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DEPARTMENT OF DEFENSE
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LAMPS, REFLECTORS AND ASSOCIATED SIGNALING
EQUIPMENT FOR MILITARY VEHICLES



MIL-STD-1179E

DEPARTMENT OF DEFENSE
Washington, DC 20301

Lamps, Reflectors and Associated Signaling Equipment for Military Vehicles

MIL-STD-1179D

1. This Military Standard is approved for use by U.S. Army Tank-Automotive Command, Department of the Army, and is available for use by all Departments and Agencies of the Department of Defense.

2. Comments, suggestions, or questions on this document should be addressed to U.S. Army RDECOM, Tank Automotive Research, Development and Engineering Center, ATTN: RDTA-EN/STND/TRANS MS #268, 6501 E. 11 Mile Road, Warren, MI 48397-5000 or emailed to DAMI_STANDARDIZATION@conus.army.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <https://assist.daps.dla.mil>.

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FOREWORD

This standard establishes the requirements for certain exterior and interior lamps and reflectors to enable safe operation: of military vehicles in darkness and other conditions of reduced visibility, and during infrared secure blackout conditions. The standard also establishes the requirements for associated signaling equipment to enable safe operation of military vehicles under normal conditions of visibility as well as in darkness and other conditions of reduced visibility.

The requirements of this standard have been established in consideration of the following, listed in order of precedence:

- a. Military mission requirements.
- b. Federal Motor Vehicle Safety Standard (FMVSS) No. 108 (or Code of Federal Regulation (CFR) Title 49, Part 571, Section 108).
- c. Greater component damage potential due to the type of usage on military vehicles.
- d. Requirements of other countries.
- e. Existing practice on military vehicles.

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1. SCOPE

1.1 Scope. This standard applies to all military combat, special purpose and tactical transport vehicles, both tracked and wheeled. Administrative and commercial vehicles are not within the scope of this standard, since total compliance with Motor Vehicle Safety Standard (MVSS) No. 108 is required for these vehicles. Infrared secure lighting photometric requirements apply to new military vehicles starting with serial number 1 manufactured after September 1, 1988. Retrofit, rebuild, or other modifications of military vehicles built before September 1, 1988 will conform to Secure Lighting Requirements upon determination of need and discretionary judgment by the appropriate modifying Government agent.

1.2 Purpose. The purpose of this standard is to establish uniform requirements for lamps, reflectors and associated signaling equipment for military vehicles tactical, combat and special purpose.

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2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4, or 5 of this standard. This section does not include documents cited in other sections of this standard or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3, 4, or 5 of this standard, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract (see 6.2).

COMMERCIAL ITEM DESCRIPTIONS

- A-A-52409 - Lamps, Incandescent, Sealed Beam.
- A-A-52418 - Light, Warning, Vehicular: Rotating Unit, 14 and 28 Volt DC.
- A-A-52428 - Reflector, Indicating, Clearance.

DEPARTMENT OF DEFENSE SPECIFICATIONS

- MIL-PRF-11021 - Switch, Vehicular Lights: 28 Volt DC.
- MIL-DTL-32361 - Composite Light, Tail Stop, Turn and Marker.

DEPARTMENT OF DEFENSE STANDARDS

- MS18003 - Lamp, Incandescent - Sealed Beam, Par 36 Headlamp, 3 Contact Lug Type.
- MS35423 - Light, Marker, Clearance - Service.
- MS51318 - Headlight: Blackout, 24 Volt, Waterproof.
- MS52126 - Composite Light-Front Turn, Park and Marker.

(Copies of these documents are available from <https://assist.daps.dla.mil/quicksearch/> or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.2.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract (see 6.2).

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DEPARTMENT OF TRANSPORTATION (DOT)

Federal Motor Vehicle Safety Standard (FMVSS) No. 108 (or Code of Federal Regulation (CFR) Title 49, Part 571, Section 108).

(Copies are available from <http://www.gpoaccess.gov/cfr/> or from the Government Printing Office, 732 North Capitol St. NW, Washington, DC 20401)

MILITARY DRAWINGS

- 7972325 - Headlamp Assembly.
- 11613631 - Flasher, Solid State.
- 11613632 - Control Assembly, Directional (Waterproof).
- 11614156 - Composite Light - Front Turn, Park and Marker.
- 11614157 - Composite Light – Tail, Stop, Turn and Marker.
- 11614174 - Reflector, Tape/Adhesive Backing.
- 12287047 - Composite Light Assembly, Tail Stop and Turn Marker.
- 12360910 - Driving Lamp, Blackout.

(Copies of these drawings are available from DAMI_STANDARDIZATION@conus.army.mil or U.S. Army RDECOM, Tank Automotive Research, Development and Engineering Center, ATTN: RDTA-EN/STND/TRANS MS #268, 6501 E. 11 Mile Road, Warren, MI 48397-5000.)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract (see 6.2).

SAE INTERNATIONAL

- SAE J222 - Parking Lamps (Front Position Lamps).
- SAE J564 - Headlight Beam Switching.
- SAE J565 - Semiautomatic Headlamp Beam Switching Devices.
- SAE J575 - Test Methods and Equipment for Lighting Devices for Use on Vehicles Less than 2032 mm in Overall Width.
- SAE J578 - Color Specification for Electric Signal Lighting Devices.
- SAE J585 - Tail Lamps (Rear Position Lamps) for Use on Motor Vehicles Less Than 2032 mm in Overall Width.
- SAE J586 - Stop Lamps for use on Motor Vehicles Less Than 2032 mm in Overall Width.
- SAE J588 - Turn Signal Lamps for use on Motor Vehicles Less than 2032 mm in Overall Width.
- SAE J589 - Turn Signal Switch.
- SAE J592 - Side Marker Lamps for Use on Road Vehicles Less than 2032 mm in Overall Width.
- SAE J593 - Backup Lamps (Reversing Lamps).

