LED Corncob Retrofit Lamps

The Simplest LED Retrofit Around!



Main Features:

- No ballast necessary
- Fast turn on; no warm-up or cold start problems
- Estimated life hours: >50,000
- Sturdy PCB housing with internal cooling fan
- 80% more energy savings compared with conventional HID lamps, CFL, and incandescent bulbs
- >85 CRI with great directionality
- Up to 100 lumens per watt
- Universal burning positions



SUGGESTED REPLACEMENT GUIDE FOR LED CORNCOB

					Je.
	LED CORNCOB	CORNCOB MINI	LED GX24Q & GU24	CORNCOB DOME	LED PANEL
Incandescent					
25 Watt-220lm	N/A	3 Watt	N/A	N/A	N/A
40 Watt-490lm	N/A	3 Watt	7 Watt GU24	N/A	N/A
60 Watt-890Im	N/A	7 Watt 9 Watt	7 Watt 9 Watt	N/A	N/A
75 Watt-1150lm	12 Watt	9 Watt	12 Watt	N/A	N/A
100 Watt-1600lm	15 Watt	N/A	N/A	20 Watt	N/A
150 Watt-2700lm	20 Watt	N/A	N/A	20 Watt	N/A
200 Watt-2900lm	30 Watt	N/A	N/A	20 Watt	N/A
300 Watt-5000lm	40 Watt 60 Watt	N/A	N/A	35 Watt	N/A
500 Watt-8700lm	80 Watt	N/A	N/A	N/A	N/A
Metal Halide					N/A
70 Watt	30 Watt	N/A	N/A	20 Watt	N/A
100 Watt	40 Watt	N/A	N/A	35 Watt	
150 Watt	60 Watt	N/A	N/A	N/A	40 Watt
175 Watt	80 Watt	N/A	N/A	N/A	60 Watt
250 Watt	100 Watt	N/A	N/A	N/A	80 Watt
400 Watt	100 Watt 120 Watt	N/A	N/A	N/A	N/A
High Pressure Sodium					
50 Watt	20 Watt	N/A	N/A	N/A	N/A
70 Watt	30 Watt	N/A	N/A	20 Watt	N/A
100 Watt	40 Watt	N/A	N/A	35 Watt	40 Watt
150 Watt	60 Watt	N/A	N/A	N/A	60 Watt
250 Watt	80 Watt	N/A	N/A	N/A	80 Watt
400 Watt	100 Watt 120 Watt	N/A	N/A	N/A	N/A
Mercury Vapor					
80 Watt	40 Watt	N/A	N/A	N/A	N/A
125 Watt	60 Watt	N/A	N/A	N/A	40 Watt
175 Watt	80 Watt	N/A	N/A	N/A	60 Watt
250 Watt	100 Watt 120 Watt	N/A	N/A	N/A	80 Watt
400 Watt	100 Watt 120 Watt	N/A	N/A	N/A	N/A
Fluorescent (CFL)					
7 Watt-400lm	N/A	3 Watt	N/A	N/A	N/A
13 Watt-825Im	N/A	7 Watt	7 Watt	N/A	N/A
18 Watt-1250Im	12 Watt	9 Watt	12 Watt	N/A	N/A
24-26 Watt-1800Im	15 Watt	N/A	N/A	N/A	N/A
32-36 Watt-2500lm	20 Watt	N/A	N/A	20 Watt	N/A
42 Watt-3200lm	30 Watt	N/A	N/A	N/A	N/A
55 Watt-4300lm	40 Watt	N/A	N/A	35 Watt	N/A
80 Watt-6000lm	60 Watt	N/A	N/A	N/A	40 Watt
105 Watt-6900lm	60 Watt	N/A	N/A	N/A	60 Watt
150 Watt-8200lm	80 Watt	N/A	N/A	N/A	80 Watt
Halogen					
300 Watt-5200lm	60 Watt	N/A	N/A	35 Watt	40 Watt
500 Watt-9500lm	80 Watt	N/A	N/A	N/A	60 Watt

*Please note that this information is only intended to be used as a guideline. It is recommended that the LED Corncob be field tested to determine a suitable light source for your application.

