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SUPERSEDING
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MILITARY SPECIFICATION

TRUCK, UTILITY: 1/4 TON, 4X4, M151A2; TRUCK, AMBULANCE: FRONT LINE, 1/4 TON, 4X4 M718A1; TRUCK, UTILITY: 1/4 TON, 4X4 CARRIER FOR 106MM RIFLE M825

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers three tactical-type trucks for use by the Armed Forces; one utility truck, one front line ambulance, and one weapon carrier.

1.2 Classification. Trucks shall be of the following models (see 6.2):

Table I. Truck models

Model M151A2	-	Truck, Utility: 1/4 Ton 4X4.
Model M718A1	-	Truck, Ambulance: Front Line 1/4 Ton 4X4.
Model M825	-	Truck, Utility: With Provisions for Mounting 106MM Rifle 1/4 Ton 4X4.

2. APPLICABLE DOCUMENTS

2.1 The following documents of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein:

SPECIFICATION

Federal

O-A-548	-	Antifreeze Coolant, Engine: Ethylene Glycol, Inhibites, Concentrated.
VV-B-680	-	Brake Fluid, Automotive.

Military

MIL-E-45332	-	Engine, Gasoline: 4-Cylinder, In-Line, Liquid-Cooled, 71 HP., M151-2.

STANDARDS

Military

MIL-STD-105	-	Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-130	-	Identification Marking of U.S. Military Property.
MIL-STD-193	-	Painting Procedures, Tactical Vehicles (Tracked and Wheeled).
MIL-STD-461 Notice 4	-	Electromagnetic Interference Characteristics Requirements for Equipment.
MIL-STD-462	-	Electromagnetic Interference Characteristics, Measurement of.
MIL-STD-642	-	Identification Marking of Combat and Tactical Transport Vehicles.
MIL-STD-882	-	System Safety Program for Systems and Associated Subsystems and Equipment, Requirements For.
MIL-STD-1472	-	Human Engineering Design Criteria Military Systems, Equipment and Facilities.

DRAWINGS

8736905	-	Truck, Utility: 1/4 Ton 4X4, M151A2.
8736906	-	Truck, Ambulance: Front Line, 1/4 Ton, M718A1.
8736907	-	Truck, Utility: 1/4 Ton, 4X4, Carrier for 106MM Rifle, M825.

(Copies of specifications, standards, drawings, and publications required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

3. REQUIREMENTS

3.1 First production vehicle. The first production vehicle of each model to be delivered under the contract shall be examined by Government personnel to determine compliance with the requirements of this specification and for those examinations and tests specified herein. Vehicles submitted by the contractor shall be production models which are representative of the units to be delivered under the contract.

3.1.1 Operational cycle. To assure that the reliability, durability and maintainability requirements of 20,000 or 5,000 miles as applicable are met, the following 5,000 mile cycle shall be used:

(a) 1500 miles on paved roads either concrete or asphalt or any combination of the two.
(b) 1850 miles on secondary roads.
(c) 1500 miles on cross-country terrain (vehicle shall be in 4 wheel drive).
(d) 150 miles on Belgian block or equivalent.

NOTE: The vehicle shall be subjected to a 500 mile break-in run. This mileage shall be counted as part of the paved road mileage for the 20,000 mile requirement. The first 100 miles shall be accumulated at speeds of not more than 35 mph. The remaining 400 miles shall be accumulated at speed of not more than 50 mph. The break-in run shall be accomplished with driver, and without pay load and trailer. This 500 mile break-in will be in addition to any tests that is 5,000 miles or less.

3.1.2 M151A2 truck. The 20,000 accumulated mileage for the M151A2 shall be accomplished by repeating the cycles specified herein 4 times. The break-in run applies to the first cycle only. Fifty percent of operation on each test course shall be performed when towing a trailer with payload specified in Table IV.

3.1.3 M718A1 truck. The 20,000 accumulated mileage for the M718A1, shall be accomplished by repeating the cycles specified herein 4 times. The accumulated break-in mileage shall be counted as part of the paved road mileage requirements as contained in the second cycle listed below. The vehicle payload for each 5,000 mile test cycle shall be as specified in Table IV.

(1) First cycle-driver plus two litter and two seated patients.
(2) Second cycle-driver plus two empty letters.
(3) Third cycle-driver plus three litter patients.
(4) Fourth cycle-driver plus three empty litters.

NOTE: A simulated load of 180 pounds will be used for each litter or seated patient required for test.

3.1.4 M825 truck. The vehicle shall be operated for 5,000 miles, with the rated payload specified in Table IV, in accordance with the cycles outlined above.

3.1.5 Reliability. The M151A2 with rated payload shall have a Specified Value (SV) of 4000 Mean Miles Between Failure (MMBF). The M718A1 with rated payload shall have a SV of 2475 MMBF. The M825 with rated payload shall have a SV of 3400 MMBF. A failure for calculating MMBF shall be as indicated below:

a. A "failure" is defined as any malfunction of the end item that requires corrective action which cannot be referred:

(1) Until the next scheduled maintenance (exclusive of lubrication services) if organizational maintenance is prescribed for correction, or--
(2) For the remainder of its specified life before overhaul, replacement, rebuild or salvage (as applicable) if direct or general support maintenance is prescribed for correction.

b. Corrective action is not deferrable if the malfunction causes (or would cause if not corredted):

(1) Inability to commence operation, cessation of operation or degradation of performance capability of the end item below that required for the accomplishment of its prescribed mission function, or--
(2) A critical or catastrophic hazard to personnel or equipment as defined by MIL-STD-882.

c. Any malfunction which the operator or crew (user) can remedy will not be considered a failure provided that the repair is authorized or prescribed as an operator function and can be accomplished within 60 minutes using only controls, tools or spare parts incorporated in or carried with the end item.

