



***THE PULSE START***  
***METAL HALIDE ADVANTAGE***

***NEW HORIZONS —***



***IN ENERGY SAVING SYSTEMS***

# PULSE START TECHNOLOGY

## LAMPS

The CEW Pulse Start lamp is the heart of the **ESS** system. When compared to standard systems, it delivers 20% higher lamp efficiency, better lumen depreciation as well as reduced energy consumption. It is available in both clear and coated versions as well as reduced jacket types for the new compact fixtures.



## LAMP EFFICIENCY

A 20% increase in lamp efficiency results in a considerable increase in lumen output compared with conventional metal halide lamps.

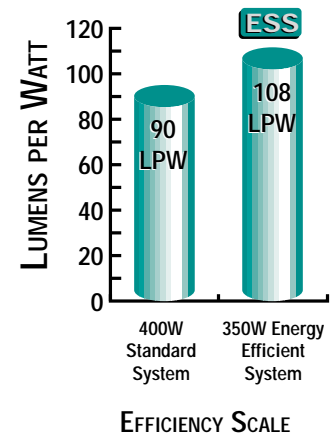
## ENERGY EFFICIENT SYSTEM

The Spartan **ESS** Pulse Start System combines new lamp and ballast technology in an energy efficient partnership that provides metal halide lighting at 20% lower operating costs – without sacrificing light output. This is achieved by using high efficiency ballasts that have a lower watt loss than standard CWA ballasts.

## ENERGY SAVINGS

When combined in an **ESS** Pulse Start fixture, the new lamp and ballast technology delivers a 75W savings per fixture when comparing the 350W to the standard 400W. This results in approximately \$52 per fixture in lower annual operating costs.①

① Comparison of 350W vs 400W at 8¢/kwh for continuous operation.)

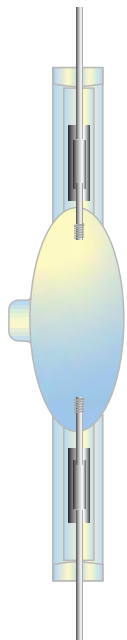
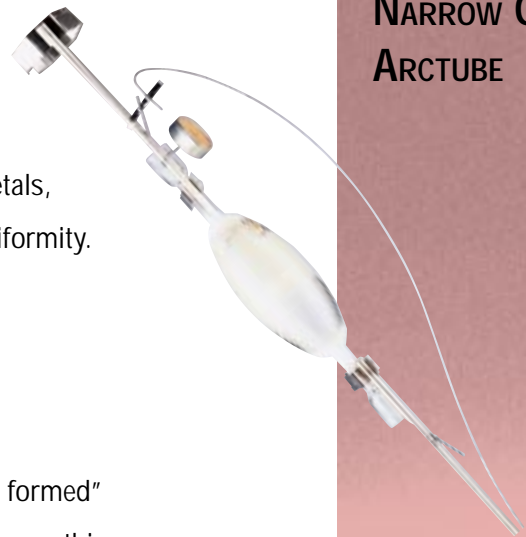


# PULSE START TECHNOLOGY

The new narrow-gauge formed arctube technology allows the Pulse Start lamps to out perform all standard metal halide lamps.

Its narrow profile follows the lamp's natural arc almost exactly. This results in better temperature control of the arctube's component metals, thus increasing light output and maintaining lamp-to-lamp color uniformity.

## NARROW GAUGE ARCTUBE

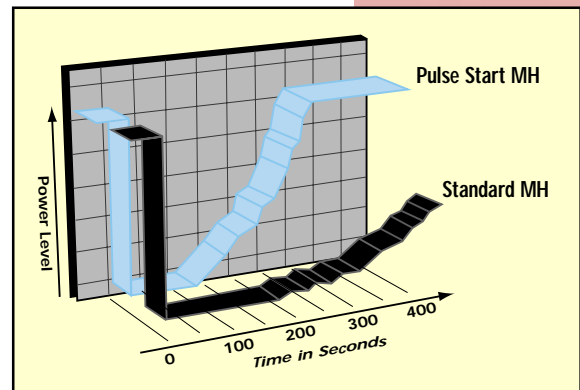


MOLDED ARC TUBE

## NEW ARCTUBE ADVANTAGES

Traditionally there has been a "pinched and formed" body arctube processing on metal halide lamps, this new metal halide Pulse Start lamp has a molded arctube, guaranteeing accurate form every time. This technology allows the **ESS** Pulse Start lamp dramatic improved performance.

