

*AEV briefing on current status of ambulance standards projects
March 30, 2015*

The following is provided as an update on activities regarding changes in ambulance standards as of above date:

I. NIOSH research/SAE Standards

NIOSH has completed much of their project on researching and developing specific crash standards and testing procedures for ambulance safety criteria. This work is being done in cooperation with the Ambulance Manufacturer's Division of the NTEA.

The final products of the NIOSH efforts are being published as Recommended Practice Standards by the Society of Automotive Engineers. Three of those ambulance standards have been officially approved and published at this time:

- SAE J3026 Ambulance Patient Compartment Seating Integrity and Occupant Restraint
- SAE J3027 Ambulance Litter Integrity, Retention and Patient Restraint
- SAE J3043 Ambulance Equipment Mount Device or Systems (Includes additional criteria and detail from SAE J2917 and J2956).

Inclusion of these standards in the design of a new production ambulance will require moderate to major changes in design, construction and equipment in each specific category.

Additional SAE standards for integrity of modular body, floor and cabinets, as well as surface de-lethalization and occupant excursion are currently under development by NIOSH and will be promulgated when completed and approved.

II. NIST Ambulance Patient Compartment Design Standards

NIST has completed their 4 year human factors and ergonomic research project, and has published the Ambulance Patient Compartment Human Factors Design Guidebook as a configuration guideline for purchasers of ambulances.

This guidebook can be down loaded at www.firstresponder.gov. Go to the Technology tab, click on Document Library and scroll down to the Guidebook to download.

III. GSA KKK-A-1822F

The GSA has publicized their intent to sunset the KKK Specification for Star of Life Ambulances, to be replaced by an alternative “bumper to bumper” vehicle consensus standard developed by an NGO (non-governmental agency). This is being done in response to a Federal directive for implementation of consensus standards where available.

It is noted that regulation of ambulance specifications is a function of each individual state, and that only 30 of the 50 states currently require compliance to KKK at some level. At this point in time, no state has yet taken action to adopt another standard (NFPA 1917 has been published since 2013, and the CAAS GVS 2015 standard has not yet been published).

Accordingly, GSA has now extended the KKK document until October of 2016. They have stated that they will continue to extend the life of the specification in one year increments as necessary, until an alternative consensus standard is accepted by a significant number of the various states.

Change Notice #7 and #8 – In conjunction with the latest extension of KKK, GSA is publishing two change notices to the document:

- Change Notice #7 was recently published, and is a summary of the content of CN documents #1-6 which were implemented in prior years.
- Change Notice #8 is scheduled to be out for public comment on or about April 6, 2015, with an effective date of July 1. This notice requires compliance with SAE J3026, J3027 and J3043 for *new production ambulances contracted for (ordered) after July 1*, as well as some other minor clarifications to the document.

The inclusion of these new SAE standards as a requirement in KKK is a major change with significant effect. Some considerations are (in no specific order):

- 1) These standards are the best science our industry has ever had. Properly executed, they will create a huge improvement in patient compartment safety.
- 2) Like everything else, improvements come with a price. Implementation of these standards will have a substantial cost impact on the price of compliant vehicles.
- 3) These new standards will only be required in states that mandate KKK or that somehow otherwise adopt the requirements.

- 4) The Litter requirements are undoubtedly the most significant change. The SAE J3027 compliant product lines offered by the two existing cot manufacturers may not yet be complete enough to fully satisfy the needs of the market.
- 5) There are no requirements for existing fleets or for units that are remounted.

Providers will need to contact their state EMS office for direction on required levels of compliance.

IV. NFPA 1917

The NFPA 1917 Standard for Automotive Ambulances has been published and available since 2013. Revision #2 has just completed a public comment period and will be effective in January of 2016.

The NFPA 1917- 2016 version will require compliance to SAE J3023, J3027 and J3043.

To date, we are not aware of any State EMS Office that has adopted or requires the NFPA 1917 as a standard for ambulances in their jurisdiction.

V. CAAS GVS-2015

The Commission on Accreditation of Ambulance Services is in the final stages of developing the GVS (Ground Vehicle Standard) 2015. The inaugural document is in its second public comment period, and is expected to be published in the second half of 2015.

The CAAS GVS-2015 will require compliance to SAE J3023, J3027 and J3043. Further information is available at www.groundvehiclestandard.org.

A comprehensive story on the ambulance standards process has been published by JEMS and is available at:

<http://www.jems.com/article/news/competing-ambulance-safety-standards-awa>

A comparison chart of KKK/NFPA/CAAS-GVS requirements as published in JEMS is attached to this document. It was current when printed in February; however changes may have occurred to any or all standards since the chart was created.