3.1.6 Durability. The M151A2 and M718A1 with rated payload shall each have a 50% probability of completing a minimum of 20,000 miles of operation without replacement, rebuild or overhaul of any of the major components, i.e., engine, transmission, transfer case and differential. The M825 with rated payload shall have a 50% probability of completing a minimum of 5000 miles of operation without replacement, rebuild or overhaul of the major components specified above.

3.1.7 Maintainability. The total maintenance, excluding driver/crew checks and services, shall not exceed the following:

a. M151A2 and M718A1: 70 manhours each during 20,000 miles of specified operation.
b. M825: 17.5 manhours during 5,000 miles of specified operation.

The above manhours equate to a Maintenance Ratio (MR) of .07 at 20 MPH equivalent to one operational hour. The scheduled maintenance intervals shall not be less than one month or 1,000 miles whichever comes first.

3.2 Materials. Materials specified herein and in the reference drawings, specifications, and standards shall be free from all defects and imperfections that might affect the serviceability and function of the finished product.

3.2.1 Qualified Products List. With respect to all assemblies and component parts requiring product qualification in accordance with the pertinent specifications or drawings listed in 3.3 and necessary in the construction of this vehicle, the contractor shall be responsible for using only those products which are listed by part or drawing number as Qualified Products List(s) (QPL) items on the QPL in the referenced specification or which have been approved for inclusion on such lists. Manufacturer's inspection records shall specifically list such component(s), name of supplier(s) as listed on the QPL or in the approval letter, and number and date of the QPL from which the selection was made or date of approval letter when products are approved but not as yet listed on the QPL.

3.3 Construction. Vehicle components, sub-assemblies, and assemblies shall be fabricated and assembled into a complete vehicle in accordance with Technical Data Package List (TDPL), as specified in Table II, associated documents, and publication reference therein. All parts sub-assemblies, and assemblies shall be identified in accordance with MIL-STD-130.

Table II. Drawings, part list and specification

MODEL	TDPL
M151A2	8736905
M718A1	8736906
M825	8736907

3.3.1 Engine. The engine shall conform to MIL-E-45332, except that the section covering preparation for delivery shall not apply.

3.3.2 Soft top. The complete soft top furnished and installed in accordance with applicable drawings for the M151A2 and M718A1 vehicles shall provide the maximum protection from the elements for the personnel when operating in adverse climatic conditions.

3.3.3 Body assembly for M151A2. Body shall be all steel unitized construction, open type with space for personnel and cargo. Stowage space shall be provided for soft top closure.

3.3.4 Body assembly for M825. Body shall be all steel unitized construction, open type with provisions for mounting the 106MM Rifle and carrying a crew of four, including driver.

3.3.5 Body assembly for M718A1. Body shall be all steel unitized construction, open type with 2 litter, and a three litter emergency capacity to serve as a front line ambulance vehicle.

3.3.6 Human engineer. The design shall provide environments which foster effective procedures, work patterns and personnel safety and which minimize discomfort, distraction and any other factors which degrade human performance or increase error. The design should tend to minimize personnel and training requirements within limits of time, cost and performance trade-offs. For particulars, see Applicable Parts of Paragraphs 4 and 5 of MIL-STD-1472.

3.3.7 Safety. The vehicle design shall be evaluated in accordance with MIL-STD-882 to assure all hazards to operating and maintenance personnel have been eliminated or reduced to an acceptable level through the utilization of appropriate safety devices.

3.4 Vehicle performance requirements. Truck shall meet all performance requirements, specifications, and be serviced as specified herein.

3.4.1 Operating conditions. Unless otherwise specified, vehicle performance shall be demonstrated at, or corrected for, atmospheric conditions of 29.92 inches mercury barometric pressure, the partial pressure of water vapor 0.39 inches of mercury, and 60 degrees Fahrenheit (60°F) ambient air temperature.

3.4.1.1 Extreme climatic operation. The vehicle engine shall start and normal operation maintained, in ambient air temperature from minus 25°F to plus 115°F, without external aid, in altitudes from sea level to 3000 feet elevation above sea level.

3.4.1.2 Low temperature operation. When specified (see 6.2), winterization equipment shall be furnished and installed. With winterization equipment installed vehicle engine shall start and normal operation maintained in ambient air temperature of minus 65°F and a relative humidity of 100 percent, after 24 hours of cold-soaking at the specified temperature.

3.4.1.3 High temperature operation. The vehicle engine shall start and normal operation maintained, in ambient air temperatures at altitudes specified in Table III, without external aids, and in relative humidity as low as 5 percent. The vehicle fuel system shall function without evidence of vapor lock, and the engine coolant temperature shall remain below the boiling point.

Table III. Elevation-temperature chart

Elevation	Minimum ambient air temperature
4000 feet	108°F
5000 feet	100°F
6000 feet	97°F
7000 feet	93°F
8000 feet	90°F

3.4.1.4 Toxic fumes. The concentration of carbon monoxide in the crew compartment(s) shall not exceed 50ppm.

3.4.2 Curb weight. Curb weight includes weight of vehicle with all attachments, accessories, equipment, and full complement of fuel, lubricants, and coolant.

3.4.3 Payload. Truck payload shall be as specified in Table IV which includes driver and personnel.

3.4.4 Towing load. Towed load performance requirements for the M151A2 as specified in Table IV.

Table IV. Weights and loads, pounds

	M151A2	M825	M718A1
Curb Weight:	2440	*2590	2750
Rated payload, including personnel			
Highway:	1200	**1730	900
Cross-Country	800	**1730	900
Gross vehicle weight (GVW)			
Highway:	3640	4320	3650
Cross-country	3240	4320	3650
Rated towed load			
Highway:	1320	None	None
Cross-country	1070	None	None

NOTE: *With rifle mount kit installed.
**Includes 106MM riflt; if vehicle is tested less rifle mount kit, payload should be adjusted to bring total GVW to 4320 pounds.

