

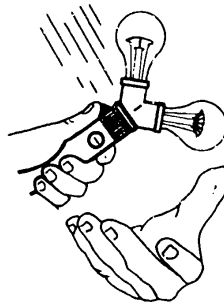
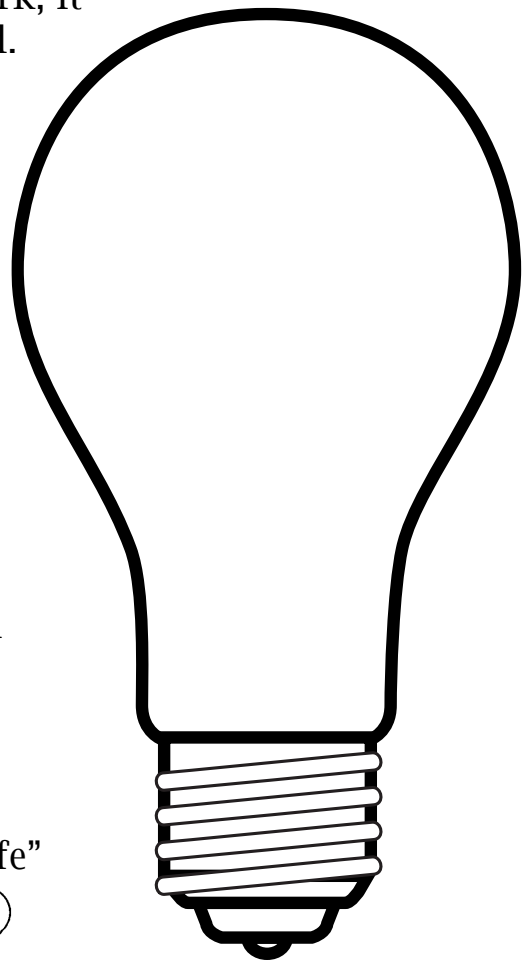
Understanding Lighting Systems

In the beginning, Incandescent lighting systems were very simple in design and easy to maintain. When a light bulb didn't work, it was burned out and would be replaced.

Incandescent light bulbs are still used in many of today's lighting systems. Incandescent systems are the least efficient of all lighting systems.

Incandescent Lighting Systems

- Easily understood
- Obvious when bulbs should be replaced
- No Ballast or transformer
- Short Lamp Life
- Usable life equal to published "Rated Life"
- Not energy efficient

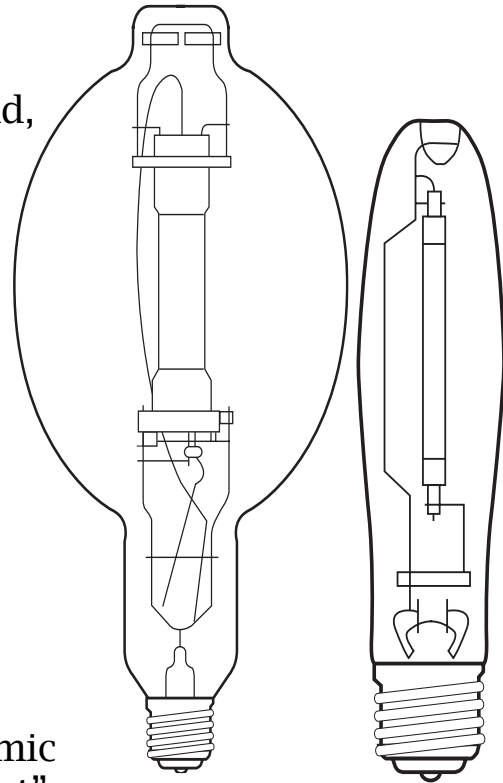


Understanding Modern Lighting Systems

Today's industrial facilities use "HID" Lighting. Mercury Vapor, Metal Halide, and High Pressure Sodium.

These systems have unique attributes that make them difficult to understand, manage, and maintain.

HID systems were "the only answer" to High bay lighting and were the system of choice for industrial facilities.