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SAE J594	-	Reflex Reflectors.
SAE J910	-	Hazard Warning Signal Switch.
SAE J1383	-	Performance Requirements for Motor Vehicle Headlamps.
SAE J1690	-	Flashers.

(Copies of these documents are available from www.sae.org or SAE International, 400 Commonwealth Drive, Warrendale, PA 15096.)

2.4 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. DEFINITIONS

3.1 Headlamps. A headlamp including one or more sealed beam units is a major lighting device used to provide general illumination ahead of the vehicle.

3.2 Taillamps. Taillamps are those lamps used to designate the rear of a vehicle by a steady warning light other than clearance or identification lamps.

3.3 Stoplamps. Stoplamps are those lamps giving a steady warning light to the rear of a vehicle or train of vehicles, to indicate the application of the service brake pedal and thus the intention of the operator of a vehicle to diminish speed or stop.

3.4 Turn signal lamps. Turn signal lamps are those which indicate a change in direction of a vehicle by giving flashing warning lights on the side toward which the turn will be made.

3.5 Turn signal control unit. The control unit is that part of a turn signal system by which the operator of a vehicle causes the signal units to function.

3.6 Turn signal flasher. The turn signal flasher is a device which causes a turn signal lamp to be operated intermittently as long as it is turned on.

3.7 Clearance lamps. Clearance lamps are lamps located on the left and right at the front and rear of a vehicle. The front ones show to the front and outboard side, the rear ones show to the rear and outboard side indicating the overall width of the vehicle.

3.8 Side-marker lamps. Side-marker lamps are lamps located on the left and right sides near the front and rear of a vehicle which show to the side, to mark the length of the vehicle.

3.9 Identification lamps. Identification lamps are lamps used in groups of three in a horizontal row centered on the vehicle at the front or rear, or on both the front and rear to identify certain types of vehicles.

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3.10 Reflex reflectors. Reflex reflectors are devices which are used on a vehicle to alert an approaching driver, by reflected light from the head lamps, of the presence of another vehicle/object.

3.11 Vehicular hazard warning flasher. A vehicle hazard warning flasher is a device which, as long as it is turned on, causes all turn signal lamps to flash.

3.12 Vehicular hazard warning flasher switch. A vehicle hazard warning switch is a driver controlled device which causes all turn signal lamps to flash simultaneously to indicate to approaching drivers the presence of a vehicular hazard.

3.13 Intermediate side-marker lamps. Intermediate side-marker lamps are those lamps on vehicles which are located on, or in proximity to, the midpoint of the vehicle. (Intermediate side-marker lamps are required when the overall vehicle length is 30 feet or more.)

3.14 Intermediate side-reflex reflector. Intermediate side-reflex reflectors are those reflectors on vehicles which are located on, or in proximity to, the midpoint of the vehicle. (Intermediate side-reflex reflectors are required when the overall vehicle length is 30 feet or more.)

3.15 Parking lamps. Parking lamps are multi-purpose lights facing forward and located on the front of the vehicle, one on each side and as far apart as practicable. They serve as clearance lamps indicating the width of the vehicle, as emergency head lamps, as low power illumination for parked vehicles and include turn signal capability.

3.16 Light warning, vehicular, rotating, DC. A 360 degree flashing warning signal lamp for use on emergency vehicles, repair vehicles, utility servicing vehicles, truck tractors designed to haul oversize slow moving loads, truck wreckers, and on other vehicles that frequently deviate from or obstruct normal traffic patterns. Also used as Convoy Warning Lights (CWL).

3.17 Flashing warning lamps. Flashing warning lamps are lamps mounted on vehicles to give a flashing warning to traffic.

3.18 Back-up lamp. A back-up lamp is a lamp on the rear of a vehicle to indicate that the vehicle is in reverse gear and the intention of the operator is to back up the vehicle.

3.19 Infrared secure blackout exterior and interior lamps. Infrared secure blackout lamps are all lamps designed to operate during vehicle nighttime blackout mode conditions. These interior and exterior lamps do not emit infrared light energy and may limit horizontal and vertical illumination while providing restricted visible light for nighttime vehicle operation.

3.20 Infrared secure blackout marker lamps. Blackout marker lamps are lamps used on military vehicles to indicate its width. Under FMVSS terminology, they are referred to as clearance lamps.

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3.21 Military wheeled vehicle overall width. Overall width for military wheeled vehicles is determined with doors and windows closed, and the wheels in the straight-ahead position. The term “overall width” refers to the nominal design dimension of the widest part of the vehicle, exclusive of signal lamps, marker lamps, outside rear view mirrors, flexible fender extensions, and mud flaps.

3.22 Convoy Warning Light (CWL). See 3.16.

4. GENERAL REQUIREMENTS.

4.1 General. Requirements that are common to both tactical (wheeled) and combat (tracked) vehicles for service lighting equipment.

4.1.1 Lamps, tail, stop, and turn candlepower. A parking lamp, tail lamp, stop lamp, or turn signal lamp shall meet the minimum percentage specified in figure 1 of the corresponding minimum allowable value specified in figure 2. The maximum candlepower output of each stop, turn signal, tail and parking lamp shall not exceed that prescribed in figure 2. The values specified in figures 1 and 2 are substituted for those specified in table I of the following SAE Standards: J222, Parking Lamps; J585, Tail Lamps (at H or above); J586, Stop Lamps and J588, Turn Signal Lamps. Figures 1 and 2 are shown below.

4.1.2 Lamp candlepower. A parking lamp, taillamp, or turn signal lamp is not required to meet the minimum candlepower value at each test point specified in this standard if the sum of the percentages of the minimum candlepower measured at the test points is not less than that specified for each group listed in figure 3.

4.1.3 Intermediate turn signal lamp visibility. Intermediate turn signal lamps shall be visible through an angle of 60 degrees (minimum) outward from the longitudinal axis of a vehicle. A blind angle of 5 degrees outward from the edge of the vehicle is permissible.