3.4.5 Speeds.

3.4.5.1 Level road speeds. The M151A2 trucks, including cross-country payload and with towed load of 1500#, shall sustain a speed of not less than 56 miles per hour (mph). The 718A1 and M825 vehicles, including cross-country payload, shall sustain a speed of not less than 56 mph and 50 mph, respectively. All vehicles shall be subjected to a 500 mile break-in run. This mileage shall be counted as part of the paved road mileage requirement. The first 100 miles shall be accumulated at speeds of not more than 35 mph with the remaining 400 miles at speeds of not more than 50 mph. The break-in run shall be accomplished with driver, and without payload and trailer. All vehicles shall sustain a low speed of not more than 2-1/2 mph in low gear, when operated on smooth, dry, relatively level, hard-surfaced roads. Drumming, shimmy, or tramping shall not occur throughout any speed range.

3.4.5.2 Grade speeds. The truck, including cross-country payload and with towed load of 1500#, shall ascend and descend grades up to 6-1/2 percent at a speed of 30 mph, when operated on smooth, dry, hard-surfaced roads. Without towed load, the M151A2 and M718A1, including cross-country payload, shall ascend and descend grades up to 60 percent at a speed of 2-1/2 mph, when operated on smooth, dry, hard-surfaced roads. Without towed load, but including cross-country payload, the M825 shall ascend and descend grades up to 50 percent at a speed of 2-1/2 mph when operating on smooth, dry, hard-surfaced roads.

3.4.6 Highway. The M151A2 truck shall transport highway payloads, while towing loads of 2,000 lbs., when operated on smooth dry, relatively level, hard-surfaced roads.

3.4.7 Side slopes. The M151A2 and M718A1 trucks, including cross-country payload, shall operate on side slopes of up to 40 percent, and the M825 truck, including cross-country payload, on side slopes up to 30 percent, sloping right or left.

3.4.8 Cross-country. The trucks shall transport cross-country payloads, while towing cross-country loads when applicable, on unimproved roads, trails, and open terrain.

3.4.9 Fording.

3.4.9.1 Deep water fording. When specified (see 6.2), deep water fording equipment shall be furnished. With deep water fording equipment installed, and with rated cross-country payload and towed load when applicable, the vehicle shall ford a hard-bottomed, relatively level crossing in fresh or salt water to 60 inches in depth. During the fording operation, while immersed to the specified depth of 60 inches for a period of 15 minutes, the vehicle shall be stopped with engine operating at the idle speed for not less than 5 minutes; the engine shall be stopped and kept inoperative for 1 minute; the engine shall be restarted and shall attain normal operating capability within 1 minute from

commencement of starting cycle; the engine shall be operated at idle speed during the remainder of the 15 minute period. Seals and gaskets shall minimize entry of water into the vehicle components and accessories. When lubricants are drained, they shall contain not more than 2 percent of water or water borne contamination. All vehicular instruments, components, and accessories shall function normally before, during, and after the fording cycle. Flywheel drain plug shall be installed in the drain hole before fording.

3.4.9.2 Shallow water fording. The vehicle, without fording equipment for modification and with rated cross-country payload and towed load when applicable, shall ford a hard-bottomed, relatively level crossing in fresh or salt water to a depth of at least 21 inches.

3.4.10 Braking ability. The fully equipped vehicle, including highway payload, but excluding towed load, tire chains, or modification kits, shall have the braking ability specified herein.

3.4.10.1 Service brakes. Service brakes, when properly adjusted and using brake fluid conforming to VV-B-680, shall stop the vehicle within 30 feet from a speed of 20 mph, on dry, hard, relatively level, smooth road, free from loose material. Service brakes shall be able to stop and hold the vehicle on a 60 percent or 50 percent incline as applicable.

3.4.10.2 Parking brake. The parking brake shall hold the vehicle on a dry concrete incline of 40 percent with highway payload; and on a dry concrete 60 percent or 50 percent incline with cross-country payload as applicable.

3.4.11 Turning ability. The vehicle shall demonstrate a maximum turning radius of 18.5 feet, measured from the centerline of the outside front wheel, when completing full turns to right and left.

3.5 Accessories. Horn, windshield wipers, windshield washers, lights turn signals and hazard warning lights, sending units, gages and other instruments, switches, and controls shall perform their intended use.

3.6 Servicing and adjustment. Prior to delivery, the contractor shall service the vehicle for operational use. Servicing and adjustment shall result in vehicle demonstrating performance in accordance with requirements of this specification. Engine cooling system shall be serviced with a solution of ethylene glycol conforming to type I of O-A-548 and water, in equal parts by volume.

3.7 Electromagnetic interference characteristics. The vehicle shall conform to the electromagnetic interference characteristics requirements for tactical equipment, of MIL-STD-461 and MIL-STD-462.

3.8 Painting and marking.

3.8.1 Treatment and painting. Vehicle painting, and preparation therefor, shall be in accordance with the applicable provisions of MIL-STD-193 and as specified herein.

3.8.2 Marking. Registration numbers and other markings shall be applied in accordance with MIL-STD-642.

3.9 Kits. All authorized kits, when required for the M151A2, M718A1, and M825 vehicles, kits shall fit, and when installed on specific vehicle shall meet all functional requirements.

3.10 Workmanship. The workmanship shall produce vehicle free from fabrication defects which would affect the appearance, functioning, or operating life of the vehicle or any of its components. All bolts, nuts, or other fasteners shall be torqued as indicated on drawings, or where not specifically detailed on drawings, to the extent consistent with their respective application in commercial vehicle of similar construction.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the supplier 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 assure supplies and services conform to prescribed requirements.

4.1.1 Contractor's quality control system. Unless otherwise specified by the procuring activity, the contractor shall provide and maintain an effective inspection and quality assurance system acceptable to the Government covering the supplies under the contract. A current written description of the system shall be submitted to the contracting officer prior to initiation of production. The contractor will not be restricted to the inspection station or to the method of inspection listed provided that an equivalent control is included in the approved quality control precedure. The contractor shall notify the Government of and obtain approval for any change to the written procedure that might affect the degree of assurance required by this specification or other applicable documents referenced herein.

