

METALARC® PULSE START

High Lumen Maintenance, Reduced Color Shift, Premium Metal Halide Lamps



SYLVANIA METALARC® PULSE START 175, 200, 250, 320, 320/350, 350/400, 400, 750 and 1000 watt lamps provide less color shift, high lumen maintenance and a long life. Their premium performance provides opportunities for higher maintained illumination levels and substantial energy savings. Additional increases in optical efficiency may be gained by fixture designs using compact outer jacket configurations. All high wattage pulse start lamps, 200W-1000W, are lead free.

SYLVANIA METALARC PULSE START lamps combine new metal halide lamp technology with proven ignitor technology. The result is a more transparent arc tube over life yielding less color shift and high lumen maintenance.

Key Features & Benefits

METALARC PULSE START Lamps

- Excellent lumen maintenance
- Quicker hot restrike*
- Long average rated life

175 Watt PULSE START

- 50% longer life than standard 175 watt
- 21% higher initial lumens and >50% higher mean lumens than standard product
- Available in universal operating position

200 Watt PULSE START

- 20% energy savings over 250 watt lamp
- Available with Compact ET23.5 version for higher luminaire efficiency

250 Watt PULSE START

- 20,000 hour life rating for MS types (doubles the life of standard 250 watt)
- MP type has 50% longer life than standard 250 watt
- Available with PRO-TECH® design for open fixture use
- Available in universal operating position

320 Watt PULSE START

- 100 initial lumens per watt for clear lamps
- May be operated base-up through horizontal
- Compact BT28 size allows higher luminaire efficiency

320/350 Watt PULSE START

- Available in PRO-TECH design for open fixture use
- Lamp can be operated on 320 or 350 watt ballast

350/400 Watt PULSE START

- Incorporates PRO-TECH design for open fixture use
- Lamp can be operated on 350 or 400 watt ballast

400 Watt PULSE START

- 24% higher mean lumens than the M400/U and 16% higher mean lumens than the MS400/BU-ONLY
- Less color shift over lamp life*
- Available with Compact BT28 version for higher luminaire efficiency
- Available in universal operating position

750 Watt PULSE START

- 25% energy savings over standard 1000 watt metal halide
- Compact BT37 outer jacket

1000 Watt PULSE START

- Compact BT37 outer jacket
- Available in universal operating position

*Compared to standard metal halide lamps.



This light source meets restrictions on hazardous substances.

Product Offering

| Product | Lamp Finish | Fixture Type |
|-------------------------|----------------|-----------------------|
| M175/PS/U | Clear | Enclosed fixture only |
| MS175/PS/BU-ONLY | Clear & Coated | Enclosed fixture only |
| MS175/PS/BU-ONLY/MED | Clear & Coated | Enclosed fixture only |
| MS200/PS/BU-ONLY/ET23.5 | Clear | Enclosed fixture only |
| MS200/PS/BU-ONLY | Clear & Coated | Enclosed fixture only |
| MP250/PS/BU-ONLY | Clear & Coated | Open or enclosed |
| MS250/PS/BU-ONLY | Clear & Coated | Enclosed fixture only |
| M250/PS/U | Clear | Enclosed fixture only |
| MS320/PS/BU-HOR | Clear & Coated | Enclosed fixture only |

*See Notes Section for more fixture information

| Product | Lamp Finish | Fixture Type |
|---------------------------|----------------|-----------------------|
| MP320/350/PS/BU-ONLY/BT28 | Clear & Coated | Open or enclosed |
| MP350/400/PS/BU-ONLY | Clear & Coated | Open or enclosed |
| MS400/PS/BU-ONLY/BT28 | Clear | Enclosed fixture only |
| MS400/PS/BU-ONLY/BT28 | Clear | Enclosed fixture only |
| MS400/PS/BD-ONLY/BT28 | Clear | Enclosed fixture only |
| MS400/PS/BU-ONLY | Clear & Coated | Open or enclosed* |
| M400/PS/U/BT28 | Clear | Enclosed fixture only |
| M400/PS/U | Clear | Enclosed fixture only |
| MS750/PS/BU-HOR/BT37 | Clear & Coated | Enclosed fixture only |
| M1000/U/PS/BT37 | Clear | Enclosed fixture only |



