H x 79.6° V (50% max.)



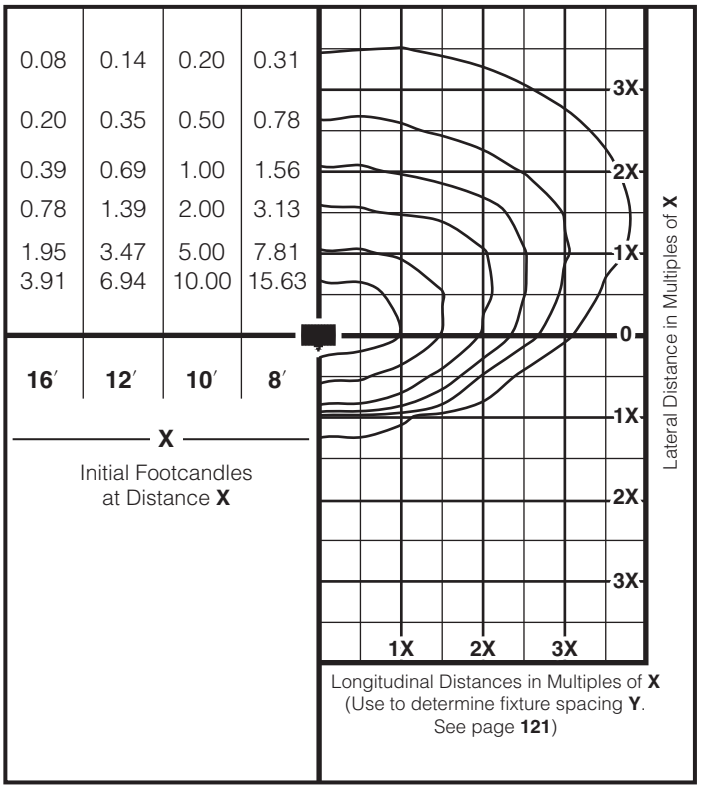
Wide Flood

150HPS Isofootcandle Diagrams

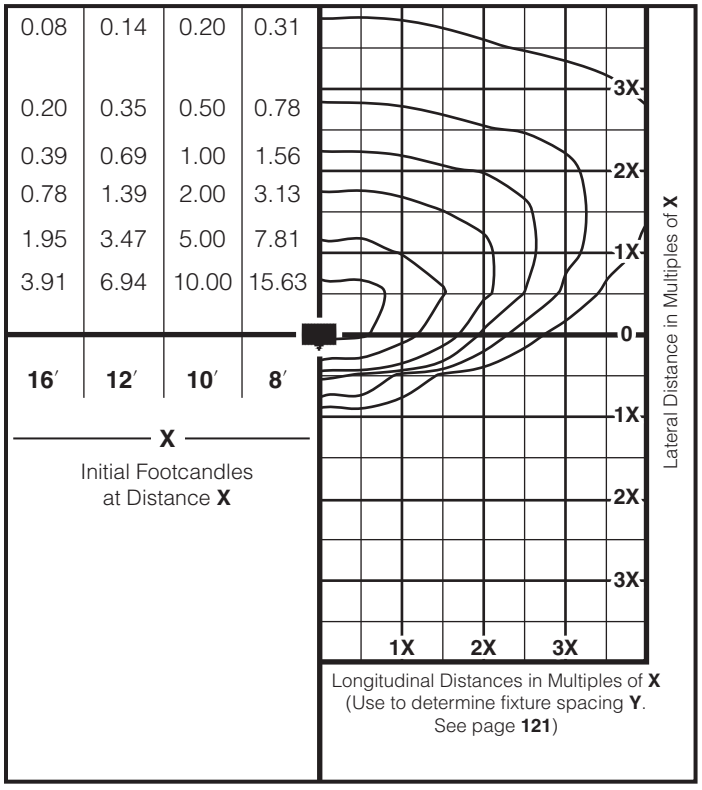
150 watt High Pressure Sodium @ 10° Aiming Angle



150 watt High Pressure Sodium @ 25° Aiming Angle



150 watt High Pressure Sodium @ 40° Aiming Angle

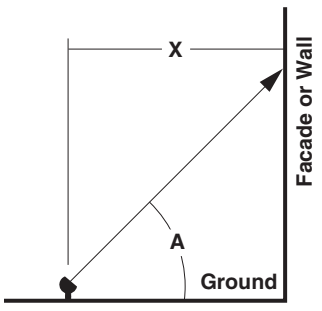


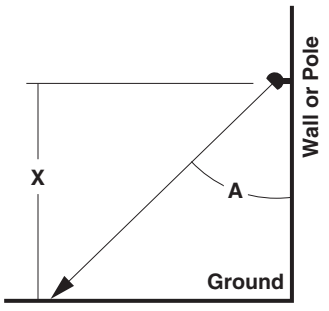
PRORATING CHART

Isofootcandle diagrams shown with 150 watt High Pressure Sodium lamp use the following prorating multipliers for other wattages:

Lamp	Initial Lumens	Factor
150HPS	16,000	1.000
100HPS	9,500	0.594
70HPS	6,300	0.394

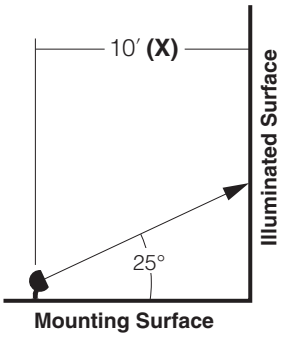
Aiming Angle (A) see individual diagrams





150HPS Lateral Spacing

Wide Flood



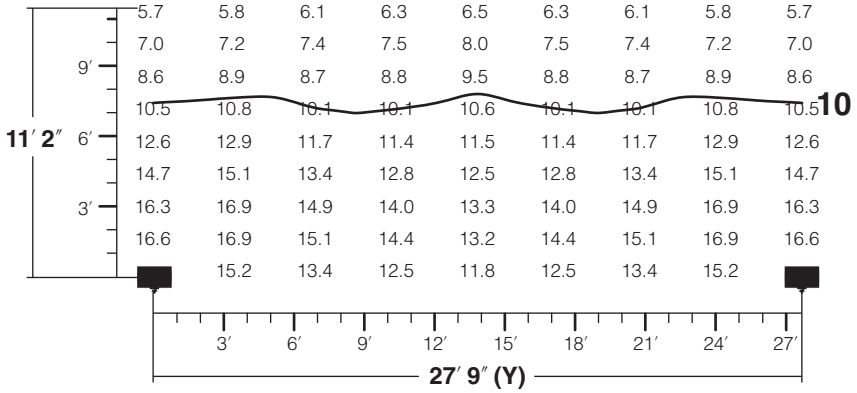
AFL11/150HPS
ED-17 clear medium base
Photometric Test No. KL00544
16,000 initial lumens
ANSI Code S-55

To calculate spacing **(Y)** for Setback Distances other than 10′ shown, multiply actual Setback Distance **(X)** by the following:

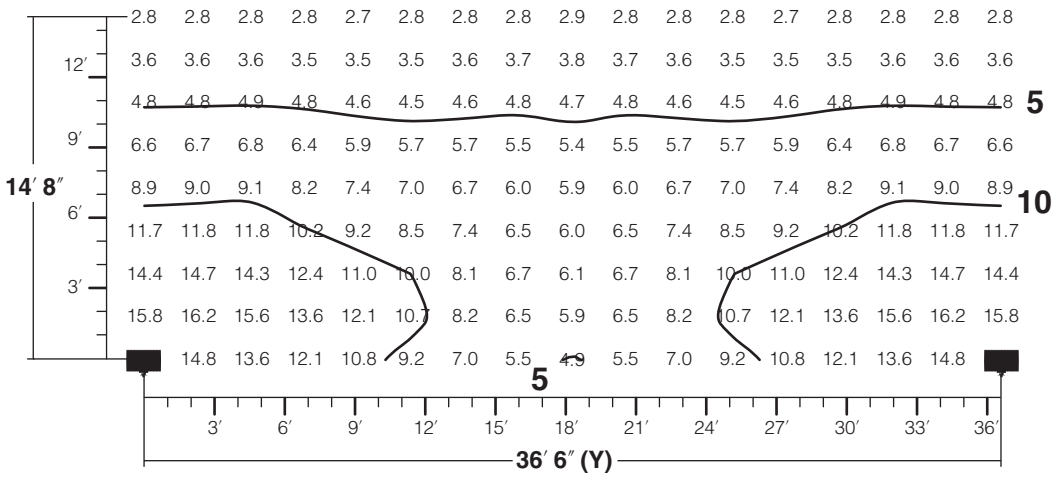
Uniformity Ratio	Factor
3:1	2.58
6:1	3.60
12:1	4.65

Example: 11′ Setback, **6:1** desired uniformity, **Y** = 11′ x 3.60 or **39.6′ (39′ 7″)**

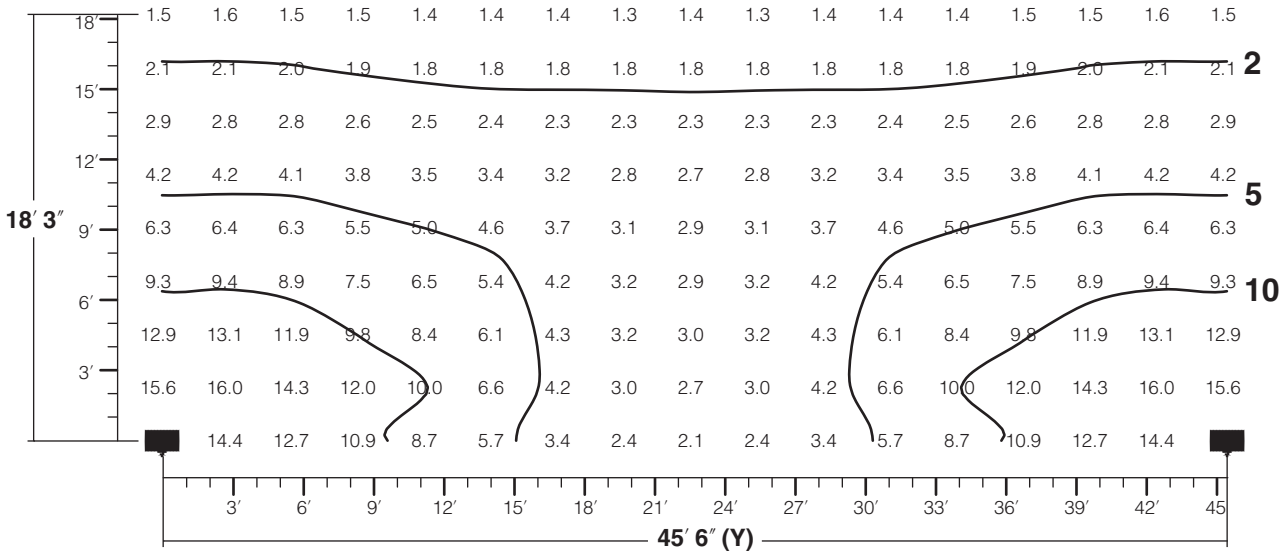
Use for optimum visual uniformity on facades, walls or signs **3:1**



Use where a slightly noticeable drop in uniformity is acceptable **6:1**



Use for area lighting where maximum spacing is desired **12:1**

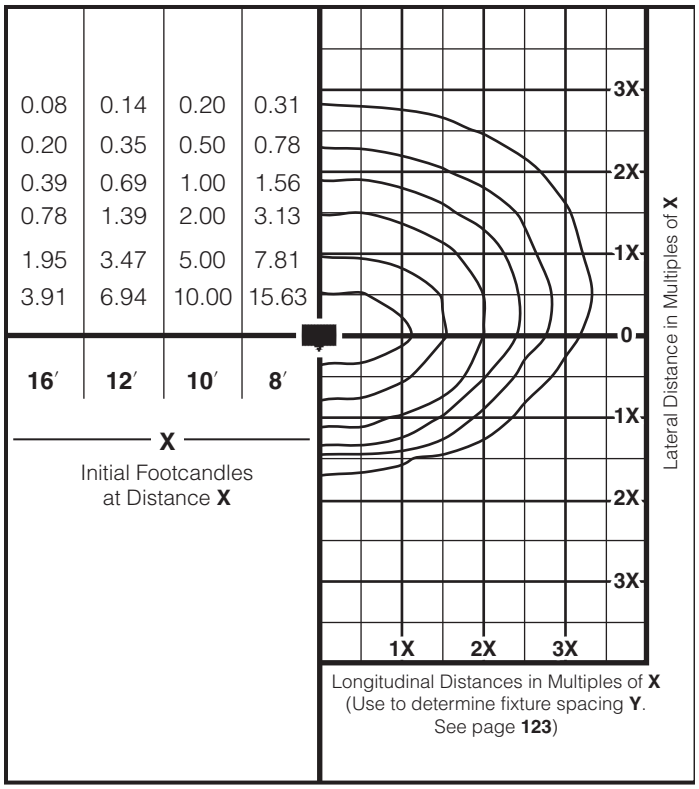


AFL11

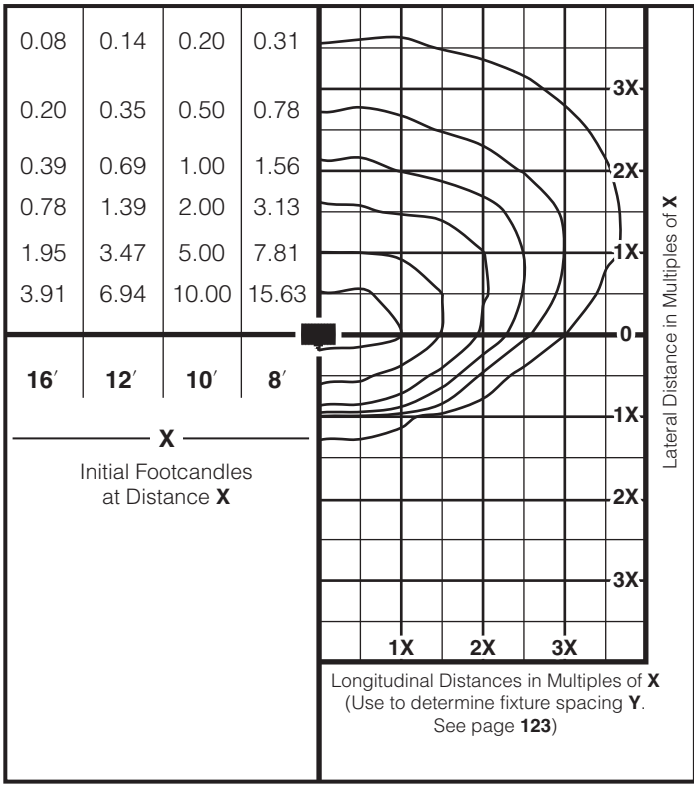
Wide Flood

175MH Isofootcandle Diagrams

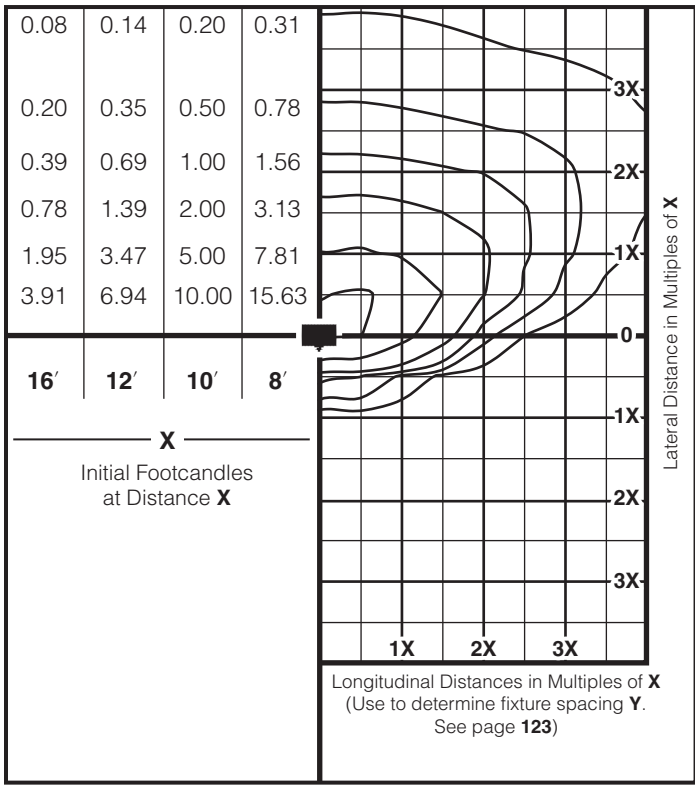
175 watt Metal Halide @ 10° Aiming Angle



175 watt Metal Halide @ 25° Aiming Angle



175 watt Metal Halide @ 40° Aiming Angle

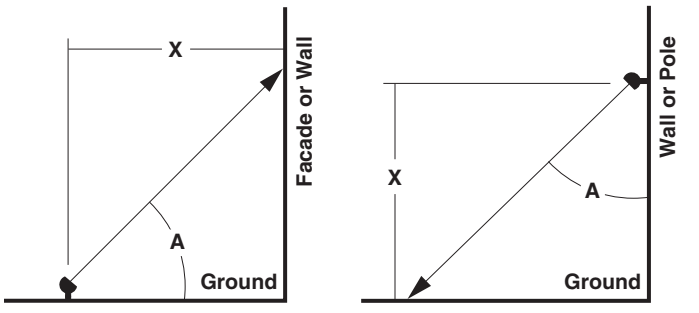


PRORATING CHART

Isofootcandle diagrams shown with 175 watt Metal Halide lamp use the following prorating multipliers for other wattages:

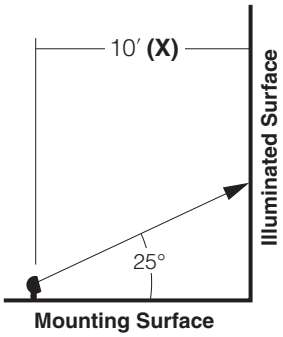
Lamp	Initial Lumens	Factor
175MH	14,000	1.000
150MH	11,500	0.821
100MH	7,200	0.514
70MH	5,000	0.357

Aiming Angle (A) see individual diagrams



175MH Lateral Spacing

Wide Flood



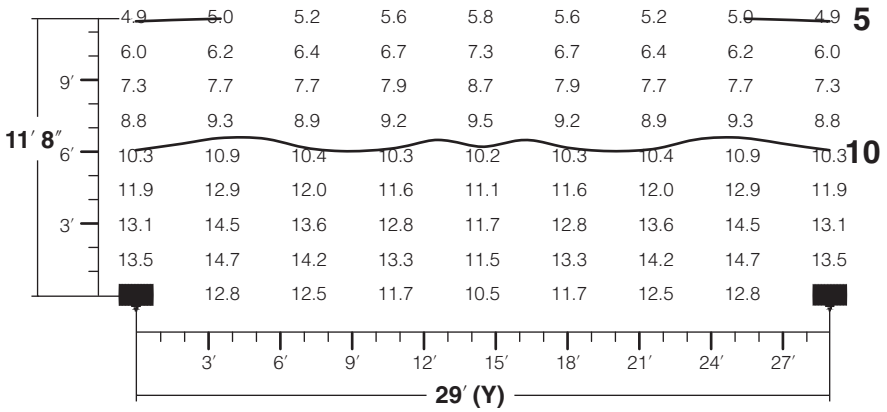
AFL11/175MH
ED-17 clear medium base
Photometric Test No. KL00542
14,400 initial lumens
ANSI Code M-57

To calculate spacing **(Y)** for Setback Distances other than 10′ shown, multiply actual Setback Distance **(X)** by the following:

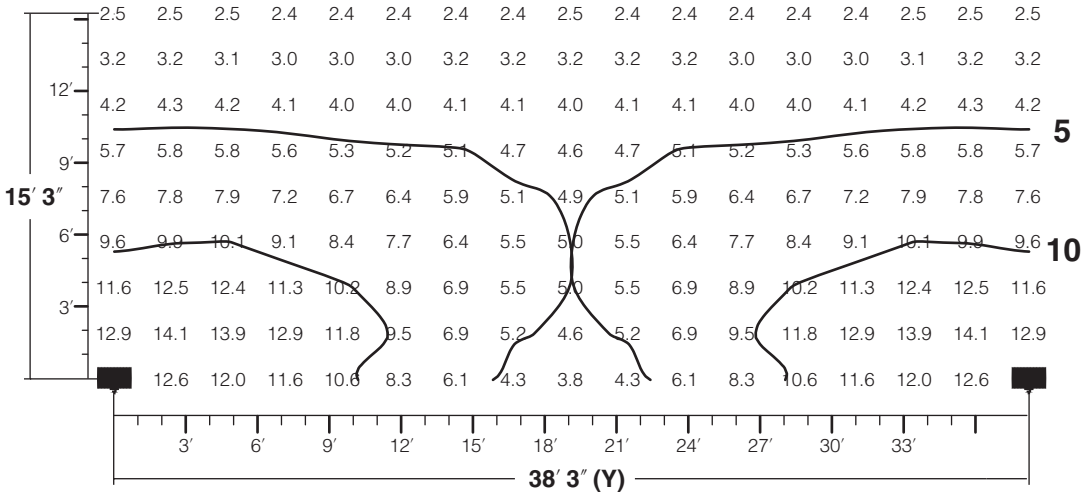
Uniformity Ratio	Factor
3:1	2.80
6:1	3.65
12:1	4.60

Example: 11′ Setback, **6:1** desired uniformity, **Y** = 11′ x 3.65 or **40.15′ (40′ 2″)**

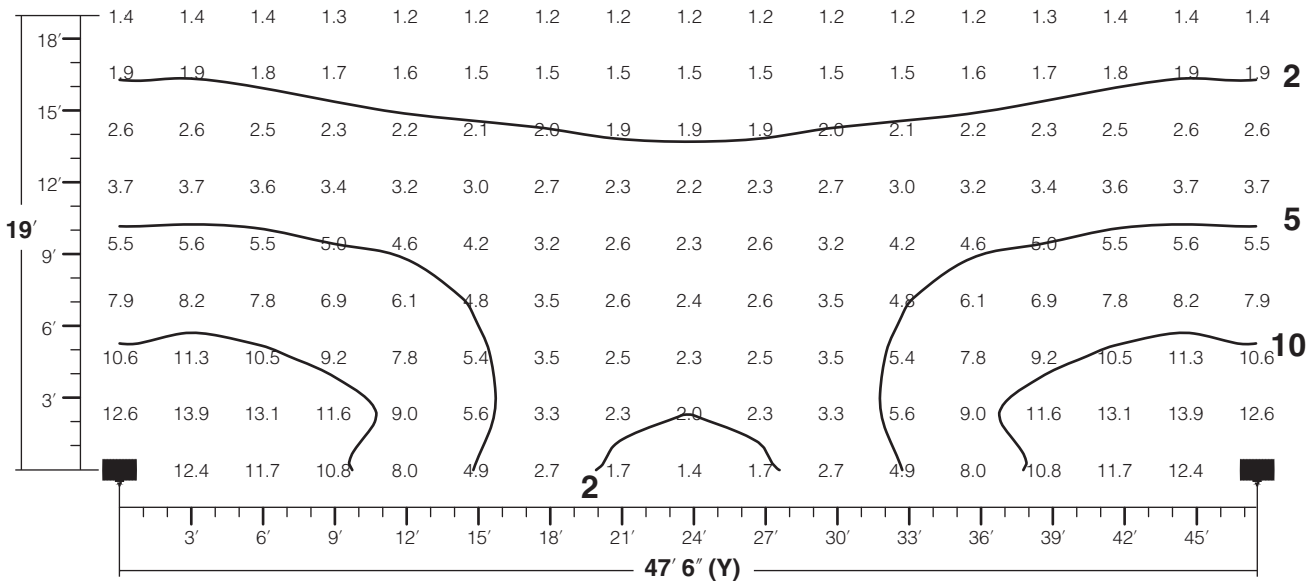
Use for optimum visual uniformity on facades, walls or signs **3:1**



Use where a slightly noticeable drop in uniformity is acceptable **6:1**



Use for area lighting where maximum spacing is desired **12:1**



1 All **Initial Lumen** values shown are approximate and may vary from one manufacturer to another. Consult lamp manufacturer's data for exact lumen and life data.

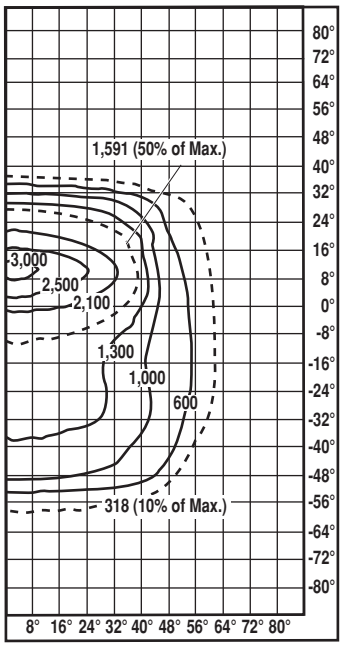
2 **Bean Angle:** Horizontal and vertical field spreads interpolated due to no valid I.E.S. standard.

3 **Field Angle:** Horizontal and vertical field spreads interpolated due to no valid I.E.S. standard.

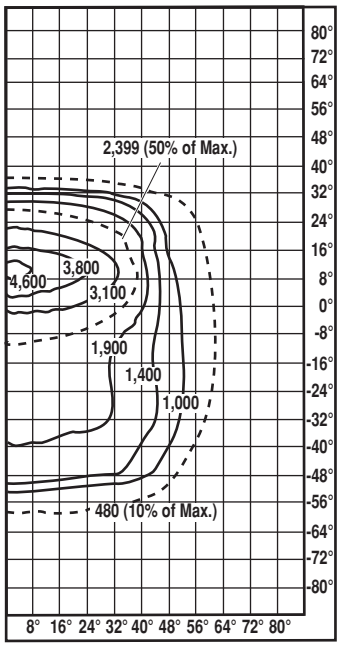
Isocandela Diagrams

Vertical Flood

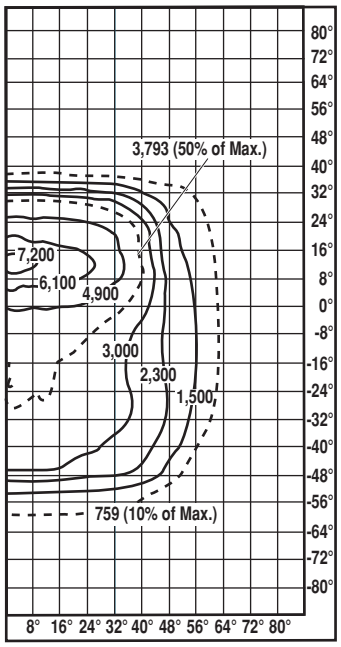
70 watt High Pressure Sodium
ED-17 clear medium base
Test No. kl00491
6,300 initial lumens[1]
ANSI Code S-62
I.E.S. Type: 6H x 5V
Field Angle[3]: 121.9° H x 96.2° V (10% max.)
Beam Angle[2]: 77.3° H x 39.1° V (50% max.)



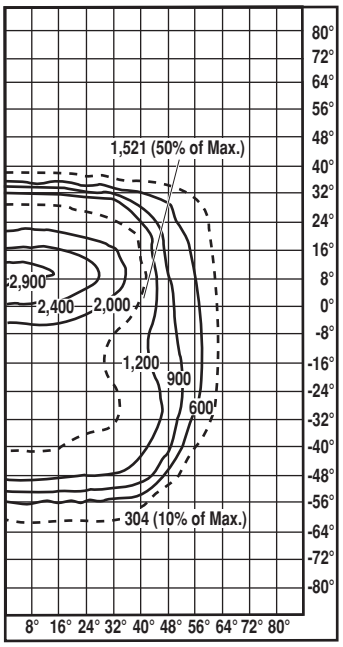
100 watt High Pressure Sodium
ED-17 clear medium base
Test No. kl00403
9,500 initial lumens[1]
ANSI Code S-54
I.E.S. Type: 6H x 5V
Field Angle[3]: 121.9° H x 96.2° V (10% max.)
Beam Angle[2]: 77.3° H x 39.0° V (50% max.)



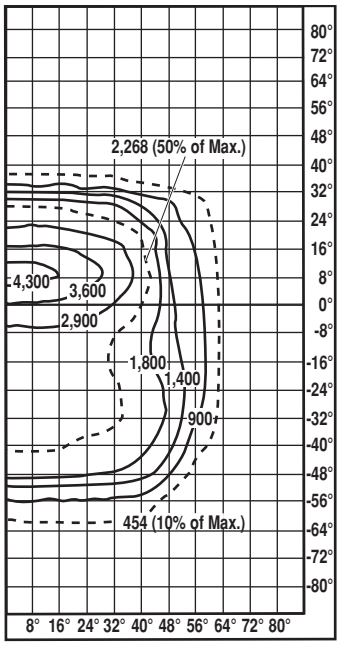
150 watt High Pressure Sodium
ED-17 clear medium base
Test No. kl00515
16,000 initial lumens[1]
ANSI Code S-55
I.E.S. Type: 6H x 5V
Field Angle[3]: 123.3° H x 98.9° V (10% max.)
Beam Angle[2]: 79.2° H x 59.4° V (50% max.)



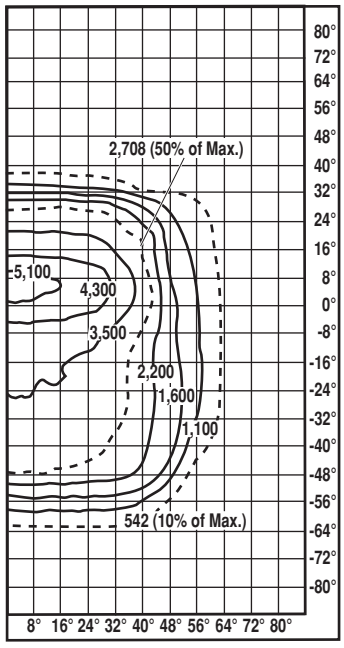
70 watt Pulse Start Metal Halide
ED-17 clear medium base
Test No. kl00489
5,900 initial lumens[1]
ANSI Code M-98
I.E.S. Type: 6H x 5V
Field Angle[3]: 125.0° H x 99.2° V (10% max.)
Beam Angle[2]: 82.9° H x 70.3° V (50% max.)



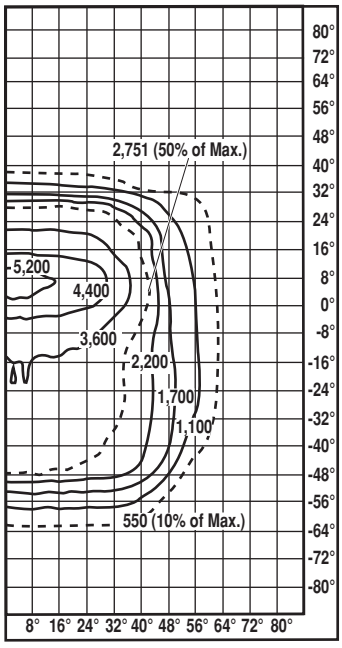
100 watt Pulse Start Metal Halide
ED-17 clear medium base
Test No. kl00391
8,800 initial lumens[1]
ANSI Code M-90
I.E.S. Type: 6H x 5V
Field Angle[3]: 125.0° H x 99.2° V (10% max.)
Beam Angle[2]: 82.9° H x 70.3° V (50% max.)



150 watt Pulse Start Metal Halide
ED-17 clear medium base
Test No. kl00400
12,600 initial lumens[1]
ANSI Code M-102
I.E.S. Type: 6H x 6V
Field Angle[3] 124.9° H x 100.8° V (10% max.)
Beam Angle[2] 84.7° H x 76.0° V (50% max.)



175 watt Metal Halide
ED-17 clear medium base
Test No. kl00343
12,800 initial lumens[1]
ANSI Code M-57
I.E.S. Type: 6H x 6V
Field Angle[3]: 124.9° H x 100.8° V (10% max.)
Beam Angle[2]: 84.7° H x 76.0° V (50% max.)

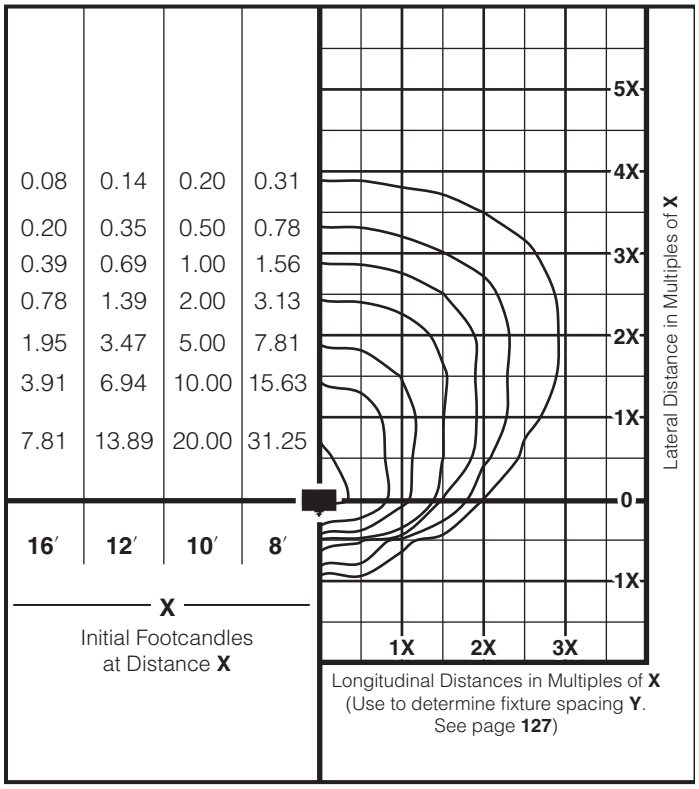


AFL12

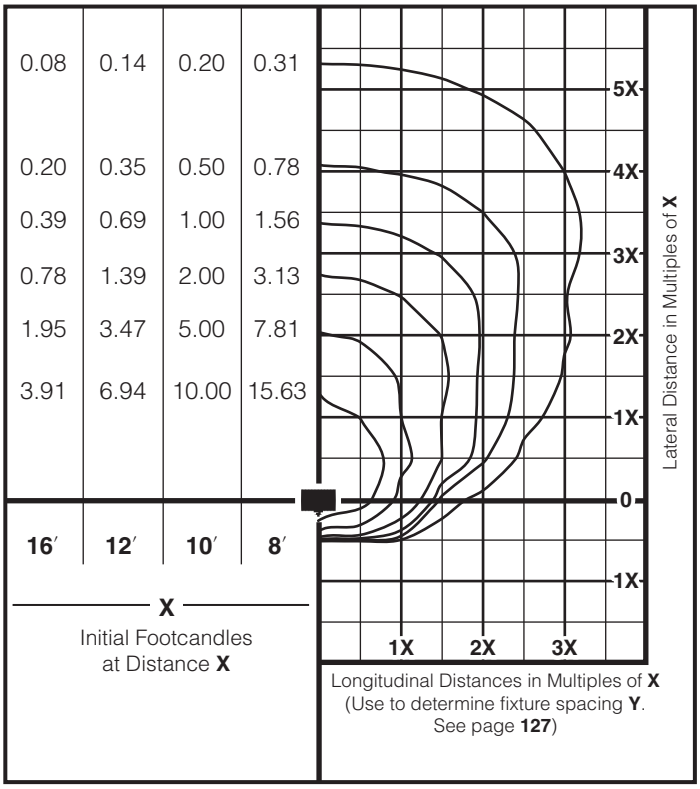
Vertical Flood

150HPS Isofootcandle Diagrams

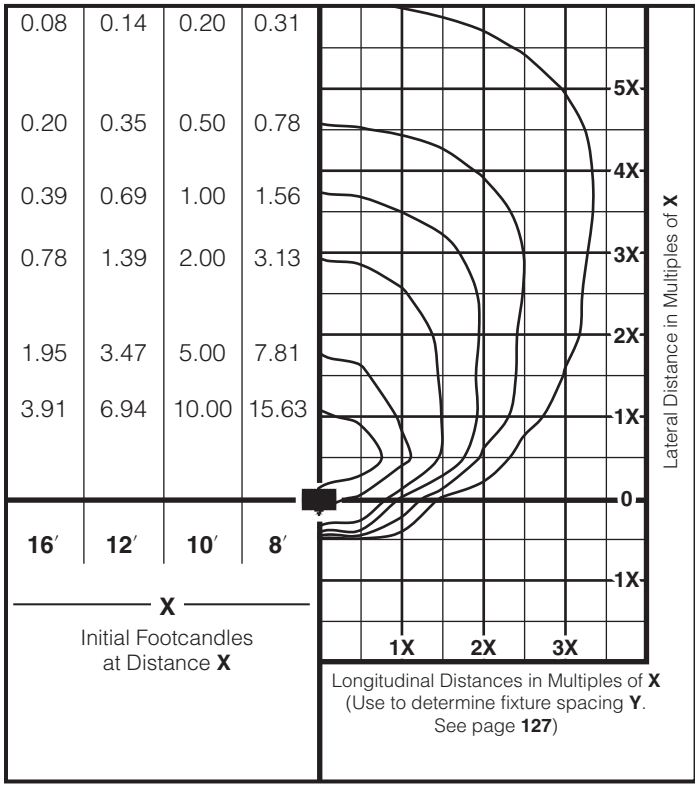
150 watt High Pressure Sodium @ 40° Aiming Angle



150 watt High Pressure Sodium @ 50° Aiming Angle



150 watt High Pressure Sodium @ 60° Aiming Angle

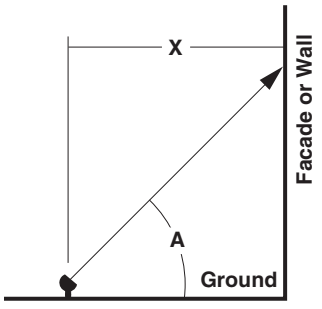


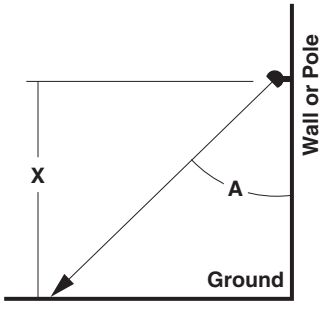
PRORATING CHART

Isofootcandle diagrams shown with 150 watt High Pressure Sodium lamp use the following prorating multipliers for other wattages:

Lamp	Initial Lumens	Factor
150HPS	16,000	1.000
100HPS	9,500	0.594
70HPS	6,300	0.394

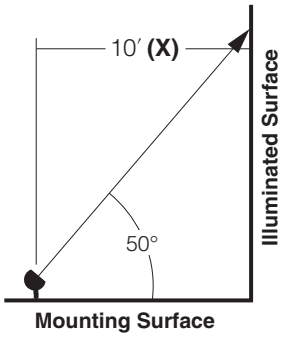
Aiming Angle (A) see individual diagrams





150HPS Lateral Spacing

Vertical Flood



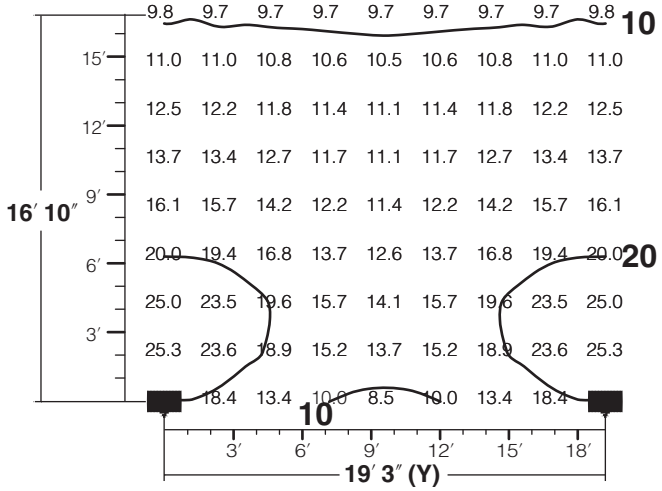
AFL12/150HPS
ED-17 clear medium base
Photometric Test No. KL00515
16,000 initial lumens
ANSI Code S-55

To calculate spacing **(Y)** for Setback Distances other than 10′ shown, multiply actual Setback Distance **(X)** by the following:

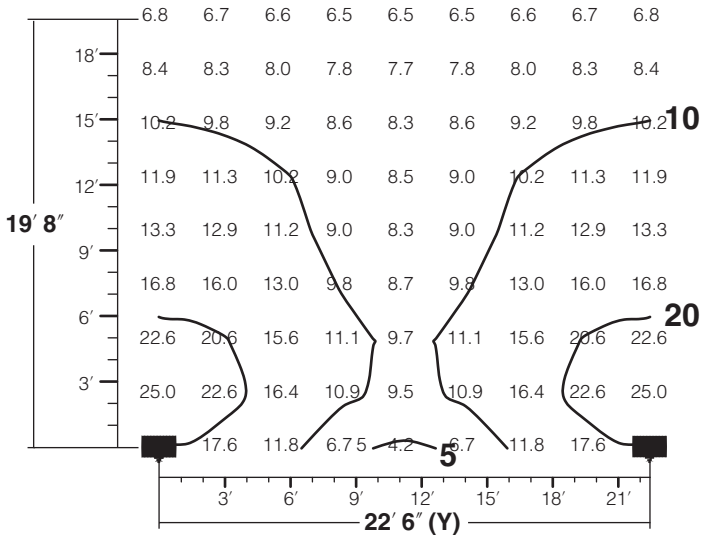
Uniformity Ratio	Factor
3:1	1.90
6:1	2.30
12:1	2.60

Example: 11′ Setback, **6:1** desired uniformity, **Y** = 11′ x 2.30 or **25.3′ (25′ 4″)**

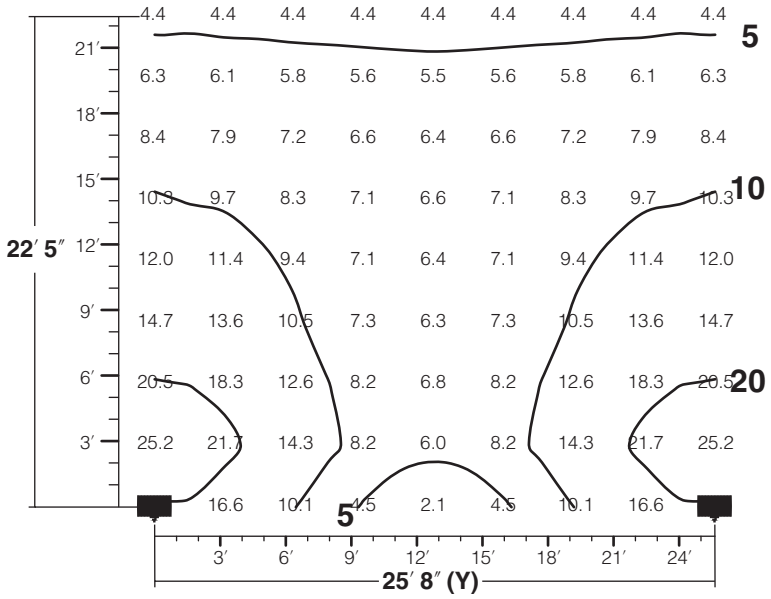
Use for optimum visual uniformity on facades, walls or signs **3:1**



Use where a slightly noticeable drop in uniformity is acceptable **6:1**



Use for area lighting where maximum spacing is desired **12:1**

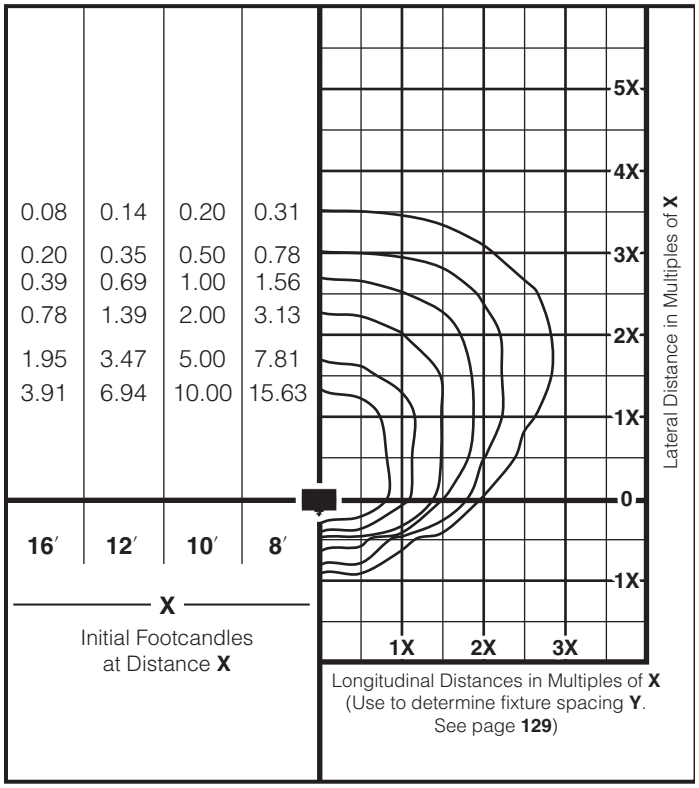


AFL12

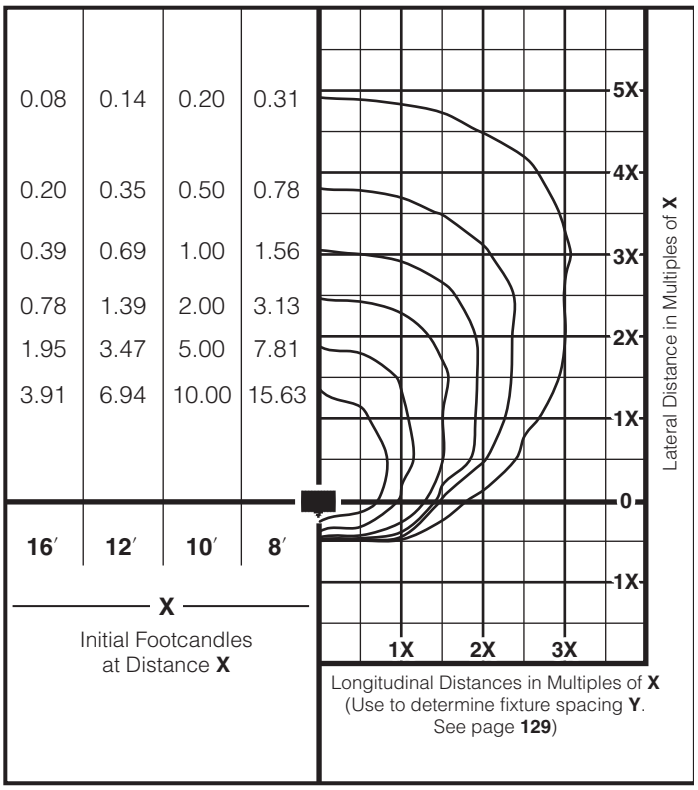
Vertical Flood

175MH Isofootcandle Diagrams

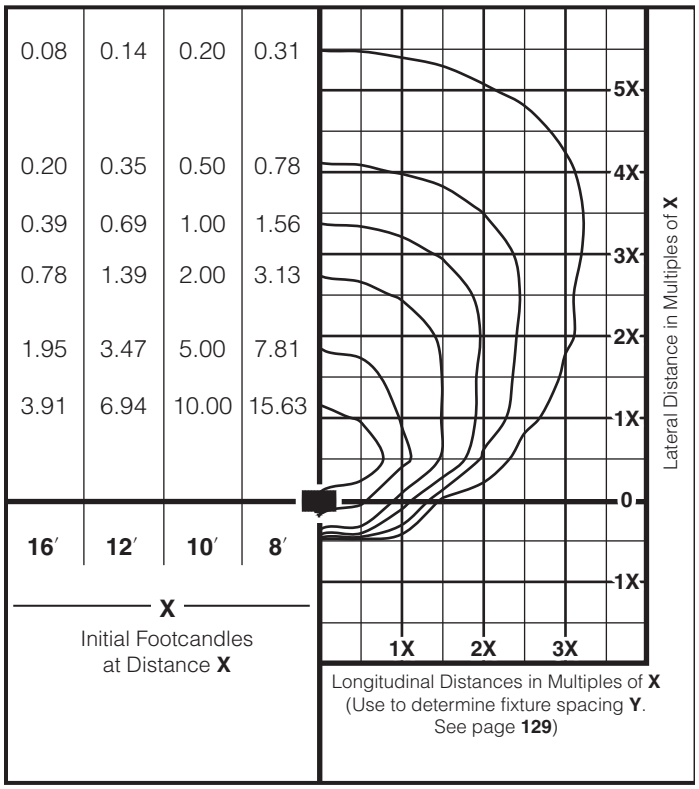
175 watt Metal Halide @ 40° Aiming Angle



175 watt Metal Halide @ 50° Aiming Angle



175 watt Metal Halide @ 60° Aiming Angle

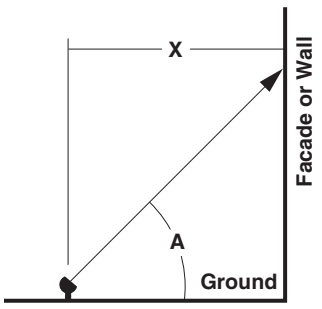


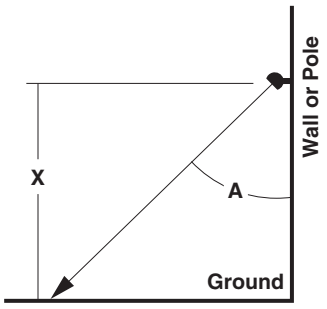
PRORATING CHART

Isofootcandle diagrams shown with 175 watt Metal Halide lamp use the following prorating multipliers for other wattages:

Lamp	Initial Lumens	Factor
175MH	13,440	1.000
150MH	11,040	0.821
100MH	6,912	0.514
70MH	5,280	0.393

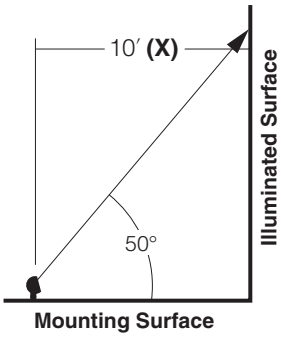
Aiming Angle (A) see individual diagrams





175MH Lateral Spacing

Vertical Flood



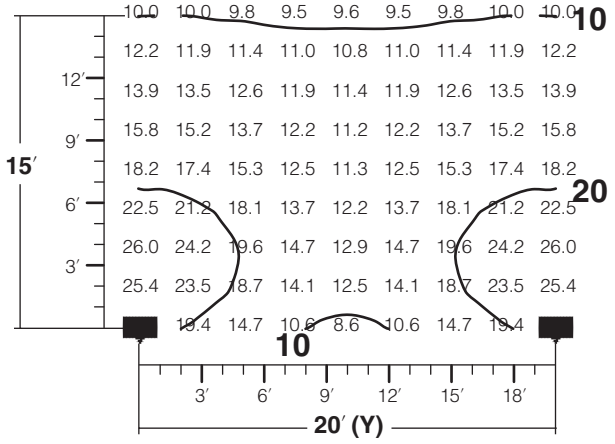
AFL12/175MH
ED-17 clear medium base
Photometric Test No. KL00343
14,400 initial lumens
ANSI Code M-57

To calculate spacing **(Y)** for Setback Distances other than 10′ shown, multiply actual Setback Distance **(X)** by the following:

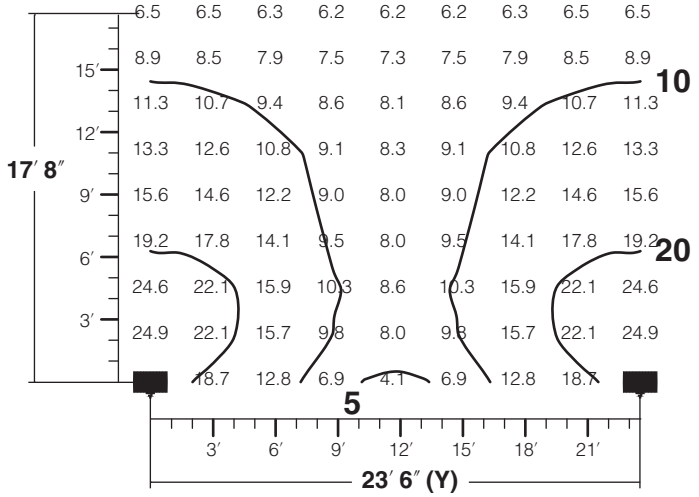
Uniformity Ratio	Factor
3:1	2.00
6:1	2.48
12:1	2.90

Example: 11′ Setback, **6:1** desired uniformity, **Y** = 11′ x 2.48 or **27.28′ (27′ 3″)**

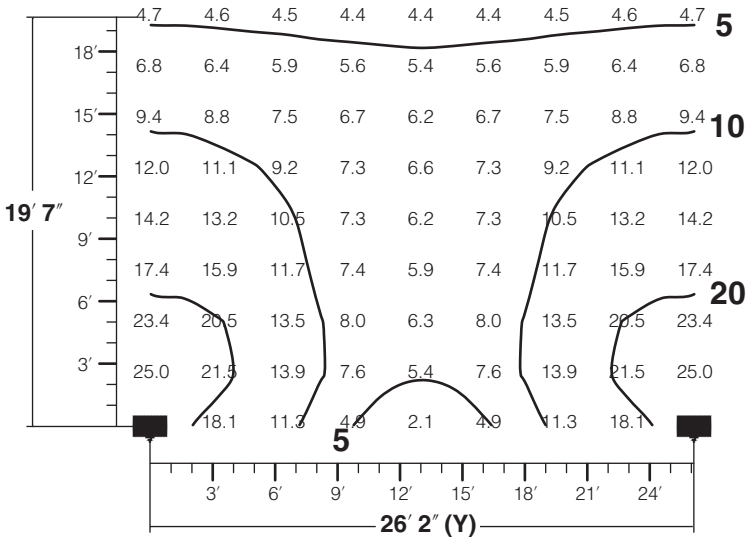
Use for optimum visual uniformity on facades, walls or signs **3:1**



Use where a slightly noticeable drop in uniformity is acceptable **6:1**



Use for area lighting where maximum spacing is desired **12:1**



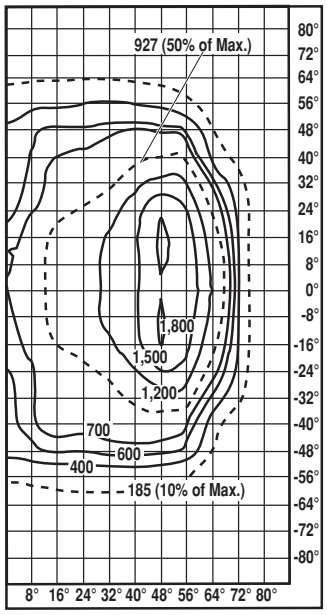
[1] All **Initial Lumen** values shown are approximate and may vary from one manufacturer to another. Consult lamp manufacturer's data for exact lumen and life data.