4.1.4 Lamp color intensity. The color in all lighting equipment covered by this standard shall comply with SAE J578, and shall meet the minimum candlepower requirements specified in 4.1.2.

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Test points (deg)		Turn signal	Stop	Parking	Tail
10U, 10D....	5L, 5R.....	20	20	20	20
5U, 5D.....	20L, 20R....	12.5	12.5	10	15
	10L, 10R.....	37.5	37.5	20	40
	V.....	87.5	87.5	70	90
H.....	10L, 10R....	50	50	35	40
	5L, 5R.....	100	100	90	100
	V.....	100	100	100	100

Note: Minimum design candlepower requirements are determined by multiplying the percentages given in the figure by the minimum allowable candlepower values in figure 2. The resulting values shall be truncated after one digit to the right of the decimal point.

FIGURE 1. Required percentages of minimum candlepower of figure 2.

Lamp	Lighted sections		
	1	2	3
Stop ¹	180/300	95/360	110/420
Tail ²	2/18	3.5/20	5.0/25
Parking.....	4.0/125
Red turn signal	80/300	95/360	110/420
Yellow turn signal rear....	130/750	150/900	175/1050
Yellow turn signal front...	200/-	240/-	275/-
Yellow turn signal front ³	500/-	600/-	685/-

- 1 Maximum at H or above.
- 2 The maximum candlepower value of 125 applies to all test points at H or above. The maximum allowable candlepower value below H is 250.
- 3 Values apply when the optical axis (filament center) of the front-turn signal is at a spacing less than 4 in (10 cm) from the lighted edge of the headlamp unit providing the lower beam, or from the lighted edge of any additional lamp installed as original equipment or used in lieu of the lower beam.

FIGURE 2. Minimum and maximum allowable candlepower values.

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Group and test points	Turn signal	Stop	Parking	Tail
1 10U-5L, 5U-20L, 5D-20L, 10D-5L.....	65	65	60	70
2 5U-10L, H-10L, 5D-10L...	125	125	75	120
3 H-5L, 5U-V, H-V, 5D-V, H-5R.....	475	475	420	480
4 5U-10R, H-10R, 5D-10R...	125	125	75	120
5 10U-5R, 5U-20R, 5D-20R, 10D-5R.....	65	65	60	70

FIGURE 3. Sum of the percentages of grouped minimum candlepower.

4.2 Vehicle lighting equipment location.

4.2.1 Headlamp location. Headlamps shall be located on the front of the vehicle and as shown in tables II, IV and V so that they will clear all portions of the vehicle and its appurtenances.

4.2.2 Lamp and reflector location. Lamps and reflectors shall be located so that their beam pattern and visibility shall be unobstructed by any part of the vehicle, throughout the range of the photometric and visibility angles specified. Lamps and reflectors shall not be mounted on extension brackets or in any other manner that will increase their damage potential beyond that of lamps and reflectors mounted directly on the vehicle.

4.2.3 Service lighting equipment location. When lamps, reflective devices, and associated signaling equipment are required to be “within X inches of the extreme edge of the vehicle” or “within X inches of the extreme front (rear) of the vehicle”, measurements shall be taken as follows:

- a. Measurements from the extreme edge of the vehicle shall be from a vertical plane tangent to the outer edge of the vehicle (exclusive of signal lamps, marker lamps, outside rear view mirrors, with doors and windows closed and wheels in a straight-ahead position) and parallel to the longitudinal axis of the vehicle, to the outboard edge of the luminous surface of the lamp or reflector, or where a multiple-compartment lamp or multiple lamps are used, to the outboard edge of the luminous surface of the outermost compartment or lamp.
- b. Measurements from the extreme front (rear) edge of the vehicle shall be from a vertical plane tangent to the extreme front (or rear) edge of the vehicle (exclusive of winch projections or trailer tongues) and perpendicular to the longitudinal axis of the vehicle, to the front (or rear) edge of the luminous surface of the lamp or reflector, or where a multiple compartment lamp or multiple lamps are used, to the front (or rear) edge of the luminous surface of the forward (or rearward) compartment or lamp.

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4.3 Lamp and equipment combinations.

4.3.1 Lamp, reflector, or associated equipment combination. Two or more lamps, reflective devices or items of associated equipment may be combined if the requirements for each lamp, reflective device, and item of associated equipment are met. No high-mounted stop lamp shall be combined with any other lamp or reflective device.

4.3.1.1 Turn signal lamp combinations. No turn signal lamp may be combined optically with any lamp (other than a stop lamp) that produces more than 1/5 the light intensity of the turn signal lamp at test points of H-V, H-5L, H-5R, and 5U-V, nor more than 1/3 of the intensity of any test point on or above the horizontal. (See SAE J575 for definition of test points.)

4.3.1.2 Turn signal and stoplamp combinations. No turn signal lamp may be combined optically with a stop lamp unless the stop lamp is extinguished when the turn signal is flashed.

4.3.2 Headlamp combination, candlepower. When a parking lamp is optically combined with a turn signal, and the parking lamp is connected to be operated with the headlamps, the turn signal shall not be less than three times the candlepower of the parking lamp at any test point on or above horizontal, except that at H-V, H-5L, H-5R, and 5U-V, the turn signal shall not be less than five times the candlepower of the parking lamp. (See SAE J575 for definition of test points.)

4.4 Service lamp wiring requirements.

4.4.1 Stoplamp actuation. Stoplamps shall be actuated upon application of service brakes provided the vehicular light switch is in stop light, service drive or park position. For wheeled vehicles 1/, stoplamps shall override or be independent of the hazard warning signal.

4.4.2 Hazard warning signal actuation. The vehicular hazard warning signal operating unit shall operate independently of the ignition or equivalent switch, and when energized shall cause all turn signal lamps to flash simultaneously, provided the vehicular light switch is in stop light, service drive, or park position. Stoplamps for wheeled vehicles 1/ shall override the hazard warning signal or, as an option, stoplamps shall be on an independent circuit.