Application Information

Applications

Ambient lighting: Industrial and Commercial
Canopy lighting
Flood lighting
Parking lots
Security lighting

Application Notes

Operating orientation: Base-up only or base down only within 15° of vertical. 320W and 750W lamps may be operated base-up through horizontal. M250/PS/U, M400/PS/U, M400/PS/U/BT28 and M1000/U/PS/BT37 may be operated in any operating position.

Socket Information

Lamps operate in standard mogul HID sockets rated to withstand 4000 volt pulses. Exclusionary mogul sockets are recommended for the METALARC PRO-TECH (MP) versions.

Ballast Information

All lamps will operate on ANSI Pulse Start ballasts with ignitors for metal halide lamps as noted in the Ordering and Specification Information section (page 3 of this PIB).

Fixtures

Consult your local fixture agent for available fixtures.

Lamp Comparison

| Lamp Type | Initial Lumens | Mean Lumens | Hot Restrike | Average Rated Life (hrs.) |
|--|----------------|-------------|--------------|---------------------------|
| 400 Watt PULSE START MS400/PS/BU-ONLY | 42,000 | 31,000 | 5 to 7 min. | 20,000 |
| 400 Watt SUPER METALARC MS400/BU-ONLY | 42,000 | 26,000 | 7 to 12 min. | 20,000 |
| 400 Watt Standard | 36,000 | 23,500 | 7 to 12 min. | 20,000 |

- 16% higher mean lumens than the 400 Watt SUPER METALARC lamps
- 24% higher mean lumens than the standard 400 Watt METALARC lamps
- 50% longer average rated life when operated on a 120-hour cycle — average rated life of 30,000 hours

Installed Savings

| Lamp Type | Watts | Number of Lamps | Energy Cost per Year | Savings per Year |
|----------------------|-------|-----------------|----------------------|------------------|
| M400/U | 400 | 500 | \$128,240 | \$0 |
| MP350/400/PS/BU-ONLY | 350 | 500 | \$112,000 | \$16,240 |

- Lowers energy costs
- 5600 hours/year, \$0.1 kWh; 458W per fixture for the 400W lamp, 400W per fixture for the 350W lamp.

Specification Data

| | |
|----------------------|------|
| Fixture Description: | Type |
| Project/Job: | |
| SYLVANIA lamp: | |
| SYLVANIA ballast: | |
| Notes: | |