Corncob LED



Aamsco supplies high quality LED retrofits to replace conventional HID & CFL lamps.

Main Features:

- Aluminum fin heat sink & internal cooling fan allow for greater heat dissipation
- No ballast necessary. Fast turn on; no warm-up or cold start problems
- Estimated life hours: >50,000
- Sturdy PCB housing with internal cooling fan on 40W and higher
- 80% more energy saving compared with conventional HID, CFL, and incandescent lamps
- >85 CRI with great directionality
- 100 lumens per watt
- Universal burning positions

Specifications:

- Operating voltage: 100-280V
- Frequency range: 50-60hz
- Color Temperatures: WW3000-3500K, CW4000-4500K, D6000-6500K
- Integrated Heat-Sink Design
- 3 year warranty
- ETL, CE & ROHS Certified
- Not for use on a dimmer or remote controls
- For use in open or enclosed fixtures***

Corncob LED



MODEL	LED15	LED20	LED30	LED40	LED60	LED80
Wattage	15W	20W	30W	40W	60W	80W
Beam Angle	360 Degree					
Light Source Count	216 LEDs	300 LEDs	486 LEDs	660 LEDs	900 LEDs	1160 LEDs
Lamp Base	Medium (MD) or Mogul (MG)					
Power Usage	17W +/-10%	22W +/-10%	33W +/-10%	44W +/-10%	67W +/-10%	88W +/-10%
Luminous Flux	16251m	2200lm	3300lm	4850lm	6950lm	8700lm
Color Temp	WW 3000-3500K CW 4000-4500K D 6000-6500K					
Input Voltage	100-280V	100-280V	100-280V	100-280V	100-280V	100-280V
Life Hours	50,000	50,000	50,000	50,000	50,000	50,000
Dimensions	2.8" x 5.9"	3.5" x 7.7"	3.5" x 8"	3.5" x 9.3"	4" x 10.5"	4" x 11.4"

ORDER CODE CONFIGURATION: LED(Watts)(Color Temp)(Base) Example: LED20W 3000-3500K Medium Base = LED20WWMD



Super Corncob LED



Aamsco supplies Super High Wattage LED retrofits to replace conventional HID & CFL lamps.

Main Features:

- Built in surge protection with automatic shut off
- Equipped with overheating protection. Automatically reduces to 1/2 power
- Aluminum fin heat sink & internal cooling fan allow for greater heat dissipation
- No ballast necessary. Fast turn on; no warm-up or cold start problems
- Estimated life hours: >50,000
- Sturdy PCB housing with internal cooling fan
- 80% more energy saving compared with conventional HID, CFL, and incandescent lamps
- 100 lumens per watt
- Universal burning positions

Specifications:

- Operating voltage: 100-280V
- Frequency range: 50-60hz
- Color Temperatures: WW3000-3500K, CW4000-4500K, D6000-6500K
- Integrated Heat-Sink Design
- 3 year warranty
- ETL, CE & ROHS Certified
- Not for use on a dimmer or remote controls
- For use in open or enclosed fixtures***

Super Corncob LED



MODEL	LED100	LED120
Wattage	100W	120W
Beam Angle	360 Degree	360 Degree
Light Source Count	1040 LEDs	1040 LEDs
Lamp Base	Medium (MD) or Mogul (MG)	Medium (MD) or Mogul (MG)
Power Usage	113W +/- 10%	135W +/- 10%
Luminous Flux	13500lm	15800lm
Color Temp	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW4000-4500K D 6000-6500K
Input Voltage	100-280V	100-280V
Life Hours	50,000	50,000
Dimensions	4.5" x 12.5"	4.5" x 14"

ORDER CODE CONFIGURATION: LED(Watts)(Color Temp)(Base) Example: LED100W 3000-3500K Medium base = LED100WWMD



Corncob Mini



An energy smart alternative to incandescent lamps and an ecological light source to help the environment. Aamsco's Mini Corncob LEDs are an affordable light source for both residential and commercial areas.