4.4.3 Head, parking and clearance lamp actuation. On all vehicles, parking lamps, clearance lamps, side-marker lamps and taillamps shall be energized when the headlamps are energized. The taillamps, identification lamps (if applicable) and side-marker lamps shall be energized when either the parking or clearance lamps are energized.

1/ Applicable only to new production wheeled vehicles manufactured after September 1, 1998. Retrofit, rebuild, or other modifications for military vehicles built before September 1, 1998 will conform to this requirement upon determination of need and discretionary judgement by appropriate modifying Government agent.

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4.4.4 Headlamp, upper and lower beam switch. Each vehicle shall be equipped with a means of switching between upper and lower headlamp beams, conforming to SAE J564 or SAE J565. Each vehicle shall be equipped with a means of indicating to the driver when the upper beams are on, conforming to SAE J564, except for signal color.

4.5 General blackout lighting requirements. No service lamp shall be capable of being activated while the vehicle's light switch (MIL-PRF-11021) is in blackout marker, blackout drive or off position.

4.5.1 Vehicle secure blackout lights and location. The minimum number of secure blackout lights on a military vehicle shall be as specified in table VI.

4.5.2 Secure blackout marker lamps. As referenced in table VI, the secure blackout marker lamps shall meet the requirements specified in 4.5.2.1 through 4.5.2.4.

4.5.2.1 Visibility of beams. The front position marker filter lens shall be opaque except for two Y-shaped openings which shall emit yellow-white light. The two openings of each blackout marker lamp shall be individually visible up to 60 feet. Beyond 60 feet the opening shall appear as a single point of light.

4.5.2.2 Visibility from air.

- a. Vehicle on 20 percent upgrade. When vehicle is on a 20 percent upgrade, the vertical angles of cutoff above the horizontal shall be the maximum practicable provided the single light effect of the front marker shall not be visible from the air at more than 400 feet above a horizontal line extended through the secure blackout marker lamp.
- b. Vehicle on level road. When vehicle is on a level road, the vertical angles of cutoff of the marker below the horizontal shall be such as not to cast a reflection on the road that would be visible from the air at a height of more than 400 feet.

4.5.2.3 Horizontal visibility on road. When the vehicle is on a level road, the horizontal angles of cutoff shall be the maximum practicable, but shall be not less than 60 degrees right or left of the beam centerline at 100 feet.

4.5.2.4 Color of visible light. Color values of the transmitted visible light shall be in accordance with trichromatic coefficients specified in component drawings.

4.5.2.5 Secure blackout lighting. Secure blackout lighting is the restriction of blackout mode light sources spectral emissions. Light sources that can or do emit light during blackout mode of operation shall be restricted to the visible portion of the electromagnetic spectrum between 380 and 700 nanometers. Peak emission in the infrared 700 to 1200 nanometer region shall be restricted to less than ten percent relative to that measured in the visible region (380 to 700 nanometers) for any given secure blackout light source.

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4.5.3 Secure blackout driving lamp. The secure blackout driving lamp, at a design voltage of 28.0 volts (V) direct current (dc), shall emit a blue-green light.

4.5.4 Secure blackout taillamp. The secure blackout taillamp shall meet the requirements specified in 4.5.4.1 through 4.5.4.5.

4.5.4.1 Visibility of beams. The secure blackout taillamp filter lens shall be opaque except for four Y-shaped openings which shall emit red-orange light. The four openings of each secure blackout taillamp shall be individually visible up to 60 feet. From 60 to 120 feet, the openings shall appear as two points of light.

4.5.4.2 Visibility from air.

- a. Vehicle on 20 percent downgrade. When vehicle is on a 20 percent downgrade, the vertical angles of cutoff above the horizontal shall be the maximum practicable, provided the single light effect of the secure blackout taillamp shall not be visible from the air at more than 400 feet above a horizontal line extended through the secure blackout taillamp.
- b. Vehicle on level road. When vehicle is on a level road the vertical angles of cutoff of the blackout taillamp below the horizontal shall be such as not to cast a reflection on the road that would be visible from the air at a height of not more than 40 feet.

4.5.4.3 Horizontal visibility on road. When the vehicle is on a level road, the horizontal angles of cutoff shall be the maximum practicable but shall be not less than 60 degrees right or left of the beam centerline at 100 feet.

4.5.4.4 Color of visible light. Color values of the transmitted visible light shall be in accordance with trichromatic coefficients specified in component drawings.

4.5.4.5 Secure blackout lighting. Secure blackout lighting is the restriction of blackout mode light sources spectral emissions. Light sources that can or do emit light during blackout mode of operation shall be restricted to the visible portion of the electromagnetic spectrum between 380 and 700 nanometers. Peak emission in the infrared 700 to 1200 nanometer region shall be restricted to less than ten percent relative to that measured in the visible region (380 to 700 nanometers) for any given secure blackout light source.

4.5.5 Secure blackout stoplamp. The secure blackout stoplamp shall meet the requirements specified in 4.5.5.1 through 4.5.5.4.

4.5.5.1 Visibility of beam. The secure blackout stoplamp filter lens shall be opaque except for the Y-shaped opening which shall emit amber light.

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4.5.5.2 Visibility from air.

- a. Vehicle on 20 percent downgrade. When vehicle is on a 20 percent downgrade, the vertical angles of cutoff above the horizontal shall be the maximum practicable, provided the single light effect of the secure blackout stoplamp shall not be visible from the air at more than 400 feet above a horizontal line extended through the secure blackout taillamp.
- b. Vehicle on level road. When vehicle is on a level road the vertical angles of cutoff of the secure blackout stoplamp below the horizontal shall be such as not to cast a reflection on the road that would be visible from the air at a height of more than 400 feet.

