Definitions of terms shall apply from NFPA 1917 Standard for Automotive Ambulances, other than where definitions are included in individual Standards.

Contents

INTRODUCTION

AMD 001 Ambulance Body Structure Test - 2014
AMD 002 Reserved
AMD 003 Oxygen Tank Retention System Static Test - 2014
AMD 004 Litter Retention System Static Test - 2014
AMD 005 Low Voltage Electrical System Test- 2014.
AMD 006 Patient Compartment Sound Level Test- 2014
AMD 007 Patient Compartment Carbon Monoxide Level Test - 2014
AMD 008 Patient Compartment Handrail Static Load Test- 2014.
AMD 009 125V AC Electrical Systems Test- 2014.
AMD 010 Water Leak Test - 2014.
AMD 011 Equipment Temperature Test - 2014.
AMD 012 Interior Climate Control Test- 2014.
AMD 013 Weight Distribution Guidelines - 2014
AMD 014 Engine Cooling System Test - 2014
AMD 015 Ambulance Main Medical Gas System Test- 2014.
AMD 016 Patient Compartment Lighting Level Test- 2014.
AMD 017 Road Test - 2014
AMD 018 Rear Stepping Surface Load Test- 2014.
AMD 019 Measuring Guidelines: Cabinets & Compartments – 2014
AMD 020 Floor Distributed Load Test - 2014
AMD 021 Aspirator System Test- 2014
AMD 022 Cold Engine Start Test - 2014
AMD 023 Siren Performance Test - 2014
AMD 024 Perimeter Illumination Test- 2014.
AMD 025 Occupant Head Clearance Zones Test - 2014.
AMD 026 Ambulance Emergency Lighting System Configuration - 2014
AMD 027 Line Voltage Electrical Systems Test - 2014
ANNEX

Copyright © 10/2014 NTEA
INTRODUCTION

For nearly 40 years, the emergency medical services in the U.S. has been represented by an association dedicated to the production of safe, state-of-the-art ambulances. That organization is the Ambulance Manufacturers Division (AMD) of the National Truck Equipment Association (NTEA).

The NTEA is the only trade association representing the nation’s manufacturers and distributors of commercial trucks, truck bodies, truck equipment and accessories. NTEA members include companies that produce highly specialized vehicles, such as ambulances, towing and recovery vehicles, small school buses and mid-size buses. The Association provides its nearly 1,700 member companies with resource materials, technical assistance, education and training and business improvement programs. Headquartered in Detroit, the NTEA interacts directly with the major truck chassis manufacturers on product compatibility issues. From its government relations office in Washington, DC, the Association keeps its members advised of changing regulations affecting commercial trucks and lobbies on the industry’s behalf.

Before affiliating with the NTEA, the AMD was a division of the Truck Body and Equipment Association. In 1986, the AMD became a division of the NTEA to further enhance its credibility and depth of professionalism. The organization has grown dramatically over the past 28 years as more and more ambulance manufacturers and industry-related companies have realized the value and significance of being an AMD member. Currently composed of approximately 70 member companies, the AMD has consistently maintained representation of more than 90% of the ambulance production in North America. Since its original founding in 1976, the AMD has worked closely with all state and federal regulatory agencies and has been directly involved in activities that benefit the general public as well as the industry. These activities include:

- Partnership with the National Institute of Occupational Safety and Health (NIOSH) and other Federal Agencies to research and develop new, dynamic test methods to evaluate and improve occupant safety of the patient compartment.
- Partnership in, and on-going maintenance of, Industry Recommended Practices for ambulance patient compartment safety with SAE International.
- Partnership with the General Services Administration (GSA) in further development and revision of KKK-A-1822.
- Active support of the National Association of State EMS Officials (NASEMSO)
- Active involvement with truck chassis manufacturers in the development of new models and options that make their chassis more compatible for ambulance service.
- Support of the Ford Qualified Vehicle Modifier Program.
On-going development, improvement and updating of AMD test methods.

Active membership and participation in related industry standards and best practices.

Federal laws and regulations require that all motor vehicles, including ambulances, operated on public highways conform and be certified to all applicable Federal Motor Vehicle Safety Standards (FMVSS). The FMVSS set the performance requirements for the safety of new motor vehicles and motor vehicle equipment. The National Highway Traffic Safety Administration (NHTSA) of the U.S. Department of Transportation oversees these Standards that were established by the National Traffic and Motor Vehicle Safety Act of 1966. All AMD Standards are in addition to, and in no way substitute for, FMVSS and other federal requirements that apply to motor vehicles and other regulated aspects of ambulances and their intended functions.

Most AMD members maintain staff engineers to keep their companies abreast of technological advances applying to the manufacture of ambulance bodies, electrical systems, environmental systems and other ambulance components. These advances are incorporated into new ambulance models thereby continuously improving the industry through competition. No governmental agency dictates that AMD members make these improvements; they are done voluntarily to upgrade the product, make it more reliable, and provide even more dependable life support capabilities.

Development of AMD Standards began almost 30 years ago by AMD members, in conjunction with the GSA, and are currently cited in Federal Specification for the Star-of-Life Ambulance (KKK-A-1822). These tests are work in tandem with the KKK-A-1822 Specification by providing ambulance purchasers and users with performance standards specific to ambulances. These tests provide a verifiable means to help assure that ambulatory vehicles comply with certain performance requirements of the KKK-A-1822 Specification.

AMD Standards are developed and revised with input from the GSA, ambulance manufacturers and component suppliers, emergency medical technicians, paramedics, vehicle maintenance personnel, the Emergency Medical Service community at large and other interested parties through public comment. All proposed changes received during periods of public comment that may enhance the quality of the tests within their respective context are considered, and appropriate revisions are made accordingly. All of the enclosed AMD Standards have been incorporated into the latest revision of KKK-A-1822. These documents and others are available for download through the NTEA Web site at www.ntea.com

Ambulance Manufacturers Division of the NTEA
37400 Hills Tech Drive,
Farmington Hills, MI 48331-3414
S1. SCOPE
This standard establishes minimum requirements for testing ambulance body structural integrity.

S2. PURPOSE
The purpose of this standard is to demonstrate static strength of the patient compartment of an ambulance when subjected to a uniform load. This is a type test.

S3. APPLICABILITY
This standard applies to all ambulances. This is a type test.

S4. DEFINITIONS
S4.1 “Curb weight” shall include the weight of the complete ambulance; chassis, cab and body, including all mandatory equipment, full complement of fuel, lubricants and coolant.

S5. REQUIREMENTS
S5.1 Structural Integrity — Roof Loading.

S5.1.1 Any Type I or Type I-AD ambulance body shall withstand a force equal to 2.5 times the curb weight of the vehicle applied to the roof of the vehicle’s body structure, validated by testing a substantially similar ambulance.

S5.1.2 Any Type II ambulance body shall withstand a force equal to 1.5 times the curb weight of the vehicle applied to the roof of the vehicle’s body structure, validated by testing a substantially similar.

S5.1.3 Any Type III or Type III-AD ambulance body shall withstand a force equal to 2.5 times the curb weight of the vehicle applied to the roof of the vehicle’s body structure, validated by testing a substantially similar ambulance in accordance with Section 9.1 AMD Standard 001 Ambulance Body Structure Test.

S5.1.4 The downward vertical movement at any point on the roof application plate shall not exceed 5.12 in. (130 mm).

S5.1.5 Each exterior door of the vehicle shall be capable of opening and closing during the full application of the force and after release of the force.

S5.1.6 No structural damage to any load bearing or supporting members (e.g., torn or broken material, broken welds, popped or sheared body rivets, bolts, and/or fasteners) shall be evident during the application of the force and after the release of the force.

S6. TEST PROCEDURES
Each vehicle tested shall be capable of meeting the requirements of S5 when tested in accordance with the procedures set forth below:
S6.1 ROOF CRUSH TEST.
The following steps shall be performed during the roof crush test:

(1) Support the ambulance on a rigid fixture independent of the vehicle suspension.
(2) Remove any components that extend upward from the vehicle roof.
(3) Measure and record the distance from the mounting surface to each of the four corners of the roof.
(4) Employ a rectangular force application plate fitted as near as possible to the contour of the ambulance roof.
(5) Position the force application plate so that it is centered on the roof.
(6) Close all ambulance doors.
(7) Load the application plate to 500 lb (227 kg) at a deflection rate less than 0.5 in. (13 mm) per second.
(8) Record elevation readings of all four corners of the roof.
(9) Load the application plate to 50 percent of the final load at a deflection rate less than 0.5 in. (13 mm) per second.
(10) Record elevation readings of all four corners of the roof.
(11) Load the application plate to 100 percent of the final load at a deflection rate less than 0.5 in. (13 mm) per second.
(12) Record elevation readings of all four corners of the roof.
(13) Verify that patient compartment doors are capable of being opened and closed.
(14) Remove load.
(15) Verify that patient compartment doors are capable of being opened and closed.

S6.1.1 The application plate shall be a minimum of 5 in. (127 mm) longer and 5 in. (127 mm) wider than the vehicle roof of the patient’s compartment.

