

NORTH AMERICAN STANDARDS & SPECIFICATIONS

SECTION OBJECTIVES

1. Federal Requirements
2. Proper Light Specification
3. Common Legal Questions
4. ID Codes
5. Regulation Charts

1. Federal Requirements

Who's who when it comes to lighting regulations?

DOT is the Department of Transportation. This functions as a large governmental umbrella for anything dealing with transportation, including the NHSTA, FHWA, etc. The DOT lettering is often put on lights to show that they conform to all government regulations.

NHTSA is the National Highway Traffic Safety Administration. They regulate lighting requirements for all new road vehicles, with the exception of pole trailers and converter dollies. Their regulations take precedence over state regulations and they have the power to implement fines, recalls, and new regulations. State Enforcement agencies often use the NHTSA regulations for their light requirements.

FMCSA is the Federal Motor Carrier Safety Administration. They issue Federal Motor Carrier Safety Regulations (FMCSR). These rules regulate vehicles

over 80" wide, such as commercial vehicles and buses. Some of these deal with lighting and wiring. Most states inspect vehicles using these standards.

FMVSS 108 is the Federal Motor Vehicle Safety Standard No. 108. This is the federal code (law) that regulates lighting and performance requirements, as well as the numbers and locations of lights on vehicles. NHTSA publishes the 108 regulations.

CMVSS 108 is Canada's analogous regulation code, which is very similar to FMVSS 108. The primary differences are that the CMVSS 108 requires daytime running lamps and allows European headlamps, while FMVSS 108 does not.

Transport Canada is the department of the Canadian government which is responsible for developing regulations, policies, and services of transportation in Canada.

2. Proper Light Specification

When it comes time to order your next heavy-duty vehicle, there are many decisions to consider. With so many costs coming into play with applications other than vehicle lighting, it is easy to justify cheaper, lesser quality equipment. Despite being marginally cheaper at the time of the initial purchase, purchasing basic equipment is often more expensive in the long run. To fully utilize industry improvements, to be sure your vehicle meets all legal requirements, and to ensure that the vehicle meets the expectations of maintenance staff and vehicle operators, it is important to properly specify the products being ordered for your vehicle.

There are two important points of interest that should be considered prior to "spec'ing" a vehicle order.

Fleet Vehicle Maintenance History and Review

It's important that Fleet and Maintenance Managers review their fleet's vehicle maintenance and warranty data before specifying a new vehicle build. This data can provide key insight into any specific areas of concern, as they relate to your particular fleet's vehicles. An appropriate investigation can yield weak areas on the vehicles, or areas that require special attention. With this data in hand, Truck-Lite Sales and Engineering Representatives can be called upon to provide additional information in terms of product resources that may aid in achieving your fleet's best lighting in an efficient full systems approach.

Once a specification has been ordered, it can be beneficial to have your supplier present at the first vehicle build to ensure that the specified equipment has been installed, is installed properly, and will optimize the benefits it offers.

Review Industry Developments

With the growing number of new LED technologies being developed that enhance safety, improve product efficiency and productivity, and provide greater functionality than ever, it's important that time is taken to review the latest offering.

Haitz's Law states that every decade, the amount of light generated per LED package increases by a factor of 20. This has proven true since Truck-Lite's LED offering that dates back to the early 1990s. Due to the energy efficiency of LED lamps vs. incandescents—a whopping 90% reduction—the U.S. Department of Energy has provided additional funding to accelerate the implementation of LED lighting. This has led to the development of LED options for work lighting, interior lighting, auxiliary lighting, and many more offerings that had previously not been possible. As development grows, lamp offerings become possible, smaller profiles,

sizes, and applications. Make sure you are taking advantage of all of the technological advancements that are available to your fleet.



3. Common Legal Questions

What lights do I need?

Browse the NHTSA charts (shown later in this section). Truck-Lite Tech Support (888.562.5012.) can be reached for additional questions. Note that states cannot require different specifications than what is in 108, but they can add regulations.

The vehicle has everything needed for 108, but the State Police still gave me a ticket.