[2] **Beam Angle:** Horizontal and vertical beam spreads interpolated due to no valid I.E.S. standard.

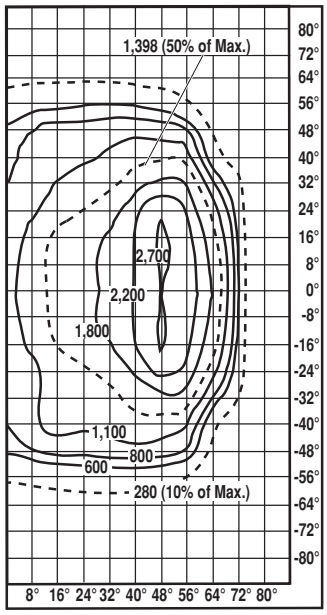
Isocandela Diagrams

Medium Flood

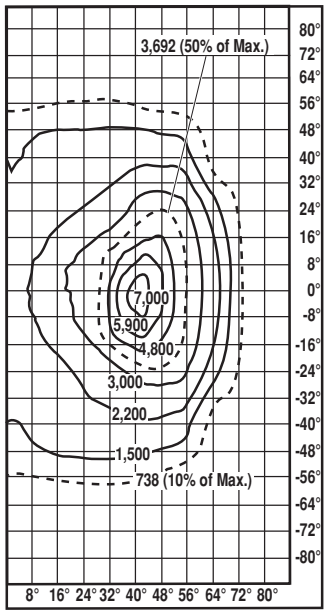
70 watt High Pressure Sodium
ED-17 clear medium base
Test No. Kim2151
4,400 initial lumens[1]
ANSI Code S-62
I.E.S. Type: 7H x 6V
Field Angle: 145.5° H x 126.1° V (10% max.)
Beam Angle[2]: 124.0° H x 68.9° V (50% max.)



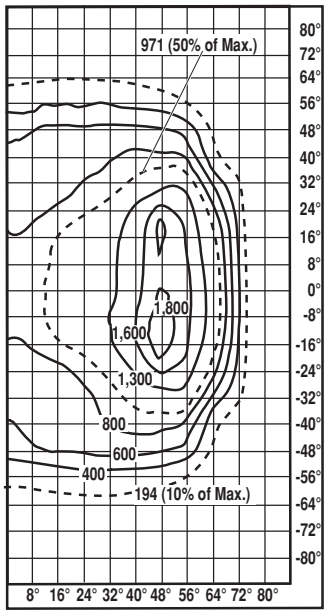
100 watt High Pressure Sodium
ED-17 clear medium base
Test No. Kim2150
7,300 initial lumens[1]
ANSI Code S-54
I.E.S. Type: 7H x 6V
Field Angle: 145.5° H x 126.1° V (10% max.)
Beam Angle[2]: 124.0° H x 68.9° V (50% max.)



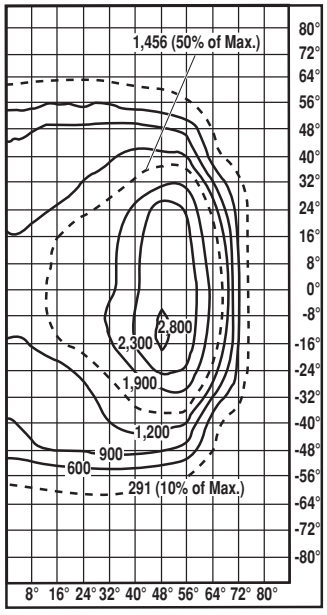
150 watt High Pressure Sodium
ED-17 clear medium base
Test No. Kim2136
16,000 initial lumens[1]
ANSI Code S-55
I.E.S. Type: 7H x 6V
Field Angle: 145.5° H x 126.1° V (10% max.)
Beam Angle[2]: 124.0° H x 68.9° V (50% max.)



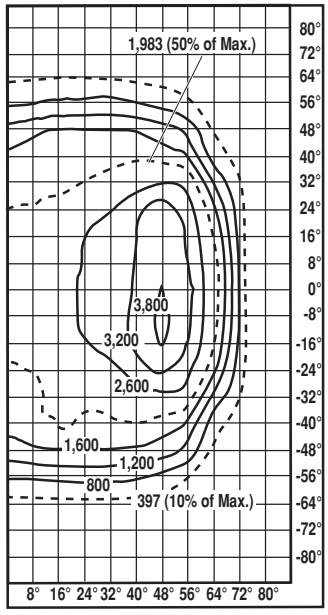
70 watt Pulse Start Metal Halide
ED-17 clear medium base
Test No. Kim2149
5,040 initial lumens[1]
ANSI Code M-98
I.E.S. Type: 7H x 6V
Field Angle: 145.8° H x 127.0° V (10% max.)
Beam Angle[2]: 124.0° H x 54.6° V (50% max.)



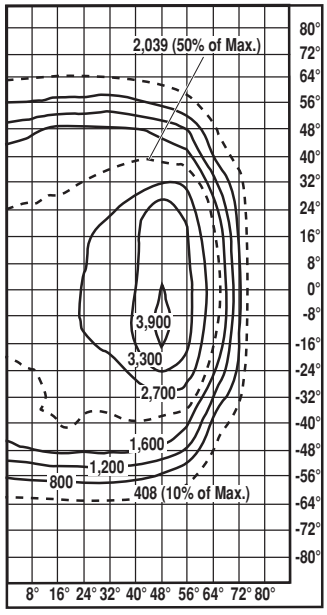
100 watt Pulse Start Metal Halide
ED-17 clear medium base
Test No. Kim2148
8,100 initial lumens[1]
ANSI Code M-90
I.E.S. Type: 7H x 6V
Field Angle: 145.8° H x 127.0° V (10% max.)
Beam Angle[2]: 124.0° H x 54.6° V (50% max.)



150 watt Pulse Start Metal Halide
ED-17 clear medium base
Test No. Kim2147
12,600 initial lumens[1]
ANSI Code M-102
I.E.S. Type: 7H x 6V
Field Angle: 145.8° H x 127.0° V (10% max.)
Beam Angle[2]: 124.0° H x 54.6° V (50% max.)



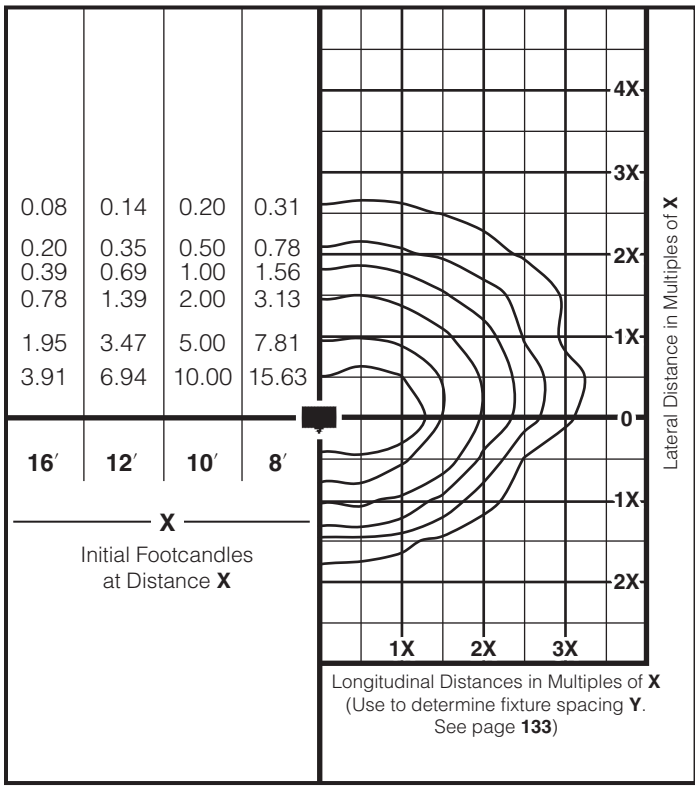
175 watt Metal Halide
ED-17 clear medium base
Test No. Kim2129
13,500 initial lumens[1]
ANSI Code M-57
I.E.S. Type: 7H x 6V
Field Angle: 145.8° H x 127.0° V (10% max.)
Beam Angle[2]: 124.0° H x 54.6° V (50% max.)



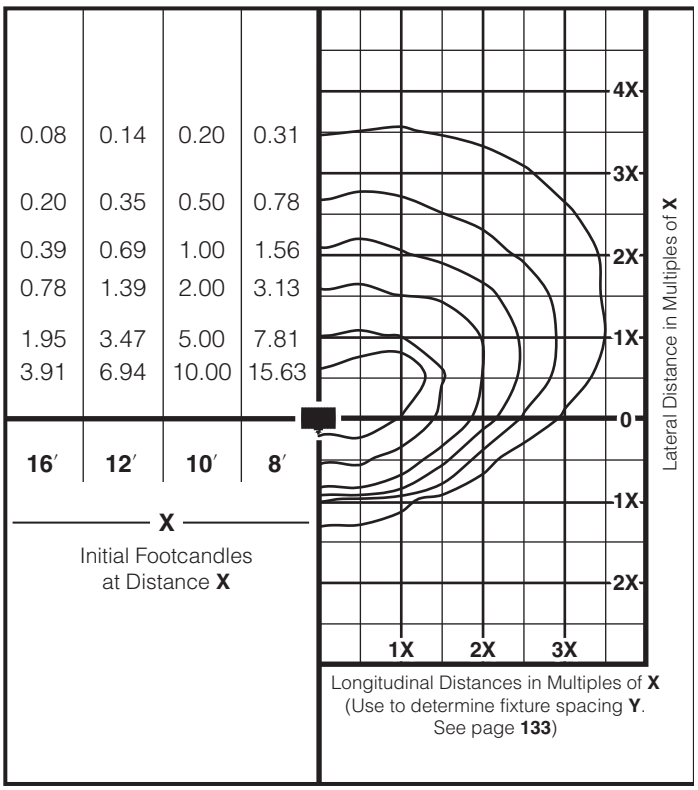
Medium Flood

150HPS Isofootcandle Diagrams

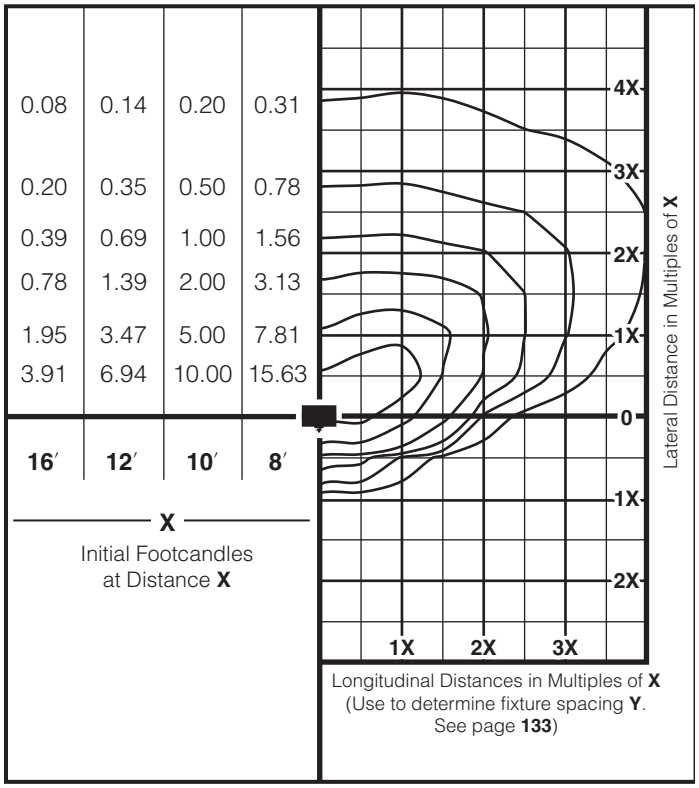
150 watt High Pressure Sodium @ 10° Aiming Angle



150 watt High Pressure Sodium @ 25° Aiming Angle



150 watt High Pressure Sodium @ 40° Aiming Angle

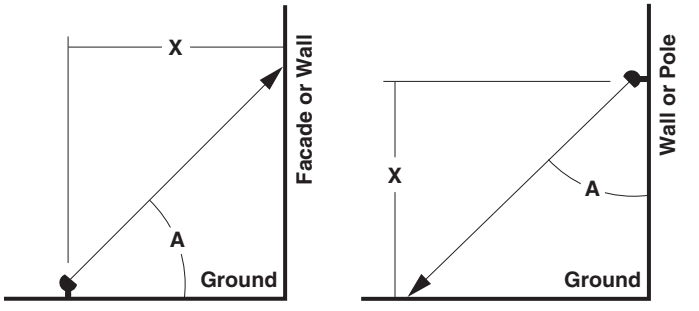


PRORATING CHART

Isofootcandle diagrams shown with 150 watt High Pressure Sodium lamp use the following prorating multipliers for other wattages:

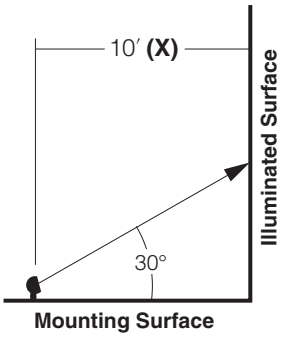
Lamp	Initial Lumens	Factor
150HPS	16,000	1.000
100HPS	7,300	0.456
70HPS	4,400	0.275

Aiming Angle (A) see individual diagrams



150HPS Lateral Spacing

Medium Flood



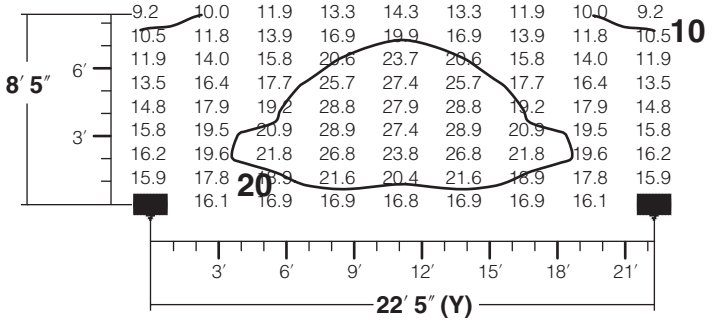
AFL13/150HPS
ED-17 clear medium base
Photometric Test No. KL00369
16,000 initial lumens
ANSI Code S-55

To calculate spacing **(Y)** for Setback Distances other than 10′ shown, multiply actual Setback Distance **(X)** by the following:

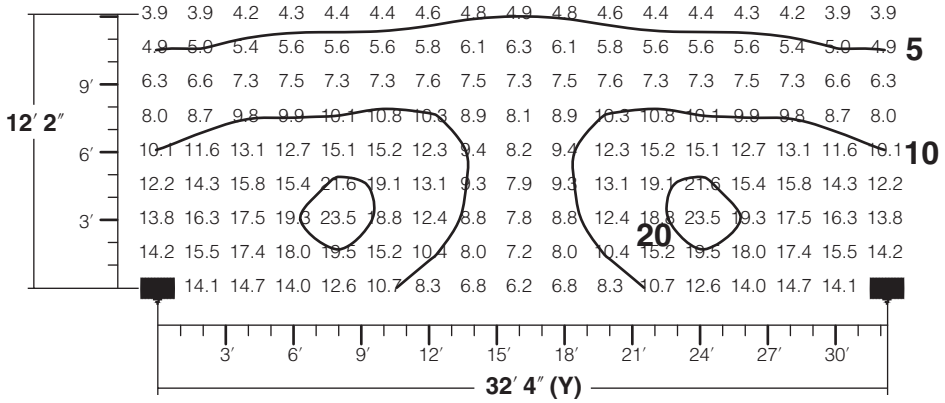
Uniformity Ratio	Factor
3:1	2.60
6:1	3.70
12:1	4.26

Example: 11′ Setback, **6:1** desired uniformity, **Y** = 11′ x 3.70 or **40.7′ (40′ 8″)**

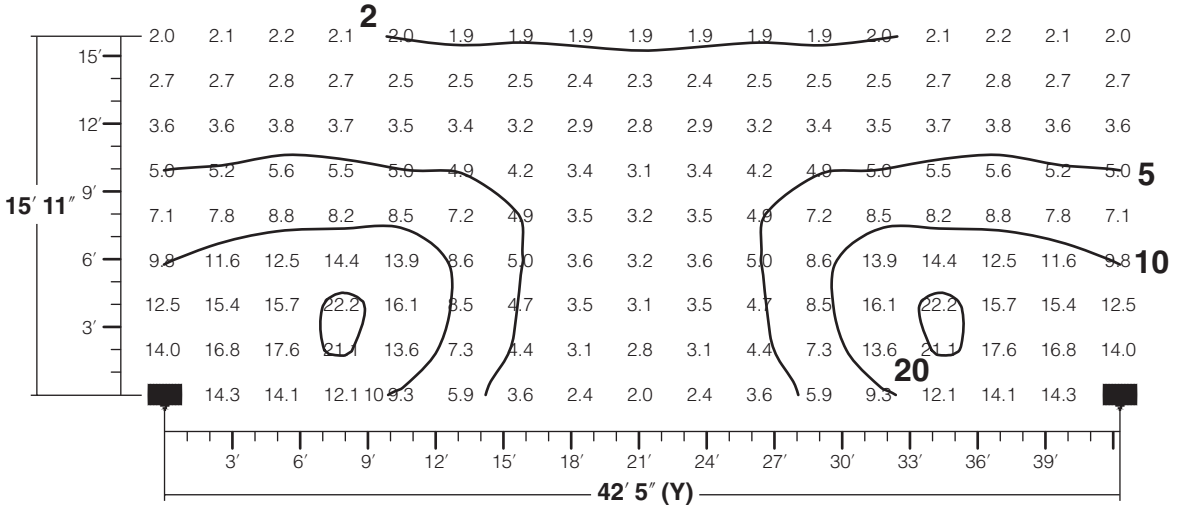
Use for optimum visual uniformity on facades, walls or signs **3:1**



Use where a slightly noticeable drop in uniformity is acceptable **6:1**



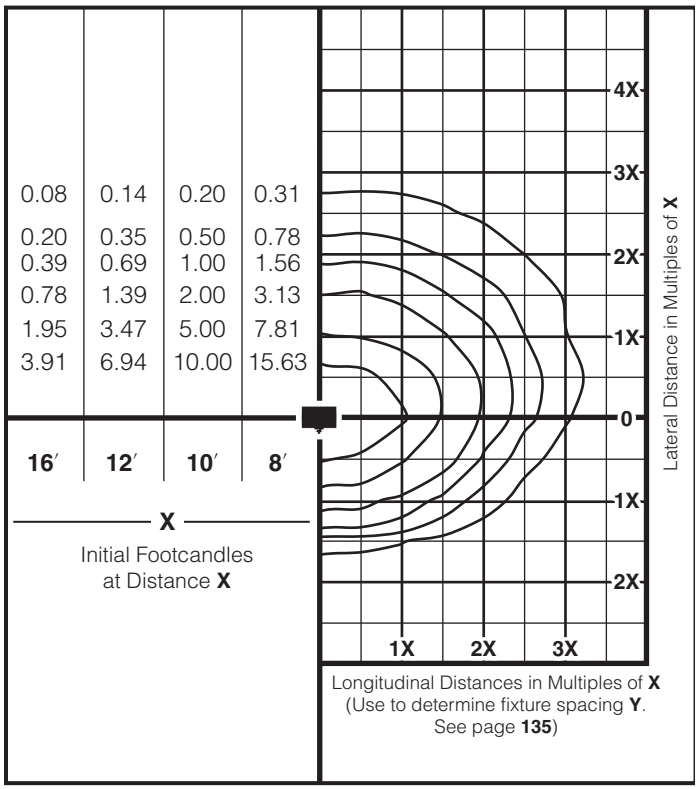
Use for area lighting where maximum spacing is desired **12:1**



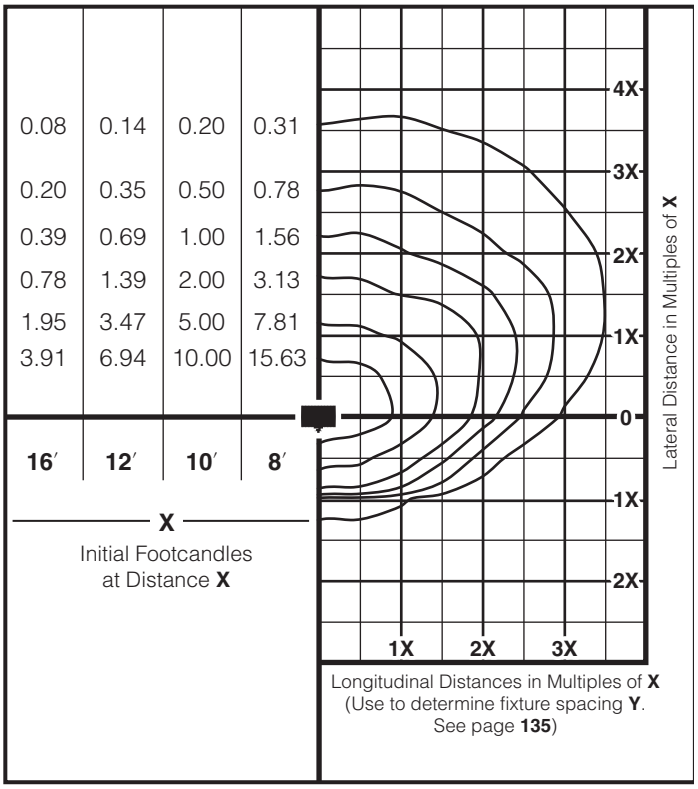
Medium Flood

175MH Isofootcandle Diagrams

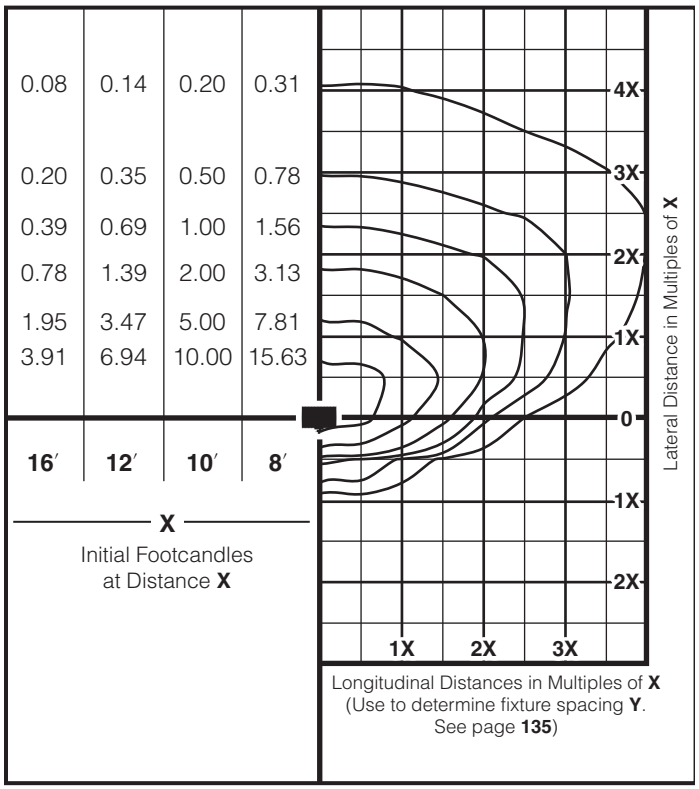
175 watt Metal Halide @ 10° Aiming Angle



175 watt Metal Halide @ 25° Aiming Angle



175 watt Metal Halide @ 40° Aiming Angle

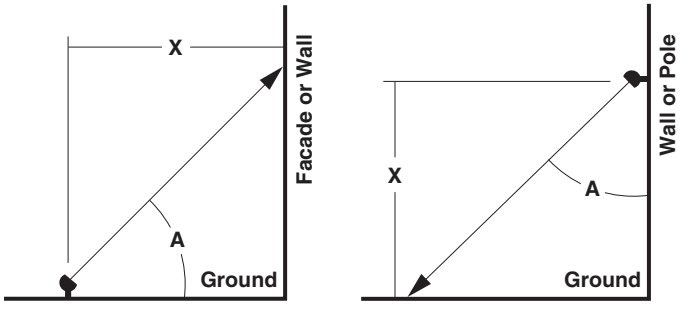


PRORATING CHART

Isofootcandle diagrams shown with 175 watt Metal Halide lamp use the following prorating multipliers for other wattages:

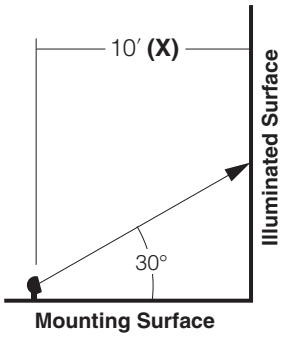
Lamp	Initial Lumens	Factor
175MH	13,500	1.000
150MH	12,600	0.926
100MH	8,100	0.578
70MH	5,040	0.373

Aiming Angle (A) see individual diagrams



175MH Lateral Spacing

Medium Flood



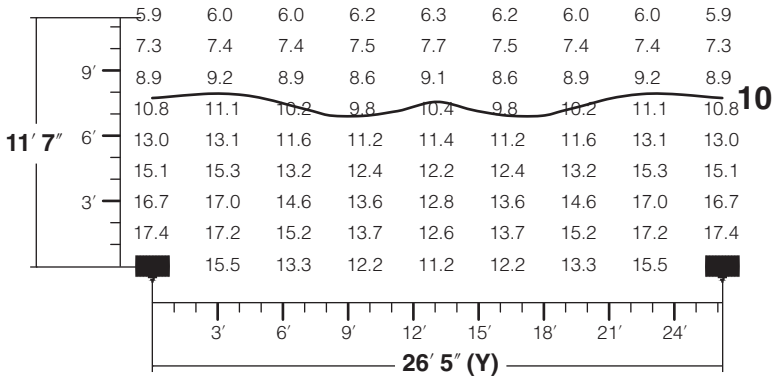
AFL13/175MH
ED-17 clear medium base
Photometric Test No. KL00426
14,400 initial lumens
ANSI Code M-57

To calculate spacing **(Y)** for Setback Distances other than 10′ shown, multiply actual Setback Distance **(X)** by the following:

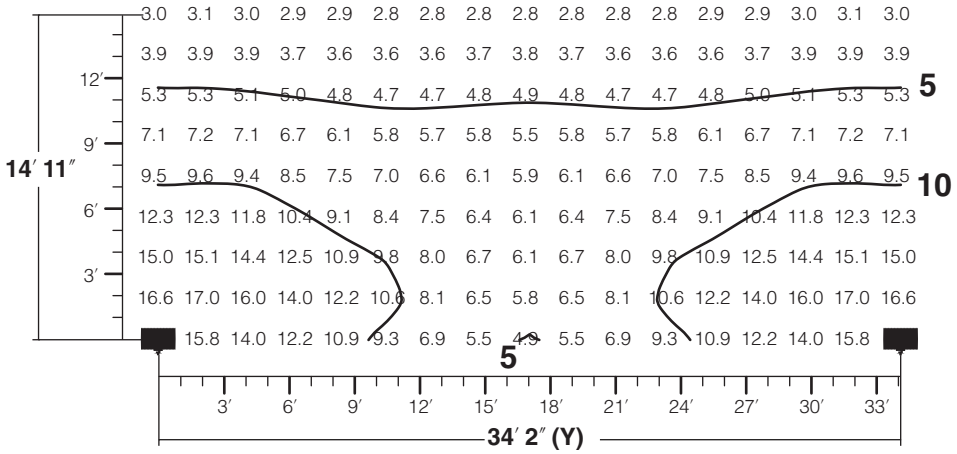
Uniformity Ratio	Factor
3:1	2.76
6:1	3.90
12:1	4.76

Example: 11′ Setback, **6:1** desired uniformity, **Y** = 11′ x 3.90 or **42.9′ (42′ 11″)**

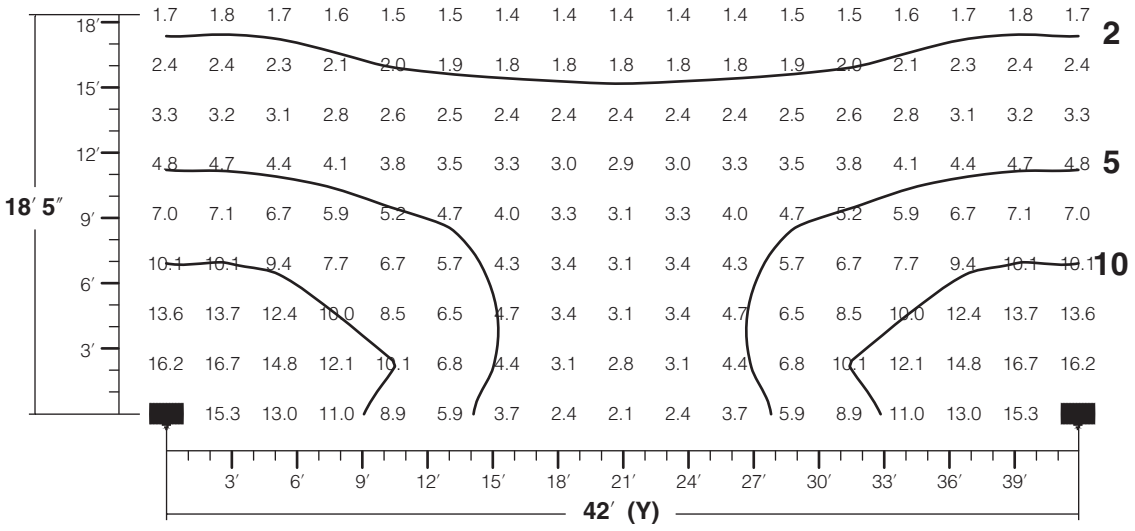
Use for optimum visual uniformity on facades, walls or signs **3:1**



Use where a slightly noticeable drop in uniformity is acceptable **6:1**



Use for area lighting where maximum spacing is desired **12:1**



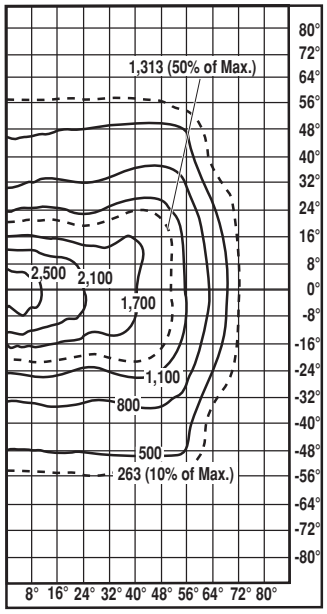
[1] All **Initial Lumen** values shown are approximate and may vary from one manufacturer to another. Consult lamp manufacturer's data for exact lumen and life data.

[2] **Beam Angle:** Horizontal and vertical beam spreads interpolated due to no valid I.E.S. standard.

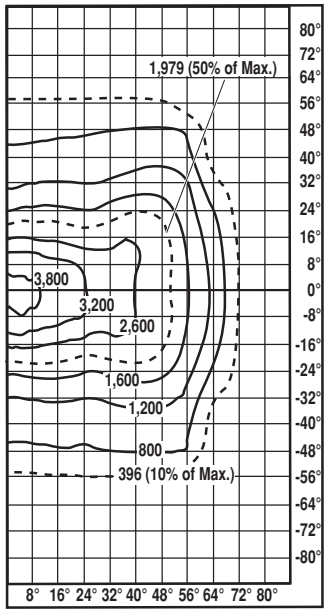
Isocandela Diagrams

Narrow Flood

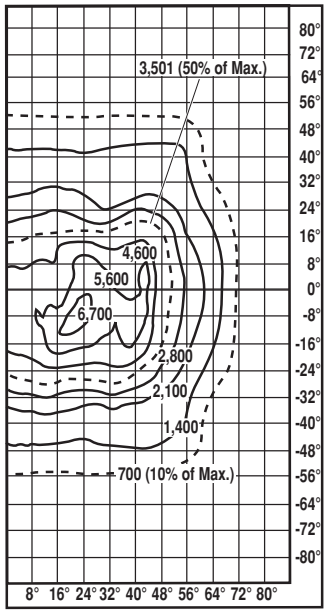
70 watt High Pressure Sodium
ED-17 clear medium base
Test No. Kim2156
4,400 initial lumens[1]
ANSI Code S-62
I.E.S. Type: 7H x 6V
Field Angle: 141.0° H x 117.0° V (10% max.)
Beam Angle[2]: 85.2° H x 57.8° V (50% max.)



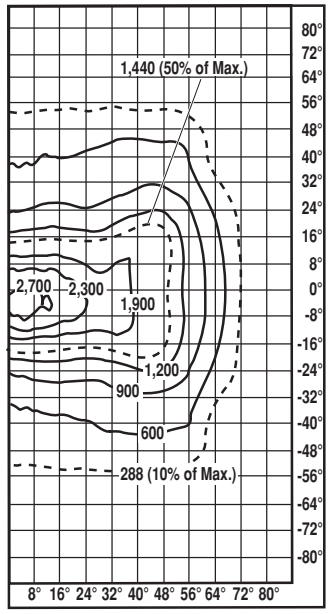
100 watt High Pressure Sodium
ED-17 clear medium base
Test No. Kim2155
7,300 initial lumens[1]
ANSI Code S-54
I.E.S. Type: 7H x 6V
Field Angle: 141.0° H x 117.0° V (10% max.)
Beam Angle[2]: 85.2° H x 57.8° V (50% max.)



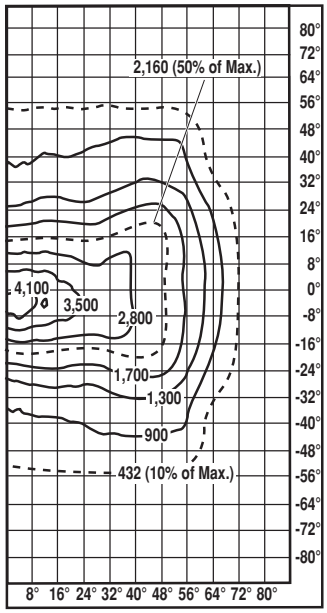
150 watt High Pressure Sodium
ED-17 clear medium base
Test No. Kim2137
16,000 initial lumens[1]
ANSI Code S-55
I.E.S. Type: 7H x 6V
Field Angle: 141.0° H x 117.0° V (10% max.)
Beam Angle[2]: 85.2° H x 57.8° V (50% max.)



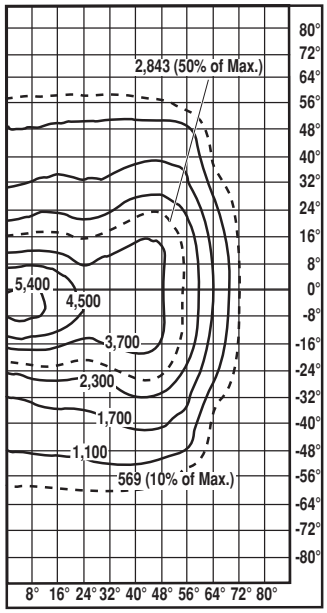
70 watt Pulse Start Metal Halide
ED-17 clear medium base
Test No. Kim2154
5,040 initial lumens[1]
ANSI Code M-98
I.E.S. Type: 7H x 6V
Field Angle: 139.3° H x 111.1° V (10% max.)
Beam Angle[2]: 86.2° H x 37.6° V (50% max.)



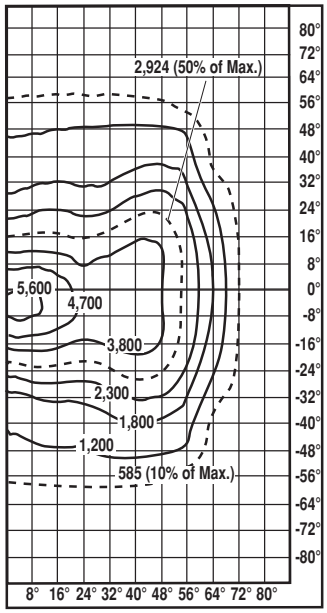
100 watt Pulse Start Metal Halide
ED-17 clear medium base
Test No. Kim2153
8,100 initial lumens[1]
ANSI Code M-90
I.E.S. Type: 7H x 6V
Field Angle: 139.6° H x 111.1° V (10% max.)
Beam Angle[2]: 86.2° H x 37.6° V (50% max.)



150 watt Pulse Start Metal Halide
ED-17 clear medium base
I.T.L. Test No. Kim2152
12,600 initial lumens[1]
ANSI Code M-102
I.E.S. Type: 7H x 6V
Field Angle: 139.3° H x 111.1° V (10% max.)
Beam Angle[2]: 86.2° H x 37.6° V (50% max.)



175 watt Metal Halide
ED-17 clear medium base
Test No. Kim2132
13,500 initial lumens[1]
ANSI Code M-57
I.E.S. Type: 7H x 6V
Field Angle: 139.3° H x 111.1° V (10% max.)
Beam Angle[2]: 86.2° H x 37.6° V (50% max.)