S6.1.2 For the purposes of the measurements in the ambulance roof shall be that structure, seen in the top projected view that coincides with the patient compartment of the ambulance, as shown in Figure 1 and Figure 2.
S6.2  SIDE CRUSH TEST (TYPE I AND TYPE III ONLY).
The following steps shall be performed during the side crush test:
(1)  Place either side of the body of the ambulance on a rigid horizontal surface so that the body of the ambulance is entirely supported.
(2)  Measure and record the distance from the mounting surface to each of the four top corners of the body side.
(3)  Employ a rigid, rectangular force application plate fitted as near as possible to the contour of the ambulance side.
(4)  Position the force application plate so that it is centered on the patient compartment side.
(5)  Close all ambulance doors.
(6)  Load the application plate to 500 lb (227 kg) at a deflection rate less than 0.5 in. (13 mm) per second.
(7)  Record elevation readings of all four corners of the body side.
(8)  Load the application plate to 50 percent of the final load at a deflection rate less than 0.5 in. (13 mm) per second.
(9)  Record elevation readings of all four corners of the body side.
(10) Load the application plate to 100 percent of the final load at a deflection rate less than 0.5 in. (13 mm) per second.
(11) Record elevation readings of all four corners of the body side.
(12) Verify that the rear patient compartment doors are capable of being opened and closed.
(13) Remove load.
(14) Verify that the rear patient compartment doors are capable of being opened and closed.

S6.2.1 The application plate shall be a minimum of 5 in. (127 mm) longer and 5 in. (127 mm) wider than the vehicle side of the patient’s compartment.
S1. SCOPE AND PURPOSE. This standard specifies the minimum static test requirements for oxygen tank holders. This is a type test.

S2. APPLICABILITY. This standard applies to holders for all oxygen tanks (including portable tanks) installed in ambulances.

S3. DEFINITION.

S3.1 "Oxygen tank holder" means the retention system, including all hardware provided for holding the oxygen tank(s).

S4. REQUIREMENTS. When a force equal to 25 times the weight of a fully loaded oxygen tank, for which the tank holder was designed to restrain, is applied to the oxygen tank holder, as specified in S5. (Test Procedure):

a. The oxygen tank holder components shall not fail or separate along attachment points.

b. The oxygen tank holder or any component thereof shall not separate from the vehicle at any attachment point.

c. The part of the vehicle to which the oxygen tank holder is attached shall not fail and/or separate at any attachment point.

d. The force application cylinder specified in S5.1 shall not disengage from the oxygen tank holder.

S5. TEST PROCEDURES. Each oxygen tank holder shall be capable of meeting the requirements of S4 when tested in accordance with the following procedures, using a force applications cylinder as described in S5.1.

S5.1 The force application cylinder is a rigid structure having the same physical dimensions as the oxygen tank for which the tank holder was designed to restrain.

S5.2 Using the oxygen tank holder, which is subject to requirements of S4, install the force application cylinder in the vehicle and apply the forces specified in S5.2.1 and S5.2.2. Simultaneous application of the forces required by S5.2.1 and 5.2.2 is not required.

S5.2.1 Apply the force required by S4 to the cylinder’s bottom surface, when the cylinder is installed in a vertical plane. In the case of horizontal installation, the force required in S4 must be applied to each end of the cylinder.

S5.2.2 Apply the force required by S4 to the cylinder in any direction in a plane perpendicular to the longitudinal center line of the cylinder and that passes through the location that corresponds to the location of the center of gravity of a full tank, for which the holder is designed to restrain.
S1. SCOPE AND PURPOSE. This standard establishes minimum requirements for testing the installation of the litter retention system when installed per the manufacturer’s directions. This is a type test.

S2. APPLICABILITY. This standard applies to all ambulances.

S3. DEFINITIONS.

S3.1 “Litter retention system” means a system that provides means for securing a litter by the posts and wheels to the floor and/or side wall of an ambulance.

S3.2 “Litter” means a wheeled cot (elevating) and/or a wheeled cot-bench (non-elevating).

S4. REQUIREMENTS. Each litter retention system shall be capable of meeting requirements set forth under this standard when tested in accordance with test procedures outlined in S6.

S4.1 The litter retention system, anchorages and litter fastener(s) shall not fail or release when subjected to the cot manufacturers recommended load or a minimum force of 2,200 lbs. applied in the longitudinal, lateral and vertical direction. (NOTE: These are three individual tests.)

S5. TEST CONDITIONS. The following conditions apply:

S5.1 The ambulance floor shall be in a horizontal plane.

S5.2 If multiple locations exist, the litter retention system shall be tested in each location.

S5.3 The testing device is a structure of appropriate design used for locking onto the hook(s) (or other litter securing means) of the litter retention system (similar to the cot frame). Force is applied through a pivot located 15” above the floor at a point representing the center of the litter.

S6. TEST PROCEDURES.

S6.1 Install the test device in the litter retention system in such a manner that will preclude contact friction with the floor or cabinet surfaces.

S6.2 Attach a cable with a calibrated, in-line strain gauge to the test device pivot and apply an initial vertical upward load to the device.

S6.3 As rapidly as possible, apply the full force required in S4.1 to the device.

S6.4 Record strain gauge readings and observe any deformation of floor, cabinets or retention mechanism.

S6.5 Release applied load.

S6.6 If any deformation has occurred in the retention mechanism (i.e., hooks, antlers or side bars) replace damaged parts.

S6.7 Reinstall test fixture and repeat steps S6.1 through S6.5 in the longitudinal direction and again in the lateral direction.
S6.8 Record all resultant data.

**NOTE:** Rotation or deformation of retention mechanisms does not constitute failure.
S1. SCOPE.
This standard establishes testing and certification requirements for ambulance electrical systems.

S2. PURPOSE.
The purpose of this standard is to verify performance of an ambulance 12-volt DC electrical system. Each finished vehicle shall be tested.

S3. DEFINITION.
S3.1 “Common point” means a point in the ambulance 12-volt DC electrical system that is common for the electrical generating and storage system to the electrical consuming system of the vehicle, at which the current is to be measured.

S4. TEST PROCEDURE.

S4.1* The ambulance’s low voltage electrical system shall be tested as required by this section, the test results shall be certified by the ambulance manufacturer, and the certified test results shall be delivered with the ambulance.

S4.2 Tests shall be performed when the ambient air temperature is between 60°F and 110°F (15°C and 43°C).

S4.3 Test Sequence.

S4.3.1 The tests defined in S4.3.2 through S4.3.4.4 shall be performed in the order in which they appear.

S4.3.1.1 Before each test, the batteries shall be fully charged until the voltage stabilizes at the voltage regulator set point and the lowest charge current is maintained for 10 minutes.

S4.3.1.2 Failure of any of these tests shall require a repeat of the sequence.

S4.3.2 Reserve Capacity Test.

S4.3.2.1 The engine shall be started and kept running until the engine and engine compartment temperatures are stabilized at normal operating temperatures and the battery system is fully charged.

S4.3.2.2 The engine shall be shut off, and the minimum continuous electrical load shall be activated for 10 minutes.

S4.3.2.3 All electrical loads shall be turned off prior to attempting to restart the engine.

S4.3.2.4 The battery system shall then be capable of restarting the engine.

S4.3.2.5 Failure to restart the engine shall be considered a test failure of the battery system.

S4.3.3 Alternator Performance Test at Idle.

S4.3.3.1 The minimum electrical load test conditions as stated in the governing standard shall be activated with the engine running at idle speed.
S4.3.3.2 The engine temperature shall be stabilized at normal operating temperature.

S4.3.3.3 The battery system shall be tested to detect the presence of battery discharge current.

S4.3.3.4 The detection of battery discharge current shall be considered a test failure.

S4.3.4 Alternator Performance Test at High Idle.

S4.3.4.1 The operational electrical load test conditions as stated in the governing standard shall be activated with the engine running at high idle.

S4.3.4.2 The test duration shall be a minimum of 30 minutes with engine at operating temperature.

S4.3.4.3 Engine speed shall not exceed 1600 RPM

S4.3.4.4 Activation of the load management system shall be permitted during this test.

S4.3.4.5 An alarm sounded by excessive battery discharge, as detected by the warning system, or a system voltage of less than 11.8 volts dc for a 12-volt nominal system, 23.6 volts dc for a 24-volt nominal system, or 35.4 volts dc for a 42-volt nominal system for more than 120 seconds shall be considered a test failure.

S4.4 Low Voltage Alarm Test.

S4.4.1 The following test shall be started with the engine off and the battery voltage at or above 12 volts for a 12-volt nominal system, 24 volts for a 24-volt nominal system, or 36 volts for a 42-volt nominal system.

S4.4.2 With the engine shut off, the total continuous electrical load shall be activated and shall continue to be applied until the excessive battery discharge alarm activates.

S4.4.3 The battery voltage shall be measured at the battery terminals.

S4.4.4 The test shall be considered a failure if the alarm does not sound in less than 140 seconds after the voltage drops to 11.70 volts for a 12-volt nominal system, 23.4 volts dc for a 24-volt nominal system, or 35.1 volts for a 42-volt nominal system.

S4.4.5 The battery system shall then be able to restart the engine.

S4.4.6 Failure to restart the engine shall be considered a test failure.

NOTE: ** denotes reference to explanatory item available in the current edition of NFPA 1917 Standard for Automotive Ambulances, Annex A.
S1. PURPOSE AND SCOPE
This standard establishes the requirements for measuring the maximum sound level for ambulance patient compartments. This is a type test.

S2. APPLICABILITY
This standard applies to all ambulances.

S3. REQUIREMENTS
The interior sound level in the patient compartment shall not exceed 80 decibels.