States can regulate anything not covered by 108, for example, any accessory lights or lights in addition to those in 108. Generally, the problem lies in these areas, though sometimes, they simply make a mistake. If it is the latter, Truck-Lite Technical Support can often write a letter to clarify the issue.

Is it all right to mount a light at some angle? That is, not “square” on the vehicle?

“Maybe.” You need to contact Technical Support for a test in that position; otherwise, it can be questioned by the NHTSA or enforcement groups.

Can I ever use the Model 40 with the reflex reflector ring legally?

Yes, on any vehicle under 80" wide, as an "extra" light on vehicles over 80" (reflex is legal), or on vehicles made in 1991 or earlier.

Is it okay to use a light for "side turn" that isn't listed for that function?

It is perfectly fine, because side turns are NOT legally required. That said, be careful that it doesn't violate some state laws regarding color or location. If it is also used as a side marker, that function must be listed on the lens code.

Is SAE or DOT lettering required on lights?

No lettering is required by the NHTSA (108) except for headlights and conspicuity tape. The Federal Motor Carrier Safety Manual mentions that some lights should be marked SAE but this is not enforced. Truck-Lite marks all of their lights with SAE and/or DOT markings.

What is a combination marker/clearance light and how do I mount it?

Simply put, it is one light doing the work of two. It must be at a 45-degree angle (on corners) to be legal. It also needs to be marked PC in the lens code. If there is a question, contact Technical Support.

Are there special lighting requirements for vehicles hauling flammable or explosive materials?

There are no special Federal requirements as 108 covers all over-the-road vehicles. Some states or municipalities have regulations, but these cannot supersede 108—they can only add to it. FMCSR and the NFPA (National Fire Protection Association) publish requirements for wire protection, as well.

Truck-Lite's sealed lights and wiring systems have been tested to all known standards and certification. Reports are available from Technical Support.

108 says that some lights must be mounted as “high as practicable or as far apart as practicable.” What is “practicable?”

The NHTSA has stated that the vehicle manufacturer has the responsibility to choose the best mounting location “in light of the particular design/configuration of the vehicle involved” and they will not contest it unless it is “clearly erroneous.” Recently, Canada has started to enforce the word practical as meaning “capable of being done.” In the case of clearance markers, not more than six inches from the edge of the vehicle is practical.

I want to add some auxiliary lights like illuminate signs, deceleration lights, or decorative lights. Are these legal?

Yes, provided they do not render inoperative any device in compliance with 108, negatively affect the performance of required equipment, or create confusion or misunderstanding of lighting signals. Always contact the Technical Support if you have any questions.

What is the “12-Square Inch Rule”?

On December 1, 1991, the NHTSA made effective the final ruling regarding the 12-Square Inch Rule. This ruling requires that the total luminous lens area for a stop and turn lamp must not be less than 75 square centimeters (11.625 square inches) when used on vehicles over 80” wide.

It must be noted that the Model 40 reflex reflector ring cannot be counted as square inch lens area. When the reflex ring is subtracted from the total 12-inch lens, it leaves less than the 12-square inches that are required.

4. Explanation of ID Codes

The SAE J759 Lighting Identification Code can be difficult to interpret regarding clearance and marker applications. This additional information may be helpful.

P2: Clearance Sidemarker and Identification Lamps

This marking is currently used for both “over” 80-inch and “under” 80-inch vehicles. It has become the standard for vehicles under 80-inches, but government specifications (FMVSS-108) have never called out increased requirements for the larger width. P2 is the minimum standard for clearance, side marker, and identification lights. All Truck-Lite devices meet this standard, even if they are marked PC, P3, etc.

PC: Combination Side Marker and Clearance Lamp or Identification for vehicles over 80-inches wide

To be used as a combination light, devices must be mounted on a 45° bevel at the corner of a vehicle. This allows clearance and side marker functions to be combined in one light, and eliminates the need for a second device. A PC light can always be used anywhere a P2 light would have been used, but the reverse is not true.

