



# 10 REASONS TO UPGRADE YOUR HEADLIGHTS TO LED

## J.W. SPEAKER & LED LIGHTING TECHNOLOGY

J.W. Speaker Corporation has been an industry leader in the design and manufacture of quality vehicular lighting systems for over 50 years.

During that time, we've played an active role in the evolution of vehicular lighting solutions—embracing the latest in technology to engineer high-quality products for a wide variety of markets and applications.

We're not some fly-by-night reseller who simply imports a cheap product and ships it to you at a marked up price. Instead, we have a breadth and depth of expertise that's focused on our customers to solve their unique challenges and deliver a high-quality product that meets their exact specifications.

We recognize that LEDs represent the future of vehicular lighting and have aligned our development and production capabilities to deliver. From our experienced engineering team to our high-tech production facility, J.W. Speaker can guarantee we'll provide our customers with the best value in vehicular lighting.

Period.

LED headlights have become increasingly popular in recent years because of the many advantages they hold over bulb-based lights. While the initial purchase price is generally higher, a good LED headlight will provide superior visibility, rugged durability and unmatched longevity—ultimately providing greater value. Not all LED headlights are created equal, however, so it is important to do your homework before you buy. The purpose of this brochure is to outline the top 10 advantages of upgrading to LED and provide you with information you can use to cut through the marketing hype and objectively evaluate different LED headlight options.

If you have specific questions about LED technology or LED headlights, please contact us by e-mail at [speaker@jwspeaker.com](mailto:speaker@jwspeaker.com) or give us a call at 262.251.6660.

### 1 MORE DURABLE

LEDs utilize solid-state construction—meaning that there are no breakable bulbs, fragile filaments, or sensitive electrodes like those found in incandescent, halogen, or HID lighting. For this reason, LEDs are the perfect choice for vehicle applications where bumps, curves and pot holes would cause traditional headlights to prematurely fail.

### 2 LESS EMI

HID headlights have the unfortunate tendency to produce electromagnetic interference (EMI)—causing a variety of complications for OEM and aftermarket customers alike. A properly designed LED headlight, on the other hand, will be much “quieter” from an EMI perspective. At J.W. Speaker, we design our lights to meet ECE Reg. 10, SAE 1455, CISPR 22 & 25, military standards, and/or special customer requirements for EMI.

### 3 MAINTENANCE-FREE

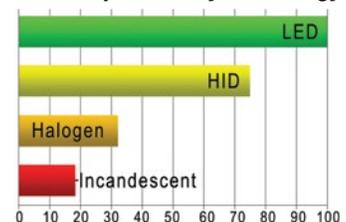
With no filaments to burn out, no bulbs to change, and no moving parts to fail, LED systems have the lowest maintenance costs of any lighting technology. Maintenance reduction is a major component of the cost effectiveness for implementing LED technology. Install an LED headlight and enjoy years of trouble-free visibility!

### 4 UNSURPASSED ENERGY EFFICIENCY

One of the key technical advantages that LED headlights have to offer is their energy efficiency. The growth of vehicle electronics and the ballooning cost of fuel have created a need for high efficiency vehicle components to minimize the load on the alternator and the drain on the battery. LED drivers (>80% efficiency) coupled with high lumen-per-watt LEDs create a winning solution to keep the required battery current low.

As you can see in the diagram below, LEDs offer superior efficiency compared to other lighting technologies—which can ultimately bring you greater fuel economy on your vehicles!

Lumens per Watt by Technology



**J.W. SPEAKER**  
Engineered. Lighting. Solutions.



## NOT ALL HEADLIGHTS ARE CREATED EQUAL.

### MAKE SURE YOU'RE COMPARING APPLES TO APPLES

Anyone who has ever shopped around for LED headlights can tell you that manufacturers commonly boast high output values. What these manufacturers may fail to tell you, however, is that the numbers they're using reflect the raw (theoretical) output of the LEDs and not the effective (actual) light output of the lights as a whole. The difference can be huge!

The raw output is calculated by multiplying the maximum output rating of the LED chip by the number of LED chips in the light. No testing is involved and this figure doesn't take into account any of the optical and thermal losses that truly exist in the real world.

What you as the consumer are really looking for is the effective output—you want to know how much actual "effective" light a headlight puts out. To arrive at the effective light output number for a headlight, the manufacturer must conduct photometric testing which not only accounts for optical & thermal losses, but also factors in assembly variations.

So the next time you see a manufacturer throwing a huge Lumen number at you, challenge them to provide you with both the raw and the effective output numbers so that you can truly make an apples-to-apples comparison.

**Top Left:** One thing customers like more than the improved visibility and increased safety provided by our LED headlights, is the tangible cost savings that they deliver.

