

# Champ® VMV

LED luminaires for hazardous areas



3,000 to 25,000 lumen LED high bay luminaires



**EATON**

*Powering Business Worldwide*



Champ® VMV LED

# Safe. Reliable. Efficient.

Featuring the industry's broadest range of LED luminaires for harsh, hazardous and industrial environments, Eaton's Crouse-Hinds can deliver a lighting solution that performs reliably in even the worst operating conditions. All the while reducing your energy, maintenance and manpower costs.

## Why LED?

### Useful life

Rated life is up to 60,000 hours of maintenance-free and safe operation

### Energy efficiency

LED average energy consumption is significantly less than traditional fluorescent and HID fixtures

### Start/restart time

Instant illumination versus 10 minute restrike time for HID

### Light quality

Higher color rendering compared to fluorescent and HID

### Environmental benefits

Mercury-free LED eliminates disposal costs and lower energy consumption for a smaller carbon footprint

## Why Crouse-Hinds?

### Rugged design

Built to withstand extreme temperatures, vibration, water and dust

### High efficacy

Up to 124 lumens per watt (model dependent)

### Thermal management

Effective heat sinking ensures longer life

### Quality of light

Custom optics designed to maximize light distribution and intensity

### Versatile mounting

LED fixtures are compatible with Crouse-Hinds' HID installed base



# Why Champ VMV LED?

**Rugged mid to high bay solutions.** Champ VMV LED luminaires are engineered to provide maintenance-free operation while delivering long life and high lumen performance.



### Custom optics:

- Type I, III and V optics designed to maximize light distribution and intensity\*

\* Type V optics standard.

### Increased efficiency and durability:

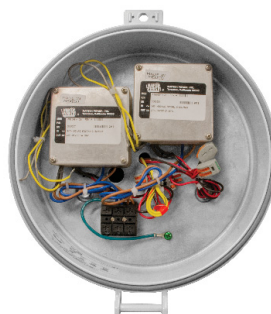
- Up to 124 lumens per watt
- Economic life: 7-20 years

### Built to last:

- Type 4X rated
- Impact-resistant lens sealed from the outside environment provides ingress protection against water and dust
- Die cast aluminum LED housing provides efficient thermal path to heat sink assembly
- Vertical fin design facilitates air flow and dust shedding

### Simple installation and replacement:

- Contractor-friendly design is ideal for both retrofit and new construction
- Easy to retrofit using existing HID Champ mounting module
- Compact modular design for easy component replacement and future upgrades
- Available with lever lock connectors and standard three-pole terminal block



VMV3L-VMV11L

**optimized for 8-30 foot mounting heights**



VMV13L & VMV17L



VMV21L & VMV25L

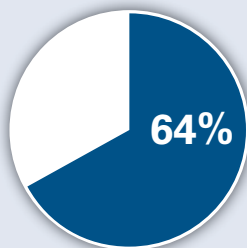
**optimized for 30-60 foot mounting heights**

## LED vs. HID savings at a glance

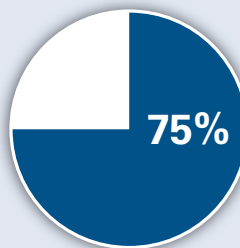
Why are so many facilities making the switch from HID to LED?

The numbers say it all.

### VMV7L vs. 175 Watt MH



64% REDUCTION IN ENERGY COSTS



75% LOWER TOTAL COST OF OWNERSHIP



100% MAINTENANCE REDUCTION

Assumptions: Calculations based on overall life of the LED system. Energy cost of \$.09 per kilowatt; 24 hour per day operation; labor rate of \$75 each for 2 workers; average time for fixture maintenance of 1 hour.

## Custom optics

Eaton's Crouse-Hinds continuously focuses on engineering product solutions tailored to our customers' unique needs and applications.

Champ VMV LED luminaires feature custom optics designed to maximize light distribution and intensity, providing flexibility for retrofits or new installations throughout the site.



Type III optics minimize light spillover onto the walls and direct light to the ground.

## Three optical options to maximize light distribution and intensity



VMV3L - VMV11L



Type I



Type III



Type V



### TYPE I

Long and rectangular for hallways, walkways, loading docks, catwalks.