4.1.2 Government verification. All quality assurance operations performed by the contractor will be subject to Government verification at unscheduled intervals. Evaluation will consist of (a) validating the conformance of the contractor to his established quality instructions (b) continuous contractor decision verification of the contractor's documented evidence relative to product quality characteristics, and (c) Government product inspections. Deviation

from the prescribed or agreed-upon procedures or instances of poor practices which might have an effect upon the quality of the product will be immediately called to the attention of the contractor. Failure of the contractor to promptly correct deficiencies discovered shall be cause for suspension of acceptance until corrective action has been taken or until conformance of products to specified criteria has been demonstrated.

4.1.3 Materials and workmanship. The contractor shall provide the Government with evidence that material and workmanship (see 3.2, 3.2.1 and 3.10) used meet the requirements of the applicable specifications and drawings.

4.1.4 Parts and components. To determine conformance to 3.3, parts, components and assemblies shall be inspected in accordance with drawings and specifications listed in Table II and TDPL's listed below in Table V:

Table V. Supplementary quality assurance provisions

MODEL	TDPL
M151A2	8736905
M718A1	8736906
M825	8736907

4.2 First production inspection

4.2.1 In-process inspection. During fabrication of the first production vehicle of each model, an in-process inspection will be conducted by Government representatives to evaluate conformance of materials and workmanship with drawing and specification requirements. These inspections shall be made at the contractor's or subcontractor's facility prior to the application of primer and paint.

4.2.1.1 Review and evaluation. Review and evaluation of records for processing procedure, inspection systems and plan of quality control, will be conducted on the following: material, welding, surface hardening, heat treating, protective finishes, etc.

4.2.2 Completed first production vehicle inspection. The first production vehicle of each model on each contract shall be road tested and completely inspected by the contractor for conformance to the requirements of the contract and specifications. The applicable road test shall be in accordance with paragraph 4.6.2.2. Upon completion, the contractor shall submit the first production vehicle (and make available all inspection records and certifications) to the responsible Government inspection element at the contractor's plant for preliminary inspection.

4.2.2.1 Preliminary inspection. The first production vehicle shall receive a preliminary inspection by the responsible Government element. The preliminary inspection shall be complete except for road test requirements of paragraph 4.6.2.2, which will be conducted jointly during provisional inspection (to be accomplished by representatives of TACOM Product Assurance Directorate) specified in paragraph 4.2.2.2.

4.2.2.2 Provisional inspection. The first completed production vehicle shall be subject to provisional inspection at the contractor's plant by representatives of TACOM Product Assurance Directorate. The contractor shall provide any other inspection assistance as may be required. At the time of this inspection, the contractor shall make available his inspection plan, inspection records and certification pertinent to the vehicle and components.

4.2.2.3 Repair of defects. Defects found as a result of above inspection shall be corrected by the contractor at no cost to the Government. Failure of the contractor to promptly correct defects shall be cause for suspension of acceptance of vehicles until corrective action has been accomplished.

4.2.3 Vehicle disposition. Upon completion of inspection by the contractor and the Government, and acceptance of the first production vehicle(s) by the Government, the vehicle(s) shall remain at the manufacturing facility as a production and quality sample. The vehicle(s) may be released after 120 days from start of production, provided the quality level of subsequent produced vehicles is equal to or exceeds the production and quality sample.

4.2.4 Final approval and acceptance. Final approval and acceptance by the Government of the first production vehicle of a specific model shall be withheld until initial production testing has been completed and a final determination has been made regarding conformity of the vehicle to contractual requirements including but not limited to workmanship and materials.

4.3 Initial production test. To determine conformance to 3 (inclusive), after completion and acceptance of the first production vehicle, a quantity of vehicle(s) specified in the contract will be selected by the Government for test. Vehicle(s) shall be selected from first month's production or from the first 20 vehicles subjected to examination (see 4.5.1.1). The selected M151A2 and M718A1 vehicle(s) shall be subjected to a test of 20,000 miles as specified in Table VI and all tests specified in Table VIII at site(s) approved by the Government. The selected M825 vehicle(s) shall be subjected to a test of 5,000 miles as specified in Table VII and all tests specified in Table VIII at site(s) approved by the Government. These tests are to be performed by the Government. The contractor shall expeditiously furnish repair parts, as required , to adequately support the test at no cost to the Government. Delays caused by vehicle breakdown due to poor quality of workmanship or material, or failure of contractor to adequately support the vehicle with spare parts during test, or failure of the

contractor to comply with specification or drawing requirements, shall not be basis for adjustment of the contract delivery schedule or the contract price. Initial production test will require a minimum of 120 days per M151A2 and M718A1 vehicles and 60 days per M825 vehicle to complete test.

4.3.1 Break-in operation. NOTE: Each vehicle selected shall be subject to a 500 mile break-in run (see paragraph 3.4.5.1, Level Road Speeds).

Table VI. 20,000 mile test

Course	Mileage & speeds	Vehicle payload (Table IV)
Hard surface, paved	6,000 miles at varying speeds up to maximum.	Highway
Secondary roads	7,400 miles at speeds applicable to conditions of terrain.	Cross-country
Cross-country	6,000 miles at speeds applicable to conditions of terrain. (Vehicle in 4-wheel drive)	Cross-country
Belgian block	600 miles at speeds applicable to conditions of terrain.	Cross-country

NOTES: 1. Fifty percent of the test of the M151A2 vehicles only shall be performed while towing the following loads in addition to the payloads specified in Table IV.