Main Features:

- Fast turn on; no warm-up or cold start problems
- Estimated life hours: >50,000
- Sturdy PCB housing
- 80% more energy saving compared with conventional CFLs and incandescent lamps
- >85 CRI with great directionality
- 80 lumens per watt
- Universal burning positions

Specifications:

- Operating voltage: 85-265V
- Frequency range: 50-60hz
- Color Temperatures: WW3000-3500K, CW4000-4500K, D6000-6500K
- Integrated Heat-Sink Design
- 3 year warranty
- ETL, CE & ROHS Certified
- Not for use on a dimmer or remote controls
- For use in open or enclosed fixtures***

Corncob Mini



MODEL	LED3W	LED7W	LED9W	LED12W
Wattage	3W	7W	9W	12W
Beam Angle	360 Degree	360 Degree	360 Degree	360 Degree
Light Source Count	63 LEDs	133 LEDs	150 LEDs	180 LEDs
Lamp Base	Medium (MD)	Medium (MD)	Medium (MD) or B22d	Medium (MD) or Mogul (MG)
Power Consumption	4W +/-10%	8W +/-10%	10W +/-10%	13W +/-10%
Luminous Flux	330lm	680lm	900lm	1200lm
Color Temperature	WW 3000-3500K CW 4000-4500K D 6000-6500K			
Input Voltage	85-265V	85-265V	100-277V	100-277V
Life Hours	50,000	50,000	50,000	50,000
Dimensions	1.5" x 3.3"	1.7" x 4.4"	2.4" x 3.9"	2.4" x 5"

ORDERING NUMBER CONFIGURATION:

LED(Watt)(color temp)(base type) Example: LED9W, 3000-3500K, medium base= LED9WWMD

Recommended minimum 6" diameter spacing in enclosed fixtures









Corncob Dome LED



Uniquely designed to create a better light to ground ratio. Easy ballast free installation and low power consumption for energy savings. Can be used in indoor and outdoor applications.

Main Features:

- Fast turn on; no warm-up or cold start problems
- Estimated life hours: >50,000
- Sturdy PCB housing
- 80% more energy saving compared with conventional HID, CFL, and incandescent lamps
- >85 CRI with great directionality
- 100 lumens per watt
- Universal burning positions

Specifications:

- Operating voltage: 100-280V
- Frequency range: 50-60hz
- Color Temperatures: WW3000-3500K, CW4000-4500K, D6000-6500K
- Integrated Heat-Sink Design
- 3 year warranty
- ETL, CE & ROHS Certified
- Not for use on a dimmer or remote controls
- For use in open or enclosed fixtures***

Corncob Dome LED



MODEL	LED20W-DOME	LED35W-DOME
Wattage	20W	35W
Beam Angle	360 Degree	360 Degree
Light Source Count	304 LEDs	590 LEDs
Lamp Base	Medium (MD) or Mogul (MG)	Medium (MD) or Mogul (MG)
Power Consumption	22W +/-10%	38W +/-10%
Luminous Flux	22001m	36001m
Color Temperature	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K
Input Voltage	100-280V	100-280V
Life Hours	50,000	50,000
Dimensions	4." x 6.25"	5" x 7"

ORDERING CODE CONFIGURATION: LED(Watts)(Color Temp)(Base)-DOME Example: LED20W 3000-3500K Medium Base = LED20WWMD-DOME

Recommended minimum 7" diameter spacing in enclosed fixtures



Recommended minimum 11" diameter spacing in enclosed fixtures



LED CFL Types





Aamsco can provide a Corncob LED with GU24 and 4-pin bases. These self-ballasted LEDs can be used in place of CFL lamps; simply bypass the existing ballast when installing.