#### Ideal for:

- Mining conveyor belts
- Aisleways and hallways
- Catwalks and walkways
- Ramps and loading docks
- Tunnels with overhead mounts



### TYPE III

Wall mount light distribution, minimizing spillover on the wall.

#### Ideal for:

- Narrow crosswalks or passages with wall mounted fixtures
- Tunnels with wall mount
- Wall or stanchion mount requiring 180° forward throw beam patterns



### TYPE V

Regular circular distribution pattern for high/low bay indoor and outdoor ceiling or pendant mount lighting.

#### Ideal for:

- Pendant, ceiling or stanchion mount overhead building mounts
- Processing mills, industrial plants, large buildings, warehouses, etc.

### Colored LED options:

- Available in red, blue, green and amber\*
- Reduction in light pollution for night space observation and sky glow due to isolating blue wavelength in red and amber colors
- Wildlife-friendly
- Improves visibility for telescopes in observatories during night sky space exploration

\* Custom optics not available with colored LEDs. One model per color, see assignment sheet.

# Case study: Type I optics

## Catwalk/conveyor lighting

Utilizing Eaton's Crouse-Hinds lighting layout services, Champ VMV luminaires with Type I optics and HID luminaires are shown installed on a catwalk to compare photometrics.

## Comparison

**Champ Type I LEDs have a wider linear pattern** than equivalent HID luminaires and provide more efficient light dispersion, which fully illuminates the catwalk.

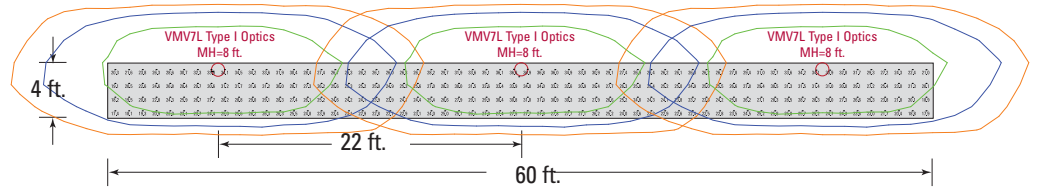
## Results

**Champ VMV LED with Type I optics** provides superior illumination along the conveyor and walkway safely. With no gaps in illumination, the optical pattern allows for increased spacing of fixtures and a safer conveyor system.

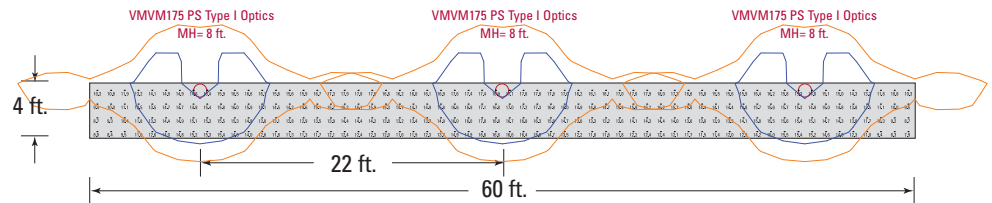
## Savings realized

- **Champ Type I pattern allows for greater fixture spacing** along the catwalk or conveyor system
- Increased visibility with no dark spots results in safer conditions for workers
- LED system provides between 7 to 20 years of maintenance-free operation
- Up to 64% energy savings over the life of the fixture