#### 5 ELIMINATE GLARE

If you've ever been blinded by oncoming headlights, you can appreciate just how important it is to minimize glare. LED headlights create clear, high-contrast light which offers excellent visibility. All of our LED headlights are specifically engineered to be easy on the eyes—providing just the right amount (and color) of light to see *and be seen by others*.

#### 6 REDUCE DRIVING FATIGUE

We've all seen news stories about the deadly consequences of falling asleep behind the wheel, but did you know that the type of headlights you use can be a significant factor in driving fatigue?

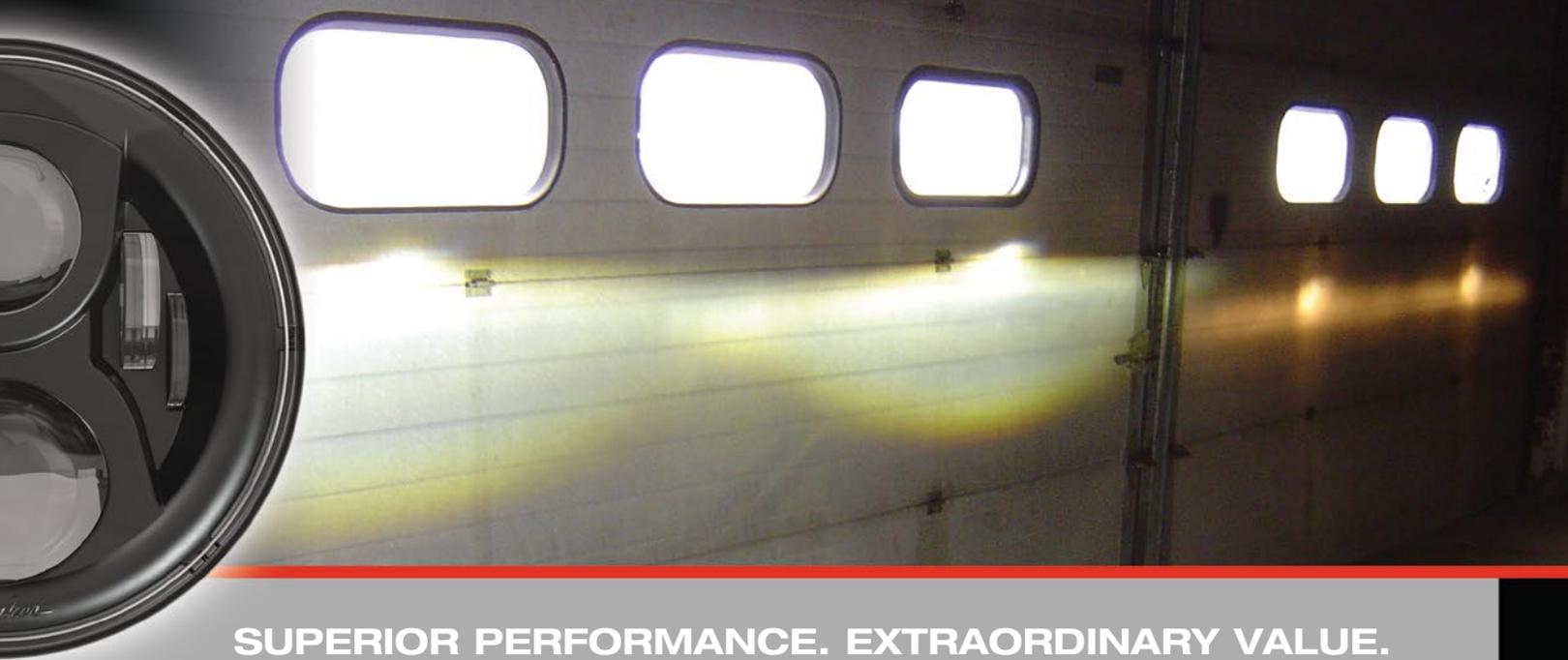
Studies show that our body's internal clock (called the circadian rhythm) is linked to the cycle of night and day. More specifically, our brains interpret the color temperature of light we're exposed to and then tell the body whether we should be alert or at rest.

As you can see from the color temperature scale to the right (measured in degrees Kelvin), traditional headlights have a color temperature signature that closely resembles sunset—when our brain tells our body that it is time to prepare for sleep. LED headlights, on the other hand, closely mimic the characteristics of a bright noon day sun when the body is most awake.