1. Hard surface - 2,000 pounds.
2. Hilly cross-country, level cross-country, and Belgian block - 1500 pounds.

Table VII. 5,000 mile test

Course	Mileage & speeds	Vehicle payload (Table IV)
Highway	1500 miles at speeds up to maximum.	Highway
Secondary	1850 miles at speeds applicable to conditions of terrain.	Cross-country
Cross-country	1500 miles at speeds applicable to conditions of terrain. (Vehicle in 4-wheel drive)	Cross-country
Belgian block	150 miles at speeds applicable to conditions of terrain.	Cross-country

4.2.3 Reliability verification. To determine conformance to the reliability specified in 3.1.5, the Minimum Acceptable Value (MAV) of 2600 MMBF will be demonstrated during tests for M151A2; MAV of 2260 MMBF will be demonstrated during tests for M825; MAV of 1650 MMBF will be demonstrated during test for M718A1. The reliability requirements will be verified at 50% or higher confidence level consistent with the selected sample size while vehicles are subjected to first production tests.

4.3.3 Durability verification. To determine conformance to 3.1.6, the durability requirements will be verified at a confidence level consistent with the selected sample size while the vehicle is subjected to first production vehicle test.

4.3.4 Maintainability verification. To determine conformance to 3.1.7, the maintainability requirements will be verified during first production vehicle test.

4.3.4.1 Test failure. Failure of test vehicle(s) to comply with any of the requirements specified or any deficiency of workmanship or materials during or as a result of the 20,000 mile test for M151A2 and M718A1, and 5,000 mile test for M825, shall be cause for rejection of the vehicle. Further, the Government may refuse to continue acceptance of production vehicles until evidence has been provided by the contractor that corrective action has been taken to eliminate the deficiency. Any deficiency found during or as a result of the test shall be prima facie evidence that all vehicles already accepted prior to completion of the test are similarly deficient unless evidence satisfactory to the Government is furnished by the contractor that they are not similarly deficient. Such deficiencies on all vehicles shall be corrected by the contractor at no cost to the Government.

Table VIII. Classification and location of inspections and tests

Title	Requirement	Init Prod Test, GPG	Accept Test Place of Mfg	Con Test Place of Mfg	Comp* Test, GPG
Engine Check	3.3.1	4.4.1	4.4.1	4.4.1	4.4.1
Soft Top Check	3.3.2	4.4.2		4.4.2	4.4.2
M151A2 Body Assy Check	3.3.3	4.4.3		4.4.3	4.4.3
M825 Body Assy Check	3.3.4	4.4.4		4.4.4	4.4.4
M718A1 Body Assy Check	3.3.5	4.4.5		4.4.5	4.4.5
Human Engr Verification	3.3.6	4.4.6		4.4.6	4.4.6
Safety Verification	3.3.7	4.4.6.1		4.4.6.1	4.4.6.1
Environ Oper Test	3.4.1 thru 3.4.1.3	4.4.8			
Toxic Fume Eval	3.4.1.4	4.4.8.1			
Level Road Speed Test	3.4.5.1	4.4.9		4.4.9	4.4.9
Grade Speed Tests	3.4.5.2	4.4.10		4.4.10	4.4.10
Highway Oper Tests	3.4.6	4.4.11			4.4.11
Side Slope Oper Test	3.4.7	4.4.12		4.4.12	4.4.12
Cross-Country Oper Test	3.4.8	4.4.13			4.4.13
Fording Oper Test	3.4.9.1 & 3.4.9.2	4.4.14			4.4.14
Braking Ability Test	3.4.10 thru 3.4.10.2	4.4.15		4.4.15	4.4.15
Service Brake Func Test			4.4.15		
Parking Brake Func Test			4.4.17		
Turning Check	3.4.11	4.4.18	4.4.18	4.4.18	4.4.18
Accessories Check	3.5	4.4.19	4.4.19	4.4.19	4.4.19
Servicing and Adjust Check	3.6	4.4.20	4.4.20	4.4.20	4.4.20
Electromagnetic Interference Check	3.7	4.4.21			4.4.21
Treatment & Painting	3.8.1	4.4.22	4.4.22	4.4.22	4.4.22

Table VIII. Classification and location of inspections and tests

Title	Requirement	Init Prod Test, GPG	Accept Test Place of Mfg	Con Test Place of Mfg	Comp* Test, GPG
Marking Check	3.8.2	4.4.23	4.4.23	4.4.23	4.4.23
Kit Check	3.9			4.4.24	
Kit Oper Check	3.9	4.4.25			4.4.25
Preservation, Packaging & Veh Processing Check	Section 5		4.4.26	4.4.26	

*GPG Government Proving Grounds

4.4 Conformance verification.

4.4.1 Engine check. To determine conformance ti 3.3.1 during vehicle testing, the engine shall be observed for proper performance.

4.4.2 Soft top check. To determine conformance to 3.3.2, the complete soft top shall be checked for proper installation, completeness and operation.

4.4.3 M151A2 body assembly check. To determine conformance to 3.3.3, the vehicle body shall be checked for completeness of assembly. All on-vehicle equipment (OVE) shall be checked for proper installation and stowage space.

4.4.4 M825 body assembly check. To determine conformance to 3.3.4, the vehicle body shall be checked for completeness of assembly. All on-vehicle equipment (OVE) including weapon, shall be checked for proper installation and stowage.

4.4.5 M718A1 body assembly check. To determine conformance to 3.3.5, the vehicle body shall be checked for completeness of assembly. All on-vehicle equipment (OVE) shall be installed, litters put in place and the vehicle checked for proper installation and stowage place.

4.4.6 Human engineering verification. To determine conformance to 3.3.6, the vehicle shall be checked for factors which degrade human performance or increase error.