**Champ® Gen III w/ Type I Optics**

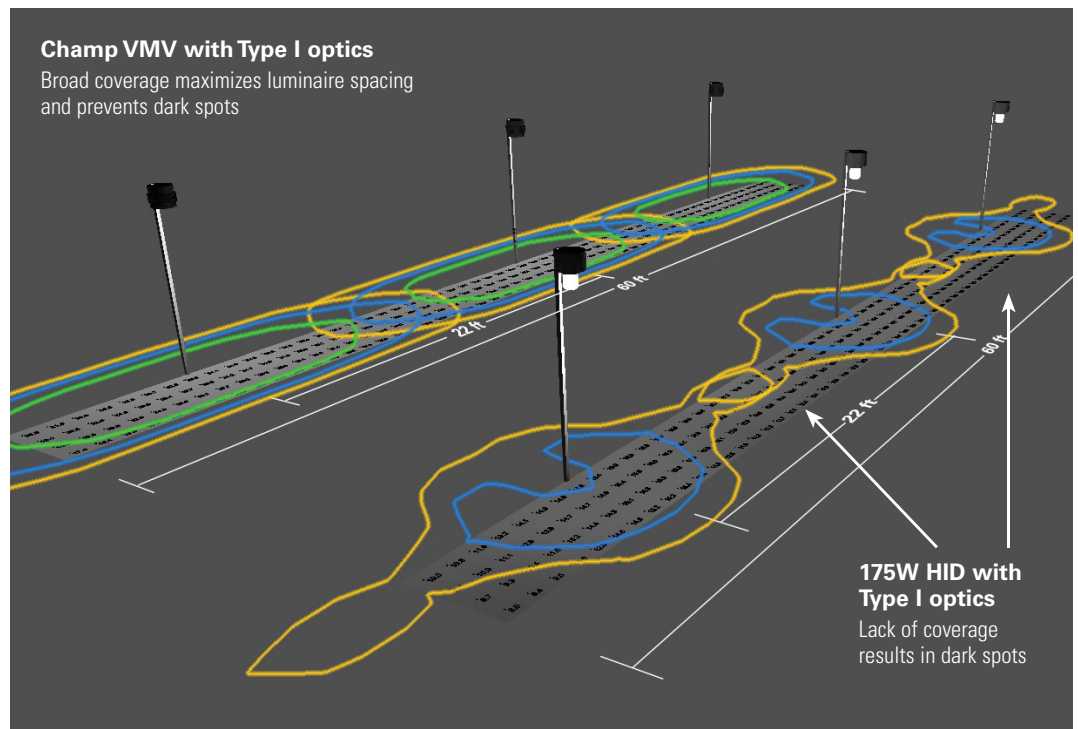


**175W Metal Halide w/ Type I Optics**



Luminaire	Calc. Type	Units	Avg.	Max.	Min.	Avg./Min.	Max./Min.
<b>Champ VMV</b>	Illuminance	Fc	26.91	36.9	17.4	1.55	2.12
<b>175W MH</b>	Illuminance	Fc	14.32	18.0	7.9	1.81	2.28

**Champ VMV has broader coverage area, higher delivered footcandles and uniformity for a typical catwalk or conveyor application.**



### Lighting layout & design services:

Let us help you design your next big project!

Contact Crouse-Hinds Customer Service

crousecustomerctr@eaton.com

(866) 764-5454



## Champ VMV Series LED Luminaires

Champ VMV Series LEDs are designed to provide full-spectrum, crisp, white light with custom IES Type I, III and V distribution.

Model	Typical lumens (Type V)*	Wattage	Lumens per watt	Equivalent HID luminaire	Typical energy savings / lifetime
VMV3L	3,531	29	122	70W-100W	Up to 77%
VMV5L	5,335	43	124	100W-150W	Up to 67%
VMV7L	7,195	62	116	150W-175W	Up to 67%
VMV9L	9,266	85	109	250W-320W	Up to 74%
VMV11L	11,440	113	101	320W-400W	Up to 74%
VMV13L	13,226	130	102	400W	Up to 68%
VMV17L	18,793	168	112	400W-600W	Up to 72%
VMV21L	22,110	196	113	600W-750W	Up to 74%
VMV25L	26,531	232	114	750W-1000W	Up to 77%

\* Tolerance +/- 10%.

### Applications:

- For areas with mounting heights of 8-60 feet
- Oil and gas refineries, drilling rigs, petrochemical facilities, food and beverage facilities, platforms, loading docks, tunnels, indoor/outdoor spotlighting, outdoor wall and stanchion mounted general area lighting, and where flammable vapors, gases, ignitable dusts, fibers or flyings are present
- Locations requiring continuous and consistent light levels in extreme ambient temperatures
- Where extremely corrosive, wet, dusty, hot and/or cold conditions exist
- Classified and hazardous locations