4.5.5.3 Horizontal visibility on road. When the vehicle is on a level road, the horizontal angles of cutoff shall be the maximum practicable but shall be not less than 60 degrees right or left of the beam centerline at 100 feet.

4.5.5.4 Color of visible light. Color values of the transmitted visible light shall be in accordance with trichromatic coefficients specified in component drawings.

4.6 Wheeled vehicle requirements for service lighting equipment.

4.6.1 Wheeled vehicle minimum lighting equipment. Except as specified in 4.6.1.1 through 4.6.1.7, military wheeled vehicles shall be equipped as a minimum with lamps, reflective devices, and associated signaling equipment in accordance with table I or table III, as applicable.

4.6.1.1 Wheeled vehicle identification lamps. Front identification lamps shall be applied only on hardtop vehicles.

4.6.1.2 Truck and truck tractor tail and parking lamps. When the taillamps and parking lamps on trucks and truck tractors are located within 6 inches of the extreme edge of the vehicle (see 4.2.2), they may also serve as clearance lamps, and separate clearance lamps are not required.

4.6.1.3 Truck tractor side marker devices, clearance lamps and identification lamps. A truck tractor need not be equipped with any rear side marker devices, rear clearance lamps and rear identification lamps.

4.6.1.4 Wheeled vehicle intermediate marker lamp and side reflector. Intermediate side marker lamps and intermediate side reflex reflectors are required only on vehicles 30 or more feet in overall length.

4.6.1.5 Truck, light, warning, vehicular, rotating DC. The 360 degree flashing warning lamp is required only on trucks designed specifically to haul overwidth, slow-moving loads and on wreckers, emergency vehicles, repair vehicles, and utility servicing vehicles.

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4.6.1.6 Short trailer side marker lamps and front side reflector. Trailers less than 6 feet in overall length, including the trailer tongue, need not be equipped with front side marker lamps and front side reflex reflectors.

4.6.1.7 Narrow trailer reflector and lamp. A trailer that is less than 30 inches in overall width may be equipped with only one of each of the following reflective devices, located at or near its vertical centerline: taillamp, stoplamp, and rear reflex reflector.

4.6.1.8 Semitrailer convertor dolly reflector and lamp. No lighting devices or reflectors are required on any semitrailer converter dolly.

4.7 Wheeled vehicle service lighting equipment location.

4.7.1 Truck and trailer lamp and reflector location. Except as specified in 4.7.1.1 through 4.7.1.2, lamps, reflective devices, and associated equipment shall be located in accordance with table II or table IV, whichever applies.

4.7.1.1 Truck tractor, rear red reflex reflector location. On truck tractors, the red reflex reflector may be mounted on the back of the cab, at a height not less than 4 inches above the rear tires and must indicate the overall width of the vehicle (see 4.2.2).

4.7.1.2 Wheeled vehicle rear identification lamp location. When the rear identification lamps are mounted at the extreme height of a vehicle, rear clearance lamps need not be located as close as practicable to the top of the vehicle.

4.8 Wheeled vehicle service lamp wiring requirements.

4.8.1 Back-up lamp actuation. Back-up lamps shall be actuated when the vehicle gear shift lever is placed in reverse gear, provided the vehicular light switch is in stop light, service drive or park position.

4.9 Tracked vehicle service lighting equipment and location.

4.9.1 Minimum lighting equipment. Tracked vehicles shall be equipped, at minimum with lamps and reflective devices as specified in table V.

4.10 Clearance lights. All tracked and tactical wheeled vehicles, regardless of width, must have two (one on each side as far outboard as practicable) front mounted clearance lights, white or amber in color, if the headlights are not within 16 inches of the edge of the vehicle.

4.11 Reflex reflectors. Reflex reflectors must be attached as close as practicable to the outer edge of each side, and at the same height (see 4.2.2).

4.12 Provisions for tracked vehicle CWL. Provide a fused weatherproof power receptacle on the top of the vehicle (or turret) provide power for a CWL. The circuitry shall be

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such that there will be no power to the receptacle when the vehicle is in the blackout mode. The CWL should be readily attachable and removable.

4.13 Provisions for wheeled vehicle CWL. Provide two waterproof receptacles on the top of the vehicle to provide power for a CWL. A separately fused, waterproof on/off switch shall be located in the cab within easy reach of the driver. The circuitry shall be such that there will be no power to the receptacle when the vehicle is in the blackout mode.

5. DETAILED REQUIREMENTS. Not applicable.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. This standard establishes the lighting, reflectors, and signaling requirements for military trucks, trailers, and truck-tractors. Due to the infrared secure blackout lighting requirements, this is considered military-unique.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this standard.
- b. If required, the specific issue of individual documents referenced (see 2.2.1, 2.2.2, and 2.3).

6.3 Key words.

Blackout
Blinkers
Clearance
Flashers
Flashing
Infrared Secure
Lighting
Warning

6.4 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

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TABLE I. Lighting equipment requirements for tactical military trucks and trailers of less than 80 inches overall width (see 3.21).

Items	Quantity and color <u>1/</u>		Applicable standards and military part numbers
	Trucks	Trailers	
Headlamps	2 white, 7 inch		SAE J1383 A52409-4863
Taillamps	2 red	2 red	SAE J585 11614157
Stoplamps	2 red	2 red (see 4.1.1)	SAE J586 11614157
Parking lamps	2 amber (see 4.1.1)		SAE J222 11614156
Reflex reflectors	4 red; 2 amber	4 red; 2 amber (see 4.6.1.7 & 4.6.1.8)	SAE J594 AA52428-1 or 11614174-1 red AA52428-2 or 11614174-2 amber
Intermediate side-reflex reflectors	2 amber (see 4.6.1.3)	2 amber (see 4.6.1.3)	SAE J594 AA52428-2 or 11614174-2
Intermediate side-marker lamps	2 amber (see 4.6.1.3)	2 amber (see 4.6.1.3)	SAE J592 MS35423-1
Side marker lamps	2 red; 2 amber	2 red; 2 amber (see 4.6.1.6)	SAE J592 MS35423-1 amber MS35423-2 red
Back-up lamp	1 white		SAE J593
Turn signal lamps	2 red 2 amber	2 red 2 amber	SAE J588 11614156 amber
Turn signal control unit	1		SAE J589 11613632
Turn signal flasher	1		SAE J1690 11613631

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TABLE I. Lighting equipment requirements for tactical military trucks and trailers of less than 80 inches overall width (see 3.21) - Continued.

