

NOT MEASUREMENT SENSITIVE

MIL-T-12407X(AT)
28 September 1990
SUPERSEDING
MIL-T-12407W(AT)
1 October 1983

MILITARY SPECIFICATION

TRUCKS: PATIENT TRANSPORT, VAN CONVERSION, DIESEL OR GASOLINE ENGINE DRIVEN, 4x2 AND 4x4, MODIFIED COMMERCIAL

This specification is approved for use by the US Army Tank Automotive Command, Department of the Army, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

* 1.1 Scope. This specification covers forward control, diesel or gasoline engine driven, four-wheel, two-wheel and four-wheel drive commercial truck(s) converted for use as 4 litter patient or 8 seated passenger patient transport vehicles. Vehicles procured under this specification are commercial items which shall be warranted by the manufacturer as specified in acquisition documents.

1.2 Model. The vehicle shall be one of the following models, as specified (see 6.2):

4x2 model - 4 wheels, 2 wheels driving
4x4 model - 4 wheels, 4 wheels driving

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: US Army Tank-Automotive Command, ATTN: AMSTA-UED, Warren, MI 48397-5000, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC-2310

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2. APPLICABLE DOCUMENTS

2.1 Government documents.

* 2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents shall be those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS), and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

FEDERAL

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| L-S-300 | - Sheeting and Tape, Reflective: Nonexposed Lens Adhesive Backing. |
| W-B-131 | - Battery, Storage: Vehicular, Ignition, Lighting and Starting. |
| VV-F-800 | - Fuel Oil, Diesel. |

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| MIL-P-514 | - Plates, Identification. Instruction and Marking, Blank. |
| * MIL-T-5624 | - Turbine Fuel, Aviation, Grades JP-4 and JP-5. |
| MIL-P-18066 | - Plywood, Ship and Boat Construction. |
| MIL-B-4617 | - Brake Fluid, Silicone, Automotive All Weather, Operational and Preservative. |
| * MIL-T-83133 | - Turbine Fuel, Aviation, Kerosene Type, Grade JP-8. |

STANDARDS

FEDERAL

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| FED-STD-297 | - Rustproofing of Commercial (Nontactical) Vehicles. |
| FED-STD-595 | - Colors. |

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| MIL-STD-1223 | - Nontactical Wheeled Vehicles Treatment, Painting, Identification Marking and Data Plate Standards. |
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* (Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Naval Publications and Forms Center, Military Specifications and Standards, Bldg. 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

* 2.1.2 Other Government documents, drawings and publications. The following other Government documents, drawings and publications, form a part of this specification to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

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* DEPARTMENT OF DEFENSE

Department of Defense Index of Specifications and Standards (DODISS).

(Copies of the DODISS are available on a yearly subscription basis either from the Government Printing Office for hard copy, or microfiche copies are available from the Director, Navy Publication and Printing Service Office, 700 Robbins Avenue, Philadelphia, PA 19111-5093).

DEPARTMENT OF TRANSPORTATION (DoT)

Federal Motor Carrier Safety Regulations.

Federal Motor Vehicle Safety Standards.

* (Application for copies of DoT publications should reference the Code of Federal Regulations, 49 CFR, and the Federal Register, and should be addressed to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.)

ENVIRONMENTAL PROTECTION AGENCY (EPA)

Control of Air Pollution from New Motor Vehicles and New Motor Vehicle Engines.

Noise Emission Standards for Transportation Equipment - Medium and Heavy Trucks.

(Application for copies of EPA publications should reference the Code of Federal Regulations, 40 CFR, and the Federal Register, and should be addressed to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.)

* 2.2 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issue of the documents cited in the solicitation (see 6.2).

* THE EUROPEAN TYRE AND RIM TECHNICAL ORGANISATION (ETRTO)
Standards Manual

(Application for copies of the ETRTO publications should be addressed to the European Tyre and Rim Technical Organization, 32, Avenue Brugmann, 1060 Brussels, Belgium.)

* NORTH ATLANTIC TREATY ORGANIZATION (NATO)

Allied Engineering Publication (AEP-5)

Part II

- NATO Standard Diesel and Spark Ignition Engines
Laboratory Test, dated January 1984.

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(Application for copies of NATO publications should be addressed to North Atlantic Treaty Organization, Military Agency for Standardization, 1110 Brussels, Belgium.)

SAE, INC.

SAE Standards and Recommended Practices.

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| J537 | - Storage Batteries (DoD adopted). |
| J551 | - Performance Levels and Methods of Measurement of Electromagnetic Radiation from Vehicles and Devices (30-1000 MHz). |
| J588 | - Turn Signal Lamps. |
| J589 | - Turn Signal Switch. |
| J688 | - Truck Ability Prediction Procedure (DoD adopted). |
| J689 | - Approach: Departure and Ramp Breakover Angles Passenger Car and Light Duty Trucks. |
| J1349 | - Engine Power Test Code - Spark Ignition and Diesel. |

(Application for copies of SAE publications should be addressed to SAE, Inc., 400 Commonwealth Drive, Warrendale, PA 15096.)

STATE OF CALIFORNIA

Vehicle Code of California, Section 27200.

(Application for copies of State of California publications should be addressed to the Department of Motor Vehicles, 2570 24th Street, Sacramento, CA 95809.)

THE TIRE AND RIM ASSOCIATION, INC.

Year Book.

(Application for copies of Tire and Rim Association publications should be addressed to the Tire and Rim Association, Inc., 175 Montrose West Ave., Copley, OH 44321.)

TRUCK BODY AND EQUIPMENT ASSOCIATION (TBEA)

Ambulance Manufacturers Division (AMD) Standards

- AMD 001 - Static Load Test for Body Structure.
- AMD 003 - Oxygen Tank Retention System.
- AMD 004 - Litter Retention System.

* (Sources for copies of TBEA publications are not known, since TBEA discontinued operations. Use alternate publications, if copies of TBEA publications are not on hand.)

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(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

* 2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

* 3.1 Standard vehicle and accessories. Except as specified in 3.1.1 through 3.1.1.10, the vehicle, components, assemblies, and accessories to be delivered under the contract shall be standard or optional items, which meet or exceed the requirements of this specification. Except as specified in 3.1.1 through 3.1.1.10, no removal, substitution, or alteration of the chassis manufacturer's standard or optional chassis model components shall be made. All chassis items shall be as represented in the chassis manufacturer's technical data book. Special bodies or mounted equipment shall be as represented in the body and equipment manufacturer's technical data. Technical data shall be limited to specifications and technical material identical to that furnished to the authorized company representatives for selection of vehicle models and components, and shall be available to the engineering offices of the procuring activity, prior to delivery of the items. The model furnished shall be not older than the manufacturer's current model on the date of invitation for bids.

3.1.1 Special requirements. In addition to the standard vehicle and components specified in 3.1, the vehicle shall be furnished with special equipment as specified herein.

3.1.1.1 Painting and marking. Treatment, painting, marking and data plates shall be in accordance with MIL-STD-1223. The exterior color and identification markings shall be in accordance with the requirements of MIL-STD-1223 for the military service identified by the procuring activity (see 6.2), except the exterior color of the vehicle shall be gloss white, matching color chip No. 17886 of FED-STD-595. The grill brushguard, and mirror frame and mountings shall be furnished in bright finish metal if available as the manufacturer's standard or option. Markings other than identification markings shall be as specified by the procuring activity (see 6.2).

* 3.1.1.2 No smoking sign. A sign reading "NO SMOKING IN MEDICAL VEHICLES" shall be prominently displayed in the driver's compartment. The sign shall be not less than 3.500 inches high and 5 inches wide. The letters shall be red on a contrasting background.