S4. TEST PROCEDURE

S4.1
This test shall be performed during the following environmental conditions:
(1) Temperature not to exceed 95°F (35°C)
(2) Humidity not to exceed 75 percent relative humidity
(3) Wind velocity not to exceed 12 mph (19 km/hr)
(4) Barometric pressure 29 in. Hg to 31 in. Hg (98.2 kPa to 104.9 kPa)

S4.2
The following steps shall be performed during the patient compartment sound level test:

(1) Measure sound level using a meter that meets the requirements of ANSI S1.4, Specification for Sound Level Meters, for Type II meters with the meter set to A for a weighting network, “fast” meter response.
(2) Suspend the microphone 23 in. (584 mm) above the vehicle floor, centered laterally and longitudinally on the expected center of the patient cot as it will be secured in the patient compartment.
(3) Park the ambulance on a concrete or asphalt surface, at a location so that no large reflecting surfaces, such as other vehicles, signboards, buildings, or hills, are within 50 ft (15.2 m) of the vehicle being tested.
(4) Close all ambulance doors, windows, and vents.
(5) Run air conditioner and heater blower fans in patient compartment at the highest speed.
(6) Set vehicle transmission in neutral gear and set the engine speed to the rpm obtained by the ambulance when operating on level ground at 55 mph (88 km/hr).
(7) Turn on all warning lights.
(8) Operate siren in the loudest mode.
(9) Measure and record the highest sound level.
(10) Decrease the engine speed to idle and then back to the 55 mph (88 km/hr) rpm.
(11) Measure and record the highest sound level.
(12) Repeat until two maximum sound levels within 2 decibels (dB) of each other are recorded.
(13) Numerically average these two maximum sound level readings.
S1. PURPOSE AND SCOPE. This standard establishes the minimum requirements for testing for the presence of carbon monoxide (CO) gas in ambulances. This is a type test.

S2. TEST CONDITIONS.
   a. Open vehicle doors and ventilate with fresh air for 10 minutes.
   b. Do not conduct testing during high wind periods (above 15 mph) or during any type of precipitation.
   c. Calibrate equipment at start of test.

S3. TEST EQUIPMENT.
   a. MSA Model I or Model II CO monitor or equivalent instrument with accuracy of plus or minus 4%.
   b. Canister of 60–100 parts per million (ppm) CO.

S4. TEST PROCEDURE.

S4.1 Sample ambient air around the outside of the vehicle and record.

S4.2 Close all doors and windows of vehicle, assuring that heating, air conditioning and ventilating systems are off.

S4.3 Start and idle engine in parked position for 10 minutes.

S4.4 Monitor CO at head of primary cot for the first five minutes and record results.

S4.5 Monitor CO around doors, windows and floor for the remaining five minutes and record results.

S4.6 With environmental systems remaining off, drive the vehicle for 10 minutes on traffic laden city streets (15–30 mph).

S4.7 Repeat S4.4.

S4.8 Repeat S4.5.

S4.9 With environmental systems remaining off, drive vehicle for 10 minutes on limited access (interstate) highway (45–65 mph).

S4.10 Repeat S4.4

S4.11 Repeat S4.5

S4.12 Stop vehicle and repeat S4.1
S5.  CALCULATION OF RESULTS.

S5.1  Determine the average reading taken in S4.1 and S4.2.

S5.2  Deduct result of S4.1 from the highest reading taken in each of the three tests. The resultant levels of CO shall not exceed 10 ppm.

S5.3  Record all results noting time, date, location and route of tests. Record temperature, barometric pressure and humidity at the time of the test.
S1. PURPOSE AND SCOPE
This standard establishes minimum requirements for testing an ambulance grab rail. This is a type test.

S2. APPLICABILITY
This standard applies to all ambulances.

S3. REQUIREMENTS
Handrails shall withstand a force of 300 lb (136 kg) applied in any direction without detaching, loosening, or permanently deforming.

S4. TEST PROCEDURE.
The following steps shall be performed during the handrail static load test:

(1) Apply force to handrail at the midpoint between every location where the handrail fastens to the vehicle body structure and as near as possible to the ends of the handrail, as shown in Figure 1
(2) Apply the force perpendicular to the mounting surface.
(3) Apply the force parallel to the mounting surface.
(4) Apply the force diagonal to the mounting surface at an angle midway between the perpendicular and the parallel pulls, as shown in Figure 2
(5) Maintain each force application for 2 minutes.

Copyright © 10/2014 NTEA
S1. SCOPE AND PURPOSE. This standard establishes test requirements for ambulances and equipment installed within or on ambulances and the conductors that connect ambulances to 125 volt, nominal, AC electrical supply system(s).

S2. APPLICABILITY. This standard applies to all ambulances.

S3. DEFINITIONS.

S3.1 “Dielectric Testing (withstanding)”, a test of the insulation between normal current carrying conductors (hot and neutral) and the ground (ambulance shoreline ground or ambulance chassis ground). This is accomplished by applying higher than normal voltage across the insulation for a given period of time. The purpose of this test is to detect any ‘weak spots’ in the insulation of the “current carrying conductor/s.

S3.2 “Continuity Test” means the testing to ensure all metallic parts that may become energized are properly bonded and that the bonding path is complete.

S3.3 “Operational Test” means testing all added 125 volt equipment or outlets for function.

S3.4 “Polarity Test” means using a polarity or circuit tester with built-in GFCI tester to test all outlets for proper polarity.

S4. REQUIREMENTS. Each ambulance shall be tested this is not a type test.

S4.1 FACTORY ELECTRICAL TESTS. Each ambulance shall be subjected to the following tests, and the results shall be documented:

   a) Dielectric Test. (withstanding) this test is accomplished by introducing a higher voltage (AC or DC), for the specified period of time per Table 1 (or) per test parameters below, to assure the wire insulation will perform as designed and installed.

<table>
<thead>
<tr>
<th>Test Voltage</th>
<th>Time</th>
<th>Trip Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>900 - 1079 volts AC</td>
<td>60 seconds</td>
<td>10 – 50 mA</td>
</tr>
<tr>
<td>1273 -1526 volts DC</td>
<td>≥ 2- 5 s</td>
<td>≥ 1 – 3 mA</td>
</tr>
</tbody>
</table>

The dielectric withstanding test is to be performed between ungrounded and grounded conductors of the Ambulance on all 125 volt circuits.

NOTE 1: This test is to be conducted after all production activities that may damage conductors, such as cabinet set, trim / upholstery installation and any final assembly.
NOTE 2: All wiring installed by the Ambulance manufacturer that supplies current from a generator or inverter to the Ambulance branch circuits must be dielectric tested. Generators and inverters need to be disconnected to reduce possible test voltage damage.

NOTE 3: When testing 125 volt system with load transfer switch (shoreline power), the test must be performed on both sides of the switch to assure total circuit testing.

b) Continuity Test. A continuity test is to be performed to ensure that all metallic parts are properly bonded using a volt/ohm meter or other suitable continuity tester.

c) Polarity Test. A polarity test is to be performed using a polarity or circuit tester to ensure that all electrical connections (neutral, hot and ground) have been properly made and that all GFCI devices function as required.

d) Operational Test. Operational tests are to be performed to demonstrate that all equipment is properly connected and in working order. This should be done through shoreline connections, inverters and generators (based on ambulance configuration / equipment) by use of volt/ohm meters, circuit tester, or by using test loads.
S1. SCOPE.
This standard establishes requirements for the testing of ambulances for water leakage.

S2. PURPOSE.
The purpose of this standard is to minimize the possibility of water leakage in ambulances. Each finished vehicle shall be tested.

S3. APPLICABILITY
This standard applies to all ambulances.

S4. REQUIREMENTS.
There shall be no water leakage into the cab, any exterior compartment, or the patient compartment.

S5. TEST PROCEDURES
The water leak test shall be performed during the following environmental conditions:
(1) Temperature above 40°F (4°C)
(2) Wind velocity not to exceed 10 mph (16 km/hr)

S5.1
The following steps shall be performed during the water leak test:
(1) Close all windows and doors.
(2) Turn off heating, ventilating, and air conditioning (HVAC) systems.
(3) Drench the entire roof, sides, front, and back of the vehicle evenly with water spray from a nozzle or combination of nozzles.
(4) Continue spraying until a minimum of 40 gal (151 L) of water has been used.
(5) Start engine and operate the cab and patient compartment ventilation systems at maximum ventilation rates.
(6) Continue spraying until an additional minimum of 40 gal (151 L) of water has been used.
(7) Inspect the interior of the cab and patient compartment for water leaks during the duration of the test.
(8) At the conclusion of the test, examine all exterior lights and exterior compartments for leakage.
S1. PURPOSE AND SCOPE
This standard establishes testing requirements for the ambulance and ambulance equipment over a specified ambient temperature range. This is a type test.

S2. APPLICABILITY
This standard applies to all ambulances.

S3. REQUIREMENTS
All interior systems, components, and permanently attached equipment shall function satisfactorily over a temperature range of 32°F to 95°F (0°C to 35°C).

S4. TEST PROCEDURES
The following steps shall be performed during the equipment temperature test:

1. Locate the test vehicle in an environmental chamber capable of maintaining a temperature within ±4°F (2°C).
2. Turn off all vehicle power.
3. Open all patient compartment entry doors, cabinet doors, cab door windows, and exterior compartment doors.
4. Maintain an air velocity over the vehicle of at least 5 mph (8 km/hr) throughout the entire test.
5. Cool the chamber to 32°F (0°C) and soak the vehicle at this temperature for a minimum of 3 hours.
6. Start the engine.
7. Operate all vehicle systems for 1 hour while maintaining 32°F (0°C) chamber temperature.
8. Shut off the engine.
9. Heat the chamber to 95°F (35°C) and soak the vehicle at this temperature for a minimum of 3 hours.
10. Start the engine.
11. Operate all vehicle systems for 1 hour while maintaining 95°F (35°C) chamber temperature.
12. Shut off the engine.
S1. SCOPE
This standard verifies the performance of the primary heater/air conditioning system of an ambulance.

S2. PURPOSE
The purpose of this standard is to measure and ensure adequate performance of the heater/air conditioning system in an ambulance. This is a type test.

S3. APPLICABILITY
This standard applies to all ambulances.

