

Cl. I, Div. 2, Groups A, B, C, D
 Restricted Breathing Cl. I,
 Div. 2 & Zone 2 (Suffix S826)
 Cl. II, Groups E, F, G, Cl. III &
 Simultaneous Presence
 (HPS 50W, 70W)

Marine & Wet Locations
 3, 3R, 4, 4X; IP56 to IP66

Champ® H.I.D. Luminaires

Applications:

VMV series *Champ* luminaires are used:

- In manufacturing plants, refineries, chemical, petrochemical, and other industrial process facilities, waste or sewage treatment facilities, offshore, dockside, and harbor installations, and other heavy industrial applications
- In areas in which ignitable concentrations of flammable gases or vapors will be present only due to abnormal, unusual, or accidental conditions
- Where combustible dusts are present
- In marine applications where water spray and corrosive atmospheres are considerations
- In elevated ambient temperatures often found in industrial applications
- In installations where moisture, dirt, dust, vibration, corrosion, and rough usage are problems
- Wherever the damaging effects of water, wind, snow, sleet, hot sun, or any combination of these elements are found

Features:

- Compact, lightweight design is ideal for medium and low mounting heights
- Cast copper-free aluminum construction (less than 0.4 of 1% copper) and epoxy powder finish provide excellent resistance to corrosion
- Seven mounting arrangements to suit any lighting layout – pendant, flexible pendant, ceiling, wall bracket, angle stanchion, straight stanchion, and quad-mount
- Wide range of light sources and wattages to meet specifiers' needs: 50, 70, 100, and 150 watt high pressure sodium (HPS); 70, 100, 175 watt metal halide (MH and Pulse Start MH)
- Hinged ballast housing for ease of installation and maintenance
- Wide choice of photometric distributions. Glass globes, refractors and compact refractors available for all wattage luminaires; plastic refractors (for non-hazardous applications only) for 50–100 watt luminaires
- All luminaires are designed to perform in a 40°C ambient temperature. Selected luminaires are suitable for ambient temperatures up to 65°C
- Superior gasketing seals between the mounting module, housing, and optical assembly for optimum performance in wet and corrosive environments
- Hubs with an integral conduit stop and bushing to help prevent damage to field wiring during installation
- Low ambient capability to (–40°C)
- Dome and 30° angle reflectors made of bright white *Krydon*® material provide superior reflectivity, with twist-on feature requiring no tools or additional hardware. Will not chip, peel, dent, rust, or corrode
- Grounding wire for safety
- High power factor ballasts (Min P.F. 90%) and available in a variety of voltages to meet local area requirements
- Mogul base porcelain lamp socket



Certifications and Compliances:

- NEC & CEC:
 - Class I, Division 2, Groups A, B, C, D
 - HPS 50W, 70W – Class II, Class III & Simultaneous Presence (Class I, Division 2 and Class II)
 - Class I, Zone 2
- UL Standards:
 - 844 Hazardous (Classified) Locations
 - 1598 Luminaires
 - 1598A Marine Locations
- CSA Standards:
 - C22.2 No. 137
- IEC Standards:
 - 60079-15

Standard Materials:

- Ballast housings and mountings – copper-free aluminum (less than 0.4 of 1%)
- Exterior hardware – stainless steel
- Reflectors (dome and angle) – *Krydon* fiberglass-reinforced polyester material
- Globes – heat and impact resistant internally fluted glass
- Refractors – glass (50–175 watts); plastic (50–100 watts), for non-hazardous applications
- Guards: Globe – copper-free aluminum
 Refractor – stainless steel

Standard Finishes:

- Copper-free aluminum – epoxy powder coat
- *Krydon* material – high reflectance white
- Stainless steel – natural

Electrical Ratings:

- 120, 208, 240, 277, 347, 480, 600, Multi-tap (120, 208, 240 and 277)
- 50 to 150W HPS; 70 to 175W MH

Options:

The following special options are available from the factory by adding suffix to luminaire Cat. No.:

| Description | Suffix |
|--|---------|
| Factory Sealed Champs | .S865 |
| Class I, Division 2 & Zone 2 Provides T3 code without conduit or cable seals Restricted breathing/Non-sparking | |
| Restricted Breathing Construction | .S826 |
| Class I, Division 2 & Zone 2 Suitability Cooler Operating Temperatures (T-Numbers) | |
| Terminal block | .S826TB |
| Furnished with terminal block, crimp terminals and dedicated voltage ballasts (no MT, DT or TT) | |
| Fused – to protect ballast and capacitors against abnormal line conditions | .S658* |
| (Not available with /MT Ballast) (Not for use in Canada) (Not suitable for marine applications) | |
| Quick-Clip - Holds weight of housing when closed. No need to support luminaire while screwing the housing to the cover | .S890 |
| Ballast-Gard™ starter cut-out switch – prevents starter pulsing when lamp is cycling or inoperative; prolongs ballast and ignitor life. Available for use with 50–150W LX HPS only | .BG |
| Instant restrike – enables a hot HPS lamp to immediately restrike after a momentary loss arc due to voltage fluctuation or power outage. It has no effect on the warm-up period of cold lamps. | |
| 50–150W LX HPS only | .IR |
| Quartz auxiliary lighting – comes to full brightness immediately and remains lit until the HID lamp attains 60–70% of full illumination. For non- hazardous locations only. Must use R2, R3 and R5 refractors. | .QTZ |
| Refractor Mount - For ballast housing only. Used with R2, R3 and R5 refractors. | .RM |
| Stainless steel insert – top hat with stainless steel threaded insert to attach ballast housing | .S806 |
| TEFLON coating on globe for increased shatter protection | .S808 |
| G24 only. T-Numbers not affected Factory assembled with H.I.D. lamps installed for additional labor savings | .FA |

Note: BG and IR options cannot be used together. IR and QTZ options cannot be used together.

Accessories:

- See pages 1022–1023 for complete listing.

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*When ordering fuses for luminaires, option S658, you must specify the operating voltage. S658 cannot be ordered with /MT in the catalog number.

Crouse-Hinds
 by **EATON**

VMV Series 50-150W High Pressure Sodium








Champ® H.I.D. Luminaires

Cl. I, Div. 2, Groups A, B, C, D
Restricted Breathing Cl. I,
Div. 2 & Zone 2 (Suffix S826)
Cl. II, Groups E, F, G, Cl. III &
Simultaneous Presence
(50W, 70W)

Marine & Wet Locations
3, 3R, 4, 4X; IP66

3L

To complete the catalog #, include information in notes 1, 2 and 3 below. For guards and other optics see VMV Series - Ordering By Components page.

| Mounting Style | Hub Size | Lamp Watts | BASIC CATALOG NUMBER | | |
|---|----------|------------|------------------------------|--------------------------------------|---------------------------|
| | | | With G24 Globe and P21 Guard | With G241 Type I Compact Refractor * | With R5 Glass Refractor † |
|  | 3/4 | 50 | VMVS2A050GP | VMVS2A050G241 | VMVS2A050R5 |
| | | 70 | VMVS3A050GP | VMVS3A050G241 | VMVS3A050R5 |
| | 3/4 | 100 | VMVS2A100GP | VMVS2A100G241 | VMVS2A100R5 |
| | | 150 | VMVS3A100GP | VMVS3A100G241 | VMVS3A100R5 |
| | 3/4 | 50 | VMVS2A150GP | VMVS2A150G241 | VMVS2A150R5 |
| | | 70 | VMVS3A150GP | VMVS3A150G241 | VMVS3A150R5 |
|  | 3/4 | 50 | VMVS2HA050GP | VMVS2HA050G241 | VMVS2HA050R5 |
| | | 70 | VMVS2HA070GP | VMVS2HA070G241 | VMVS2HA070R5 |
| | 3/4 | 100 | VMVS2HA100GP | VMVS2HA100G241 | VMVS2HA100R5 |
| | | 150 | VMVS2HA150GP | VMVS2HA150G241 | VMVS2HA150R5 |
|  | 3/4 | 50 | VMVS2C050GP | VMVS2C050G241 | VMVS2C050R5 |
| | | 70 | VMVS3C050GP | VMVS3C050G241 | VMVS3C050R5 |
| | 3/4 | 100 | VMVS2C100GP | VMVS2C100G241 | VMVS2C100R5 |
| | | 150 | VMVS3C100GP | VMVS3C100G241 | VMVS3C100R5 |
| | 3/4 | 50 | VMVS2C150GP | VMVS2C150G241 | VMVS2C150R5 |
| | | 70 | VMVS3C150GP | VMVS3C150G241 | VMVS3C150R5 |
|  | 3/4 | 50 | VMVS2TW050GP | VMVS2TW050G241 | VMVS2TW050R5 |
| | | 70 | VMVS3TW050GP | VMVS3TW050G241 | VMVS3TW050R5 |
| | 3/4 | 100 | VMVS2TW100GP | VMVS2TW100G241 | VMVS2TW100R5 |
| | | 150 | VMVS3TW100GP | VMVS3TW100G241 | VMVS3TW100R5 |
| | 3/4 | 50 | VMVS2TW150GP | VMVS2TW150G241 | VMVS2TW150R5 |
| | | 70 | VMVS3TW150GP | VMVS3TW150G241 | VMVS3TW150R5 |
|  | 3/4 | 50 | VMVS25Q050GP | VMVS25Q050G241 | VMVS25Q050R5 |
| | | 70 | VMVS25Q070GP | VMVS25Q070G241 | VMVS25Q070R5 |
| | 3/4 | 100 | VMVS25Q100GP | VMVS25Q100G241 | VMVS25Q100R5 |
| | | 150 | VMVS25Q150GP | VMVS25Q150G241 | VMVS25Q150R5 |
|  | 1 1/2 | 50 | VMVSJ050GP | VMVSJ050G241 | VMVSJ050R5 |
| | | 70 | VMVSJ070GP | VMVSJ070G241 | VMVSJ070R5 |
| | 1 1/2 | 100 | VMVSJ100GP | VMVSJ100G241 | VMVSJ100R5 |
| | | 150 | VMVSJ150GP | VMVSJ150G241 | VMVSJ150R5 |
|  | 1 1/2 | 50 | VMVSP050GP | VMVSP050G241 | VMVSP050R5 |
| | | 70 | VMVSP070GP | VMVSP070G241 | VMVSP070R5 |
| | 1 1/2 | 100 | VMVSP100GP | VMVSP100G241 | VMVSP100R5 |
| | | 150 | VMVSP150GP | VMVSP150G241 | VMVSP150R5 |

* For G243 Type III Compact Refractor, change "241" at end of catalog number to "243". Ex. VMVS2A050G243
For G245 Type V Compact Refractor, change "241" at end of catalog number to "245". Ex. VMVS2A050G245

† For R2 Glass Refractor, change "R5" at end of catalog number to "R2". Ex. VMVS2A050R2.
For R3 Glass Refractor, change "R5" at end of catalog number to "R3". Ex. VMVS2A050R3.

1. Add voltage suffix to end of catalog number
Standard Voltage Ballasts - 60Hz

| Voltage Suffix | NEC/UL | | | CEC/CSA (cUL) | | |
|----------------|---------------|--------------|-----------|---------------|-------------|--------------|
| | Multi Tap /MT | Dual Tap /DT | 120V /120 | 480V /480 | Tri Tap /TT | Dual Tap /DT |
| | | | | | | 120V /120 |

Multi Tap and Dual Tap ballasts are powered for 277V

2. 150W HPS Luminaires: For 55V lamps - add suffix LX; for 100V lamps - add suffix CE. 50W HPS luminaire is dual tap only.
3. Options - Add the required option suffixes, see page 962, in alpha-numeric order.