4.4.6.1 Safety verification. To determine conformance with 3.3.7, all exposed parts which are energized electrically shall be located, insulated,

fully enclosed or guarded to prevent hazards to operating personnel and equipment functioning. All moving parts, mechanical power transmission devices, pneumatic components and hydraulic components which are of such a nature or so located as to be a hazard to operating or maintenance personnel shall be enclosed or guarded. Protective devices shall not impair vehicle operation functions. Equipment design which creates hazards shall result in a hazard classification as defined in MIL-STD-882. Those classified as catastrophic or critical will be considered as failures.

4.4.7 Performance. To determine conformance to 3.4, the vehicle, with engine installed and properly serviced as specified, shall be examined and tested for compliance to specified requirements.

4.4.8 Environmental operation tests. To determine conformance to 3.4.1 through 3.4.1.3, the vehicle properly serviced and equipped shall be subjected to an operation test at their applicable temperature ranges.

4.4.8.1 Toxic fume evaluation. To determine conformance with paragraph 3.4.1.4, the crew compartment(s) shall be monitored during normal vehicle operation with all winterization equipment installed and operating. Monitoring shall be accomplished in accordance with standard industrial hygiene procedures.

4.4.9 Level road speed tests. To determine conformance to 3.4.5.1, the vehicle shall be operated as specified and vehicle observed for performance and speed environments.

4.4.10 Grade speed tests. To determine conformance to 3.4.5.2, the vehicle shall be operated as specified and observed for performance and speed requirements.

4.4.11 Highway operation test. To determine conformance to 3.4.6, the vehicle shall be operated as specified and observed for performance during test listed in Table VIII.

4.4.12 Side slope operation test. To determine conformance to 3.4.7, the vehicle shall be operated on slopes as specified and observed for perfor- during tests listed in Table VIII.

4.4.13 Cross-country operation test. To determine conformance to 3.4.8, the vehicle shall be operated as specified and observed for performance during test listed in Table VIII.

4.4.14 Fording operational test. To determine conformance to 3.4.9.1 and 3.4.9.2, the vehicle shall be operated as specified at each of the specified depths and observed for performance requirements. After tests at each depth, the lubricants shall be tested to determine that water or water borne contamination does not exceed the specified maximum.

4.4.15 Braking ability test. To determine conformance to 3.4.10 through 3.4.10.2, the service brakes and parking brakes shall be tested to determine compliance with specified requirements.

4.4.16 Service brake functional test. The service brakes, when properly adjusted shall stop the unloaded vehicle within 30 feet from a speed of 20 MPH on dry, hard, relatively level smooth road free from loose material. The service brakes shall be able to stop and hold vehicle on a 60 percent or 50 percent incline as applicable.

4.4.17 Parking brake functional test. The parking brake shall hold the unloaded vehicle on a dry incline of 60 percent or 50 percent as applicable. The incline may be of any material providing a minimum static coefficient of friction with the tires of .80.

4.4.18 Turning check. To determine conformance to 3.4.11, the vehicle shall turn within the maximum specified turning radius when negotiating full turns to the right and left.

4.4.19 Accessories check. To determine conformance to 3.5, horn, windshield wipers, windshield washers, lights, turn signals, hazard warning lights, sending units, gages and other instruments, switches and controls shall be checked for proper installation and functional operation.

4.4.20 Servicing and adjustment check. To determine conformance to 3.6, servicing and adjustments of vehicle and cooling system shall be checked.

4.4.21 Electromagnetic interference characteristics test. To determine conformance to 3.7, the vehicle shall be tested to assure vehicle meets specified requirements of MIL-STD-461, Notice 4.

4.4.22 Treatment and painting check. To determine conformance to 3.8.1, all applicable surfaces of vehicles shall be checked for specified treatment, primer and paint requirements.

4.4.23 Markings check. To determine conformance to 3.8.2, vehicle identification marking and applicable DOT regulation(s) markings shall be checked for specified marking requirements.

4.4.24 Kit check. To determine conformance to 3.9, kits as furnished shall be checked for proper installation, completeness and fit.

4.4.25 Kit operational tests. To determine conformance to 3.9, a specific kit when furnished with a vehicle or subsequent to arrival of vehicle for testing, shall be installed on vehicle and checked for operational and functional requirements.

4.4.26 Preservation, packaging and vehicle processing check. Each vehicle shall be checked for conformance to Section 5 of this specification and contract requirements.

4.5 Inspection provisions

4.5.1 Lot size. An inspection lot shall consist of all vehicles of one type, from one days production, submitted at one time for acceptance inspection.

4.5.1.1 Sampling for inspection. For the purpose of visual, dimensional and primary functional inspection, a representative sample shall be selected from each inspection lot in accordance with inspection Level II of MIL-STD-105. Before sampling may be accomplished by the contractor, the contractor shall 100 percent inspect the first 20 vehicles to establish a process average (see paragraph 6.3) to allow sampling in accordance with MIL-STD-105.

4.5.2 Examinations. Visual dimensional, primary and functional examinations shall consist of examination of each vehicle for conformance to the applicable drawings and specification. Examination shall be performed against the classification of defects listed in Tables IX and X. These examinations shall be performed subsequent to road test specified in paragraph 4.6.1. The following constitutes a part of the classification of defects (see 6.4):

a. Any leak defined as a drip or droplet shall be considered as a major defect.
b. Any leak defined as a weep or seep shall be considered as a minor defect.