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- * 3.1.1.3 Identification and instruction plates. All operating controls for equipment in the patient's compartment and for ambulance equipment shall be provided with identification plates and, as appropriate, with caution, warning and instruction plates. Plates shall conform to composition A (class 1 or 2) or composition C of MIL-P-514.
- * 3.1.1.4 Rustproofing. When specified (see 6.2), the vehicle shall be rustproofed in accordance with FED-STD-297. When specified (see 6.2), tropical rustproofing in accordance with FED-STD-297 shall be furnished.
- * 3.1.1.5 Towing devices. Not less than two hooks, loops, or pins for the towing vehicle shall be furnished on the front of the vehicle.
- * 3.1.1.6 Wood treatment. Wood shall be treated in accordance with MIL-STD-1223.
- * 3.1.1.7 Brushguard. The 4x4 model vehicle shall be equipped with a radiator and headlamp brushguard. When the headlamps are recessed into and protected by the front bumper, a headlamp brushguard is not required.
- * 3.1.1.8 Brake lights. At least one pair of brake lights shall override the four-way emergency flasher or the two systems shall be independent of each other. Modifications to the manufacturer's standard product to accommodate this requirement shall not compromise conformance to any Federal Motor Carrier Safety Regulation referenced herein or to any Federal Motor Vehicle Safety Standard. If additional lights are added to the vehicle, the lights shall be selected from the chassis manufacturer's standard matching hardware.
- 3.1.1.9 Silicone brake fluid. When specified (see 6.2), and if available as the manufacturer's standard or optional brake fluid, brake fluid conforming to MIL-B-46176 shall be provided in the hydraulic brake system. A tag shall be placed near the master cylinder stating: "CAUTION: USE SILICONE BRAKE FLUID ONLY, MIL-B-46176."
- * 3.1.1.10 4x4 conversion. The chassis manufacturer's standard 4x2 truck chassis may be modified to provide all wheel drive conforming to the requirements specified herein if:
 - (a) The conversion axle manufacturer's engineering department specifically approves and certifies that all such modifications meet the design requirements and standards of the conversion axle manufacturer. Certification shall be based on both design analysis and proving ground test reports, which shall be made available to the engineering and quality assurance offices of the procuring activity.

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- (b) The chassis manufacturer's front axle before conversion has the same load rating as the conversion axle to be installed.
- (c) Components used in the all wheel drive conversion are of current production.
- (d) Components used in the all wheel drive conversion are approved for the conversion application by the component manufacturers.
- (e) The converted vehicle is certified to conform to Federal Motor Vehicle Safety Standard, No. 121, by the intermediate or final manufacturer.
- (f) Replacement headlights, if required to be added to meet the height requirements of Federal Motor Vehicle Safety Standard No. 108, are equivalent in mounting, protection, and range and precision of adjustment to the chassis manufacturer's original standard headlights.
- (g) Unused headlight cavities are covered in a neat workmanlike manner, treated and painted to match the chassis cab color with treatment and painting equivalent to the chassis cab manufacturer's process for the remainder of the chassis cab. Cavities and their covers shall be rustproofed in accordance with 3.1.1.4.
- (h) Complete installation drawings are available to the procuring activity.

3.2 General design.

3.2.1 Federal Motor Vehicle Safety Standards. The vehicle and furnished accessories shall comply with all Federal Motor Vehicle Safety Standards in effect on the date of manufacture.

3.2.2 Air pollution control. Vehicles destined for the 50 states, the District of Columbia, Puerto Rico, and all U.S. Territories except the Canal Zone, shall comply with the EPA regulations governing Control of Air Pollution from New Motor Vehicles and New Motor Vehicle Engines in effect on the date of manufacture. In addition, vehicles destined for California shall comply with the State of California regulations governing air pollution control in effect on the date of manufacture. For other vehicles, the manufacturer's export vehicle emissions package shall be furnished. The export package shall be designed for continuous vehicle operation on regular grade leaded gasoline without vehicle modification or adjustment.

* 3.2.3 Sound level. The interior sound level shall not exceed 84 db(A).

3.2.4 Curb weight. The curb weight shall include the weight of the chassis, integral cab and body, with all attachments, accessories, equipment, and a full complement of fuel, lubricants and coolant.

3.2.5 Gross vehicle weight. The minimum gross vehicle weight (GVW) shall consist of the curb weight, operator and assistant operator weights (175 pounds each), and a minimum payload of 1,400 pounds evenly distributed over the load area.

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3.2.6 Ratings. Vehicle and component ratings shall be the manufacturer's published ratings. Vehicle and component ratings shall not be raised to meet the requirements of this specification. When published ratings are not available, verification of the ratings shall be available to the engineering office of the procuring activity.

* 3.2.7 Standard frame and driveline. The chassis frame and driveline shall be the chassis manufacturer's standard and shall not be spliced to extend the wheelbase.

3.2.8 Wheelbase. The wheelbase shall be not less than 123 inches.

3.2.9 Angle of approach, ramp breakover, and departure. The vehicle, loaded to the required GVW, with bumpers and rear step (with step down if folding style), shall provide not less than the following clearances, measured in accordance with SAE J689:

Approach angle	-20 degrees
Ramp breakover	-10 degrees
Departure angle	-10 degrees

3.2.10 Interchangeability. The vehicle chassis, body, equipment, seats, and component parts shall be fabricated and assembled through the use of tooling which ensures production of interchangeable parts and assemblies.

3.2.11 Strength. Materials, fabrication, and attachment of all vehicle equipment and furnishings shall be adequate to withstand working stresses including dynamic loads encountered in mobile operations and all normal usage.

3.2.12 Accessibility. The design of the vehicle and optional equipment shall permit access for routine servicing and shall permit access for replacement and adjustment of component parts and accessories with minimal disturbance of other components and systems.

3.2.13 Asbestos. Asbestos materials shall not be used in any form in any part of the vehicle.

3.3 Performance. The vehicle shall meet the following performance requirements. For 4x4 model vehicles, performance requirements shall be met with front wheel drive disengaged except that a vehicle equipped with interaxle compensating devices shall meet the performance requirements with the front wheel drive engaged.

3.3.1 Speeds and gradeability. High and low speed requirements shall be met with the vehicle loaded to the required GVW as specified in 3.2.5. The vehicle shall be capable of maintaining a high speed of not less than 70 miles per hour (mph) on smooth, approximately level road surfaces, with the engine operating within the recommended maximum revolutions per minute (rpm).

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3.3.1.1 High speed gradeability. The vehicle, loaded to the required GVW, shall be capable of ascending a continuous grade of 3.6 percent at 60 mph. Gradeability requirements shall be met with the transmission in direct drive. Gradeability shall be verified with calculations in accordance with SAE J688 (see 6.3). Calculations shall include an appropriate allowance for a full air conditioning load.

3.3.1.2 Low speed. Low speed shall be calculated with engine operating at not less than 35 percent of the recommended governed speed and shall provide not more than 9 mph.

3.3.2 Service brakes. The service brakes shall control and hold the vehicle, when loaded to its required GVW, on a 30 percent grade. The service brakes shall stop the vehicle, loaded to specified GVW, within the stopping distance requirements of Federal Motor Carrier Safety Regulation 393.52, under all conditions of loading.

* 3.3.2.1 Parking brakes. A hand or foot actuated parking brake shall be furnished in addition to the service brakes. When a foot actuated parking brake is furnished, a hand lever shall be furnished to release the parking brake. The vehicle parking brake shall be capable of holding the vehicle with highway payload on a 35 percent slope.

3.4 Chassis components.

3.4.1 Engine. The engine furnished shall be the chassis manufacturer's standard or optional engine for the commercial model truck which meets or exceeds the requirements of this specification.

* 3.4.1.1 Diesel engine. Unless otherwise specified (see 3.4.1.2), the vehicle shall be equipped with a liquid cooled, compression ignition, two-stroke or four-stroke cycle diesel engine, with not less than six cylinders. Engine net horsepower used in performance prediction calculations shall be determined in accordance with SAE J1349. The engine shall demonstrate the performance characteristic specified herein when using diesel fuel conforming to VV-F-800. In addition, when specified (see 6.2), the engine shall operate satisfactorily on grade JP-4 and grade JP-5 fuel conforming to MIL-T-5624 under emergency, short duration conditions and on grade JP-8 fuel conforming to MIL-T-83133 under normal conditions. A power loss when operating on JP-4, JP-5 or JP-8 is acceptable.