Main Features:

- Fast turn on; no warm-up or cold start problems
- Estimated life hours: >50,000
- Sturdy PCB housing
- 80% more energy saving compared with conventional CFLs and incandescent lamps
- >85 CRI with great directionality
- 100 lumens per watt
- Universal burning positions

Specifications:

- Operating voltage: 85-277V
- Frequency range: 50-60hz
- Color Temperatures: WW3000-3500K, CW4000-4500K, D6000-6500K
- Integrated Heat-Sink Design
- 3 year warranty
- ETL, CE & ROHS Certified
- Not for use on a dimmer or remote controls
- For use in open or enclosed fixtures***

LED-GU24



MODEL	LED7W-GU24
Wattage	7W
Beam Angle	360 Degree
Light Source Count	133 LEDs
Lamp Base	GU24
Power Consumption	8W +/-10%
Luminous Flux	680lm
Color Temperature	WW 3000-3500K CW 4000-4500K D 6000-6500K
Input Voltage	85-277V
Life Hours	50,000
Dimensions	1.5" x 4"

ORDERING NUMBER CONFIGURATION: LED(WATTS)(COLOR TEMP)-GU24 Example: LED7W 3000-3500K=LED7WW-GU24

Recommended minimum 6" diameter spacing in enclosed fixtures



LED7W

LED-GX24Q

Aamsco can provide a Corncob LED with GX24Q base to take the place of a 4 pin CFL. These self-ballasted LEDs can be used in place of CFL lamps; simply bypass the existing ballast when installing.



MODEL	LED7W-GX24Q	LED9W-GX24Q	LED12W-GX24Q
Wattage	7W	9W	12W
Beam Angle	360 Degree	360 Degree	360 Degree
Light Source Count	133 LEDs	140 LEDs	189 LEDs
Lamp Base	GX24Q	GX24Q	GX24Q
Power Consumption	8W +/-10%	10W +/-10%	13W +/-10%
Luminous Flux	680lm	900lm	1200lm
Color Temperature	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K
Input Voltage	85-265V	85-265V	85-265V
Life Hours	50,000	50,000	50,000
Dimensions	1.7" x 4.4"	1.8" x 4.2"	1.8" x 5"

ORDERING NUMBER CONFIGURATION: LED(WATTS)(COLOR TEMP)-GX24Q Example: LED12W 3000-3500K=LED12WW-GX24Q

Recommended minimum 6" diameter spacing in enclosed fixtures







Flat Panel LED



Introducing the LED Flat Panel retrofit designed with a large, radiating area to illuminate larger spaces.

Main Features:

- Fast turn on; no warm up or cold start problems
- Estimated Life hours >50,000
- Sturdy PCB housing
- 80% more energy savings compared with conventional CFL or HID lamps
- Optional steel support wires for safe ceiling mount
- Cylinder available in silver or black
- Optional opaque or transparent cover available

Specifications:

- Operating voltage: 100-277V
- Frequency range: 50-60hz
- Color temperatures: WW 3000-3500K, CW 4000-4500K, D 6000-6500K
- 3 year warranty
- ETL, CE & ROHS certified
- Not for use on a dimmer or remote controls
- For use in open or enclosed fixtures***

Flat Panel LED



MODEL	LED40-PANEL	LED60-PANEL	LED80-PANEL
Wattage	40W	60W	80W
Beam Angle	120 Degree	120 Degree	120 Degree
Light Source Count	140 LEDs	200 LEDs	300 LEDs
Lamp Base	Mogul (MG)	Mogul (MG)	Mogul (MG)
Power Usage	43W +/-10%	67W +/-10%	80W +/-10%
Luminous Flux	4200lm	58001m	83001m
Color Temp	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K
Input Voltage	100-280V	100-280V	100-280V
Life Hours	50,000	50,000	50,000
Dimensions	12" x 8.6"	12" x 8.6"	12" x 8.6"

ORDER CODE CONFIGURATION: LED(Watt)(Color temp)-PANEL Example: LED40 PANEL 3000-3500K = LED40WW-PANEL Optional cover available in clear or translucent finish.



LED vs. HID Lighting

LEDs offer substantial energy savings compared to high intensity discharge (HID) and other traditional lighting systems. However, as explained below, calculating LED efficiency requires a non-traditional approach.