- Higher light output
- Consistent lamp-to-lamp color
- Faster restrike and warm-up — 2-3 minutes\* compared with 10-15 minutes on standard lamps
- Longer life

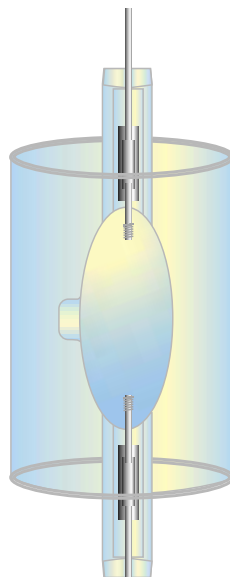


## WARM UP TIME – PULSE START VS STANDARD

\* ENCLOSED RATED LAMP

## OPEN RATED

Underwriters Lab requires the standard metal halide lamp to be operated in fixtures that have a bottom lens for containment because of the possibility of rupturing of the arc tube at end of life. This protective quartz shroud allows most of the Pulse Start lamps to be open rated.



SHROUDED ARC TUBE

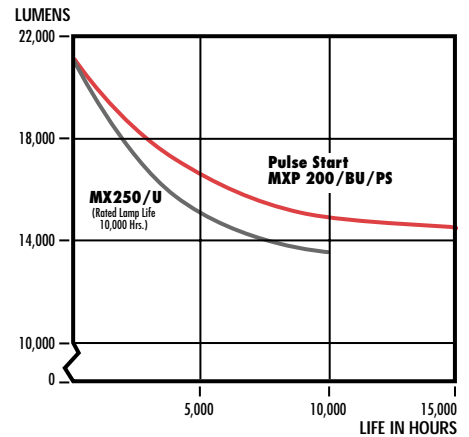
# PULSE START ADVANTAGE

## 200 WATT



Energy is the key factor for using the **200W Pulse Start** lamp. This lamp is excellent as a retrofit for a standard 250W lamp. The benefits are a 50% longer life than standard 175 or 250W MH lamps; substantial energy savings over the standard MH lamps; plus a faster warm-up and restrike.

LUMEN MAINTENANCE CHART



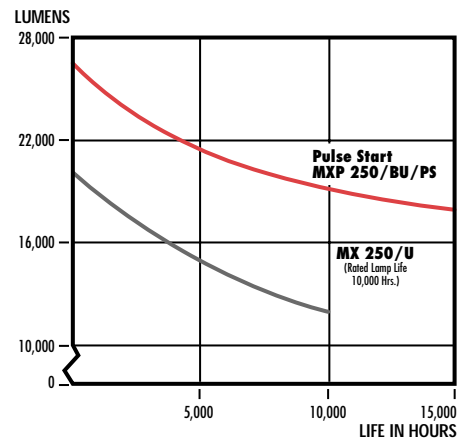
## 250 WATT



The **250W Pulse Start** lamp is the ideal lamp choice for those needing to justify standard lamp specifications. With the technology of this Pulse Start lamp, there is increased lumen output as well as a 50% higher lamp life.

Substituting the Pulse Start 250W lamp for the standard 400W metal halide lamp reduces your energy consumption by 170W per fixture. Lumen output is maintained by utilizing Spartan's high efficiency fixtures and ballasts.