* 3.4.1.2 Gasoline engine. When specified (see 6.2), the vehicle shall be equipped with a liquid cooled, internal combustion, four-stroke cycle gasoline engine with not less than eight cylinders. The engine furnished shall provide the required vehicle performance when operated on unleaded fuel with a research octane rating of 91, at an engine speed of not more than the manufacturer's recommended operating speed. The engine shall be capable of warranted operation on unleaded fuel when used in accordance with the operator's manual. Engine net

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horsepower used in performance prediction calculations shall be determined in accordance with SAE J1349. Unless otherwise specified or required by foreign laws, vehicles for overseas use shall be capable of accepting and operating on leaded gasoline.

3.4.1.3 Oil filter. A full flow type oil filter shall be furnished.

3.4.1.4 Cooling system. The cooling system shall maintain the engine coolant at a temperature below the boiling point with the vehicle loaded to rated GVW and operated at an altitude of 10,000 feet above sea level or in an ambient air temperature of not less than 125 degrees Fahrenheit (°F). A coolant level indicator consisting of an unbreakable translucent reservoir shall be provided in a position readily visible for checking the coolant level. The translucent reservoir shall be part of the coolant recovery system. The cooling system shall be of sufficient capacity to permit idling the engine (including high idle at full air conditioning load) in an ambient temperature of 95°F, for a period of not less than one half hour without overheating.

* 3.4.1.5 Coolant temperature controls. Thermostatic control of engine coolant temperature shall be provided. On diesel engine driven vehicles, the control shall include complete thermostatic control of all coolant flow through the radiator.

* 3.4.1.6 Fan clutch. A fan clutch shall be provided. The fan clutch shall reduce the fan speed automatically when the fan is not required for engine cooling. The clutch lining shall be asbestos free.

* 3.4.1.7 Power plant heaters and fuel warmers. When specified (see 6.2), a coolant heater, an engine oil heater, and a fuel warmer (diesel engine driven vehicles only) shall be provided. Unless otherwise specified (see 6.2), a battery heater shall be provided when power plant heaters are specified. Heaters shall operate on 110-volt alternating current (ac), shall be wired through a junction block, including fuse or circuit breaker, to a single, three-pronged (male), weatherproof, slave receptacle for receiving external power and grounding the vehicle. A three-wire connecting cable, 25 feet long, and of adequate line capacity to supply power for all heater units simultaneously, shall be furnished. Connecting cable shall include a matching female connector at the vehicle end and a standard, weatherproof, three-pronged (two power plus one ground) male connector at the other end. Electrical apparatus shall conform to Federal Motor Carrier Safety Regulation 393.77(c)(7). Electrical insulation of connecting cable shall withstand normal operating stresses in low ambient air temperatures (down to minus 60°F) without cracking or loss of dielectric capacity. All heater lead wires shall be installed without interfering with vehicle component operation and without loose excess wire. Provisions for stowage of the cable shall be provided in the vehicle cab. Heaters shall be furnished as follows:

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- (a) Coolant heater, 1500-watt minimum rating, shall be installed in the engine block or in the lower coolant inlet hose. Engine thermostat with an operating range of 170°F to 195°F shall be installed
- (b) Immersion type engine oil heater, 300-watt minimum rating, with 170°F to 195°F thermostat, shall be installed in oil pan through any convenient opening
- (c) Battery heater shall have a capacity adequate to maintain the battery electrolyte at a temperature of not less than 10°F during vehicle exposure in ambient air temperatures as low as minus 60°F, and shall embody a thermostat to-limit the temperature of the electrolyte to not more than 80°F
- (d) A fuel warmer or preheater shall be provided on diesel engine driven vehicles to prevent clogging of fuel filters due to wax crystallization in the fuel. The fuel warmer shall use engine coolant to transfer sufficient heat to the diesel fuel to heat it from an inlet temperature of minus 40°F to an outlet temperature of plus 9°F, with a flow rate of not less than the maximum fuel demand of the engine fuel system. A coolant shutoff valve shall be provided for the coolant inlet side of the fuel warmer unit.

* 3.4.1.8 Fuel fired engine preheater. When specified (see 6.2), for diesel engine driven vehicles, a diesel fuel fired engine coolant heater shall be furnished to preheat the engine. The heater shall include a timer, a thermostat and a circulating pump and shall be connected directly across the engine coolant inlet and outlet. The heater shall be capable of starting and operating at minus 60°F and shall heat the engine to plus 40°F from minus 60°F in not more than 1 hour. The system shall be equipped with a light, visible to the driver to indicate that the preheater is operating.

3.4.2 Electrical systems. The electrical system shall be in accordance with Federal Motor Carrier Safety Regulations 393.27 through 393.31 and 393.33.

* 3.4.2.1 Starting system (diesel engine). For diesel engine driven vehicles, a 12 or 24-volt direct current (dc) starting system, with a 12-volt dc lighting system, shall be furnished. Unless otherwise specified (see 6.2), a minimum 90-ampere alternator shall be furnished. Engine starting equipment shall include an ether starting system, glow plug or grid heater. If an ether system is furnished in lieu of a glow plug or grid heater, it shall be of the measured shot type. The measured shot type ether system shall be key operated or manually operated from the driver's compartment, and shall be inoperative with the engine warm. Complete provisions for a replaceable reservoir of not less than 12 fluid ounces shall be furnished. A reservoir need not be furnished.

3.4.2.2 Ignition system (gasoline engine). For gasoline engine driven vehicles, a 12-volt dc system shall be furnished. Unless otherwise specified (see 6.2), an alternator of not less than 60 amperes rated capacity shall be furnished which provides a dc output capacity, at normal engine idle speed, adequate to support all electrical loads operating simultaneously.

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* 3.4.2.3 Battery. Each battery shall be of 12-volt potential. The total reserve capacity ratings and the total cold cranking ratings at 0°F, both measured in accordance with SAE J537, shall be not less than specified in table I. The batteries shall be of the maintenance-free type having the maintenance-free characteristics listed in W-B-131. When specified (see 6.2), a high cycle life (deep cell) battery shall be provided.

Table I. Batteries.

Engine Type	Reserve Capacity (minutes)	Cold Cranking (amperes)
Diesel	320	1,200
Gasoline	100	450

* 3.4.2.4 Lighting. All vehicle lights, reflectors and wiring shall conform to Federal Motor Carrier Safety Regulations 393.12, 393.19, 393.20 and 393.22 through 393.26(d).

* 3.4.2.5 Turn signals. Turn signal lamps shall conform to SAE J588. Operating units shall conform to SAE J589, class A, and shall be mounted on the steering column. Turn signal units shall be installed in accordance with SAE J588. Turn signal operating units shall have a visible and audible type flash indicator.

3.4.2.6 Radio interference suppression. The vehicle shall be suppressed to limit electromagnetic radiation in accordance with SAE J551. Any body equipment emitting radio interference shall be suppressed to the same level as the vehicle chassis.

* 3.4.3 Fuel system. The fuel system shall conform to Federal Motor Carrier Safety Regulations 393.65 and 393.67, except compliance with 393.67(c), subparagraphs (1), (4)(ii), (7)(ii), (8), (9), (11); 393.67(d); and 393.67(f) is not required. The total capacity of the fuel tank(s) shall be not less than 20 gallons. When more than one tank is furnished on gasoline engine driven vehicles, a selector valve connecting either tank to the engine fuel intake shall be provided, and means shall be provided to monitor the fuel level of either tank from a single gage; or an equalizing pump shall be used to maintain the same fuel level in both tanks. When more than one tank is furnished on diesel engine driven vehicles, means shall be provided to assure an equalized fuel level in both tanks or a selector valve and fuel monitor gage as described above shall be furnished. Model 4x4 vehicle shall have the fuel tank protected by a metal shield (skidplate). The tank shall be located in an area which will be free from hazards encountered in cross-country operations.