Table IX. Major Defects AQL = 25 Defects/100 Units

Defect No.	Characteristics	Defects	Method of Inspection
101	Engine	Malfunction, improper installation, leaks, unusal noise	Functional and Visual
102	Steering Systems and Components	Leaks, malfunction, clearance	Functional and Visual
103	Clutch	Malfunction, unusual noise, improper installation	Functional and Visual
104	Transmission	Malfunction, improper installation, leaks, unusual noises	Functional and Visual
105	Transfer	Malfunction, improper installation, leaks, unusual noise	Functional and Visual
106	Drive Train	Malfunction, leaks, unusual noise, misalignment improper installation	Functional and Visual
107	Cooling System and Components	Malfunction, leaks, improper clearance	Functional and Visual
108	Fuel System and Components	Malfunction, leaks, improper clearance	Functional and Visual
109	Electrical System and Components	Malfunction, damaged	Functional and Visual
110	Brake System and Components	Malfunction, leaks, adjustments	Functional and Visual
111	Instrumentation Switches, Warning Indicating and Safety Devices	Malfunction, omission, improper installation	Functional and Visual
112	Exhaust System	Damaged, leaks	Functional and Visual
113	Tires and Wheels	Damaged, leaks, improper mounting	Visual and Gage

Table IX. Major Defects AQL = 25 Defects/100 Units (Cont'd)

Defect No.	Characteristics	Defects	Method of Inspection
114	Windshield and Windows	Malfunction, fogged, cracked, broken, improper installation	Functional and Visual
115	Prop Shafts	Malfunction, misalignment, unusual noise	Functional and Visual
116	Speed	Nonconformance	Functional
117	Intervehicle Cable and Hose	Improper length, damage	Visual
118	Engine Lubricating System and Components	Leaks, malfunction	Visual and Functional
119	Body and Welding Defects	Damaged, improper or broken welds	Visual
120	Controls	Malfunction, improper clearance	Functional and Visual
121	Misc Items or Accessories	Malfunction, damage	Functional and Visual
122	Suspension System and Components	Malfunction, damage	Functional and Visual
123	Shock Absorbers	Damage, leaks	Functional and Visual
124	Gas Tank	Damage, leaks	Visual

Table X. Minor Defects AQL = 150 Defects/100 Units

Defect No.	Characteristics	Defects	Method of Inspection
201	Controls	Improper adjustment or assembly	Functional and Visual
202	Coolant	Low or improper mixture	Functional and Visual
203	Lubricants	Levels and types improper all units	Visual
204	Wheels and Tires	Improper size, type	Visual
205	Pulleys and Fan	Misalignment, improper mounting, clearance	Visual
206	Belts	Tension improper, defective	Visual
207	Shock Absorbers	Improper installation or assembly	Visual
208	Wiring and Tubing	Defective, improper assy, installation or coding	Visual
209	Brake System and Components	Improper assembly, installation or protection	Visual
210	Hood Items, Racks, Bow, Flooring, Seals, Hardware, Stowage, Brackets and Boxes	Improper fit, installation assembly, weldments	Visual
211	Electrical System	Improper installation or assembly	Visual
212	Paint	Application or color improper	Visual
213	Suspension Components	Improper installation or assembly	Visual
214	Steering System Components	Improper installation or assembly	Visual

Table X. Minor Defecs AQL = 150 Defects/100 Units (Cont'd)

Defect No.	Characteristic	Defects	Method of Inspection
215	Exhaust System Components	Improper installation or assembly	Visual
216	Cooling System Components	Improper installation or assembly	Visual
217	Fuel System Components	Improper installation or assembly	Visual
218	Lube Fittings	Defective, missing or improperly installed	Visual
219	Sheet Metal Fabrications	Improper installation, weld defects	Visual
220	Cushions, Upholstery, Canvas Top and Curtains	Damaged, missing, improper fit and installation	Visual
221	Misc Items and Accessories	Missing, improper assembly or installation	Visual
222	Decals, Data and Instruction Plates	Missing, incomplete, painted over, improper location	Visual
223	Protective Coating	Improper application, coverage, materials	Visual
224	Record Forms and Publications	Missing, improperly processed	Visual
225	Vehicle Registration and Identification Marking	Missing, incomplete date	Visual
226	Workmanship	Loose, missing or damaged securing hardware, binding and interference of components	Physical and Visual
227	Tires	Improperly inflated	Gage

4.5.2.1 Unclassified defects. All defects having no affect on function, safety, interchangeability or life but are departures from good workmanship will be noted in writing.

4.5.2.2 Recurring major deficiencies. A major deficiency is recurring when the same major defect occurs more than once in the same sample or when the major defect occurs in two successive samples. A major defect may be considered recurring when the historical inspection records ("P" chart or equivalent) reflect such a condition. Recurring major deficiencies shall be cause for the entire lot or lots to be inspected for the recurring deficiencies. The deficiencies shall be corrected when found.

4.5.2.3 Recurring minor deficiencies. A minor deficiency is recurring when it occurs more than twice in the same sample or when the minor defect occurs in four successive samples. Recurring minor deficiencies shall be cause for the entire lot or lots to be inspected for the recurring deficiencies. Correction of all deficiencies shall be made when found.

4.5.2.4 Examination failure. If the vehicle fails to pass any examination or test specified herein, the Government inspector may withhold acceptance of subsequent vehicles until evidence has been provided by the contractor that corrective action has been taken.

4.6 Classification of test.

a. Acceptance test (4.6.1).
b. Control test (4.6.2).
c. Comparison test (4.6.3).

4.6.1 Acceptance test. Each completed vehicle (less payload) shall be operated for a distance of not less than 7 miles at speeds not to exceed 35 MPH at the contractor's plant. The vehicle(s) shall be subject to examinations specified in Tables IX and X and subjected to all tests specified in Table VIII except that portion as pertains to high speeds (see 3.4.5.1). Vehicle shall be driven in reserve gear a minimum of 50 feet. Vehicle shall meet all requirements for acceptance test specified herein.

4.6.1.1 Test failure. If a vehicle fails to pass acceptance test criteria specified herein, the Government inspector shall stop acceptance of subsequent vehicles until evidence has been provided by the contractor that corrective action has been accomplished.

4.6.2 Control test

4.6.2.1 Frequency. The Government shall select at random one of the first ten production vehicles of each model and one per week thereafter except M825 and M718A1 vehicles, which will be one every 100 vehicles or one a month whichever occurs first, for a road test by the contractor.