LUMEN MAINTENANCE CHART

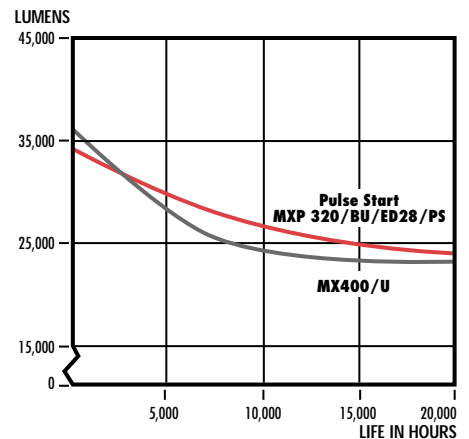


## 320 WATT



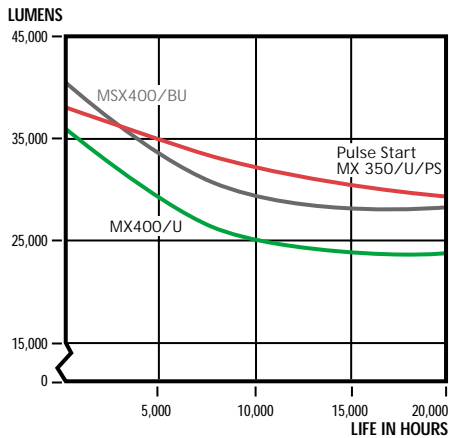
This **320W Pulse Start** lamp is the perfect choice for the energy conscious who need to maintain high lumen output. The efficient 320W Pulse Start lamp can save as much as 115 watts in energy compared to a standard 400W metal halide lamp.

LUMEN MAINTENANCE CHART



# PULSE START ADVANTAGE

## LUMEN MAINTENANCE CHART

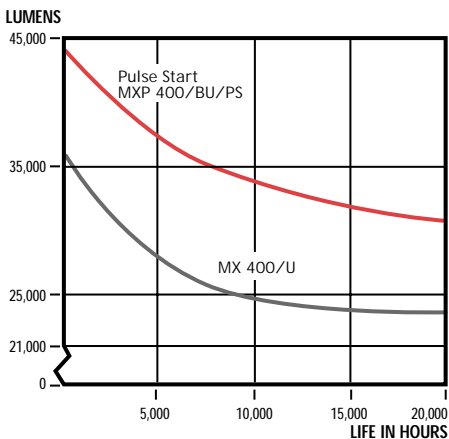


The **350W Pulse Start** lamp was originally designed to replace the standard 400W lamp for any application. It is a long life, highly efficient lamp that will maintain higher lumens and faster restrike and warm-up than standard 400W lamps. Available for open and enclosed applications. A high energy saver.

**350 WATT**



## LUMEN MAINTENANCE CHART

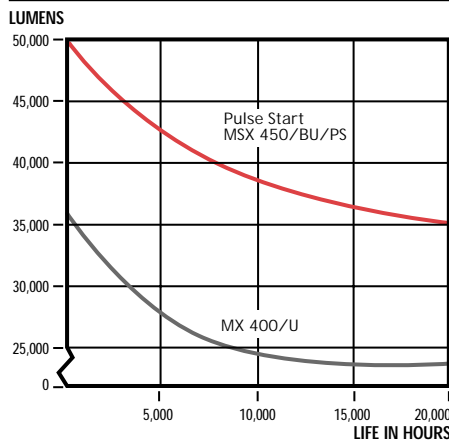


The **400W Pulse Start** lamp is perfect for those applications needing to meet strict lamp specification requirements. It is available with a protection shroud for open fixture operation. The higher lumen output and longer life make this lamp the ideal choice for upgrading your standard 400W fixtures.

**400 WATT**



## LUMEN MAINTENANCE CHART



This **450W Pulse Start** lamp is the perfect option for those wanting to change HPS yellow light to a bright white light. The standard 400W metal halide lamp has not been able to compete with lumen output of high pressure sodium lamps until now. The 450W Pulse Start is the answer. This lamp has a lumen output of 50,000 lumens with a 20,000 hour life rating.