Optional Voltage Ballasts - 50 or 60Hz

| Voltage Suffix | CEC/CSA (cUL) - CWI Isolated Ballasts | | | | EXPORT | | |
|----------------|---------------------------------------|------------------|------------------|------------------|----------------|-------------------|-------------------|
| | 208V CWI /208CWI | 240V CWI /240CWI | 480V CWI /480CWI | 600V CWI /600CWI | 220V 60Hz /220 | 220V 50Hz /220 50 | 240V 50Hz /240 50 |
| | | | | | | | |

Crouse-Hinds
by E.T.N

3L








VMV Series 150-175W Pulse Start Metal Halide

Champ® H.I.D. Luminaires

Cl. I, Div. 2, Groups A, B, C, D
Restricted Breathing Cl. I, Div. 2
& Zone 2 (Suffix S826)

Marine & Wet Locations
3, 3R, 4, 4X; IP66

To complete the catalog #, include information in note 1 below. For guards and other optics see VMV Series - Ordering By Components page.

| | Mounting Style | Hub Size | Lamp Watts | BASIC CATALOG NUMBER | | |
|---|--|----------|------------|------------------------------|--------------------------------------|---------------------------|
| | | | | With G24 Globe and P21 Guard | With G245 Type V Compact Refractor * | With R5 Glass Refractor † |
|  | Pendant Mount | 3/4 | 150 | VMVM2A150GP S828 | VMVM2A150G245 S828 | VMVM2A150R5 S828 |
| | | 1 | | VMVM3A150GP S828 | VMVM3A150G245 S828 | VMVM3A150R5 S828 |
| | | 3/4 | 175 | VMVM2A175GP S828 | VMVM2A175G245 S828 | VMVM2A175R5 S828 |
| | | 1 | | VMVM3A175GP S828 | VMVM3A175G245 S828 | VMVM3A175R5 S828 |
|  | Flexible Pendant Mount | 3/4 | 150 | VMVM2HA150GP S828 | VMVM2HA150G245 S828 | VMVM2HA150R5 S828 |
| | | 3/4 | 175 | VMVM2HA175GP S828 | VMVM2HA175G245 S828 | VMVM2HA175R5 S828 |
|  | Ceiling Mount Thru-Feed | 3/4 | 150 | VMVM2C150GP S828 | VMVM2C150G245 S828 | VMVM2C150R5 S828 |
| | | 1 | | VMVM3C150GP S828 | VMVM3C150G245 S828 | VMVM3C150R5 S828 |
| | | 3/4 | 175 | VMVM2C175GP S828 | VMVM2C175G245 S828 | VMVM2C175R5 S828 |
| | | 1 | | VMVM3C175GP S828 | VMVM3C175G245 S828 | VMVM3C175R5 S828 |
|  | Wall Mount Thru-Feed | 3/4 | 150 | VMVM2TW150GP S828 | VMVM2TW150G245 S828 | VMVM2TW150R5 S828 |
| | | 1 | | VMVM3TW150GP S828 | VMVM3TW150G245 S828 | VMVM3TW150R5 S828 |
| | | 3/4 | 175 | VMVM2TW175GP S828 | VMVM2TW175G245 S828 | VMVM2TW175R5 S828 |
| | | 1 | | VMVM3TW175GP S828 | VMVM3TW175G245 S828 | VMVM3TW175R5 S828 |
|  | Quad-Mount Pendant, Adjustable Thru-Feed, 25° Angle, 12 1/2° Angle | 3/4 | 150 | VMVM25Q150GP S828 | VMVM25Q150G245 S828 | VMVM25Q150R5 S828 |
| | | 3/4 | 175 | VMVM25Q175GP S828 | VMVM25Q175G245 S828 | VMVM25Q175R5 S828 |
|  | Stanchion Mount 25° Angle | 1 1/2 | 150 | VMVMJ150GP S828 | VMVMJ150G245 S828 | VMVMJ150R5 S828 |
| | | 1 1/2 | 175 | VMVMJ175GP S828 | VMVMJ175G245 S828 | VMVMJ175R5 S828 |
|  | Stanchion Mount Straight | 1 1/2 | 150 | VMVMP150GP S828 | VMVMP150G245 S828 | VMVMP150R5 S828 |
| | | 1 1/2 | 175 | VMVMP175GP S828 | VMVMP175G245 S828 | VMVMP175R5 S828 |

* For G241 Type I Compact Refractor, change "245" at end of catalog number to "241". Ex. VMVM2A150G241-S828
For G243 Type III Compact Refractor, change "245" at end of catalog number to "243". Ex. VMVM2A150G243-S828

† For R2 Glass Refractor, change "R5" at end of catalog number to "R2". Ex. VMVM2A150R2-S828.
For R3 Glass Refractor, change "R5" at end of catalog number to "R3". Ex. VMVM2A150R3-S828.

1. Add voltage suffix to end of catalog number

| Voltage Suffix | Standard Voltage Ballasts - 60Hz | | | |
|----------------|---|-------------------|-------------------|-------------------------------------|
| | Multi Tap /MT | 120V /120 | 480V /480 | CEC/CSA (cUL) Tri Tap /TT 120V /120 |
| | Optional Voltage Ballasts - 50 or 60Hz EXPORT | | | |
| Voltage Suffix | 220V 60Hz /220 | 220V 50Hz /220 50 | 230V 50Hz /230 50 | 240V 50Hz /240 50 |

VMV Series 70-175W Metal Halide








Cl. I, Div. 2, Groups A, B, C, D
Restricted Breathing Cl. I,
Div. 2 & Zone 2 (Suffix S826)

Marine & Wet Locations
3, 3R, 4, 4X; IP66

3L

Champ® H.I.D. Luminaires

To complete the catalog #, include information in notes 1, 2 and 3 below. For guards and other optics see VMV Series - Ordering By Components page.

| | Mounting Style | Hub Size | Lamp Watts | BASIC CATALOG NUMBER | | |
|---|---|----------|------------|------------------------------|--------------------------------------|---------------------------|
| | | | | With G24 Globe and P21 Guard | With G241 Type I Compact Refractor * | With R5 Glass Refractor † |
|  | Pendant Mount | 3/4 | 70 | VMVM2A070GP | VMVM2A070G241 | VMVM2A070R5 |
| | | 1 | | VMVM3A070GP | VMVM3A070G241 | VMVM3A070R5 |
| | | 3/4 | 100 | VMVM2A100GP | VMVM2A100G241 | VMVM2A100R5 |
| | | 1 | | VMVM3A100GP | VMVM3A100G241 | VMVM3A100R5 |
| | | 3/4 | 175 | VMVM2A175GP | VMVM2A175G241 | VMVM2A175R5 |
| | | 1 | | VMVM3A175GP | VMVM3A175G241 | VMVM3A175R5 |
|  | Flexible Pendant Mount | 3/4 | 70 | VMVM2HA070GP | VMVM2HA070G241 | VMVM2HA070R5 |
| | | 3/4 | 100 | VMVM2HA100GP | VMVM2HA100G241 | VMVM2HA100R5 |
| | | 3/4 | 175 | VMVM2HA175GP | VMVM2HA175G241 | VMVM2HA175R5 |
|  | Ceiling Mount Thru-Feed | 3/4 | 70 | VMVM2C070GP | VMVM2C070G241 | VMVM2C070R5 |
| | | 1 | | VMVM3C070GP | VMVM3C070G241 | VMVM3C070R5 |
| | | 3/4 | 100 | VMVM2C100GP | VMVM2C100G241 | VMVM2C100R5 |
| | | 1 | | VMVM3C100GP | VMVM3C100G241 | VMVM3C100R5 |
| | | 3/4 | 175 | VMVM2C175GP | VMVM2C175G241 | VMVM2C175R5 |
| | | 1 | | VMVM3C175GP | VMVM3C175G241 | VMVM3C175R5 |
|  | Wall Mount Thru-Feed | 3/4 | 70 | VMVM2TW070GP | VMVM2TW070G241 | VMVM2TW070R5 |
| | | 1 | | VMVM3TW070GP | VMVM3TW070G241 | VMVM3TW070R5 |
| | | 3/4 | 100 | VMVM2TW100GP | VMVM2TW100G241 | VMVM2TW100R5 |
| | | 1 | | VMVM3TW100GP | VMVM3TW100G241 | VMVM3TW100R5 |
| | | 3/4 | 175 | VMVM2TW175GP | VMVM2TW175G241 | VMVM2TW175R5 |
| | | 1 | | VMVM3TW175GP | VMVM3TW175G241 | VMVM3TW175R5 |
|  | Quad-Mount Pendant, Adjustable Thru-Feed, 25° Angle, 12 1/2° Angle | 3/4 | 70 | VMVM25Q070GP | VMVM25Q070G241 | VMVM25Q070R5 |
| | | 3/4 | 100 | VMVM25Q100GP | VMVM25Q100G241 | VMVM25Q100R5 |
| | | 3/4 | 175 | VMVM25Q175GP | VMVM25Q175G241 | VMVM25Q175R5 |
|  | Stanchion Mount 25° Angle | 1 1/2 | 70 | VMVMJ070GP | VMVMJ070G241 | VMVMJ070R5 |
| | | 1 1/2 | 100 | VMVMJ100GP | VMVMJ100G241 | VMVMJ100R5 |
| | | 1 1/2 | 175 | VMVMJ175GP | VMVMJ175G241 | VMVMJ175R5 |
|  | Stanchion Mount Straight | 1 1/2 | 70 | VMVMP070GP | VMVMP070G241 | VMVMP070R5 |
| | | 1 1/2 | 100 | VMVMP100GP | VMVMP100G241 | VMVMP100R5 |
| | | 1 1/2 | 175 | VMVMP175GP | VMVMP175G241 | VMVMP175R5 |

* For G243 Type III Compact Refractor, change "241" at end of catalog number to "243". Ex. VMVM2A070G243
For G245 Type V Compact Refractor, change "241" at end of catalog number to "245". Ex. VMVM2A070G245

† For R2 Glass Refractor, change "R5" at end of catalog number to "R2". Ex. VMVM2A070R2.
For R3 Glass Refractor, change "R5" at end of catalog number to "R3". Ex. VMVM2A070R3.

1. Add voltage suffix to end of catalog number
Standard Voltage Ballasts - 60Hz

| Voltage Suffix | NEC/UL | | | CEC/CSA (cUL) | |
|----------------|---------------|-----------|-----------|---------------|-----------|
| | Multi Tap /MT | 120V /120 | 480V /480 | Tri Tap /TT | 120V /120 |

Optional Voltage Ballasts - 50 or 60Hz

| Voltage Suffix | CEC/CSA (cUL) - CWI Isolated Ballasts | | | EXPORT | | | |
|----------------|---------------------------------------|------------------|------------------|----------------|-------------------|-------------------|-------------------|
| | 208V CWI /208CWI | 480V CWI /240CWI | 600V CWI /600CWI | 220V 60Hz /220 | 220V 50Hz /220 50 | 230V 50Hz /230 50 | 240V 50Hz /240 50 |

2. 70W ballast not available in 480V.

3. Options - Add the required option suffixes, see page 962, in alpha-numeric order.

3L

VMV luminaires are available in components.

A complete luminaire consists of:

- I. Champ Cover (Mounting Module)
- II. VMV Ballast Housing – Include voltage and required option(s)
- III. Optical & Guard components – Globe, Reflector, Refractor, Guard

I. Champ Cover (Mounting Module):

| Type | Conduit | Cat. # |
|-----------------------------|---------|--------|
| Pendant | 3/4" | APM2 |
| | 1" | APM3 |
| Flexible Pendant | 3/4" | HPM2 |
| | 1" | CM2 |
| Ceiling* | 3/4" | CM3 |
| | 1" | TWM2 |
| Wall | 3/4" | TWM3 |
| | 1" | JM5 |
| Stanchion – 25 Degree Angle | 1 1/2" | PM5 |
| Stanchion – Straight | 1 1/2" | QM25 |
| Quad-Mount | 3/4" | |

*Not available with V2PC photocell.