S4. REQUIREMENTS.
The heating system shall be capable of raising the interior temperature from 32°F to 68°F (0°C to 20°C) within 30 minutes when tested in accordance with S5.

The air-conditioning system shall be capable of lowering the interior temperature from 95°F to 78°F (35°C to 25°C) at a minimum of 40 percent relative humidity within 30 minutes when tested in accordance with S5.

S5. TEST PROCEDURES
*The following steps shall be performed during the interior climate control test:
(1) Locate the test vehicle in an environmental chamber capable of maintaining a temperature within ±4°F (2°C).
(2) Locate three thermocouples 7 in. (178 mm) off the floor along the patient compartment centerline and equally spaced from front to back.
(3) Locate three thermocouples 7 in. (178 mm) below the ceiling along the patient compartment centerline and equally spaced from front to back.
(4) Locate three thermocouples midway between the floor and the ceiling along the patient compartment centerline and equally spaced from front to back.
(5) Locate three thermocouples in the cab horizontally positioned 24 in. (600 mm) above the seat cushion and located 12 in. (300) in front of the headrest.
(6) Locate the first and third thermocouples along the centerline of the driver’s and passenger’s seats and center the second between the first and third.
(7) Turn off all vehicle power.
(8) Open all patient compartment entry doors, cabinet doors, cab door windows, and exterior compartment doors.
(9) Open engine hood.
(10) Maintain an air velocity over the vehicle of at least 5 mph (8 km/hr) throughout the entire test.
(11) Cool the chamber to 32°F ± 4°F (0° C ± 2°C) and soak the vehicle at this temperature for a minimum of 3 hours.
(12) Close all doors and hood with the exception of partition doors (if present) and patient compartment/cab partition window (if present).
(13) Set heaters in cab and patient compartment to maximum heating setting (maximum temperature, maximum blower speed, recirculating air).
(14) Record the thermocouple temperatures.
(15) Shut off patient compartment dome lights.
(16) Start engine and maintain transmission in neutral or park and engine high idle on with a maximum engine speed not to exceed 1600 rpm for the duration of the test.
(17) Record thermocouple temperatures at 5-minute intervals up to 30 minutes.
(18) Shut off the engine.
(19) Open all patient compartment entry doors, cabinet doors, cab door windows, and exterior compartment doors.

(20) Open the engine hood.

(21) Heat the chamber to 95°F (35°C) with a minimum of 40 percent relative humidity and soak the vehicle at this temperature for a minimum of 3 hours.

(22) Close the hood; all doors, with the exception of partition doors (if present); and all windows, with the exception of the patient compartment/cab partition window (if present).

(23) Set the air conditioners in the cab and the patient compartment to maximum cooling setting (maximum blower speed, coldest temperature setting, recirculating air).

(24) Record the thermocouple temperatures.

(25) Shut off the patient compartment dome lights.

(26) Start the engine and maintain the transmission in neutral or park and engine high idle on with a maximum engine speed not to exceed 1600 rpm for the duration of the test.

(27) Record thermocouple temperatures at 5-minute intervals up to 30 minutes.

(28) Shut off the engine.

NOTE 1: "*" denotes reference to explanatory material available in the Annex to this document.
S1. SCOPE. This standard establishes measurement of ambulance weight distribution.

S2. PURPOSE. The purpose of this standard is to assure vehicle weight is within required limits and proportionally distributed to each wheel. This is a type test.

S3. APPLICABILITY. This standard applies to all ambulances.

S4. DEFINITIONS.

S4.1 “Curb weight” means the weight of a motor vehicle with standard equipment — maximum capacity of engine fuel, oil and coolant.

S5. REQUIREMENTS. In the absence of instructions from the chassis manufacturer to the contrary, the following requirements shall apply to all ambulances. The total weight of the vehicle, including all occupants and cargo, shall not exceed the gross vehicle weight rating (GVWR) or any gross axle weight rating (GAWR). Additionally, the vehicle shall not exceed any maximum unloaded vehicle weight limitations specified by the chassis manufacturer. The requirements of S5.2 can be satisfied through actual weights and/or calculated methods.

NOTE: All specifications and requirements of the chassis manufacturer shall take precedence where they may conflict, be more stringent or more complete than the following requirements of this standard.

S5.1 Payload. The curb weight of the completed vehicle shall provide enough payload capacity to meet the minimum value as required for the ambulance type under the current version of KKK-A-1822, unless optional items are ordered by customer. If customer-ordered, optional items are included in the curb weight (i.e., permanently attached equipment), minimum payload values no longer apply and the resulting payload will be communicated to the customer. Curb weight of the completed vehicle shall be verified in accordance with S6, but initial values of payload capacity may be calculated to evaluate customer payload requirements per the specific application.

S5.2 Weight Distribution.
   a. The curb weight of the completed ambulance shall be the same from side to side within 5% on any given axle.

   When loaded to GVWR:
   b. The weight on each axle shall be within its respective GAWR;
   c. The front to rear weight distribution shall have not less than 20% of the total weight on the front axle, and not less than 50% nor more than 80% on the rear axle; and
   d. The center of gravity of the loaded vehicle must be located in accordance with all stated limitations of the chassis manufacturer.

S6. TEST PROCEDURES.

S6.1 On level ground, determine the amount of curb weight on each wheel end (i.e., “corner weight”) of the completed ambulance.
6.2 Divide the weight on the left front wheel by the sum of the weights on the left front and right front wheels. Then multiply the number by 100% to obtain the percent of the front axle load carried by the left front wheel.

S6.3 Find the difference between the percent of the front axle load carried by the left front wheel and 50%. Multiply the resulting number by 2 to obtain the percent weight difference between the left front and right front wheels.

S6.4 Use the procedures outlined in S6.2 and S6.3 to determine the percent weight difference on the rear axle.

S6.5 Subtract the total curb weight of the completed vehicle from the GVWR. Verify that the resulting payload capacity is equal to or greater than the minimum required by the current version of KKK-A-1822 or other amount established with the customer. Any permanently attached, optional items of equipment specified by the customer are to be included in the curb weight of the completed vehicle. Any other items of optional equipment (i.e., not permanently attached and/or removable) are to be included in the payload requirement. Use this value for the payload signage required in the current version of KKK-A-1822.

S6.6 Using the curb/corner weight information from S6.1, load the vehicle to its GVWR using actual weight or by mathematical weight distribution. The weight of occupants at 175 lbs. shall be calculated or placed at the design H-point of each designated seating position and equivalent location for the patient position. Any optional equipment shall be placed accordingly or combined to a single value and location to represent the effect of the weight. Any remaining cargo capacity shall be evenly distributed from the front occupant compartment through the rear of the patient compartment and/or placed accordingly in cabinets and storage areas or according to customer specific requirements.

S6.7 Under the loading conditions of S6.6, determine the weight on the front and rear axles and compare each load to the GAWR for each axle. All axle loads shall comply with the front/rear distribution conditions of S5.2 c.

S6.8 Using the previous information where appropriate, determine the center of gravity location under the conditions set forth by the chassis manufacturer and compare to the limits/conditions set forth in the respective incomplete vehicle document or other appropriate chassis manufacturer publication.
S1. SCOPE. This standard verifies performance of the engine cooling system.

S2. PURPOSE. The purpose of this test is to reduce the possibility of ambulance overheating while operating in a high-temperature environment. This is a type test.

S3. APPLICABILITY. This standard applies to all ambulances.

S4. REQUIREMENTS. With the patient compartment and cab air conditioners operating at maximum cooling settings (coldest setting, maximum blower speeds, re-circulating air), engine on high idle, an ambient temperature of 95° F, with a relative humidity of a minimum 40%, and air velocity of at least 5 mph, the cooling system must maintain the engine temperature within the OEM recommended safe operating limits for one hour. If a malfunction warning lamp is illuminated during the test due to excessive engine temperatures, the test is considered failed.

S5. TEST PROCEDURES.

S5.1 Place the ambulance in the hot room. Open all doors: cabinet doors, partition door (if present), patient compartment/cab window (if present) exterior compartment doors and hood.

S5.2 Heat room to 95° F with a minimum relative humidity of 40% and an air velocity of at least 5 mph for three hours.

S5.3 Close all doors, hood, partition door (if present) and patient compartment/cab partition window (if present).

S5.4 Maintain a minimum room air velocity of 5 mph over the vehicle for the duration of the test.

S5.5 Set air conditioners in cab and patient compartment to maximum cooling setting (maximum blower speed, coldest temperature setting, re-circulating air).

S5.6 With all other ambulance equipment off, operate the engine for one hour at a speed not to exceed 1600 rpm for the duration of the test.
S1. SCOPE
This standard establishes testing requirements for the on-board medical gas system.

S2. PURPOSE
The purpose of this standard is to minimize the possibility of an medical gas system leak and to demonstrate adequate flow through the medical gas outlets. Each vehicle shall be tested as noted in (S5).

S3. APPLICABILITY
This standard applies to all ambulances.

S4. REQUIREMENTS

S4.1 The medical gas system shall lose no more than 5 psi (34.5 kPa) of pressure in a 2-hour period.

S4.2 *Each outlet shall be capable of delivering at least 3.53 ft³/min (100 L/min) of medical gas.

S4.3 *A label shall be provided near the medical gas tank stating the following: “The integrity of this medical gas system was tested in accordance with AMD 015 and meets the requirements thereof.”

S4.4 The label shall be signed and dated by an authorized representative of the ambulance manufacturer or test agency.