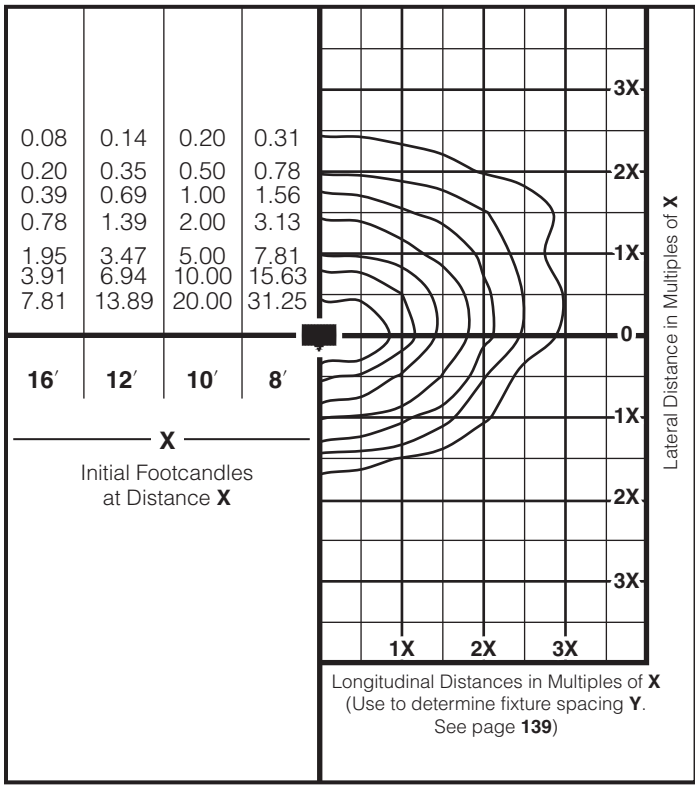


AFL14

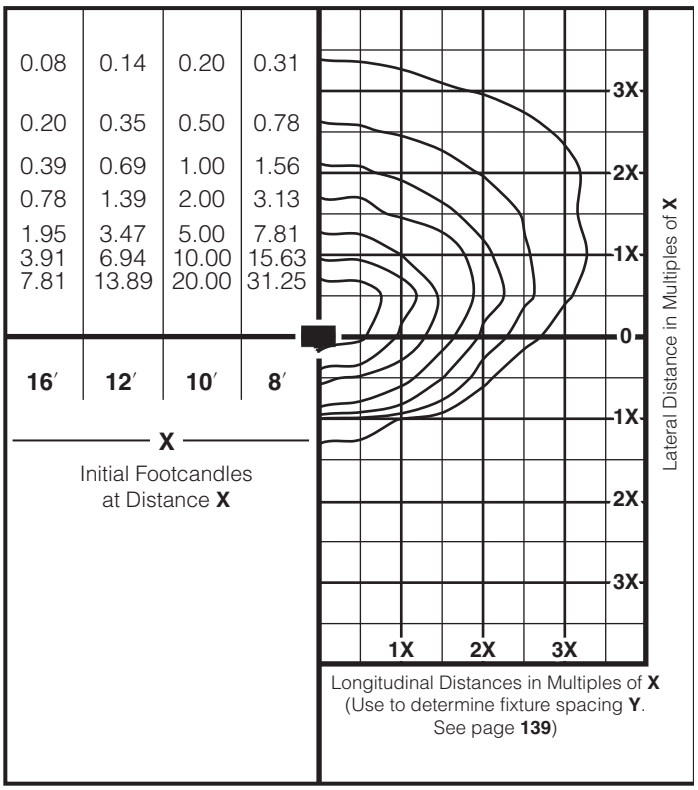
Narrow Flood

150HPS Isofootcandle Diagrams

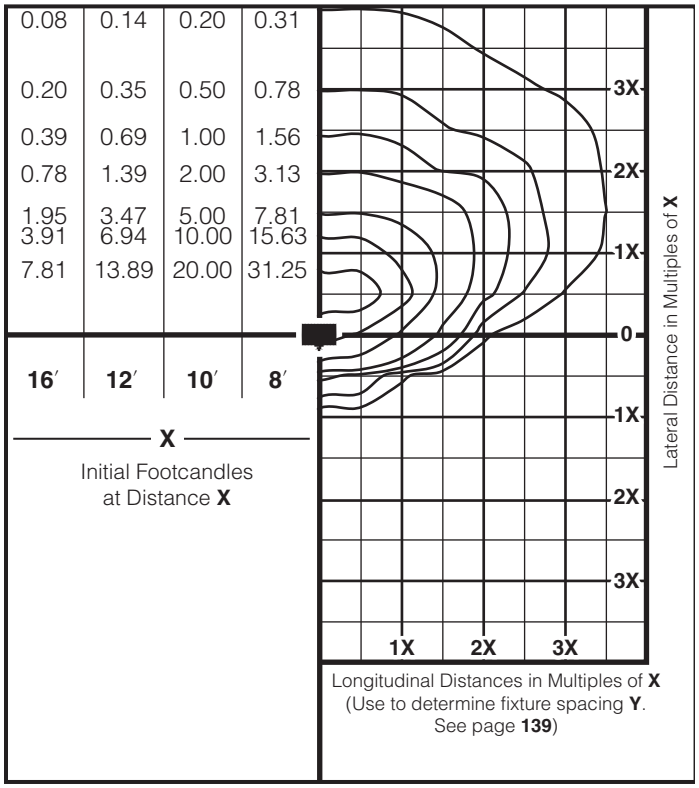
150 watt High Pressure Sodium @ 10° Aiming Angle



150 watt High Pressure Sodium @ 25° Aiming Angle



150 watt High Pressure Sodium @ 40° Aiming Angle

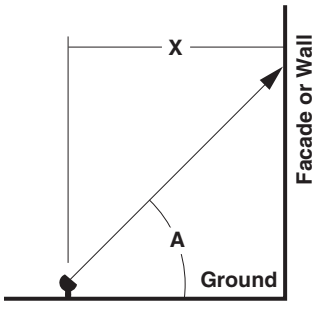


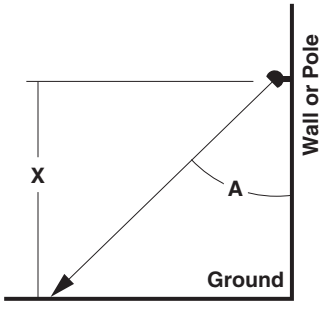
PRORATING CHART

Isofootcandle diagrams shown with 150 watt High Pressure Sodium lamp use the following prorating multipliers for other wattages:

Lamp	Initial Lumens	Factor
150HPS	16,000	1.000
100HPS	7,300	0.456
70HPS	4,400	0.275

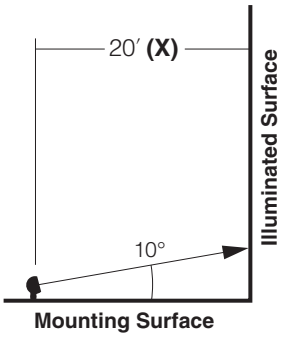
Aiming Angle (A) see individual diagrams





150HPS Lateral Spacing

Narrow Flood



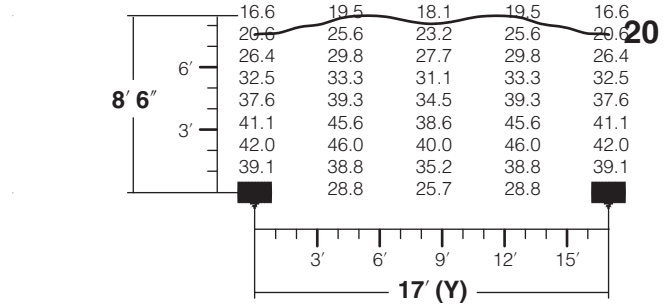
AFL14/150HPS
ED-17 clear medium base
Photometric Test No. KL00370
16,000 initial lumens
ANSI Code S-55

To calculate spacing **(Y)** for Setback Distances other than 20′ shown, multiply actual Setback Distance **(X)** by the following:

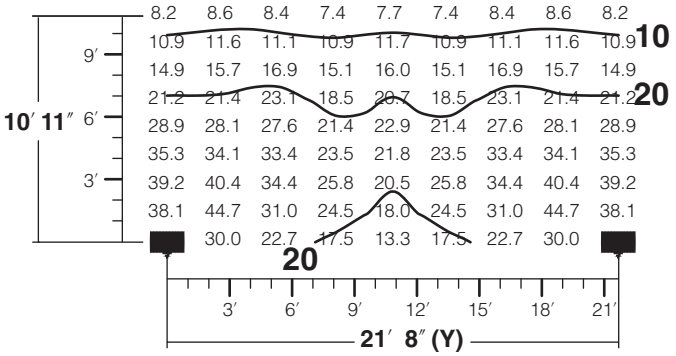
Uniformity Ratio	Factor
3:1	1.70
6:1	2.05
12:1	2.50

Example: 21′ Setback, **6:1** desired uniformity, **Y** = 21′ x 2.05 or **43.05′ (43′ 1′)**

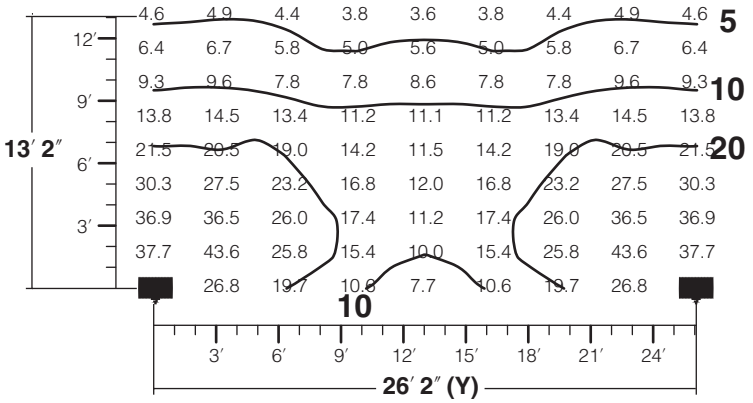
Use for optimum visual uniformity on facades, walls or signs **3:1**



Use where a slightly noticeable drop in uniformity is acceptable **6:1**



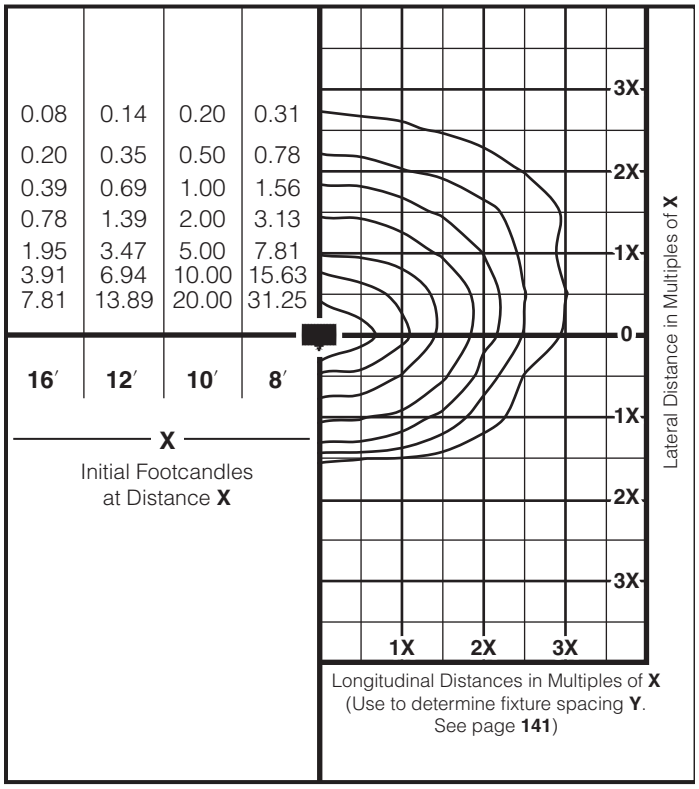
Use for area lighting where maximum spacing is desired **12:1**



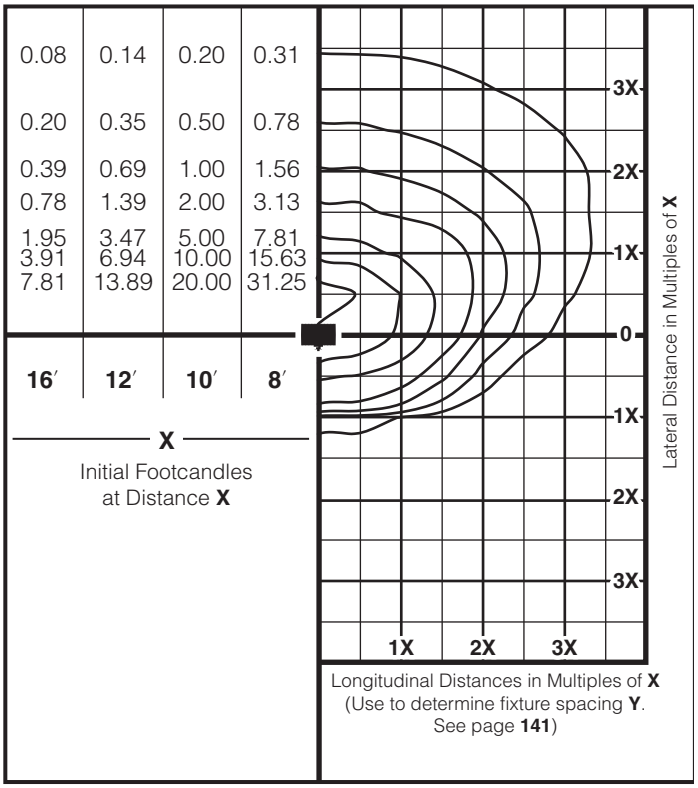
Narrow Flood

175MH Isofootcandle Diagrams

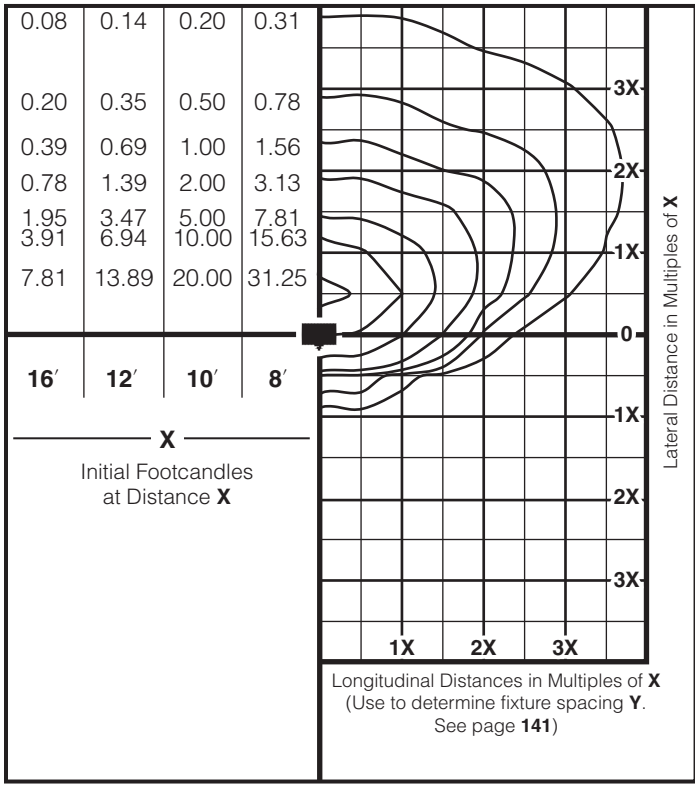
175 watt Metal Halide @ 10° Aiming Angle



175 watt Metal Halide @ 25° Aiming Angle



175 watt Metal Halide @ 40° Aiming Angle

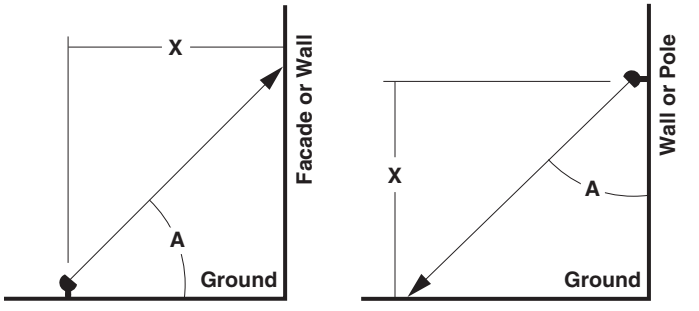


PRORATING CHART

Isofootcandle diagrams shown with 175 watt Metal Halide lamp use the following prorating multipliers for other wattages:

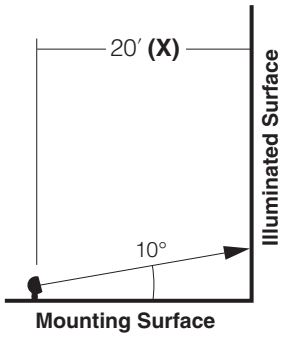
Lamp	Initial Lumens	Factor
175MH	13,500	1.000
150MH	12,600	0.926
100MH	8,100	0.578
70MH	5,040	0.370

Aiming Angle (A) see individual diagrams



175MH Lateral Spacing

Narrow Flood



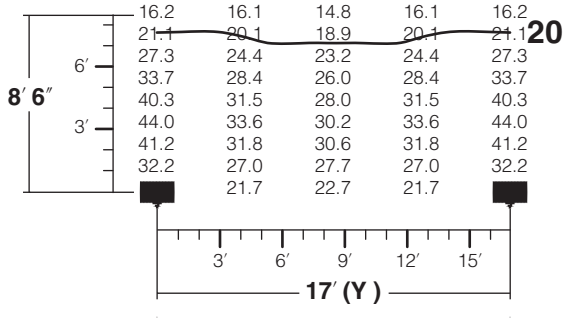
AFL14/175MH
ED-17 clear medium base
Photometric Test No. KL00423
14,400 initial lumens
ANSI Code M-57

To calculate spacing **(Y)** for Setback Distances other than 20′ shown, multiply actual Setback Distance **(X)** by the following:

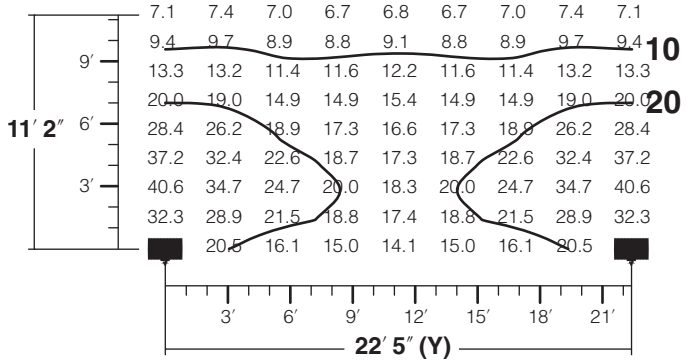
Uniformity Ratio	Factor
3:1	1.15
6:1	1.93
12:1	2.35

Example: 21′ Setback, **6:1** desired uniformity, **Y** = 21′ x 1.93 or **40.53′ (40′ 6″)**

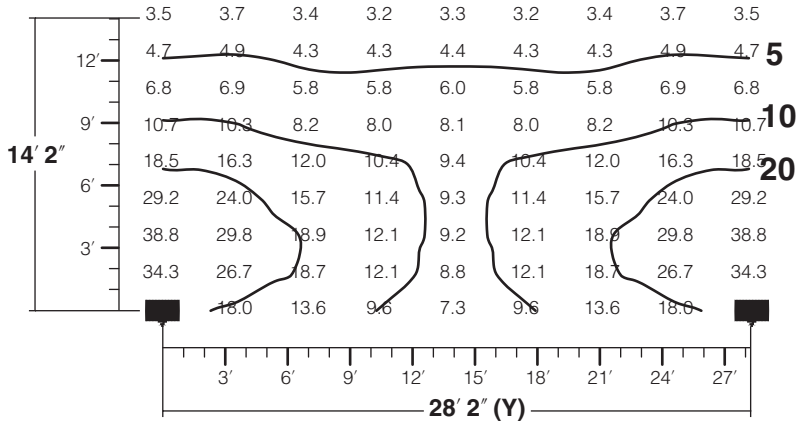
Use for optimum visual uniformity on facades, walls or signs **3:1**



Use where a slightly noticeable drop in uniformity is acceptable **6:1**



Use for area lighting where maximum spacing is desired **12:1**



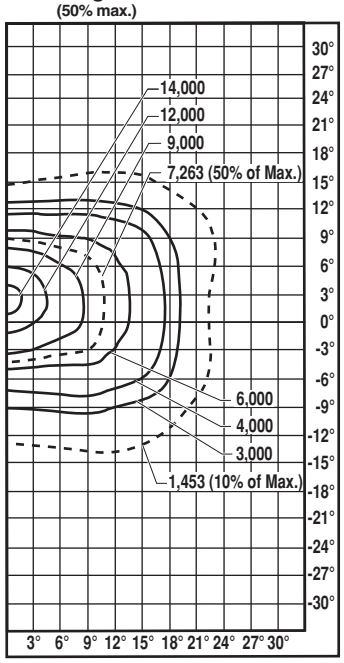
1 All **Initial Lumen** values shown are approximate and may vary from one manufacturer to another. Consult lamp manufacturer's data for exact lumen and life data.

2 **Beam Angle:** Horizontal and vertical beam spreads interpolated due to no valid I.E.S. standard.

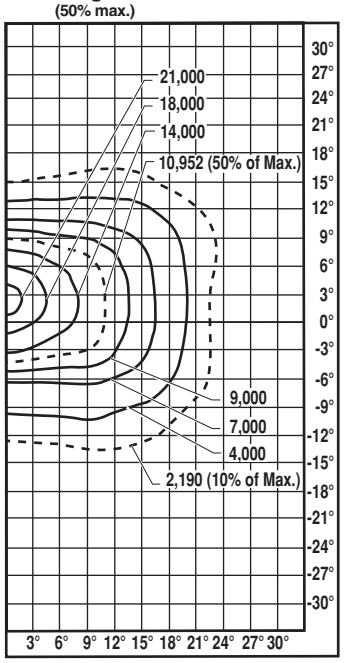
Isocandela Diagrams

Spot

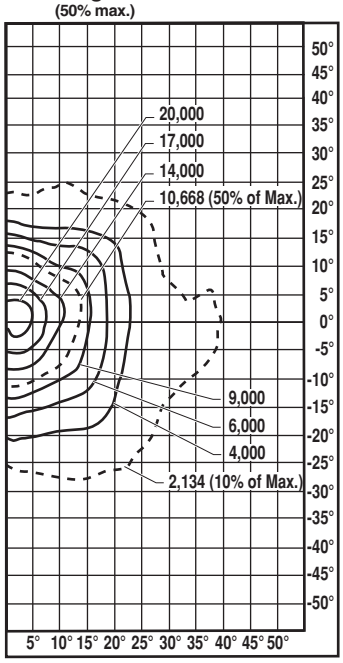
70 watt High Pressure Sodium
ED-17 clear medium base
Test No. kl00566
6,300 initial lumens[1]
ANSI Code S-62
I.E.S. Type: 3H x 3V
Field Angle: 45.9° H x 30.1° V (10% max.)
Beam Angle[2]: 21.7° H x 13.3° V (50% max.)



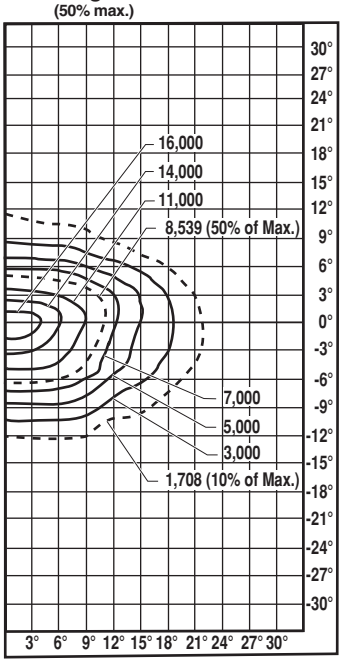
100 watt High Pressure Sodium
ED-17 clear medium base
Test No. kl00510
9,500 initial lumens[1]
ANSI Code S-54
I.E.S. Type: 3H x 3V
Field Angle: 45.9° H x 30.1° V (10% max.)
Beam Angle[2]: 21.7° H x 13.3 ° V (50% max.)



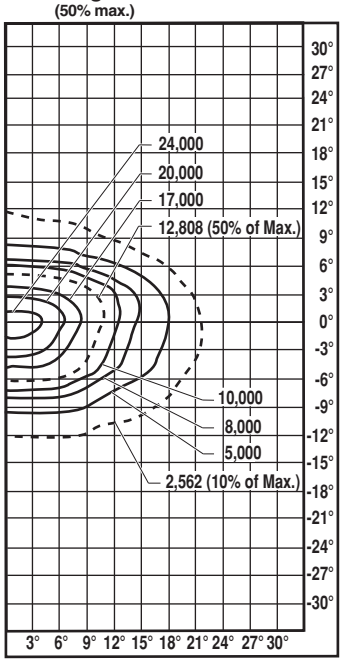
150 watt High Pressure Sodium
ED-17 clear medium base
Test No. kl00372
16,000 initial lumens[1]
ANSI Code S-55
I.E.S. Type: 5H x 4V
Field Angle: 79.1° H x 52.6° V (10% max.)
Beam Angle[2]: 28.1° H x 24.2° V (50% max.)



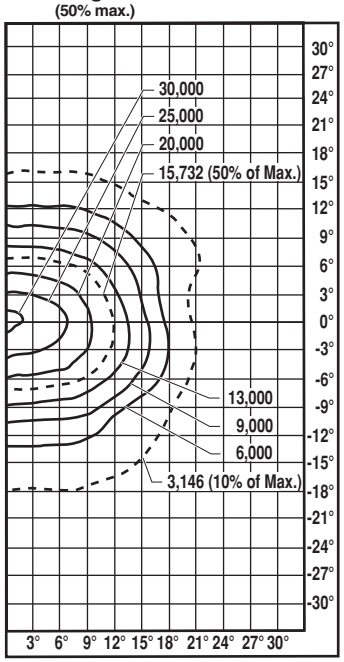
70 watt Pulse Start Metal Halide
ED-17 clear medium base
Test No. kl00564
6,200 initial lumens[1]
ANSI Code M-98
I.E.S. Type: 3H x 2V
Field Angle: 43.4° H x 23.6° V (10% max.)
Beam Angle[2]: 22.5° H x 11.6° V (50% max.)



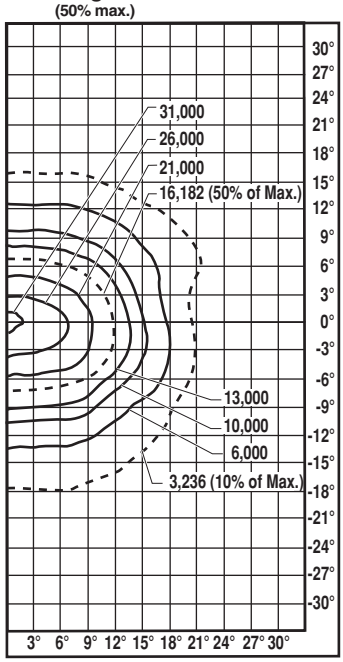
100 watt Pulse Start Metal Halide
ED-17 clear medium base
Test No. kl00419
9,300 initial lumens[1]
ANSI Code M-90
I.E.S. Type: 3H x 2V
Field Angle: 43.4° H x 23.6° V (10% max.)
Beam Angle[2]: 22.5° H x 11.6° V (50% max.)



150 watt Pulse Start Metal Halide
ED-17 clear medium base
Test No. kl00563
14,000 initial lumens[1]
ANSI Code M-102
I.E.S. Type: 3H x 3V
Field Angle: 42.9° H x 33.9° V (10% max.)
Beam Angle[2]: 23.8° H x 14.5° V (50% max.)



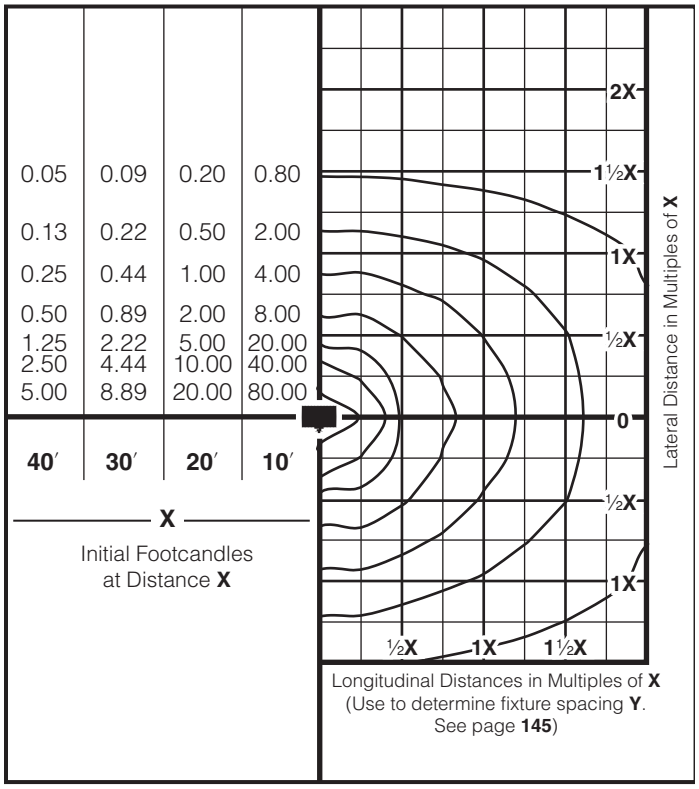
175 watt Metal Halide
ED-17 clear medium base
Test No. kl00424
14,400 initial lumens[1]
ANSI Code M-57
I.E.S. Type: 3H x 3V
Field Angle: 42.9° H x 33.9° V (10% max.)
Beam Angle[2]: 23.8° H x 14.5° V (50% max.)



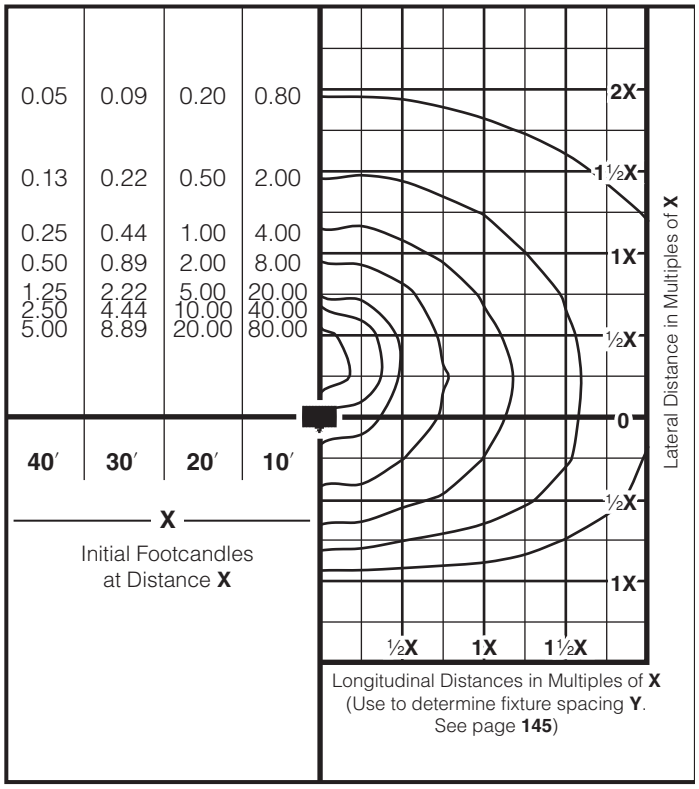
Spot

150HPS Isofootcandle Diagrams

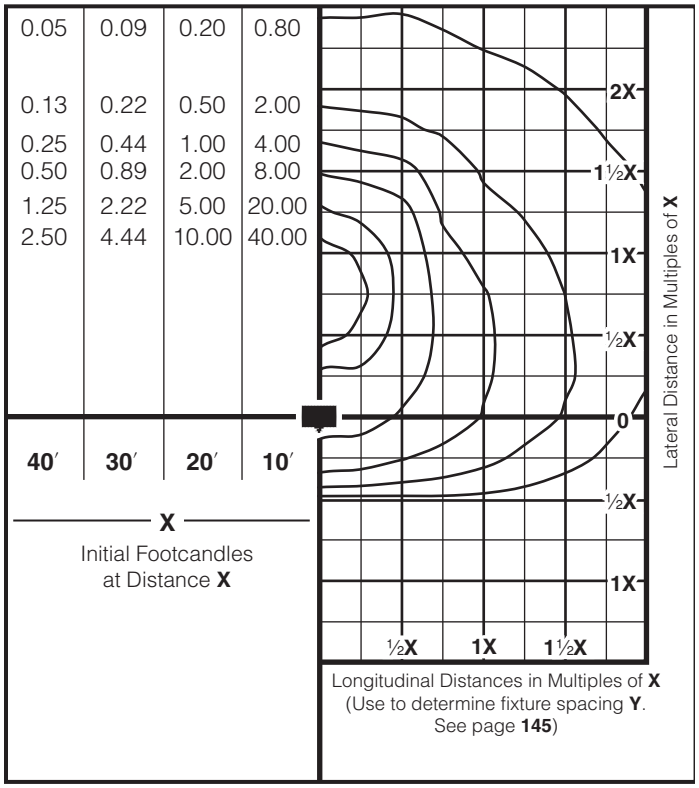
150 watt High Pressure Sodium @ 0° Aiming Angle



150 watt High Pressure Sodium @ 20° Aiming Angle



150 watt High Pressure Sodium @ 40° Aiming Angle

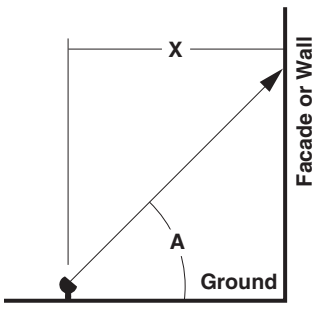


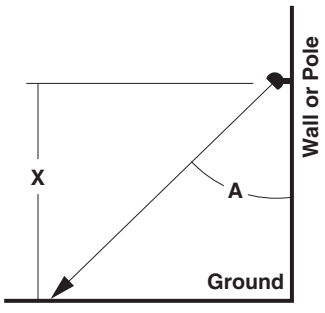
PRORATING CHART

Isofootcandle diagrams shown with 150 watt High Pressure Sodium lamp use the following prorating multipliers for other wattages:

Lamp	Initial Lumens	Factor
150HPS	16,000	1.000
100HPS	9,500	0.594
70HPS	6,400	0.400

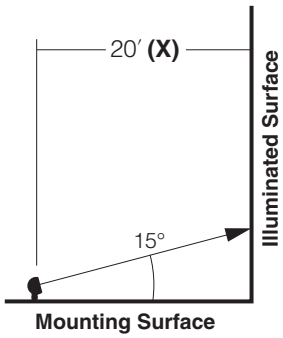
Aiming Angle (A) see individual diagrams





150HPS Lateral Spacing

Spot



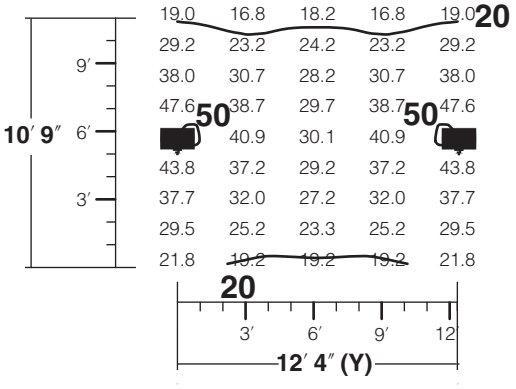
AFL15/150HPS
ED-17 clear medium base
Photometric Test No. KL00372
16,000 initial lumens
ANSI Code S-55

To calculate spacing **(Y)** for Setback Distances other than 20′ shown, multiply actual Setback Distance **(X)** by the following:

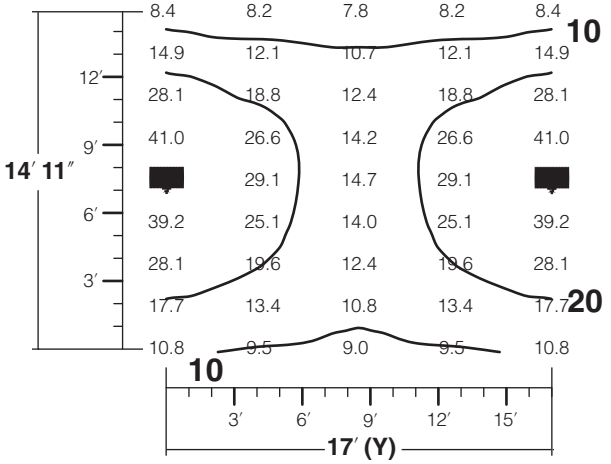
Uniformity Ratio	Factor
3:1	0.75
6:1	1.00
12:1	1.40

Example: 21′ Setback, **6:1** desired uniformity, **Y** = 21′ x 1.00 or **21′ (21)**

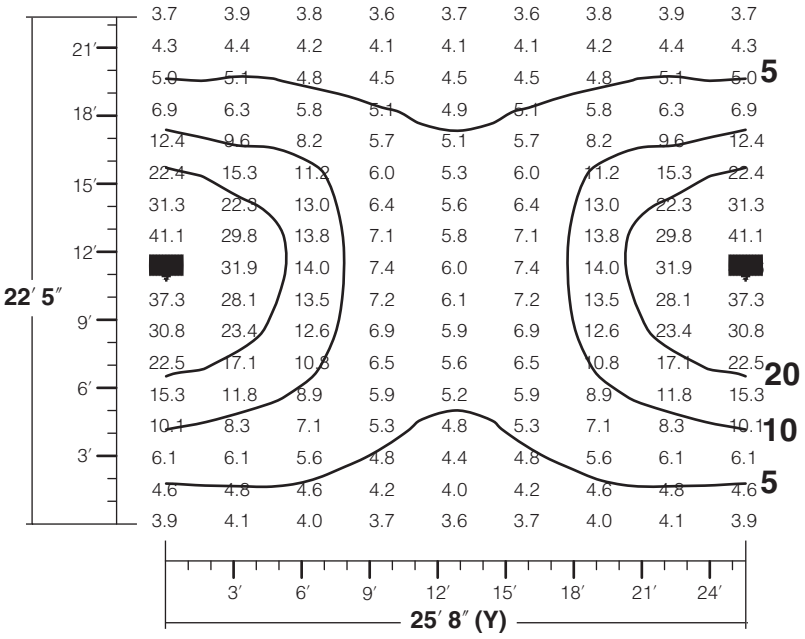
Use for optimum visual uniformity on facades, walls or signs **3:1**



Use where a slightly noticeable drop in uniformity is acceptable **6:1**



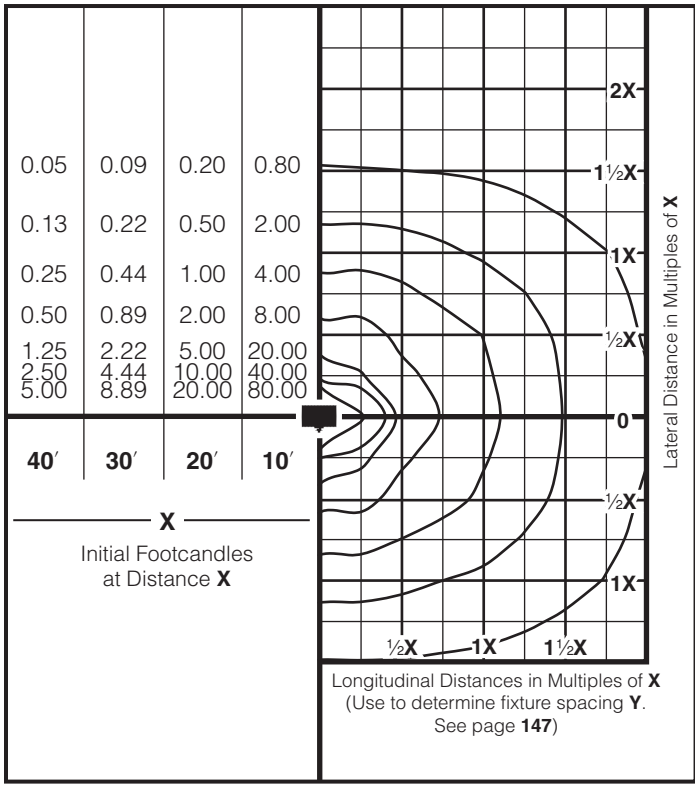
Use for area lighting where maximum spacing is desired **12:1**



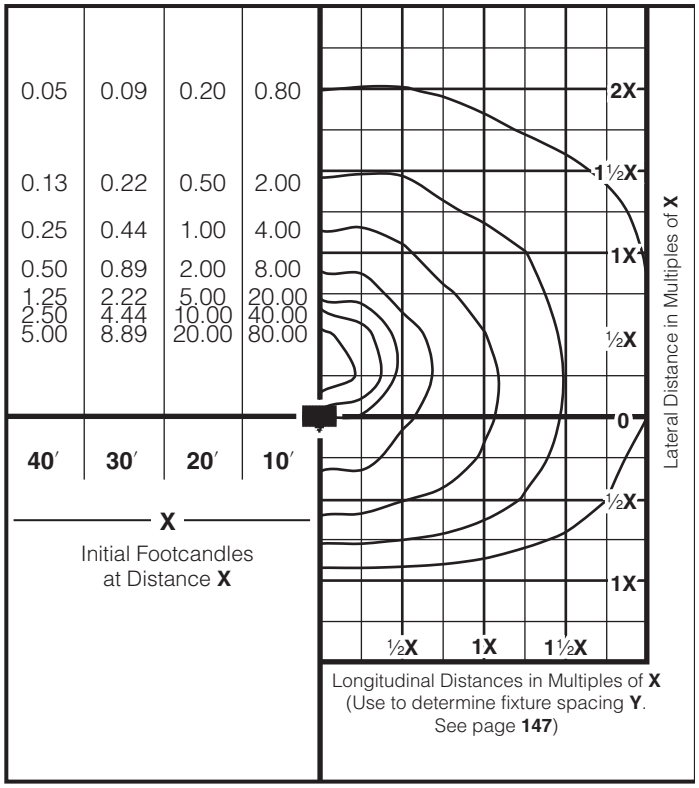
Spot

175MH Isofootcandle Diagrams

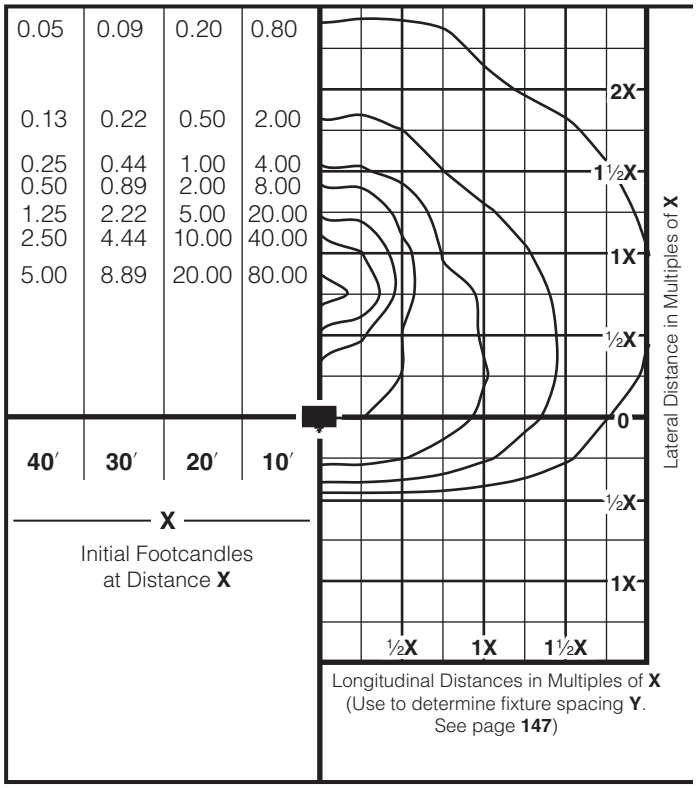
175 watt Metal Halide @ 0° Aiming Angle



175 watt Metal Halide @ 20° Aiming Angle



175 watt Metal Halide @ 40° Aiming Angle

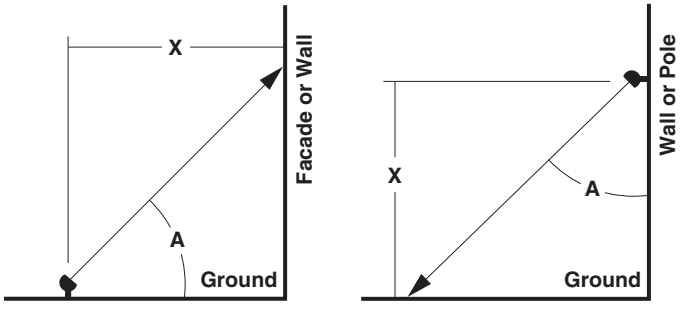


PRORATING CHART

Isofootcandle diagrams shown with 175 watt Metal Halide lamp use the following prorating multipliers for other wattages:

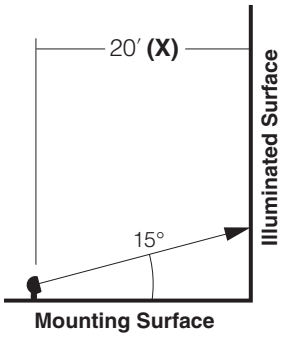
Lamp	Initial Lumens	Factor
175MH	15,000	1.000
150MH	13,500	0.900
100MH	8,500	0.567
70MH	5,600	0.373

Aiming Angle (A) see individual diagrams



175MH Lateral Spacing

Spot



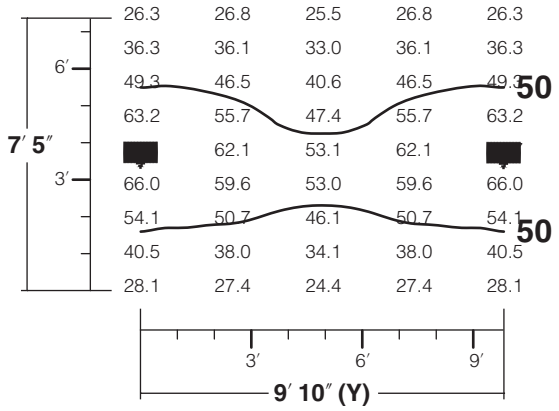
AFL15/175MH
ED-17 clear medium base
Photometric Test No. KL00424
14,400 initial lumens
ANSI Code M-57

To calculate spacing **(Y)** for Setback Distances other than 20′ shown, multiply actual Setback Distance **(X)** by the following:

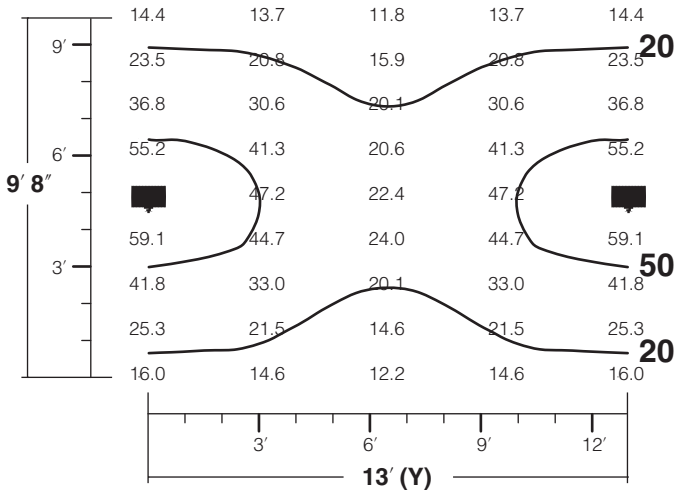
Uniformity Ratio	Factor
3:1	0.50
6:1	0.73
12:1	0.94

Example: 21′ Setback, **6:1** desired uniformity, **Y** = 21′ x 0.73 or **15.33′ (15′ 4″)**

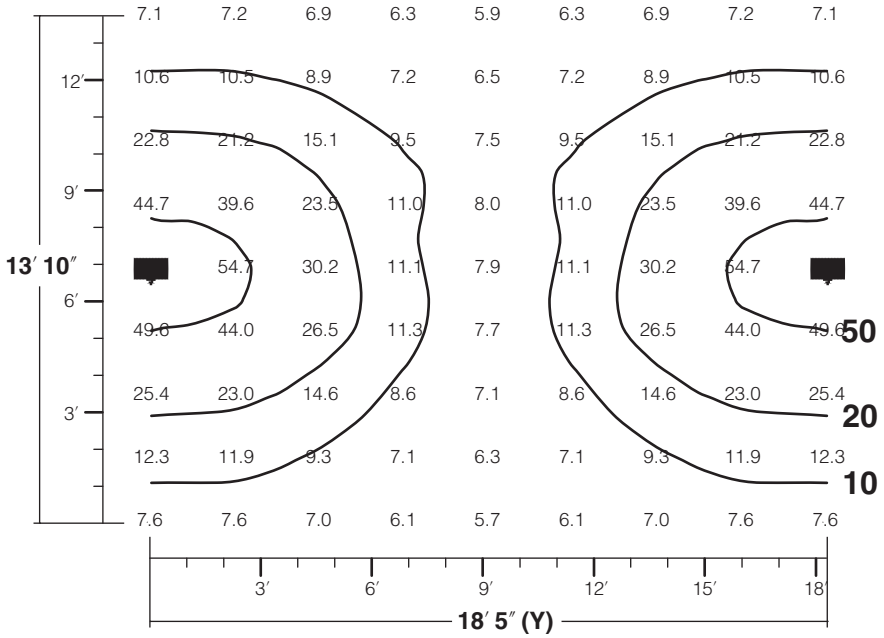
Use for optimum visual uniformity on facades, walls or signs **3:1**



Use where a slightly noticeable drop in uniformity is acceptable **6:1**



Use for area lighting where maximum spacing is desired **12:1**



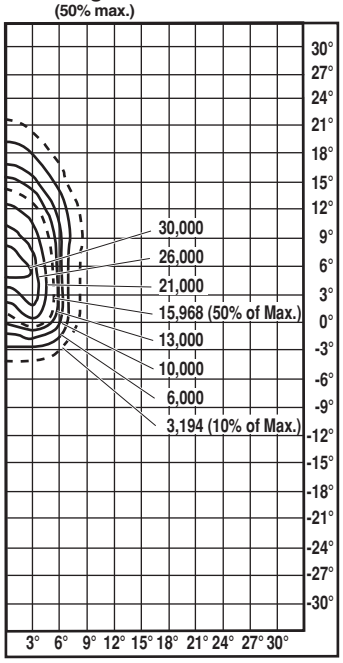
[1] All **Initial Lumen** values shown are approximate and may vary from one manufacturer to another. Consult lamp manufacturer's data for exact lumen and life data.

[2] **Beam Angle:** Horizontal and vertical beam spreads interpolated due to no valid I.E.S. standard.

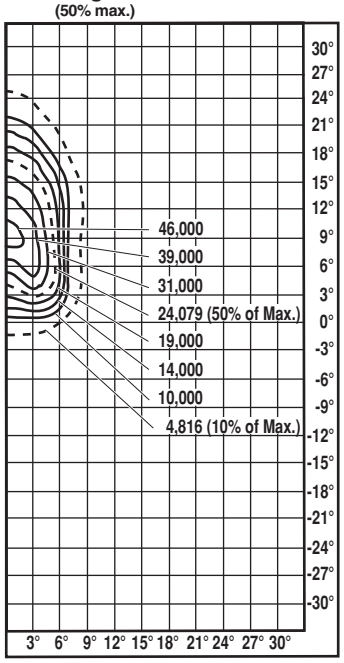
Isocandela Diagrams

Narrow Spot

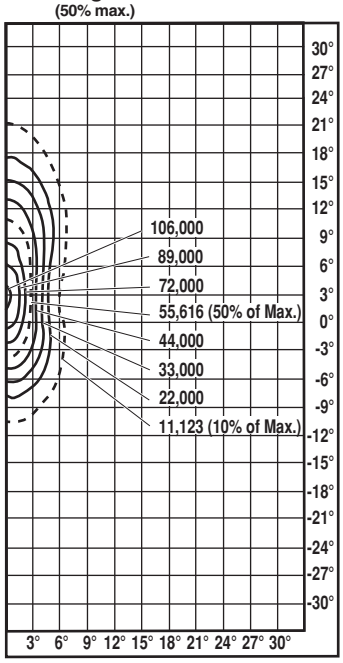
70 watt High Pressure Sodium
ED-17 clear medium base
Test No. kl00572
6,300 initial lumens[1]
ANSI Code S-62
I.E.S. Type: 1H x 2V
Field Angle: 16.8° H x 26.3° V (10% max.)
Beam Angle[2]: 10.6° H x 13.5° V (50% max.)



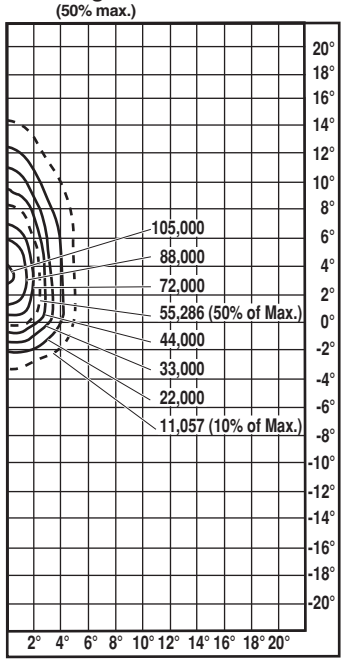
100 watt High Pressure Sodium
ED-17 clear medium base
Test No. kl00511
9,500 initial lumens[1]
ANSI Code S-54
I.E.S. Type: 1H x 2V
Field Angle: 16.8° H x 26.3° V (10% max.)
Beam Angle[2]: 10.6° H x 13.5° V (50% max.)



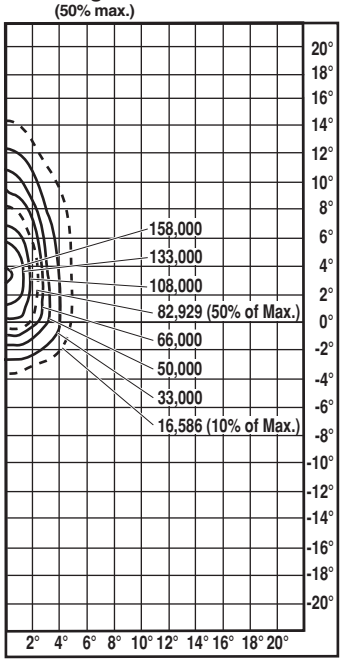
150 watt High Pressure Sodium
ED-17 clear medium base
Test No. kl00436
16,000 initial lumens[1]
ANSI Code S-55
I.E.S. Type: 1H x 3V
Field Angle: 13.2° H x 31.4° V (10% max.)
Beam Angle[2]: 5.5° H x 14.7° V (50% max.)