II. Ballast Housings:

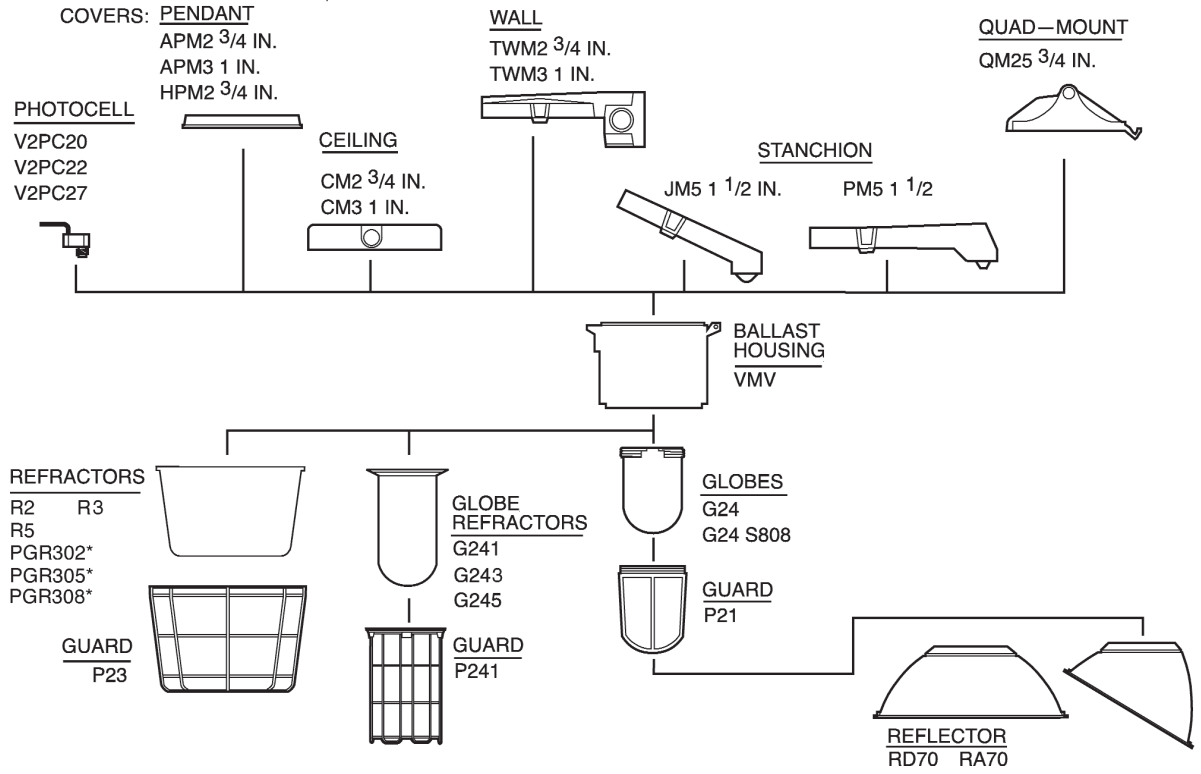
Complete catalog number must have the **voltage suffix** (MT shown) and any **options suffixes**.

| Lamp Type | Lamp Watts | Cat. # For Globe and Compact Refractor | Cat. # For Large Refractor |
|----------------------------|------------|--|----------------------------------|
| High Pressure Sodium | 50 | VMVS050/DT | VMVS050/MT RM |
| | 70 | VMVS070/MT | VMVS070/MT RM |
| | 100 | VMVS100/MT | VMVS100/MT RM |
| | 150 | VMVS150/MT LX | VMVS150/MT LX RM |
| Metal Halide | 70 | VMVM070/MT | VMVM070/TT RM |
| | 100 | VMVM100/MT | VMVM100/MT RM |
| | 175 | VMVM175/MT | VMVM175/MT RM |

III. Globe, Reflectors, Refractors, Guards:

| Type | Cat. # |
|--------------------------------|----------|
| Globe | G24 |
| Globe – Teflon Coated | G24 S808 |
| Globe Guard | P21 |
| Reflector – Dome | RD70 |
| Reflector – Angle | RA70 |
| Compact Refractor Type 1 | G241 |
| Compact Refractor Type 3 | G243 |
| Compact Refractor Type 5 | G245 |
| Compact Refractor Guard | P241 |
| Large Refractor Type 2 | R2 |
| Large Refractor Type 3 | R3 |
| Large Refractor Type 5 | R5 |
| Large Refractor Guard | P23 |
| Large Plastic Refractor Type 2 | PR2 |
| Large Plastic Refractor Type 3 | PR3 |
| Large Plastic Refractor Type 5 | PR5 |

Champ® H.I.D. Luminaires



*Plastic refractors are for non-hazardous areas only (50-100W Max.)



Champ® H.I.D. Luminaires

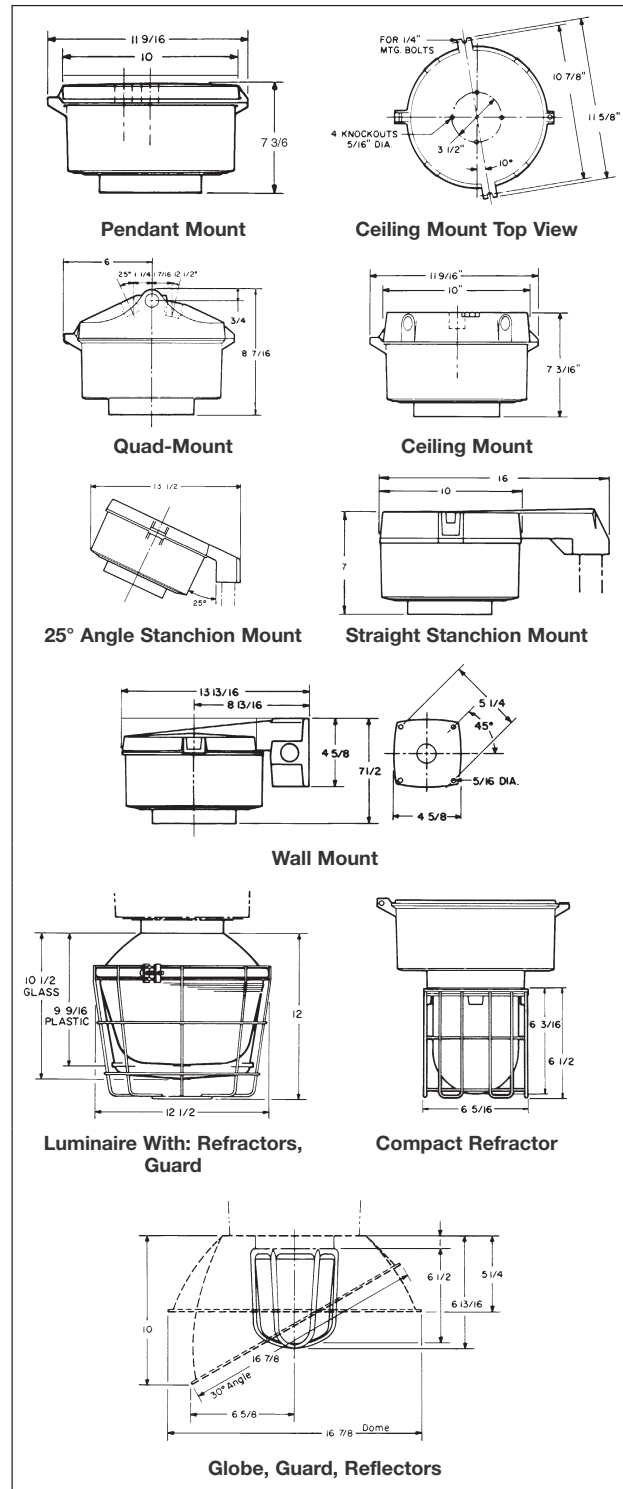
| Cat. # | Lamp | | Rated Ambient °C | Class I, Division 2 | | | | Class II, Division 1 | Simultaneous Presence Class I, Div. 2 Class II, Div. 1 | Class I, Zone 2 | | Supply Wire Suitable For °C | |
|--------------|---------|-----------|------------------|-------------------------|---|---------------------------|-------|----------------------|--|--|---|---|-------------------------|
| | Wattage | Type | | Globe (G24, G241, G245) | Globe (G24) w/ Reflector (RA70 or RD70) | Reflector (R2, R3, or R5) | Group | | | Globe (G24) w/ or w/o Reflector (RA70 or RD70) | Restricted Breathing Suffix S826 w/ Globe (G24, G241, G245) | Factory Sealed Suffix S865 AEx nA nR II | Globe (G24, G241, G245) |
| VMVM70 | 70 | MH | 40 | T3A | T3A | T3A | | T3A | | T5 | T3 | 90 | 90 |
| VMVM70 | 70 | MH | 55 | T3 | T3 | T3 | | T3 | | T4 | T3 | 90 | 90 |
| VMVM70 | 70 | MH | 65 | T3 | T3 | T3 | | T3 | | T4 | T3 | 90 | 90 |
| VMVM100 | 100 | MH | 40 | T2D | T2D | T2D | | T2D | | T4 | T3 | 90 | 90 |
| VMVM100 S849 | 100 | MH | 40 | T2 | T2 | T2 | | T2 | | T4 | T3 | 75 | 75 |
| VMVM100 | 100 | MH | 55 | T2D | T2D | T2D | | T2D | | T4 | T3 | 90 | 90 |
| VMVM150 | 150 | MH | 40 | T2A | T2A | T2B | | T2A | | T3 | T3 | 90 | 90 |
| VMVM175 | 175 | MH | 40 | T2A | T2A | T2B | | T2A | | T3 | T3 | 90 | 90 |
| VMVS50 | 50 | HPS | 40 | T3A | T3A | T3B | EFG | T4A | T3A | T5 | T3 | 75 | 65 |
| VMVS50 | 50 | HPS | 55 | T3A | T3A | T3A | EFG | T4 | T3 | T5 | T3 | 75 | 75 |
| VMVS50 | 50 | HPS | 65 | T3 | T3 | T3 | EFG | T4 | T2D | T5 | T3 | 75 | 75 |
| VMVS70 | 70 | HPS | 40 | T3 | T3 | T3B | EFG | T3C | T2C | T4 | T3 | 75 | 65 |
| VMVS70 | 70 | HPS | 55 | T3 | T3 | T3 | EFG | T3C | T2B | T4 | T3 | 90 | 90 |
| VMVS100 | 100 | HPS | 40 | T2C | T2C | T2D | EFG | T3A | T2A | T4 | T3 | 90 | 75 |
| VMVS100 | 100 | HPS | 55 | T2B | T2B | T2C | EFG | | | T3 | T3 | 105 | 90 |
| VMVS150 | 150 | HPS | 40 | T2A | T2A | T2B | | | | T3 | T3 | 90 | 85 |
| VMVS150 | 150 | HPS | 55 | T2 | T2 | T2A | | | | T3 | T3 | 105 | 105 |
| VMVIG055 | 55 | Induction | 40 | T2C | T2C | — | | | | T6 | — | 65 | — |
| VMVIG055 | 55 | Induction | 55 | T2C | T2C | — | | | | T5 | — | 65 | — |

The Class I, Division 2 T-codes apply to luminaires without the restricted breathing (S826) or factory sealed (S865) options. These luminaires are listed to UL 844. UL844 specifies how the temperatures are measured.