S5 TEST PROCEDURE

S5.1 Pressure Test.
The following steps shall be performed for the pressure test:

1. Ensure that the ambulance temperature has stabilized in an environment between 34°F (1°C) and 110°F (43°C).
2. If equipped, bypass must be open.
3. Charge the system with approximately 80 psi (552 kPa) of test gas.
4. *Close system valves to trap pressure in the lines that contain the vent valve.
5. Record the system pressure with an accuracy of ±1 psi (7 kPa).
6. Allow the system to rest without disturbance for 2 hours.
7. Record the system pressure.
S5.2 Flow Test.
The following steps shall be performed for the flow test:

(1) Ensure that the ambulance temperature has stabilized in an environment between 34°F and 110°F (1°C and 43°C).
(2) Charge the system with test gas regulated to 50 psi ± 2 psi (345 kPa ± 14 kPa).
(3) Plug all outlets other than the one being tested.
(4) **Measure and record the flow of gas from each outlet using a flowmeter with an accuracy of ±0.18 ft³/min (±5 L/min).
(5) Check the electrical continuity between the medical gas system piping and the vehicle to verify that it is grounded

NOTE 1: “**” denotes reference to explanatory material available in the Annex to this document.

NOTE 2: “***” denotes reference to explanatory item available in the current edition of NFPA 1917 Standard for Automotive Ambulances, Annex A.
S1. SCOPE AND PURPOSE
This standard verifies performance of ambulance interior lighting. This is a type test.

S2. APPLICABILITY
This standard applies to all ambulances.

S3. REQUIREMENTS

S3.1 The patient compartment lighting shall have the two levels of lighting, high and low, at a minimum.

S3.2 In the high setting, the patient compartment floor shall have a minimum of 15 fc of illumination, measured along the centerline of the clear floor.

S3.3 In the high setting, the primary cot shall be provided with a minimum of 35 fc of illumination, measured on at least 90 percent of the cot’s surface area.

S3.4 In the low setting, the patient compartment floor shall have a minimum of 3.5 fc of illumination, measured along at least 85 percent of the centerline length.

S3.5 In the low setting, the side entry step shall have a minimum of 2.0 fc of illumination, measured in the center of the step area.

S3.6 Compliance of the requirements in S3.2 through S3.5 shall be validated by testing a substantially similar ambulance in accordance with S4.

S4. TEST PROCEDURE

The following steps shall be performed for the patient compartment lighting level test:

1. Prepare the ambulance or locate it in an environment to prevent light from penetrating into the patient compartment.
2. Remove the patient cot.
3. Start the engine.
4. Turn on dome lights to highest setting.
5. Measure and record the light intensity along the longitudinal centerline of the patient compartment floor every 10 in. (254 mm).
6. Turn on the lights that come on with the side entry door or rear entry door.
7. *Measure and record the light intensity along the longitudinal centerline of the patient compartment floor every 10 in. (254 mm).
8. Measure and record the light intensity in the center of the side entry step well and record the reading.
9. Install the patient cot test grid shown in Figure 1, 17 in. (432 mm) above the patient compartment floor, centered laterally and longitudinally on the expected center of the patient cot as it will be secured in the patient compartment.
10. Measure and record the light intensity in the center of each 5 in.² (322 mm²) area on the test grid.

NOTE 1: “*” denotes reference to explanatory material available in the Annex to this document.
Figure 1  Patient Cot Test Grid, Top View.
S1. PURPOSE AND SCOPE. This standard verifies ambulance road performance. This is a type test.

S2. APPLICABILITY. This standard applies to all ambulances.

S3. DEFINITIONS.

S3.1 “Curb Weight” is the total weight of the complete ambulance and is defined as chassis (including batteries and any other permanently attached or dedicated equipment); cab; body and a full complement of fuel, lubricants and coolant.

S3.2 “Payload Allowance” is the minimum payload for the listed vehicles.
   a. Single rear-wheeled, van ambulances (Type II), 1,500 lbs.
   b. Dual, rear-wheeled, modular ambulances (Type I or III), 1,750 lbs.
   c. Additional duty modular ambulances (Type I AD or III AD), 2,250 lbs. or more, as specified by customer.

S3.3 “Cross-Country Operation” is defined as travel over open fields, rolling hills, rough and muddy terrain.

S4. REQUIREMENTS. The ambulance shall be capable of meeting the requirements set forth under this standard when tested in accordance with test procedures outlined in S6. under the conditions set forth in S5.

S4.1 Speed. The vehicles shall be capable of a sustained speed of not less than 65 mph over dry, hard-surfaced, level roads, at sea level, and passing speeds of 70 mph.

S4.2 Acceleration. Vehicle shall have a minimum average acceleration at sea level of 0–55 mph within 25 seconds.

S4.3 Gradeability. The vehicle shall be capable of meeting the following requirements. The determination shall be made by actual test or chassis manufacturer’s certified computer prediction or chassis manufacturer’s certification.
   a. Minimum gradeability at speed shall be 55 mph on a 3% (1.72 degrees) grade.
   b. The minimum low speed gradeability of 5 mph on a 35% (19.3 degrees) grade is required for 4x2 vehicles.
   c. The minimum low-speed gradeability of 5 mph on a 45% (24.2 degrees) grade for 4x4 vehicle in the low 4x4 range.

S4.4 Fuel Range. The ambulance shall be capable of being driven for at least 250 miles without refueling.

S4.5 Fording. The vehicle shall be capable of three fordings, without water entering patient and equipment compartments while being driven through a minimum of 8” of water, at speeds of 5 mph, for a distance of at least 100’.

S5. TEST CONDITIONS. The following conditions apply.

S5.1 Road test may be performed at any ambient temperature.
S5.2 Vehicle must be loaded to curb weight plus total usable payload (i.e., GVWR), or if specified by the customer, to the prescribed curb weight plus the minimum payload allowance for the type of vehicle being tested as listed in S3.2.

S6. TEST PROCEDURE.

S6.1 The vehicle shall be subjected to a minimum 150-mile road test.
   a. Seventy-five (75) miles shall be continuous miles on paved highways at speeds up to 70 mph.
   b. Thirty (30) miles on city streets.
   c. Fifteen (15) miles on gravel or dirt roads at speeds up to at least 35 mph.
   d. Not less than five miles in simulated or actual cross-country operation at speeds applicable to the terrain.
   e. 4x4 vehicles shall demonstrate cross-country operation in four-wheel drive for an additional 20 miles.
   f. Balance of the 150-mile road test may be accumulated during other tests and checks requiring vehicle movements.
   g. After completion of the road test, vehicle shall be subjected to the water spray test (AMD Standard 010).
S1. SCOPE AND PURPOSE
   This standard establishes the minimum requirements for testing an ambulance rear step while
   the ambulance is not in motion. This is a type test.

S2. APPLICABILITY
   This standard applies to all ambulances.

S3. REQUIREMENTS

S3.1 The rear stepping surface shall withstand a load of 500 lb (227 kg) with no more than 1.0 in.
   (25.4 mm) of deflection or 0.25 in. (6.4 mm) of permanent deformation.

S3.2 Compliance of the rear step surface shall be validated by testing a substantially similar
   ambulance or bumper and step structure in accordance with S4.

S4. TEST PROCEDURE
   The following steps shall be performed during the rear stepping surface load test:
   (1) Support the ambulance or substantially similar structure to negate the effect of the vehicle
       suspension.
   (2) Apply a vertical load on the stepping surface using a fixture that distributes the load over a
       circular area 5 in. (127 mm) in diameter.
   (3) Apply 500 lb (227 kg) of load to the lateral and longitudinal center of the stepping surface.
   (4) Record deflection during the load application.
   (5) Release the load.
   (6) Measure and record any permanent deformation after the load is released.
   (7) Apply 500 lb (227 kg) of load to the longitudinal center of the stepping surface as close to
       each of the lateral extremes as the test fixture will allow.
   (8) Record deflection during the load application.
   (9) Release the load.
   (10) Measure and record any permanent deformation after the load is released.
S1. **SCOPE AND PURPOSE.** This standard establishes guidelines for accurately measuring the volume of interior cabinets and exterior compartments of an ambulance. This is a type test.

S2. **APPLICABILITY.** This standard applies to all ambulances.

S3. **DEFINITIONS.**

S3.1 “Cabinet depth” is the measured depth from the cabinet inside back wall to the outside cabinet face.

S3.2 “Compartment depth” is the measured depth from the compartment inside back wall to the outside compartment face.

S3.3 “Door OD” is the door overall outside thickness (dimension).

S3.4 “Depth ID” is the actual interior depth ether measured or figured by subtracting the Door OD from the cabinet or compartment measured depth.

S3.5 “Height ID” is determined by measuring from interior bottom surface to the interior surface of the cabinet or compartment top.

S3.6 “Width ID” is determined by measuring from one interior surface to the next interior surface of the cabinet or compartment.

S3.7 “Sliding window track” is the track used for sliding cabinet windows.

S3.8 “Sliding cabinet windows” is the sliding doors used on interior cabinets.

S4. **TEST CONDITIONS.**

S4.1 Remove any loose or mounted removal able equipment from interior cabinets or exterior compartments. Examples would be fire extinguishers, portable oxygen mounts, spare tires and tools.

S5. **TEST PROCEDURE.**

S5.1 Interior cabinet with sliding doors or roll-up doors (Figure 1).
   a. Measuring from the back of the rear wall to the back of the sliding window track, record that dimension for Depth ID.
   b. Measuring from cabinet interior wall to wall, record that dimension for Width ID.
   c. Measuring from the interior top to bottom, record dimension. This is the Height ID.
   d. Multiply Height ID x Width ID x Depth ID = then divide by 1,728 to get cubic feet.