Items	Quantity and color <u>1/</u>		Applicable standards and military part numbers
	Trucks	Trailers	
Vehicular hazard warning signal operating unit	1		SAE J910 11613632
Vehicular hazard warning signal flasher	1		SAE J1690 11613631
Light, warning, vehicular, rotating, DC	1		A-A-52418
Receptacles for CWL	2		
Clearance lamps	2 red; 2 amber	2 red; 2 amber	SAE J592 MS35423-1 amber MS35423-2 red

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Table II. Lighting equipment location for technical military trucks and trailers of less than 80 inches in overall width.

Equipment	Location on trucks and trailers	Height above road surface measured from center of item on vehicle at curb weight
Head lamps	On the front, the same height, 1 on each side of the vertical centerlines as far apart as practical. Not required on trailers.	Not less than 22 inches, nor more than 54 inches.
Tail lamps	On the rear – 1 on each side of the vertical centerline, at the same level, and as far apart as practical (see 4.6.1.2)	Not less than 15 inches, nor more than 72 inches.
Stop lamps	On the rear – 1 on each side of the vertical centerline, at the same height, and as far apart as practical.	Not less than 15 inches, nor more than 72 inches.
Parking lamps	On the front – 1 on each side of the vertical centerline, at the same level, and as far apart as practical. Not required on trailers (see 4.6.1.2)	Not less than 15 inches, nor more than 72 inches.
Reflex reflectors	On the rear – 1 red on each side of the vertical centerline, at the same level, and as far apart as practical. On each side – 1 red as far to the rear as practical, and 1 amber as far to the front as practical (see 4.6.1.6)	Not less than 15 inches, nor more than 60 inches.
Back-up lamp	On the rear.	No requirement.
Turn signal lamps	At or near the front – 1 amber on each side of the vertical centerline, at the same height, and as far apart as practical. Not required on trailers. On the rear – 1 red or amber on each side of the vertical centerline, at the same height and as far apart as practical.	On the front – not less than 15 inches, nor more than 83 inches. On the rear – not less than 15 inches, nor more than 83 inches.
Side marker lamps	On each side – 1 red as far to the rear as practical, and 1 amber as far to the front as practical (see 4.6.1.6) and visible from a point in front of the vehicle.	Not less than 15 inches.
Intermediate side marker lamps	On each side – 1 amber located at or near the midpoint between the front and rear side marker lamps (see 4.6.1.3).	Not less than 15 inches.

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Table II. Lighting equipment location for technical military trucks and trailers of less than 80 inches in overall width – Continued.

Equipment	Location on trucks and trailers	Height above road surface measured from center of item on vehicle at curb weight
Intermediate reflex	On each side – 1 amber located at or near the midpoint between the front and rear side marker lamps (see 4.6.1.4).	Not less than 15 inches, nor more than 60 inches.
Clearance lamps (If headlights are located more than 16 inches from edge of vehicle)	On the front – 1 amber or white on each side of the vertical centerline, at the same level, as far apart as practical.	Not less than 15 inches.
Light, warning, vehicular, rotating, DC	On top, near the centerline of the vehicle.	
Receptacle for CWL	Two waterproof receptacles located on the exterior of the back of the cab, one on each side of the centerline of the vehicle as far outboard as practical, where the CWL may be plugged in. Not required on trailers.	

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TABLE III. Lighting equipment requirements for tactical military trucks, trailers and truck tractors of 80 or more inches overall width (see 3.21).

Items	Quantity and color <u>1/</u>			Applicable standards and military part numbers
	Trucks	Trailers	Truck-tractors	
Headlamps	2 white, 7-inch		Same as trucks	SAE J1383 A52409-4863
Taillamps	2 red	Same as trucks	Same as trucks	SAE J585 11614157
Stoplamps	2 red	Same as trucks	Same as trucks	SAE J586 11614157
Reflex reflectors	4 red; 2 amber	4 red; 2 amber	4 red; 2 amber	SAE J594 AA52428-1 or 11614174-1 red AA52428-2 or 11614174-2 amber
Side marker lamps	4 red; 2 amber	4 red; 2 amber (see 4.6.1.6)	2 amber	SAE J592 MS35423-1 amber MS35423-2 red
Back-up lamp	1 white		1 white	SAE J593
Turn signal lamps	2 red or 2 amber (rear) 2 amber (front)	2 red	Same as trucks	SAE J588 11614156 amber 11614157 red
Turn signal control unit	1		1	SAE J589 11613632
Turn signal flasher	1		1	SAE J1690 11613631
Vehicular hazard warning signal operating unit	1		1	SAE J910 11613632
Vehicular hazard warning signal flasher	1		1	SAE J1690 11613631

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TABLE III. Lighting equipment requirements for tactical military trucks, trailers and truck tractors of 80 or more inches overall width (see 3.21) – Continued.