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3.4.3.1 Air cleaner. An air cleaner shall be furnished.

3.4.4 Exhaust system. The exhaust system shall conform to Federal Motor Carrier Safety Regulation 393.83. The exhaust tailpipe shall extend to the rear of the body or to the side behind the rear wheels, and shall be so located as to minimize the possibility of exhaust fumes entering the body.

3.4.5 Gear train. The gear train and components torque capacity shall be adequate to transmit the maximum delivered torque of the engine, as developed through the maximum gear train reduction.

* 3.4.5.1 Automatic transmission. Unless otherwise specified, (see 3.4.5.2), the vehicle shall be provided with an automatic transmission. The input torque capacity of the transmission shall be at least equal to the maximum torque delivered by the engine. The transmission shall have not less than three forward gear ratios and one reverse gear ratio. The transmission shall include a hydraulic torque converter and an oil cooler.

* 3.4.5.2 Manual transmission. When specified (see 6.2), a manually shifted transmission shall be provided. The input torque capacity of the transmission shall be at least equal to the maximum torque delivered by the engine. The transmission shall have not less than three forward speeds and one reverse speed. The transmission shall provide for the maximum ease of shifting with synchronized shift for at least the two highest forward speeds. Transmission and axle gear ratios shall be selected to provide the performance specified in 3.3.1 through 3.3.1.2.

* 3.4.5.3 Clutch. The clutch shall be the largest capacity clutch offered for the type of vehicle and size of engine furnished, with the clutch torque capacity exceeding the maximum delivered engine torque. The clutch lining shall be asbestos free.

* 3.4.5.4 Transfer case. Model 4x4 vehicles shall be provided with a two-speed transfer case. The transfer case shall provide for driver selection of either two-wheel or four-wheel drive. The speedometer shall read accurate speed (mph) with the speed selector in high or low range.

3.4.6 Driveline components. The driveline components shall be adequate to transmit the maximum delivered torque of the engine, as developed through the maximum gear train reduction, in proportion to the number of driving axles furnished.

3.4.6.1 Heavy duty skid plate (model 4x4). Unless otherwise specified (see 6.2), a heavy duty skid plate shall be installed protecting the engine and transmission (from ground contact) if there is less than 15 inches of clearance to the ground. The skid plate shall be demountable for servicing the engine and the transmission. Openings shall be provided to enable draining of the transmission and servicing the underside of the engine.

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* 3.4.7 Frame. The frame shall be the manufacturer's standard for the vehicle furnished.

3.4.8 Suspension. The vehicle shall be equipped with a suspension system, with components having a rated capacity at least equal to the load imposed on each member, measured at the ground, with the vehicle loaded to the specified GVW. When suspension is rated at the spring pads, unsprung weight shall be deducted.

3.4.8.1 Shock absorbers. The vehicle shall be equipped with heavy duty, hydraulic, double-acting shock absorbers on the front and rear axles. The heavy duty shock absorbers shall have a diameter larger than the manufacturer's standard shock absorbers for the model vehicle furnished.

3.4.9 Axles. Axle ratings shall be at least equal to the load imposed on each axle, measured at the ground, when the vehicle is loaded to the required GVW, as specified in 3.2.5. A single reduction rear axle shall be furnished. Gear ratios shall provide performance specified in 3.3.1.

3.4.9.1 Positive traction differential. Unless otherwise specified (see 6.2), the rear axle shall have a positive traction, limited slip or automatic locking differential. An appropriate warning for safe vehicle jacking shall be displayed prominently (consistent with the type of differential used).

3.4.9.2 Drive hubs, front wheel (model 4x4). Unless otherwise specified (see 6.2), automatic front wheel locking hubs shall be provided for model 4x4 vehicles.

* 3.4.10 Wheels, rims, tires and tubes. The vehicle shall be equipped with single front and rear wheels. Multi-piece rims shall not be furnished. Rim size, tire size, and load range (ply rating) shall be the same for all tires on each vehicle. Rims and tire ratings shall conform to Tire and Rim Association or European Tyre and Rim Technical Organisation recommendations for the type and size of the tires furnished.

* 3.4.10.1 Tires. The tires shall be tubeless truck type with highway tread. The tires shall have a minimum of load range D (8-ply). The tires shall have a rated capacity at least equal to the load imposed on each tire, measured at each wheel, at the ground, with the vehicle loaded to the required GVW as specified in 3.2.5. Tires and tire size designation systems shall conform to Tire and Rim Association or European Tyre and Rim Technical Organisation recommendations.

3.4.10.2 Inner tubes. When tube type tires are specified in procurement documents, inner tubes shall be of heavy duty type and shall be of proper size for the tires furnished. Tire flaps shall be provided for tube type tires in accordance with Tire and Rim Association recommendations.

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* 3.4.10.3 Spare tire assembly. Unless otherwise specified (see 6.2), an inflated spare tire mounted on a spare wheel or rim shall be furnished. The spare tire assembly shall be of the same size, tread design and load range (ply rating) as the tires furnished on the vehicle.

* 3.4.10.4 Carrier for spare tire assembly. A carrier for a spare wheel or rim and tire assembly shall be installed in a readily accessible location on the vehicle. The carrier design shall enable removal or mounting of spare wheel assembly using only tools specified in 3.4.16. Threaded fasteners, when used to secure the spare tire in the carrier, shall be constructed of or plated with corrosion-resistant material. If the spare is located in the patient area, it shall be concealed in a closed compartment covered with the same material as the patient compartment or shall be concealed with a washable, fire-retardant, vinyl, removable cover. The spare tire assembly shall be removable from the vehicle without moving the cot with the patient from the patient compartment.

3.4.11 Brakes. Brakes shall conform to Federal Motor Carrier Safety Regulations 393.40 through 393.42 (except 393.40(b)(1)(i), 393.45 through 393.49 and 393.51. Brake linings shall be of nonasbestos material. The vehicle shall be equipped with power assisted, hydraulically actuated, four-wheel service brakes.

* 3.4.11.1 Split hydraulic brake system. The power-hydraulic brake system shall be so arranged as to provide separate systems for at least two wheels and so designed and constructed that rupture or leakage type failure of any single pressure component of the service brake system, except structural failures of the brake master cylinder body, effectiveness indicator body, or other housing common to the divided system, will not result in complete loss of function of the vehicle brakes when force on the brake pedal is continued. "Pressure component" means any internal component of the brake master cylinder or master control unit, wheel brake cylinder, brake line, brake hose, or equivalent, except power assist components.

* 3.4.11.2 Indicator light. The split hydraulic brake system shall be equipped with an electrically operated red light mounted on the instrument panel to indicate system effectiveness. The light shall have an area of not less than 0.196 square inch. It shall illuminate before or upon application of the brakes when an actuating-pressure component of the system has sustained a loss of pressure. The indicator light system shall include a means for testing by the vehicle operator to assure that the light bulb is operable.

3.4.12 Steering. Power steering shall be furnished.

3.4.13 Windshield wipers and washers. The vehicle shall be equipped with dual windshield wipers and windshield washers. The windshield wipers shall be the multispeed type and shall be operated by electric motor(s).

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3.4.14 Bumpers and step. Front and rear bumpers shall be provided. The rear of the vehicle shall be provided with an open mesh, mechanically operated, fold-up step bumper, full width of the rear doors, and shall provide not less than six inches usable depth. With the vehicle unloaded, the step height shall be 14 to 16 inches measured from the ground. Two step lights, one on each side of rear step, shall be provided. The step lights shall be automatically controlled with the opening and closing of the rear door.

3.4.14.1 Heavy duty grille guard. A heavy duty grille guard shall be furnished to protect the vehicle grille, radiator, and air conditioner condenser. The heavy duty grille guard shall be custom fit to the front bumper and bolted to the vehicle frame. The grille guard shall be of all welded steel construction with not less than 0.3750 inch thick side plates and two horizontal two-inch diameter tube crossmembers. The grille guard shall be of a height to extend from the bottom edge of the front bumper to not less than eight inches above the top edge. Unless otherwise specified (see 6.2), the grille guard shall be chrome plated or painted to match the vehicle exterior color.