P3: Clearance, Sidemarker or Identification lights for use on vehicles over 80-inches wide

A P3 designated lamp has higher light outputs than a P2 rated lamp. It is legal wherever a P2 light would be used. Because the federal regulations (FMVSS-108) have yet to adopt P3, many manufacturers have not made lights to meet the standard. Some of Truck-Lite’s lamps do not meet this standard, and are marked accordingly.

PC2: Combination Side Marker and Clearance or Identification lights used on a vehicle over 80 inches wide

PC2 Lamps meet an increased angle output, and are designed as combination lamps. When used as combination lamps, they must be mounted on a 45° beveled corner. Because the federal regulations (FMVSS-108) have yet to adopt P3, many manufacturers have not made lights to meet the standard. Some of Truck-Lite's lamps do not meet this standard, and are marked accordingly.

Additional Points of Concern:

- Currently, the FMVSS-108 standard has recognized only the standards that call for P2 or PC markings. The other markings are for SAE recommended practices.
- The PC or PC2 lights offer the widest patterns of visibility.
- FMVSS-108 does not require any of these lens markings, with the exception that they accept DOT lettering as certifying legal compliance.
- A good rule of thumb is to only buy lighting that has the manufacturer's name engraved on the lens and has the SAE/DOT Identification Codes on lamps.

Lighting ID Codes:

A	Reflex reflectors
A2	Wide angle reflex reflectors
C	Motorcycle auxiliary front lamps
D	Motorcycle and motor-driven cycle turn signal lamps
E	Side turn signal lamps—vehicles 12m or more in length
E2	Side turn signal lamps—vehicles less than 12m in length
F	Front fog lamps
F2	Fog tail lamps
G	Truck cargo lamp
H	Sealed beam headlamp
HG	Discharge forward lighting (headlamp)
HH	Sealed beam headlamp housing
HR	Replaceable bulb headlamp
I	Turn signal lamps
13	Turn signal lamps spaced from 75 mm to less than 100 mm from headlamp
14	Turn signal lamps spaced from 60 mm to less than 75 mm from headlamp
15	Turn signal lamps spaced less than 60 mm from headlamp
16	Rear mounted turn signal lamps and front mounted turn signal lamps mounted 100 mm or more from the headlamp, for use on vehicles 2032 mm or more in overall width
17	Front mounted turn signal lamps mounted less than 100 mm from the headlamp, for use on vehicles 2032 mm or more in overall width
J590	Turn signal flasher
J945	Hazard warning signal flasher
J1054	Warning lamp alternating flasher
K	Front cornering lamps
K2	Rear cornering lamps

L	License plate lamps
M	Motorcycle and motor-driven cycle headlamps—motorcycle type
N	Motorcycle and motor-driven cycle headlamps—motor driven cycle type
O	Spot lamps
P	Parking lamps
P2	Clearance, sidemarker, and identification lamps
P3	Clearance, sidemarker, and identification lamps for use on vehicles 2032 mm or more in overall width
PC	Combination clearance and sidemarker lamps
PC2	Combination clearance and sidemarker lamps for use on vehicles 2032 mm or more in overall width
Q	Turn signal operating units—Class A
QB	Turn signal operating units—Class B
QC	Vehicular hazard warning signal operating unit
R	Backup lamps
S	Stop lamps
S2	Stop lamp for use on vehicles 2032 mm or more in overall width
T	Tail lamps (rear position lamps)
T2	Tail lamps (rear position lamps) for use on vehicles 2032 mm or more in overall width
U	Supplemental high-mounted stop and turn signal lamps
U2	High-mounted stop lamps for trucks 2032 mm or more in overall width
U3	Center high-mounted stop lamp for passenger cars, light trucks, and MPVs
W	Warning lamps for emergency, maintenance, and service vehicles
W2	Warning lamps for school buses
W3	360 degree emergency warning lamps
W4	Emergency warning device

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Lighting ID Codes:

W5-1	360 degree gaseous discharge lamp—Class 1
W5-2	360 degree gaseous discharge lamp—Class 2
W5-3	360 degree gaseous discharge lamp—Class 3
Y	Driving lamps
Y2	Daytime running lamps
Z	Auxiliary low beam lamps