Items	Quantity and color <u>1/</u>			Applicable SAE standards and military part numbers
	Trucks	Trailers	Truck- tractors	
Identification lamps	3 red; 3 amber (see 4.6.1.1)	3 red (see 4.6.1.1)	3 amber, 3 red (see 4.6.1.1)	SAE J592 MS35423-1 amber MS35423-2 red
Clearance lamps	2 red; 2 amber (see 4.3.1 & 4.6.1.2)	2 red; 2 amber	2 amber, 2 red (see 4.3.1 & 4.6.1.2)	SAE J592 MS35423-1 amber MS35423-2 red
Parking brakes	2 amber		Same as trucks	SAE J222 11614156
Intermediate side marker lamps	2 amber (see 4.6.1.3)	2 amber (see 4.6.1.3)	Same as trucks	SAE J592 MS35423-1
Intermediate side reflex reflectors	2 amber (see 4.6.1.3)	2 amber (see 4.6.1.3)	Same as trucks	SAE J594 AA52428-2 or 11614174-2
Light, warning, vehicular, rotating, DC	1 lamp with color as specified by local ordnance (see 4.6.1.5).		1 amber (see 4.6.1.5)	A-A-52418
Receptacle for CWL	2		2	

1/ Color in accordance with SAE J578

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Table IV. Lighting equipment location for tactical military trucks, trailers, and truck tractors of 80 or more inches in overall width.

Item	Location on			Height above road surface measured from center of item on vehicle at curb weight
	Trucks	Trailers	Truck-tractors	
Head lamps	On the front, at the same height, 1 on each side of the vertical centerline; as far apart as practicable.		Same as trucks	Not less than 22 inches, nor more than 54 inches.
Tail lamps	On the rear – 1 on each side of the vertical centerline at the same level, as far apart as practicable (see 4.6.1.2).	Same as trucks	Same as trucks	Not less than 15 inches, nor more than 72 inches.
Stop lamps	On the rear – 1 on each side of the vertical centerline at the same level, and as far apart as practicable.	Same as trucks	Same as trucks	Not less than 15 inches, nor more than 72 inches.
Reflex reflectors	On the rear – 1 red on each side of the vertical centerline, at the same level, as far apart as practicable.	Same as trucks	Same as trucks	Not less than 15 inches, nor more than 60 inches.
	On each side – 1 red as far to the rear as practicable, and 1 amber as far to the front as practicable.		On each side – 1 amber as far to the front as practicable	Not less than 15 inches, nor more than 60 inches.
Side marker lamps	On each side – 1 red as far to the rear as practicable, and 1 amber as far to the front as practicable.	Not less than 15 inches and on the rear of trailers not more than 60 in (see 4.6.1.6).	On each side – 1 amber as far to the front as practicable.	Not less than 15 inches.

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Table IV. Lighting equipment location for tactical military trucks, trailers, and truck tractors of 80 or more inches in overall width – Continued.

Item	Location on			Height above road surface measured from center of item on vehicle at curb weight
	Trucks	Trailers	Truck-tractors	
Back-up lamps	On the rear.			
Turn signal lamps	At or near the front – 1 amber on each side of the vehicles centerline, at the same level, as far apart as practicable.		Same as trucks	On the front – not less than 15 inches, nor more than 83 inches.
	On the rear – 1 red or amber on each side of the vertical centerline at the same height and as far apart as practicable. The turn signal may be part of the stoplight assembly	Same as trucks	Same as trucks	On the rear – not less than 15 inches, nor more than 83 inches.
Identification lamps	On the front, 3 amber lamps and on the rear, 3 red lamps. Grouped in a horizontal row with lamp centers spaced not less than 6 inches nor more than 12 inches apart, and mounted as close as practicable to the vertical centerline and the top of the vehicle (see 4.6.1.1 and 4.7.1.2).	On the rear, 3 red lamps grouped the same as for trucks (see 4.6.1.1).	On the front, 3 amber lamps grouped the same as for trucks.	On the front only, no part of the clamp or mountings shall extend below the vehicle windshield.

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Table IV. Lighting equipment location for tactical military trucks, trailers, and truck tractors of 80 or more inches in overall width – Continued.

Item	Location on			Height above road surface measured from center of item on vehicle at curb weight
	Trucks	Trailers	Truck-tractors	
Clearance lamps	On the front and rear - 2 amber or white lamps on front, 2 red on rear to indicate overall width of the vehicle, one on each side of the vertical centerline as far apart as practical.	On the front and on the rear – 1 on each side of the vertical centerline.	On the front – 1 on each side of the vertical centerline as far apart as practical (see 4.6.1.3 and 4.10.1).	No requirement.
Parking lamps	On the front – 1 on each side of the vertical centerline, at the same level (see 4.6.1.2)		Same as trucks	Not less than 15 inches, nor more than 72 inches.
Intermediate side marker	On each side – 1 amber lamp located at or near midpoint between the front and rear side marker lamps (see 4.6.1.4).	Same as trucks		Not less than 15 inches, nor more than 60 inches
Intermediate side reflex reflectors	On each side – 1 amber located at or near midpoint between the front and rear side reflex reflectors.	Same as trucks		Not less than 15 inches, nor more than 60 inches.
Light, warning, vehicular, rotating, DC	On top – near the centerline of the vehicle (see 4.6.1.5).		Same as trucks	

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Table IV. Lighting equipment location for tactical military trucks, trailers, and truck tractors of 80 or more inches in overall width – Continued.

Item	Location on			Height above road surface measured from center of item on vehicle at curb weight
	Trucks	Trailers	Truck-tractors	
Flashing warning lamps		On the rear – 1 red on each side of the vertical centerline at the same level and as far apart as practicable.		Not less than 24 inches, nor more than 60 inches.
Receptacle for CWL	Two waterproof receptacles located on the exterior of the back of the cab, one on each side of the centerline of the vehicle as far outboard as practicable, where the CWL may be plugged in.		Same as trucks	

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Table V. Lighting equipment requirements and location for tracked vehicles.