3.4.15 Heater and defroster. A hot water heater shall be provided. The heater shall have fresh air intakes. Discharge outlets shall be provided to direct the heated air to the floor and to defroster louvers. The heater shall be complete with a blower and mounted controls convenient to the driver. When specified (see 6.2), an auxiliary hot water heater of not less than 24,000 British thermal units (Btu) capacity shall be furnished in the patients' compartment.

3.4.16 Tools. The vehicle shall be furnished with tools required for exchanging a mounted tire assembly with the spare assembly, and shall include at least a jack, jack handle and a wheelnut wrench. The jack shall be of such closed height as to permit its location under the axle or other satisfactory lift point, at any wheel with a tire flat. The jack, without blocking, shall be capable of raising any wheel of the loaded vehicle to a height adequate to permit removal and replacement of the wheel and tire assembly.

3.4.16.1 Tool stowage space. Stowage space for the tools specified in 3.4.16 shall be located under the driver's seat or in a compartment within the vehicle that provides access without removal of the patients.

3.4.17 Controls and operating mechanisms. All controls and operating mechanisms shall be located for left-hand drive. Controls shall be complete and conveniently operable by the driver. Lever controls shall be designed and located to permit easy entrance and exit of the operator to and from the driver's compartment. Instruments and controls shall be identified as to their function and installed in a manner to facilitate removal and servicing. Instruments shall be visible to the driver when seated in the driving position.

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3.4.18 Accessories and equipment. Chassis equipment shall be complete with all accessories furnished as standard equipment by the manufacturer.

The following minimum equipment shall be furnished:

- (a) Inside rearview mirror
- (b) Key-operated ignition switch
- (c) Ammeter, voltmeter or charging indicator
- (d) Fuel gage
- (e) Oil pressure gage
- (f) Engine temperature gage
- (g) Speedometer with recording odometer
- (h) Driver's compartment ventilator other than window
- (i) Dual sunvisors
- (j) Front door mounted armrest on driver's side
- (k) When manual transmission is furnished, a hand throttle control mounted on the instrument panel
- (l) Domelight in driver's compartment.

3.4.18.1 Outside rearview mirrors. An outside rearview mirror shall be provided on both sides. The mirrors shall be of the Junior West Coast or low mount type incorporating a wide angle viewing system. The upper mirror shall have a flat reflective area of not less than 33 square inches. The lower mirror shall have a convex reflective area of not less than 20 square inches. The mirror assembly shall be adjustable and mounted to minimize obstruction of the forward lines of vision.

3.4.19 Horn. The manufacturer's standard electric horn shall be furnished.

3.5 Cab and body. The cab and body shall be the manufacturer's forward control type with integral cab and body constructions.

3.5.1 General construction. The integral cab and body unit shall be an all-metal structure; shall incorporate a body frame of welded construction with the roof assembly, exterior sides, and rear covered with sheet metal panels symmetrically rounded; and shall embody provisions for doors and windows specified herein. The cab and body shall meet the static load test for ambulance body structure, AMD standard 001. The interior of the body sides and doors shall be lined with washable, fire retardant and mildew resistant, high strength, formica or marlite panels or an approved equivalent. Panels shall be butted together without gaps at all corners and edges or shall be provided with heavy duty, bright finish, corrosion-resistant metal trim. The headliner for the patient compartment shall be formica, marlite, vinyl, or fiberglass reinforced plastic. Bench storage compartments specified herein shall be constructed of marine grade plywood conforming to class I of MIL-P-18066, with pressure bonded laminate on both faces, with a material thickness of not less than 0.6250 inch. Laminate shall be white in color, readily

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washable, nonporous, phenolic or Formica Brand V-32 or equal. All exposed edges of the bench storage compartments and partitions shall be provided with bright finish, corrosion-resistant metal trim. Bench compartments with litter and cot holders attached shall be reinforced to withstand sudden stresses imposed by the loaded cots and litters during sudden stops. Reinforcements shall include metal angle brackets between the compartments and the floor.

3.5.2 Driver's compartment. The driver's compartment shall be furnished with doors on each side of the cab and with upholstered, individual driver and assistant seats. The driver's seat shall be adjustable. Seat belts shall be installed for the driver and assistant seats. Seats, seat belts, and their anchors shall not interfere with the entrance or exit past the assistant's seat to the patient compartment. Doors shall be the manufacturer's current standard with safety glass in the upper section and a crank-regulating mechanism provided for each window. An external, key-operated lock shall be provided for at least the curbside door. Ventilators shall be provided. A walk-through access shall be provided between the driver and patient compartments, and a partition is not required.

3.5.3 Floor. The floor of the patient compartment shall be sheet metal, reinforced with marine grade plywood conforming to class I of MIL-P-18066, and shall be covered with nonskid, no-wax vinyl. The plywood floor and the floor covering each shall be one piece, shall extend the full length and width of the rear compartment, and to the wall under the benches. A bright finish, corrosion-resistant, metal molding shall be installed around the entire exposed periphery of the floor, with a cove molding installed at the floor at the base of the bench compartments and side walls. The vinyl shall be not less than 0.0625 inch in thickness and shall be applied permanently to the floor. A molding with not less than a 0.250 inch overlap shall be provided at the edges of the covering and the side panels. The color of the floor covering shall harmonize with the interior of the patient compartment.

3.5.4 Rear doors. Two rear doors, one on each side of the center, providing a clear opening not less than 49 inches wide, shall be furnished. The doors shall be hinged at the outer edges, shall open not less than 135 degrees, shall be furnished with windows of laminated safety sheet glass or solid safety plate in the upper section, and shall be provided with check arms to prevent inadvertent closing. One door shall be furnished with a latch operable from inside and outside the body. The other door shall be equipped with an operating handle, located on both the inside and outside of the vehicle, which will operate both the top and bottom latches simultaneously, positively locking the door. A key lock shall be provided on the outside to lock the doors. The inside door operating handle shall be designed and placed so that doors cannot be opened when accidentally hit or inadvertently used as a grab handle. Means shall be provided to unlock the doors, without the key, from inside the vehicle. In addition to the door operating handle, the inside of each door shall be provided with a grab handle. The rear doors shall be

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furnished with rubber pads or other means of protection, installed at a location that will prevent damage to body sides and rear doors when doors are fully opened. The interior of the upper door frame shall be padded to prevent head injury to personnel. Two red reflectors of three-inch minimum diameter shall be installed, one on the interior surface of each rear door. The reflectors shall be so positioned as to provide maximum visibility when the doors are in the fully open position. At the manufacturer's option, reflective tape, dark red, conforming to L-S-300, type I, class 3, reflectivity 1, may be furnished. The tape shall be four inches wide and shall extend the full width of each rear door panel.

3.5.5 Side windows. A minimum of two safety glass side windows shall be provided in the patient compartment. Each window shall have not less than 250 square inches of visual area. Not less than one side window on each side of the vehicle shall be provided with a means for retaining in the open position and for locking in the closed position.

3.5.6 Side doors. Side doors are not required. When side doors are furnished, doors shall be permanently secured in the locked position, metal panels shall be furnished in lieu of door windows, and door operating handles shall be removed and openings sealed with metal blanks or other suitable means. Interior paneling shall be furnished along the complete curbside of the patient compartment.

3.6 Equipment and furnishings. The patient compartment shall be of a size to accommodate four stretcher patients using the cots and litters specified in 3.6.1 and under the conditions specified herein. The loadspace (measured at the floor level, from the vertical projection of the driver and passenger seat, in the rearmost position, to the rear door) shall be not less than 110 inches; the height (at the centerline of the floor, midway of the roof section) shall be not less than 52 inches; and the minimum distance between wheel housings shall provide clearance for separately loading two Navy stokes litters under all of the following conditions:

- (a) With a patient weighing not less than 176 pounds in each litter
- (b) Without distorting either litter before or during loading
- (c) Without pressure against the side walls of the wheelhousing or adjoining litter
- (d) By placing the head end of each litter on the floor of the patient transport vehicle at the rear entrance, and sliding each litter into position with a steady forward motion
- (e) While maintaining a level lateral position of each litter during loading operation
- (f) With each litter resting in a loaded position on the floor without cocking.