S5.2 Interior cabinets with hinged doors (Figure 2).
   a. Measure from the back of the door to the face of the door and record that dimension for Door OD.
   b. Measure from the back of the rear wall to the cabinet face and record that dimension for cabinet depth.
   c. Subtract the Door OD from the cabinet depth to get Depth ID.
d. Measure from cabinet interior wall to wall and record that dimension for Width ID.
e. Measure from the interior top to bottom and record dimension. This is the Height ID.
f. Multiply Height ID x Width ID x Depth ID = then divide by 1,728 to get cubic feet.

S5.3 Exterior Compartments with hinged doors (Figure 3).
 a. Measure from the back of the door to the face of the door and record that dimension for Door OD.
b. Measure from the back of the rear wall to the cabinet face and record that dimension for cabinet depth.
c. Subtract the Door OD from the cabinet depth to get Depth ID.
d. Measure from cabinet interior wall to wall and record that dimension for Width ID.
e. Measure from the interior top to bottom and record dimension this is the Height ID.
f. Multiply Height ID x Width ID x Depth ID = then divide by 1,728 to get cubic feet.

NOTE: Subtract any notches for spring shackles or fuel systems from the total to get the correct total cubic feet.

Figure 1
FLOOR DISTRIBUTED LOAD TEST - 2014

S1. SCOPE. This standard establishes the minimum testing requirements for verifying patient compartment floor weight bearing capacity.

S2. PURPOSE. The purpose of this standard is to validate that the weight bearing capacity of the ambulance floor can support the weight of the laden cot. This is a type test.

S3. APPLICABILITY. This standard applies to all ambulances.

S4. DEFINITIONS.

S4.1 “Distributed loads.” Medium footprint of existing cots loaded to required test load of 400 lbs. for a standard cot or 800 lbs. for a bariatric cot.

S4.2 “Standard cot load” is designed to handle a cot load of 400 lbs.

S4.3 “Bariatric cot load” is designed to handle a cot load of 800 lbs.

S4.4 “Load Cell,” as shown in Figure 1, is loaded to either a standard cot load of 400 lbs. or a bariatric cot load of 800 lbs.

S4.5 “Deflection Indicator” as shown in Figure 2 used to measure floor deflection as close to centerline of the load cell and wheels as possible.

S5. REQUIREMENTS. With a load for either a standard cot or bariatric cot applied to the floor structure as specified in S7., the allowable maximum deflection is 1/16-inch for standard cot and 1/8-inch for a bariatric cot. If flooring material has a raised pattern, measure the pattern and subtract from any deflection.

S6 TEST CONDITIONS.

S6.1 The test may be conducted at any temperature with the vehicle parked on a level surface.

S7. TEST PROCEDURE.
   Each vehicle tested shall be capable of meeting the requirements of S5. when tested in accordance with the procedures set forth below:
   a. Locate load cell on centerline of floor (measured from left wall to squad bench) and flush with inside of rear doors (see Figure 3).
   b. Load cell to required load (400 lbs. or 800 lbs.).
   c. Using Deflection Indicator, measure floor deflection at centerline of each wheel along load cell axis (four points B, C, E and F).
   d. Using Deflection Indicator, measure floor deflection across (22") the front and rear of the load cell at centerline of floor (two points A and D).
   e. Move load cell forward 12” and repeat procedures C and D.
   f. Continue moving load cell forward and recording deflection at six points until 12” from front seat cushion.
S1. SCOPE
This standard verifies performance of an ambulance Aspirator System, Primary Patient, when installed per the manufacturer’s directions. Each finished vehicle shall be tested.

S2. PURPOSE
The purpose of this standard is to insure that minimum performance levels are attained that will permit collection of aspirate and semi-solid gastric stomach contents.

S3. REQUIREMENTS

S3.1 The aspirator system shall provide a free airflow of at least 34 L/min.

S3.2 The aspirator system shall achieve a minimum of 305 mm Hg vacuum within 4 seconds after the suction tube is closed.

S3.3 Compliance of the aspirator system shall be validated by the manufacturer by testing each individual aspirator system installed in accordance with S4.

S4 TEST PROCEDURE
The following steps shall be performed during the aspirator system test:

1. Ensure that the ambulance temperature has stabilized in an environment between 34°F and 110°F (1°C and 43°C).
2. Run the vehicle engine at high idle speed for duration of the test.

S4.1 Vacuum Test.
The following steps shall be performed during the vacuum test:

1. Attach a 120 in. (3 m) length of transparent or translucent, nonkinking suction tubing to the collection bottle.
2. Install a vacuum-measuring instrument capable of an accuracy of ±10 mm Hg (+1.3 kPa) to measure the vacuum in the collection bottle.
3. Adjust the vacuum control valve to its maximum vacuum position.
4. Turn on the vacuum pump.
5. Clamp or plug the end of the suction tubing.
6. Measure and record the vacuum 4 seconds after plugging the tubing.

S4.2 Flow Test.
The following steps shall be performed during the flow test:

1. Install a flow-measuring instrument capable of an accuracy of ±0.18 ft³/min (5 L/min) to measure the flow in the suction tubing.
2. Adjust the vacuum control valve to its maximum vacuum position.
3. Turn on vacuum pump.
4. Measure and record the flow.
S1. SCOPE. This standard verifies the ambulance engine starting performance requirements.

S2. PURPOSE. The purpose of this standard is to reduce the possibility of the engine failing to start in a cold environment. This is a type test.

S3. APPLICABILITY. This standard applies to all ambulances.

S4. REQUIREMENTS. The engine shall start without the use of external power or starting fluids. The engine shall start satisfactorily without the aid of engine block preheating devices (except glow plugs or combustion air pre-heater) at 0° F. The determination shall be by actual test, cooperative testing through AMD or by chassis manufacturer’s certification.

S5. TEST CONDITIONS.

S5.1 The ambulance shall have all patient compartment doors, cabinet doors, cab doors, hood and exterior compartment doors open throughout S6.3.

S5.2 Air velocity of at least 5 mph shall be maintained over the vehicle throughout the entire test.

S5.3 The test chamber must be capable of maintaining temperature within a tolerance limit of +/- 4° F for the duration of the test.

S6. TEST PROCEDURE.

S6.1 Place the ambulance in the cold room. Turn off all power. Open all doors and hood. If in the case of cab dome lights being on, roll the cab windows all the way down.

S6.2 Two exterior thermocouples are to be placed on the centerline of the vehicle, half way between the ground and the highest point of the vehicle (excluding bolt-on items), 36” forward of the front extremity of the vehicle and 36” rear of the rear extremity. Reference Figure 1. This requirement shall also hold the same +/- 4° F tolerance.

S6.3 Cool to 0° F with an air velocity of at least 5 mph for three hours.

S6.4 Close all doors, hood, partition door (if present) and patient compartment/cab partition window (if present) and start engine. Engine must run for five minutes without stalling.
SCOPE AND PURPOSE. This standard verifies performance of an ambulance siren. This is a type test.

APPLICABILITY. This standard applies to all ambulances.

DEFINITION.

“Electronic Siren” is a combination electronic siren with integral public address system, including radio interface capability. It is capable of producing the following sounds: wail, yelp and other applicable sounds such as “rapid yelp,” “air horn” or composite-type sounds.

“Siren Control” shall permit the following sounds: manual, wail and yelp, or other applicable sounds.

“Public address system” amplifier shall be independent of the two-way radio, except that a common microphone and control housing group may be employed.

“Microphone” for the public address system shall be a noise-canceling type.

“Dual speakers” shall be installed outside the vehicle in the bumper/hood area. Speakers shall not protrude beyond the face of the bumper or bumper guards.


REQUIREMENTS. The siren, with the exception of cancellation effects due to dual speakers, when tested in a full anechoic chamber with test equipment and methods shall conform to California Administrative Code, Title 13, Article 8:

a. Shall be capable of producing a continuous warning sound at a minimum level of 123 dB, A-weighted, at 3 meters (10') on axis in the “wail mode” with “yelp” falling within 1 dB with 13.6 volts +/- 1% input, at a fundamental frequency in the range of 500–2,000 Hz maximum.

b. The output over the sweep range shall not drop to less than 116 dB. The speakers shall be located in the configuration that is representative of the vehicle on which they will be mounted.

c. In the “wail” mode, the siren shall have a sweep rate of 10–18 cycles per minute and in the “yelp” mode, a sweep rate of 150–250 cycles per minute. All sweep modes shall cover a range of at least one octave.

d. In voice (P.A.) operation, the unclipped sine wave output shall be at least 55 watts RMS into a resistive load matching the nominal speaker system impedance at 1000 Hz. The frequency response of the amplifier shall be from 500–3,000 Hz +/- 3 dB, when measured from 1,000 Hz reference. Total harmonic distortion shall not exceed 10%, at 20 watts RMS, over the specified frequency range when measured with the load shown above.

e. In addition, the electronic siren furnished with the exception of cancellation effects attributable to dual speakers shall comply with all the other requirements included in the State of California Vehicle Code Section 1020–1029, Title 13, Article 8, the latest issue for Class A sirens.

The electronic siren shall be tested, approved and listed with the Automotive Manufacturers Equipment Compliance Agency.
S1. SCOPE
This standard verifies performance of ambulance perimeter lighting intensity.

S2. PURPOSE
The purpose of this standard is to measure and verify the exterior lighting provided for the sides and rear of ambulances. This is a type test.

S3 REQUIREMENTS

S3.1 The loading area shall be illuminated to a level of at least 1 footcandle (fc) within the first 5 ft (1.5 m) from the vehicle and 0.3 fc up to 10 ft (3 m) from the vehicle.

S3.2 Compliance of the load lighting illumination shall be validated by testing a substantially similar ambulance in accordance with S4.