### Champ VMV benefits:

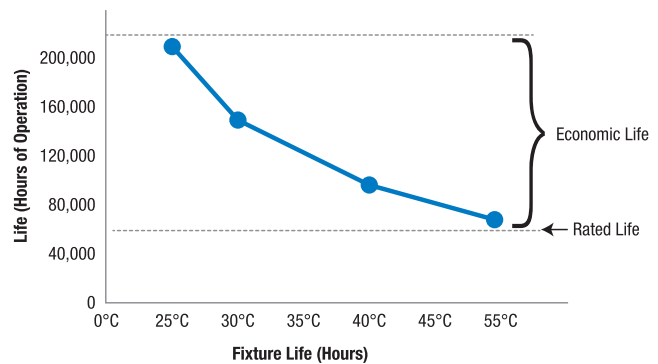
- Instant illumination and restrike
- Cold temperature operation / no warm-up required
- Option for redundancy in drivers with multiple series circuits connected to each driver to avoid complete loss of illumination
- Easy installation - compact modular fixture attaches onto existing Champ mounting module
- Energy-efficient technology - up to 64% energy savings over HID fixtures
- Contains no mercury or other hazardous substances
- Shock- and vibration-resistant solid-state luminaires have no filaments or glass components that could break - greatly reduces the risk of premature failure
- Operating ambient: -40°C to 65°C (VMV3L-VMV11L/UNV1 models); -40°C to 55°C (VMV3L-VMV11L/UNV34 and VMV13L-VMV25L models)
- 5 year fixture warranty†

† Refer to page 2 of the D-0914 authorized distributor price book for Crouse-Hinds standard Terms and Conditions.

### LED system:

- High intensity discrete power emitters
- Standard: cool white (5000K, 70 CRI)  
Optional: warm white, (3000K, 80 CRI)
- Custom Type I, III and V optics available
- Optics clocking in field to align Type I and Type III light patterns to illumination path for VMV13L-VMV25L

### LED system lifetime rated versus economic life:



Economic life can range anywhere between 64,000 to 200,000 hours, or 7 to 20 years of maintenance-free operation.

### Fixture life and years of maintenance-free operation

Ambient temperature	Fixture life (hours)	No. of years at 24 hours usage	No. of years at 12 hours usage
25°C	201,008	23	46
30°C	153,445	17	35
40°C	94,949	11	22
55°C	64,286	7	15

\* 50,000 hrs of life at 65°C ambient for VMV3L-VMV11L/UNV1 models.

### Fixture life:

- Rated life of 60,000 hours @ 55°C operating ambient and 24/7 continuous operation for 365 days
- Economic life of 200,000 hours @ 25°C ambient
- L70 >300,000 hours @ 55°C

### Drivers

Option	Voltage: VMV3L-VMV25L
/UNV1	120-277 VAC, 50/60 Hz; 108-250 VDC, 50/60 Hz
/UNV34	347-480 VAC, 50/60 Hz

### Standard materials:

- Lamp housing and adapter - die cast aluminum with Corro-free™ epoxy powder coat
- Lens - heat- and impact-resistant glass
- Gaskets - silicone
- External hardware - stainless steel
- Factory-sealed, no external seals required

### Qualifications and compliances:

- DesignLights Consortium® Qualified (some models are not DLC qualified)\*



\* Approved models include: VMV3L/UNV1; VMV5L/UNV1; VMV7L/UNV1; VMV9L/UNV1; VMV11L/UNV1; VMV13L/UNV1; VMV17L/UNV1; VMV21L/UNV1; VMV25L/UNV1; VMV3L/UNV34; VMV5L/UNV34; VMV7L/UNV34; VMV9L/UNV34; VMV11L/UNV34.

Refer to [www.designlights.org](http://www.designlights.org) Qualified Products List under family models for full listing details. Not all models are approved for all application categories.

## Certifications and compliances:

### NEC and CEC

- Class I, Division 2, Groups A, B, C, D; Class I, Zone 2, nA nR; Class II, Groups E, F, G; Class III
- Zone 21 tb
- Simultaneous Presence
- Wet Locations, Type 4X, IP66

### UL Standards

- UL844; UL1598 Luminaires; UL1598A Marine; UL8750; UL50; UL50E

### CSA Standard

- cUL Listed to CSA Standard CSA C22.2 No. 137

### IEC\*\*

- IEC 60079-0:2011; IEC 60079-15:2010; IEC 60079-31:2008; IEC 60598-2-1:1979; IEC 60529:2001
- Ex nA nR IIC T\* Gc -40 to +40
- Ex nA nR IIC T\* Gc -40 to +55
- Ex nA nR IIC T\* Gc -40 to +65
- Ex tb IIIC T\*°C Db -40 to +40
- Ex tb IIIC T\*°C Db -40 to +55
- Ex tb IIIC T\*°C Db -40 to +65