Source vs. System Efficiency

Comparing the efficiency of LEDs to traditional lamp sources requires a non-traditional approach. HID lamps, as well as other traditional lamps, are typically evaluated based on their **source efficiency**, which is measured with a bare lamp at room temperature. This approach does not account for the impact on lamp performance from the luminaire in which the lamp is installed. A common measurement of source efficacy is lumens per watt, which reflects the amount of light produced by the source divided by the power required to operate it. Some LEDs and HID sources, such as high pressure sodium (HPS) and metal halide (MH), appear very efficient (e.g., 100 lumens/watt or higher) when one focuses solely on source efficiency. However, source efficiency does not accurately reflect how much light is actually delivered from the light source to the target area, such as a street or a parking lot.

System efficiency is measured with the lamp installed in a luminaire. It is based on how many lumens actually reach the target area, not simply how many lumens are emitted from the lamp. System efficiency is always lower than source efficiency due to four primary sources of light and power loss when a lamp is installed in a luminaire:

- **Trapped Light** Traditional lamps, which emit light in all directions, require reflectors inside the luminaires to "bounce" as much light as possible away from the lamp and fixture components to the target area. However, not all light can be effectively redirected. Typically, 40% or more of the light emitted from the lamp is trapped within the luminaire and does not reach the target area.
- **Protective Covers and Lenses** Luminaires almost always use some sort of secondary optics (such as tempered glass or acrylic) to help focus or redirect light, and to protect the lamps or LEDs from the environment. These materials do not allow light to pass with 100% efficiency, so system efficiency is reduced.
- Operating Temperature Many light sources become less effective as operating temperatures change. Because source efficiency is measured at a standard 25°C (or about 77°F), the actual operating efficiency under a range of outdoor temperatures may be significantly different. For example, LED lumen output in a typical operating environment where LED junction temperature (T_j) is very high (e.g., T_j = 75°C) can be 10-15% lower than lumen levels published by LED manufacturers, which are typically measured at T_i = 25°C.
- **Power Supplies** Most light sources require a ballast or driver to convert line power into a form which can be used by the lamp. These losses can vary from 5-25%, depending on the power supply used. This also results in lower system efficiency.

When considering all of the factors that affect system efficiency, LEDs provide a clear advantage over HID lamps. Here is a summary comparison:

- **HID lamp:** Source efficiency is typically 120 lumens/watt or higher. However, losses from trapped light, protective covers and lenses, inefficient ballasts and unfavorable operating temperature typically result in a measured system efficiency of 30 lumens/watt or less.
- **LEDs:** Source efficiency can be 100 lumens/watt or higher, depending on the type and manufacturer of the LED used. There are no losses from trapped light due to the focused output of the LED, and secondary optics and protective covers generally reduce output by only 25% or less. LED power drivers are also more generally efficient than HID ballasts, and reduce system efficiency by 10–15%. However, even when efficiency reductions due to high operating temperatures are included, LED system efficiency often remains above 50 lumens/watt or higher.

Lumen Depreciation & Useful Life

A second important factor involved in comparing the efficiency of LEDs to traditional lamp sources is accounting for the lumen depreciation of both sources. HID sources, especially metal halide, suffer from substantial lumen depreciation over relatively short periods:

	High Pressure Sodium	Metal Halide
Lumen Depreciation	20%	50%
Maximum Useful Life (Hours)	24,000	6,000-10,000

Note: The data above reflect typical performance and are intended for illustrative purposes.

The useful life of LEDs is typically defined as the operating time prior to 30% lumen depreciation, or 70% lumen maintenance (L_{70}) . This level of LED lumen depreciation has been widely adopted as the standard for useful life since a 30% decline in lumen levels is not easily detectable by most people. Although the time required to reach L_{70} lumen levels is directly related to the typical T_J, LED life expectancy can be 50,000—100,000 hours or more if T_J remains low. This means that you can enjoy higher LED system efficiency for many more years than traditional sources, and postpone costly maintenance required to change dim or failed traditional lamps.