3.6.1 Stretchers, cots and litters. The vehicle shall be capable of accommodating all the stretchers, cots, and litters through the range of dimensions specified in table II. When specified

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(see 6.2), a style I stretcher conforming to Ferno Washlington Number 11 or equivalent shall be furnished. The stretcher shall be of the folding type with two casted wheels, two legs, and straps for holding the patient in the stretcher. When specified (see 6.2) a style 2 cot conforming to Ferno Washington model 30 All-Level or equivalent shall be furnished. The cot shall include foot and head pull handles and a three-inch thick polyether mattress with vinyl coated nylon fabric cover and straps for holding the patient in the cot. The mattress pad and cover and the stretcher bottom shall be of fire-retardant material. Cots and stretchers shall conform to the nominal dimensions in table II.

TABLE II. Stretcher, cot and litter.

Stretcher cot, or litter	Dimension in inches		
	Length	Width	Bed height
Style 1 - Ambulance stretcher	73.500	19.500	9
Style 2 - Ambulance wheeled cot (elevating)	75	22.500	15 <u>1/</u>
Style 3 - Navy Stokes litter (resting on floor)	84.750	23.5 00	7.500
Style 4 - Standard Army or NATO <u>2/</u> litter (with poles)	90(+0.000, -0.250)	23(+0.625, -0.750)	6.750(+0)

NOTE: 1/ Bed height of style 2 cot measured to top of positioned three-inch thick mattress.

2/ Dimensions of Army and NATO litters are in accordance with North Atlantic Treaty Standardization Agreement (STANAG) No. 2040.

3.6.2 Stretcher and cot holders. A quick detachable and adjustable cot holder of the one-piece plunger type, Ferno Washington model I or equivalent, operable with style 2 cot (see 3.6.1) shall be installed on both walls. When a style I stretcher is specified (see 3.6.1), post cups and wheel cups for holding the stretcher on the right-hand side of the floor shall be installed. The cot and stretcher retention system shall conform to AMD standard 004.

3.6.3 Suspension hangers and brackets. A reinforced roof with four brackets and four removable metal hangers for suspension of two style 4 litters shall be provided. Hooked ends of hangers shall be plastic or rubber covered. Roof brackets shall be the spring loaded, retractable type or shall be recessed. Wall brackets shall be furnished with four permanently attached hooks. Hooked ends of the wall bracket and roof litter supports shall conform to 3.6.3.1. The outer edges of the support hooks shall be not more than 84 inches apart. The inside edges of the attachment supports shall be not more than 77 inches and not less than 75 inches apart. Wall brackets shall provide not less than a 1.750 inch space between the wall and litter pole, for hand clearance.

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3.6.3.1 Litter support hooks. All litter support hooks shall allow easy insertion and removal of the litters by the attendants. Hooks shall be capable of accepting and securing handles 1.750 inches in diameter. Hooks shall conform to figure 1 or shall be provided with manual latching devices. Hooks conforming to figure 1 shall require outward, upward, and inward movement of the litter to disengage the litter. Hooks with latching devices shall manually lock closed and prevent movement of the litter out of the hook.

3.6.4 Patient seats. Folding, upholstered, longitudinal seats and backs mounted on both sides of the vehicle, capable of accommodating eight passengers with a minimum of 18 inches provided for each passenger, shall be furnished. Seats shall be provided with spring loaded hinge brackets and shall fold vertically when not in use. The seats, when folded, shall not interfere with the accommodation of the patients using the cots and litters specified in 3.6.1. Seat depth shall be not less than 12.500 inches. The seat and seat back padding shall be not less than one inch thick. Upholstered seats and backs shall be covered with washable, fire-retardant material.

3.6.5 Stowage space. Stowage space shall be provided by enclosing the space under the patient seats flush with the wheelwells. Enclosed space shall be provided with a hinged type cover.

* 3.6.6 Vacuum outlet. When specified (see 6.2), a single plug-in, vacuum outlet with self-sealing valve connection shall be installed at the front of the patient compartment toward the left side of the vehicle. The plug-in unit shall prevent the entry of dust without the use of a dust cap or cover and shall allow the attachment and release of secondary equipment with one hand. A mating male outlet fitting shall be furnished for later connection to a medical hose by means of a barbed hose end.

* 3.6.6.1 Vacuum installation. A suction line shall be connected between a vacuum source and the vacuum outlet. The installed suction shall be powerful enough to provide an air flow of at least 30 liters per minute (1.06 cubic feet per minute) at the end of the delivery tube and shall create a vacuum of at least 300 millimeters (11.81 inches of mercury) to be reached within 4 seconds after the suction line delivery tube is clamped. The suction line shall use the vacuum of a 12-volt dc pump or, at the manufacturer's option, shall use the vacuum of the engine when a gasoline engine driven vehicle is furnished. When the vacuum system of the gasoline engine driven vehicle is utilized it shall be isolated from the brake system to prevent loss of braking power; a cylindrical stainless steel reservoir having a volume of not less than 300 cubic inches shall be provided in the suction line to reduce loss of vacuum during vehicle acceleration; and a check valve, TRICO part no. 85690-42 or equal, shall be installed in the suction line between the reservoir and the vacuum source. All suction lines shall be adequately supported to prevent chafing from movement and vibration. Whenever the line passes through bulkheads, grommets and fastening devices shall be employed to prevent chafing.

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* 3.6.7 Oxygen tank support. When specified (see 6.2), the vehicle shall be equipped with straps or other holding devices to hold three "E" size oxygen tanks (see 6.4). When specified (see 6.2), holding devices for one "M" size oxygen tank shall be furnished in lieu of the holding devices for the three "E" size tanks. The holding devices shall secure the tanks in a location where gages and connections are accessible to the attendant, but where the tanks do not interfere with the driver's vision to the rear and with the driver's and assistant driver's view of the patient compartment. The oxygen tank retention system shall conform to AMD standard 003.

3.6.8 Ventilation. Ventilation shall be provided for the driver and patient compartments. Ventilators shall be provided in the driver's compartment and on the top or sides of patient compartment roof. The patient compartment ventilator(s) shall be of the power intake type having a total capacity of not less than 400 cubic feet per minute. A rheostat control or a two-speed switch shall be mounted on the instrument panel. Vent opening(s) shall be provided with an attached weatherproof cover with a means for opening and closing from inside the vehicle. Power ventilator openings inside the vehicle shall be furnished with a safety grille or screen.

3.6.9 Tinted windows. Tinted, heat absorbing window safety glass shall be furnished for the windshield. Tinting of lamination material is not acceptable.

3.6.10 Air conditioning. Unless otherwise specified (see 6.2), automotive air conditioner(s) with required allied components shall be furnished to air condition both the driver and patient compartments. The air conditioner(s) shall have a rated cooling capacity at engine idle speed of not less than 20,000 Btu per hour at 95°F dry bulb ambient outside temperature and 67°F wet bulb inside vehicle temperature. The air conditioning unit(s) shall be an integral part of the vehicle. Air conditioner(s) shall not be mounted on the roof.

3.6.11 Domelights. At least four domelights shall be installed, one in the driver's compartment and three in the patient compartment along the center of the aisle. The patient compartment domelights shall be provided with a translucent lens. Each light shall provide not less than 40 foot-candles of illumination at lower stretcher patient level.