The Class I, Zone 2 T-codes are for luminaires that are additionally listed to UL 60079-15 that specify a different method for measuring temperatures. Since NEC® 501.1 states that equipment "...for use in Class I, Zone 0, 1, or 2 locations shall be permitted in Class I, Division 2 locations..." then these luminaires are suitable for Class I, Division 2 but with cooler temperature ratings. They also have the advantage of meeting the more rigorous mechanical tests of UL 844.

Champ® H.I.D. Luminaires

**Dimensions
In Inches:**



Net Luminaire Weights:

| Luminaire Series | Lamp Watts | | | |
|---|------------|-----|-----|---------|
| | 50 | 70 | 100 | 150 175 |
| Luminaire with Globe, Guards (lbs.): | | | | |
| VMVS | 13½ | 14½ | 14½ | 14½ |
| VMVM | | 13 | 13¼ | 15½ |
| Luminaire with Glass Refractor (lbs.): | | | | |
| VMVS | 21¾ | 22¾ | 22¾ | 22¾ |
| VMVM | | 21 | 21½ | 23¾ |

| Type | Lbs. | Type | Lbs. |
|----------------------------------|------|--------------------|------|
| Add for mounting modules: | | | |
| Pendant | 1¼ | Quad-Mount | 3½ |
| Flexible Pendant | 1½ | Angle Stanchion | 3½ |
| Ceiling | 2¾ | Straight Stanchion | 4½ |
| Wall | 4½ | | |

| | | | |
|----------------------------|----|-----------|----|
| Add for reflectors: | | | |
| Dome | 1½ | 30° Angle | 1½ |

Deduct: ½" lb. for fixture without P21 Guard

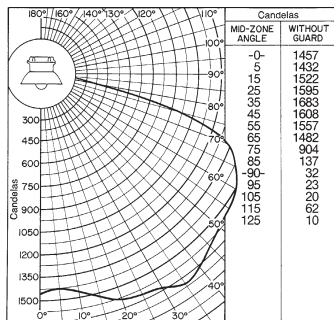


Champ® H.I.D. Luminaires

Lamp: 100W/E – 23½ high pressure sodium (HPS)
 Total bare lamp lumens: 9500

NOTE: All data provided is for high pressure sodium luminaires with 100W/E-23½ clear lamps. Use conversion factors (multipliers) shown below for other clear lamp types and wattages. Consult Eaton's Crouse-Hinds for additional photometric data on any Champ Series luminaire.

Luminaire with Globe and Dome Reflector



Multipliers (for use with candela curve only).

| Luminaire Series | Lamp Watts | Conversion Factor |
|------------------|------------|-------------------|
| VMVS | 50 | 0.42 |
| | 70 | 0.67 |
| | 150 | 1.68 |

Luminaire spacing ratio: 1.85

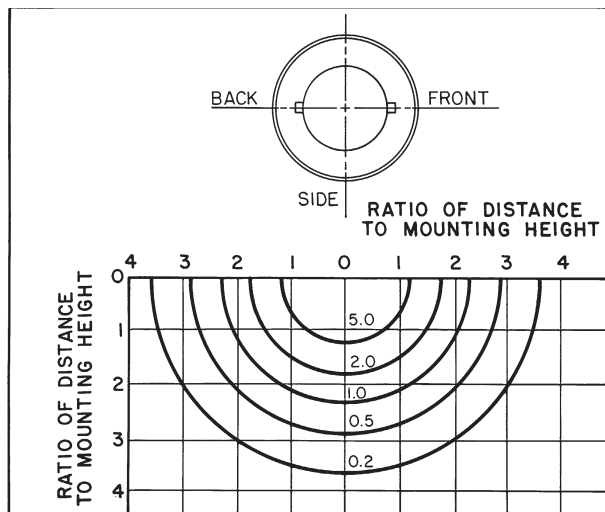
Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

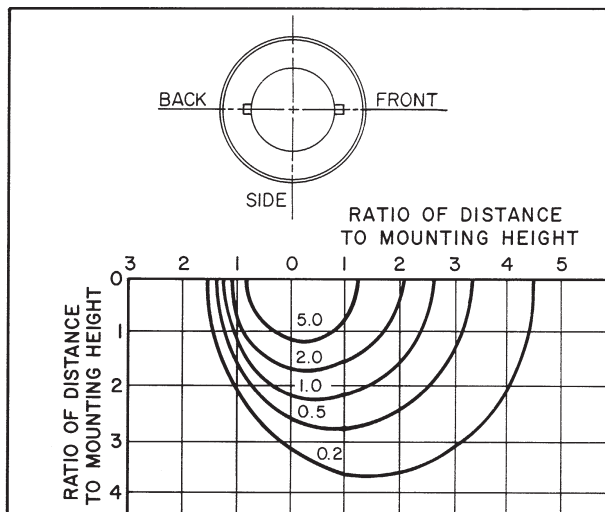
| % Reflectance Eff. Ceil. | Wall | Room Cavity Ratio | | | | |
|--------------------------|------|-------------------|------|------|------|------|
| | | 1 | 2 | 3 | 4 | 5 |
| 80 | 50 | .823 | .707 | .610 | .529 | .464 |
| | 30 | .784 | .646 | .538 | .451 | .384 |
| | 10 | .749 | .594 | .482 | .391 | .324 |
| 70 | 50 | .804 | .690 | .597 | .517 | .452 |
| | 30 | .767 | .633 | .530 | .445 | .377 |
| | 10 | .734 | .587 | .477 | .388 | .321 |
| 50 | 50 | .765 | .658 | .571 | .494 | .434 |
| | 30 | .735 | .611 | .513 | .431 | .368 |
| | 10 | .709 | .569 | .466 | .381 | .318 |
| 30 | 50 | .731 | .629 | .546 | .473 | .416 |
| | 30 | .708 | .591 | .497 | .419 | .357 |
| | 10 | .685 | .555 | .456 | .375 | .312 |
| 10 | 50 | .701 | .603 | .524 | .454 | .399 |
| | 30 | .681 | .569 | .482 | .406 | .348 |
| | 10 | .662 | .541 | .446 | .367 | .307 |
| 0 | 0 | .644 | .521 | .427 | .348 | .288 |

| % Reflectance Eff. Ceil. | Wall | Room Cavity Ratio | | | | |
|--------------------------|------|-------------------|------|------|------|------|
| | | 6 | 7 | 8 | 9 | 10 |
| 80 | 50 | .412 | .366 | .326 | .296 | .258 |
| | 30 | .334 | .290 | .253 | .224 | .187 |
| | 10 | .278 | .239 | .201 | .175 | .142 |
| 70 | 50 | .403 | .359 | .320 | .291 | .252 |
| | 30 | .329 | .285 | .250 | .221 | .187 |
| | 10 | .274 | .235 | .200 | .174 | .142 |
| 50 | 50 | .386 | .344 | .307 | .279 | .244 |
| | 30 | .320 | .277 | .244 | .216 | .182 |
| | 10 | .271 | .231 | .197 | .172 | .140 |
| 30 | 50 | .371 | .329 | .296 | .269 | .235 |
| | 30 | .312 | .272 | .237 | .210 | .178 |
| | 10 | .267 | .227 | .195 | .170 | .137 |
| 10 | 50 | .357 | .319 | .285 | .260 | .227 |
| | 30 | .304 | .266 | .232 | .206 | .173 |
| | 10 | .263 | .224 | .192 | .167 | .135 |
| 0 | 0 | .245 | .207 | .176 | .152 | .120 |

Isofootcandle Chart: Luminaire with Globe and Dome Reflector



Isofootcandle Chart: Luminaire with Globe and 30° Angle Reflector



Isofootcandle charts show illumination in footcandles on work plane 10 feet below light center. Multiply by factor shown to convert to other mounting heights.

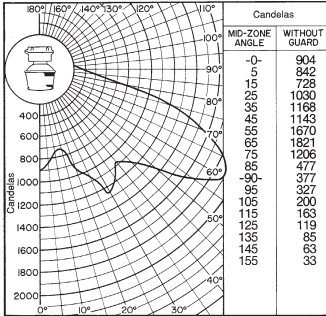
| Height (Ft.) | Factor | Height (Ft.) | Factor |
|--------------|--------|--------------|--------|
| 6 | 2.78 | 14 | 0.51 |
| 8 | 1.56 | 16 | 0.39 |
| 12 | 0.70 | | |

3L

Champ® H.I.D. Luminaires

Lamp: 100W/E0 – 23½ high pressure sodium (HPS)

Luminaire with I.E.S. Type V Glass Refractor



NOTE: Photometric data was developed using a 100 watt clear high pressure sodium lamp (9500 lumens). For other clear lamps, use the following conversion factors (multipliers):

| Luminaire Series | Lamp Watts | Conversion Factor |
|------------------|------------|-------------------|
| VMVS | 50 | 0.42 |
| | 70 | 0.67 |
| | 150 | 1.68 |

Luminaire spacing ratio: 2.0

Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

| % Reflectance Eff. Ceil. | Wall | Room Cavity Ratio | | | | |
|--------------------------|------|-------------------|------|------|------|------|
| | | 1 | 2 | 3 | 4 | 5 |
| 80 | 50 | .848 | .709 | .597 | .508 | .437 |
| | 30 | .796 | .631 | .509 | .414 | .343 |
| | 10 | .750 | .566 | .439 | .341 | .271 |
| 70 | 50 | .818 | .682 | .576 | .489 | .419 |
| | 30 | .770 | .611 | .493 | .402 | .331 |
| | 10 | .726 | .552 | .428 | .334 | .264 |
| 50 | 50 | .759 | .632 | .533 | .451 | .389 |
| | 30 | .720 | .574 | .464 | .377 | .312 |
| | 10 | .685 | .521 | .407 | .318 | .253 |
| 30 | 50 | .706 | .586 | .493 | .417 | .359 |
| | 30 | .675 | .538 | .435 | .354 | .291 |
| | 10 | .645 | .495 | .386 | .302 | .240 |
| 10 | 50 | .658 | .544 | .457 | .385 | .331 |
| | 30 | .632 | .504 | .408 | .331 | .274 |
| | 10 | .608 | .469 | .366 | .286 | .227 |
| 0 | 0 | .581 | .441 | .340 | .260 | .203 |

| % Reflectance Eff. Ceil. | Wall | Room Cavity Ratio | | | | |
|--------------------------|------|-------------------|------|------|------|------|
| | | 6 | 7 | 8 | 9 | 10 |
| 80 | 50 | .384 | .337 | .299 | .272 | .238 |
| | 30 | .292 | .249 | .214 | .189 | .159 |
| | 10 | .226 | .189 | .154 | .132 | .103 |
| 70 | 50 | .369 | .325 | .288 | .262 | .229 |
| | 30 | .283 | .240 | .203 | .183 | .156 |
| | 10 | .218 | .182 | .150 | .130 | .105 |
| 50 | 50 | .341 | .301 | .266 | .243 | .214 |
| | 30 | .266 | .225 | .195 | .173 | .146 |
| | 10 | .209 | .173 | .143 | .124 | .099 |
| 30 | 50 | .316 | .277 | .248 | .225 | .198 |
| | 30 | .249 | .213 | .182 | .161 | .136 |
| | 10 | .199 | .163 | .136 | .117 | .093 |
| 10 | 50 | .292 | .258 | .223 | .209 | .134 |
| | 30 | .233 | .200 | .171 | .151 | .127 |
| | 10 | .188 | .154 | .128 | .110 | .087 |
| 0 | 0 | .165 | .133 | .108 | .091 | .070 |