S4 TEST PROCEDURE
The following steps shall be performed during the perimeter illumination test:

1. Place the ambulance in a dark environment.
2. Ensure that the vehicle batteries are fully charged.
3. Record the light intensity with a meter capable of measuring to an accuracy of ±0.01 fc.
4. Construct a grid of test points off the sides and rear of the test ambulance, as shown in Figure 1.
   a. Locate lines parallel with the exterior walls of the patient compartment 60 in. and 120 in. (1524 mm and 3048 mm) from the test unit.
   b. Intersect these lines with lines perpendicular to the exterior walls emanating from each corner and the midpoint of the patient compartment.
   c. Construct additional perpendicular lines emanating from the center of each scene light.
5. Measure and record the light intensity at each point in the grid.
6. Turn on all exterior scene lights.
7. Measure and record the light intensity at each point 3 in. (76 mm) above the grid.
8. Subtract the ambient light readings from the scene light readings.
Figure 1  Perimeter Illumination Test Grid.
S1. SCOPE
This standard establishes the requirements for measuring the minimum acceptable dimension for an occupant workspace based on static considerations.

S2. PURPOSE
The purpose of this standard is to insure that measurement of the occupant workspace is performed correctly. Each finished vehicle shall be tested.

S3. REQUIREMENTS

S3.1 The minimum seat-to-ceiling dimension from the top surface of the seat bottom cushion to the nearest overhead obstruction for each designated seating position shall be 43 in. (1092 mm).

S3.2 The measurement shall be in accordance with the procedures in S4.

S4 TEST PROCEDURES

S4.1 The following steps shall be performed during the occupant head clearance zones test:
(1) Construct a rigid rectangular test box 43 in. (1092 mm) high, 24 in. (457 mm) wide, and 15 in. (381 mm) deep.
(2) Place the test box in each seating position, centered laterally on the seat cushion, with the bottom edge resting against the seat back.
(3) Align the test box so that the sides of the box are perpendicular to the patient compartment floor.

S4.2 The maximum weight for the test fixture shall not exceed 60 lb (27 kg).

S4.3 No permanent objects shall protrude into the test box zone.
S1. SCOPE AND PURPOSE. This standard validates performance requirements for ambulance emergency lighting systems. The purpose of this standard is to establish testing and certification procedures for the ambulance emergency lighting system. Each finished vehicle shall be tested.

S2. APPLICABILITY. This Standard applies to all ambulances.

S3. DEFINITIONS.

S3.1 “Section” means the applicable section of the current version of The Federal Star of Life Ambulance Specification, KKK-A-1822

S4. REQUIREMENTS. Each ambulance shall be tested.

S5. TEST PROCEDURES.

S5.1 PHOTOMETRIC, CHROMATICITY, AND PHYSICAL REQUIREMENTS.

Each emergency light shall flash 75 to 125 times per minute. The chromaticity values of the lights shall conform to SAE J578, for their respective color, except for the red lights, which may conform to the following expanded boundary limits of: y =0.34; y = 0.32; x = 0.62. All warning lights shall project a beam spread of at least 5° up and 5° down and at least 45° left and right of H-V. Each light shall produce flash energy, (Cd-s) per flash, measured from the H-V to all the extreme test point coordinates and shall be tested at all 5° increments. At no point shall the Cd-s values drop to less than the minimum values as shown in Table 1 when tested at 14.2 volts. Flash energy shall be determined in accordance with the SAE J845 method for determining the flash energy of a light. Testing shall be conducted on the device(s) as manufactured including use of the actual light source and all other related system components.

S5.2 The engine will be started and set to at an engine speed not to exceed 1600 rpm in order to maintain the system voltage between 13.0 and 14.5 volts for the duration of the test.

S5.3 Immediately following warm-up, emergency lighting shall be turned on. If the ambulance is equipped with a load management system that inhibits certain systems and loads from operating under certain conditions, ambulance shall be put into the condition that will allow the maximum electrical load.

S5.4 TESTS, WARNING LIGHT SYSTEM.

The lighting manufacturers shall furnish and certify or the FSAM shall measure and record the total average current load of the standard emergency warning light system on the vehicle as manufactured at the regulated voltage of 14.2 volts, when operated in the mode which draws maximum current. The warning light system and related components and devices shall be tested and approved by an Automotive Manufacturers Equipment Compliance Agency (AMECA) accredited laboratory independent from the lighting device manufacturer’s own labs and listed with the AMECA for compliance with the requirements in this specification.

Copyright © 10/2014 NTEA
S5.5 EMERGENCY LIGHTING SYSTEM CONFIGURATION.

The ambulance standard emergency warning light system shall contain twelve fixed red lights, one fixed clear light and one fixed amber light. These lights shall function in a dual mode system as shown in Table 1 and meet the physical and photometric requirements. The upper body warning lights shall be mounted at the extreme upper corner areas of the ambulance body, below the horizontal roofline. The single clear light shall be centered between the two front facing, red, upper corner lights or in a dedicated housing mounted forward of the body on the cab roof. If due to limited body dimensions and physical size of the outboard forward facing lights, the lights may also be mounted in dedicated housings on the cab roof. Doors or other ancillary equipment shall not obstruct the standard warning lights. The amber light shall be symmetrically located between the two rear facing red lights. The red “grille” lights shall be located at least 30” above the ground and below the bottom edge of the windshield and be laterally separated by at least 18”, measured from centerline to centerline of each lamp. The lateral facing intersection lights shall be mounted as close as possible to the front upper edge of each front fender and may be angled forward a maximum of 30°. All warning lights furnished shall be mounted to project their highest intensity beams on the horizontal plane. Alternate approved lighting systems are NFPA 1901 compliant or SAE J2498 compliant.

S5.6 The FSAM shall examine the ambulance to determine that the flash pattern and flash rate are in compliance with section 3.8.2.2 and Table 1. A certification of compliance from the lighting manufacturer for the flash rate of the flashing sequencer (75 to 125 flashes per minute) shall be acceptable.

S5.7 The primary and secondary modes shall be tested to determine that they perform as required by Table 1.

S6. TEST CONDITIONS. The following conditions apply to the requirements specified in S5.

S6.1 Ambulance and component systems shall be complete and ready to operate on the road.

S6.2 Temperature. Engine shall be started and allowed to operate until normal engine temperature is reached then allowed to operate an additional 15 minutes.

S6.3 Batteries. Batteries shall be fully charged at the beginning of the test.

S7. CERTIFICATION.

S7.1 The reading recorded in S5.4 shall be recorded. The load shall not exceed 40 Amperes.
### TABLE 1 – Emergency Lighting

**FLASH PATTERN**

* Optional forward facing light locations on cab roof for two red and single center clear lights.

** Optional rear amber lights in lieu of single center light.

1. Indicates lights flashing at the same time.
2. Indicates lights flashing 180 degrees out of phase with 1.

---

**MINIMUM FLASH ENERGY, Cd-S PER FLASH, PER FIXTURE**

<table>
<thead>
<tr>
<th>COLOR &amp; LOCATION</th>
<th>RED</th>
<th>CLEAR</th>
<th>AMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOCATION</td>
<td>GRILL &amp; FENDERS</td>
<td>UPPER BODY CORNERS</td>
<td>FRONT CENTER</td>
</tr>
<tr>
<td>DAY</td>
<td>160 Cd-S @ HV</td>
<td>240 Cd-S @ HV</td>
<td>900 Cd-S @ HV</td>
</tr>
<tr>
<td></td>
<td>80 Cd-S @ ± 5° H Points</td>
<td>120 Cd-S @ ± 5° H Points</td>
<td>450 Cd-S @ ± 5° H Points</td>
</tr>
<tr>
<td></td>
<td>12 Cd-S @ All 5° V - 45° H Points</td>
<td>32 Cd-S @ All 5° V - 45° H Points</td>
<td>96 Cd-S @ All 5° V - 45° H Points</td>
</tr>
<tr>
<td>NIGHT</td>
<td></td>
<td>10 - 30% of the above</td>
<td></td>
</tr>
</tbody>
</table>

* Single center rear or combined dual rear (Optional)

---

**MODAL EMERGENCY LIGHTING SYSTEM**

<table>
<thead>
<tr>
<th>COLOR &amp; LOCATION</th>
<th>RED</th>
<th>CLEAR</th>
<th>AMBER</th>
<th>RED</th>
</tr>
</thead>
<tbody>
<tr>
<td>MODE OF OPERATION</td>
<td>Front and Rear Corners</td>
<td>Front Upper Center</td>
<td>Rear Center</td>
<td>Grille and Fender</td>
</tr>
<tr>
<td>PRIMARY</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
</tr>
<tr>
<td>SECONDARY</td>
<td>ON</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
</tr>
</tbody>
</table>
S1. SCOPE AND PURPOSE
This standard establishes test requirements for ambulances and equipment installed within or on ambulances and the conductors that connect ambulances to 125 volt, nominal, AC electrical supply system(s).

S2. APPLICABILITY
This standard applies to all ambulances

S3 REQUIREMENTS

S3.1 The wiring and associated equipment shall be tested by the ambulance manufacturer or the installer of the line voltage system.

S3.2 The electrical polarity of all permanently wired equipment, cord reels, and receptacles shall be tested to verify that wiring connections have been properly made.

S3.3 Electrical continuity shall be verified from the chassis or the body to all line voltage electrical enclosures, light housings, motor housings, light poles, switch boxes, and receptacle ground connections that are accessible to personnel in normal operations.

S3.4 If the ambulance is equipped with a transfer switch, it shall be tested to verify operation and that all nongrounded conductors are switched.

S3.5 Electrical light towers, floodlights, motors, fixed appliances, and portable generators shall be operated at their full rating or capacity for 30 minutes to ensure proper operation.