Item	Quantity and Color	Applicable standards or military part numbers	Location	Recommended height above road surface measured from center of item on vehicle at curb weight
Head lamps	2 white	SAE J1383 MS18003-4811	At the same height, one on each side of the vertical centerline, at the same level, and as far apart as practicable.	Not less than 23 inches, nor more than 72 inches.
Tail lamps	2 red	SAE J585 11614157 or 12287047	On the rear – 1 on each side of the vertical centerline, at the same level, and as far apart as practicable.	Not less than 15 inches, nor more than 72 inches.
Stop lamps	2 red	SAE J586 11614157 or 12287047	On the rear – 1 on each side of the vertical centerline, at the same level, and as far apart as practicable.	Not less than 15 inches, nor more than 72 inches.
Vehicular hazard warning lamps	2 red 2 amber		On the rear – 1 red on each side of the vertical centerline, at the same level, and as far apart as practicable. On the front – 1 amber on each side of the vertical centerline, at the same level, and as far apart as practicable.	Not less than 15 inches, nor more than 72 inches.
Turn signal lamps	2 red 2 amber	SAE J588 MIL-DTL-32361 11614157 or 12287047	At or near the front – 1 amber on each side of the vertical centerline, at the same level, and as far apart as practicable. On the rear – 1 red incorporated into a composite tail, stop and turn signal on each side of the vehicle centerline, at the same level, and as far apart as practicable.	Not less than 15 inches, nor more than 72 inches. Not less than 15 inches, nor more than 72 inches.

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Table V. Lighting equipment requirements and location for tracked vehicles – Continued.

Item	Quantity and Color	Applicable standards or military part numbers	Location	Recommended height above road surface measured from center of item on vehicle at curb weight
Turn signal operating unit		SAE J589 11613632	Easy access of the vehicle driver.	
Turn signal flasher	1	SAE J1690 11613631		
Vehicular hazard warning signal operating unit	1	SAE J910 11613632		
Vehicular hazard warning signal flasher	1	SAE J1690 11613631		
Clearance lamps on any vehicle whose head lights are more than 16 inches from the edge of the vehicle	2 amber or white	SAE J592 MS35423-1	On the front, one on each side of the vertical centerline, not more than 16 inches from vehicle centerline.	Not less than 23 inches, nor more than 72 inches.

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Table V. Lighting equipment requirements and location for tracked vehicles – Continued.

Item	Quantity and Color	Applicable standards or military part numbers	Location	Recommended height above road surface measured from center of item on vehicle at curb weight
Reflex reflectors	2 red	SAE J594 AA52418-1 11614174	On the rear, one red on each side of the vertical centerline, at the same level, as far apart as practicable.	Not less than 15 inches, nor more than 60 inches.
Receptacle for CWL	1		On top of the vehicle or turret. Power receptacle must be weatherproof, separately fused and must not be hot when vehicle is in Black Out mode.	No requirement.
Flashing warning lamp	1 amber		Forward facing, separately switched on tank retrievers only.	Not less than 25 inches, nor more than 100 inches.

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Table VI. Military wheeled and tracked vehicle infrared secure blackout lighting equipment requirements and locations.

Item	Quality and color		Military part numbers and photometric requirements <u>2/</u>	Location	Recommended height above road surface measured from center of item on vehicle at curb weight
	Tactical	Combat			
Blackout driving lamp <u>1/</u>	1-blue	1-blue or 1-blue	12360910 (see 4.5.3) MS51318-1 7972325 (composite) (see 4.5.3)	The light source shall be mounted between the center and left-hand side of the vehicle, as far forward and as near the line of the driver's vision as practicable.	Approximately 42 inches
Blackout front marker lamp <u>1/</u>	2-yellow/white		MS52126-2 (composite) (see 4.5.2) 7972325 (see 4.5.2)	On the front – 1 on each side of the vertical centerline, at the same level, and as far apart as practicable.	Not less than 15 inches, nor more than 72 inches.
Blackout tail & stop	2-tail red/orange 2-stop amber		MIL-DTL-32361 (see 4.5.4 & 4.5.5)	On the rear – 1 on each side of the vertical centerline, at the same level and as far apart as practicable.	Not less than 15 inches, nor more than 72 inches.
		1-tail red/orange 1-stop amber	MIL-DTL-32361 (see 4.5.4 & 4.5.5)	On rear right side of the vertical centerline at the same level as the rear left side and as far apart as practicable.	Not less than 15 inches, nor more than 72 inches.

1/ Not required on trailers.

2/ All exterior infrared secure blackout lamp housings shall be metal unless otherwise specified.

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Table VII. Military vehicle lighting equipment minimum candlepower requirements. 1/

Groups	Test Points Deg	Parking Lamps	Group totals, CP								
			Tail lamps			Red stop and turn signal lamps			Yellow turn signal lamps		
			Lighted compartments	One	Two	Three	One	Two	Three	One	Two
1	20L-5U 20L-H 20L-5D 10L-10U 10L-10D	2.8	1.6	2.7	3.8	55	66	80	135	165	190
2	10U-V 5U-10L 5U-10R	2.4	2.1	3.6	5.5	85	100	115	210	251	290
3	10L-H 5L-5U 5L-5D	4.2	3.4	5.3	8.0	140	167	195	350	420	490
4	5U-V H-5L H-V H-5R 5D-V	16.8	9.6	16.5	24.0	380	449	520	950	1130	1295
5	5R-5U 5R-5D 10R-H	4.2	3.4	5.3	8.0	140	167	193	350	420	490
6	5D-10L 5D-10R 10D-V	2.4	2.1	3.6	5.5	85	100	115	210	251	290
7	10R-10U 10R-10D 20R-5U 20R-H 20R-5D	2.8	1.6	2.7	3.8	55	66	80	135	165	190
Maximum – rear lamps only			15	20	25	300	360	420	900	900	900

1/ Grouped photometric minimum candlepower requirements for devices using one, two, or three separately lighted compartments, or for one, two, or three lamps used in a single design location to perform a single function.

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Custodian:

Army – AT
Air Force – 99
Navy - MC

Preparing activity:

Army – AT

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NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.daps.dla.mil>.