3.7 Electrical accessories.

3.7.1 Spotlight(s) and rear floodlight. Unless two spotlights are specified (see 3.7.1.1) a single spotlight, mounted on the vehicle centerline, directly over the windshield header section with inside controls easily accessible to the driver and assistant, shall be furnished. The spotlight shall be of the roof mounted type and shall be a Unity Model U275 or equal. In addition, rear mounted floodlight shall be furnished with door switches which automatically turn the floodlight

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on when either rear door is open. The operation of the floodlight shall be overridden by a dash mounted switch and a patient compartment switch. The rear floodlight shall be swivel mounted to provide vertical and horizontal adjustment. Mountings shall include locking devices to secure the floodlight in any selected position. The mounting shall permit directing the light beam to the ground to all points two feet or more from the vehicle. All switches shall be labeled as to function.

3.7.1.1 Two spotlights. When specified (see 6.2), two spotlights shall be furnished in lieu of a single spotlight, mounted so that one is located for convenient access by the driver, the other for use by the assistant driver. Spotlights shall have inside controls, and shall be mounted through the windshield posts or through the windshield header section. Interior controls shall be located to minimize possible safety hazards.

3.7.2 Removal of lights for shipment. At the option of the manufacturer or when specified (see 6.2), the spotlight(s) and floodlight specified in 3.7.1 and 3.7.1.1 shall be removed for shipment where it will result in a reduction in overall vehicle shipping cubage. When removed, the light(s) shall be stowed within the vehicle and the roof opening shall be provided with weathertight cover(s). Provisions for reinstalling the light(s), including access to the light wiring and mounting devices from inside the vehicle, shall be provided.

3.7.3 Auxiliary 110-volt circuit and wiring. When specified (see 6.2), a power pack device capable of converting the 12-volt vehicle dc power supply to provide not less than 1,000 watts at 80 percent power factor and at 110 volts, single phase, 60-cycle, ac power, shall be furnished. The circuit shall include two 110-volt grounded duplex receptacles mounted in the patient compartment and a 110-volt male exterior outlet mounted on the curbside at the rear, for connecting an exterior power source to the vehicle. One outlet shall be provided in allocation convenient from the front of the curbside patient's seat. A second outlet shall be provided at the rear of the patient compartment convenient to the attendant on the ground with the rear doors opened. The exterior outlet shall include a ground and a spring or screw type waterproof cover. When an external power service is used, the circuits shall be capable of automatically by passing the vehicle power converter.

* 3.7.4 Body electrical wiring. All of the vehicle body electrical systems shall be on circuit(s) separate and distinct from the truck chassis circuit(s). The body electrical wiring shall incorporate overload protective devices of the automatic reset, overload, circuit breaker type. Additionally, two spare single pole, 15-ampere circuit breakers shall be furnished for future radio installation. The circuit breakers shall be readily available for inspection and service. The body electrical ground system shall be a through ground to the chassis electrical system.

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3.8 Identification of outlets and controls. All electrical, lighting, vacuum and air conditioning controls in the vehicle cab and body shall be identified with permanent plates as to function. Electrical and vacuum outlets shall be likewise identified.

3.9 Servicing and adjusting. Prior to acceptance of the vehicle by the Government inspector, the contractor shall service and adjust the vehicle for operational use including at least the following: alinement of lights; adjustment of engine and brake systems; filling and charging of the battery; alinement of front wheels; inflation of all tires; complete lubrication of the chassis, engine, running gear, all vehicle parts and on-vehicle equipment, with grades of lubricants recommended for the ambient air temperature at the delivery point; servicing of the cooling system with a solution of ethylene glycol type antifreeze and water in equal parts by, volume; and servicing of the windshield washer reservoir with water and appropriate additives.

* 3.10 Workmanship. Defective components or parts and assemblies which have been repaired or modified to overcome deficiencies shall not be furnished. Welded, bolted, and riveted construction utilized shall be in accordance with the highest standards of the industry.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements, (examination and tests), as specified herein. Except as otherwise specified in the contract, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to ensure supplies and services conform to proscribed requirements.

* 4.1.1 Responsibility for compliance. All items must meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility for ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

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4.2 Government verification. Quality assurance operations performed by the contractor will be subject to Government verification at unscheduled intervals. Verification will consist of observation of the operations to determine that practices, methods, and procedures of the contractor's inspection are being properly applied. Failure of the contractor to promptly correct product deficiencies discovered shall be cause for suspension of acceptance until correction has been made or until conformance of product to specification criteria has been demonstrated.

4.3 First production vehicle inspection. The first vehicle produced under the contract shall be inspected by the contractor at his plant under the direction and in the presence of Government representatives. The purpose of the inspection shall be to determine vehicle conformance to the contract. Acceptance of the first production vehicle shall not constitute a waiver by the Government of its rights under the provisions of the contract.

* 4.3.1 Vehicle weight. The first production vehicle shall be weighed to determine the curb weight and the distribution of the curb weight on the front and rear axles. The total imposed loading on the front and rear axles shall be computed by the contractor and verified by the Government, using the curb weight, the operator and assistant driver weight at 175 pounds each and the minimum payload required to provide the specified GVW (see 3.2.5). The calculated imposed loads on the front and rear axles shall be compared to the suspension, axle, and tire load capacity ratings to determine if these components are of adequate capacity to meet contractual requirements.

* 4.3.2 Road test. The first production vehicle shall be examined and road tested by the contractor, with driver, assistant driver and payload (see 3.2.5). The payload shall be not less than 1,400 pounds. Payload shall consist of four weights of not less than 240 pounds placed in each of the four litter rack travel positions plus an evenly distributed load to provide the remainder of the 1,400 pound payload. The road test shall be for a distance of not less than 100 miles. Approximately 60 percent of this mileage shall be on paved streets or highways at speeds of up to at least 55 mph; 30 percent on gravel or dirt roads at speeds of up to at least 35 mph; and not less than 10 percent in simulated or actual cross-country operation at speeds applicable to the terrain. Cross-country operation is defined as travel over open fields, rolling and side sloping hills, and rough and muddy terrain.

* 4.3.3 Heating, ventilation, and air conditioning systems. The heating, ventilating and air conditioning systems shall be operated to determine that the controls and system are functioning. The contractor shall certify that the supplied systems meet the requirements in 3.4.15, 3.6.8 and 3.6.10. Certification shall be based on test data or calculations showing that the system offered will meet the specified requirements.

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* 4.3.4 Army litter loading. The contractor shall make available four standard Army litters and one Navy Stokes type litter (see 3.6.1) and four individual 240-pound weights suitable for placing on the litters. All possible combinations of loading and unloading, both with and without fully loaded Army and Navy litters, shall be demonstrated successfully.

* 4.3.5 Water spray test. After the road test, the vehicle body shall be subjected to a water spray test for approximately 15 minutes. The spray shall be delivered by nozzles operating at not less than 25 pounds per square inch (psi) water pressure, sufficient in number and so placed (approximately three feet from the body) to afford full coverage of the sides, roof, front, rear, and undercarriage of the vehicle. Evidence of water leakage shall be cause for rejection until leaks are corrected.

* 4.3.6 Truck body treatment and painting. The certification regarding the body cleaning, treating, prime painting and salt spray resistance testing, as required by MIL-STD-1223, shall be made to Government representatives at the first production vehicle inspection.

* 4.3.7 Production sample. Upon acceptance of the first production vehicle, it shall remain at the manufacturing facility as a production sample, and be the last vehicle shipped on the contract. The contractor shall maintain the vehicle in a serviceable condition for the duration of the contract.

4.3.8 Failure. Failure of the first production vehicle to meet requirements of the contract shall be cause for the Government to refuse acceptance of all vehicles under contract until corrective action has been taken.

* 4.4 Inspection of production vehicles. Each production vehicle shall be examined and driven (less payload) for not less than 5 miles at speeds up to 50 mph to assure that the vehicle will operate in accordance with the contractual requirements. Each production vehicle shall be subjected to the water spray test specified in 4.3.5 after the road test. The contractor may authorize the subcontractor who will perform the final assembly work on the vehicle to make such examination and tests, but this shall not relieve the contractor of his obligation to deliver an acceptable vehicle or constitute a waiver of any warranty provision. For each vehicle under contract, the contractor shall make available to the Government, at the point of final acceptance, records acceptable to the Government indicating that the servicing and adjusting required by 3.9 have been accomplished.