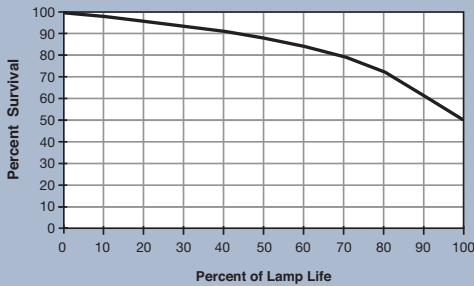
Ordering Information

| Item Number | Ordering Abbreviation | Watts | Finish | Bulb | Base | ANSI ² Code | Average Rated Life (hrs.) | Initial Lumens | Mean Lumens | CRI | Color Temp | Lamp Efficacy (LPW) |
|-------------|---------------------------------|------------|--------|--------|------|--|-------------------------------|----------------------|-------------------------------|----------|----------------|---------------------|
| 64171 | MS175/PS/BU-ONLY/MED | 175 | Clear | ED17 | E26 | M152/E, M137/E ⁵ | 15,000 | 17,500 | 12,800 | 65 | 4000K | 100 |
| 64170 | MS175/C/PS/BU-ONLY/MED | 175 | Coated | ED17 | E26 | M152/E, M137/E ⁵ | 15,000 | 16,600 | 12,500 | 70 | 3700K | 95 |
| 64319 | M175/PS/U | 175 | Clear | BT28 | E39 | M152/E, M137/E ⁵ | 12,000V 9,000H | 14,400V 12,800H | 10,000V 8,300H | 65 | 4000K | 82V 73H |
| 64815 | MS175/PS/BU-ONLY ⁴ | 175 | Clear | ED28 | E39 | M152/E, M137/E ⁵ | 15,000 | 17,500 | 12,800 | 65 | 4000K | 100 |
| 64816 | MS175/C/PS/BU-ONLY ⁴ | 175 | Coated | ED28 | E39 | M152/E, M137/E ⁵ | 15,000 | 16,600 | 12,500 | 70 | 3700K | 95 |
| 64837 | MS200/PS/BU-ONLY/ET23.5 | 200 | Clear | ET23.5 | E39 | M136/E | 15,000 | 19,000 | 13,300 | 65 | 4200K | 95 |
| 64838 | MS200/PS/BU-ONLY ⁴ | 200 | Clear | BT28 | E39 | M136/E ⁵ | 15,000 | 19,000 | 13,500 | 65 | 4000K | 95 |
| 64839 | MS200/C/PS/BU-ONLY ⁴ | 200 | Coated | BT28 | E39 | M136/E ⁵ | 15,000 | 18,000 | 12,800 | 70 | 3800K | 90 |
| 64789 | MP250/PS/BU-ONLY | 250 | Clear | BT28 | EX39 | M153/O, M138/O ⁵ | 15,000 | 22,500 | 17,000 | 65 | 4000K | 90 |
| 64790 | MP250/C/PS/BU-ONLY | 250 | Coated | BT28 | EX39 | M153/O, M138/O ⁵ | 15,000 | 21,000 | 16,000 | 70 | 4000K | 84 |
| 64578 | MS250/PS/BU-ONLY | 250 | Clear | BT28 | E39 | M153/E, M138/E ⁵ | 20,000 | 23,000 | 17,000 | 65 | 4200K | 92 |
| 64617 | MS250/C/PS/BU-ONLY | 250 | Coated | BT28 | E39 | M153/E, M138/E ⁵ | 20,000 | 21,500 | 15,500 | 70 | 3600K | 86 |
| 64320 | M250/PS/U | 250 | Clear | BT28 | E39 | M153/E, M138/E ⁵ | 15,000V 12,000H | 21,000V 18,000H | 15,400V 11,000H | 65 | 3800K | 88V 76H |
| 64507 | MS320/PS/BU-HOR | 320 | Clear | BT28 | E39 | M154/E, M132/E ⁵ | 20,000V 15,000H | 30,000V 28,000H | 21,000V 19,700H | 65 | 4300K | 94V 88H |
| 64646 | MS320/C/PS/BU-HOR | 320 | Coated | BT28 | E39 | M154/E, M132/E ⁵ | 20,000V 15,000H | 30,000V 28,000H | 19,700V 18,400H | 70 | 3900K | 94V 88H |
| 64391 | MP320/350/PS/BU-ONLY/BT28 | 320 350 | Clear | BT28 | EX39 | M154/E, M132/O ⁵ M131/O ⁵ | 20,000 20,000 | 28,600 33,500 | 21,000 24,000 | 65 65 | 3800K 3600K | 89 96 |
| 64349 | MP320/350/C/PS/BU-ONLY/BT28 | 320 350 | Coated | BT28 | EX39 | M154/O, M132/O ⁵ M131/O ⁵ | 20,000 20,000 | 27,700 32,000 | 19,000 22,000 | 70 70 | 3600K 3600K | 87 91 |
| 64769 | MP350/400/PS/BU-ONLY | 350 400 | Clear | BT37 | EX39 | M131/O ⁵ M155/O, M135/O ⁵ | 20,000 20,000 | 33,000 40,000 | 24,500 29,500 | 65 65 | 3700K 3500K | 94 100 |
| 64770 | MP350/400/C/PS/BU-ONLY | 350 400 | Coated | BT37 | EX39 | M131/O ⁵ M155/O, M135/O ⁵ | 20,000 20,000 | 32,000 39,000 | 23,000 28,000 | 70 70 | 3500K 3300K | 91 98 |
| 64189 | MS400/PS/BU-ONLY/BT28 | 400 | Clear | BT28 | E39 | M155/E, M135/E ⁵ | 20,000 | 40,000 | 32,500 | 65 | 4100K | 100 |
| 64191 | MS400/PS/BU-ONLY/BT28 | 400 | Clear | BT28 | E39 | M155/E, M135/E ⁵ | 20,000 | 40,000 | 32,500 | 65 | 4100K | 100 |
| 64525 | MS400/PS/BU-ONLY | 400 | Clear | BT37 | E39 | M155/S, M135/S ⁵ | 30,000 ¹ 20,000 | 42,000 42,000 | 31,000 ¹ 35,700 | 65 | 4000K | 105 105 |
| 64527 | MS400/C/PS/BU-ONLY | 400 | Coated | BT37 | E39 | M155/S, M135/S ⁵ | 30,000 ¹ 20,000 | 42,000 42,000 | 29,000 ¹ 35,700 | 70 | 3600K | 105 105 |
| 64188 | M400/PS/U/BT28 | 400 | Clear | BT28 | E39 | M155/E, M135/E ⁵ | 20,000V 15,000H | 36,000V 31,000H | 25,500V 22,400H | 65 | 4000K | 90V 78H |
| 64321 | M400/PS/U | 400 | Clear | BT37 | E39 | M155/E, M135/E ⁵ | 20,000V 15,000H | 36,000V 31,000H | 25,500V 22,400H | 65 | 4000K | 90V 78H |
| 64787 | MS750/PS/BU-HOR/BT37 | 750 | Clear | BT37 | E39 | M149/E ³ | 20,000V 9,000H | 78,000V 68,000H | 67,000V 56,000H | 65 | 4000K | 104V 91H |
| 64822 | MS750/C/PS/BU-HOR/BT37 | 750 | Coated | BT37 | E39 | M149/E ³ | 20,000V 9,000H | 75,000V 65,000H | 63,000V 53,000H | 70 | 3700K | 100V 87H |
| 64351 | M1000/U/PS/BT37 | 1000 | Clear | BT37 | E39 | M141/E | 15,000V 9,000H | 110,000V 107,800H | 96,000V 86,300H | 65 | 3800K | 110V 108H |