### VMV3L-VMV11L only

- IECEx UL 13.0052X

### VMV13L-VMV25L only

- IECEx UL 14.0031X

### ATEX/CE\*\*

- EN 60079-0:2012; EN 60079-15:2010; EN 60079-31:2009; EN 60598-2-1:1989; EN 60929:1991 +A1:2001
- Ex II 3 G Ex nA nR IIC T\* Gc -40 to +40
- Ex II 3 G Ex nA nR IIC T\* Gc -40 to +55
- Ex II 3 G Ex nA nR IIC T\* Gc -40 to +65
- Ex II 2 D Ex tb IIIC T\*°C Db IP66 -40 to +40
- Ex II 2 D Ex tb IIIC T\*°C Db IP66 -40 to +55
- Ex II 2 D Ex tb IIIC T\*°C Db IP66 -40 to +65

### VMV3L-VMV11L only

- DEMKO 13 ATEX 1475031X; DEMKO 13 ATEX 1305741X

### VMV13L-VMV25L only

- DEMKO 14 ATEX 1324722X; DEMKO 14 ATEX 2274231X

\* See temperature code table below.

\*\* VMV3L-VMV11L/UNV1 rated to +65°C, VMV13L-VMV25L and VMV3L-VMV11L/UNV34 rated to +55°C.

## Temperature codes:

Lamp/lumen output	Driver type	Ambient temperature	Class I, Div. 2	Class II, Div. I	Simultaneous rating Class I, Div. 2, Div. 1	Class I, Zone 2 AEx nA nR; Ex nA nR	Class III, Div. 1 Class II, Div. 1, Groups E, F, G Zone 21 AEx tb IIIC
3L, 5L, 7L, 9L, 11L	/UNV1	40°C	T5	T5	T3C	T6	T66°C
3L, 5L, 7L, 9L, 11L	/UNV1	55°C	T5	T4A	T3A	T5	T83°C
3L, 5L, 7L, 9L, 11L	/UNV1	65°C	T4A	T4A	T3A	T4	T92°C
3L, 5L, 7L, 9L, 11L	/UNV34	40°C	T3C	T5	T3C	T4	T70°C
3L, 5L, 7L, 9L, 11L	/UNV34	55°C	T3A	T4A	T3A	T4	T85°C
13L, 17L	/UNV1; UNV34	40°C	T4A	T5	T4A	T6	T66°C
13L, 17L	/UNV1; UNV34	55°C	T4	T4A	T4	T5	T81°C
21L, 25L	/UNV1; UNV34	40°C	T4A	T5	T4A	T6	T71°C
21L, 25L	/UNV1; UNV34	55°C	T4	T4A	T4	T5	T86°C

## Electrical ratings:

	VMV3L	VMV5L	VMV7L	VMV9L	VMV11L
Voltage range, VAC	120-277	120-277	120-277	120-277	120-277
Frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Input power (watts)	29	43	62	85	113
Input amps at 120-277 VAC	0.24-0.11	0.35-0.16	0.52-0.23	0.71-0.31	0.95-0.41
Voltage range, VDC	108-250	108-250	108-250	108-250	108-250
Power factor	>0.90	>0.90	>0.90	>0.90	>0.90
Total harmonic distortion (THD)	<20%	<20%	<20%	<20%	<20%
Nominal lumenst (Type V)	3,531	5,335	7,195	9,266	11,440

	VMV13L	VMV17L	VMV21L	VMV25L
Voltage range, VAC	120-277	120-277	120-277	120-277
Frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Input power (watts)	131	168	196	232
Input amps at 120-277 VAC	1.08-0.48	1.40-0.62	1.64-0.73	1.94-0.87
Voltage range, VDC	108-250	108-250	108-250	108-250
Power factor	>0.90	>0.90	>0.90	>0.90
Total harmonic distortion (THD)	<20%	<20%	<20%	<20%
Nominal lumenst (Type V)	13,226	18,793	22,110	26,531

† Tolerance +/- 10%.

## Weights:

Luminaire	lbs.	kg.
VMV3L-VMV11L	21.8	8.07
VMV13L & VMV17L	36.0	16.32
VMV21L & VMV25L	44.0	19.95

Mounting module	lbs.	kg.
Pendant	1.25	0.57
Cone pendant	4.00	1.81
Flexible pendant	1.50	0.68
Ceiling	2.75	1.25
Wall	4.50	2.04
Angled stanchion*	3.50	1.59
Straight stanchion	4.50	2.04

\* Angled stanchion for VMV3L-VMV11L models only.