The Results: LED vs. HID Lighting Efficiency

Higher system efficiency and slower lumen depreciation combine to provide substantially higher overall efficiency with LEDs compared to HID sources. For example, the chart below shows the expected performance of a 100 watt MH street light versus a comparable LED:



*Data cited from Innovating Lighting

LED FAQ

What is an LED?

LED is the common abbreviation for a light-emitting diode. Each individual LED consists of a semiconductor diode that emits light when a voltage is applied to it. The LEDs used predominantly in general illumination applications are "Phosphor Converted Blue" LEDs, which are blue LEDs that have a layer of yellow phosphor placed over the LED. The phosphor absorbs some of the blue light, and emits yellow light. When the unabsorbed blue light mixes with the yellow light it creates what your eye perceives as "white" light. Aamsco's LED retrofits are made with SMD (surface mount diodes) and are CE & ROHS compliant. They also comply with ETL guidelines and suitable for fixtures with IP65 rating.

What are the advantages to using Aamsco Corncob LEDs?

Aamsco's Corncob LEDs bring several advantages to the lighting industry, including high efficacy and durability, and, with superior life over other light sources, their required maintenance is greatly reduced. This translates into energy savings, maintenance savings, and environmental sustainability.

What's the difference between efficiency and efficacy?

Efficiency is the ratio of the total lumens exiting the fixture to the total lumens initially produced by the light source. For example, if a bare 100W incandescent lamp (light bulb) produces 1,000 lumens, and it is put into a lamp fixture that delivers 700 lumens, this would be an example of a 70% efficient fixture.

Efficacy is a term normally used in cases where the input and output units differ. In lighting, we are concerned with the amount of light (in lumens) produced by a certain amount of electricity (in watts). Efficacy = Lumens Per Watt. The Corncob LED offers 100 lumens per watt.

Why are Corncob LEDs considered a GREEN technology?

Corncob LEDs are environmentally friendly on many fronts. First, unlike HID lamps, Corncob LEDs contain no mercury. In addition, they have been designed to provide more than a decade of near maintenance-free service. That means no re-lamping which means no waste.

Assuming an HID fixture is re-lamped every two years, that's five re-lamping cycles over a 10 year period. Just imagine the benefits of choosing a Corncob LED:

- No concern over proper disposal (hopefully not simply thrown in a landfill) of old HID lamps containing harmful mercury.
- No fuel used and the accompanying pollution to service those fixtures.

It's important to keep in mind all the positive and powerful ripple effects that using LED technology can have on the environment.

How are Corncob LEDs able to outperform HID?

Super-bright white Corncob LEDs have the advantage of minimal lumen depreciation, better optical efficiency and high lumens per watt. Corncob LEDs also have a vastly longer life span than traditional lamp sources. A Total Systems Approach is needed for an LED product to bring all these features together.

If a Corncob LED has lower initial lumen output than a traditional HID light, how can the LED claim to deliver lumens more efficiently than HID? When you average delivered lumens over the course of 60,000 hours, you'll see that Aamsco's Corncob LED outperforms a metal halide lamp operated in a horizontal position. (60,000 hours is used for this comparison to show three full life cycles of the HID.) The metal halide's lumen depreciation, as well as optical and ballast losses, quickly reduce output of the HID system. Note that there are three relamps over 60,000 hours. Conversely, our Corncob LED has significantly better lumen maintenance and a more efficient driver. Also note that the LED retrofit typically doesn't need relamping from zero to 60,000 hours.

How does ambient temperature affect LED efficiency?

LED retrofits must be designed with junction temperature thermal management as a key component. These products will then be robust enough to operate in most ambient temperature applications. Unlike fluorescent sources, cold temperatures do not impact the performance of Corncob LEDs.

What is junction temperature?