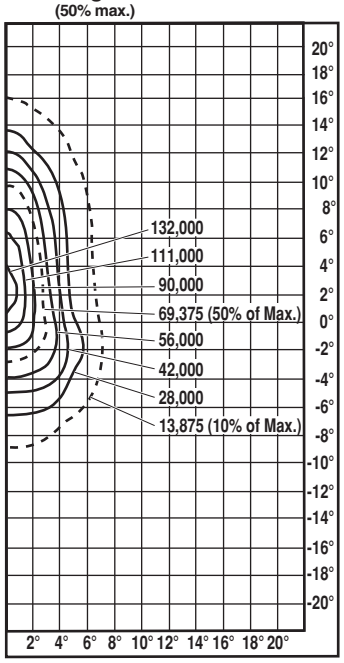
70 watt Pulse Start Metal Halide
ED-17 clear medium base
Test No. kl00570
6,200 initial lumens[1]
ANSI Code M-98
I.E.S. Type: 1H x 1V
Field Angle: 9.8° H x 17.9° V (10% max.)
Beam Angle[2]: 4.8° H x 8.7° V (50% max.)



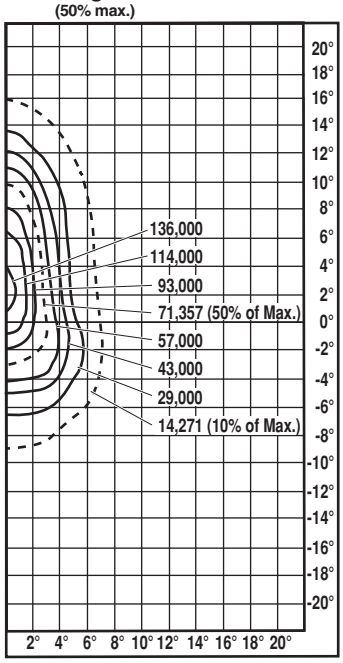
100 watt Pulse Start Metal Halide
ED-17 clear medium base
Test No. kl00420
9,300 initial lumens[1]
ANSI Code M-90
I.E.S. Type: 1H x 1V
Field Angle: 9.8° H x 17.9° V (10% max.)
Beam Angle[2]: 4.8° H x 8.7° V (50% max.)



150 watt Pulse Start Metal Halide
ED-17 clear medium base
Test No. kl00569
14,000 initial lumens[1]
ANSI Code M-102
I.E.S. Type: 1H x 2V
Field Angle: 13.9° H x 24.8° V (10% max.)
Beam Angle[2]: 6.2° H x 12.8° V (50% max.)



175 watt Metal Halide
ED-17 clear medium base
Test No. kl00360
14,400 initial lumens[1]
ANSI Code M-57
I.E.S. Type: 1H x 2V
Field Angle: 13.9° H x 24.8° V (10% max.)
Beam Angle[2]: 6.2° H x 12.8° V (50% max.)

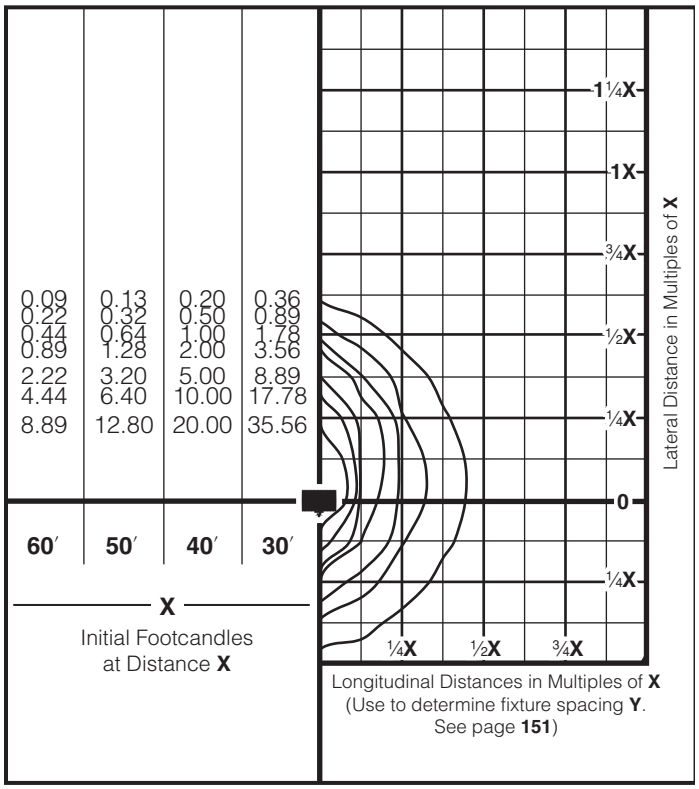


AFL16

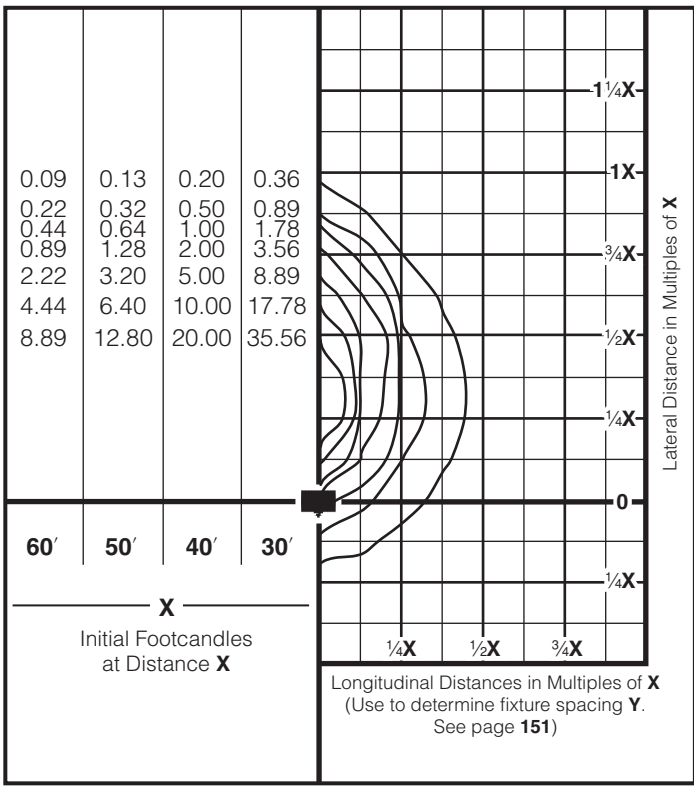
Narrow Spot

150HPS Isofootcandle Diagrams

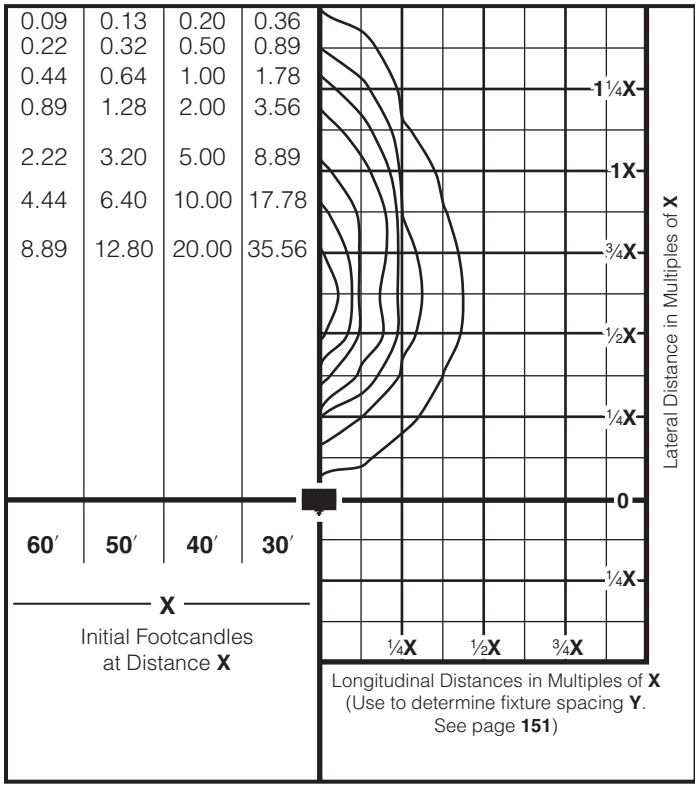
150 watt High Pressure Sodium @ 0° Aiming Angle



150 watt High Pressure Sodium @ 15° Aiming Angle



150 watt High Pressure Sodium @ 30° Aiming Angle

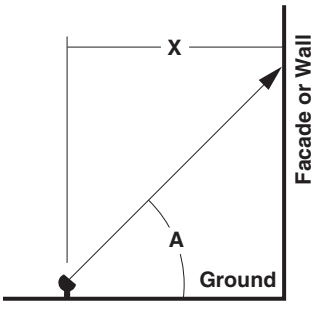


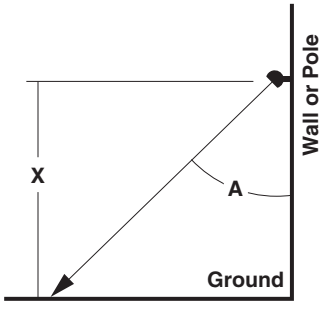
PRORATING CHART

Isofootcandle diagrams shown with 150 watt High Pressure Sodium lamp use the following prorating multipliers for other wattages:

Lamp	Initial Lumens	Factor
150HPS	16,000	1.000
100HPS	9,500	0.594
70HPS	6,300	0.394

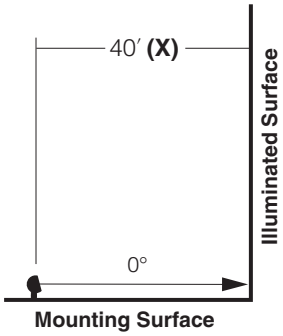
Aiming Angle (A) see individual diagrams





150HPS Lateral Spacing

Narrow Spot



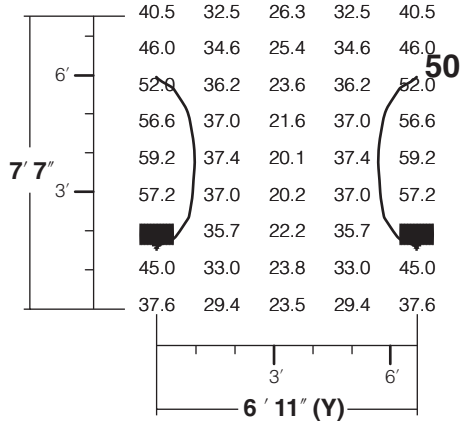
AFL16/150HPS
ED-17 clear medium base
Photometric Test No. KL00436
16,000 initial lumens
ANSI Code S-55

To calculate spacing **(Y)** for Setback Distances other than 40′ shown, multiply actual Setback Distance **(X)** by the following:

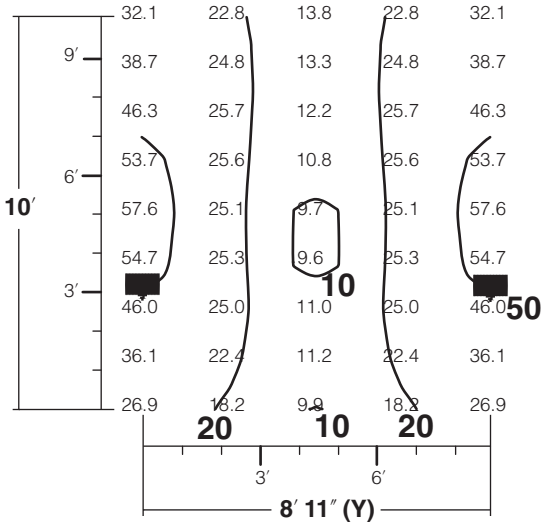
Uniformity Ratio	Factor
3:1	0.14
6:1	0.21
12:1	0.29

Example: 41′ Setback, **6:1** desired uniformity, **Y** = 41′ x 0.21 or **8.61′ (8′ 7″)**

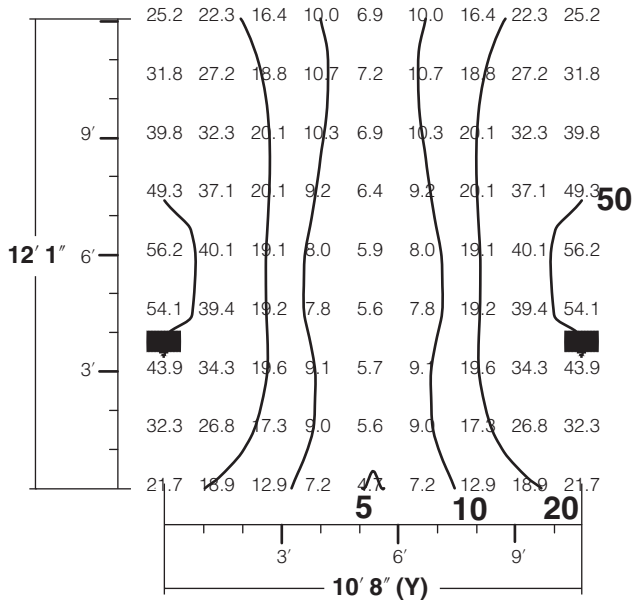
Use for optimum visual uniformity on facades, walls or signs **3:1**



Use where a slightly noticeable drop in uniformity is acceptable **6:1**



Use for area lighting where maximum spacing is desired **12:1**

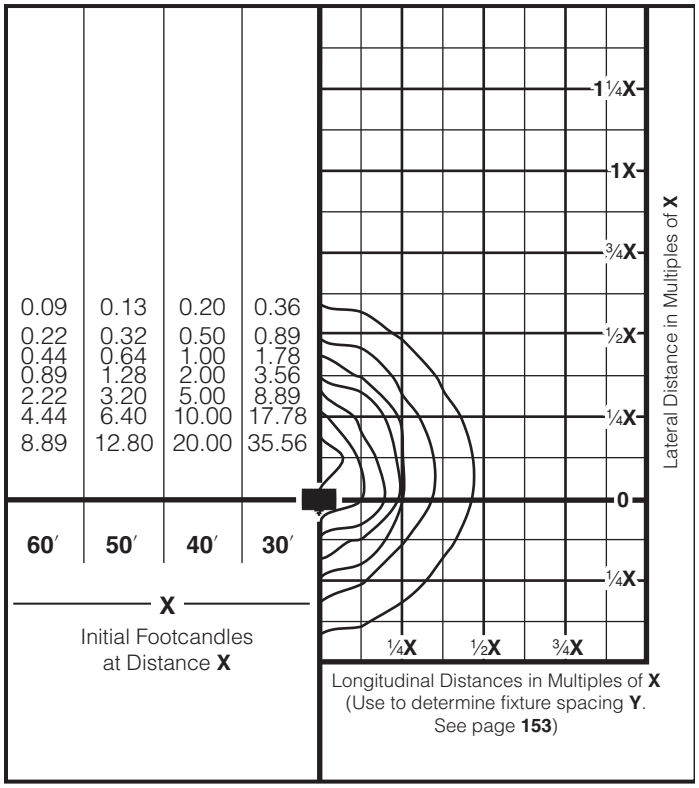


AFL16

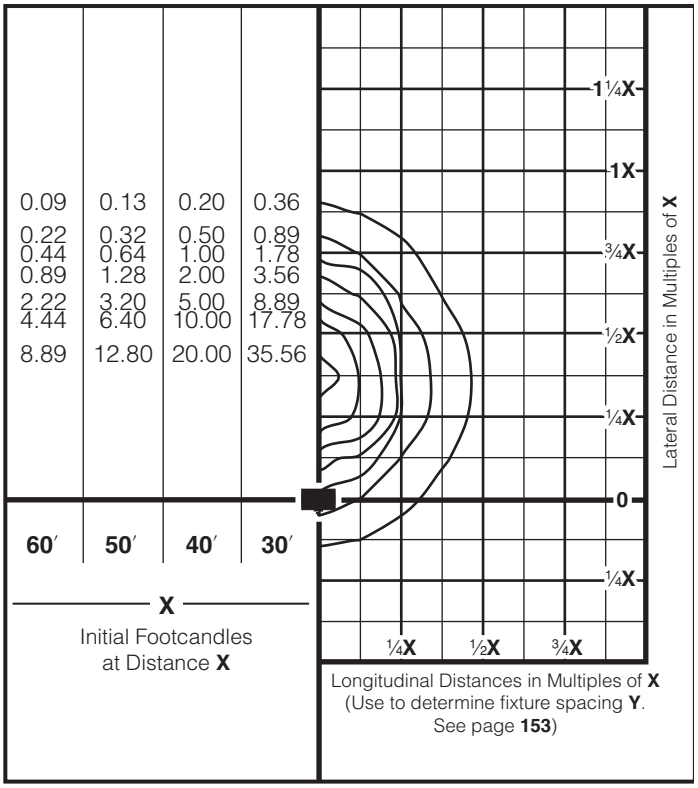
Narrow Spot

175MH Isofootcandle Diagrams

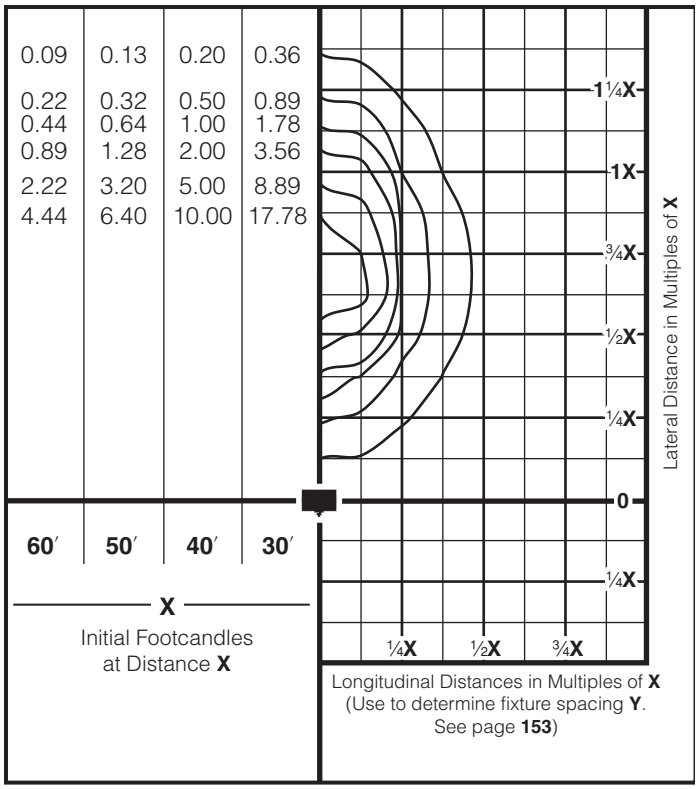
175 watt Metal Halide @ 0° Aiming Angle



175 watt Metal Halide @ 15° Aiming Angle



175 watt Metal Halide @ 30° Aiming Angle

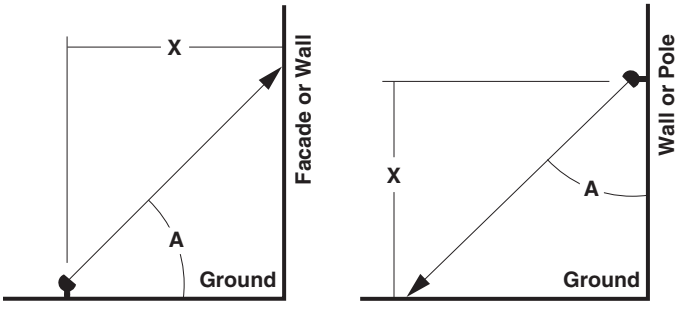


PRORATING CHART

Isofootcandle diagrams shown with 175 watt Metal Halide lamp use the following prorating multipliers for other wattages:

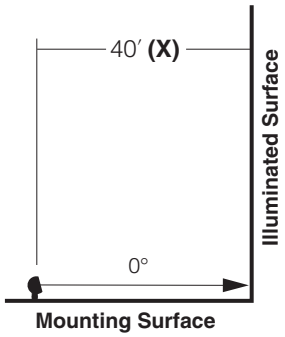
Lamp	Initial Lumens	Factor
175MH	15,000	1.000
150MH	13,500	0.900
100MH	9,000	0.600
70MH	5,600	0.373

Aiming Angle (A) see individual diagrams



175MH Lateral Spacing

Narrow Spot



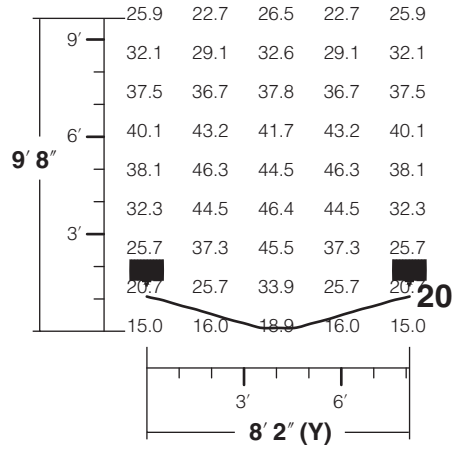
AFL16/175MH
ED-17 clear medium base
Photometric Test No. KL00360
14,400 initial lumens
ANSI Code M-57

To calculate spacing **(Y)** for Setback Distances other than 40′ shown, multiply actual Setback Distance **(X)** by the following:

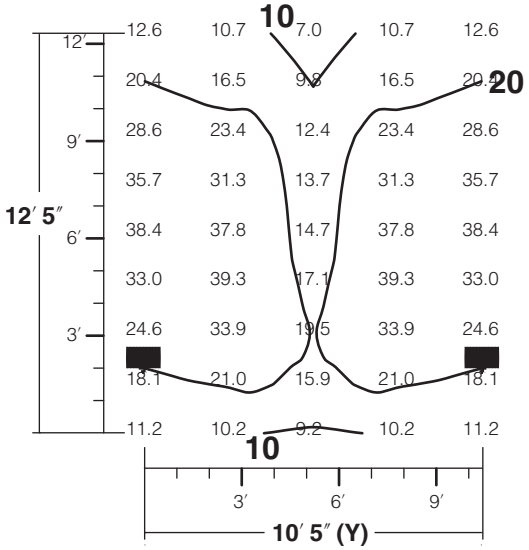
Uniformity Ratio	Factor
3:1	0.19
6:1	0.28
12:1	0.39

Example: 41′ Setback, **6:1** desired uniformity, **Y** = 41′ x 0.28 or **11.48′ (11′ 6″)**

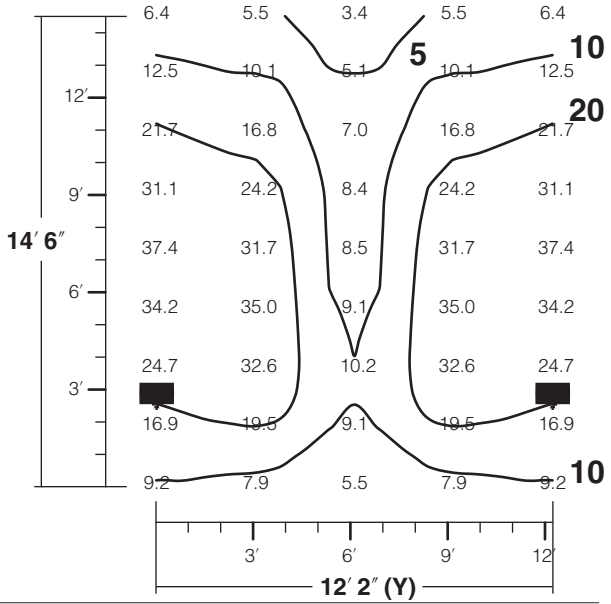
Use for optimum visual uniformity on facades, walls or signs **3:1**



Use where a slightly noticeable drop in uniformity is acceptable **6:1**



Use for area lighting where maximum spacing is desired **12:1**



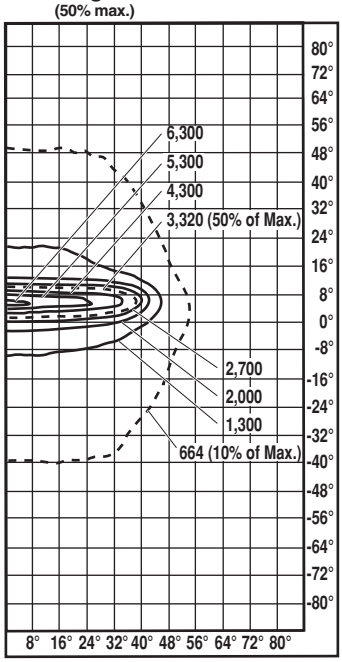
[1] All **Initial Lumen** values shown are approximate and may vary from one manufacturer to another. Consult lamp manufacturer's data for exact lumen and life data.

[2] **Beam Angle:** Horizontal and vertical beam spreads interpolated due to no valid I.E.S. standard.

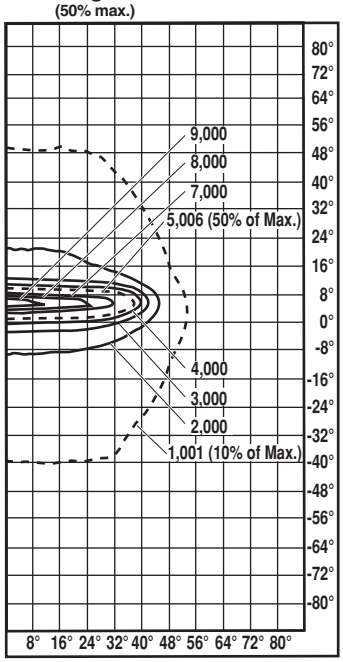
Isocandela Diagrams

Horizontal Spot

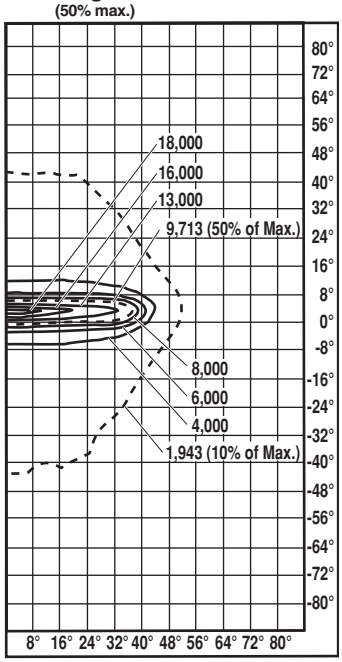
70 watt High Pressure Sodium
ED-17 clear medium base
Test No. kI00575
6,300 initial lumens[1]
ANSI Code S-62
I.E.S. Type: 6H x 5V
Field Angle: 107.2° H x 89.6° V (10% max.)
Beam Angle[2]: 75.1° H x 9.1° V (50% max.)



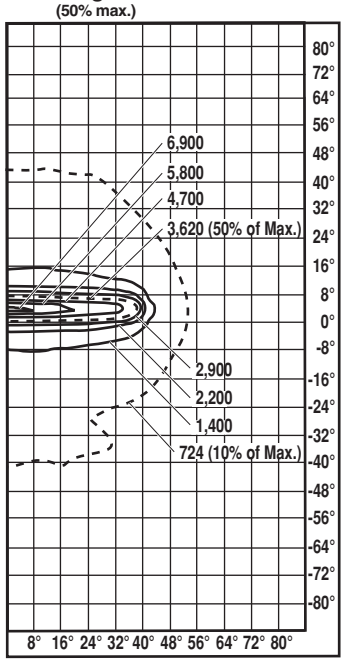
100 watt High Pressure Sodium
ED-17 clear medium base
Test No. kI00512
9,500 initial lumens[1]
ANSI Code S-54
I.E.S. Type: 6H x 5V
Field Angle: 107.2° H x 89.6° V (10% max.)
Beam Angle[2]: 75.0° H x 9.1° V (50% max.)



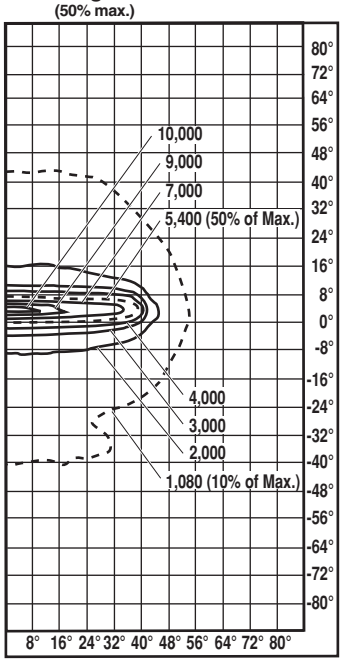
150 watt High Pressure Sodium
ED-17 clear medium base
Test No. kI00377
16,000 initial lumens[1]
ANSI Code S-55
I.E.S. Type: 6H x 5V
Field Angle: 103.3° H x 85.9° V (10% max.)
Beam Angle[2]: 74.0° H x 7.2° V (50% max.)



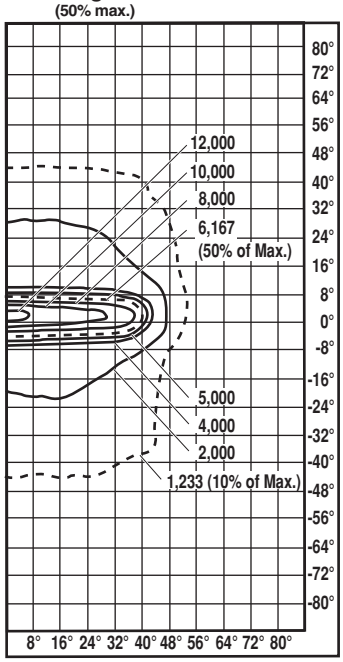
70 watt Pulse Start Metal Halide
ED-17 clear medium base
Test No. kI00497
5,900 initial lumens[1]
ANSI Code M-98
I.E.S. Type: 6H x 5V
Field Angle: 107.9° H x 85.3° V (10% max.)
Beam Angle[2]: 76.9° H x 7.6° V (50% max.)



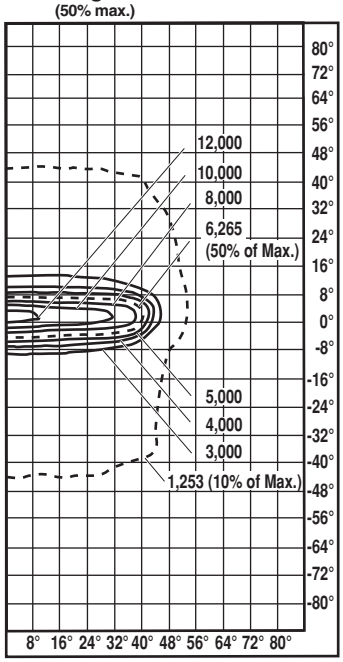
100 watt Pulse Start Metal Halide
ED-17 clear medium base
Test No. kI00392
8,800 initial lumens[1]
ANSI Code M-90
I.E.S. Type: 6H x 5V
Field Angle: 107.9° H x 85.3° V (10% max.)
Beam Angle[2]: 76.9° H x 7.6° V (50% max.)



150 watt Pulse Start Metal Halide
ED-17 clear medium base
Test No. kI00401
12,600 initial lumens[1]
ANSI Code M-102
I.E.S. Type: 6H x 5V
Field Angle: 106.9° H x 89.7° V (10% max.)
Beam Angle[2]: 80.1° H x 11.8° V (50% max.)



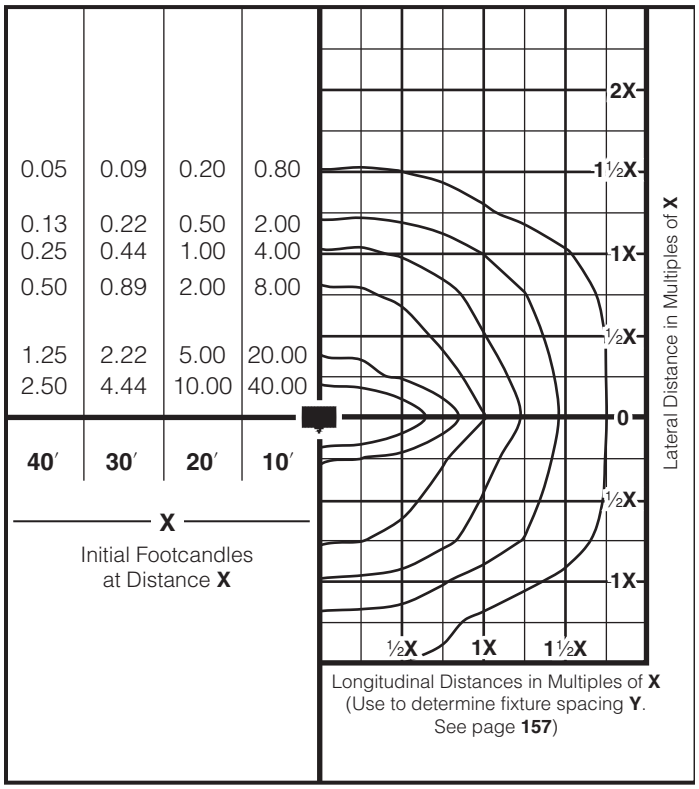
175 watt Metal Halide
ED-17 clear medium base
Test No. kI00347
12,800 initial lumens[1]
ANSI Code M-57
I.E.S. Type: 6H x 5V
Field Angle: 106.9° H x 89.7° V (10% max.)
Beam Angle[2]: 80.1° H x 11.8° V (50% max.)



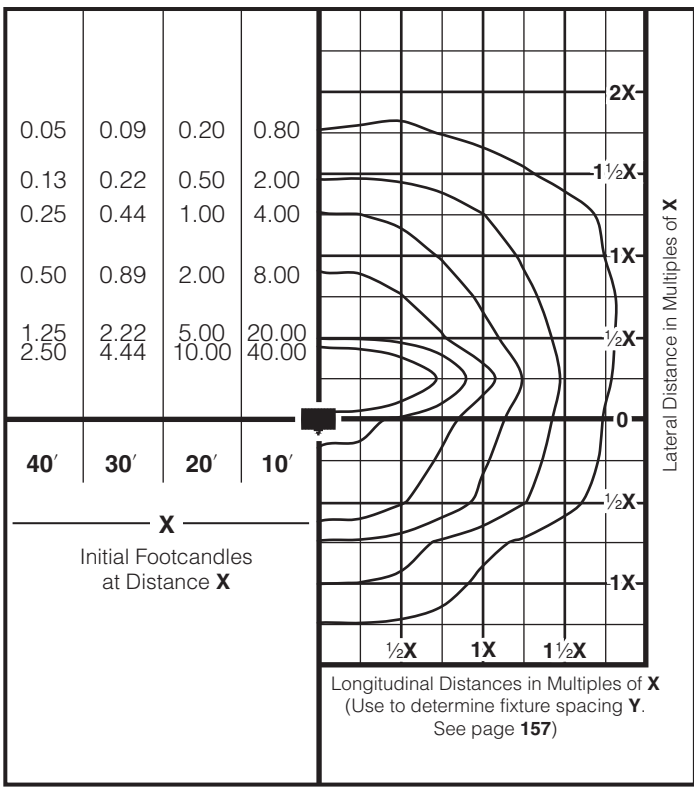
Horizontal Spot

150HPS Isofootcandle Diagrams

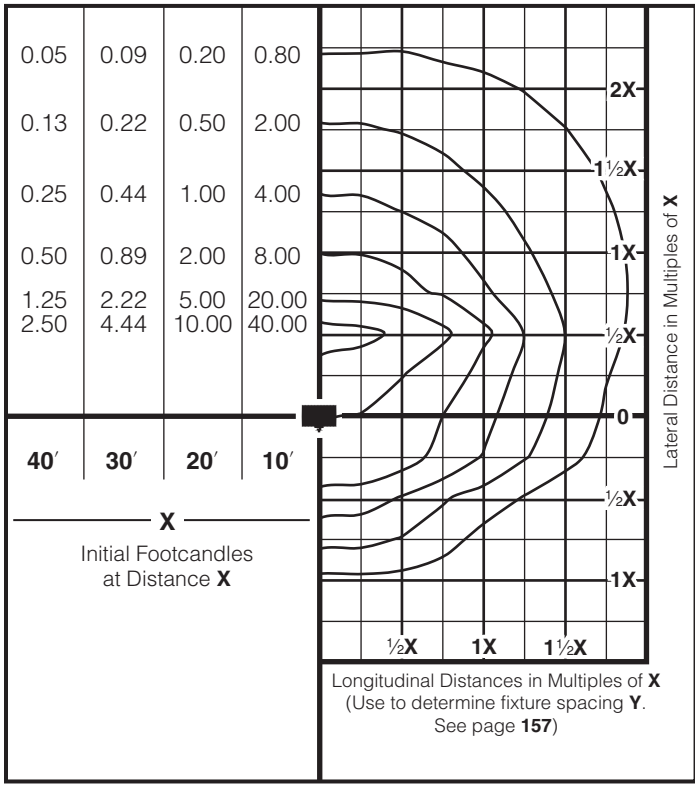
150 watt High Pressure Sodium @ 0° Aiming Angle



150 watt High Pressure Sodium @ 10° Aiming Angle



150 watt High Pressure Sodium @ 20° Aiming Angle

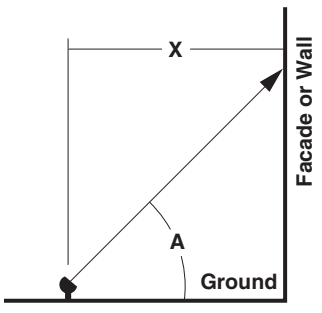


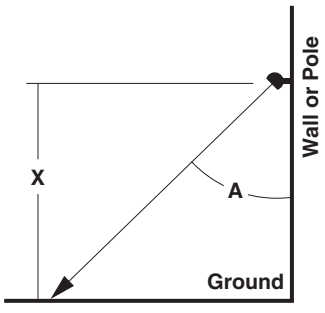
PRORATING CHART

Isofootcandle diagrams shown with 150 watt High Pressure Sodium lamp use the following prorating multipliers for other wattages:

Lamp	Initial Lumens	Factor
150HPS	16,000	1.000
100HPS	9,500	0.594
70HPS	6,300	0.394

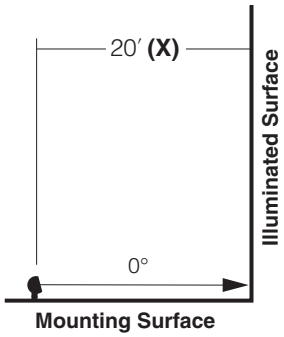
Aiming Angle (A) see individual diagrams





150HPS Lateral Spacing

Horizontal Spot



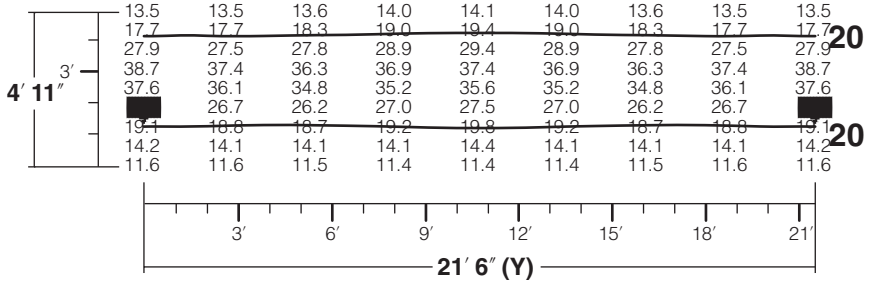
AFL17/150HPS
ED-17 clear medium base
Photometric Test No. KL00377
16,000 initial lumens
ANSI Code S-55

To calculate spacing **(Y)** for Setback Distances other than 20′ shown, multiply actual Setback Distance **(X)** by the following:

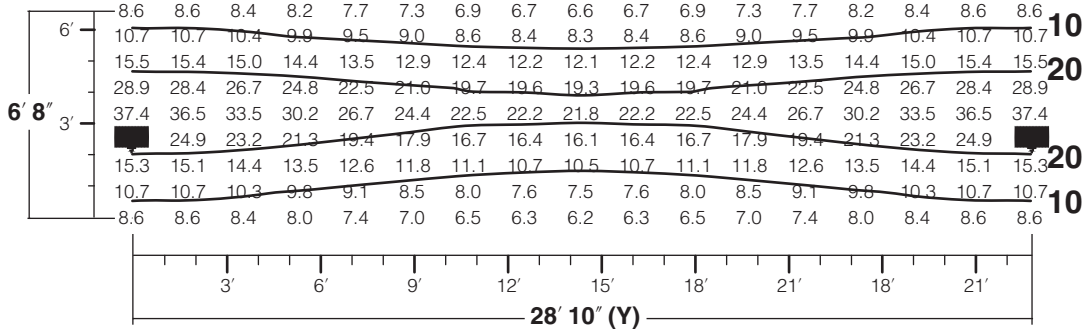
Uniformity Ratio	Factor
3:1	0.63
6:1	1.20
12:1	1.75

Example: 21′ Setback, **6:1** desired uniformity, **Y** = 21′ x 1.20 or **25.2′ (25′ 2″)**

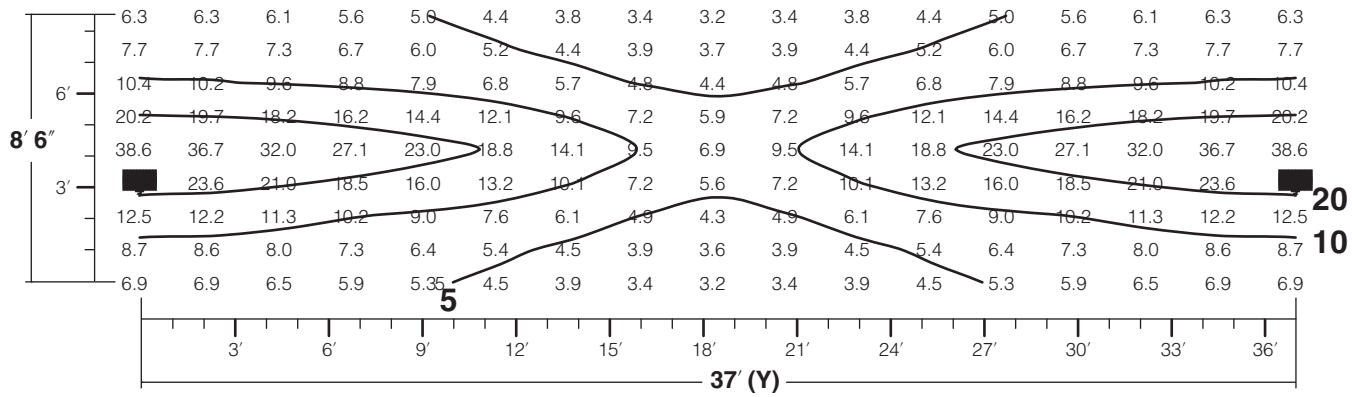
Use for optimum visual uniformity on facades, walls or signs **3:1**



Use where a slightly noticeable drop in uniformity is acceptable **6:1**



Use for area lighting where maximum spacing is desired **12:1**



Photometric System Design

Illuminance level required

Charts below show I.E.S. recommended illuminance in Average Maintained Footcandles. These values correspond to the values on each Isofootcandle diagram on the following "Isofootcandle Diagram" pages. Refer to the beam spread charts on pages **60-61**.

Floodlighting			Parking Lot Lighting		
Surface Material Examples See page **244** for average surface reflectance values.	Surrounding Light Level		Level of Activity	Vehicular Traffic	Pedestrian Security
	Bright	Dark		Avg. Maintained Footcandles	
	Avg. Maintained Footcandles				
Light marble, white or cream terra cotta, white plaster	**15**	**5**	Low	**0.5**	**0.8**
Concrete, tinted stucco, light gray and buff limestone, buff face brick	**20**	**10**	Medium	**1**	**2**
Common tan brick, sandstone, medium gray limestone	**30**	**15**	High	**2**	**4**
Common red brick, stained wood, dark gray brick	**50**	**20**			

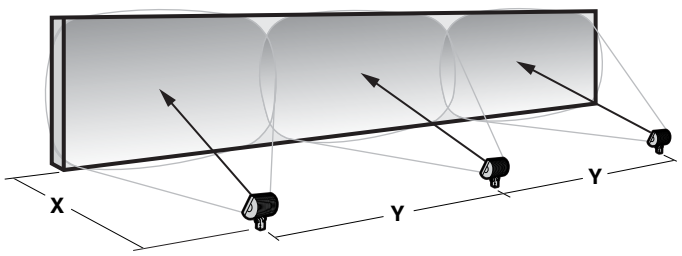
Uniformity of Illumination

Dimension **X** is obtained directly from the isofootcandle diagram. Listed **X** dimensions represent the optimum range for that lamp and wattage. Dimension **Y** (fixture spacing) is simply a multiple of **X** obtained by figuring the longitudinal distance to the next fixture. The next fixture is located where its light pattern intersects the previous fixture as illustrated above.

Refer to individual lateral spacing information for specific fixtures for details on determining spacing **Y** for various mounting distances **X**.

NOTE: All areas of uniformity are based on a lighting system, not individual fixtures. Therefore areas of uniformity are calculated assuming contributions from adjacent fixtures.

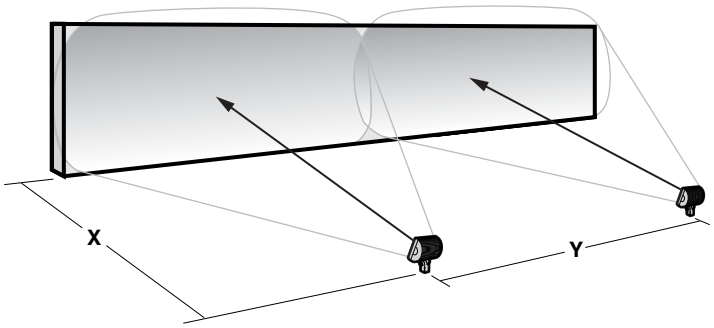
Facade, Wall, or Sign



For facade, wall, or sign lighting, optimum visual uniformity is achieved when the maximum-to-minimum illumination is no greater than **3:1**.

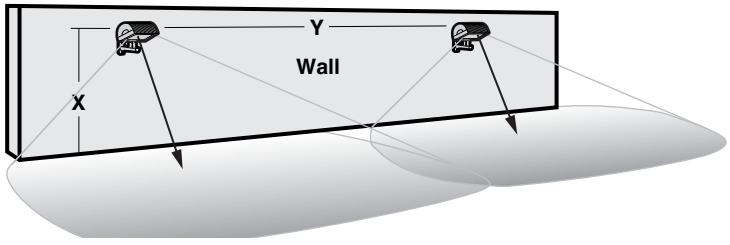
Example:
If **X** = 10′, **Y** would = 30′

Facade, Wall, or Sign



For facade, wall, or sign lighting where a slight noticeable drop in illumination between fixtures is acceptable, use **6:1** uniformity.

Example:
If **X** = 10′, **Y** would = 60′



For parking lot or area lighting, a **12:1** maximum-to-minimum uniformity will provide excellent results.

Example:
If **X** = 10′, **Y** would = 120′

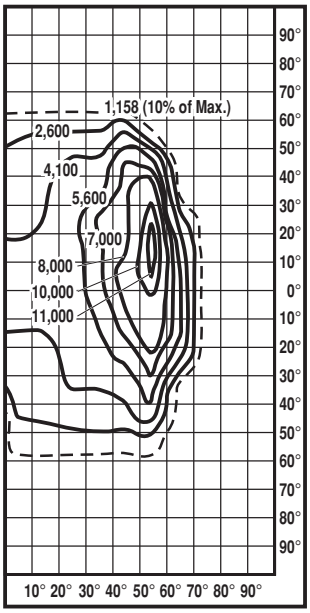
[1] All **Initial Lumen** values shown are approximate and may vary from one manufacturer to another. Consult lamp manufacturer's data for exact lumen and life data.

[2] **Beam Angle:** Horizontal and vertical beam spreads interpolated due to no valid I.E.S. standard.