# Ordering information

Part number example

VMV17LW2AR1G/UNV1 S890

**VMV 17L W 2A R1 G /UNV1 S890**

## Lamp/function

<b>3L</b>	3,531 Lumen LED
<b>5L</b>	5,335 Lumen LED
<b>7L</b>	7,195 Lumen LED
<b>9L</b>	9,226 Lumen LED
<b>11L</b>	11,440 Lumen LED
<b>13L</b>	13,226 Lumen LED
<b>17L</b>	18,793 Lumen LED
<b>21L</b>	22,110 Lumen LED
<b>25L</b>	26,531 Lumen LED
<b>RL*</b>	Red (3,200 Lumen LED)
<b>GL*</b>	Green (4,300 Lumen LED)
<b>BL*</b>	Blue (2,100 Lumen LED)
<b>AL*</b>	Amber (5,000 Lumen LED)

\* Custom optics not available with colored LEDs.

## Color temperature

<b>BLANK</b>	Cool (5000K), Colored
<b>W</b>	Warm (3000K)

## Mounting style

<b>BLANK</b>	No Cover	<b>2C</b>	¾" Ceiling
<b>J*</b>	1-½" Stanchion, 25° Angled	<b>3C</b>	1" Ceiling
<b>P</b>	1-½" Stanchion, Straight	<b>20C</b>	20mm Ceiling
<b>2A</b>	¾" Pendant	<b>25C</b>	25mm Ceiling
<b>3A</b>	1" Pendant	<b>2HA</b>	¾" Flexible Pendant
<b>20A</b>	20mm Pendant	<b>2TW</b>	¾" Wall
<b>25A</b>	25mm Pendant	<b>3TW</b>	1" Wall
<b>2B</b>	¾" Cone Pendant	<b>20TW</b>	20mm Wall
<b>3B</b>	1" Cone Pendant	<b>25TW</b>	25mm Wall

\* For VMV3L-VMV11L only.

## Suffixes

<b>S812*</b>	Trunnion Mount Kit with Pin
<b>S831**</b>	Safety Cable
<b>S890</b>	Quick Clip
<b>S891**</b>	Diffused Lens
<b>S892***</b>	Redundant Driver
<b>S896**</b>	Teflon Coated Lens
<b>S903</b>	Polycarbonate Lens
<b>TB6</b>	Six-pole Terminal Block

\* Order with ceiling mount only.

\*\* Not available for IEC.

\*\*\* Available for 5L & 7L only. Redundant driver standard on 9L - 25L models. 7L = 6,616 lumens with S892 suffix.

## Voltage

<b>/UNV1</b>	120-277 VAC, 50/60 Hz; 108-250 VDC, 50/60 Hz
<b>/UNV34</b>	347-480 VAC, 50/60 Hz

## Guard

<b>BLANK</b>	No Guard
<b>G</b>	P3001 Wire Guard

## Optics

<b>BLANK</b>	Type V Optic Standard (All Mounts)
<b>R1</b>	Type I Optic (All Mounts Minus Ceiling)
<b>R1A*</b>	Type I Optic (Ceiling with Conduit 45° Counterclockwise or 135° Clockwise from Hinge)
<b>R1B*</b>	Type I Optic (Ceiling with Conduit 45° Clockwise or 135° Counterclockwise from Hinge)
<b>R3</b>	Type III Optic (All Mounts Minus Ceiling)
<b>R3AP*</b>	Type III Optic (Select when using Appleton® Top Hat Adapter with Champ Fixture)
<b>R3A1*</b>	Type III Optic (Ceiling with Conduit 45° Counterclockwise from Top Hat Hinge)
<b>R3A2*</b>	Type III Optic (Ceiling with Conduit 135° Clockwise from Top Hat Hinge)
<b>R3B1*</b>	Type III Optic (Ceiling with Conduit 45° Clockwise from Top Hat Hinge)
<b>R3B2*</b>	Type III Optic (Ceiling with Conduit 135° Counterclockwise from Top Hat Hinge)

\* For VMV3L-VMV11L only.