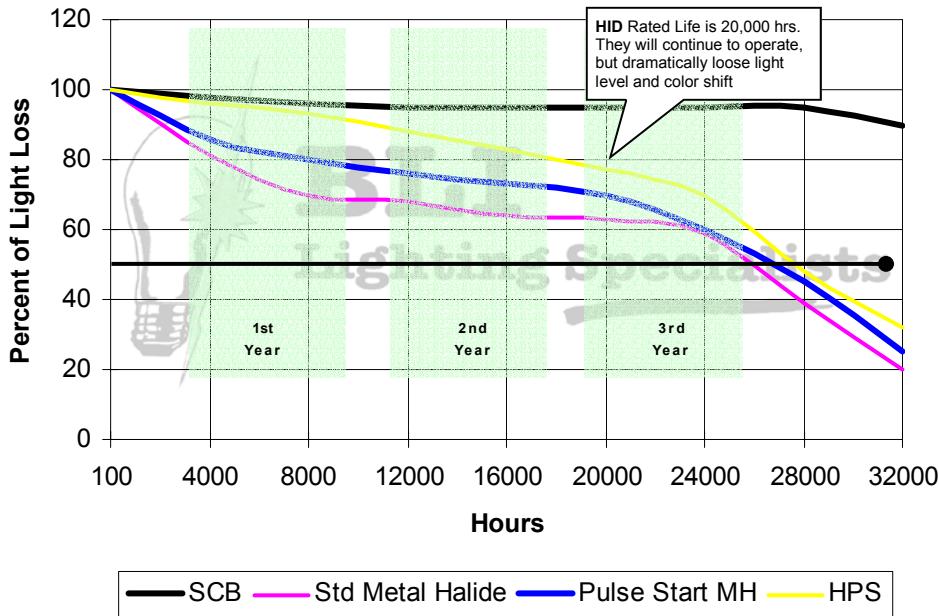
HID (High Intensity Discharge) Lighting Systems

- Complicated systems
- Normally mis-maintained
- Bulbs should be changed at "economic life". Lamps typically don't "burn out"
- Dramatic light loss, and color shift
- Low "fixture" efficiencies
- Energy consumption can increase as system ages
- Ballast or transformer consumes electricity over and above lamp wattage

Question:

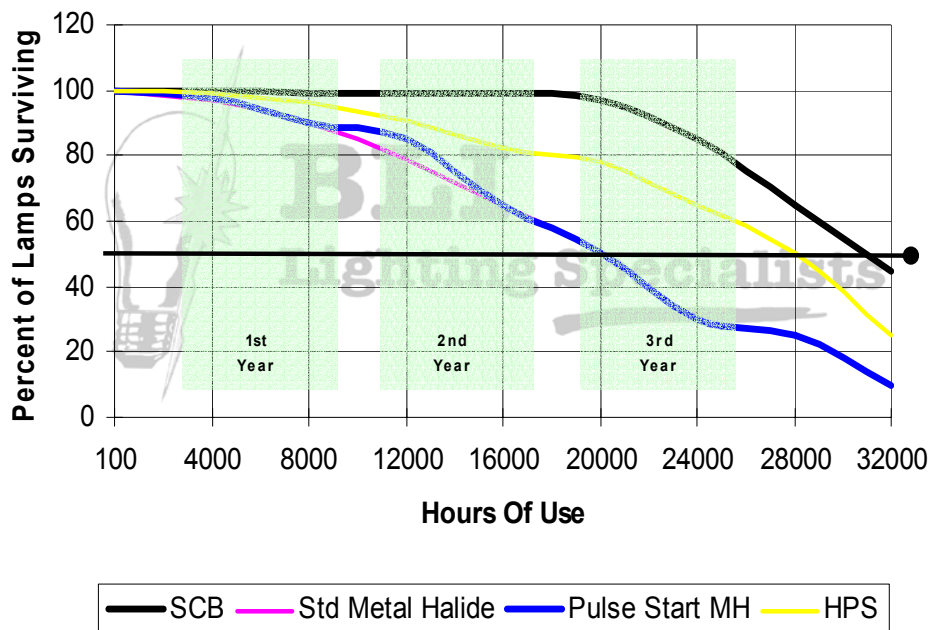
When do you change your HID bulbs?
If you see a "rainbow" of different colors in your ceiling and varying light levels, the following charts explain why:

Light Loss Comparison Chart



- SCB Lamps lose only 5% of their light output over their rated life.
- Spot Relamped HID systems light level will typically be found in the 3rd year area or worse.
- Metal Halide lamps lose at least 40% of their light output at rated life.