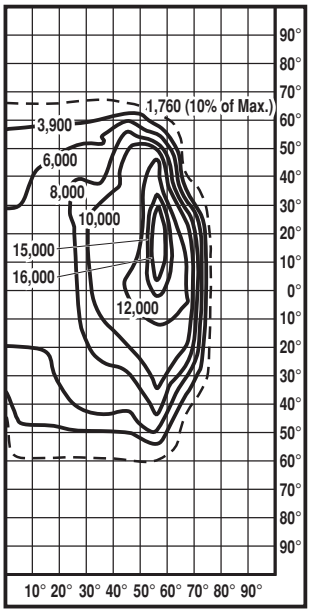
Isocandela Diagrams

Wide Flood

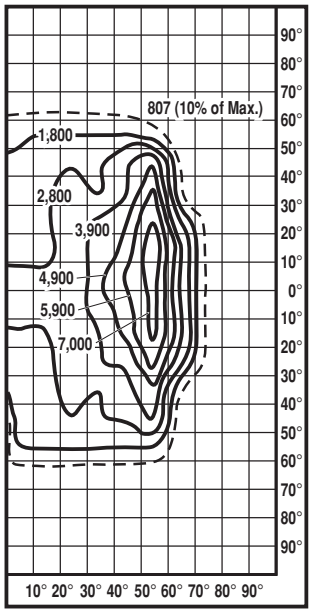
250 watt High Pressure Sodium
E-18 clear mogul base
I.T.L. Test No. 34659
30,000 initial lumens[1]
ANSI Code S-50
I.E.S. Type: 7H x 6V
Field Angle: 146.8° H x 124.0° V (10% max.)
Beam Angle[2]: 132.0° H x 93.0° V (50% max.)



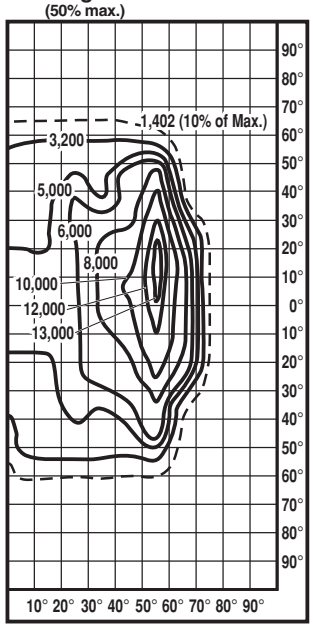
400 watt High Pressure Sodium
E-18 clear mogul base
I.T.L. Test No. 34660
50,000 initial lumens[1]
ANSI Code S-51
I.E.S. Type: 7H x 6V
Field Angle: 147.8° H x 128.0° V (10% max.)
Beam Angle[2]: 136.0° H x 100.0° V (50% max.)



250 watt Metal Halide
BT-28 clear mogul base
I.T.L. Test No. 34661
20,500 initial lumens[1]
ANSI Code M-58
I.E.S. Type: 7H x 6V
Field Angle: 146.6° H x 126.0° V (10% max.)
Beam Angle[2]: 126.0° H x 87.0° V (50% max.)



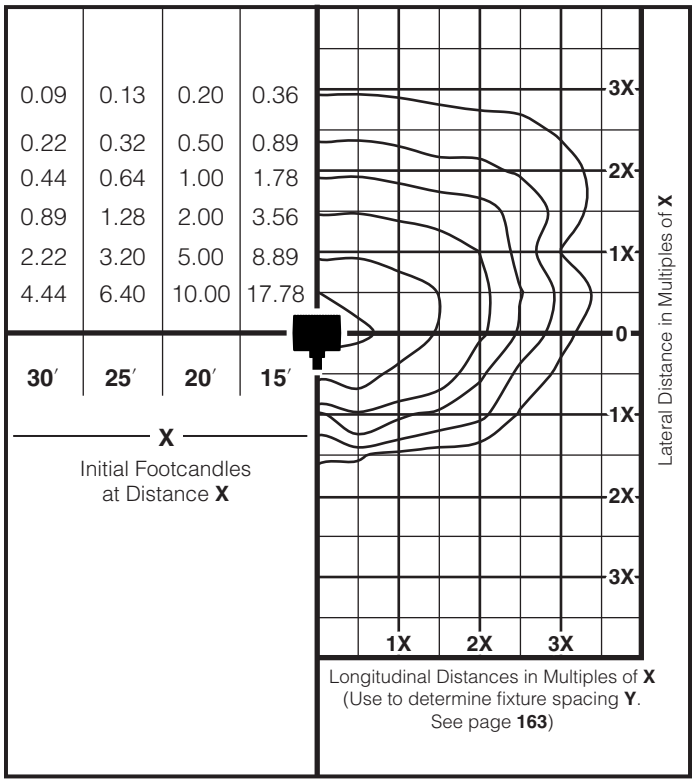
400 watt Metal Halide
BT-28 clear mogul base "reduced outer jacket"
I.T.L. Test No. 34662
36,000 initial lumens[1]
ANSI Code M-59
I.E.S. Type: 7H x 6V
Field Angle: 147.1° H x 126.0° V (10% max.)
Beam Angle[2]: 136.0° H x 101.0° V (50% max.)



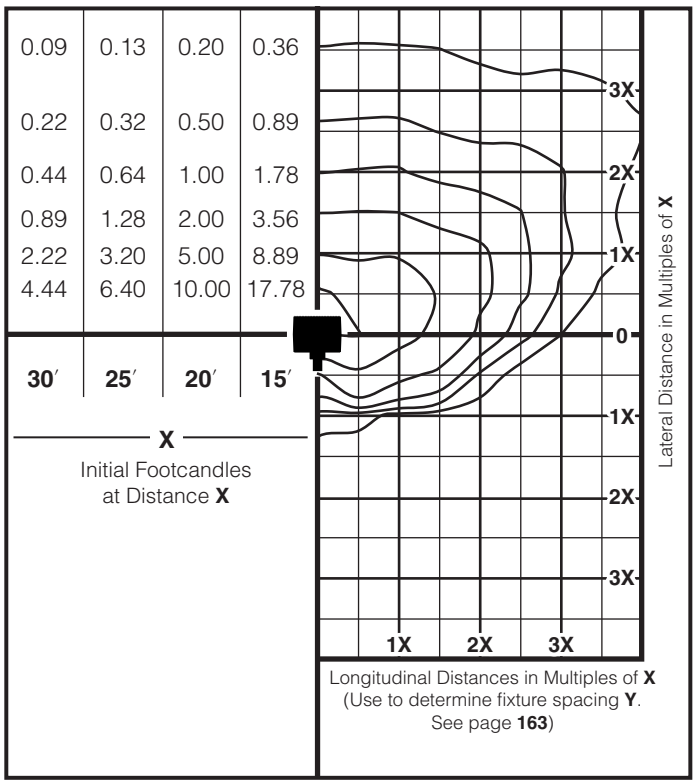
Wide Flood

400HPS Isofootcandle Diagrams

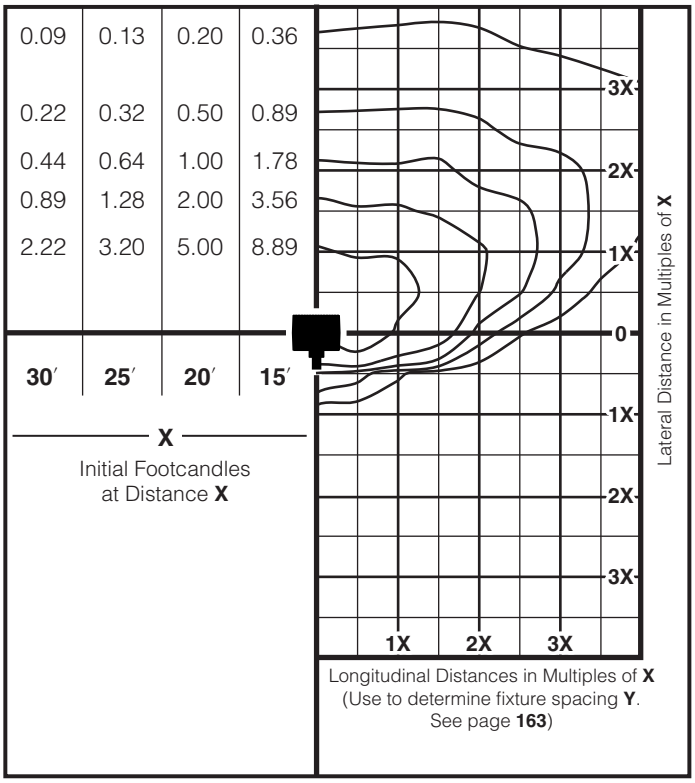
400 watt High Pressure Sodium @ 10° Aiming Angle



400 watt High Pressure Sodium @ 25° Aiming Angle



400 watt High Pressure Sodium @ 40° Aiming Angle

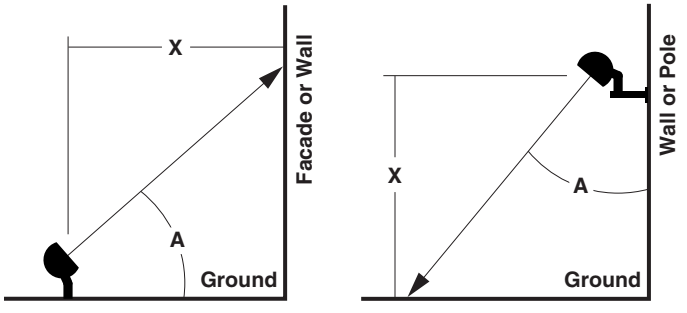


PRORATING CHART

Isofootcandle diagrams shown with 400 watt High Pressure Sodium lamp use the following prorating multipliers for other wattages:

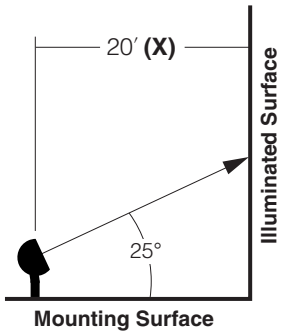
Lamp	Initial Lumens	Factor
400HPS	50,000	1.000
250HPS	30,000	0.600

Aiming Angle (A) see individual diagrams



400HPS Lateral Spacing

Wide Flood



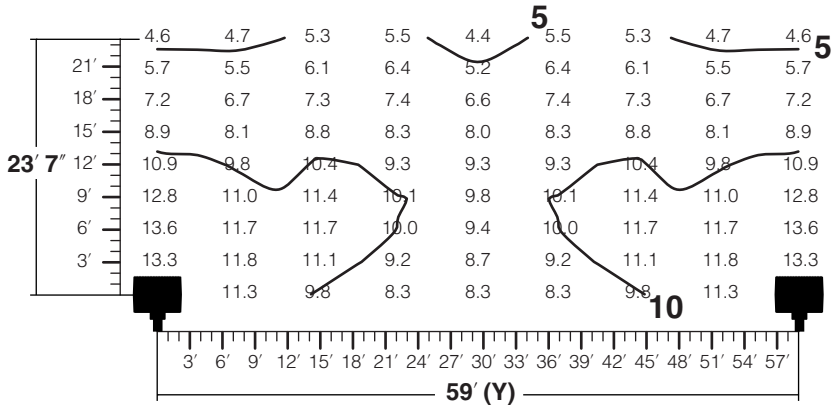
AFL21/400HPS
ED-17 clear medium base
I.T.L. Test No. 34660
50,000 initial lumens
ANSI Code S-51

To calculate spacing **(Y)** for Setback Distances other than 20′ shown, multiply actual Setback Distance **(X)** by the following:

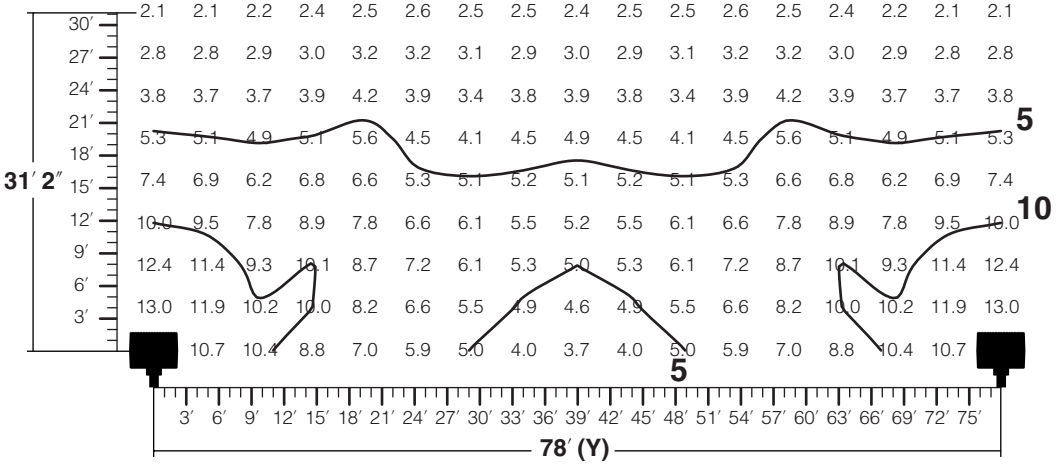
Uniformity Ratio	Factor
3:1	2.95
6:1	3.90
12:1	4.95

Example: 21′ Setback, **6:1** desired uniformity, **Y** = 21′ x 3.90 or **81.9′ (81′ 11″)**

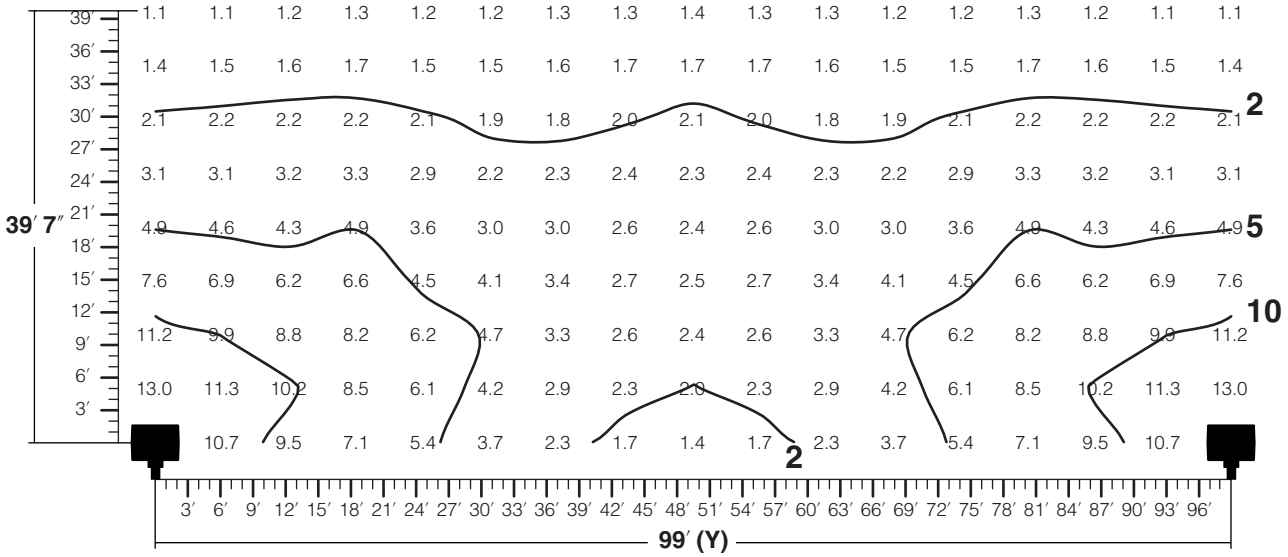
Use for optimum visual uniformity on facades, walls or signs **3:1**



Use where a slightly noticeable drop in uniformity is acceptable **6:1**



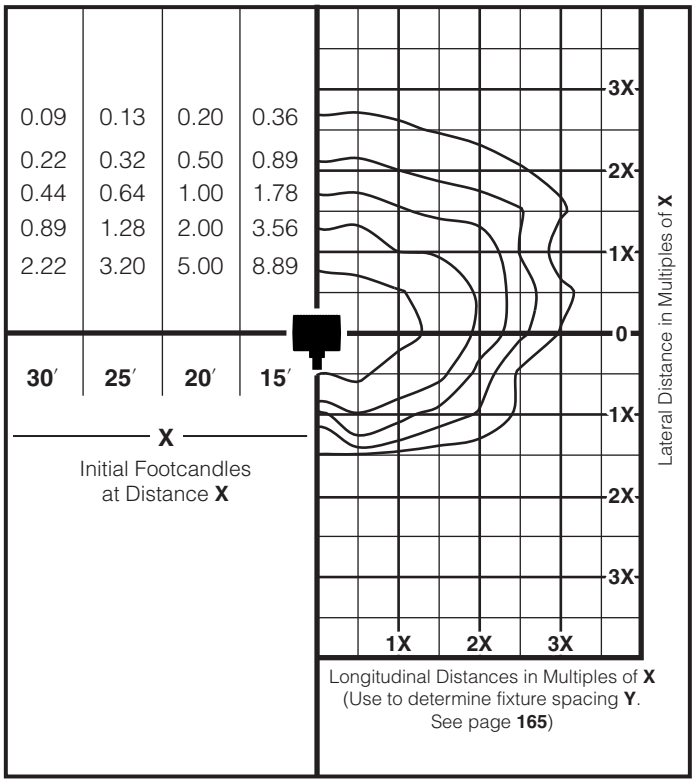
Use for area lighting where maximum spacing is desired **12:1**



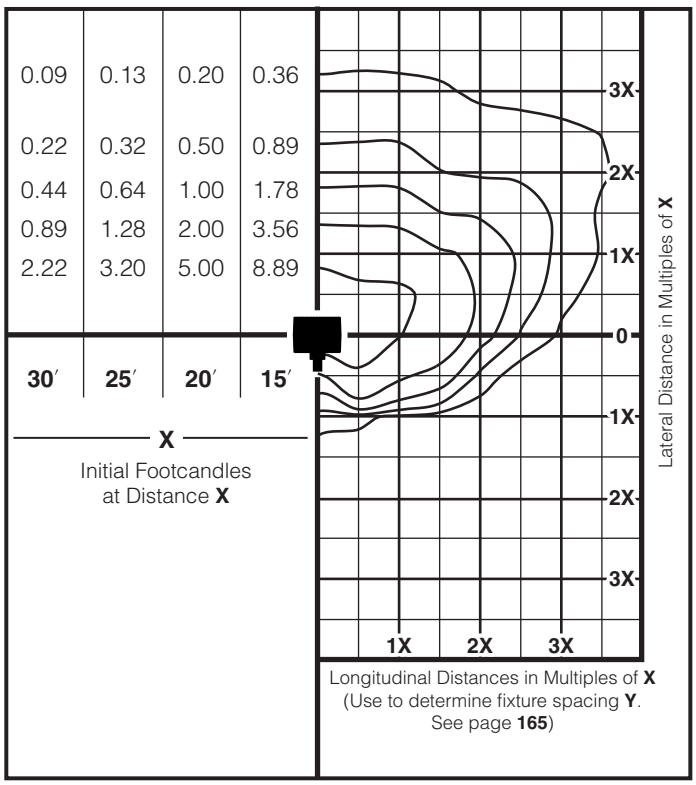
Wide Flood

400MH Isofootcandle Diagrams

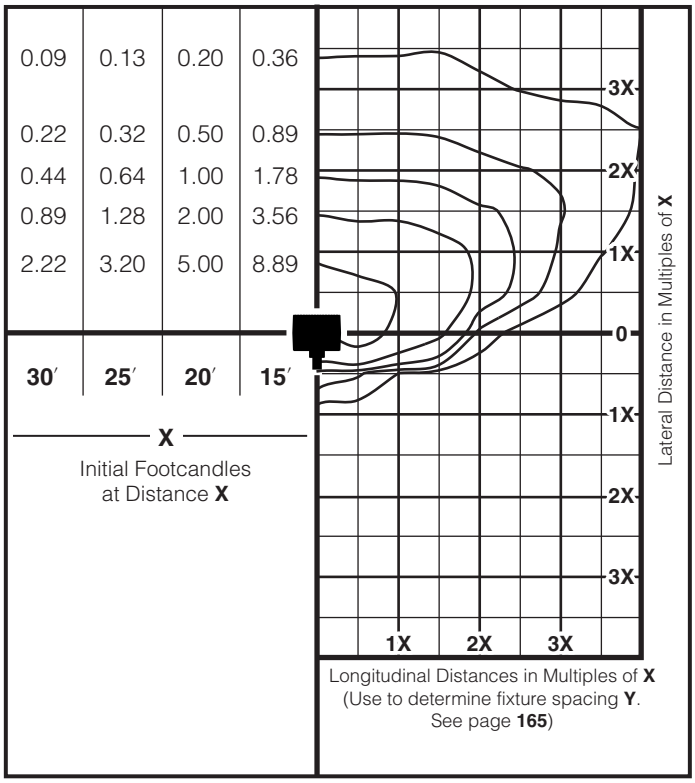
400 watt Metal Halide @ 10° Aiming Angle



400 watt Metal Halide @ 25° Aiming Angle



400 watt Metal Halide @ 40° Aiming Angle

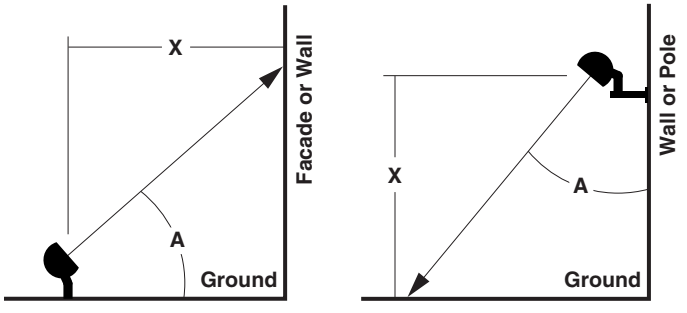


PRORATING CHART

Isofootcandle diagrams shown with 400 watt Metal Halide lamp use the following prorating multipliers for other wattages:

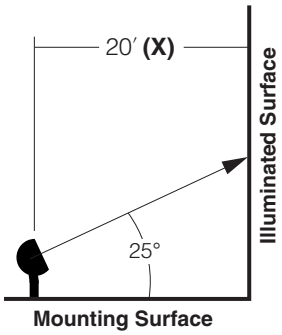
Lamp	Initial Lumens	Factor
400MH	36,000	1.000
250MH	20,500	0.569

Aiming Angle (A) see individual diagrams



400MH Lateral Spacing

Wide Flood



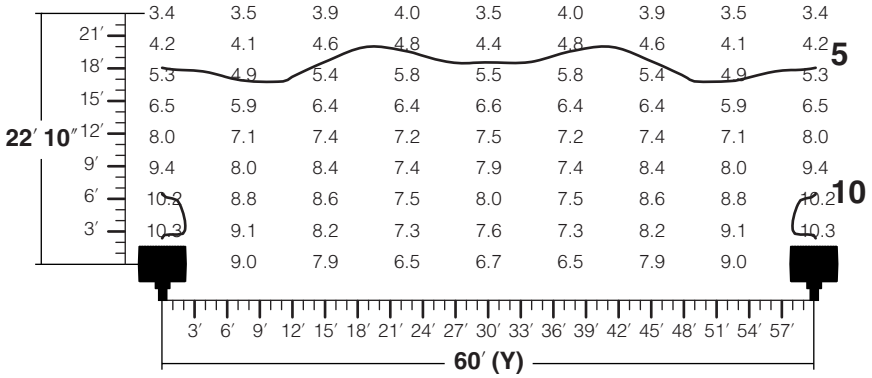
AFL21/400MH
ED-17 clear medium base
I.T.L. Test No. 34662
36,000 initial lumens
ANSI Code M-59

To calculate spacing **(Y)** for Setback Distances other than 20′ shown, multiply actual Setback Distance **(X)** by the following:

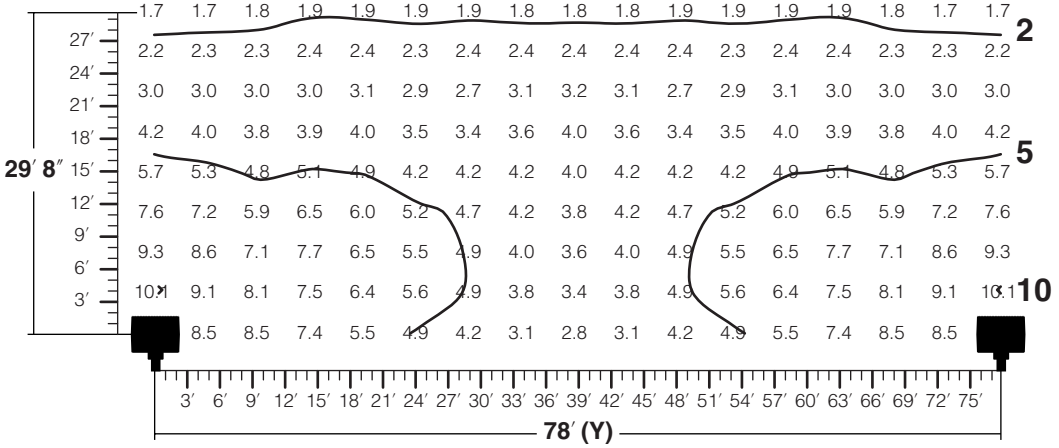
Uniformity Ratio	Factor
3:1	3.00
6:1	3.90
12:1	4.90

Example: 21′ Setback, **6:1** desired uniformity, **Y** = 21′ x 3.90 or **81.9′ (81′ 11″)**

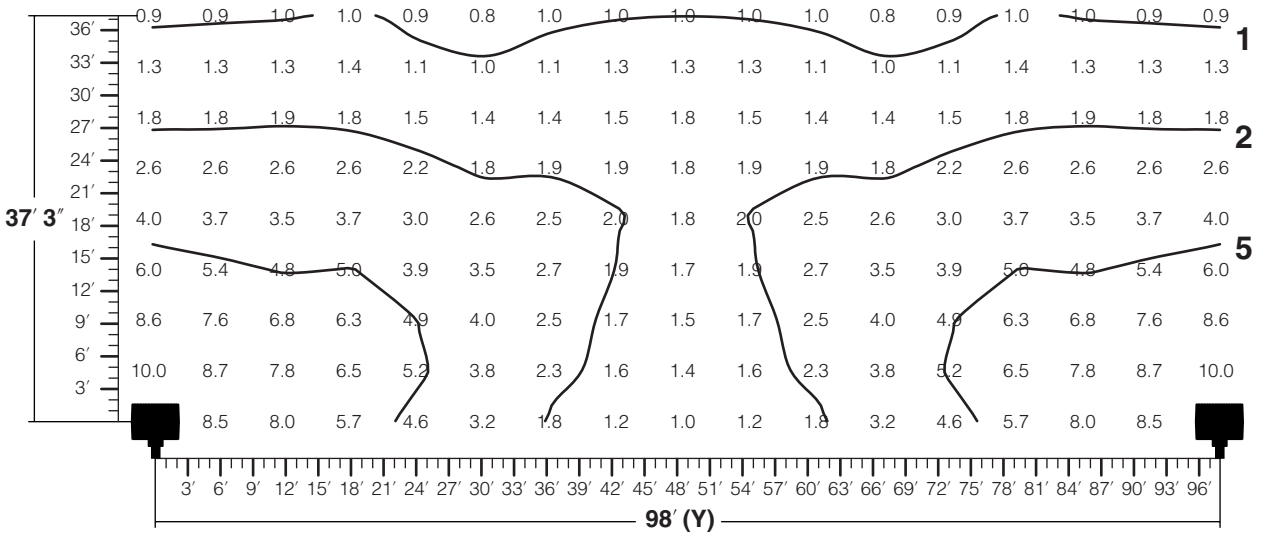
Use for optimum visual uniformity on facades, walls or signs **3:1**



Use where a slightly noticeable drop in uniformity is acceptable **6:1**



Use for area lighting where maximum spacing is desired **12:1**



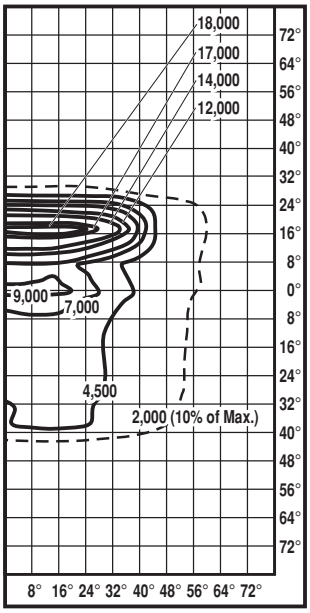
1 All **Initial Lumen** values shown are approximate and may vary from one manufacturer to another. Consult lamp manufacturer's data for exact lumen and life data.

2 **Beam Angle:** Horizontal and vertical beam spreads interpolated due to no valid I.E.S. standard.

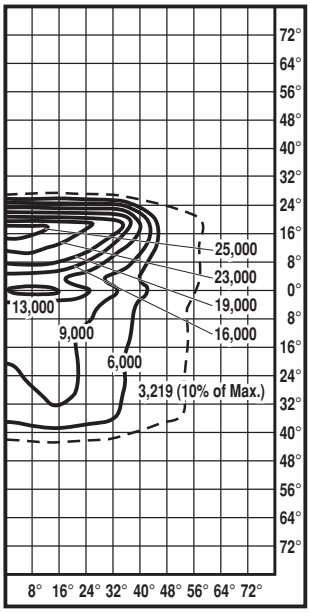
Isocandela Diagrams

Vertical Flood

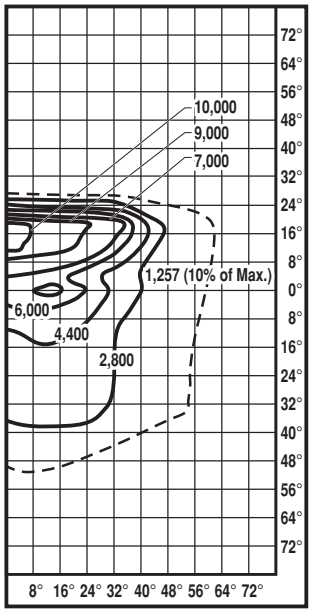
250 watt High Pressure Sodium
E-18 clear mogul base
I.T.L. Test No. 34535
30,000 initial lumens[1]
ANSI Code S-50
I.E.S. Type: 6H x 4V
Field Angle: 118.0° H x 71.0° V
(10% max.)
Beam Angle[2]: 80.0° H x 16.0° V
(50% max.)



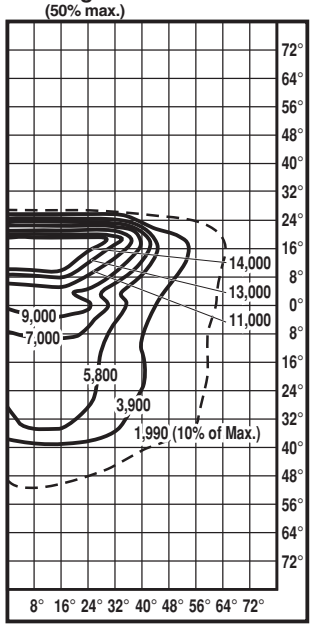
400 watt High Pressure Sodium
E-18 clear mogul base
I.T.L. Test No. 34541
50,000 initial lumens[1]
ANSI Code S-51
I.E.S. Type: 6H x 5V
Field Angle: 116.0° H x 71.0° V
(10% max.)
Beam Angle[2]: 80.0° H x 28.0° V
(50% max.)



250 watt Metal Halide
BT-28 clear mogul base
I.T.L. Test No. 34543
19,500 initial lumens[1]
ANSI Code M-58
I.E.S. Type: 6H x 5V
Field Angle: 128.0° H x 80.8° V
(10% max.)
Beam Angle[2]: 76.0° H x 33.0° V
(50% max.)



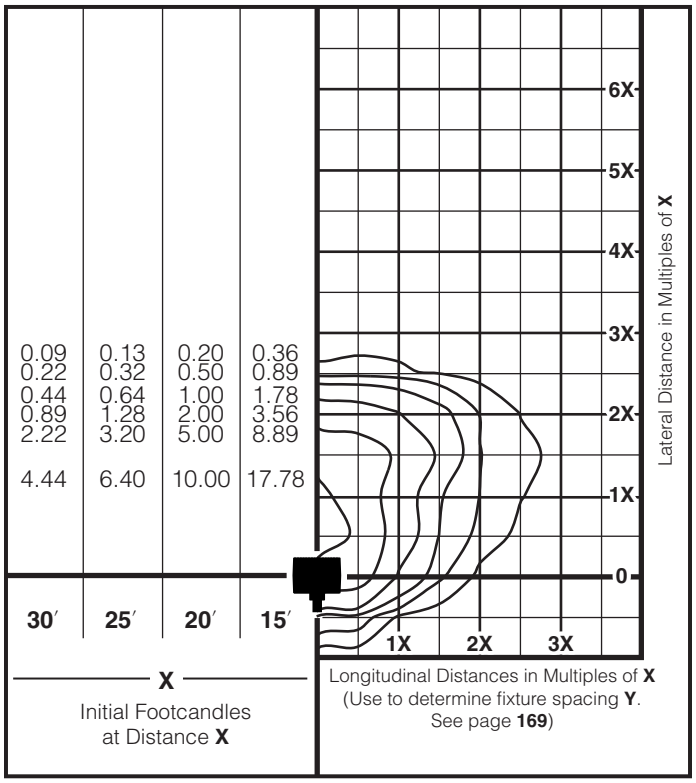
400 watt Metal Halide
ED-28 clear mogul base "reduced outer jacket"
I.T.L. Test No. 34697
36,000 initial lumens[1]
ANSI Code M-59
I.E.S. Type: 6H x 5V
Field Angle: 128.0° H x 80.0° V
(10% max.)
Beam Angle[2]: 86.0° H x 42.0° V
(50% max.)



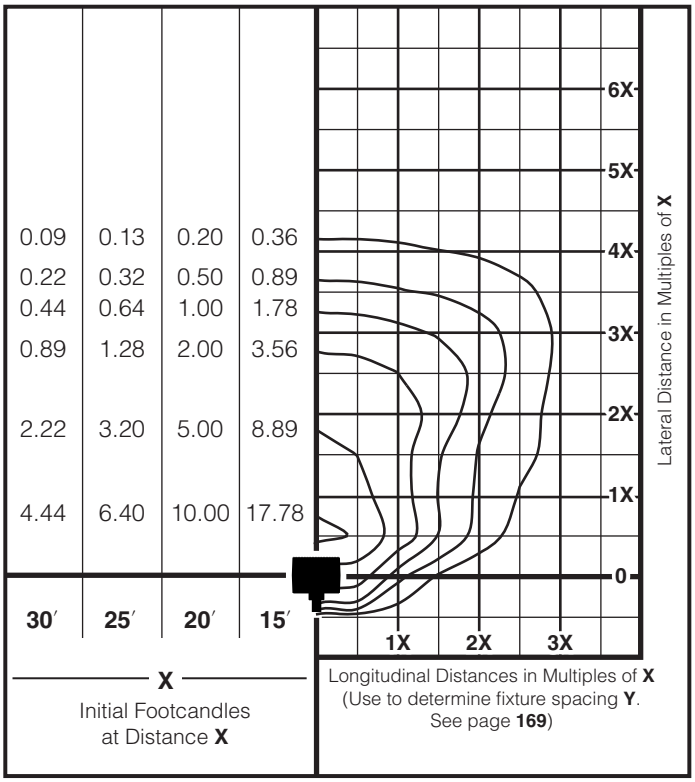
Vertical Flood

400HPS Isofootcandle Diagrams

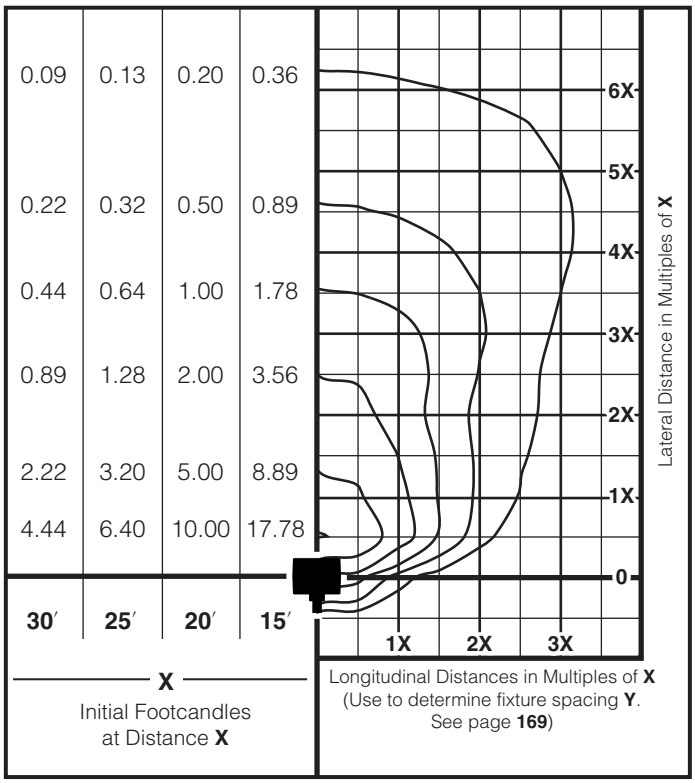
400 watt High Pressure Sodium @ 40° Aiming Angle



400 watt High Pressure Sodium @ 50° Aiming Angle



400 watt High Pressure Sodium @ 60° Aiming Angle

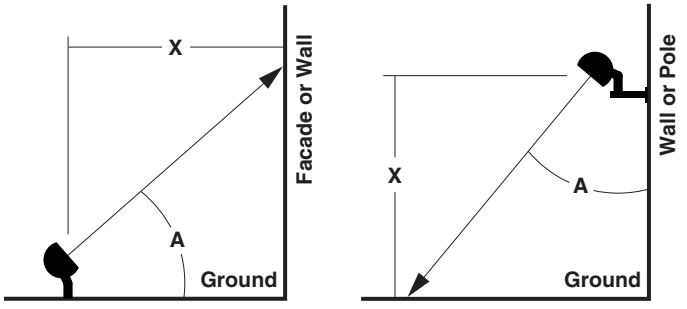


PRORATING CHART

Isofootcandle diagrams shown with 400 watt High Pressure Sodium lamp use the following prorating multipliers for other wattages:

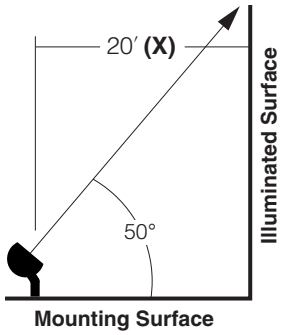
Lamp	Initial Lumens	Factor
400HPS	50,000	1.000
250HPS	30,000	0.600

Aiming Angle (A) see individual diagrams



400HPS Lateral Spacing

Vertical Flood



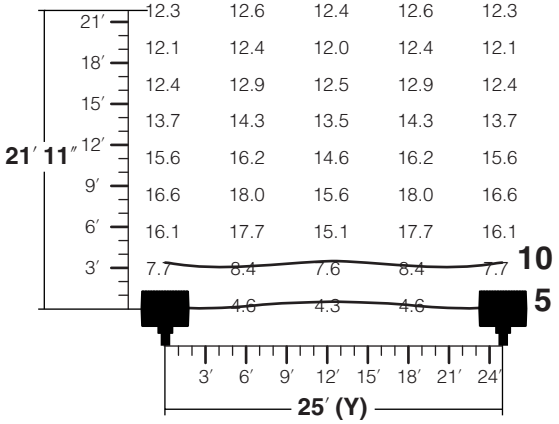
AFL22/400HPS
ED-17 clear medium base
I.T.L. Test No. 34541
50,000 initial lumens
ANSI Code S-51

To calculate spacing **(Y)** for Setback Distances other than 20′ shown, multiply actual Setback Distance **(X)** by the following:

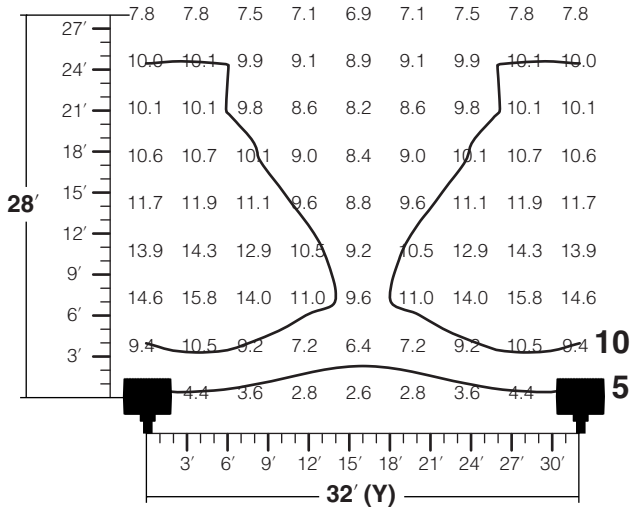
Uniformity Ratio	Factor
3:1	1.25
6:1	1.60
12:1	2.00

Example: 21′ Setback, **6:1** desired uniformity, **Y** = 21′ x 1.60 or **33.6′ (33′ 7″)**

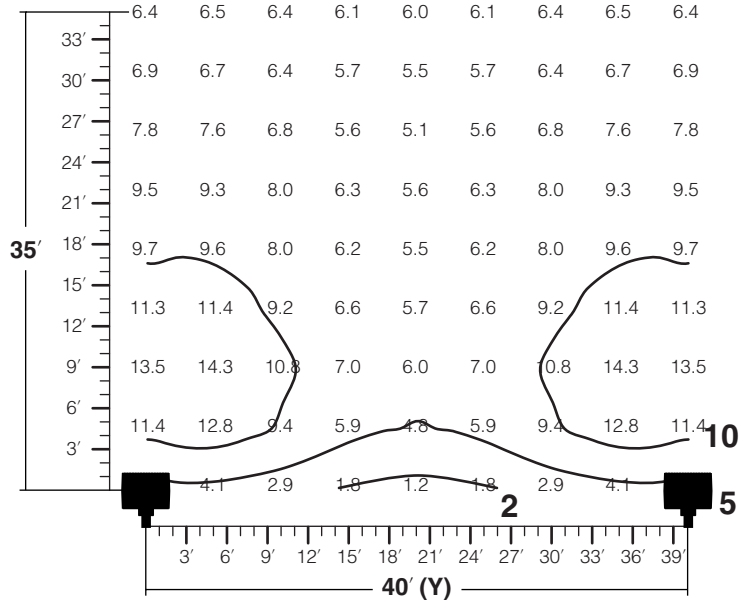
Use for optimum visual uniformity on facades, walls or signs **3:1**



Use where a slightly noticeable drop in uniformity is acceptable **6:1**



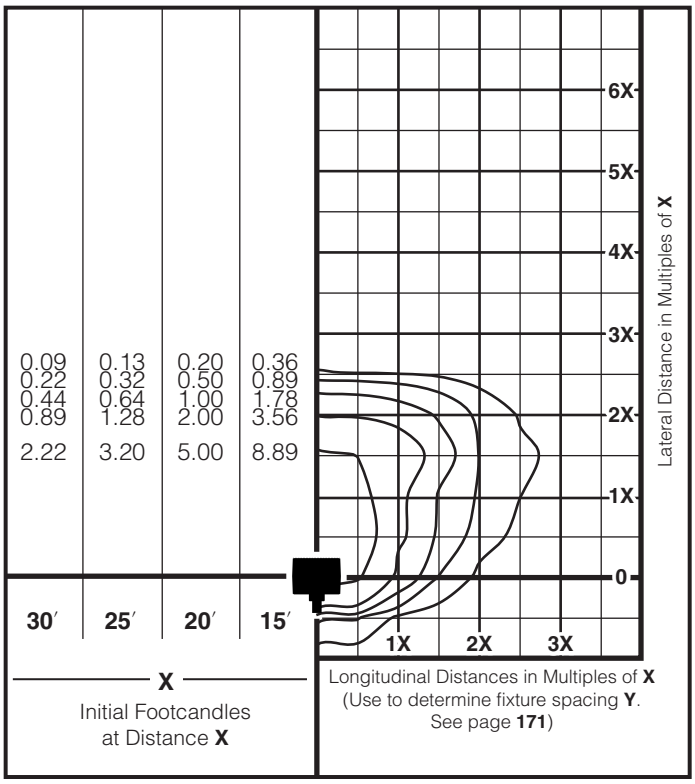
Use for area lighting where maximum spacing is desired **12:1**



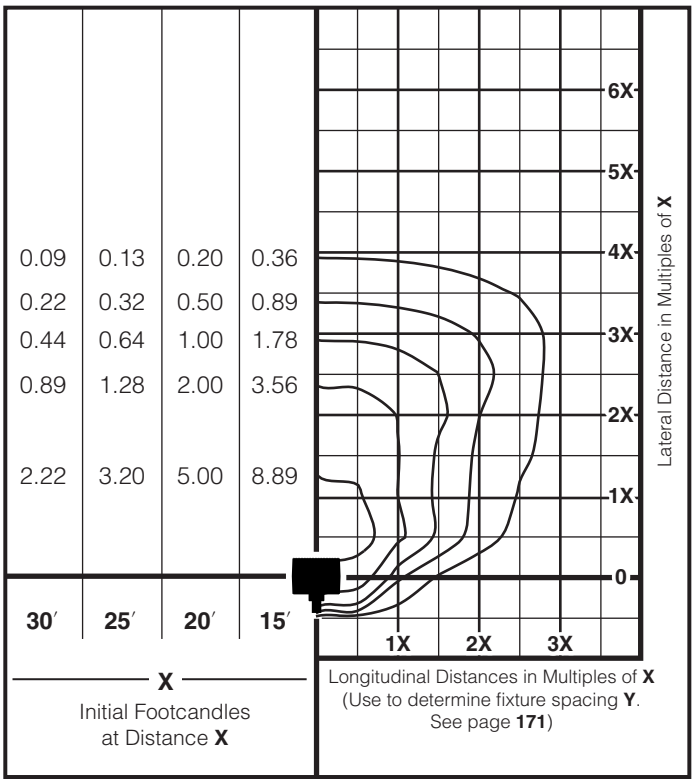
Vertical Flood

400MH Isofootcandle Diagrams

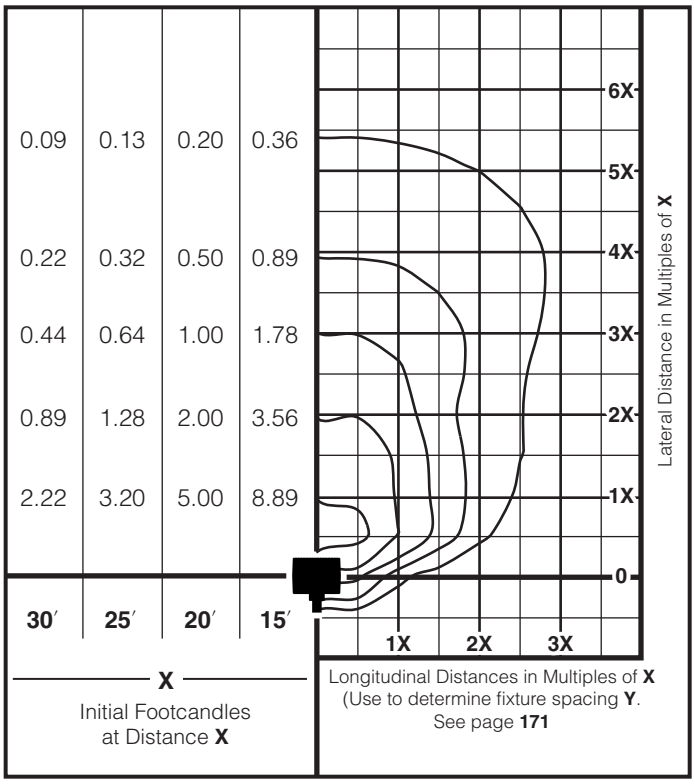
400 watt Metal Halide @ 40° Aiming Angle



400 watt Metal Halide @ 50° Aiming Angle



400 watt Metal Halide @ 60° Aiming Angle

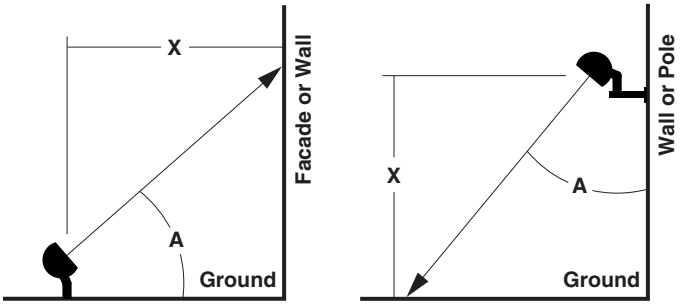


PRORATING CHART

Isofootcandle diagrams shown with 400 watt Metal Halide lamp use the following prorating multipliers for other wattages:

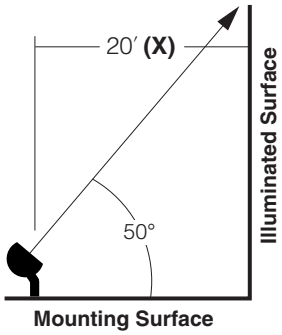
Lamp	Initial Lumens	Factor
400MH	36,000	1.000
250MH	19,500	0.542

Aiming Angle (A) see individual diagrams



400MH Lateral Spacing

Vertical Flood



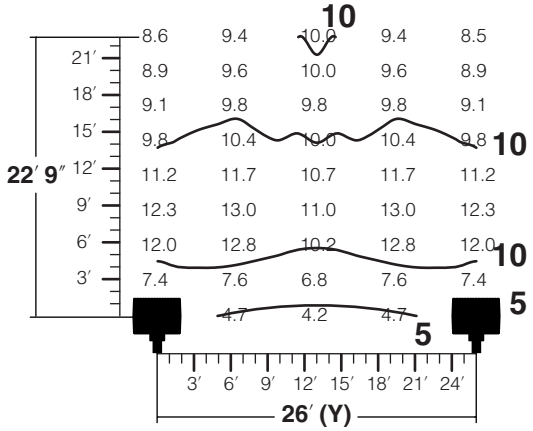
AFL22/400MH
ED-17 clear medium base
I.T.L. Test No. 34547
36,000 initial lumens
ANSI Code M-59

To calculate spacing **(Y)** for Setback Distances other than 20′ shown, multiply actual Setback Distance **(X)** by the following:

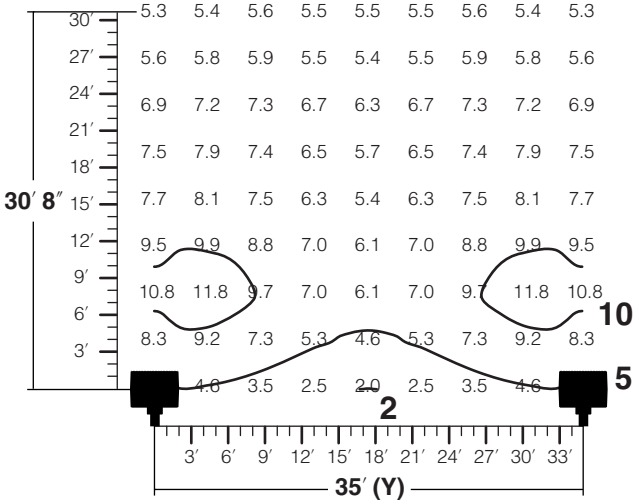
Uniformity Ratio	Factor
3:1	1.30
6:1	1.75
12:1	2.20

Example: 21′ Setback, **6:1** desired uniformity, **Y** = 21′ x 1.75 or **36.75′ (36′ 9″)**

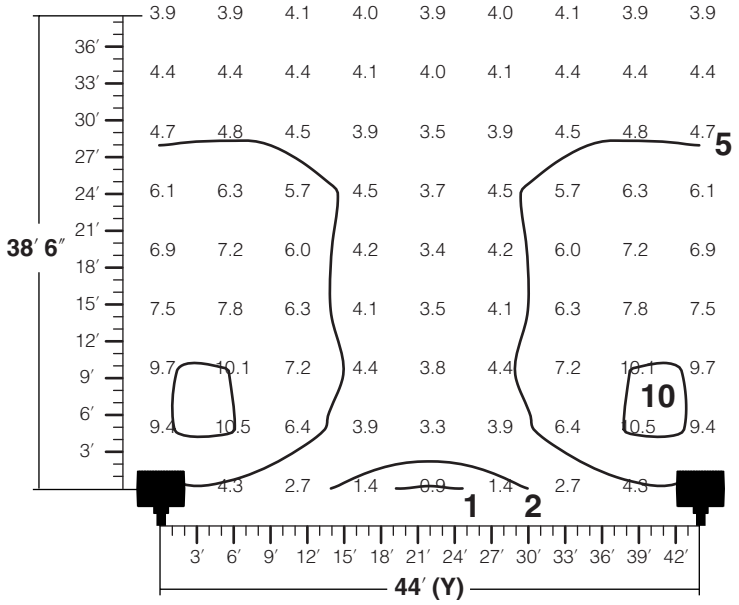
Use for optimum visual uniformity on facades, walls or signs **3:1**



Use where a slightly noticeable drop in uniformity is acceptable **6:1**



Use for area lighting where maximum spacing is desired **12:1**

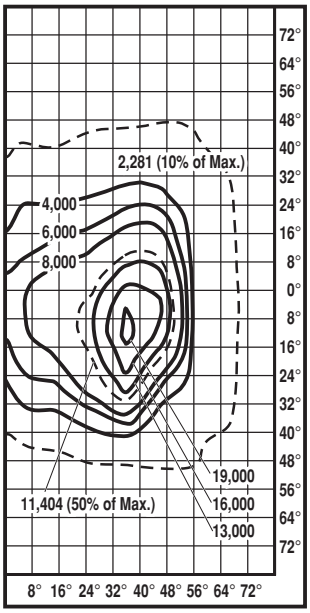


[1] All **Initial Lumen** values shown are approximate and may vary from one manufacturer to another. Consult lamp manufacturer's data for exact lumen and life data.

