

# 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/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:	

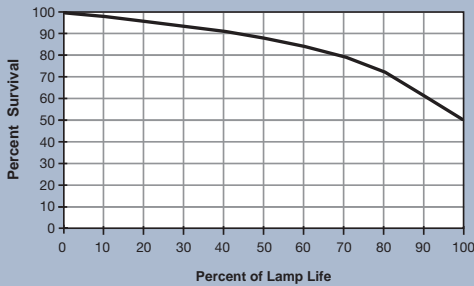
## Ordering Information

Item Number	Ordering Abbreviation	Watts	Finish	Bulb	Base	ANSI <sup>2</sup> 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 <sup>5</sup>	15,000	17,500	12,800	65	4000K	100
64170	MS175/C/PS/BU-ONLY/MED	175	Coated	ED17	E26	M152/E, M137/E <sup>5</sup>	15,000	16,600	12,500	70	3700K	95
64319	M175/PS/U	175	Clear	BT28	E39	M152/E, M137/E <sup>5</sup>	12,000V 9,000H	14,400V 12,800H	10,000V 8,300H	65	4000K	82V 73H
64815	MS175/PS/BU-ONLY <sup>4</sup>	175	Clear	ED28	E39	M152/E, M137/E <sup>5</sup>	15,000	17,500	12,800	65	4000K	100
64816	MS175/C/PS/BU-ONLY <sup>4</sup>	175	Coated	ED28	E39	M152/E, M137/E <sup>5</sup>	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 <sup>4</sup>	200	Clear	BT28	E39	M136/E <sup>5</sup>	15,000	19,000	13,500	65	4000K	95
64839	MS200/C/PS/BU-ONLY <sup>4</sup>	200	Coated	BT28	E39	M136/E <sup>5</sup>	15,000	18,000	12,800	70	3800K	90
64789	MP250/PS/BU-ONLY	250	Clear	BT28	EX39	M153/O, M138/O <sup>5</sup>	15,000	22,500	17,000	65	4000K	90
64790	MP250/C/PS/BU-ONLY	250	Coated	BT28	EX39	M153/O, M138/O <sup>5</sup>	15,000	21,000	16,000	70	4000K	84
64578	MS250/PS/BU-ONLY	250	Clear	BT28	E39	M153/E, M138/E <sup>5</sup>	20,000	23,000	17,000	65	4200K	92
64617	MS250/C/PS/BU-ONLY	250	Coated	BT28	E39	M153/E, M138/E <sup>5</sup>	20,000	21,500	15,500	70	3600K	86
64320	M250/PS/U	250	Clear	BT28	E39	M153/E, M138/E <sup>5</sup>	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 <sup>5</sup>	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 <sup>5</sup>	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 <sup>5</sup> M131/O <sup>5</sup>	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 <sup>5</sup> M131/O <sup>5</sup>	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 <sup>5</sup> M155/O, M135/O <sup>5</sup>	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 <sup>5</sup> M155/O, M135/O <sup>5</sup>	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 <sup>5</sup>	20,000	40,000	32,500	65	4100K	100
64191	MS400/PS/BU-ONLY/BT28	400	Clear	BT28	E39	M155/E, M135/E <sup>5</sup>	20,000	40,000	32,500	65	4100K	100
64525	MS400/PS/BU-ONLY	400	Clear	BT37	E39	M155/S, M135/S <sup>5</sup>	30,000 <sup>1</sup> 20,000	42,000 42,000	31,000 <sup>1</sup> 35,700	65	4000K	105 105
64527	MS400/C/PS/BU-ONLY	400	Coated	BT37	E39	M155/S, M135/S <sup>5</sup>	30,000 <sup>1</sup> 20,000	42,000 42,000	29,000 <sup>1</sup> 35,700	70	3600K	105 105
64188	M400/PS/U/BT28	400	Clear	BT28	E39	M155/E, M135/E <sup>5</sup>	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 <sup>5</sup>	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 <sup>3</sup>	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 <sup>3</sup>	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

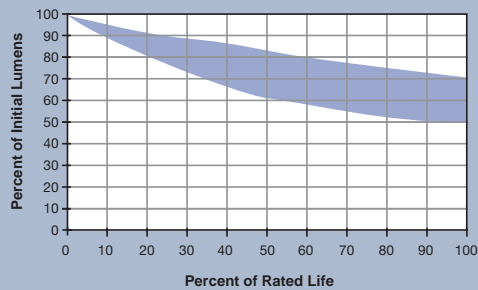
- Notes:
- Based on 10 hrs/start operating cycle. On 120 hrs/start, life rating increases from 20,000 to 30,000 hours and mean lumen point is at 12,000 hrs.
  - For lamps with 2 ANSI codes, the first is the new ANSI code and the second is the original code.
  - When operated on ballasts having a sustaining 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

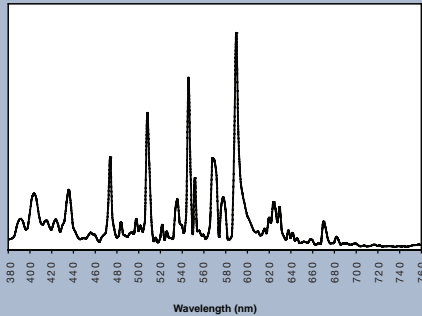
Typical Mortality Curve



Typical Lumen Depreciation

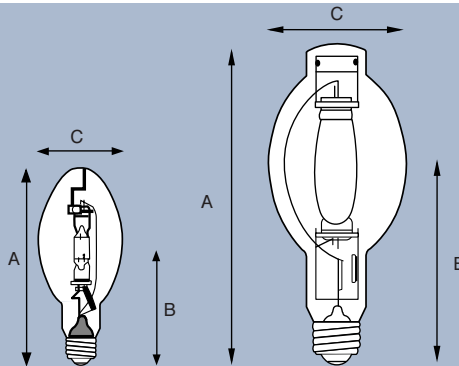


Typical Spectral Power Distribution



## 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,						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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