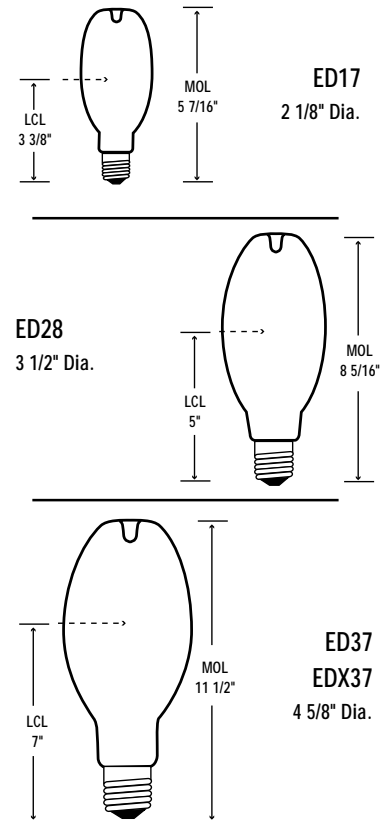
**450 WATT**



# PULSE START ADVANTAGE

## SPECIFICATIONS

Order Code	Initial Lumens	Mean Lumens	Avg. Rated Life (hrs)	Base Pos.	Bulb Size	Fixture Spec
MX 200/V/PS	21,000	16,000	15,000	(V)	ED28	ENCLOSED
MXP 200/V/PS	20,000	16,000	15,000	(V)	ED28	OPEN
MSX 200/V/MED/PS	21,000	16,800	12,000	(V)	ED28	ENCLOSED
MX 250/V/PS	25,000	20,000	15,000	(V)	ED28	ENCLOSED
MXP 250/BU/PS	23,800	19,000	15,000	(BU)	ED28	OPEN
MXP 300/V/PS	29,000	23,200	20,000	(V)	ED28	OPEN
MSX 320/V/ED28/PS	33,000	26,400	20,000	(V)	ED28	ENCLOSED
MXP 320/BU/ED28/PS	32,300	25,800	20,000	(BU)	ED28	OPEN
MX 320/V/ED37/PS	33,000	26,400	20,000	(V)	ED37	ENCLOSED
MX 350/V/PS	37,000	29,600	20,000	(V)	ED37	ENCLOSED
MX 350/V/ED28/PS	37,000	29,600	20,000	(V)	ED28	ENCLOSED
MXP 350/BU/PS	35,200	28,200	20,000	(BU)	ED37	OPEN
MSX 400/V/PS	44,000	35,200	20,000	(V)	ED37	OPEN
MXP 400/BU/PS	42,000	33,600	20,000	(BU)	ED37	OPEN
MXP 450/BU/PS	47,500	38,000	20,000	(BU)	ED37	OPEN
MSX 450/VBU/PA	50,000	40,000	20,000	(BU)	ED37	OPEN
MRV 750/VBU/PA	80,000	60,000	16,000	(BU)	ED37	OPEN
MSX 875/BU/BT37/PS	100,600	80,500	12,000	(BU)	ED37	ENCLOSED



## LIGHTING SYSTEM COMPARISONS

LAMP TYPE	Lamp Wattage	ANSI #	System Wattage (Including Ballast)		Initial Lumens	System Lumens/Watt	Mean Lumens	System Lumens/Watt	Lamp Life (10hrs/start)	Ballast Type	Ballast Regulation
MX 175/U •	175	M57	210 CWA		14400	68	12000	57	10000	CWA	10%
MSX 175/BU/PS •	175	M137	208 CWA	194* Reactor	17500	84/90	14000	67* 72	12000	CWA/Reactor	±10% / ±5%
MX 200/U/PS	200	M136	232 CWA	219* Reactor	21000	90/95	16800	72* 76	15000	CWA/Reactor	±10% / ±5%
MX 250/U	250W	M58	289 CWA		22000	76	17000	58	10000	CWA	±10%
MX 250/HBU/PS	250W	M138	288 CWA	275* Reactor	26300	91/95	21000	72/76	15000	CWA/Reactor	±10% / ±5%
MSX 320/BU/ED28/PS	320W	M132	365 CWA	349* Reactor	34000	93/97	27200	74/77	20000	CWA/Reactor	±10% / ±5%
MX 350/U/PS	350W	M131	400 CWA	375* Reactor	37000	92/99	29600	74* 79	20000	CWA/Reactor**	±10% / ±5%
MX 400/U	400W	M59	455 CWA		36000	79	25000	54	20000	CWA	±10%
MX 400/HBU/PS	400W	M135	450 CWA	435* Reactor	44000	97/101	35200	78/80	20000	CWA/Reactor**	±10% / ±5%
MSX 450/BU/PS	450W	M144	503 CWA	485* Reactor	50000	99/103	40000	79/82	20000	CWA/Reactor**	±10% / ±5%
MX 1000/U	1000W	M47	1080 CWA		110000	101	88,000	81	15000	CWA	±10%
MVR 750/VBU/PA	750W	M149	815 CWA		80000	98	60000	73	16000	CWA	±10%
MSX 875/BU/BT37/PS	875W	TBA	940 CWA	925* Reactor	100600	107/109	80500	85/87	12000	CWA/Reactor**	±10% / ±5%

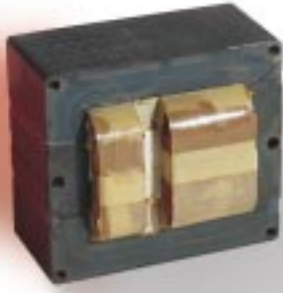
• Enclosed fixtures only.