#### 7 UNMATCHED LONGEVITY

Regardless of whether you're looking for a high-quality OEM lighting solution or that perfect aftermarket replacement headlight, there's no denying that LED technology offers a product lifespan that's second to none. As you can see from the illustration below, LED headlights out-live incumbent lighting technologies many, many times over:





## SUPERIOR PERFORMANCE. EXTRAORDINARY VALUE.

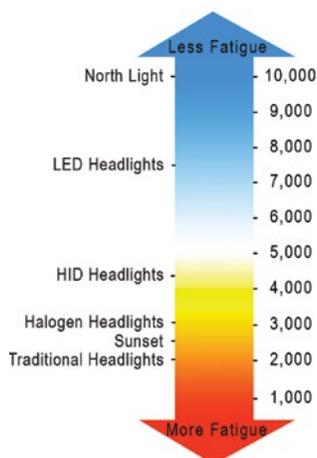
**Top Right: A customer took this photo of our 4" x 6" LED low beam headlights (left side) compared to their existing sealed beam headlights (right side). Notice the brighter, whiter color of the LED headlights as well as their superior illumination pattern.**

### 8 MORE ENVIRONMENTALLY RESPONSIBLE

Most HID, halogen and incandescent lights contain hazardous waste in the form of mercury, lead, sodium or other hazardous materials. Globally, discarded lighting products account for 50,000 pounds of mercury waste each and every year. That's enough mercury to poison every gallon of water in the United States and Canada!

LEDs, on the other hand, do not contain any hazardous waste and are completely recyclable—thus eliminating pollution and the danger of related mercury absorption into the environment. Imagine the reduced impact you can make on our environment by using LEDs for your lighting needs!

#### COLOR TEMPERATURE OF LIGHT



### 9 REDUCE YOUR DOWNTIME COSTS

The superior operating life of LED headlights means that you'll not only save money on replacement parts and labor, but that you'll also create drastic reductions in vehicle downtime.

If you use a vehicle for a business, you understand that downtime has real financial costs. Every moment your vehicle spends in the shop is a moment that it isn't out operating and earning revenue.

LED headlights are a great solution which can help you minimize downtime for headlight servicing (or eliminate it altogether) for the life of the vehicle.

### 10 COMPLIANCE WITH WORLDWIDE STANDARDS

When you choose a J.W. Speaker LED headlight, you're not only getting a product that has passed rigorous in-house safety testing—you're getting a product that has earned the seal of approval from government agencies and third party testing facilities around the globe. Here are just a few:



## ARE YOU AN OEM IN NEED OF A CUSTOM HEADLIGHT SOLUTION?

Perhaps you're thinking "I really like the benefits that LED headlights have to offer, but I want my vehicles to have a unique look that's all their own." If so, J.W. Speaker can help!

J.W. Speaker specializes in the design, production, testing and certification of custom lighting solutions. Our experienced team of engineers will partner with you to understand your needs and create a solution that meets your exact specifications. Our state-of-the-art production facility enables us to design and manufacture your custom headlight in-house, resulting in lower costs, higher quality and shorter lead-times.

Our portfolio of custom LED headlight solutions includes a wide variety of applications and customers including organizations like Harley-Davidson, New Flyer, Bombardier Transit and the U.S. Military.

Team up with J.W. Speaker today and we can help you to make your custom headlight idea a reality!



## OUR LED HEADLIGHT FAMILY IS EVOLVING

We've raised the bar and re-engineered our lineup of LED headlights to provide superior visibility, rugged durability and unmatched longevity.



**8630**  
EVOLUTION



**8800**  
EVOLUTION



**8700**  
EVOLUTION



**8900**  
EVOLUTION



**6130**  
EVOLUTION

For the latest product information, visit [www.jwspeaker.com](http://www.jwspeaker.com) and Like Us on Facebook!

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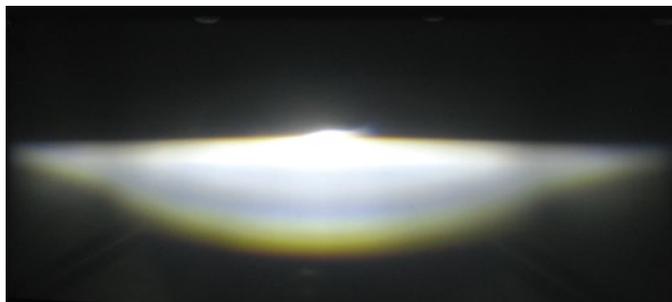
# EXPECT MORE THAN STANDARDS COMPLIANCE

One thing to keep in mind when selecting an LED headlight is that just because a headlight meets certain standards (DOT, ECE, etc.), that doesn't guarantee that it will also have a high quality beam pattern. It is one thing for a headlight to meet a minimum standard, but it is considerably more difficult to design a light that meets the standard **and** has a good quality beam pattern.

In the photographs below, you'll see the beam patterns of two different DOT-compliant low beam headlights shining on a wall. The first is a competitor's, and the second is J.W. Speaker's.



COMPETITOR'S LIGHT



J.W. SPEAKER'S LIGHT

Notice how the beam pattern of the competitor's product (despite being DOT-compliant) is just a narrow band of light. J.W. Speaker's beam pattern, on the other hand, has a much larger shape and evenly distributes the light to increase visibility. Meeting on-road standards is certainly important, but you should compare beam patterns to ensure you're getting the best LED headlights for your money.



**J.W. SPEAKER**  
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