Lamp Mortality Comparison Chart



- Mortality based on 3 hr starts for Fluorescent and 12 hour starts for HID Lamps.
- Fluorescent mortality is greatly improved the longer the burn times.
- Our high performance Fluorescent lamp doesn't begin to burn out until the 3rd year.
- HID loses 10% of the lamps in just the first year of operation

Understanding “Economic Life” of HID

“Economic Life” refers to the hours of operation a lamp is designed to provide in terms of optimum light output, color quality, and energy consumption.

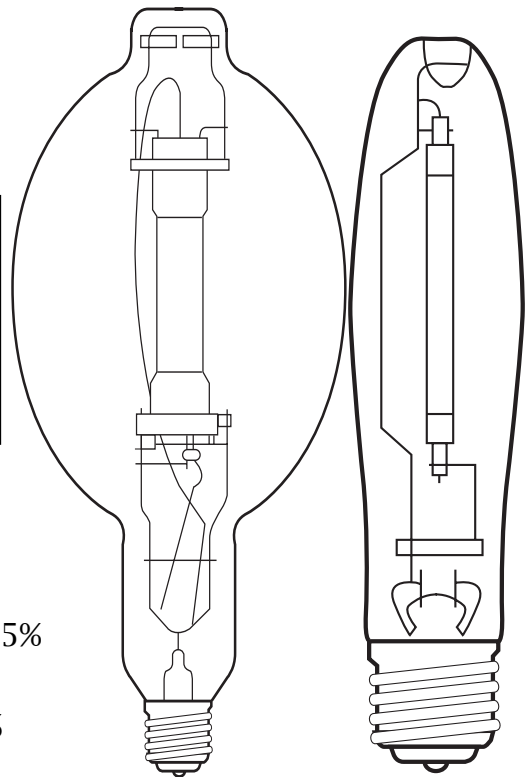
It defines “usable lamp life” versus the “rated life” published by manufacturers. Rated life does not account for the lumen depreciation (light loss), and color shifting that occurs as lamps age.

The “economic life” of Metal Halide lamps is generally defined as 60 to 75% of the lamps “rated life”.

- Waiting for HID lamps to burn out before replacing sacrifices efficiency, light output, color consistency, and causes additional stress on the system gear.

Additional Light Loss Factors for HID

- Horizontal Burning position up to 15%
- Lensed Fixture - up to 25%
- Open fixture rated lamp - up to 15%
- Dirt Accumulation- up to 50%

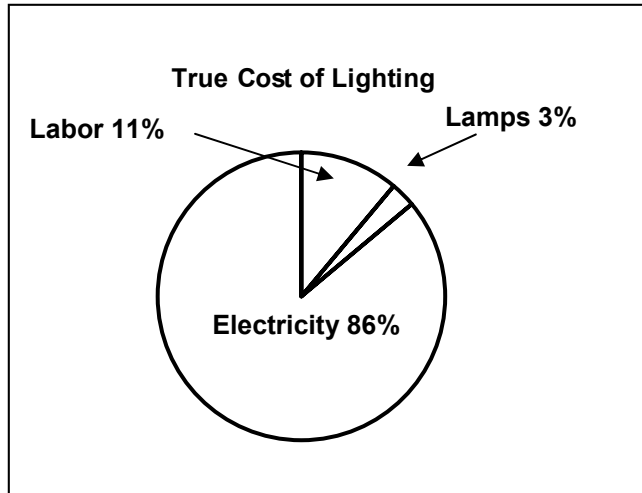


It's All About Energy Savings

Our mission is to provide the highest quality of light for the least overall cost.

When you examine the "True Cost of Lighting" you will see the cost of materials is minimal when compared to the cost of the electricity required to operate the bulbs.

By applying the latest technology in lighting design we can dramatically reduce the amount of electricity your lighting system uses. In most applications the reduction is over 50%!



The Power Of Scotopic vs Photopic

The "latest technology" in lighting design incorporates the use of the "Scotopic values" of light sources.

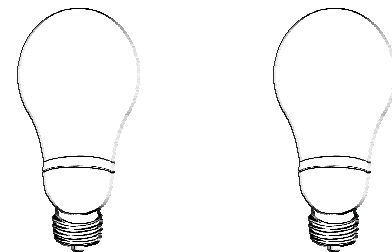
In this demonstration, we have two CFL light bulbs of equal wattage. The differences between them are the color of the bulb, and the amount of lumens per bulb.

See if you can match up the right lumens with the correct light bulb.

Definition of "Scotopic":

Scotopic refers to how the lighting is perceived by the eye versus what is measured by a meter.

Ask your Lighting Specialist for a demonstration.