S3.6 Certification Test of Power Source.

S3.6.1 The ambulance manufacturer or installer of the power source shall perform a certification test on each power source.

S3.6.2 The testing of any power source greater than 8 kW shall be witnessed, and the results of the tests of the power source shall be certified by an independent third-party certification organization.

S4 TEST PROCEDURE

S4.1 The prime mover shall be started from a cold start condition, and the unloaded voltage and frequency shall be recorded.

S4.2 The line voltage electrical system shall be loaded to at least 100 percent of the continuous rated wattage stated on the power source specification label.

S4.3 Testing with a resistive load bank shall be permitted.

S4.4 The power source shall be operated in the manner specified by the ambulance manufacturer as documented on instruction plates or in operation manuals.

S4.5 The power source shall be operated at a minimum of 100 percent of the continuous rated wattage as stated on the power source specification label for a minimum of 2 hours.
S4.5.1 The load shall be adjusted to maintain the output wattage at or above the continuous rated wattage during the entire 2-hour test.

S4.5.2 The following conditions shall be recorded at least every 30 minutes during the test:
   1. The power source output voltage, frequency, and amperage
   2. The prime mover's oil pressure, water temperature, and transmission temperature, if applicable
   3. The power source hydraulic fluid temperature, if applicable
   4. The ambient temperature and power source air inlet temperature

S4.5.3 The following conditions shall be recorded once during the test for power sources driven by dedicated auxiliary internal combustion engines:
   1. Altitude
   2. Barometric pressure
   3. Relative humidity

S4.6 If the generator is driven by the chassis engine and the generator allows for operation at variable speeds, the chassis engine speed shall be reduced to the lowest rpm allowed for generator operation, and the voltage and frequency shall be recorded.

S4.7 The load shall be removed, and the unloaded voltage and frequency shall be recorded.

S4.8 Voltage shall be maintained within ±10 percent of the voltage stated on the power source specification label during the entire test.

S4.9 Frequency shall be maintained within ±3 Hz of the frequency stated on the power source specification label during the entire test.

S4.10 Inverter Test.
If the ambulance has an inverter, then the ambulance inverter shall be tested as follows:
   1. The ambulance engine shall be running during the inverter test.
   2. The inverter shall be subjected to a load equal to the manufacturer's nominal listed power output for a minimum of 1 hour.
   3. If the manufacturer has a specific full power output test, that test shall be performed.
   4. A load bank shall be permitted to be used.
   5. The test shall be considered a failure if the output of the inverter drops below the manufacturer's specifications or more than 10 percent of nominal listed output.

S4.11 On-Board Battery Charger Test
The ambulance on-board battery charger shall be tested for 2 hours as follows:
   1. Batteries shall be fully charged to at least 12.66 volts before starting test.
   2. Engine off and shoreline power cord attached.
   3. Apply a load of at least 80% of nominal charger output.
   4. Inverter/battery charger compartment closed
   5. Record battery voltage at beginning of test.
   6. Remove the load and record battery voltage at end of test.
   7. The battery charger test shall be considered a failure if charger does not maintain battery voltage at 12.54 volts or higher

The purchaser should consider the range of temperatures in which the power source is to be operated. If extreme conditions are anticipated, the purchaser should specify the test conditions that are desired.
The purchaser should check the polarity of the wiring in a building prior to interconnecting the ambulance-mounted electrical system to the electrical system in a building.

It is important that the power source meets the purchaser’s requirements for output. Power sources may be advertised with power ratings for operating conditions that are more favorable than the conditions that might be encountered in ambulance use. Some power sources are advertised at peak output or intermittent duty ratings and not the continuous duty output required for ambulances. The power source manufacturer and ambulance manufacturer might need to establish a reduced rating that is appropriate for ambulances.

This standard calls for two steps. First the power source manufacturer provides a declared rating for 120°F (49°C) air inlet temperature and 2000 ft (600 m) altitude for the minimum clearance and ventilation indicated on the declaration. Then the ambulance manufacturer verifies that the rating printed on the power source specification label can be attained during the line voltage load test.

Generator Set Rating. Auxiliary engine–powered generator sets are the type of power source most likely to require a reduction from advertised ratings, and generator set literature usually provides rating correction factors for altitude and temperature. These factors could be based on standards for engines, such as ISO 3046-1, Reciprocating internal combustion engines — Performance — Part 1: Declarations of power, fuel and lubricating oil consumptions, and test methods—Additional requirements for engines for general use, and SAE J1349, Engine Power Test Code — Spark Ignition and Compression Ignition — Net Power Rating; standards for generators, such as NEMAMG 1, Motors and Generators; or manufacturer testing. As an example of how altitude and temperature affect output capability, consider a typical 10 kW generator set with 0.8 generator efficiency and naturally aspirated diesel engine that is rated at 500 ft (150 m) and 85°F (30°C) for continuous operation without overload or reserve capacity. ISO 3046-1 indicates a factor of −2.1 percent output per 10°F (5.5°C) ambient increase, and a −2.6 percent per 1000 ft (300 m) altitude increase. Generator output is also affected by temperature [about −0.5 percent per 10°F (5.5°C)] and altitude (small and ignored in this example). There is also an effect from combining engine and generator into a generator set due to each heating the other. This may require an additional factor of −1 to −4+ percent per 10°F (5.5°C), depending on the effectiveness of the cooling system and temperature (the factor increases with increasing temperature). Altogether, these factors suggest the 10 kW generator set in this example is capable of about 8.8 kW at the maximum temperature of 110°F (43°C) and altitude of 2000 ft (600 m) specified in the standard. Another way to view this result is that an 11.4 kW generator set would be required to provide 10 kW at 110°F (43°C) and 2000 ft (600 m).

Where there is concern that installation or operational circumstances could cause power source intake air to heat above 120°F (49°C) or where the flow of cooling, induction, or exhaust air is more restricted than what is allowed by the manufacturer’s literature, advance consultation with the power source manufacturer(s) could help in the selection of a power source that will pass the ambulance test with an output that meets the purchaser’s needs. Also, weather, like altitude, also can affect air density and thus engine and generator set output. The combined effect of altitude and weather is reported as barometric pressure on local weather reports. Low barometric pressure will reduce engine and generator set output capability. High barometric pressure (usually clear cold days) will increase engine and generator set output capacity.

Other Power Source Types. Some output correction factors described in the generator set example apply to other types of power sources, depending on circumstances. For example, PTO and hydraulically driven generators also rely on engine power, but the engine will usually have substantial reserve power, so increased altitude or temperature will not affect their power supply rating. Regardless, best practice for longest life and lowest maintenance is to provide unrestricted airflow at the lowest temperature.
When performing the AMD005 test in conjunction with the Federal of Star Ambulance Specification, KKK-A-1822, as the governing standard, the minimum electrical load shall consist of the following electrical equipment and systems:

1. Engine/transmission control system.
2. Headlights (low beam).
3. All FMVSS 108 lights.
4. Windshield wipers (low speed).
5. Cab air conditioning (at coldest setting with highest blower speed).
6. Radio in receiving mode (or equal load, if not equipped).
7. Patient module dome lighting (in the high intensity setting).
8. Patient module air conditioning (at coldest setting with highest blower speed).
10. 20 amp medical load or equal.

When performing the AMD012 test in conjunction with the Federal of Star Ambulance Specification, KKK-A-1822, as the governing standard, the following figure may be used for guidance for the placement of thermocouples:

---

1) SP = LONGITUDINAL SPACING. PATIENT CABIN WOOD LENGTH (FROM) IS THE DISTANCE FROM THE FACE OF THE BACKREST AT SEAT BASE POSITION TO THE NEAR ENTRY DOORS. SP = POR, TIMES SPREAD BY 4.
2) TP = THERMOCOUPLE PROBE COLUMN
   1 AT 7-INCHES ABOVE FLOOR LEVEL.
   1 AT 43-INCHES BETWEEN FLOOR AND CEILING.
   1 AT 7-INCHES BELOW CEILING.
3) PLACED EXTERIOR THERMOCOUPLES (12 NO. 13 & 14) SHALL BE HEIGHT SET AT 1/2 OF THE OVERALL VEHICLE HEIGHT.
When performing the AMD015 test in conjunction with the Federal of Star Ambulance Specification, KKK-A-1822, as the governing standard, the following provides an example form of the label required to represent compliance of the main medical gas delivery system, as well as a figure depicting system pressure testing:

Example documentation:

The integrity of this medical gas system was tested in accordance with AMD 015 and meets the requirements thereof.

Stage 1 Testing - Flow rate at each outlet:

Gas used for flow test (check one):
_____Dry Nitrogen (110 LPM min. req’d.)
_____Breathing Air (110 LPM min. req’d.)
_____Oxygen (100 LPM min. req’d.)

NOTE: For purposes of this test, 110 LPM of dry Nitrogen or Breathing Air is considered equivalent to 100 LPM of Oxygen.

Outlet #     Flow Rate (LPM)
1.            ________________
2.            ________________
3.            ________________
4.            ________________
5.            ________________
6.            ________________

Stage 2 Testing - Pressure:

Initial Conditions for Stage 2 Testing:
Temperature: ______˚F
Pressure: ______psi

Final Conditions for Stage 2 Testing:
Temperature: ______˚F
Pressure: ______psi
Pressure Loss: ______psi
Maximum Allowable Pressure Loss: 5psi

Signature of operator performing test:

______________________________________________________________

Print Name of Operator Performing Test:______________________________

Date of test:____________________________________________________
When performing the AMD015 test in conjunction with the Federal of Star Ambulance Specification, KKK-A-1822, as the governing standard, the following provides a depiction of the locations for measuring floor lighting intensity along the centerline of the patient compartment: