Comparing Portable Lights Made Easy

New standards are making it simpler than ever for automotive technicians to select portable lighting tools

By Eric Pike

Confused by all the flashlight options out there? With so many brands on the market, and so many variables to consider, picking the right flashlight can be daunting for even the experienced buyer. Should you opt for a high lumens rating over a long run time? Brightness over compact size? Battery type versus safety characteristics? Technological advancement is a good thing…right?

Unfortunately, you rarely have the opportunity to try out the variety of makes and models now available to automotive professionals.

Help is finally here. New performance guidelines for lighting equipment, collectively called the ANSI/NEMA FL 1 standard, are now making comparisons easier. Created by a group of leading U.S. flashlight manufacturers, the new guidelines are designed to help users compare the most important features of lighting tools. The guidelines were developed in association with the National Electrical Manufacturers Association (NEMA) and the American National Standards Institute (ANSI).

The manufacturers who helped create the guidelines now display ratings, using a series of icons, indicating how the light performed in standardized tests. Featured on the companies' websites, in catalogs and other marketing materials, as well as on product packaging, these ratings are your best to safeguard against misleading or false product claims.

Following is a short guide to help you figure out which lights are best suited for your needs by using the standard's measurements, as well as a few other tips:

How Bright?

Many technicians assume that the higher a flashlight's lumens rating, the brighter the light. But a lumens rating doesn't necessarily indicate how a bright an object will appear; rather, it is a measurement of the light's entire light output. To effectively compare the brightness of lights you're considering, you should actually look at two ANSI/NEMA FL 1 measurements – Total Light Output and Peak Beam Intensity:

> **Total Light Output:** This represents the light's *overall visible light energy*, as expressed in lumens. It is largely a function of the power of the light's bulb or LED and is not a measurement of how bright a target will appear when the light is trained on it.
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> **Peak Beam Intensity:** This value measures the brightest spot in the light's beam when it is focused on a target, as expressed in candela. It is a combination of the bulb or LED output, combined with the effectiveness of the light's reflector in producing a focused beam.

In other words, a flashlight may have a high lumens rating, but only modest candlepower. Like a small lamp on a table, such a flashlight is useful for lighting the immediate area, but not as effective for illuminating a target some distance away. Select your light accordingly.

How Far?

Beam Distance is defined as the distance from the flashlight at which the light beam is 0.25 lux, or the light emitted by a full moon on a clear night in an open field. This measurement is typically expressed in meters. Compare and contrast it among the lights you are evaluating.

How Sturdy?

Impact Resistance measures the degree to which a portable light resists damage when dropped on a solid surface. Dropped samples must not exhibit any cracks or breaks, and must remain fully functional in order to pass the Impact Resistance test.

How Long Will it Run?

Run Time measures the duration of a light's runtime from the initial light output value (that's 30 seconds after the light is turned on with fresh batteries) until the light output drops to 10% of the initial value.

How Water Resistant?

Water resistant isn't the same as waterproof. If you will be using flashlight equipment around water, you should be aware of the three ratings concerning water resistance and select your light accordingly:

- Resistance to Temporary Immersion in Water
- Resistance to Continuous Immersion in Water
- Resistance to Splashing Water

Other considerations

Following are a few other tips to keep in mind when selecting flashlights:

How Safe?

Consider your environment. If you are using a flashlight in a hazardous environment or confined space, the light should be properly tested to meet or exceed all applicable safety standards for those locations. Organizations such as Underwriters Laboratories Inc. (UL) and Factory Mutual Research (FM) test and approve high-performance flashlights according to the ANSI/UL 783 standard for flashlights used in hazardous locations or the ANSI/UL 913 "intrinsically safe" standard for general electronic equipment. Either of these standards can lead to "Division 1" certification, the highest safety rating available, although keep in mind that not every product with a Class 1, Division 1 rating is considered intrinsically safe.

It's also important to note other hazardous location classifications such as Class, Group and Temperature code requirements when selecting the correct flashlight for specific applications.

How Compact?

Today, flashlight manufacturers have the ability to make small, compact lights that are significantly bright. Despite these advances, smaller lights are generally not as bright as larger lights. You need to decide which is more important: extreme brightness or a lightweight, compact flashlight.

What Type of Battery?

Disposable alkaline or lithium batteries both have excellent storage life – 7 and 10 years respectively. Disposables generally offer longer run times and are typically cheaper than rechargeable batteries. But, rechargeable batteries have a considerably lower operating cost. Studies have found that rechargeable flashlights provide an average savings of at least $300 in battery costs over a four-year period.

What Type of Bulb?

Light output depends considerably on the kind of bulb or LED. You have several choices: incandescent, LED (Light Emitting Diodes), combination LED/incandescent, power LED and HID (High Intensity Discharge) Lights. Each bulb type offers specific advantages depending on the environment in which you are operating:

Incandescent: Xenon or halogen bulbs provide high output for their size, and a white, natural light. They focus easily, and often are the top choice for long distances. However, they need to be replaced periodically and can fail on impact.

LED:
Extremely durable and long-lived, LEDs feature up to a 100,000-hour life, so they rarely need to be replaced. They are good for close-up work, such as under the hood or chassis of a vehicle, and offer a soft focus and short range. While typically less powerful than incandescent lamps, they can offer extremely long run times.

Combination LED/Incandescent:
These types of lights combine an LED and Xenon bulb to product the long running times and durability of LEDs with the brightness of an incandescent.

Power LED:
All the reliability of an LED with the performance of an incandescent. The newest versions of power LEDs use premium diode chips which, when combined with a light's reflector, can magnify, direct and intensify the light beam. The result is an intense beam that in many cases exceeds the brightness of an incandescent.

HID (High Intensity Discharge) Lights*:*

Designed for scene lighting, HID lights feature rugged high pressure plasma arc lamps that generate more lumens per watt than LEDs or incandescents; these lights can produce thousands of lumens.

Conclusion

The next time you are in the market for new flashlights, make sure you ask yourself the necessary questions and then look for the relevant ANSI/NEMA FL 1 Standard icons and ratings on flashlight product packages, on websites, or in product literature. While compliance with the standard is voluntary, many of the leading flashlight companies are performing these tests and displaying their results, and, hopefully, the entire industry will soon use these standards. But for now, buyers finally have a way to evaluate what flashlights would be best for the tasks at hand.

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