Junction temperature is the temperature at the point where an individual diode connects to its base. Maintaining a low junction temperature increases output and slows LED lumen depreciation. Junction temperature is a key metric for evaluating an LED product's quality and ability to deliver long life. The three things affecting junction temperature are: drive current, thermal path, and ambient temperature. In general, the higher the drive current, the greater the heat generated at the die. Heat must be moved away from the die in order to maintain expected light output, life, and color. The amount of heat that can be removed depends upon the ambient temperature and the design of the thermal path from the die to the surroundings. The Department of Energy advises: "Heat management and an awareness of the operating environment are critical considerations to the design and application of LED luminaires for general illumination. Successful products will use superior heat sink designs to dissipate heat, and minimize junction temperature. Keeping the junction temperature as low as possible and within manufacturer specifications is necessary in order to maximize the performance potential of LEDs."

Why is the life span of a Corncob LED measured as lumen depreciation?

The life span of a Corncob LED is vastly longer than that of incandescent, fluorescent or HID lamp sources, generally lasting 50,000 hours or longer. Although the LED never really burns out, product life span is measured by lumen depreciation. The Illuminating Engineering Society's (IES) current standard for calculating the life of an LED as the point at which the LED reaches 30 percent lumen depreciation. Remember, a 100,000-hour rating is not equivalent to lamp life rating. LED life is rated where it has reached 30 percent lumen depreciation. At 100,000 hours an LED would still be operating, but at a decreased lumen output.

Limited Warranty

The limited warranty set forth below is given by AAMSCO LIGHTING INC with respect to the AAMSCO Alinea LED bulb (the "Product").

Your product, when shipped to you in new condition in its original packaging, is warranted against defects in materials or workmanship for a period of three (3) years from the date of original purchase. Product must be returned to AAMSCO for inspection. It is AAMSCO's sole judgment to determine defect in parts or Product. AAMSCO will at its option repair it, exchange it for a new product, or issue credit. AAMSCO does not pay incoming freight on warranty claims. This limited warranty covers all defects encountered in normal use of the product.

This limited warranty does not cover:

Loss of or damage to, or failure of, the Product due to abuse, negligence, mishandling, alteration, accident, electrical current fluctuations, or disassembly or modification of any part of the Product, or loss of or damage to the Product due to cosmetic damage, or acts of God. Failure of an LED light bulb is defined as more than 2% of its total LED chip count.

This warranty is null and void if the Product is not installed within the manufacturer's guidelines of voltage and current (excessive high VOLTAGE or heat will have the potential to burn out the LED), or due to the failure to follow proper installation, operating, maintenance, or environmental instructions or due to loss of or damage to the Product in reinstallation of any Product, nor for the expense accumulated thereof. AAMSCO and its suppliers are not responsible under any circumstance for the removal of or reinstallation of any Product, nor for the expense accumulated thereof.

AAMSCO'S REPAIR, REPLACEMENT, OR REFUND IS THE SOLE REMEDY AVAILABLE ARISING FROM THE FAILURE OF A PRODUCT. NO IMPLIED WARRANTY, INCLUDING IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, APPLIES TO THE PRODUCT AFTER THE APPLICABLE PERIOD OF THE EXPRESS LIMITED WARRANTY STATED ABOVE, AND NO OTHER EXPRESS WARRANTY OR GUARANTY, EXCEPT AS MENTIONED ABOVE, GIVEN BY ANY PERSON OR ENTITY WITH RESPECT TO THE PRODUCT SHALL BIND AAMSCO. WARRANTY IS VOID IF PRODUCT IS NOT USED FOR THE PURPOSE FOR WHICH THIS PRODUCT IS MANUFACTURED.

Returned items require AAMSCO's written return authorization number. All returns must have a return claim number affixed to the return packaging.

Before returning the LED, please answer the following questions to the best of your knowledge:

- When was the LED purchased? Invoice or PO#
- When was the LED installed?
- In what way was the LED used?
- Open or enclosed fixture?
- Indoor or Outdoor?
- Operating voltage?
- Did the LED burn out prematurely? If so, what was the duration of life?
- Did the LED fail upon initial start up?
- If possible, please email a photo of the LED in both lit and unlit images.

Address any complaints or suggestions to AAMSCO LIGHTING INC., 100 LAMP LIGHT CIRCLE, SUMMERVILLE, SC 29483