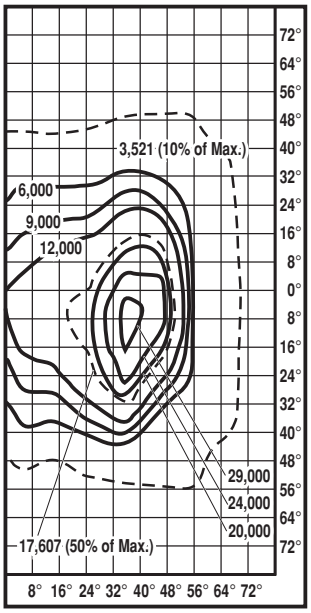
Isocandela Diagrams

Medium Flood

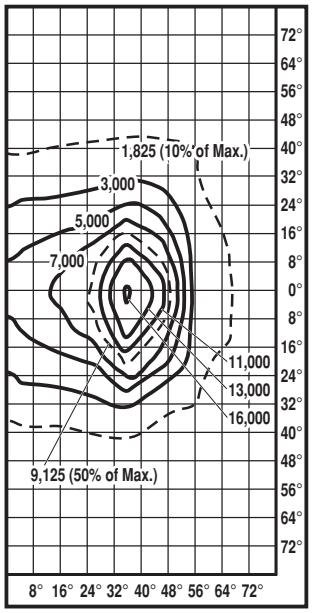
250 watt High Pressure Sodium
E-18 clear mogul base
I.T.L. Test No. 46389
30,000 initial lumens[1]
ANSI Code S-50
I.E.S. Type: 7H x 5V
Field Angle: 135.4° H x 99.9° V (10% max.)
Beam Angle: 98.0° H x 43.0° V (50% max.)



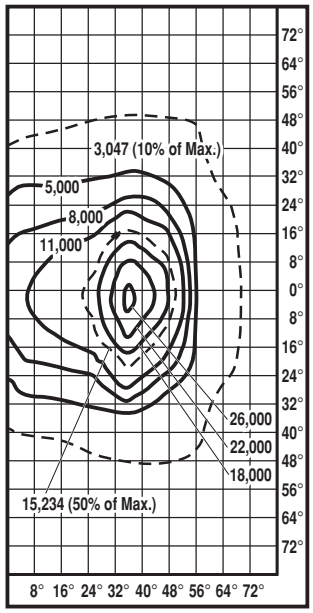
400 watt High Pressure Sodium
E-18 clear mogul base
I.T.L. Test No. 46390
51,000 initial lumens[1]
ANSI Code S-51
I.E.S. Type: 7H x 6V
Field Angle: 137.1° H x 107.0° V (10% max.)
Beam Angle: 100.00° H x 48.0° V (50% max.)



250 watt Metal Halide
BT-28 clear mogul base
I.T.L. Test No. 46387
21,000 initial lumens[1]
ANSI Code M-58
I.E.S. Type: 7H x 5V
Field Angle: 132.3° H x 87.8° V (10% max.)
Beam Angle: 96.0° H x 40.0° V (50% max.)



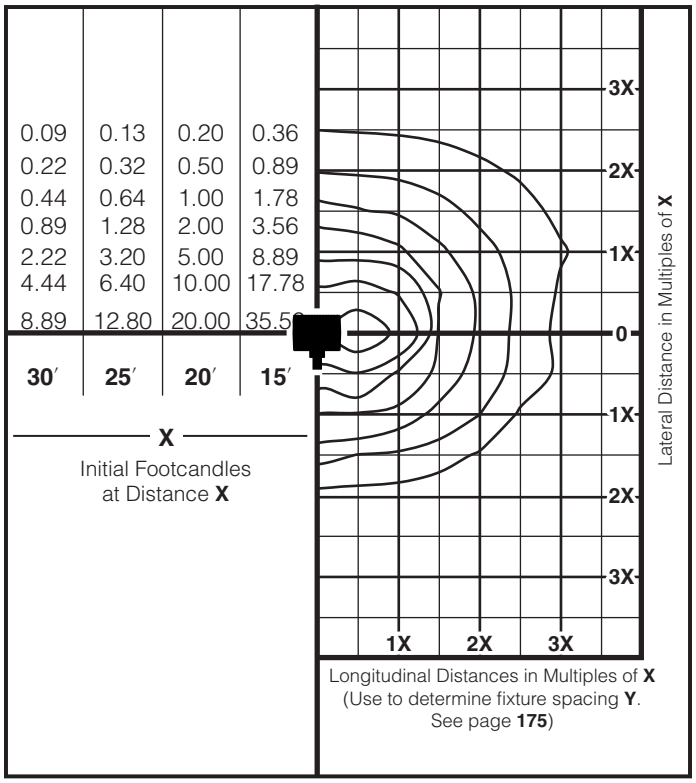
400 watt Metal Halide
ED-28 clear mogul base
I.T.L. Test No. 46388
36,000 initial lumens[1]
ANSI Code M-59
I.E.S. Type: 7H x 5V
Field Angle: 134.1° H x 98.6° V (10% max.)
Beam Angle: 96.0° H x 38.0° V (50% max.)



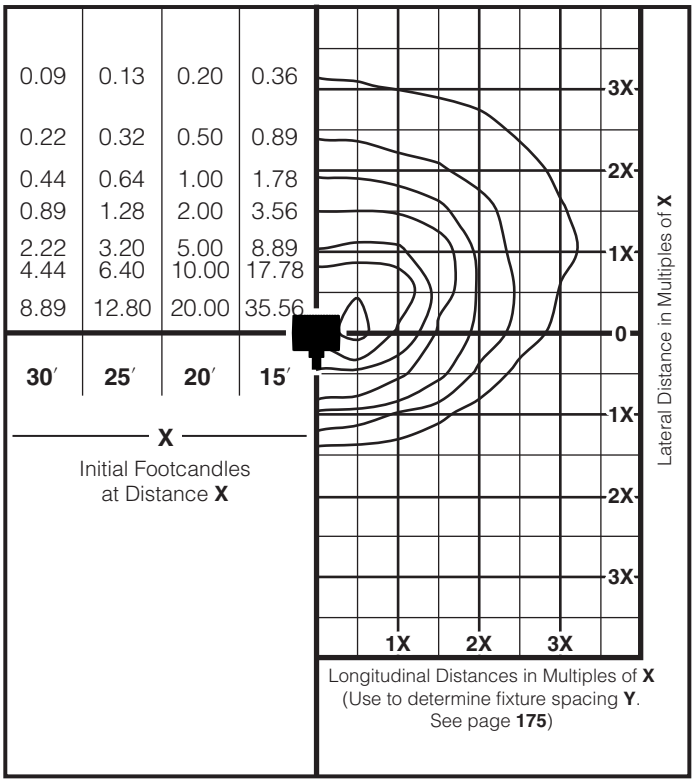
Medium Flood

400HPS Isofootcandle Diagrams

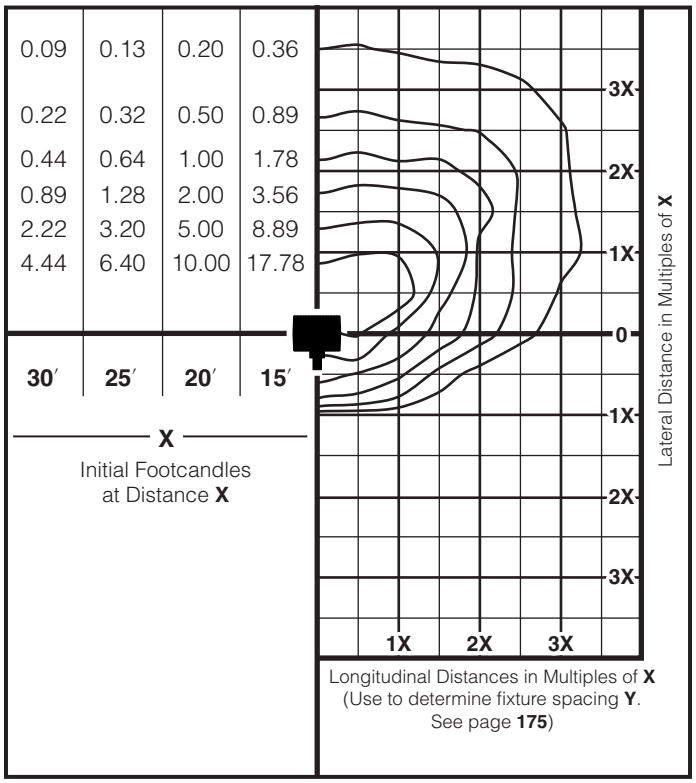
400 watt High Pressure Sodium @ 10° Aiming Angle



400 watt High Pressure Sodium @ 25° Aiming Angle



400 watt High Pressure Sodium @ 40° Aiming Angle

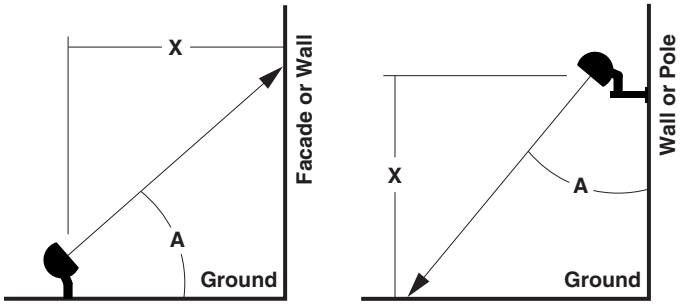


PRORATING CHART

Isofootcandle diagrams shown with 400 watt High Pressure Sodium lamp use the following prorating multipliers for other wattages:

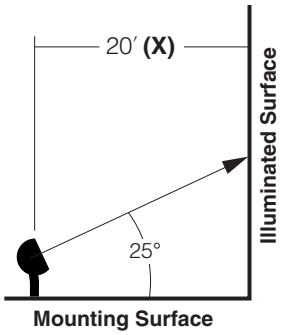
Lamp	Initial Lumens	Factor
400HPS	51,000	1.000
250HPS	30,000	0.588

Aiming Angle (A) see individual diagrams



400HPS Lateral Spacing

Medium Flood



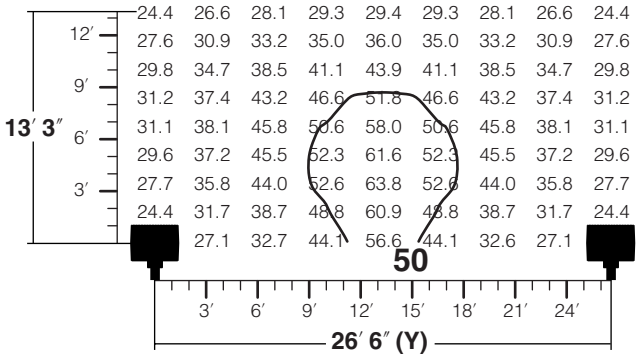
AFL23/400HPS
ED-17 clear medium base
I.T.L. Test No. 46390
51,000 initial lumens
ANSI Code S-51

To calculate spacing **(Y)** for Setback Distances other than 20′ shown, multiply actual Setback Distance **(X)** by the following:

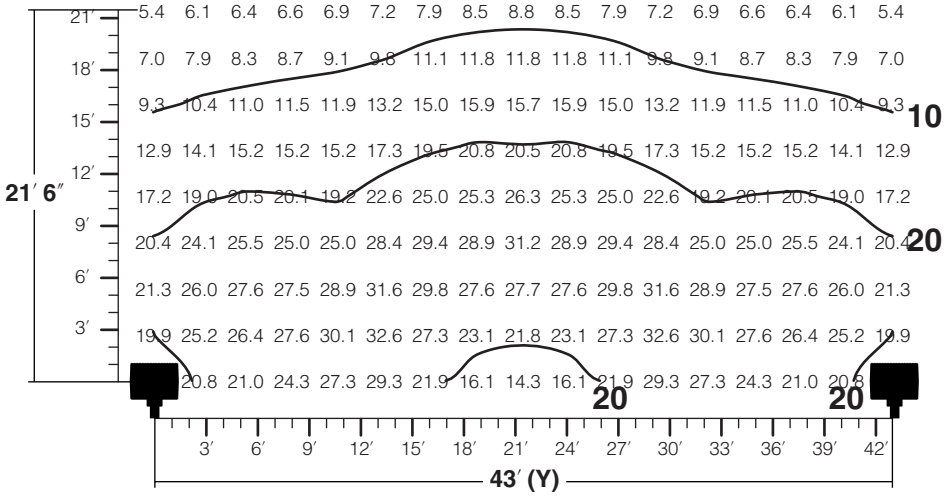
Uniformity Ratio	Factor
3:1	1.33
6:1	2.15
12:1	2.81

Example: 21′ Setback, **6:1** desired uniformity, **Y** = 21′ x 2.15 or **45.15′ (43′ 2″)**

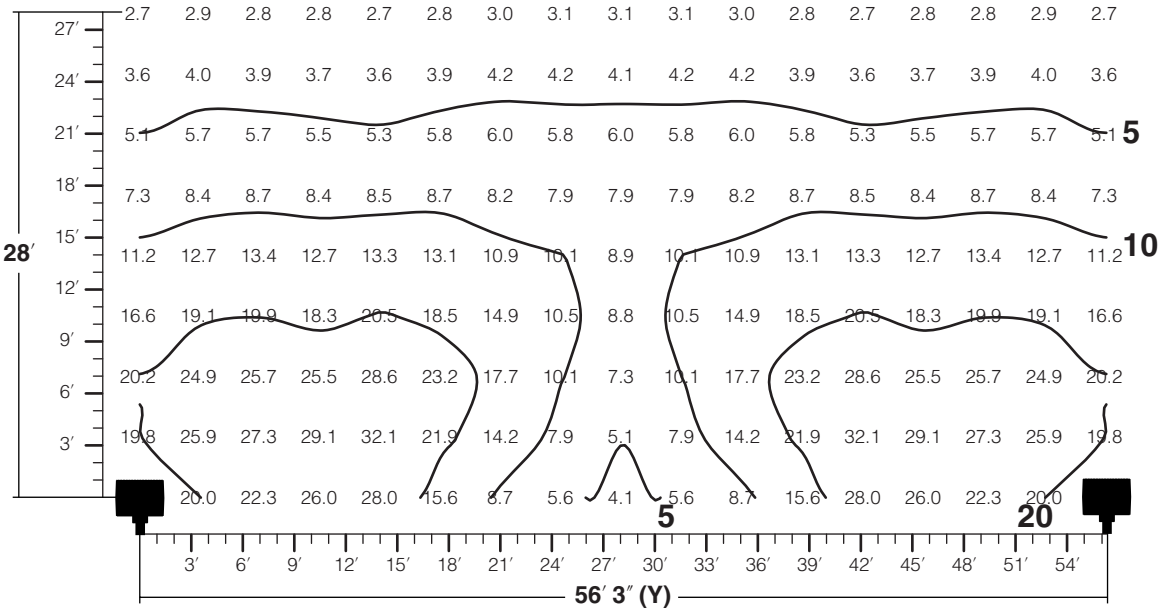
Use for optimum visual uniformity on facades, walls or signs **3:1**



Use where a slightly noticeable drop in uniformity is acceptable **6:1**



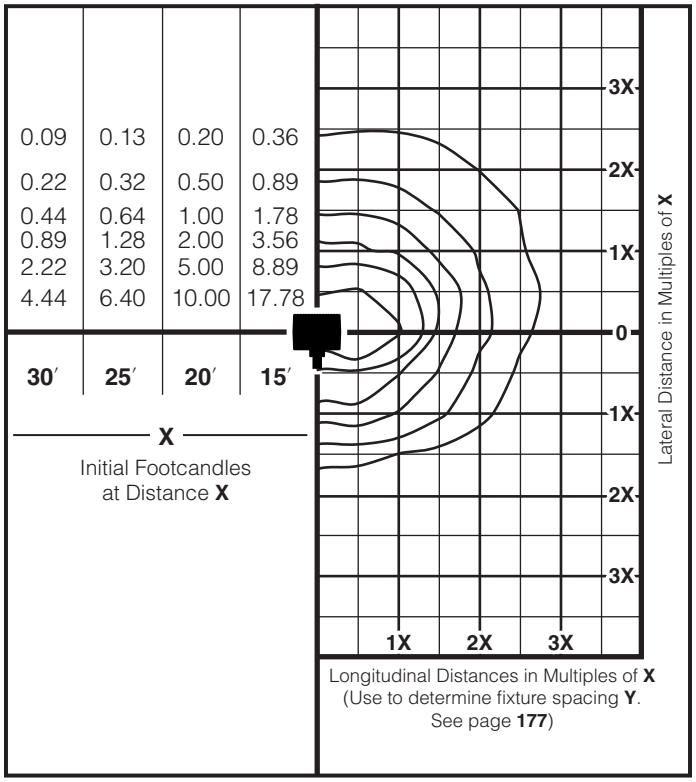
Use for area lighting where maximum spacing is desired **12:1**



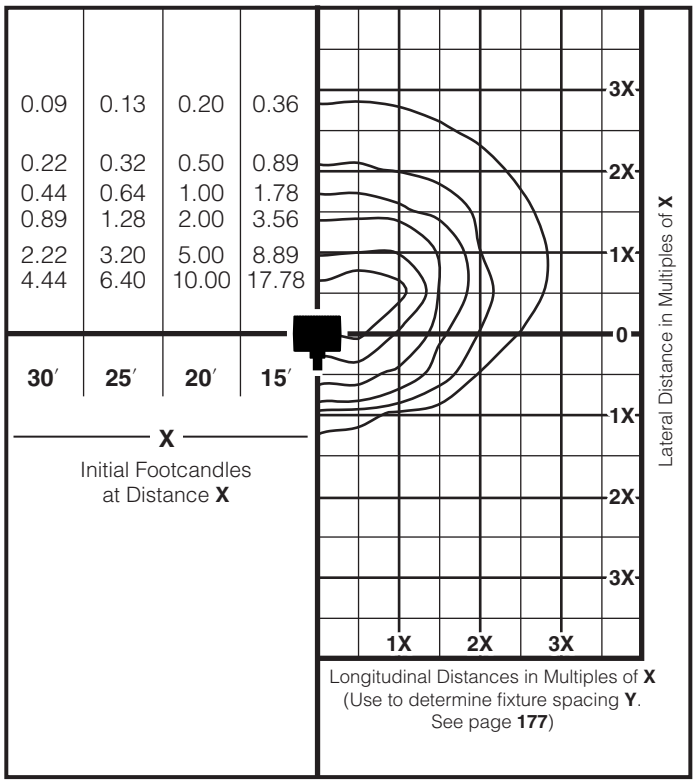
Medium Flood

400MH Isofootcandle Diagrams

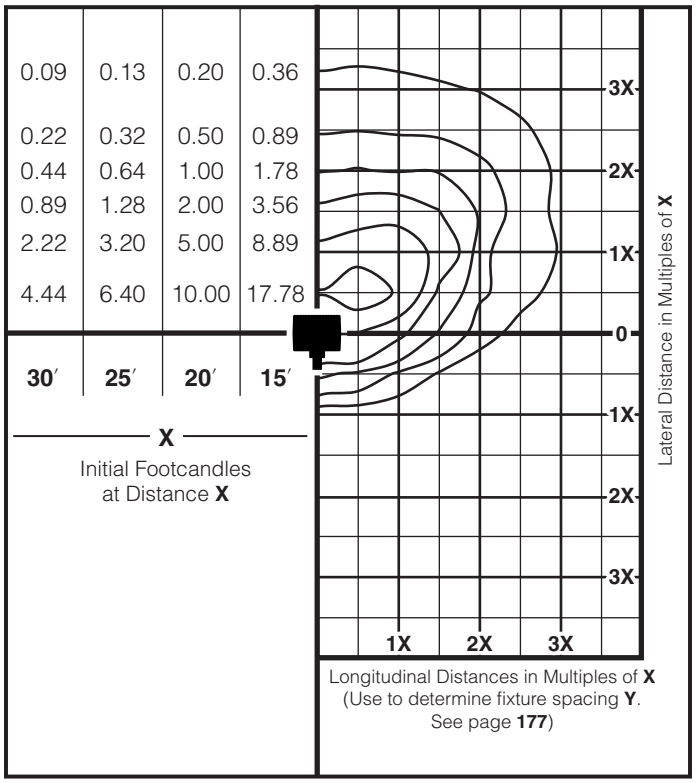
400 watt Metal Halide @ 10° Aiming Angle



400 watt Metal Halide @ 25° Aiming Angle



400 watt Metal Halide @ 40° Aiming Angle

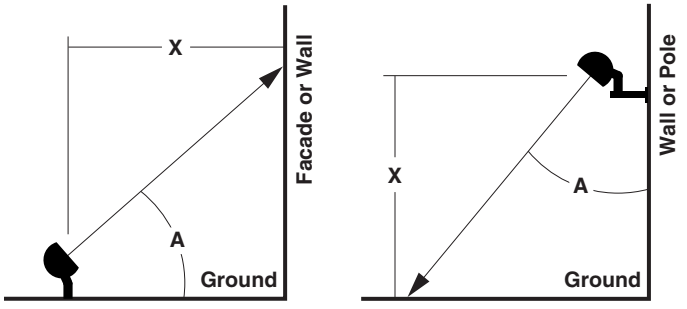


PRORATING CHART

Isofootcandle diagrams shown with 400 watt Metal Halide lamp use the following prorating multipliers for other wattages:

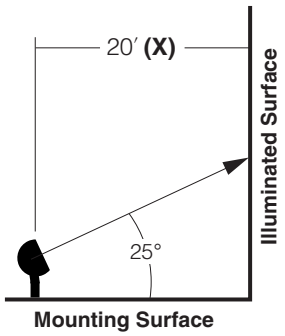
Lamp	Initial Lumens	Factor
400MH	36,000	1.000
250MH	21,000	0.583

Aiming Angle (A) see individual diagrams



400MH Lateral Spacing

Medium Flood



AFL23/400MH
ED-17 clear medium base
I.T.L. Test No. 46388
36,000 initial lumens
ANSI Code M-59

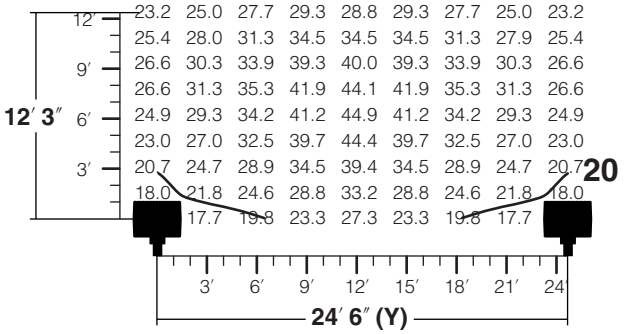
To calculate spacing **(Y)** for Setback Distances other than 20′ shown, multiply actual Setback Distance **(X)** by the following:

Uniformity Ratio	Factor
3:1	1.23
6:1	2.20
12:1	2.85

Example: 21′ Setback, **6:1** desired uniformity, **Y** = 21′ x 2.20 or **46.2′ (46′ 2″)**

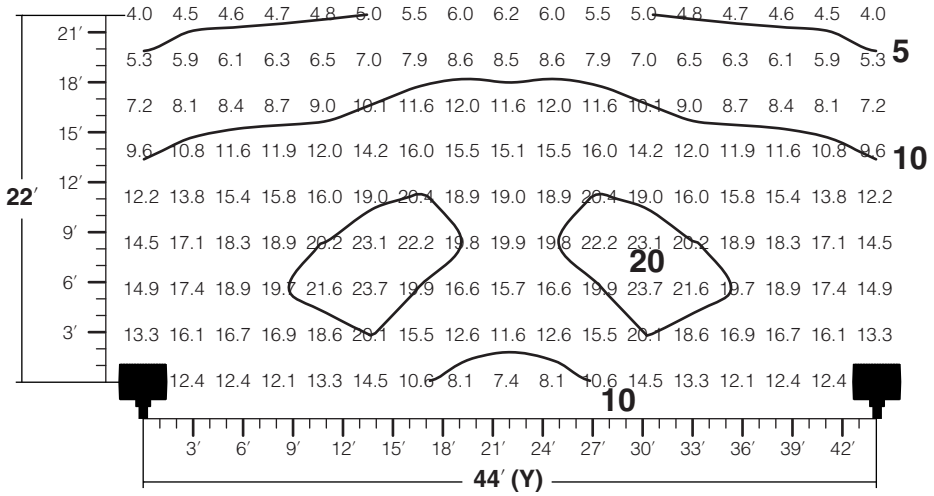
3:1

Use for optimum visual uniformity on facades, walls or signs



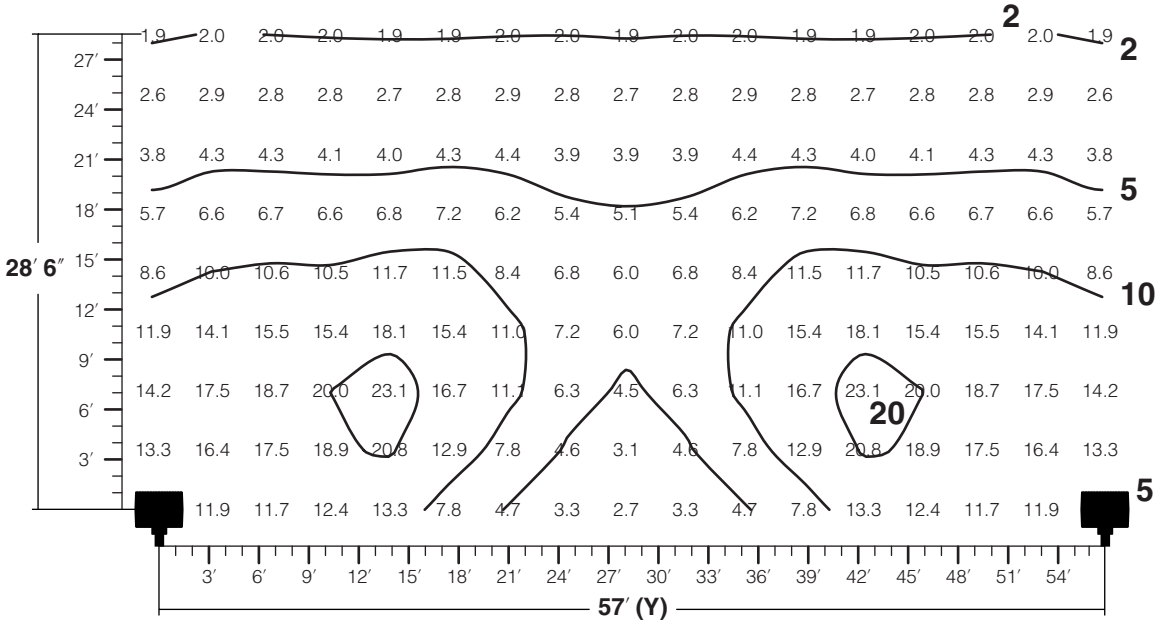
6:1

Use where a slightly noticeable drop in uniformity is acceptable



12:1

Use for area lighting where maximum spacing is desired

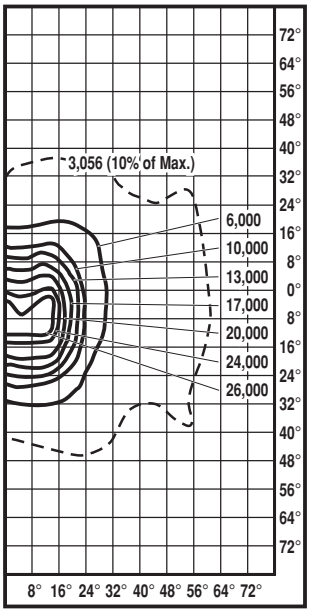


1 All **Initial Lumen** values shown are approximate and may vary from one manufacturer to another. Consult lamp manufacturer's data for exact lumen and life data.

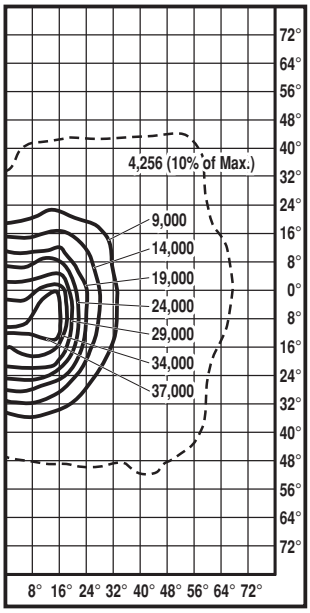
Isocandela Diagrams

Narrow Flood

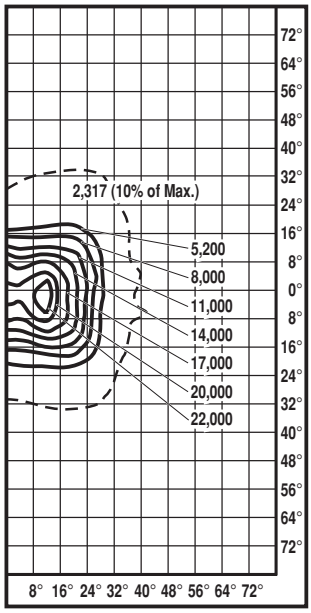
250 watt High Pressure Sodium
E-18 clear mogul base
I.T.L. Test No. 34536
30,000 initial lumens[1]
ANSI Code S-50
I.E.S. Type: 6H x 5V
Field Angle: 122.3° H x 82.0° V (10% max.)
Beam Angle: 44.0° H x 37.0° V (50% max.)



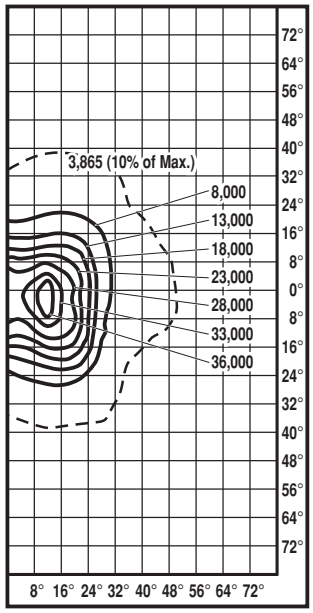
400 watt High Pressure Sodium
E-18 clear mogul base
I.T.L. Test No. 34539
50,000 initial lumens[1]
ANSI Code S-51
I.E.S. Type: 7H x 5V
Field Angle: 132.0° H x 101.0° V (10% max.)
Beam Angle: 46.0° H x 43.0° V (50% max.)



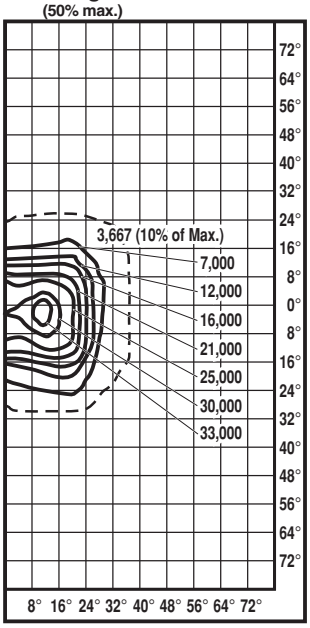
250 watt Metal Halide
BT-28 clear mogul base
I.T.L. Test No. 34544
20,500 initial lumens[1]
ANSI Code M-58
I.E.S. Type: 5H x 4V
Field Angle: 74.7° H x 69.0° V (10% max.)
Beam Angle: 48.0° H x 28.0° V (50% max.)



400 watt Metal Halide
BT-28 clear mogul base
I.T.L. Test No. 34548
36,000 initial lumens[1]
ANSI Code M-59
I.E.S. Type: 5H x 4V
Field Angle: 104.0° H x 76.0° V (10% max.)
Beam Angle: 48.0° H x 30.0° V (50% max.)



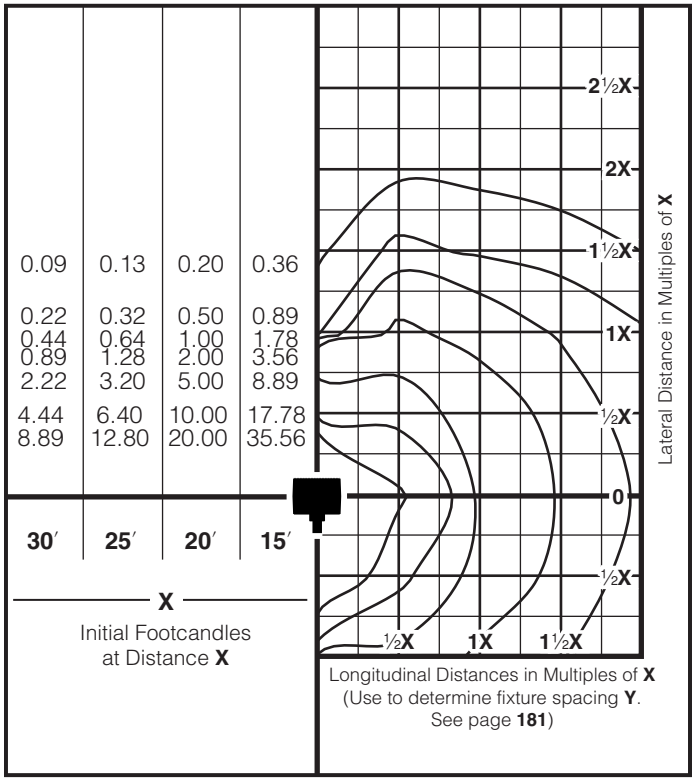
400 watt Metal Halide w/GL8 Louver
ED-28 clear mogul base
I.T.L. Test No. 34550
36,000 initial lumens[1]
ANSI Code M-59
I.E.S. Type: 5H x 4V
Field Angle: 72.0° H x 76.0° V (10% max.)
Beam Angle: 48.0° H x 27.0° V (50% max.)



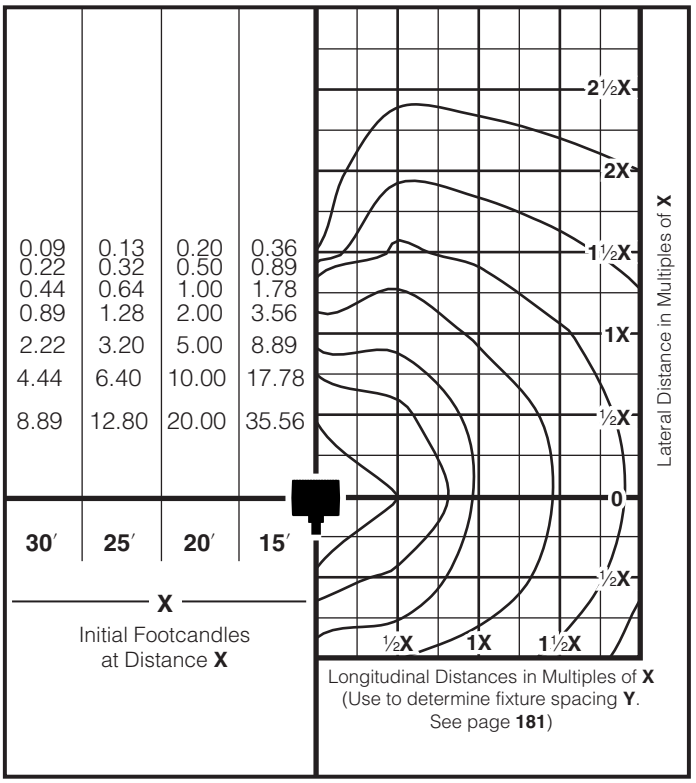
Narrow Flood

400HPS Isofootcandle Diagrams

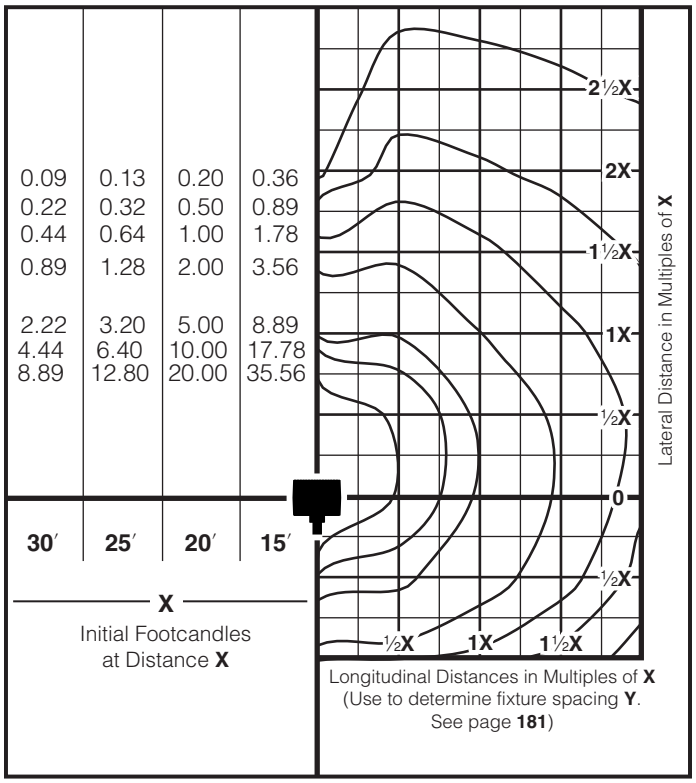
400 watt High Pressure Sodium @ 0° Aiming Angle



400 watt High Pressure Sodium @ 10° Aiming Angle



400 watt High Pressure Sodium @ 20° Aiming Angle

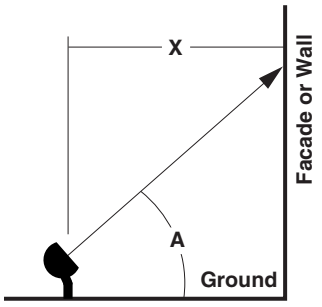


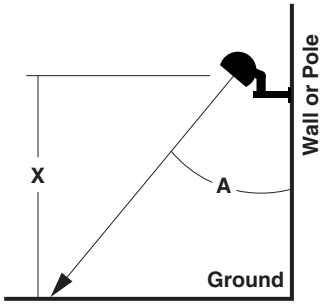
PRORATING CHART

Isofootcandle diagrams shown with 400 watt High Pressure Sodium lamp use the following prorating multipliers for other wattages:

Lamp	Initial Lumens	Factor
400HPS	50,000	1.000
250HPS	30,000	0.600

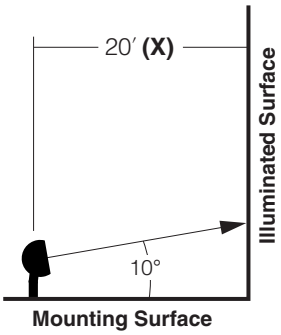
Aiming Angle (A) see individual diagrams





400HPS Lateral Spacing

Narrow Flood



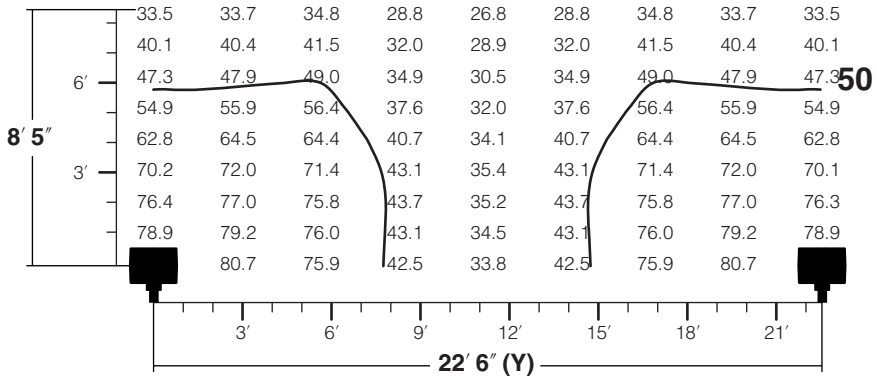
AFL24/400HPS
ED-17 clear medium base
I.T.L. Test No. 34539
50,000 initial lumens
ANSI Code S-51

To calculate spacing **(Y)** for Setback Distances other than 20′ shown, multiply actual Setback Distance **(X)** by the following:

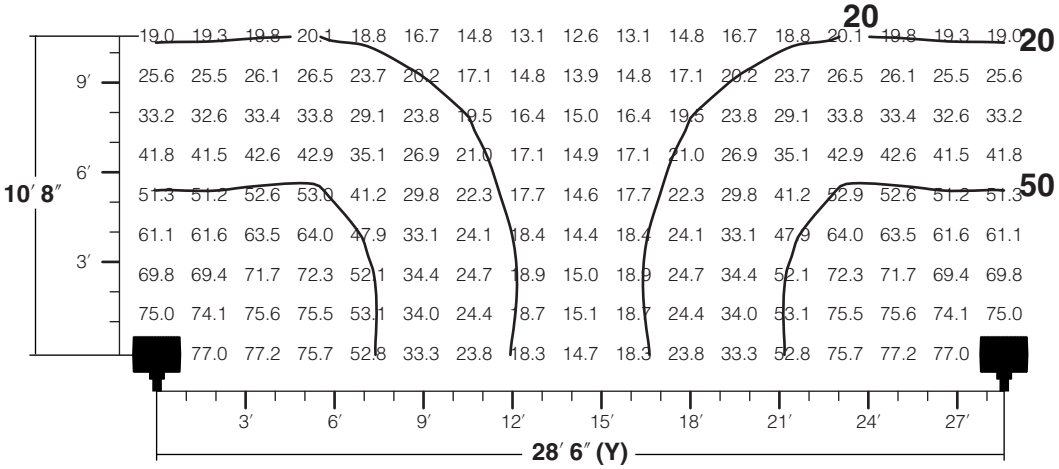
Uniformity Ratio	Factor
3:1	1.13
6:1	1.43
12:1	1.85

Example: 21′ Setback, **6:1** desired uniformity, **Y** = 21′ x 1.43 or **30.03′ (30′)**

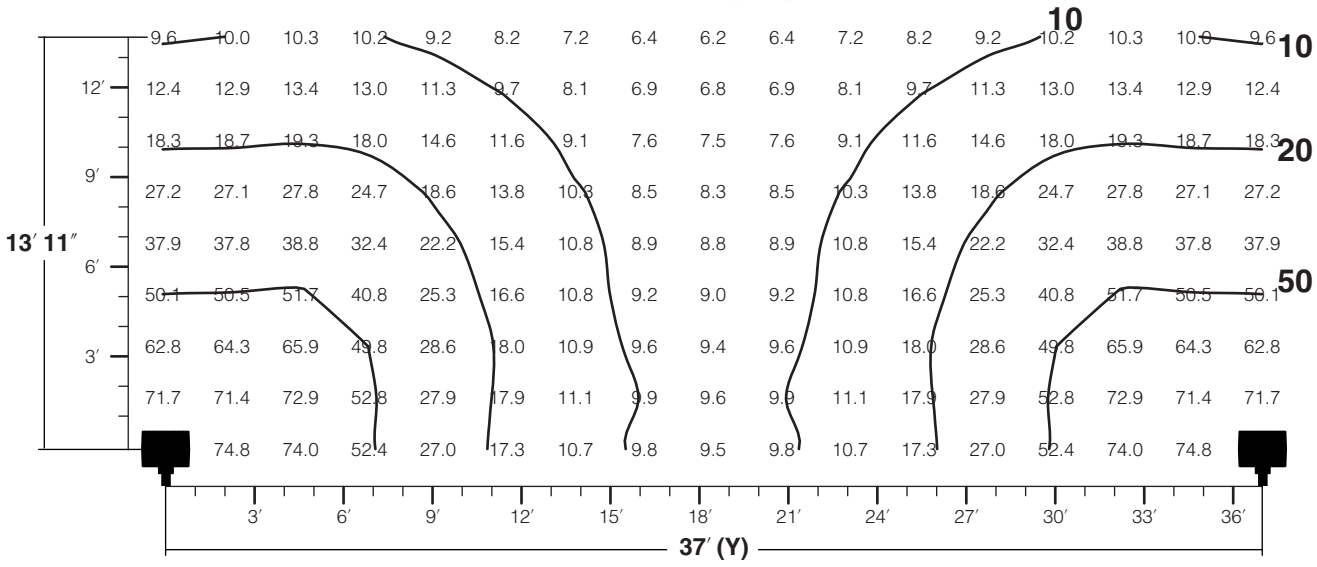
Use for optimum visual uniformity on facades, walls or signs **3:1**