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Table 1: Comparison overview of KKK/NFPA/CAAS ambulance vehicle standards

Requirement	KKK-A-1822F (soon to be replaced)	NFPA 2013	CAAS GVS-2015
AMD testing to verify compliance	AMD tests 1–26 required	Some AMD tests required	AMD tests 1–26 required
Payload requirement	Type II 1,500 pounds before options, Type I/III 1,750 pounds before options, Type I/III AD 2,250 pounds before options	Purchaser to set minimum payload	All Types 1,300 pounds minimum, payload after all options
Vehicle type certification	Proof of compliance and complete certification testing by ISO-approved laboratory is required for each type	Manufacturer may self-certify with exception of generator installation which requires third-party testing	Proof of compliance and complete certification testing by ISO-approved laboratory is required for each type
Occupant payload calculations	Weight calculated at 175 lbs./person	Weight calculated at 175 lbs./person	Weight calculated at 171 lbs./person
Engine hourmeter	Optional	Required	Optional
Suspension clearance angles	Approach: 20 degrees; Breakover: 10 degrees; Departure: 10 degrees	Approach: 10 degrees; Breakover: 10 degrees; Departure: 10 degrees	Approach: 20 degrees; Breakover: 10 degrees; Departure: 10 degrees
Tire pressure monitor	Optional	Visual indicator or monitor required	Optional
CO monitor	Testing per AMD 007 required	Monitor required	Testing per AMD 007 required
Bulkhead/Partition	Bulkhead with latchable door	Bulkhead with optional window	Bulkhead with window required and sliding door optional
Floor loading height	Maximum is 34"	No maximum load height specified	Maximum is 34"
Access handrails	Grab handle on inside of each door or adjacent body structure	Interior or exterior grab handles on cab and patient compartment at each step location	Grab handle on inside of each door and recessed overhead grab rail required
Required door openings	Rear and side doors required—minimum dimensions provided	Two means of escape required—minimum size 30" x 24"	Rear and side doors required—minimum dimensions provided
Floor testing requirements	AMD 20 floor deflection test required to prove floor load capacity	AMD 20 compliance not required, NFPA minimum floor load is lower	AMD 20 floor deflection test required to prove floor load capacity
Equipment stowage criteria	Minimum 35 cubic feet of interior storage; all devices to be fastened to manufacturers req.	All equipment 3 lbs. or more to be mounted or stored in enclosure or bracket	Purchaser to specify stowage requirements
Cabinet storage load	Not specified pending SAE requirements	Each cabinet to be labeled with max load	Not specified pending SAE requirements
Access to patient	Primary attendant seat min 25" from head of cot	Seat to cot dimension provided to allow multiple cot positions	Primary attendant seat min 25" from head of cot
Patient compartment seating	NIOSH/SAE J3026 may be required in Change #7 effective July 2015	NIOSH/SAE J3026 may be required in 2016 edition	NIOSH/SAE J3026 standard required
Mounting and retention of equipment	NIOSH/SAE J3043 may be required in Change #7 effective July 2015	NIOSH/SAE J3043 may be required in 2016 edition	NIOSH/SAE J3043 standard required
Litter fasteners and anchorages	NIOSH/SAE J3027 may be required in Change #7 effective July 2015	NIOSH/SAE J3027 may be required in 2016 edition	NIOSH/SAE J3027 standard required
Seat belt warning	"Fasten Seat Belt" label required	Seat belt monitoring system required with visual and audible alarms in cab and pt compartment	"Fasten Seat Belt" label required
Main electrical printed circuit board	Certified to "Class 3 life support" standard	Certified to "Class 2 commercial/industrial assembly" standard	Certified to "Class 3 life support" standard
Wiring	SXL, GXL copper wiring or better	TXL, SXL or GXL acceptable—strands other than copper permitted	SXL, GXL copper wiring or better
Wire harness protective loom	300 degree F maximum rated	194 degree F maximum rated	300 degree F maximum rated
Warning lights	KKK or NFPA configuration acceptable	NFPA zone lighting or KKK acceptable	Purchaser to specify
Ground lighting under vehicle	Step wells to be illuminated	Under body lighting required at all step/access points	Step wells to be illuminated
Warning indicators	Door ajar light	"DO NOT MOVE" light attached to open door, equipment rack not stowed, or attached device open or deployed	Door ajar light
Generator requirements	Not specified	Detailed requirements included	Not specified
Reflective striping	6"–14" orange reflective stripe around body	4" reflective stripe covering minimum 25% of front and 50% of length	Purchaser to specify
Chevrons	Optional	50% of rear required to have reflective chevrons in specific red-yellow/green color	Purchaser to specify