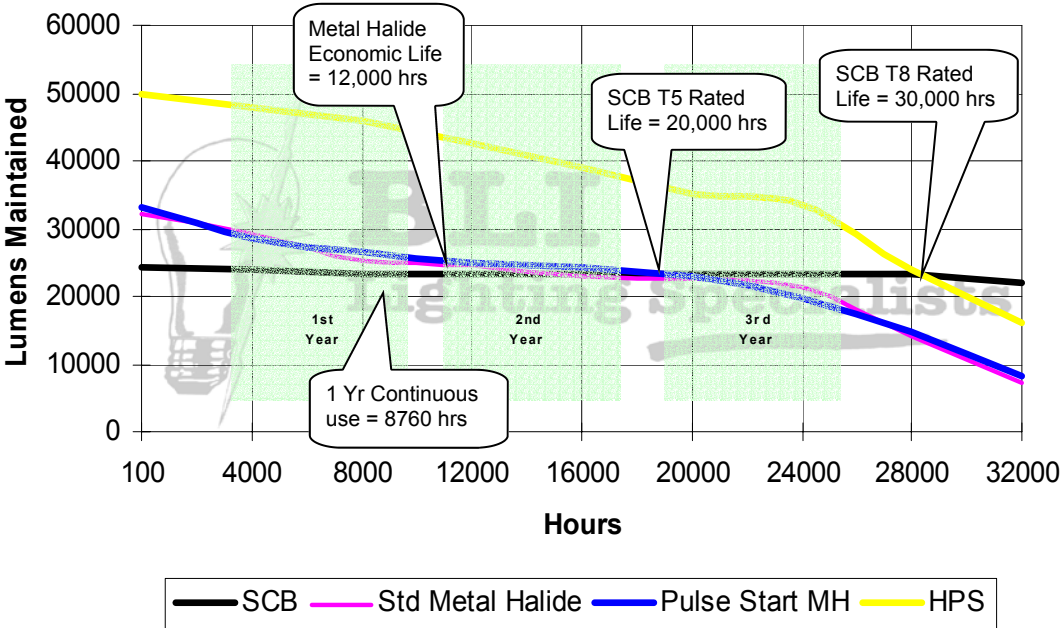
Scotopically Enhanced.
1400 Lumens
14 Watts

Scotopic Deficient
1480 Lumens
14 Watts



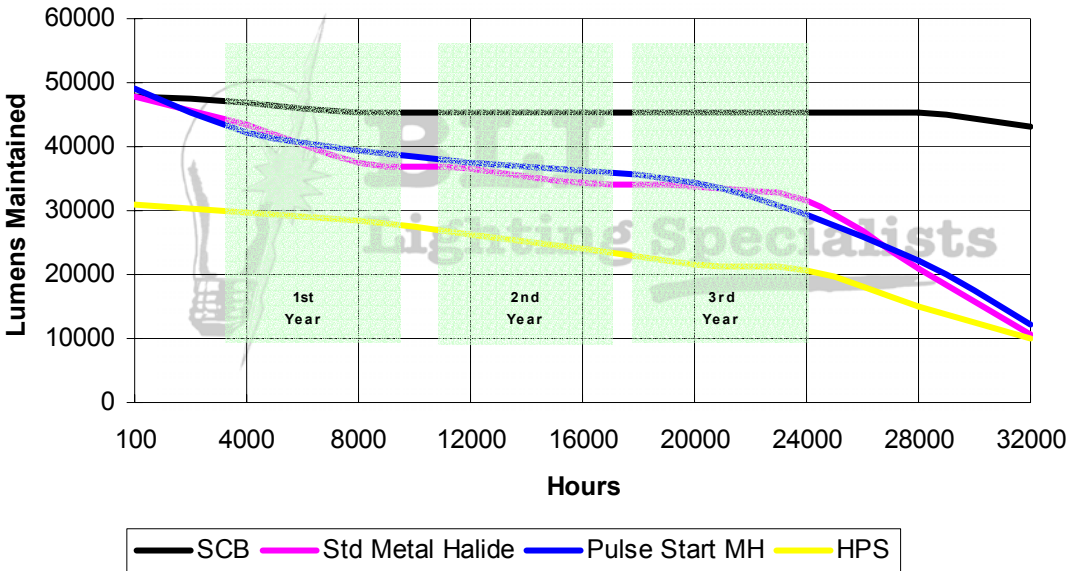
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Traditional Lumen Maintenance Comparison Chart



Scotopic Lumen Maintenance Comparison Chart

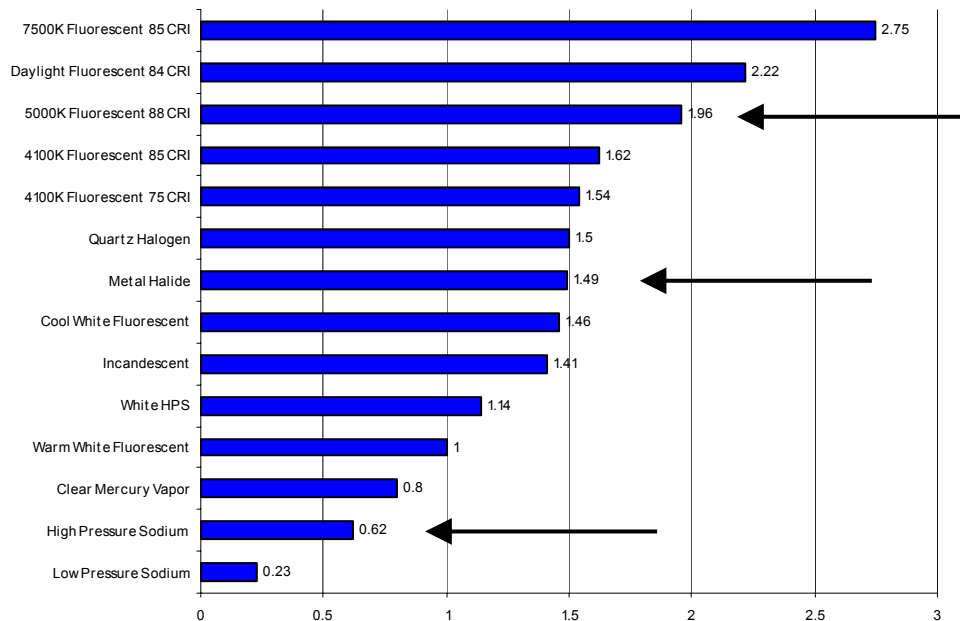
Scotopic Factors Used
 SCB 1.96
 Std Metal Halide 1.49
 Pulse Start MH 1.49
 HPS .62



Applying The Scotopic Theory

Applying the Scotopic Factor to traditional lighting measurements

Scotopic Factors



The Intel experience. A west coast power company set up a demonstration for the purpose of showing how new research in Scotopic sensitivity affected vision and brightness. The demo used conventional fluorescent lamps to compare the vision effects of a “Scotopically Enhanced” lamp to a “Scotopically Deficient” fluorescent lamp.

They chose 2’x4’ office type fixtures and installed one room with four, 3500K, warm white, T12 lamps per fixture on magnetic ballasts consuming 144W. The other room same except with just two 5000K, T8, tubes on an HLO electronic ballast consuming 62W. The difference in traditional light measures was 65 foot candles in the 3500K room, and 55fc in the 5000K room. Participants were asked to decide which room was brightest and which room they would rather work in.

They overwhelmingly chose the Scotopic room over the 3500K room!



You Decide...

Here are the Facts:

Z-Max Systems

1. Up to 58% energy savings
2. 95% maintained light output over life
3. 20,000 to 30,000 hour average life ratings, 2 to 3 year lamp warranties
4. 5 year ballast warranty
5. Instant On - Instant Restrike (Improved Safety)
6. No Flicker— ballast operates at high frequency
7. Sound Rating A, no hum or buzz, silent operation
8. No Color Shift
9. Very Wide, Even, Light Distribution
10. Exceptional Color Rendering - 5000K 88 CRI Scotopically Enhanced




Metal Halide



HIGH BAY
 Metal Halide or HPS
 460 - 1080 Watts
 20,000 hour life
 8 min start up
 15 min restrike

LOW BAY
 Metal Halide or HPS
 460 - 1180 Watts
 12,000 - 20,000 hrs
 8 min start up
 15 min restrike
 Addl' 10% light loss



1. Ballasts burn more than 50 watts over rated lamp wattage
2. Lose 46% of their light output in first year
3. Economic Life of only 60% of rated life of 20,000 hours. No Warranty
4. Warm up times as much as 5 to 10 minutes
5. Restrike times of 15 to 20 minutes
6. Irritating, constant flicker, ballast operates at low frequency
7. Hum and buzz. Sound rated C (greater than 31 decibels)
8. Shifts color after first 1000 hours of use.
9. Large fixtures with concentrated light patterns
10. Safety issue in lamp redundancy and explosions

Is Our Z-Max Solution Right For Your Facility?

Here's how to get started:

We have developed a specific set of questions that will help us qualify and analyze your existing system. By filling out the questions below we can provide a very detailed analysis of your existing system to enable you and your people to make an educated fact based decision. It is important to BLI that our clients have enough information, supported by facts, to make this very important decision.

1. How many shifts does your facility operate? a. One b. Two c. Three	12. Do you pay demand charges on your electric bill? a. Yes b. No c. Not sure
2. How many total hours do the lights operate... a. Per Year _____ b. Per Week _____ c. Per Day _____	13. If you were to do the project, would your people install the new fixtures? a. Yes b. No, provide labor with proposal
3. Does your facility shut down for extended periods of time? (When lights would likely be turned off) a. Yes (please explain) _____ b. No	14. If no, is there someone you prefer we work with? _____
4. Is the building... a. Leased? b. Owned?	15. Any special complaints or deficiencies about your present lighting system? a. Yes _____ b. No
5. If leased do you pay the electric bill? a. Yes b. No	16. What is: a. Spacing of existing fixtures? _____ b. Mounting Height of existing? _____
6. What Fixture Type are you using now? a. High Bay b. High Bay with Lense c. Low Bay d. Prism Bay	17. What is the operating voltage of your existing lighting system? a. 120v b. 277v c. 480v d. Other _____
7. What Lamp Type are you using now? a. Mercury Vapor (bluish green color) _____ watt b. Metal Halide (white, blue, pinkish) _____ watt c. HPS (amber or orange color) _____ watt	Contact _____
8. How are your fixtures mounted? a. Hook, Cord Plug b. Rigid Stem—Direct wired c. Other _____	Business _____
9. Quantity of existing Fixtures _____	Address _____
10. Who is your electric utility provider? _____	City, St. Zip _____
11. What do you pay per KWH? _____	Phone _____
	Fax _____
	Email _____



BLI's "In-The-Air" Program

If You Are "Not Sure" that
our New Technology Light-
ing Systems Will Work For
You...



Our exclusive, "IN THE AIR"
sample program allows you to
test it in your facility without risk!

Here's How It Works:

1. Your BLI Lighting Specialist will help you determine which new technology product will work best for your application.
2. A sales order is then processed to allow shipment of the new technology product for your installation and approval process.
3. The Invoice will have a special notation on it stating "IN THE AIR PROGRAM". This allows you to install the new technology product as a test for a period of up to 20 days.
4. At the end of the pre-set time period, if the product works as you expected, all you have to do is pay the invoice. If the product does not work the way you expected, simply contact your rep for instructions to return the materials. **You will owe nothing** if the product does not meet your expectations and is returned in salable condition.



Retro-Fit Selection Guide

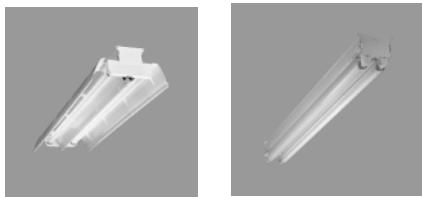
LOW BAY or HIGH BAY



Z-MAX REPLACEMENT

Present System		For Equal Light Use	Input Watts	For Additional Light Use	Input Watts
250 Watt Metal Halide	295 Watts	Z-Max 58	148	Z-MAX 88	193
400 Watt Metal Halide or Mercury	465 Watts	Z-MAX 88	193	Z-MAX 45	234
400 Watt HPS	465 Watts	Z-MAX 88HP	277	Z-MAX 45	234
1000 Watt Metal Halide or Mercury	1100 Watts	Z-MAX 85	466	Z-MAX 105	583

FLUORESCENT



Z-MAX REPLACEMENT

Present System		For Equal Light Use	Input Watts	For Additional Light Use	Input Watts
2XF96/HO	250 Watts	Z-MAX 25	117	Z-MAX 35	178
2XF96PG17/VHO	446 Watts	Z-MAX 88	193	Z-MAX 45	234
3XF96T12/VHO	540 Watts	Z-MAX 88	193	Z-MAX 45	234

For More Information Contact:



Ph 800-245-5874 Fx 888-333-2852

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