Cl. I, Div. 2, Groups A, B, C, D
 Restricted Breathing Cl. I,
 Div. 2 & Zone 2 (Suffix S826)
 Cl. II, Groups E, F, G, Cl. III &
 Simultaneous Presence
 (HPS 50W, 70W)

Marine & Wet Locations
 3, 3R, 4, 4X; IP56 to IP66

Champ® H.I.D. Luminaires

Applications:

VMV series *Champ* luminaires are used:

- In manufacturing plants, refineries, chemical, petrochemical, and other industrial process facilities, waste or sewage treatment facilities, offshore, dockside, and harbor installations, and other heavy industrial applications
- In areas in which ignitable concentrations of flammable gases or vapors will be present only due to abnormal, unusual, or accidental conditions
- Where combustible dusts are present
- In marine applications where water spray and corrosive atmospheres are considerations
- In elevated ambient temperatures often found in industrial applications
- In installations where moisture, dirt, dust, vibration, corrosion, and rough usage are problems
- Wherever the damaging effects of water, wind, snow, sleet, hot sun, or any combination of these elements are found

Features:

- Compact, lightweight design is ideal for medium and low mounting heights
- Cast copper-free aluminum construction (less than 0.4 of 1% copper) and epoxy powder finish provide excellent resistance to corrosion
- Seven mounting arrangements to suit any lighting layout – pendant, flexible pendant, ceiling, wall bracket, angle stanchion, straight stanchion, and quad-mount
- Wide range of light sources and wattages to meet specifiers' needs: 50, 70, 100, and 150 watt high pressure sodium (HPS); 70, 100, 175 watt metal halide (MH and Pulse Start MH)
- Hinged ballast housing for ease of installation and maintenance
- Wide choice of photometric distributions. Glass globes, refractors and compact refractors available for all wattage luminaires; plastic refractors (for non-hazardous applications only) for 50–100 watt luminaires
- All luminaires are designed to perform in a 40°C ambient temperature. Selected luminaires are suitable for ambient temperatures up to 65°C
- Superior gasketing seals between the mounting module, housing, and optical assembly for optimum performance in wet and corrosive environments
- Hubs with an integral conduit stop and bushing to help prevent damage to field wiring during installation
- Low ambient capability to (–40°C)
- Dome and 30° angle reflectors made of bright white *Krydon*® material provide superior reflectivity, with twist-on feature requiring no tools or additional hardware. Will not chip, peel, dent, rust, or corrode
- Grounding wire for safety
- High power factor ballasts (Min P.F. 90%) and available in a variety of voltages to meet local area requirements
- Mogul base porcelain lamp socket



Certifications and Compliances:

- NEC & CEC:
 - Class I, Division 2, Groups A, B, C, D
 - HPS 50W, 70W – Class II, Class III & Simultaneous Presence (Class I, Division 2 and Class II)
 - Class I, Zone 2
- UL Standards:
 - 844 Hazardous (Classified) Locations
 - 1598 Luminaires
 - 1598A Marine Locations
- CSA Standards:
 - C22.2 No. 137
- IEC Standards:
 - 60079-15

Standard Materials:

- Ballast housings and mountings – copper-free aluminum (less than 0.4 of 1%)
- Exterior hardware – stainless steel
- Reflectors (dome and angle) – *Krydon* fiberglass-reinforced polyester material
- Globes – heat and impact resistant internally fluted glass
- Refractors – glass (50–175 watts); plastic (50–100 watts), for non-hazardous applications
- Guards: Globe – copper-free aluminum
 Refractor – stainless steel

Standard Finishes:

- Copper-free aluminum – epoxy powder coat
- *Krydon* material – high reflectance white
- Stainless steel – natural

Electrical Ratings:

- 120, 208, 240, 277, 347, 480, 600, Multi-tap (120, 208, 240 and 277)
- 50 to 150W HPS; 70 to 175W MH

Options:

The following special options are available from the factory by adding suffix to luminaire Cat. No.:

| Description | Suffix |
|--|---------|
| Factory Sealed Champs | .S865 |
| Class I, Division 2 & Zone 2 Provides T3 code without conduit or cable seals Restricted breathing/Non-sparking | .S826 |
| Restricted Breathing Construction Class I, Division 2 & Zone 2 Suitability Cooler Operating Temperatures (T-Numbers) | .S826TB |
| Terminal block | .S826TB |
| Furnished with terminal block, crimp terminals and dedicated voltage ballasts (no MT, DT or TT) | |
| Fused – to protect ballast and capacitors against abnormal line conditions | .S658* |
| (Not available with /MT Ballast) (Not for use in Canada) (Not suitable for marine applications) | |
| Quick-Clip - Holds weight of housing when closed. No need to support luminaire while screwing the housing to the cover | .S890 |
| Ballast-Gard™ starter cut-out switch – prevents starter pulsing when lamp is cycling or inoperative; prolongs ballast and ignitor life. Available for use with 50–150W LX HPS only | .BG |
| Instant restrike – enables a hot HPS lamp to immediately restrike after a momentary loss arc due to voltage fluctuation or power outage. It has no effect on the warm-up period of cold lamps. | .IR |
| 50–150W LX HPS only | .IR |
| Quartz auxiliary lighting – comes to full brightness immediately and remains lit until the HID lamp attains 60–70% of full illumination. For non- hazardous locations only. Must use R2, R3 and R5 refractors. | .QTZ |
| Refractor Mount - For ballast housing only. Used with R2, R3 and R5 refractors. | .RM |
| Stainless steel insert – top hat with stainless steel threaded insert to attach ballast housing | .S806 |
| TEFLON coating on globe for increased shatter protection | .S808 |
| G24 only. T-Numbers not affected Factory assembled with H.I.D. lamps installed for additional labor savings | .FA |

Note: BG and IR options cannot be used together. IR and QTZ options cannot be used together.

Accessories:

- See pages 1022–1023 for complete listing.

TEFLON is a registered trademark of E.I. duPont Co.

*When ordering fuses for luminaires, option S658, you must specify the operating voltage. S658 cannot be ordered with /MT in the catalog number.

Crouse-Hinds
 by **EATON**

VMV Series 50-150W High Pressure Sodium


Champ® H.I.D. Luminaires

Cl. I, Div. 2, Groups A, B, C, D
Restricted Breathing Cl. I,
Div. 2 & Zone 2 (Suffix S826)
Cl. II, Groups E, F, G, Cl. III &
Simultaneous Presence
(50W, 70W)

Marine & Wet Locations
3, 3R, 4, 4X; IP66

3L

To complete the catalog #, include information in notes 1, 2 and 3 below. For guards and other optics see VMV Series - Ordering By Components page.

| Mounting Style | Hub Size | Lamp Watts | BASIC CATALOG NUMBER | | | |
|---|------------------------|------------|------------------------------|--------------------------------------|---------------------------|--------------|
| | | | With G24 Globe and P21 Guard | With G241 Type I Compact Refractor * | With R5 Glass Refractor † | |
|  | 3/4 | 50 | VMVS2A050GP | VMVS2A050G241 | VMVS2A050R5 | |
| | | 70 | VMVS3A050GP | VMVS3A050G241 | VMVS3A050R5 | |
| | 3/4 | 100 | VMVS2A100GP | VMVS2A100G241 | VMVS2A100R5 | |
| | | 150 | VMVS3A100GP | VMVS3A100G241 | VMVS3A100R5 | |
| | Flexible Pendant Mount | 3/4 | 50 | VMVS2HA050GP | VMVS2HA050G241 | VMVS2HA050R5 |
| | | 3/4 | 70 | VMVS2HA070GP | VMVS2HA070G241 | VMVS2HA070R5 |
| 3/4 | | 100 | VMVS2HA100GP | VMVS2HA100G241 | VMVS2HA100R5 | |
| 3/4 | | 150 | VMVS2HA150GP | VMVS2HA150G241 | VMVS2HA150R5 | |
| Ceiling Mount Thru-Feed | 3/4 | 50 | VMVS2C050GP | VMVS2C050G241 | VMVS2C050R5 | |
| | | 70 | VMVS3C050GP | VMVS3C050G241 | VMVS3C050R5 | |
| | 3/4 | 100 | VMVS2C100GP | VMVS2C100G241 | VMVS2C100R5 | |
| | | 150 | VMVS3C100GP | VMVS3C100G241 | VMVS3C100R5 | |
| | Wall Mount Thru-Feed | 3/4 | 50 | VMVS2TW050GP | VMVS2TW050G241 | VMVS2TW050R5 |
| | | | 70 | VMVS3TW050GP | VMVS3TW050G241 | VMVS3TW050R5 |
| 3/4 | | 100 | VMVS2TW100GP | VMVS2TW100G241 | VMVS2TW100R5 | |
| | | 150 | VMVS3TW100GP | VMVS3TW100G241 | VMVS3TW100R5 | |
| Quad-Mount Pendant, Adjustable, Thru-Feed, 25° Angle, 12½° Angle | | 3/4 | 50 | VMVS25Q050GP | VMVS25Q050G241 | VMVS25Q050R5 |
| | | 3/4 | 70 | VMVS25Q070GP | VMVS25Q070G241 | VMVS25Q070R5 |
| | 3/4 | 100 | VMVS25Q100GP | VMVS25Q100G241 | VMVS25Q100R5 | |
| | 3/4 | 150 | VMVS25Q150GP | VMVS25Q150G241 | VMVS25Q150R5 | |
| Stanchion Mount 25° Angle | 1½ | 50 | VMVSJ050GP | VMVSJ050G241 | VMVSJ050R5 | |
| | 1½ | 70 | VMVSJ070GP | VMVSJ070G241 | VMVSJ070R5 | |
| | 1½ | 100 | VMVSJ100GP | VMVSJ100G241 | VMVSJ100R5 | |
| | 1½ | 150 | VMVSJ150GP | VMVSJ150G241 | VMVSJ150R5 | |
| Stanchion Mount Straight | 1½ | 50 | VMVSP050GP | VMVSP050G241 | VMVSP050R5 | |
| | 1½ | 70 | VMVSP070GP | VMVSP070G241 | VMVSP070R5 | |
| | 1½ | 100 | VMVSP100GP | VMVSP100G241 | VMVSP100R5 | |
| | 1½ | 150 | VMVSP150GP | VMVSP150G241 | VMVSP150R5 | |

* For G243 Type III Compact Refractor, change "241" at end of catalog number to "243". Ex. VMVS2A050G243
For G245 Type V Compact Refractor, change "241" at end of catalog number to "245". Ex. VMVS2A050G245

† For R2 Glass Refractor, change "R5" at end of catalog number to "R2". Ex. VMVS2A050R2.
For R3 Glass Refractor, change "R5" at end of catalog number to "R3". Ex. VMVS2A050R3.

1. Add voltage suffix to end of catalog number
Standard Voltage Ballasts - 60Hz

| Voltage Suffix | NEC/UL | | | CEC/CSA (cUL) | | |
|--|---------------|--------------|-----------|---------------|-------------|--------------|
| | Multi Tap /MT | Dual Tap /DT | 120V /120 | 480V /480 | Tri Tap /TT | Dual Tap /DT |
| Multi Tap and Dual Tap ballasts are powered for 277V | | | | | | |

2. 150W HPS Luminaires: For 55V lamps - add suffix LX; for 100V lamps - add suffix CE. 50W HPS luminaire is dual tap only.
3. Options - Add the required option suffixes, see page 962, in alpha-numeric order.