## Accessories (ordered separately)

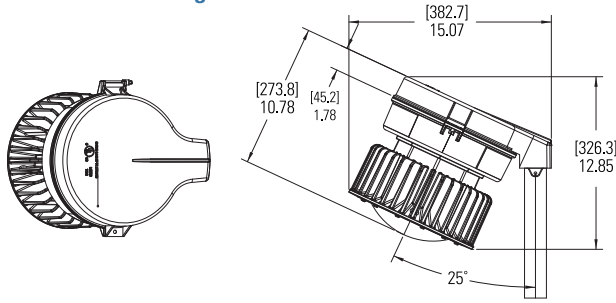
<b>D2S20</b>	Photocell, 120V, 50/60 Hz
<b>D2S208 277</b>	Photocell, 208-277V
<b>VMVL S812 K1*</b>	Trunnion Mount Kit with Pin

\* Order with ceiling mount only.

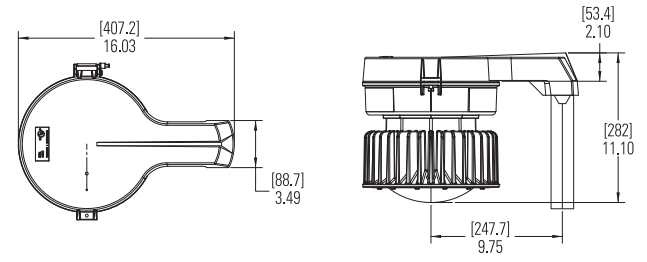


# Mounting options and dimensions

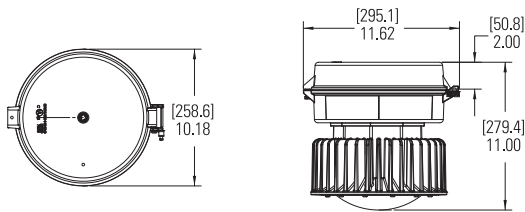
## Stanchion - 25° Angled



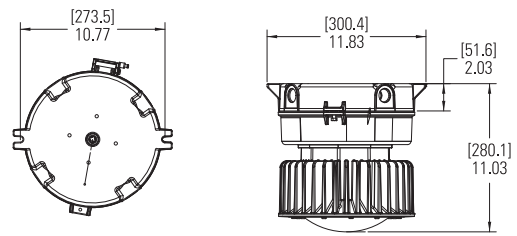
## Stanchion - Straight



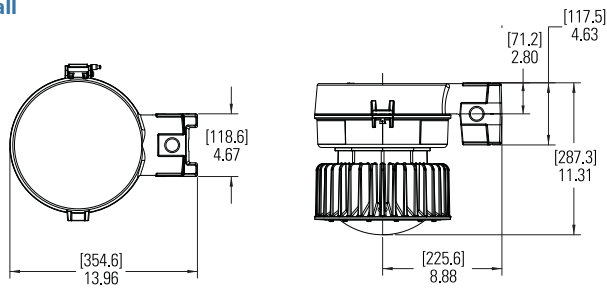
## Pendant



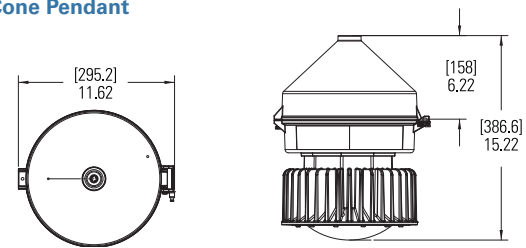
## Ceiling



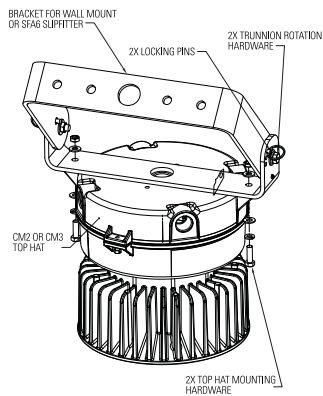
## Wall



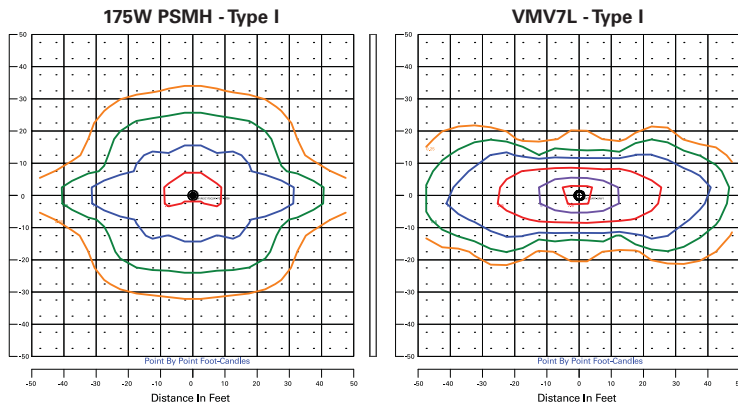
## Cone Pendant



## Trunnion



# Photometric comparison at 15 ft. mounting height

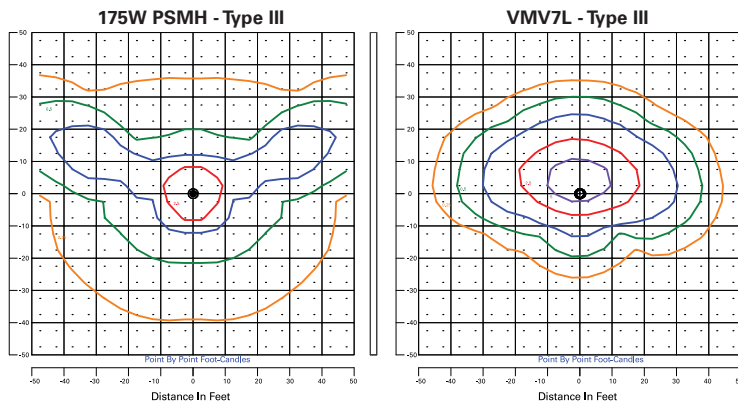


## Type I optical pattern



### Calculation summary

Label	Calc. type (in Fc)	Avg.	Max.	Min.
VMV 175W MH Grid	Illuminance	0.45	2.8	0.0
VMV LED Grid	Illuminance	0.62	8.0	0.0