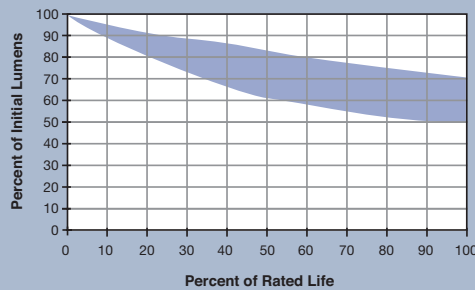
- Notes:
- Based on 10 hrs/start operating cycle. On 120 hrs/start, life rating increases from 20,000 to 30,000 hours and mean lumen point is at 12,000 hrs.
 - For lamps with 2 ANSI codes, the first is the new ANSI code and the second is the original code.
 - When operated on ballasts having a sustaining voltage less than 310V, lamp life may be significantly reduced.
 - Contact your local OSRAM SYLVANIA sales representative for availability.
 - When operated on ballasts having a sustaining voltage less than 270V, lamp life may be significantly reduced.
 - For lamp wattages of 360W and greater, it is recommended that lampholders with nickel-plated copper alloy center contacts (with spring) should be used rather than electrical contacts made of stainless steel.
- E = Lamps classified as E-type are to be used ONLY in suitably enclosed luminaires. See lamp warning.
O = Lamps classified as O-type, comply with ANSI standard C78.389 for containment testing and may be used in open luminaires. See lamp warning.
S = When operated within 15 degrees of vertical, this lamp may be operated in an open luminaire provided the installation is not near people or flammable or combustible material, otherwise it must be operated in a suitably enclosed luminaire. See lamp warning.