Optional Voltage Ballasts - 50 or 60Hz

| Voltage Suffix | CEC/CSA (cUL) - CWI Isolated Ballasts | | | | EXPORT | | |
|----------------|---------------------------------------|------------------|------------------|------------------|----------------|-------------------|-------------------|
| | 208V CWI /208CWI | 240V CWI /240CWI | 480V CWI /480CWI | 600V CWI /600CWI | 220V 60Hz /220 | 220V 50Hz /220 50 | 240V 50Hz /240 50 |
| | | | | | | | |

Crouse-Hinds
by E.T.N

3L








VMV Series 150-175W Pulse Start Metal Halide

Champ® H.I.D. Luminaires

Cl. I, Div. 2, Groups A, B, C, D
Restricted Breathing Cl. I, Div. 2
& Zone 2 (Suffix S826)

Marine & Wet Locations
3, 3R, 4, 4X; IP66

To complete the catalog #, include information in note 1 below. For guards and other optics see VMV Series - Ordering By Components page.

| | Mounting Style | Hub Size | Lamp Watts | BASIC CATALOG NUMBER | | |
|---|--|----------|------------|------------------------------|--------------------------------------|---------------------------|
| | | | | With G24 Globe and P21 Guard | With G245 Type V Compact Refractor * | With R5 Glass Refractor † |
|  | Pendant Mount | 3/4 | 150 | VMVM2A150GP S828 | VMVM2A150G245 S828 | VMVM2A150R5 S828 |
| | | 1 | | VMVM3A150GP S828 | VMVM3A150G245 S828 | VMVM3A150R5 S828 |
| | | 3/4 | 175 | VMVM2A175GP S828 | VMVM2A175G245 S828 | VMVM2A175R5 S828 |
| | | 1 | | VMVM3A175GP S828 | VMVM3A175G245 S828 | VMVM3A175R5 S828 |
|  | Flexible Pendant Mount | 3/4 | 150 | VMVM2HA150GP S828 | VMVM2HA150G245 S828 | VMVM2HA150R5 S828 |
| | | 3/4 | 175 | VMVM2HA175GP S828 | VMVM2HA175G245 S828 | VMVM2HA175R5 S828 |
|  | Ceiling Mount Thru-Feed | 3/4 | 150 | VMVM2C150GP S828 | VMVM2C150G245 S828 | VMVM2C150R5 S828 |
| | | 1 | | VMVM3C150GP S828 | VMVM3C150G245 S828 | VMVM3C150R5 S828 |
| | | 3/4 | 175 | VMVM2C175GP S828 | VMVM2C175G245 S828 | VMVM2C175R5 S828 |
| | | 1 | | VMVM3C175GP S828 | VMVM3C175G245 S828 | VMVM3C175R5 S828 |
|  | Wall Mount Thru-Feed | 3/4 | 150 | VMVM2TW150GP S828 | VMVM2TW150G245 S828 | VMVM2TW150R5 S828 |
| | | 1 | | VMVM3TW150GP S828 | VMVM3TW150G245 S828 | VMVM3TW150R5 S828 |
| | | 3/4 | 175 | VMVM2TW175GP S828 | VMVM2TW175G245 S828 | VMVM2TW175R5 S828 |
| | | 1 | | VMVM3TW175GP S828 | VMVM3TW175G245 S828 | VMVM3TW175R5 S828 |
|  | Quad-Mount Pendant, Adjustable Thru-Feed, 25° Angle, 12 1/2° Angle | 3/4 | 150 | VMVM25Q150GP S828 | VMVM25Q150G245 S828 | VMVM25Q150R5 S828 |
| | | 3/4 | 175 | VMVM25Q175GP S828 | VMVM25Q175G245 S828 | VMVM25Q175R5 S828 |
|  | Stanchion Mount 25° Angle | 1 1/2 | 150 | VMVMJ150GP S828 | VMVMJ150G245 S828 | VMVMJ150R5 S828 |
| | | 1 1/2 | 175 | VMVMJ175GP S828 | VMVMJ175G245 S828 | VMVMJ175R5 S828 |
|  | Stanchion Mount Straight | 1 1/2 | 150 | VMVMP150GP S828 | VMVMP150G245 S828 | VMVMP150R5 S828 |
| | | 1 1/2 | 175 | VMVMP175GP S828 | VMVMP175G245 S828 | VMVMP175R5 S828 |

* For G241 Type I Compact Refractor, change "245" at end of catalog number to "241". Ex. VMVM2A150G241-S828
For G243 Type III Compact Refractor, change "245" at end of catalog number to "243". Ex. VMVM2A150G243-S828

† For R2 Glass Refractor, change "R5" at end of catalog number to "R2". Ex. VMVM2A150R2-S828.
For R3 Glass Refractor, change "R5" at end of catalog number to "R3". Ex. VMVM2A150R3-S828.

1. Add voltage suffix to end of catalog number

| Voltage Suffix | Standard Voltage Ballasts - 60Hz | | | |
|----------------|---|-------------------|-------------------|-------------------------------------|
| | Multi Tap /MT | 120V /120 | 480V /480 | CEC/CSA (cUL) Tri Tap /TT 120V /120 |
| | Optional Voltage Ballasts - 50 or 60Hz EXPORT | | | |
| Voltage Suffix | 220V 60Hz /220 | 220V 50Hz /220 50 | 230V 50Hz /230 50 | 240V 50Hz /240 50 |

VMV Series 70-175W Metal Halide








Cl. I, Div. 2, Groups A, B, C, D
Restricted Breathing Cl. I,
Div. 2 & Zone 2 (Suffix S826)

Marine & Wet Locations
3, 3R, 4, 4X; IP66

3L

Champ® H.I.D. Luminaires

To complete the catalog #, include information in notes 1, 2 and 3 below. For guards and other optics see VMV Series - Ordering By Components page.

| | Mounting Style | Hub Size | Lamp Watts | BASIC CATALOG NUMBER | | |
|---|---|----------|------------|------------------------------|--------------------------------------|---------------------------|
| | | | | With G24 Globe and P21 Guard | With G241 Type I Compact Refractor * | With R5 Glass Refractor † |
|  | Pendant Mount | 3/4 | 70 | VMVM2A070GP | VMVM2A070G241 | VMVM2A070R5 |
| | | 1 | | VMVM3A070GP | VMVM3A070G241 | VMVM3A070R5 |
| | | 3/4 | 100 | VMVM2A100GP | VMVM2A100G241 | VMVM2A100R5 |
| | | 1 | | VMVM3A100GP | VMVM3A100G241 | VMVM3A100R5 |
| | | 3/4 | 175 | VMVM2A175GP | VMVM2A175G241 | VMVM2A175R5 |
| | | 1 | | VMVM3A175GP | VMVM3A175G241 | VMVM3A175R5 |
|  | Flexible Pendant Mount | 3/4 | 70 | VMVM2HA070GP | VMVM2HA070G241 | VMVM2HA070R5 |
| | | 3/4 | 100 | VMVM2HA100GP | VMVM2HA100G241 | VMVM2HA100R5 |
| | | 3/4 | 175 | VMVM2HA175GP | VMVM2HA175G241 | VMVM2HA175R5 |
|  | Ceiling Mount Thru-Feed | 3/4 | 70 | VMVM2C070GP | VMVM2C070G241 | VMVM2C070R5 |
| | | 1 | | VMVM3C070GP | VMVM3C070G241 | VMVM3C070R5 |
| | | 3/4 | 100 | VMVM2C100GP | VMVM2C100G241 | VMVM2C100R5 |
| | | 1 | | VMVM3C100GP | VMVM3C100G241 | VMVM3C100R5 |
| | | 3/4 | 175 | VMVM2C175GP | VMVM2C175G241 | VMVM2C175R5 |
| | | 1 | | VMVM3C175GP | VMVM3C175G241 | VMVM3C175R5 |
|  | Wall Mount Thru-Feed | 3/4 | 70 | VMVM2TW070GP | VMVM2TW070G241 | VMVM2TW070R5 |
| | | 1 | | VMVM3TW070GP | VMVM3TW070G241 | VMVM3TW070R5 |
| | | 3/4 | 100 | VMVM2TW100GP | VMVM2TW100G241 | VMVM2TW100R5 |
| | | 1 | | VMVM3TW100GP | VMVM3TW100G241 | VMVM3TW100R5 |
| | | 3/4 | 175 | VMVM2TW175GP | VMVM2TW175G241 | VMVM2TW175R5 |
| | | 1 | | VMVM3TW175GP | VMVM3TW175G241 | VMVM3TW175R5 |
|  | Quad-Mount Pendant, Adjustable Thru-Feed, 25° Angle, 12 1/2° Angle | 3/4 | 70 | VMVM25Q070GP | VMVM25Q070G241 | VMVM25Q070R5 |
| | | 3/4 | 100 | VMVM25Q100GP | VMVM25Q100G241 | VMVM25Q100R5 |
| | | 3/4 | 175 | VMVM25Q175GP | VMVM25Q175G241 | VMVM25Q175R5 |
|  | Stanchion Mount 25° Angle | 1 1/2 | 70 | VMVMJ070GP | VMVMJ070G241 | VMVMJ070R5 |
| | | 1 1/2 | 100 | VMVMJ100GP | VMVMJ100G241 | VMVMJ100R5 |
| | | 1 1/2 | 175 | VMVMJ175GP | VMVMJ175G241 | VMVMJ175R5 |
|  | Stanchion Mount Straight | 1 1/2 | 70 | VMVMP070GP | VMVMP070G241 | VMVMP070R5 |
| | | 1 1/2 | 100 | VMVMP100GP | VMVMP100G241 | VMVMP100R5 |
| | | 1 1/2 | 175 | VMVMP175GP | VMVMP175G241 | VMVMP175R5 |

* For G243 Type III Compact Refractor, change "241" at end of catalog number to "243". Ex. VMVM2A070G243
For G245 Type V Compact Refractor, change "241" at end of catalog number to "245". Ex. VMVM2A070G245

† For R2 Glass Refractor, change "R5" at end of catalog number to "R2". Ex. VMVM2A070R2.
For R3 Glass Refractor, change "R5" at end of catalog number to "R3". Ex. VMVM2A070R3.

1. Add voltage suffix to end of catalog number
Standard Voltage Ballasts - 60Hz

| Voltage Suffix | NEC/UL | | | CEC/CSA (cUL) | |
|----------------|---------------|-----------|-----------|---------------|-----------|
| | Multi Tap /MT | 120V /120 | 480V /480 | Tri Tap /TT | 120V /120 |

Optional Voltage Ballasts - 50 or 60Hz

| Voltage Suffix | CEC/CSA (cUL) - CWI Isolated Ballasts | | | EXPORT | | | |
|----------------|---------------------------------------|------------------|------------------|----------------|-------------------|-------------------|-------------------|
| | 208V CWI /208CWI | 480V CWI /240CWI | 600V CWI /600CWI | 220V 60Hz /220 | 220V 50Hz /220 50 | 230V 50Hz /230 50 | 240V 50Hz /240 50 |

2. 70W ballast not available in 480V.

3. Options - Add the required option suffixes, see page 962, in alpha-numeric order.

3L

VMV luminaires are available in components.

A complete luminaire consists of:

- I. Champ Cover (Mounting Module)
- II. VMV Ballast Housing – Include voltage and required option(s)
- III. Optical & Guard components – Globe, Reflector, Refractor, Guard

I. Champ Cover (Mounting Module):

| Type | Conduit | Cat. # |
|-----------------------------|---------|--------|
| Pendant | 3/4" | APM2 |
| | 1" | APM3 |
| Flexible Pendant | 3/4" | HPM2 |
| | 1" | CM2 |
| Ceiling* | 3/4" | CM3 |
| | 1" | TWM2 |
| Wall | 3/4" | TWM3 |
| | 1" | JM5 |
| Stanchion – 25 Degree Angle | 1 1/2" | PM5 |
| Stanchion – Straight | 1 1/2" | QM25 |
| Quad-Mount | 3/4" | |

*Not available with V2PC photocell.