5. PREPARATION FOR DELIVERY

5.1 Vehicle processing. The vehicle shall be processed for shipment, from the manufacturer's plant to the initial receiving activity, in accordance with the manufacturer's standard commercial practice.

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6. NOTES

6.1 Intended use. The vehicles covered by this specification are intended for nontactical use by the Government in transporting reclining or sitting patients over highways, unimproved roads, and cross-country terrain. Principal use of the vehicles will be stop and go, short haul, medium and low speed operations and occasional high speed highway operations.

* 6.2 Ordering data. Acquisition documents should specify the following:

- (a) Title, number, and date of this specification.
- (b) Model of vehicle required (see 1.2).
- * (c) Issue of DODISS to be cited in the solicitation and if required, the specific issue of individual documents referenced (see 2.1.1 and 2.2).
- (d) Identification of appropriate service for painting and marking (see 3.1.1.1).
- (e) Markings other than identification markings, if required (see 3.1.1.1).
- (f) Rustproofing, if required (see 3.1.1.4).
- (g) Tropical rustproofing, if required (see 3.1.1.4).
- (h) Silicone brake fluid, if required (see 3.1.1.10).
- * (i) Satisfactory operation on JP-4, JP-5 and JP-8 fuels, if required (see 3.4.1. 1).
- (j) Gasoline engine, if required (see 3.4.1.2).
- (k) Power plant heaters and a fuel warmer, if required (see 3.4.1.7).
- (l) If a battery heater is not required with the power plant heaters (see 3.4.1.7).
- (m) Fuel fired engine preheater, if required (see 3.4.1.8).
- (n) Alternator capacity, if other than as specified (see 3.4.2.1).
- (o) Alternator capacity, if other than as specified (see 3.4.2.2).
- (p) High cycle life (deep cell) batteries, if required (see 3.4.2.3).
- (q) Manual transmission, if required (see 3.4.5.2).
- (r) If engine and transmission skid plates are not required for model 4x4 vehicles (see 3.4.6.1).
- (s) If a positive traction, limited slip, or automatic locking differential is not required (see 3.4.9.1).
- (t) If automatic drive hubs are not required for model 4x4 vehicles (see 3.4.9.2).
- (u) If a spare tire assembly and carrier are not required (see 3.4.10.4).
- (v) Chrome plating of grille guard, if required (see 3.4.14.1).
- (w) Auxiliary heater, if required for patient compartment (see 3.4.15).
- (x) Style 1 stretcher, if required (see 3.6.1).
- (y) Style 2 cot, if required (see 3.6.1).
- (z) A vacuum outlet, if required (see 3.6.6).
- (aa) Supports for three "E" size oxygen tanks, if required (see 3.6.7).
- (ab) Supports for one "M" size oxygen tank, if required (see 3.6.7).

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- (ac) If air conditioning is not required (see 3.6.10).
- (ad) Two spotlights in lieu of a single spotlight, if required (see 3.7.1.1).
- (ae) Removal of spotlight(s) and floodlight for shipment, if required (see 3.7.2).
- (af) Auxiliary, 110-volt circuit, if required (see 3.7.3).

* 6.3 Performance prediction. SAE Truck Ability Prediction Procedure computations and computations for low speed and maximum geared speed will be required by the contract. Unless other conditions are cited in the contract, computations should be made for normal atmospheric pressure, normal ambient air temperature, and still dry air. The SAE Work Sheet Item 1 should include the vehicle model number, wheelbase engine model number, and vehicle type. The factors to be used in predicting truck ability (site 3.3.1.1) are established as follows for the corresponding SAE Truck Ability Prediction Procedure Tables:

Table 1	- <u>Tire Factor</u> . This factor must relate to the size of tire furnished by the contractor in accordance with this specification.
Table 2	- <u>Altitude Factor</u> . 1.00
Table 3	- <u>Rolling Factor</u> . 2.080
Table 4	- <u>Area Factor</u> . 0.092
Table 5	- <u>Velocity Factor</u> . 432.0
Table 6	- <u>Altitude Factor</u> . 1.00
Table 7	- <u>Chassis Friction Horsepower</u> . 4.5
Table 8	- <u>Grade Factor</u> . 0.62
Table 8A	- <u>Correction Factor</u> . Not required
Table 9	- <u>Road Factor</u> . 0.0.

6.4 Oxygen tank. The following are the appropriate dimensions, weights, and capacities of the various sizes of oxygen cylinders referenced in this specification (Tanks shall conform to DOT specification 3AA2015):

	<u>"E"</u>	<u>"M"</u>
Outside diameter (0.250 -0) inches	4.250	7
Overall heights w/valve (inches)	29	46
Capacity (cubic feet)	22.100	106
Weight, empty (pounds)	20	75
Weight, full (pounds)	22	83

6.5 International Standardization Agreement. Certain provisions of this specification pertaining to litter handling capability (see 3.6.1, table II, 3.6.3, and figure 1) are the subject of international standardization agreement, STANAG No. 2040. When an amendment, revision, or cancellation of this specification is proposed which will affect or violate the international agreement concerned, the preparing activity will take appropriate reconciliatory action through international standardization channels including departmental standardization office, if required.

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6.6 Change in classification. The type II emergency medical service ambulance has been deleted from this specification. Future procurement of the type II ambulance will be made through KKK-A-1822B.

* 6.7 Subject term (key word) listing.

Ambulance marking
Amy litter
Aspirator
Litter racks
Stokes litter
Truck, ambulance.

* 6.8 Changes from previous issue. The margins of this document are marked with an asterisk (*) to indicate where changes (additions, modifications, corrections, deletions) from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content regardless of the marginal notations and relationship to the previous issue.

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Preparing activity:
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NOTE: UNTOLERANCED DIMENSIONS
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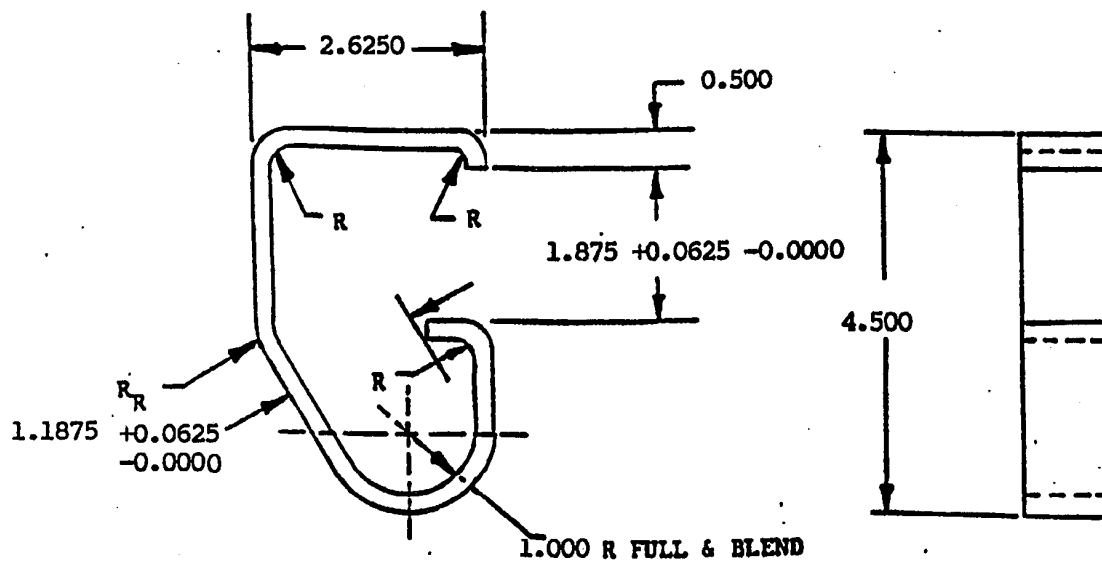


FIGURE 1. Litter bracket.