Use where a slightly noticeable drop in uniformity is acceptable **6:1**



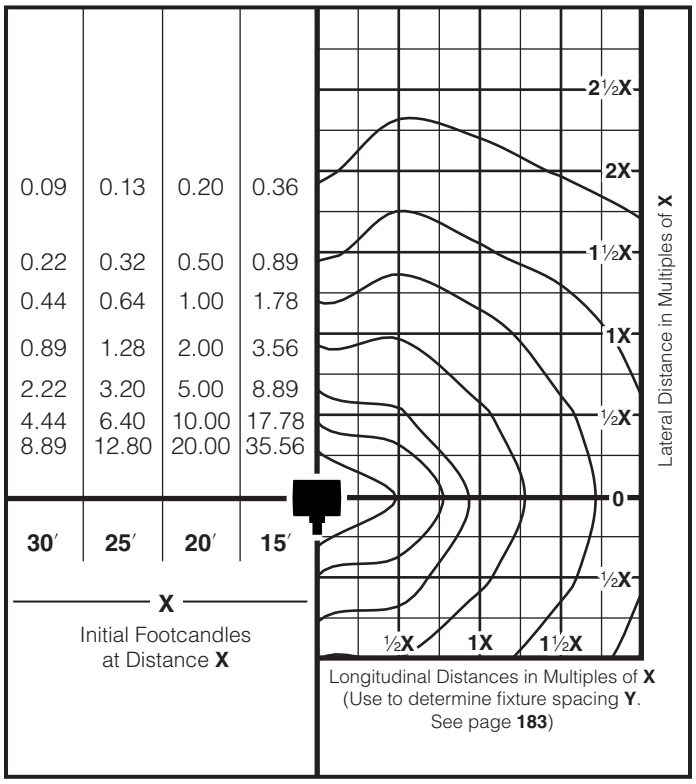
Use for area lighting where maximum spacing is desired **12:1**



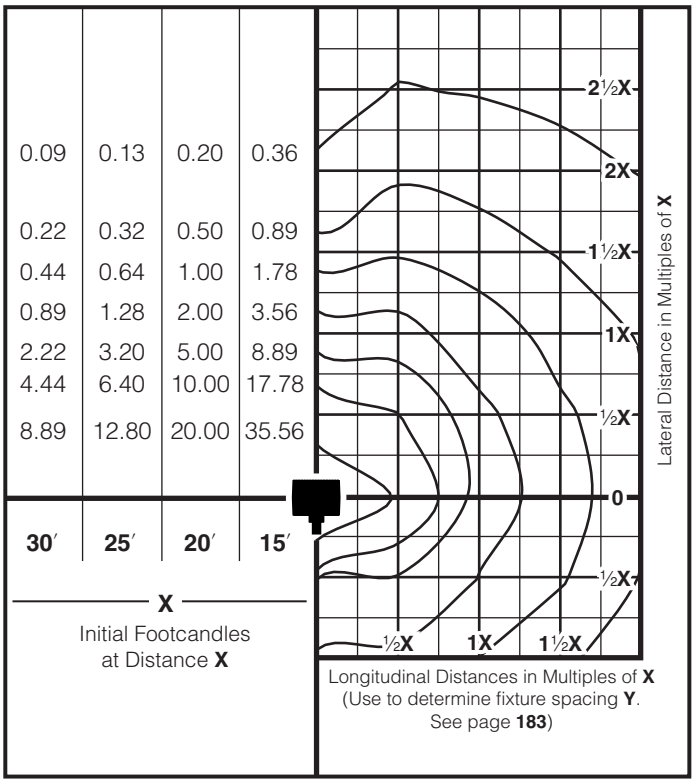
Narrow Flood

400MH Isofootcandle Diagrams

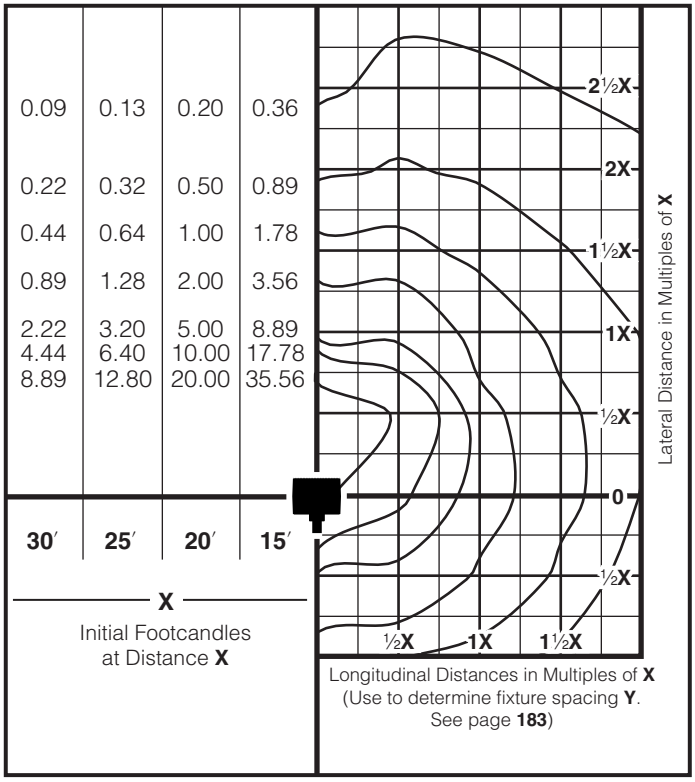
400 watt Metal Halide @ 0° Aiming Angle



400 watt Metal Halide @ 10° Aiming Angle



400 watt Metal Halide @ 20° Aiming Angle

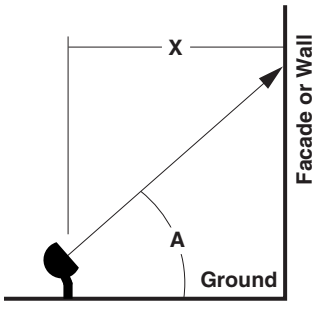


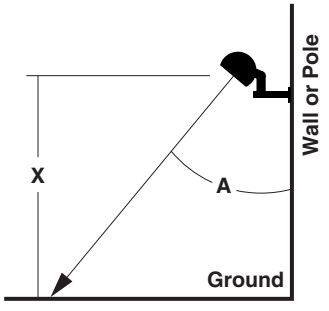
PRORATING CHART

Isofootcandle diagrams shown with 400 watt Metal Halide lamp use the following prorating multipliers for other wattages:

Lamp	Initial Lumens	Factor
400MH	36,000	1.000
250MH	20,500	0.569

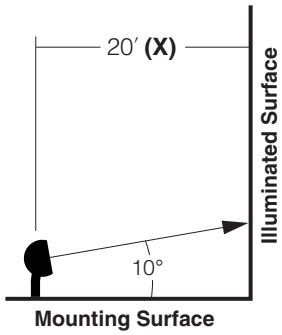
Aiming Angle (A) see individual diagrams





400MH Lateral Spacing

Narrow Flood



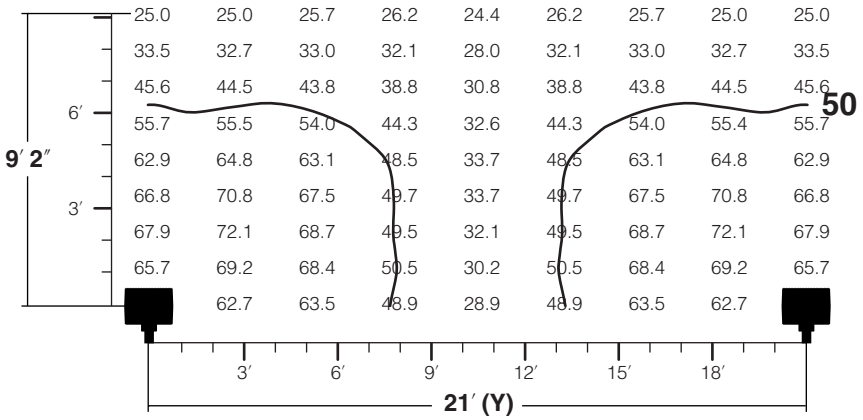
AFL24/400MH
ED-17 clear medium base
I.T.L. Test No. 34548
36,000 initial lumens
ANSI Code M-59

To calculate spacing **(Y)** for Setback Distances other than 20′ shown, multiply actual Setback Distance **(X)** by the following:

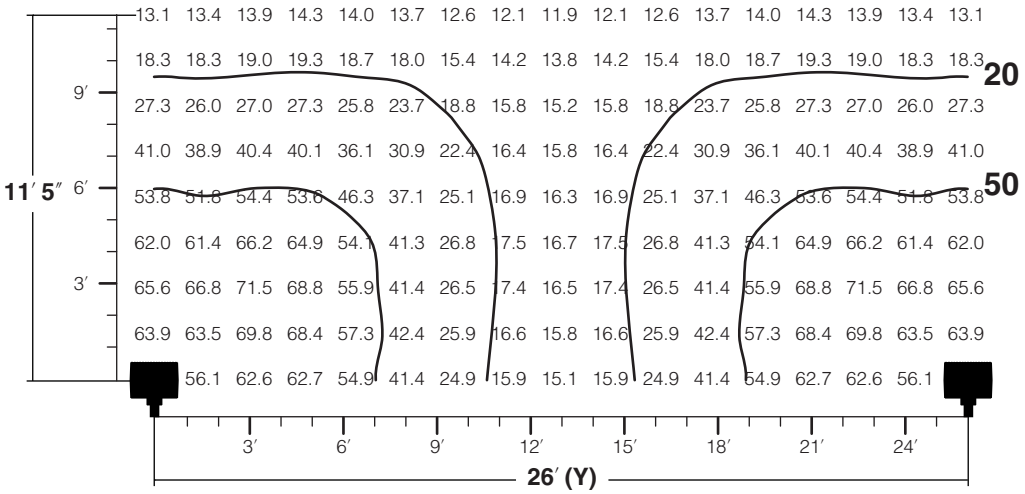
Uniformity Ratio	Factor
3:1	1.05
6:1	1.30
12:1	1.60

Example: 21′ Setback, **6:1** desired uniformity, **Y** = 21′ x 1.30 or **27.3′ (27′ 4″)**

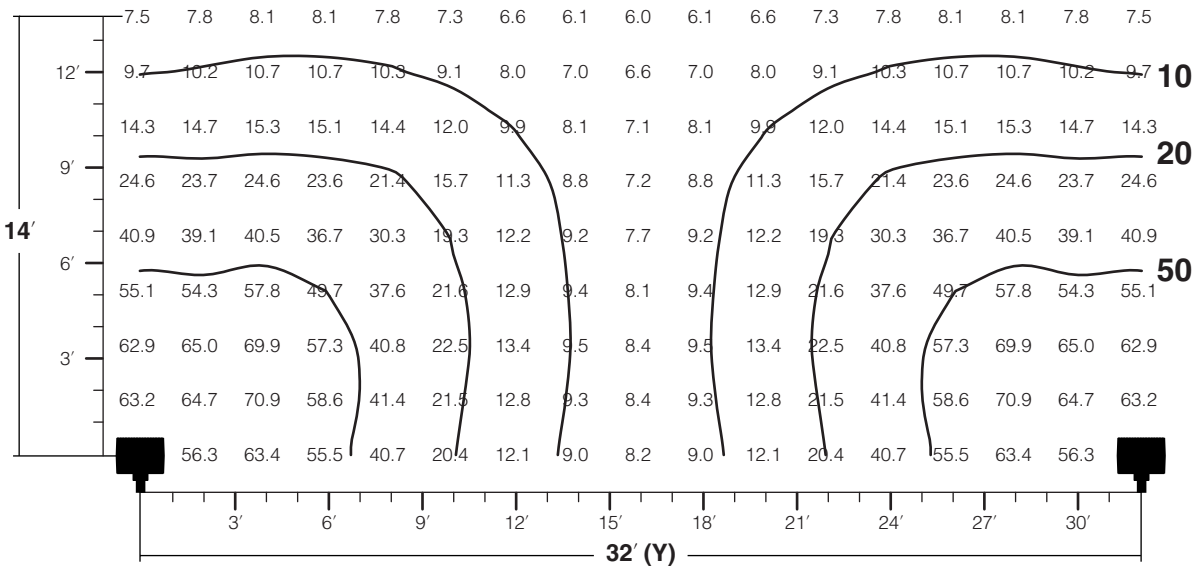
Use for optimum visual uniformity on facades, walls or signs **3:1**



Use where a slightly noticeable drop in uniformity is acceptable **6:1**



Use for area lighting where maximum spacing is desired **12:1**

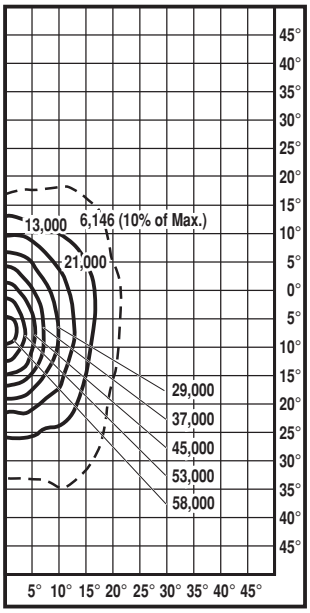


[1] All **Initial Lumen** values shown are approximate and may vary from one manufacturer to another. Consult lamp manufacturer's data for exact lumen and life data.

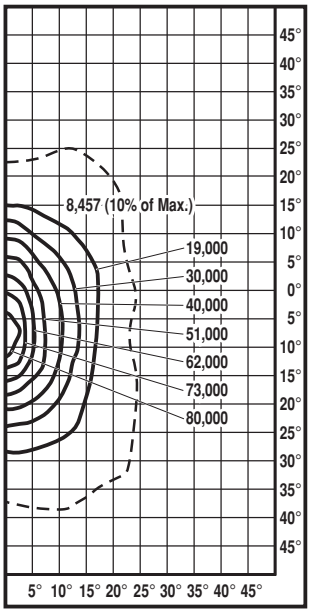
Isocandela Diagrams

Spot

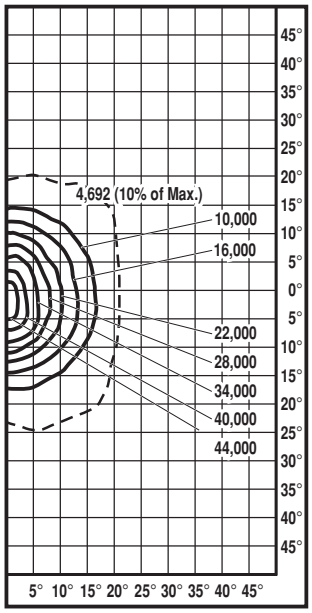
250 watt High Pressure Sodium
E-18 clear mogul base
I.T.L. Test No. 34537
30,000 initial lumens[1]
ANSI Code S-50
I.E.S. Type: 3H x 4V
Field Angle: 44.0° H x 53.0° V **(10% max.)**
Beam Angle: 20.0° H x 27.0° V **(50% max.)**



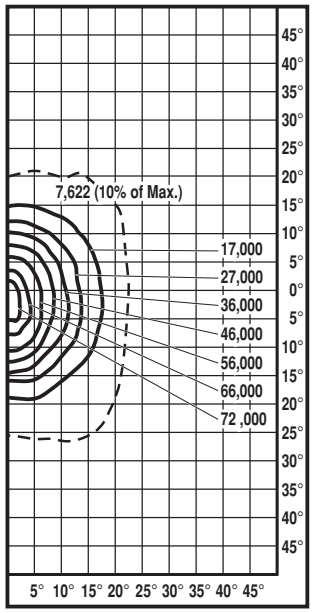
400 watt High Pressure Sodium
E-18 clear mogul base
I.T.L. Test No. 34540
50,000 initial lumens[1]
ANSI Code S-51
I.E.S. Type: 4H x 4V
Field Angle: 48.2° H x 63.0° V **(10% max.)**
Beam Angle: 22.0° H x 31.0° V **(50% max.)**



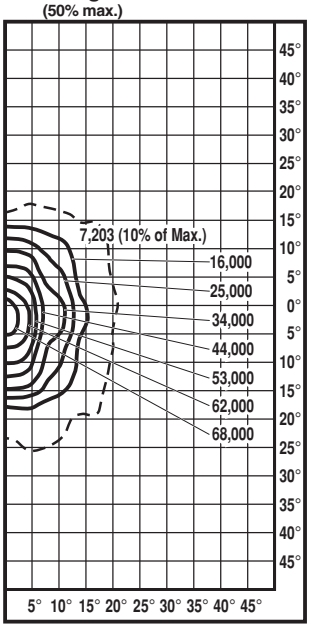
250 watt Metal Halide
BT-28 clear mogul base
I.T.L. Test No. 34545
20,500 initial lumens[1]
ANSI Code M-58
I.E.S. Type: 3H x 3V
Field Angle: 41.0° H x 45.0° V **(10% max.)**
Beam Angle: 21.0° H x 24.0° V **(50% max.)**



400 watt Metal Halide
ED-28 clear mogul base
I.T.L. Test No. 34549
36,000 initial lumens[1]
ANSI Code M-59
I.E.S. Type: 3H x 3V
Field Angle: 44.3° H x 48.0° V **(10% max.)**
Beam Angle: 22.0° H x 25.0° V **(50% max.)**



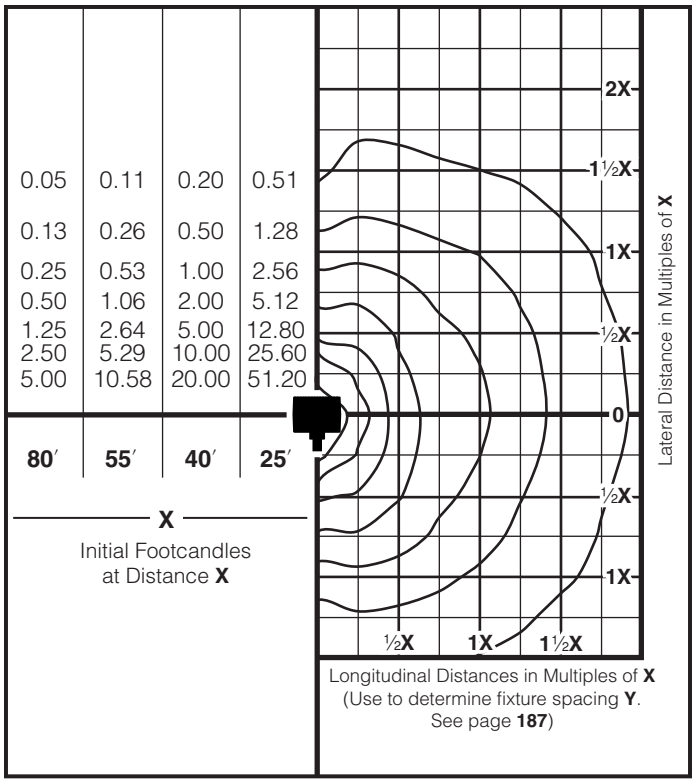
400 watt Metal Halide w/GL9 Louver
ED-28 clear mogul base
I.T.L. Test No. 34551
36,000 initial lumens[1]
ANSI Code M-59
I.E.S. Type: 3H x 3V
Field Angle: 40.2° H x 39.0° V **(10% max.)**
Beam Angle: 21.0° H x 25.0° V **(50% max.)**



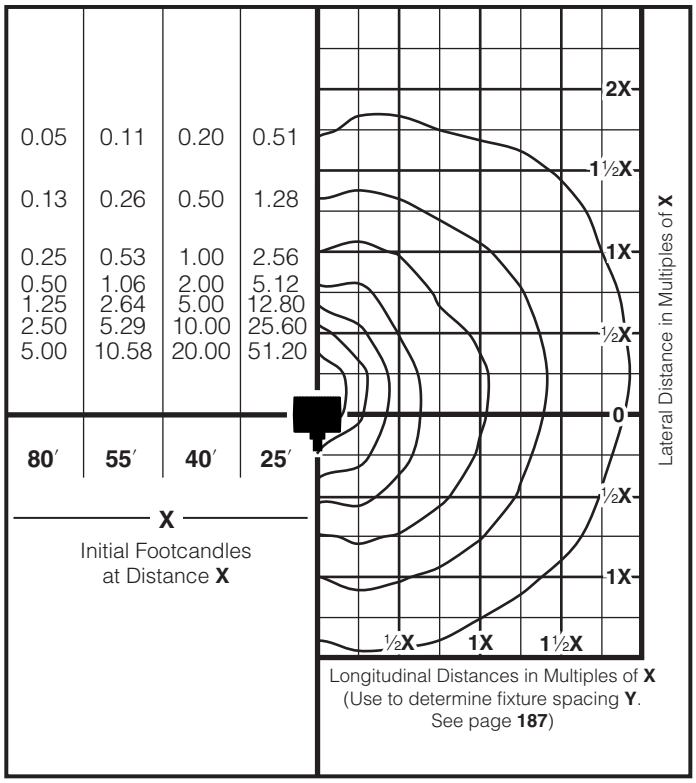
Spot

400HPS Isofootcandle Diagrams

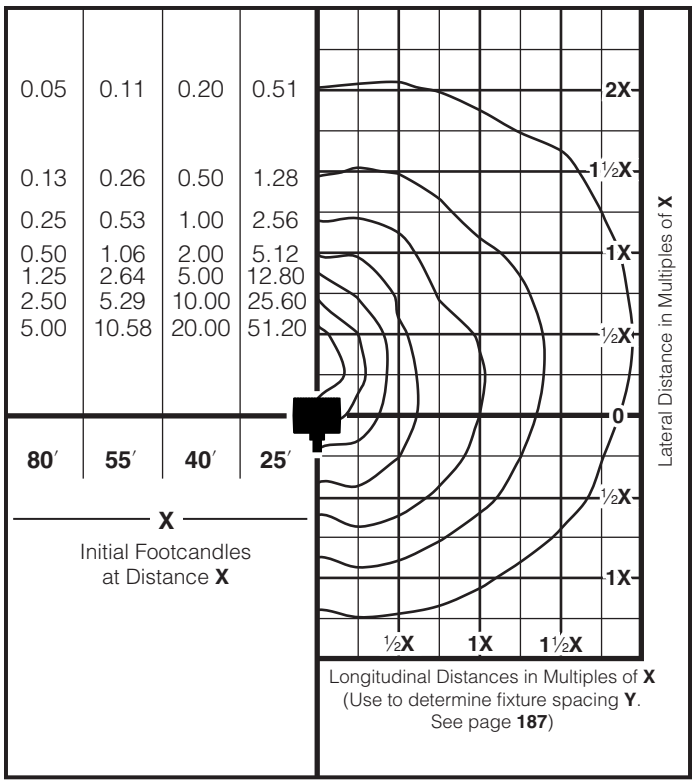
400 watt High Pressure Sodium @ 5° Aiming Angle



400 watt High Pressure Sodium @ 15° Aiming Angle



400 watt High Pressure Sodium @ 25° Aiming Angle

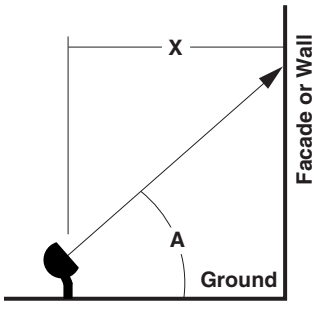


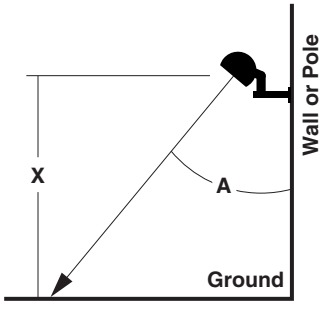
PRORATING CHART

Isofootcandle diagrams shown with 400 watt High Pressure Sodium lamp use the following prorating multipliers for other wattages:

Lamp	Initial Lumens	Factor
400HPS	50,000	1.000
250HPS	30,000	0.600

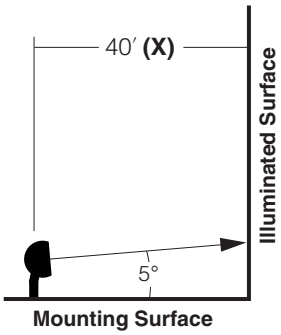
Aiming Angle (A) see individual diagrams





400HPS Lateral Spacing

Spot



AFL25/400HPS
ED-17 clear medium base
I.T.L. Test No. 34540
50,000 initial lumens
ANSI Code S-51

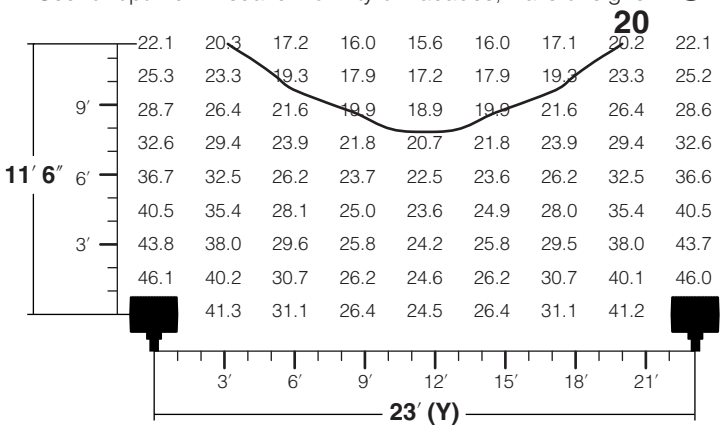
To calculate spacing **(Y)** for Setback Distances other than 40′ shown, multiply actual Setback Distance **(X)** by the following:

Uniformity Ratio	Factor
3:1	0.58
6:1	0.80
12:1	1.12

Example: 41′ Setback, **6:1** desired uniformity, **Y** = 41′ x 0.80 or **32.8′ (32′ 10″)**

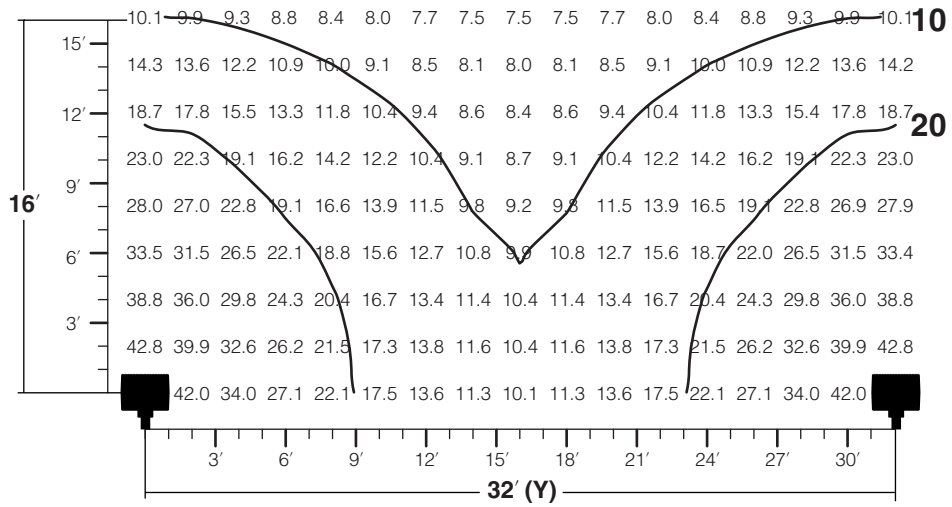
3:1

Use for optimum visual uniformity on facades, walls or signs



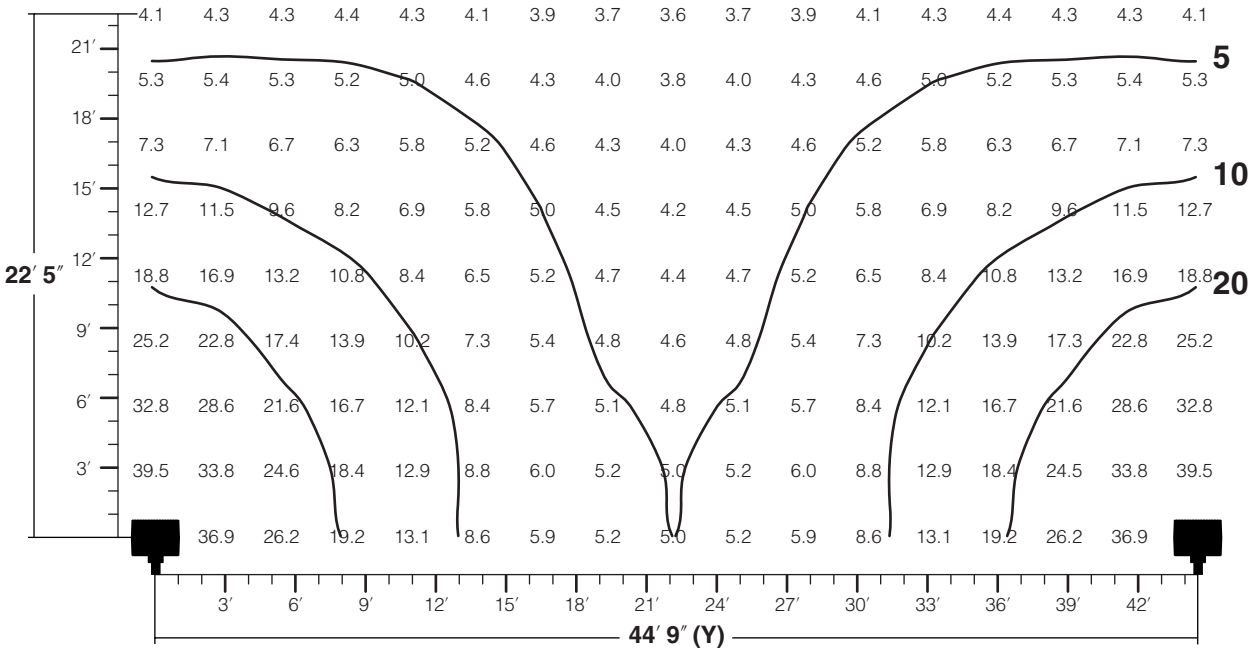
6:1

Use where a slightly noticeable drop in uniformity is acceptable



12:1

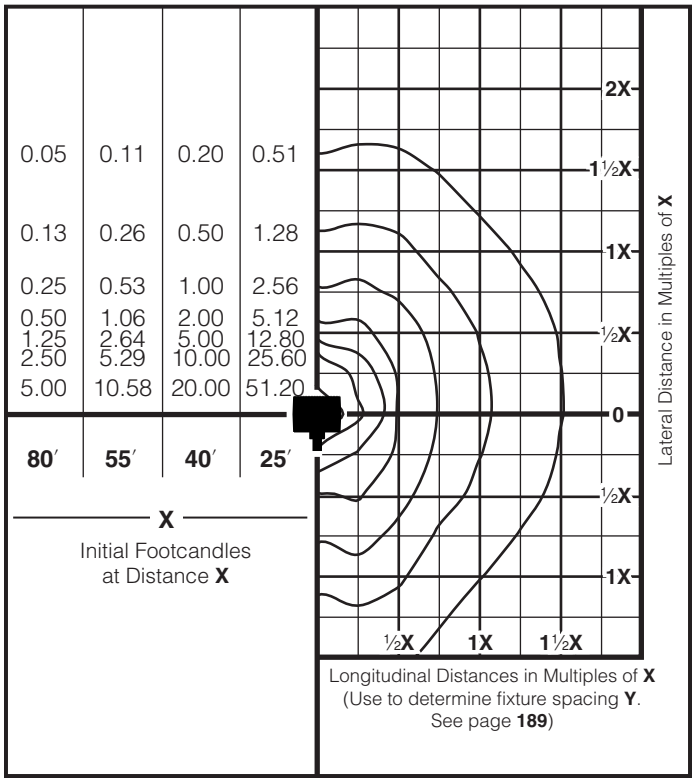
Use for area lighting where maximum spacing is desired



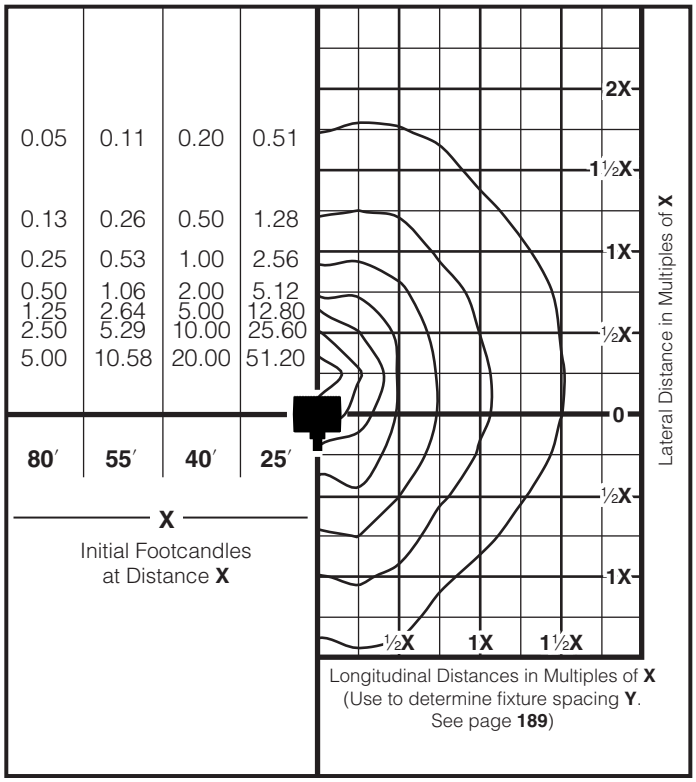
Spot

400MH Isofootcandle Diagrams

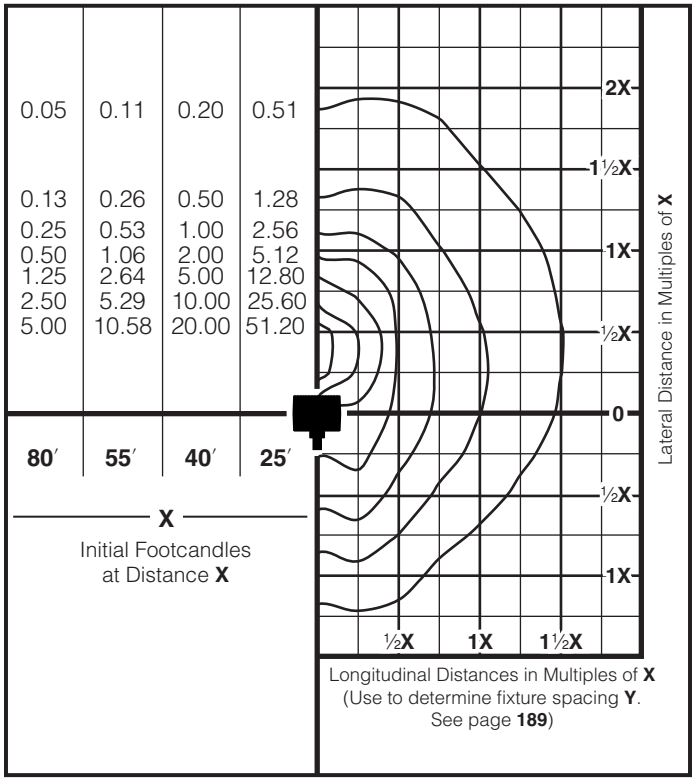
400 watt Metal Halide @ 5° Aiming Angle



400 watt Metal Halide @ 15° Aiming Angle



400 watt Metal Halide @ 25° Aiming Angle

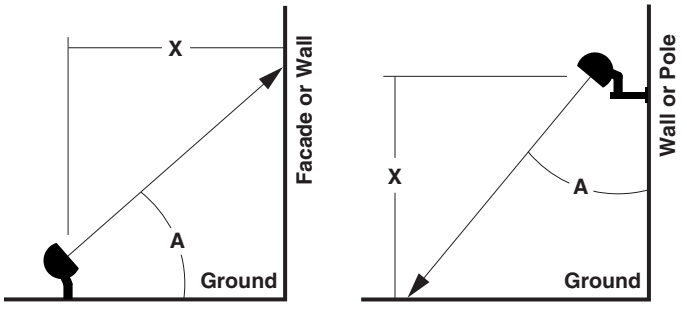


PRORATING CHART

Isofootcandle diagrams shown with 400 watt Metal Halide lamp use the following prorating multipliers for other wattages:

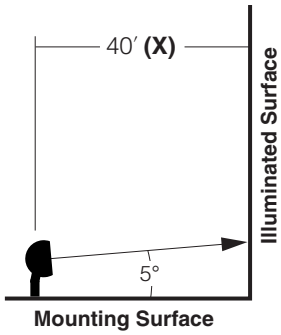
Lamp	Initial Lumens	Factor
400MH	36,000	1.000
250MH	20,500	0.569

Aiming Angle (A) see individual diagrams



400MH Lateral Spacing

Spot



AFL25/400MH
ED-17 clear medium base
I.T.L. Test No. 34549
36,000 initial lumens
ANSI Code M-59

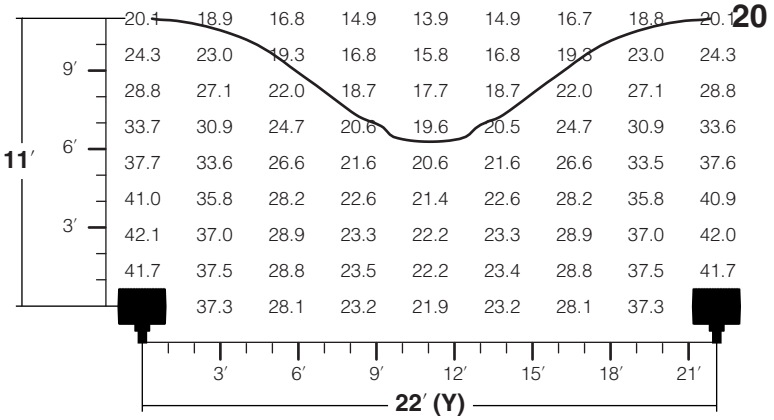
To calculate spacing **(Y)** for Setback Distances other than 40′ shown, multiply actual Setback Distance **(X)** by the following:

Uniformity Ratio	Factor
3:1	0.55
6:1	0.74
12:1	0.99

Example: 41′ Setback, **6:1** desired uniformity, **Y** = 41′ x 0.74 or **30.3′ (30′ 4″)**

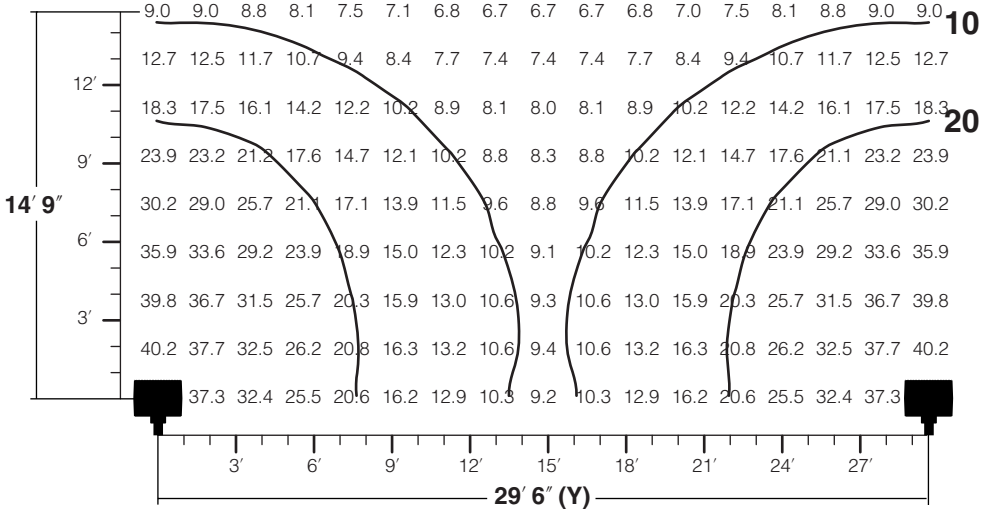
3:1

Use for optimum visual uniformity on facades, walls or signs



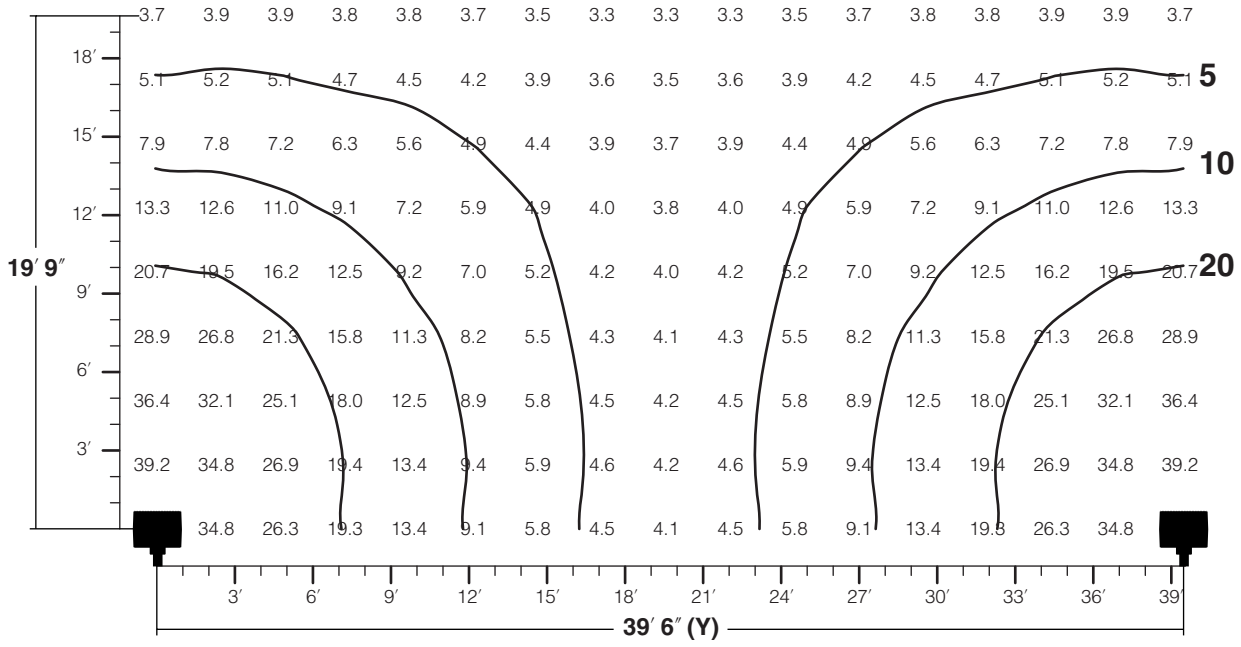
6:1

Use where a slightly noticeable drop in uniformity is acceptable



12:1

Use for area lighting where maximum spacing is desired

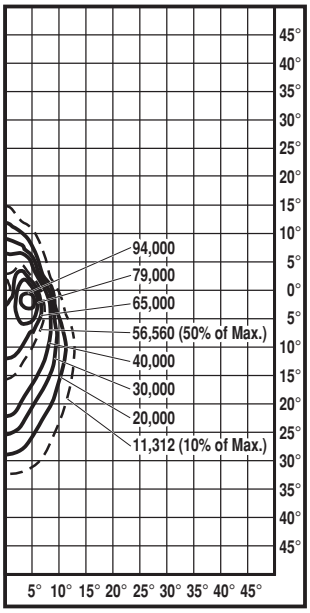


[1] All **Initial Lumen** values shown are approximate and may vary from one manufacturer to another. Consult lamp manufacturer's data for exact lumen and life data.

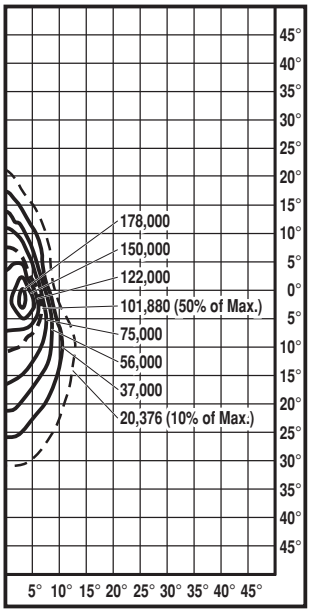
Isocandela Diagrams

Narrow Spot

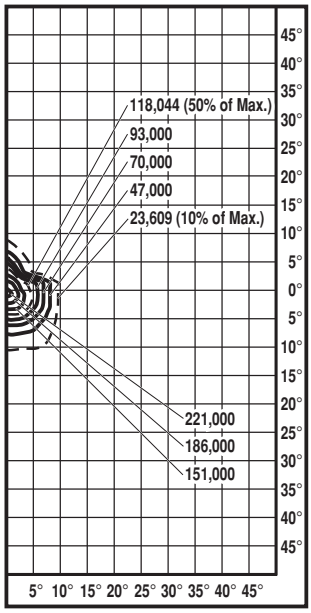
250 watt High Pressure Sodium
E-18 clear mogul base
I.T.L. Test No. 46689
30,000 initial lumens[1]
ANSI Code S-50
I.E.S. Type: 2H x 4V
Field Angle: 24.5° H x 48.2° V
(10% max.)
Beam Angle: 13.9° H x 20.0° V
(50% max.)



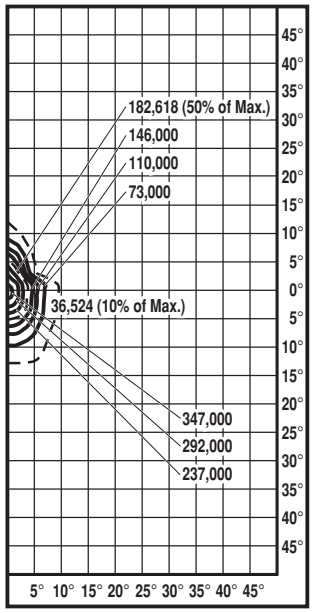
400 watt High Pressure Sodium
E-18 clear mogul base
I.T.L. Test No. 46690
51,000 initial lumens[1]
ANSI Code S-51
I.E.S. Type: 2H x 4V
Field Angle: 24.0° H x 52.6° V
(10% max.)
Beam Angle: 14.0° H x 18.3° V
(50% max.)



250 watt Metal Halide
BT-28 clear mogul base
I.T.L. Test No. 46687
21,000 initial lumens[1]
ANSI Code M-58
I.E.S. Type: 2H x 2V
Field Angle: 18.6° H x 20.0° V
(10% max.)
Beam Angle[1]: 9.0° H x 8.3° V
(50% max.)



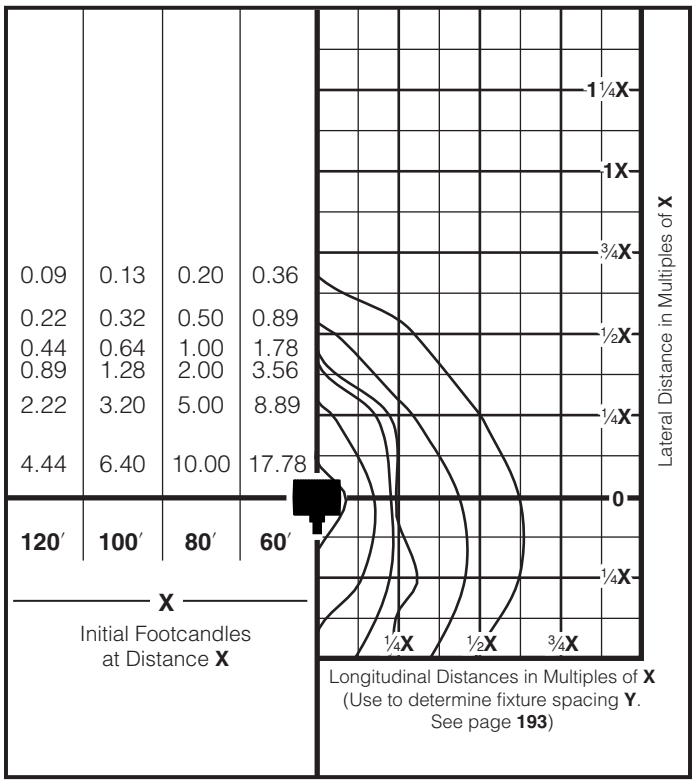
400 watt Metal Halide
ED-28 clear mogul base
I.T.L. Test No. 46901
36,000 initial lumens[1]
ANSI Code M-59
I.E.S. Type: 1H x 2V
Field Angle: 17.9° H x 25.0° V
(10% max.)
Beam Angle: 7.1° H x 10.7° V
(50% max.)