II. Ballast Housings:

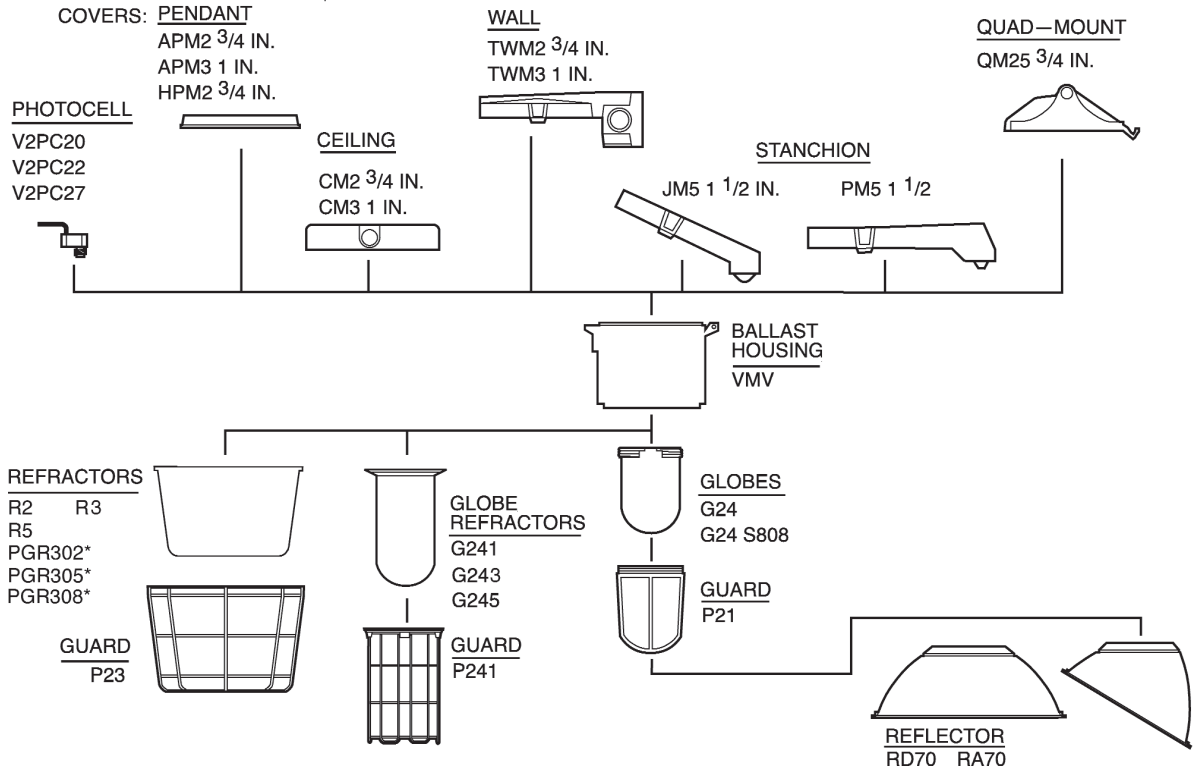
Complete catalog number must have the **voltage suffix** (MT shown) and any **options suffixes**.

| Lamp Type | Lamp Watts | Cat. # For Globe and Compact Refractor | Cat. # For Large Refractor |
|----------------------------|------------|--|----------------------------------|
| High Pressure Sodium | 50 | VMVS050/DT | VMVS050/MT RM |
| | 70 | VMVS070/MT | VMVS070/MT RM |
| | 100 | VMVS100/MT | VMVS100/MT RM |
| | 150 | VMVS150/MT LX | VMVS150/MT LX RM |
| Metal Halide | 70 | VMVM070/MT | VMVM070/TT RM |
| | 100 | VMVM100/MT | VMVM100/MT RM |
| | 175 | VMVM175/MT | VMVM175/MT RM |

III. Globe, Reflectors, Refractors, Guards:

| Type | Cat. # |
|--------------------------------|----------|
| Globe | G24 |
| Globe – Teflon Coated | G24 S808 |
| Globe Guard | P21 |
| Reflector – Dome | RD70 |
| Reflector – Angle | RA70 |
| Compact Refractor Type 1 | G241 |
| Compact Refractor Type 3 | G243 |
| Compact Refractor Type 5 | G245 |
| Compact Refractor Guard | P241 |
| Large Refractor Type 2 | R2 |
| Large Refractor Type 3 | R3 |
| Large Refractor Type 5 | R5 |
| Large Refractor Guard | P23 |
| Large Plastic Refractor Type 2 | PR2 |
| Large Plastic Refractor Type 3 | PR3 |
| Large Plastic Refractor Type 5 | PR5 |

Champ® H.I.D. Luminaires



*Plastic refractors are for non-hazardous areas only (50-100W Max.)

Champ® H.I.D. Luminaires

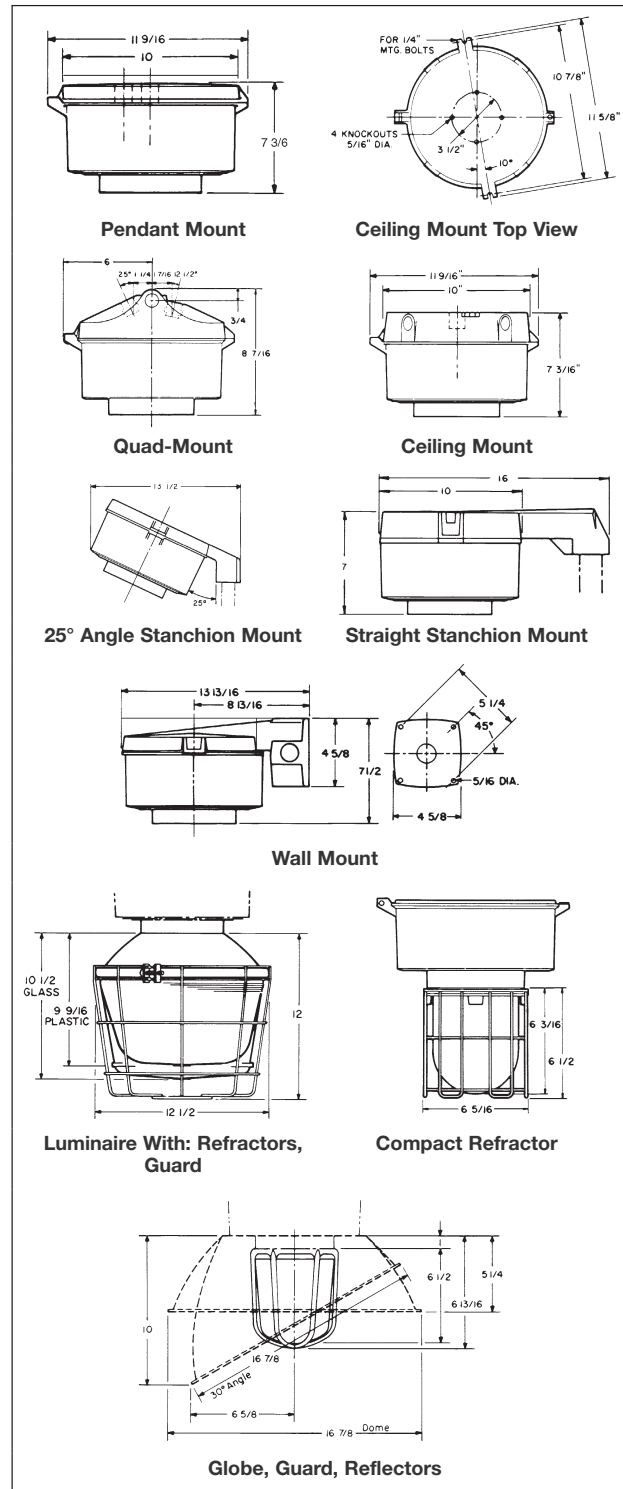
| Cat. # | Lamp | | Rated Ambient °C | Class I, Division 2 | | | | Class II, Division 1 Globe (G24) w/ or w/o Reflector (RA70 or RD70) | Simultaneous Presence Class I, Div. 2 Class II, Div. 1 | Class I, Zone 2 | | Supply Wire Suitable For °C | |
|--------------|---------|-----------|------------------|-------------------------|---|---------------------------|-------|--|--|---|---|-----------------------------|---------------------------|
| | Wattage | Type | | Globe (G24, G241, G245) | Globe (G24) w/ Reflector (RA70 or RD70) | Reflector (R2, R3, or R5) | Group | | | Restricted Breathing Suffix S826 w/ Globe (G24, G241, G245) | Factory Sealed Suffix S865 AEx nA nR II | Globe (G24, G241, G245) | Reflector (R2, R3, or R5) |
| VMVM70 | 70 | MH | 40 | T3A | T3A | T3A | | T3A | | T5 | T3 | 90 | 90 |
| VMVM70 | 70 | MH | 55 | T3 | T3 | T3 | | T3 | | T4 | T3 | 90 | 90 |
| VMVM70 | 70 | MH | 65 | T3 | T3 | T3 | | T3 | | T4 | T3 | 90 | 90 |
| VMVM100 | 100 | MH | 40 | T2D | T2D | T2D | | T2D | | T4 | T3 | 90 | 90 |
| VMVM100 S849 | 100 | MH | 40 | T2 | T2 | T2 | | T2 | | T4 | T3 | 75 | 75 |
| VMVM100 | 100 | MH | 55 | T2D | T2D | T2D | | T2D | | T4 | T3 | 90 | 90 |
| VMVM150 | 150 | MH | 40 | T2A | T2A | T2B | | T2A | | T3 | T3 | 90 | 90 |
| VMVM175 | 175 | MH | 40 | T2A | T2A | T2B | | T2A | | T3 | T3 | 90 | 90 |
| VMVS50 | 50 | HPS | 40 | T3A | T3A | T3B | EFG | T4A | T3A | T5 | T3 | 75 | 65 |
| VMVS50 | 50 | HPS | 55 | T3A | T3A | T3A | EFG | T4 | T3 | T5 | T3 | 75 | 75 |
| VMVS50 | 50 | HPS | 65 | T3 | T3 | T3 | EFG | T4 | T2D | T5 | T3 | 75 | 75 |
| VMVS70 | 70 | HPS | 40 | T3 | T3 | T3B | EFG | T3C | T2C | T4 | T3 | 75 | 65 |
| VMVS70 | 70 | HPS | 55 | T3 | T3 | T3 | EFG | T3C | T2B | T4 | T3 | 90 | 90 |
| VMVS100 | 100 | HPS | 40 | T2C | T2C | T2D | EFG | T3A | T2A | T4 | T3 | 90 | 75 |
| VMVS100 | 100 | HPS | 55 | T2B | T2B | T2C | EFG | | | T3 | T3 | 105 | 90 |
| VMVS150 | 150 | HPS | 40 | T2A | T2A | T2B | | | | T3 | T3 | 90 | 85 |
| VMVS150 | 150 | HPS | 55 | T2 | T2 | T2A | | | | T3 | T3 | 105 | 105 |
| VMVIG055 | 55 | Induction | 40 | T2C | T2C | — | | | | T6 | — | 65 | — |
| VMVIG055 | 55 | Induction | 55 | T2C | T2C | — | | | | T5 | — | 65 | — |

The Class I, Division 2 T-codes apply to luminaires without the restricted breathing (S826) or factory sealed (S865) options. These luminaires are listed to UL 844. UL844 specifies how the temperatures are measured.