\* System wattage is based on the usage of a linear reactor ballast. System wattage for a CWA quad-tap is higher.

\*\* 30,000 Hrs. @ 120Hrs./start Lamp Life.

Ballast regulation may vary from manufacturer to manufacturer.

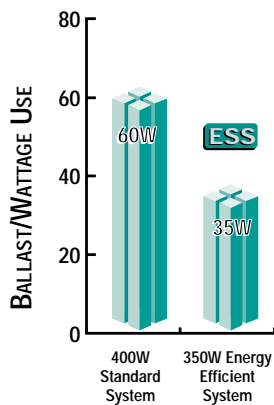
# PULSE START ADVANTAGE



This new Spartan ballast technology reduces not only the power used by the lamp but also the power used by the ballast itself. When compared to standard 400W ballasts and their 60 watts of ballast loss, the 350 **ESS** ballast and its 35 watts of ballast loss, represent a 40% reduction in ballast energy consumption.

## LONGER BALLAST LIFE

Heat is the natural enemy of all ballasts. The reduction of 40% of the ballast's heat will increase its service life in typical applications.



**BALLAST/WATTAGE CONSUMPTION**  
All comparisons are based on published values for CWA metal halide ballasts.

## LOWER INSTALLATION COSTS

The Spartan **ESS** Pulse Start ballast with its lower starting and operating current ratings, allows up to 17% more fixtures per lighting circuit. This results in significantly lower labor and material costs for new fixture installations.

## BALLAST TECHNOLOGY

REACTOR VS CWA

### CURRENT CREST FACTOR

*Lower current crest factor has been shown to actually increase lumen maintenance. The Spartan reactor ballast produces a more controlled current wave compared to a standard CWA ballast.*

## LAMP/BALLAST KITS

When you combine the **ESS** efficiencies of both ballast and lamp into an **ESS** HID Lamp/Ballast Kit, you have the best and most energy efficient replacement for existing metal halide fixtures.

- A permanent 20-30% reduction in energy costs
- A 20-25% higher light level
- Everything in one box to make the fixture upgrade (Lamp, ballast, capacitor, ignitor & mounting brackets)



### CEW HID Lamp/Ballast Kit Disclaimer

All CEW HID Lamp/Ballast Kits contain UL recognized components. The intent of these kits is for replacement of like ballasts in existing fixtures. Follow installation instructions included with each ballast kit for proper installation. Installations of CEW/Spartan Lamp/Ballast Kits are to be performed only by qualified electricians and must comply with the National Electrical Code, ANSI standards and/or local electrical codes. Ballasts must be installed only in fixtures that have a UL listing for that ballast/fixture combination in accordance with UL 1572 High Intensity Discharge Lighting Fixtures.

Extreme caution should be used when increasing lamp wattage and/or changing lamp type. There are two areas of concern when doing this. One is the thermal rating of the ballast: each ballast has a UL 1029 temperature code, which is listed in the CEW Lamp/Ballast Reference Guide. The UL listing of the fixture would be void if a higher temperature rated ballast was installed. The other concern is the fixture distribution. Reflector/refractor designs are often source dependent, and a source change may affect fixture distribution.

Contact the fixture manufacturer to address both of the above concerns. Fixture labels sometimes show maximum wattage and types allowed by UL.

## ENERGY EFFICIENT FIXTURES

Most metal halide fixtures can utilize the Spartan **ESS** Pulse Start reduced energy system. Most of the metal halide fixtures can also be equipped with Spartan's High-2-Low™ two level lighting system for additional energy savings of 50% or more.

- High Bays with open rated socket
- Low Bays
- Floodlights
- Wall Packs
- Retrofit Lamp/Ballast Kits
- Remote Ballast Enclosures



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