Technical Information

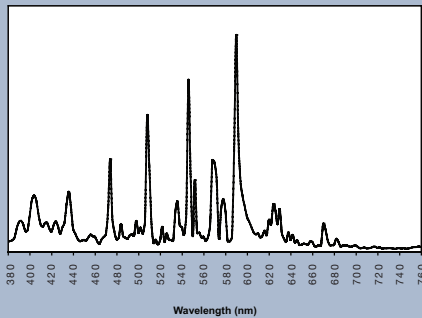
Typical Mortality Curve



Typical Lumen Depreciation

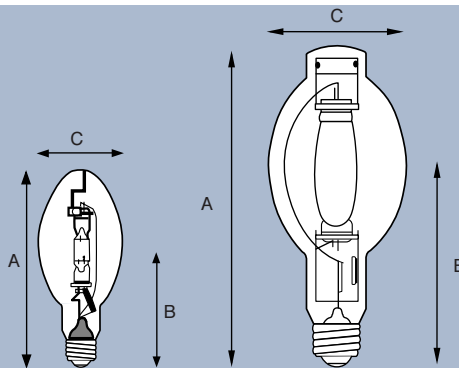


Typical Spectral Power Distribution



Lamp Dimensions

| Ordering Abbreviation | (A) MOL | (B) LCL | (C) Bulb Diameter |
|-----------------------|----------|---------|-------------------|
| ED17 | 5" | 3" | 2-1/8" |
| ET23.5 | 6-29/32" | 4-1/2" | 2-15/16" |
| BT28/ED28 | 8-5/16" | 5" | 3-1/2" |
| BT37 | 11-1/2" | 7" | 4-5/8" |



Ordering Guide

| MS | 320 | / | _____ | / | PS | / | BU-ONLY |
|------------------------|-------------------|---|------------|---|-------|---|-------------------------------|
| M = METALARC | Wattage: | | _____ | | PULSE | | BU-ONLY = Base up only |
| Metal Halide | 175, 200, 250, | | _____ | | START | | U = Universal |
| S = SUPER high output | 320, 320/350, | | C = Coated | | | | BD-ONLY = Base down only |
| P = METALARC PRO-TECH® | 350/400, 400, | | | | | | BU-HOR = Base up - Horizontal |
| open fixture rated | 750 or 1000 watts | | | | | | |

Safety Information

WARNING! THESE LAMPS CAN CAUSE SERIOUS SKIN BURN AND EYE INFLAMMATION FROM SHORT-WAVE ULTRAVIOLET RADIATION IF THE OUTER ENVELOPE (GLASS BULB) OF THE LAMP IS BROKEN OR PUNCTURED. Do not use where people will remain for more than a few minutes unless adequate shielding or other safety precautions are used. Lamps that will automatically extinguish when the outer envelope is punctured or broken are commercially available from OSRAM SYLVANIA Products Inc. THESE LAMPS CONFORM TO FEDERAL STANDARD 21 CFR 1040.30 in the U.S. AND SOR/80-381 in Canada.

Sample Specification

400 Watt: Lamp(s) shall be (a) 400W METALARC® PULSE START lamp(s) exhibiting initial lumens of 42,000 with a 74% mean lumen maintenance and capable of operating on a M155/M135 ballast. Lamp construction shall include a lead-free welded base with a maximum temperature of 250°C.

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