The Class I, Zone 2 T-codes are for luminaires that are additionally listed to UL 60079-15 that specify a different method for measuring temperatures. Since NEC® 501.1 states that equipment "...for use in Class I, Zone 0, 1, or 2 locations shall be permitted in Class I, Division 2 locations..." then these luminaires are suitable for Class I, Division 2 but with cooler temperature ratings. They also have the advantage of meeting the more rigorous mechanical tests of UL 844.

Champ® H.I.D. Luminaires

**Dimensions
In Inches:**



Net Luminaire Weights:

| Luminaire Series | Lamp Watts | | | |
|---|------------|-----|-----|---------|
| | 50 | 70 | 100 | 150 175 |
| Luminaire with Globe, Guards (lbs.): | | | | |
| VMVS | 13½ | 14½ | 14½ | 14½ |
| VMVM | | 13 | 13¼ | 15½ |
| Luminaire with Glass Refractor (lbs.): | | | | |
| VMVS | 21¾ | 22¾ | 22¾ | 22¾ |
| VMVM | | 21 | 21½ | 23¾ |

| Type | Lbs. | Type | Lbs. |
|----------------------------------|------|--------------------|------|
| Add for mounting modules: | | | |
| Pendant | 1¼ | Quad-Mount | 3½ |
| Flexible Pendant | 1½ | Angle Stanchion | 3½ |
| Ceiling | 2¾ | Straight Stanchion | 4½ |
| Wall | 4½ | | |

| | | | |
|----------------------------|----|-----------|----|
| Add for reflectors: | | | |
| Dome | 1½ | 30° Angle | 1½ |

Deduct: ½" lb. for fixture without P21 Guard

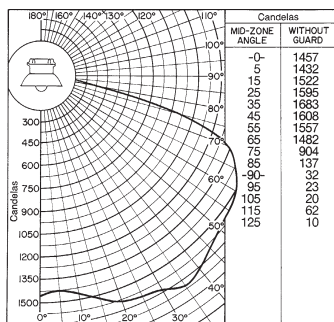


Champ® H.I.D. Luminaires

Lamp: 100W/E – 23½ high pressure sodium (HPS)
 Total bare lamp lumens: 9500

NOTE: All data provided is for high pressure sodium luminaires with 100W/E-23½ clear lamps. Use conversion factors (multipliers) shown below for other clear lamp types and wattages. Consult Eaton's Crouse-Hinds for additional photometric data on any Champ Series luminaire.

Luminaire with Globe and Dome Reflector



Multipliers (for use with candela curve only).

| Luminaire Series | Lamp Watts | Conversion Factor |
|------------------|------------|-------------------|
| VMVS | 50 | 0.42 |
| | 70 | 0.67 |
| | 150 | 1.68 |

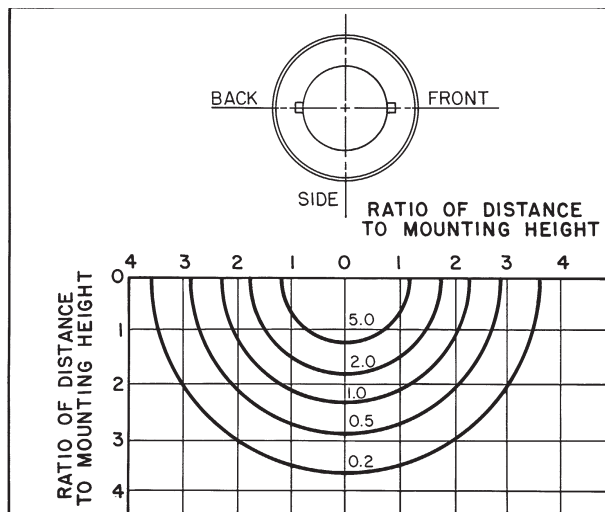
Luminaire spacing ratio: 1.85

Coefficient of Utilization

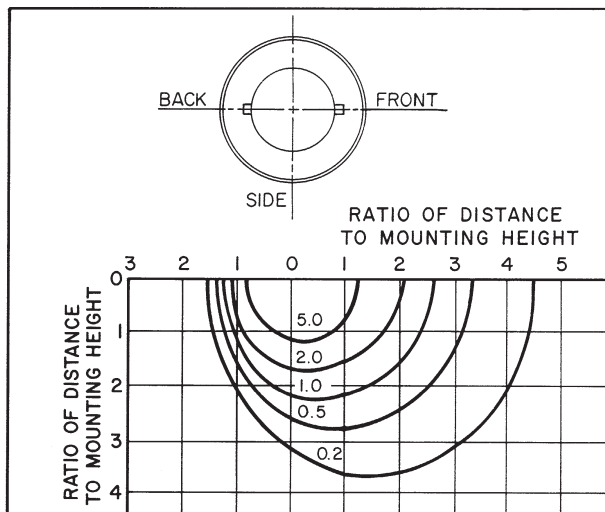
Effective Floor Cavity Reflectance 20%

| % Reflectance Eff. Ceil. | Wall | Room Cavity Ratio | | | | |
|--------------------------|------|-------------------|------|------|------|------|
| | | 1 | 2 | 3 | 4 | 5 |
| 80 | 50 | .823 | .707 | .610 | .529 | .464 |
| | 30 | .784 | .646 | .538 | .451 | .384 |
| | 10 | .749 | .594 | .482 | .391 | .324 |
| 70 | 50 | .804 | .690 | .597 | .517 | .452 |
| | 30 | .767 | .633 | .530 | .445 | .377 |
| | 10 | .734 | .587 | .477 | .388 | .321 |
| 50 | 50 | .765 | .658 | .571 | .494 | .434 |
| | 30 | .735 | .611 | .513 | .431 | .368 |
| | 10 | .709 | .569 | .466 | .381 | .318 |
| 30 | 50 | .731 | .629 | .546 | .473 | .416 |
| | 30 | .708 | .591 | .497 | .419 | .357 |
| | 10 | .685 | .555 | .456 | .375 | .312 |
| 10 | 50 | .701 | .603 | .524 | .454 | .399 |
| | 30 | .681 | .569 | .482 | .406 | .348 |
| | 10 | .662 | .541 | .446 | .367 | .307 |
| 0 | 0 | .644 | .521 | .427 | .348 | .288 |
| % Reflectance Eff. Ceil. | Wall | Room Cavity Ratio | | | | |
| | | 6 | 7 | 8 | 9 | 10 |
| 80 | 50 | .412 | .366 | .326 | .296 | .258 |
| | 30 | .334 | .290 | .253 | .224 | .187 |
| | 10 | .278 | .239 | .201 | .175 | .142 |
| 70 | 50 | .403 | .359 | .320 | .291 | .252 |
| | 30 | .329 | .285 | .250 | .221 | .187 |
| | 10 | .274 | .235 | .200 | .174 | .142 |
| 50 | 50 | .386 | .344 | .307 | .279 | .244 |
| | 30 | .320 | .277 | .244 | .216 | .182 |
| | 10 | .271 | .231 | .197 | .172 | .140 |
| 30 | 50 | .371 | .329 | .296 | .269 | .235 |
| | 30 | .312 | .272 | .237 | .210 | .178 |
| | 10 | .267 | .227 | .195 | .170 | .137 |
| 10 | 50 | .357 | .319 | .285 | .260 | .227 |
| | 30 | .304 | .266 | .232 | .206 | .173 |
| | 10 | .263 | .224 | .192 | .167 | .135 |
| 0 | 0 | .245 | .207 | .176 | .152 | .120 |

Isofootcandle Chart: Luminaire with Globe and Dome Reflector



Isofootcandle Chart: Luminaire with Globe and 30° Angle Reflector



Isofootcandle charts show illumination in footcandles on work plane 10 feet below light center. Multiply by factor shown to convert to other mounting heights.

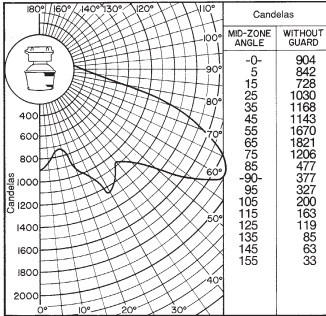
| Height (Ft.) | Factor | Height (Ft.) | Factor |
|--------------|--------|--------------|--------|
| 6 | 2.78 | 14 | 0.51 |
| 8 | 1.56 | 16 | 0.39 |
| 12 | 0.70 | | |

3L

Champ® H.I.D. Luminaires

Lamp: 100W/E0 – 23½ high pressure sodium (HPS)

Luminaire with I.E.S. Type V Glass Refractor



NOTE: Photometric data was developed using a 100 watt clear high pressure sodium lamp (9500 lumens). For other clear lamps, use the following conversion factors (multipliers):

| Luminaire Series | Lamp Watts | Conversion Factor |
|------------------|------------|-------------------|
| VMVS | 50 | 0.42 |
| | 70 | 0.67 |
| | 150 | 1.68 |

Luminaire spacing ratio: 2.0

Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

| % Reflectance Eff. Ceil. | Wall | Room Cavity Ratio | | | | |
|--------------------------|------|-------------------|------|------|------|------|
| | | 1 | 2 | 3 | 4 | 5 |
| 80 | 50 | .848 | .709 | .597 | .508 | .437 |
| | 30 | .796 | .631 | .509 | .414 | .343 |
| | 10 | .750 | .566 | .439 | .341 | .271 |
| 70 | 50 | .818 | .682 | .576 | .489 | .419 |
| | 30 | .770 | .611 | .493 | .402 | .331 |
| | 10 | .726 | .552 | .428 | .334 | .264 |
| 50 | 50 | .759 | .632 | .533 | .451 | .389 |
| | 30 | .720 | .574 | .464 | .377 | .312 |
| | 10 | .685 | .521 | .407 | .318 | .253 |
| 30 | 50 | .706 | .586 | .493 | .417 | .359 |
| | 30 | .675 | .538 | .435 | .354 | .291 |
| | 10 | .645 | .495 | .386 | .302 | .240 |
| 10 | 50 | .658 | .544 | .457 | .385 | .331 |
| | 30 | .632 | .504 | .408 | .331 | .274 |
| | 10 | .608 | .469 | .366 | .286 | .227 |
| 0 | 0 | .581 | .441 | .340 | .260 | .203 |

| % Reflectance Eff. Ceil. | Wall | Room Cavity Ratio | | | | |
|--------------------------|------|-------------------|------|------|------|------|
| | | 6 | 7 | 8 | 9 | 10 |
| 80 | 50 | .384 | .337 | .299 | .272 | .238 |
| | 30 | .292 | .249 | .214 | .189 | .159 |
| | 10 | .226 | .189 | .154 | .132 | .103 |
| 70 | 50 | .369 | .325 | .288 | .262 | .229 |
| | 30 | .283 | .240 | .203 | .183 | .156 |
| | 10 | .218 | .182 | .150 | .130 | .105 |
| 50 | 50 | .341 | .301 | .266 | .243 | .214 |
| | 30 | .266 | .225 | .195 | .173 | .146 |
| | 10 | .209 | .173 | .143 | .124 | .099 |
| 30 | 50 | .316 | .277 | .248 | .225 | .198 |
| | 30 | .249 | .213 | .182 | .161 | .136 |
| | 10 | .199 | .163 | .136 | .117 | .093 |
| 10 | 50 | .292 | .258 | .223 | .209 | .134 |
| | 30 | .233 | .200 | .171 | .151 | .127 |
| | 10 | .188 | .154 | .128 | .110 | .087 |
| 0 | 0 | .165 | .133 | .108 | .091 | .070 |