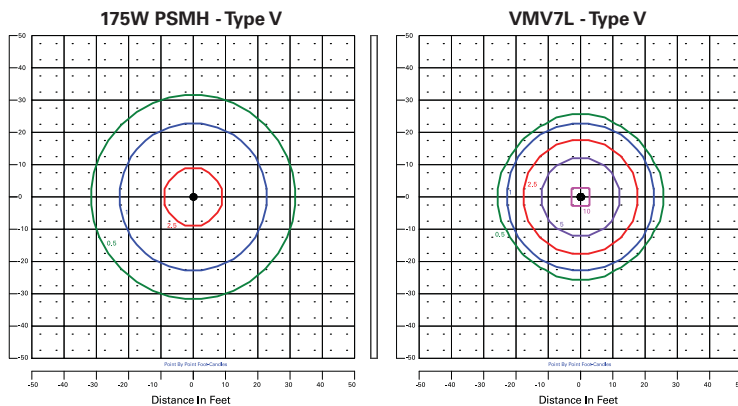


## Type III optical pattern

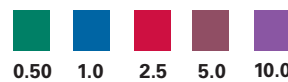


### Calculation summary

Label	Calc. type (in Fc)	Avg.	Max.	Min.
VMV 175W MH Grid	Illuminance	0.53	3.2	0.1
VMV LED Grid	Illuminance	0.61	7.5	0.0



## Type V optical pattern



### Calculation summary

Label	Calc. type (in Fc)	Avg.	Max.	Min.
VMV 175W MH Grid	Illuminance	0.51	2.8	0.1
VMV LED Grid	Illuminance	0.69	10.1	0.0

Higher average footcandles, uniformity and distribution coverage with less than half the lumens and energy consumption compared to 175W metal halide

Actual lumens (nominal†)	VMV3L	VMV5L	VMV7L	VMV9L	VMV11L
Type I	3,360	5,045	6,844	8,823	10,730
Type III	3,309	4,468	6,741	8,618	10,660
Type V	3,531	5,335	7,195	9,266	11,440

Actual lumens (nominal†)	VMV13L	VMV17L	VMV21L	VMV25L
Type I	12,842	18,194	21,404	25,685
Type III	12,493	17,699	20,822	24,987
Type V	13,266	18,793	22,110	26,531

† Tolerance +/- 10%.





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