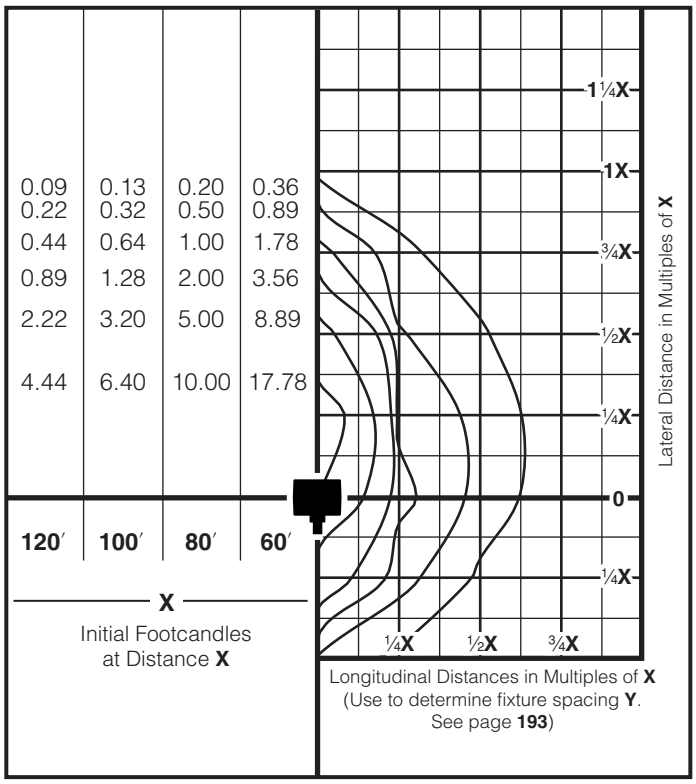
Narrow Spot

400HPS Isofootcandle Diagrams

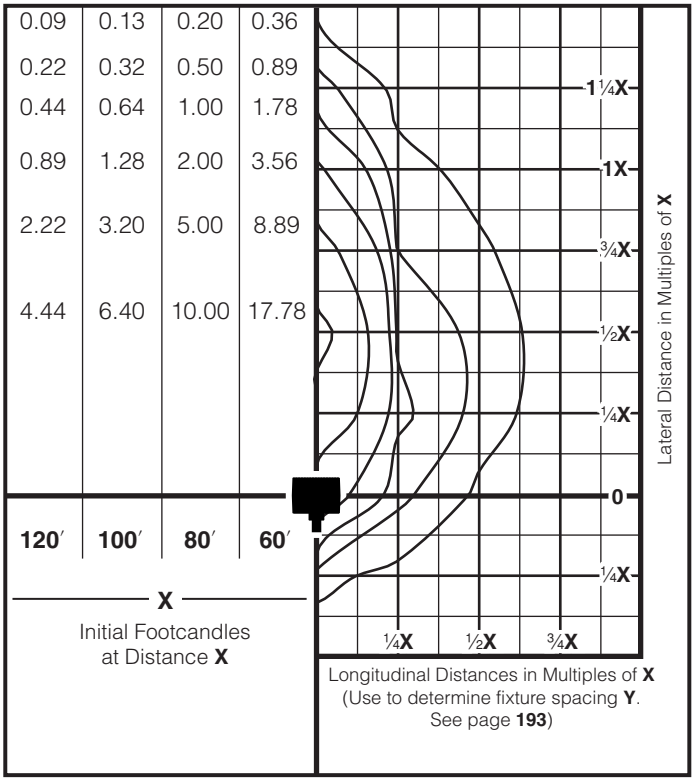
400 watt High Pressure Sodium @ 0° Aiming Angle



400 watt High Pressure Sodium @ 15° Aiming Angle



400 watt High Pressure Sodium @ 30° Aiming Angle

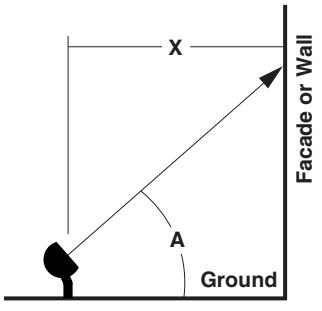


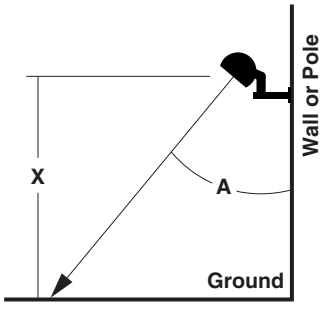
PRORATING CHART

Isofootcandle diagrams shown with 400 watt High Pressure Sodium lamp use the following prorating multipliers for other wattages:

Lamp	Initial Lumens	Factor
400HPS	51,000	1.000
250HPS	30,000	0.588

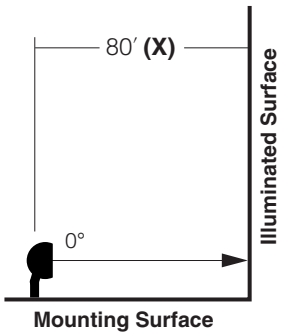
Aiming Angle (A) see individual diagrams





400HPS Lateral Spacing

Narrow Spot



AFL26/400HPS
ED-17 clear medium base
I.T.L. Test No. 46690
51,000 initial lumens
ANSI Code S-51

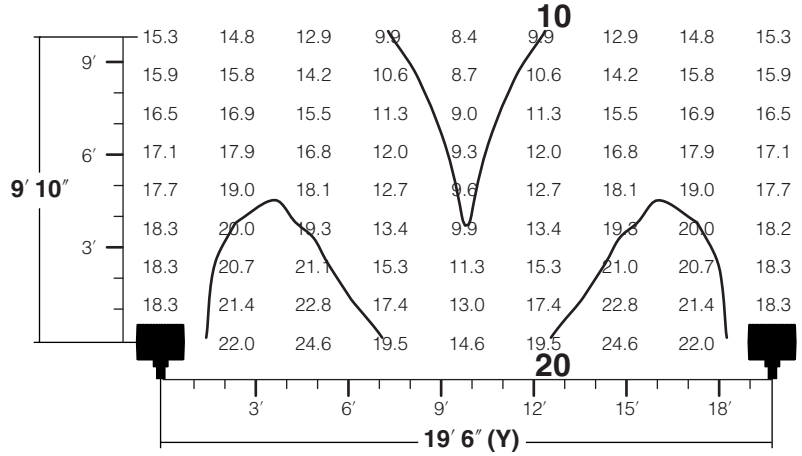
To calculate spacing **(Y)** for Setback Distances other than 80′ shown, multiply actual Setback Distance **(X)** by the following:

Uniformity Ratio	Factor
3:1	0.243
6:1	0.303
12:1	0.393

Example: 100′ Setback, **6:1** desired uniformity, **Y** = 100′ x 0.303 or **30.3′ (30′ 4″)**

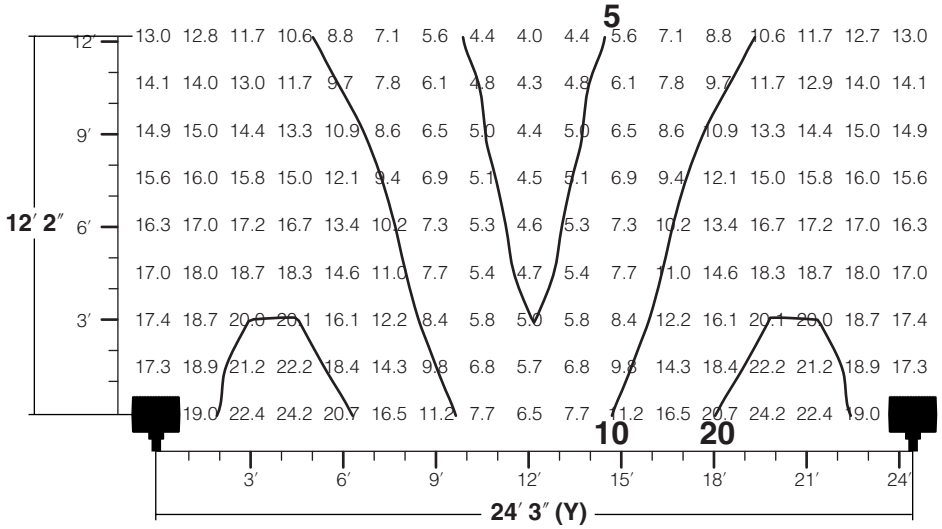
3:1

Use for optimum visual uniformity on facades, walls or signs



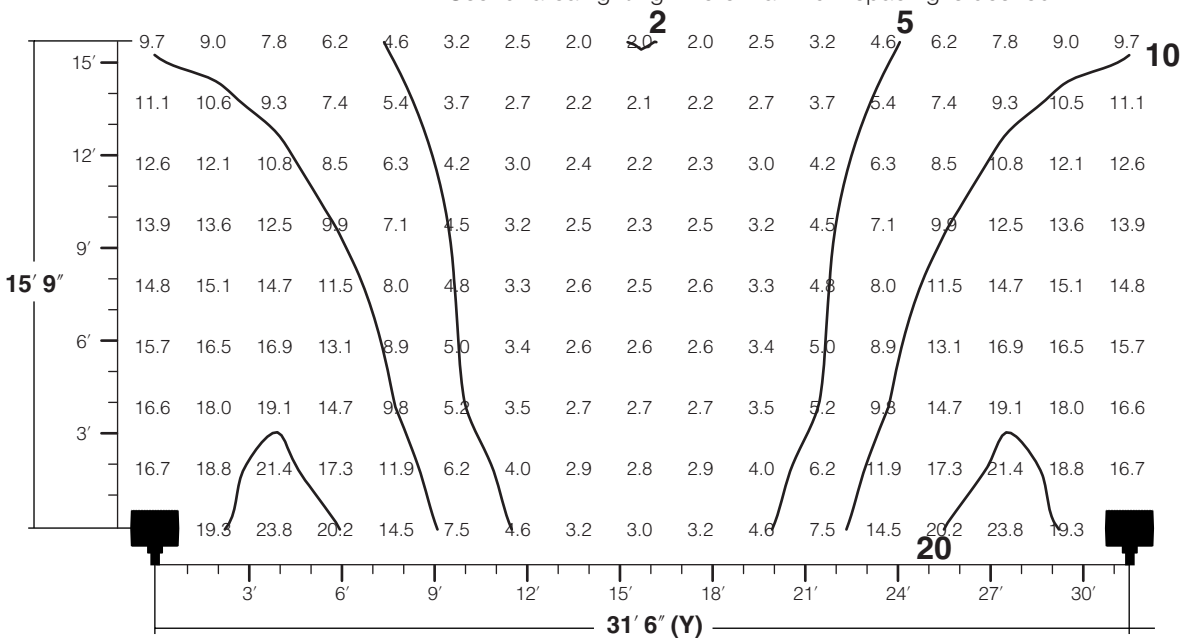
6:1

Use where a slightly noticeable drop in uniformity is acceptable



12:1

Use for area lighting where maximum spacing is desired

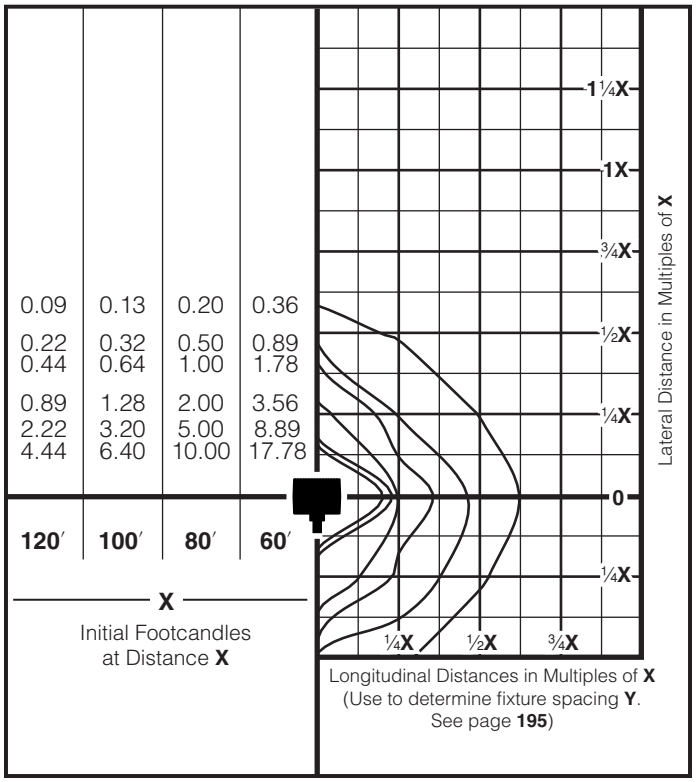


AFL26

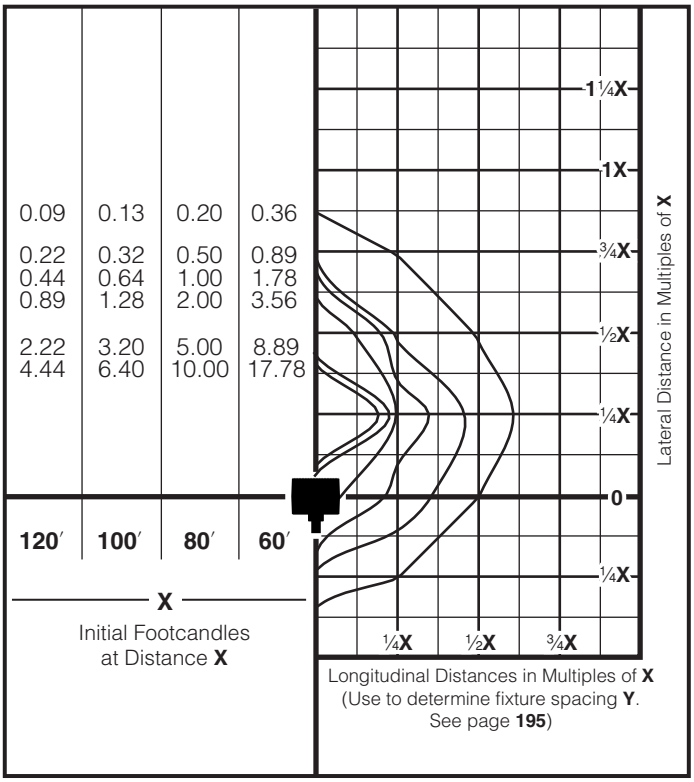
Narrow Spot

400MH Isofootcandle Diagrams

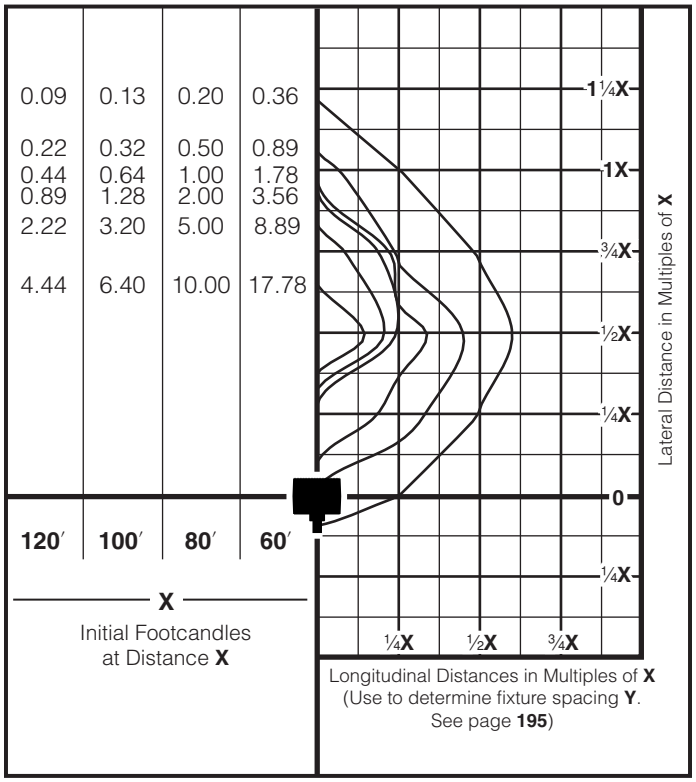
400 watt Metal Halide @ 0° Aiming Angle



400 watt Metal Halide @ 15° Aiming Angle



400 watt Metal Halide @ 30° Aiming Angle

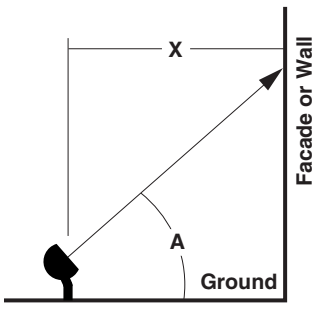


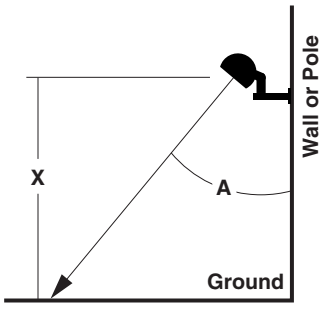
PRORATING CHART

Isofootcandle diagrams shown with 400 watt Metal Halide lamp use the following prorating multipliers for other wattages:

Lamp	Initial Lumens	Factor
400MH	36,000	1.000
250MH	21,000	0.583

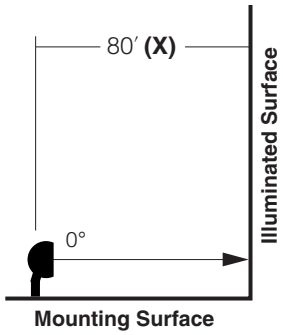
Aiming Angle (A) see individual diagrams





400MH Lateral Spacing

Narrow Spot



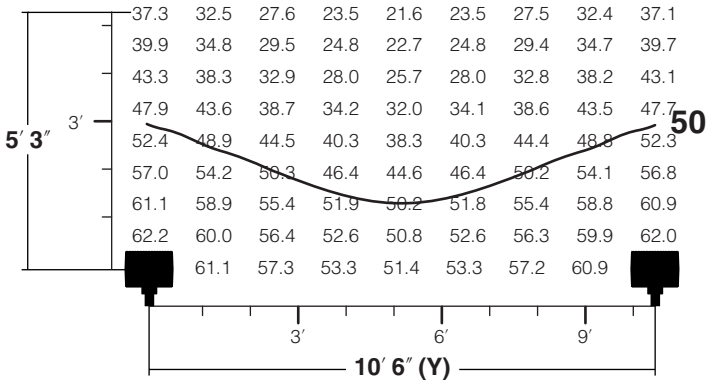
AFL26/400MH
ED-17 clear medium base
I.T.L. Test No. 46901
36,000 initial lumens
ANSI Code S-51

To calculate spacing **(Y)** for Setback Distances other than 80′ shown, multiply actual Setback Distance **(X)** by the following:

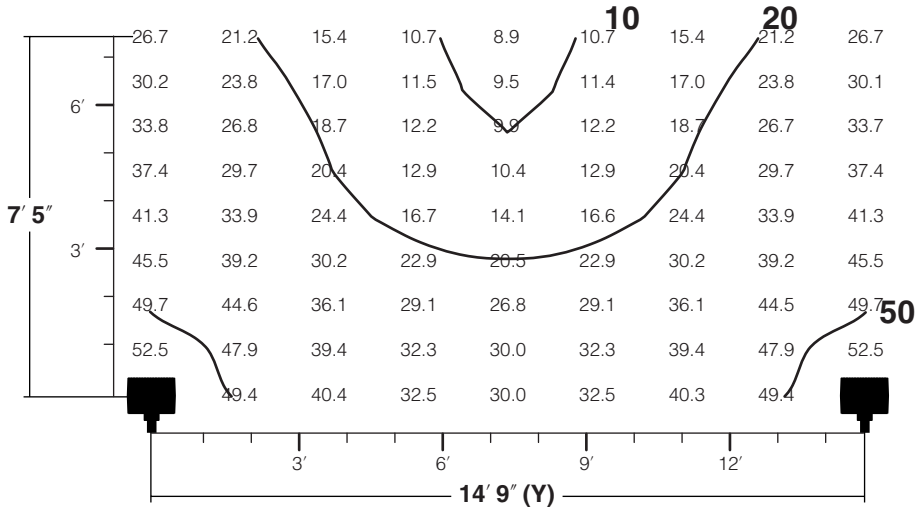
Uniformity Ratio	Factor
3:1	0.131
6:1	0.184
12:1	0.246

Example: 100′ Setback, **6:1** desired uniformity, **Y** = 100′ x 0.184 or **18.4′ (18′ 5″)**

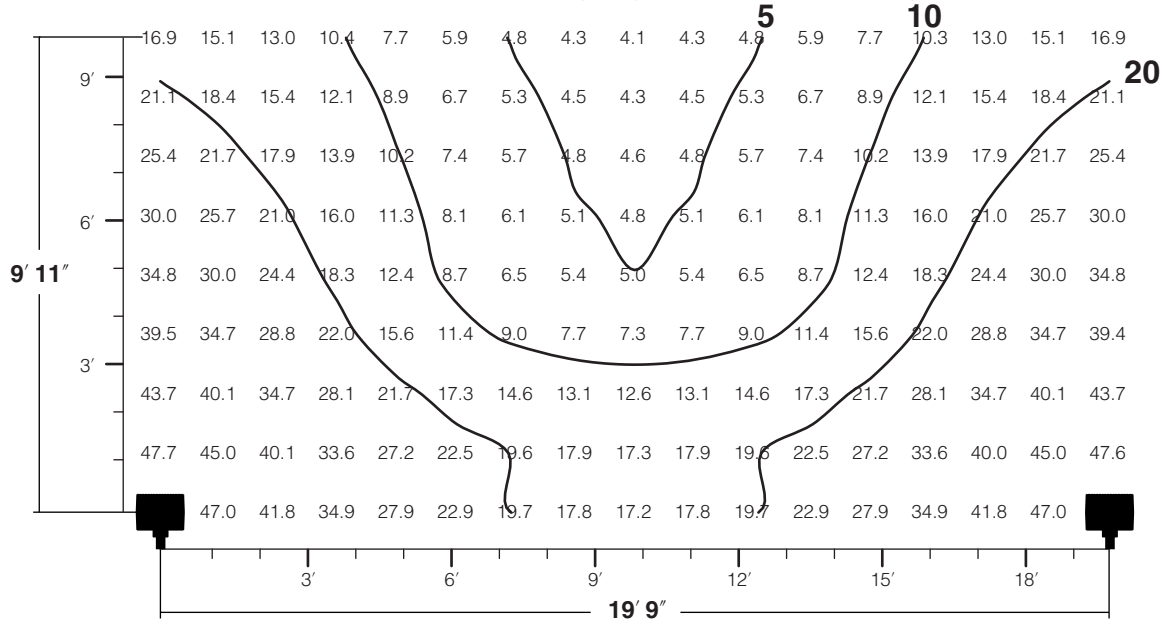
Use for optimum visual uniformity on facades, walls or signs **3:1**



Use where a slightly noticeable drop in uniformity is acceptable **6:1**



Use for area lighting where maximum spacing is desired **12:1**

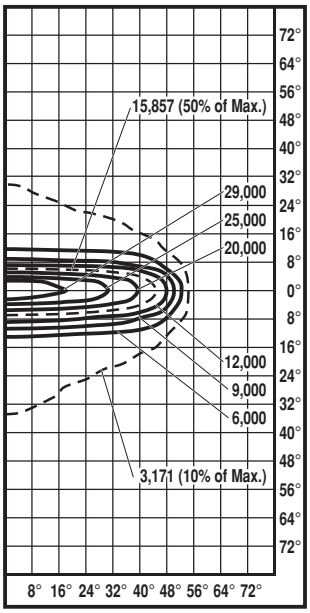


[1] All **Initial Lumen** values shown are approximate and may vary from one manufacturer to another. Consult lamp manufacturer's data for exact lumen and life data.

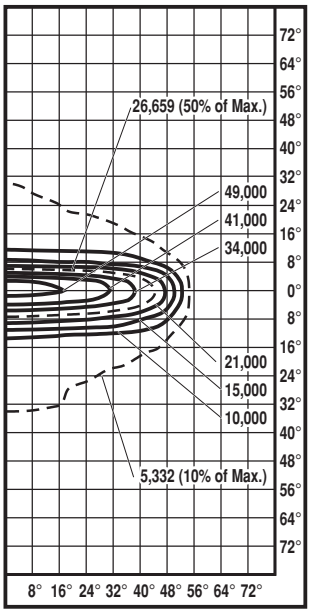
Isocandela Diagrams

Horizontal Spot

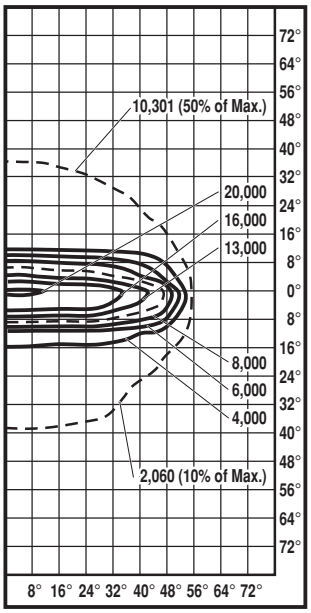
250 watt High Pressure Sodium
E-18 clear mogul base
I.T.L. Test No. 48415
30,000 initial lumens[1]
ANSI Code S-50
I.E.S. Type: 6H x 4V
Field Angle: 109.1° H x 64.9° V
(10% max.)
Beam Angle: 90.1° H x 13.1° V
(50% max.)



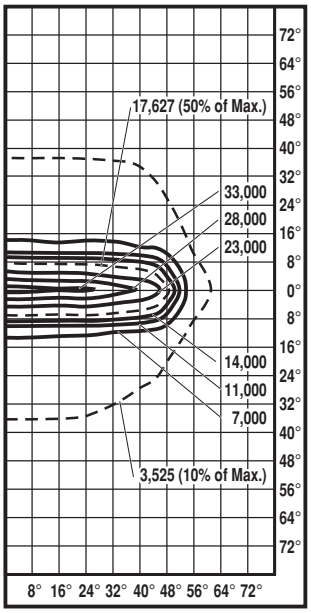
400 watt High Pressure Sodium
E-18 clear mogul base
I.T.L. Test No. 48416
51,000 initial lumens[1]
ANSI Code S-51
I.E.S. Type: 6H x 4V
Field Angle: 108.9° H x 64.5° V
(10% max.)
Beam Angle: 88.2° H x 13.4° V
(50% max.)



250 watt Metal Halide
BT-28 clear mogul base
I.T.L. Test No. 48414
21,000 initial lumens[1]
ANSI Code M-58
I.E.S. Type: 6H x 5V
Field Angle: 112.8° H x 75.1° V
(10% max.)
Beam Angle: 95.8° H x 15.8° V
(50% max.)



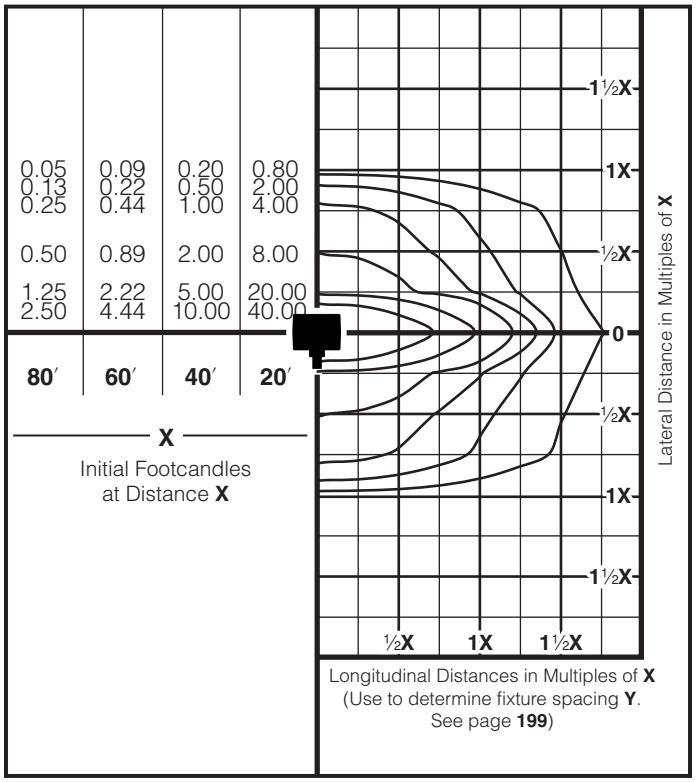
400 watt Metal Halide
ED-28 clear mogul base
I.T.L. Test No. 47773
36,000 initial lumens[1]
ANSI Code M-59
I.E.S. Type: 6H x 5V
Field Angle: 122.7° H x 74.0° V
(10% max.)
Beam Angle: 97.4° H x 14.9° V
(50% max.)



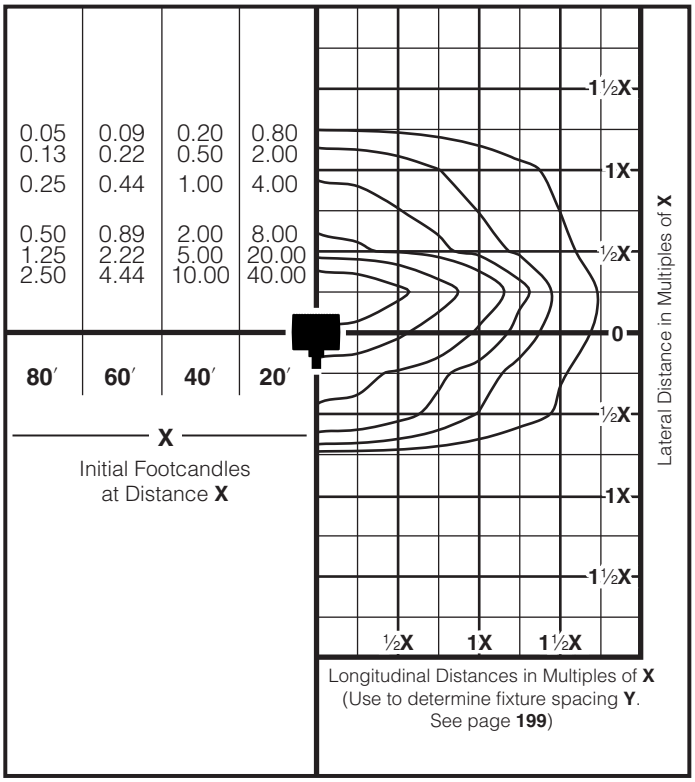
Horizontal Spot

400HPS Isofootcandle Diagrams

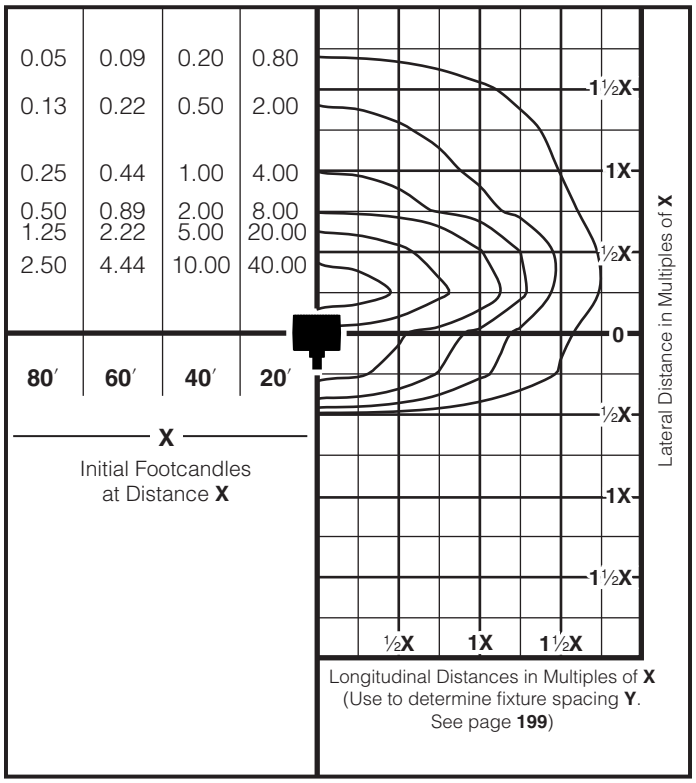
400 watt High Pressure Sodium @ 0° Aiming Angle



400 watt High Pressure Sodium @ 10° Aiming Angle



400 watt High Pressure Sodium @ 20° Aiming Angle

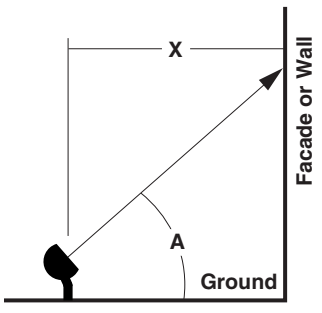


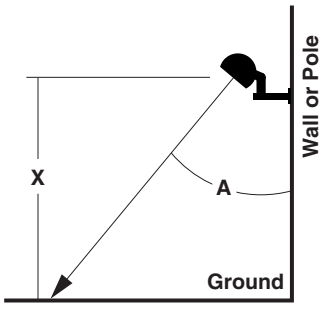
PRORATING CHART

Isofootcandle diagrams shown with 400 watt High Pressure Sodium lamp use the following prorating multipliers for other wattages:

Lamp	Initial Lumens	Factor
400HPS	51,000	1.000
250HPS	30,000	0.588

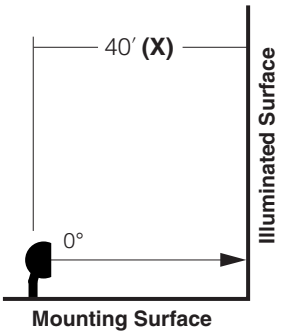
Aiming Angle (A) see individual diagrams





400HPS Lateral Spacing

Horizontal Spot



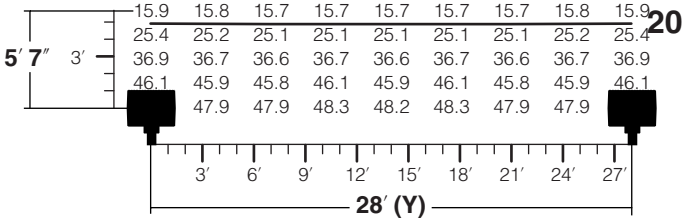
AFL27/400HPS
ED-17 clear medium base
I.T.L. Test No. 48416
51,000 initial lumens
ANSI Code S-51

To calculate spacing **(Y)** for Setback Distances other than 40′ shown, multiply actual Setback Distance **(X)** by the following:

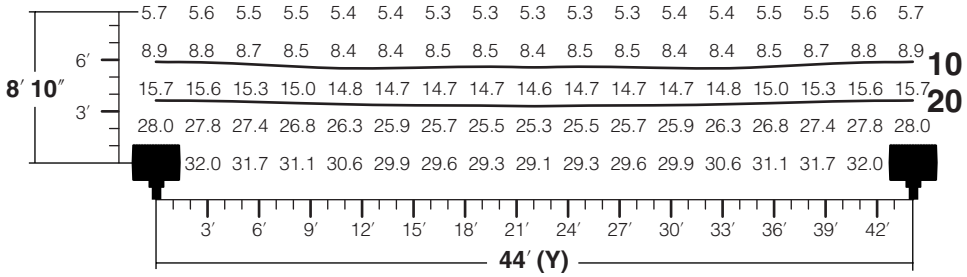
Uniformity Ratio	Factor
3:1	0.70
6:1	1.10
12:1	1.63

Example: 41′ Setback, **6:1** desired uniformity, **Y** = 41′ x 1.10 or **45.1′ (45′ 1″)**

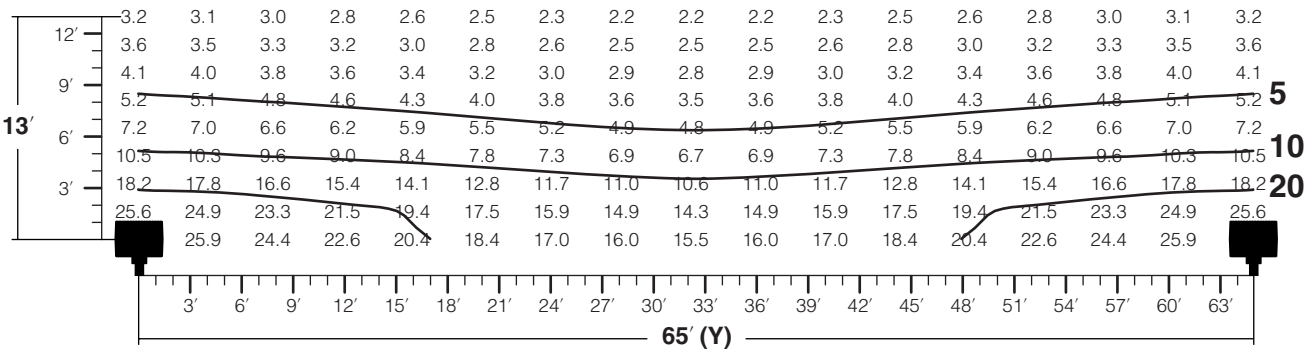
Use for optimum visual uniformity on facades, walls or signs **3:1**



Use where a slightly noticeable drop in uniformity is acceptable **6:1**



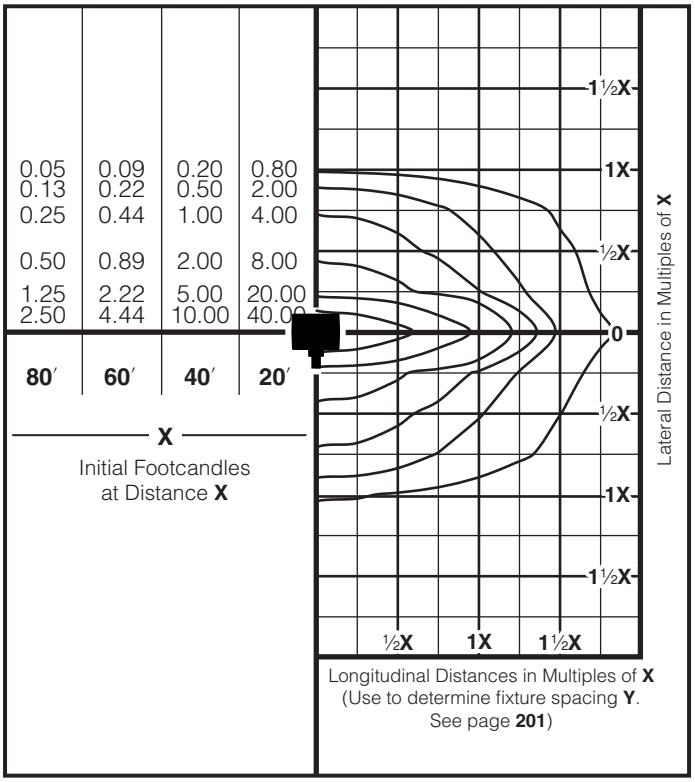
Use for area lighting where maximum spacing is desired **12:1**



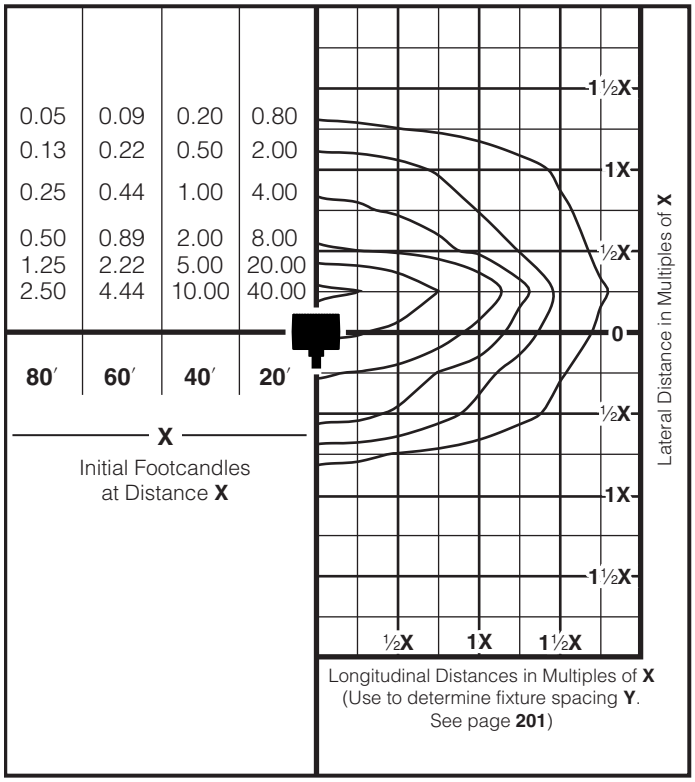
Horizontal Spot

400MH Isofootcandle Diagrams

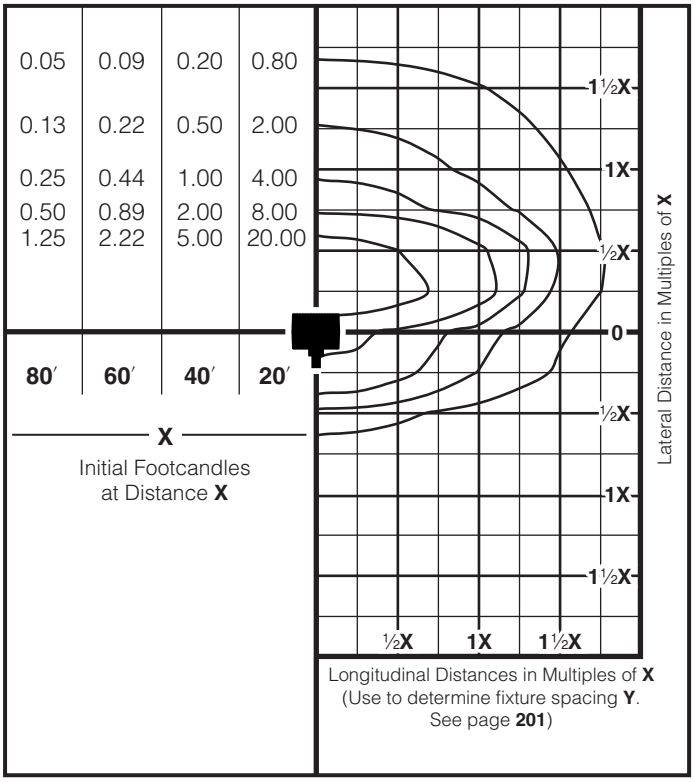
400 watt Metal Halide @ 0° Aiming Angle



400 watt Metal Halide @ 10° Aiming Angle



400 watt Metal Halide @ 20° Aiming Angle

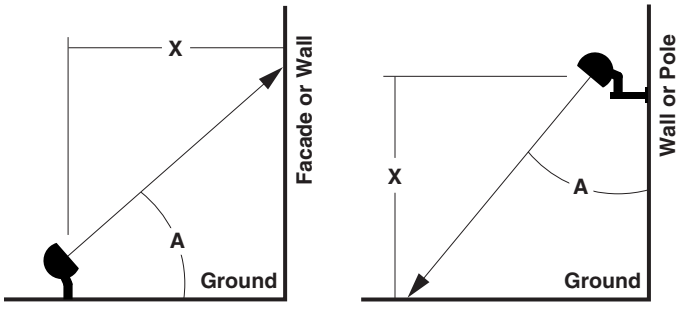


PRORATING CHART

Isofootcandle diagrams shown with 400 watt Metal Halide lamp use the following prorating multipliers for other wattages:

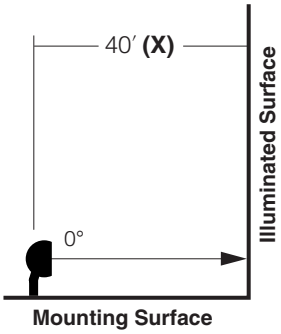
Lamp	Initial Lumens	Factor
400MH	36,000	1.000
250MH	21,000	0.583

Aiming Angle (A) see individual diagrams



400MH Lateral Spacing

Horizontal Spot



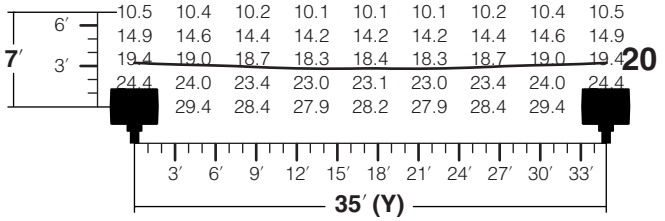
AFL27/400MH
ED-17 clear medium base
I.T.L. Test No. 47773
36,000 initial lumens
ANSI Code M-59

To calculate spacing **(Y)** for Setback Distances other than 40′ shown, multiply actual Setback Distance **(X)** by the following:

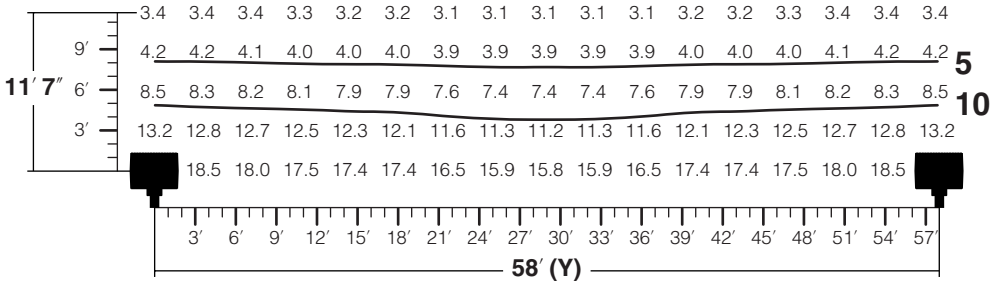
Uniformity Ratio	Factor
3:1	0.88
6:1	1.45
12:1	2.00

Example: 41′ Setback, **6:1** desired uniformity, **Y** = 41′ x 1.45 or **59.45′ (59′ 5″)**

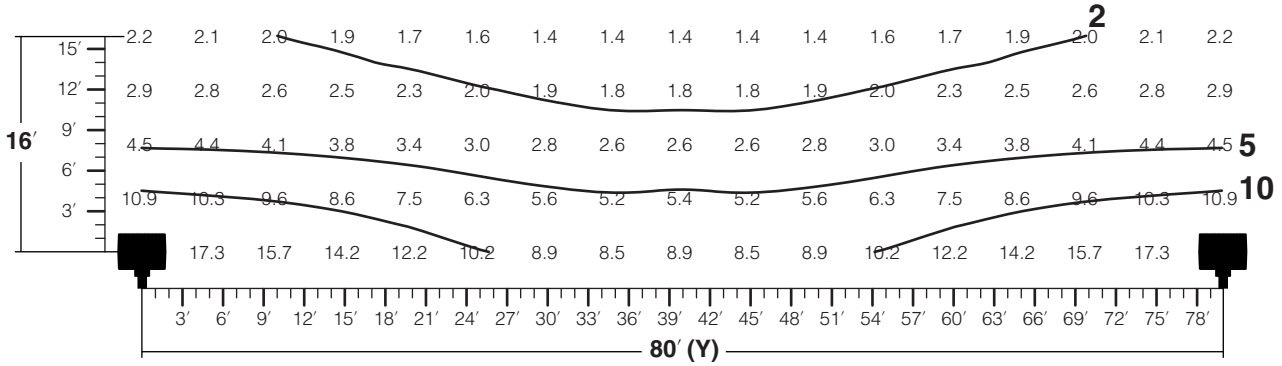
Use for optimum visual uniformity on facades, walls or signs **3:1**



Use where a slightly noticeable drop in uniformity is acceptable **6:1**



Use for area lighting where maximum spacing is desired **12:1**



References

Application Assistance

Applications Assistance

Kim Lighting utilizes the latest computer technology and software to provide specifiers with reliable evaluations of lighting system performance. We can analyze a proposed luminaire layout or provide recommendations based on performance criteria.

Electronic copies of plans can be sent directly to **yyeager@hubbell-ltg.com.** Hard copies can be sent by fax at 864-678-1743, or they can be mailed to Applications Dept, 701 Millennium Blvd, Greenville, SC 29607.

Photometric Files

Kim Lighting .ies format photometric files are available for use in lighting calculation software. The complete IES File Library is on the internet at **www.kimlighting.com**.

Surface Reflectance

Approximate Reflectance of Some Common Surfaces

Material	Reflectance
Asphalt, clean	7%
Bluestone, Sandstone	18%
Brick, dark buff	40%
Brick, light buff	48%
Brick, dark red	30%
Cement	27%
Concrete	40%
Earth, average	7%
Glass, clear	7%
Glass, reflective	20-30%
Glass, tinted	7%
Granolite Pavement	17%
Grass, dark green	6%
Gravel	13%
Macadam	18%
Slate, dark clay	8%
Snow, new	74%
Snow, old	64%
Vegetation, average	25%
White Marble	45%
White Paint, new	75%
White Paint, old	55%

Architectural Floodlights

50-400 Watt

Because of a continuing product improvement program, Kim Lighting reserves the right to change specifications without notice.

How may we serve you better?
Let us know by visiting our web site at:
www.kimlighting.com

Your input is valuable to us.

KIM LIGHTING

HUBBELL

HUBBELL LIGHTING, INC.