4.6.2.2 Fifty mile test. Each vehicle loaded with designated or simulated highway payload, including all stowage and OVE items, shall be operated for a distance of no less than 50 miles on hard surface roads. Vehicle(s) shall be subjected to all control test requirements specified in Table VIII except that portion which pertains to high speeds (see 4.5.2.1). The tests shall be performed at the place of manufacture by the contractor and witnessed by Government representatives. Vehicle(s) shall meet all requirements for control test specified herein.

4.6.2.2.1 Failure. If the vehicle selected fails to pass any of the control tests, the Government inspector shall stop acceptance examination and testing on subsequent vehicles until such time as conditions causing the failure have been remedied. Any defect found during or as a result of the test shall be prima facie evidence that vehicles accepted subsequent to the previous acceptable control test are similarly defective unless evidence satisfactory to the contracting officer is furnished by the contractor that they are not similar defects. Such defects on all vehicles shall be corrected by the contractor at no cost to the Government. The contractor shall correct defects on all vehicles represented by the failed control test vehicle(s). Another vehicle(s) with corrective actions implemented shall be subjected to the control test.

4.6.3 Comparison test. The Government may select vehicles, at random, any time during a production contract period and subject vehicle to tests to reveal defects of a workmanship or materials nature that may reduce the effective operation of these items in the field and compare existing quality with previous standards. A 5,000 mile test shall be accomplished as specified in Table VIII and XI for M151A2 and M718A1 vehicles. A 1,250 mile test shall be accomplished as specified in Tables VIII and XII for the M825 vehicle. All tests specified shall be conducted at Government laboratories or proving grounds designated by the contracting officer. Comparison test vehicles shall be combat loaded with all OVE stored in their applicable spaces. Vehicles selected shall not include any vehicles tested for conformance to 4.6.2 (Control Test).

Table XI. 5,000 miles

Course	Mileage and speeds	Vehicle payload (Table IV)
Hard Surface, paved	1,500 miles at varying speeds up to maximum	Highway
Secondary roads	1,850 miles at speeds applicable to conditions of terrain	Cross-country
Cross-country	1,500 miles at speeds applicable to conditions of terrain (vehicle in 4-wheel drive)	Cross-country
Belgian block	150 miles at speeds applicable to conditions of terrain	Cross-country

NOTE: Fifty percent of the tests of the M151A2 vehicles only shall be performed while towing the following loads in additions to the payloads specified in TableIV:

(1) Hard Surface - 2,000 pounds
(2) Hill Cross-Country, Level Cross-Country and Belgian Block 1,500 pounds

NOTE: Ptior to starting the 5,000 mile test, the vehicle shall be subjected to 500 mile break-in run less payload and towed load. This 500 mile break-in run is not a part of the above test cycle.

Table XII. 1,250 miles

Course	Mileage and speeds	Vehicle payload (Table IV)
Highway	375 miles at speeds up to maximum	Highway
Secondary roads	350 miles at speeds applicable to conditions of terrain	Cross-country
Cross-country	375 miles at speeds applicable conditions of terrain (vehicle in 4-wheel drive)	Cross-country
Belgian block	150 miles at speeds applicable to conditions of terrain	Cross-country

NOTE: Prior to starting the 1,250 mile test, the vehicle shall be subjected to 500 mile break-in run less payload and towed load. This 500 mile break-in run is not a part of the above test cycle.

4.6.3.1 Test failure. Failure of any vehicle tested to comply with any of the requirements specified in the contract or any major defects of the workmanship or materials nature occuring during or as a result of the test cycle, may be considered cause for refusal to continue acceptance of vehicles by the Government until objective evidence has been provided by the manufacturer that corrective action has been taken. Any defect found during or as a result of the test shall be prima facie evidence that vehicles accepted subsequent to the previous acceptable comparison test vehicles are similarly defective unless evidence satisfactory to the contracting officer is furnished by the contractor that they are not similarly defective. Such defects on all vehicles shall be corrected by the contractor at no cost to the Government.

5. PREPARATION FOR DELIVERY

5.1 Processing and marking shall be in accordance with the specific Equipment Preservation Data Sheet for the desired level of protection specified (see 6.2).

6. NOTES

6.1 Intended use. The vehicles covered by this specification are intended for use by the United States Armed Services in transporting personnel or cargo, or in providing for special tasks during tactical military operations under extreme or unusual conditions of climate, weather, terrain and military service.

6.2 Ordering data. Procurement documents should specify the following:

(a) Title, number and date of this specification.
(b) Vehicle model(s) (see 1.2).
(c) Special kits, if required (see 3.4.1.2 and 3.4.9.1).
(d) Quantity of initial production test vehicles required (see 4.3).
(e) Selection of method and applicable level of processing of referenced specification (see 5.1).

6.3 Process average. Sampling may be initiated if the process average value for the first twenty vehicles inspected is less than the AQL specified in the Classification of Defects for major and minor defects. Process average shall be computed as follows:

$$\text{Process average} = \frac{\text{Number of Defects}}{\text{Number of Vehicle Inspected}} \times 100$$

If the computed process average exceeds the specified AQL, 100 percent inspection shall be performed and continued until such time that the process average for twenty consecutive vehicles is less than the specified AQL.

6.4 The following definitions shall be used for classification of defects for leaks:

(a) Weep: - Any non-recurring evidence of fluid beyond the seal.
(b) Seep: - Any recurring evidence of fluid beyond the seal that does not result in formation of a droplet.
(c) Droplet: - Any evidence of fluid beyond the seal that results in the formation of a droplet.
(d) Drip: - Any evidence of fluid beyond the seal where droplet forms and falls.

6.5 International standardization agreement. Certain provisions of this specification are the subject of International Standardization Agreement NATO STANAG 2805-A(Edition 3). When amendment, revision or cancellation of this specification is proposed which will affect or violate the international agreement concerned, the preparing activity will take appropriate reconciliation action through international standardization channels, including departmental standardization offices, if required.

Custodians:
Army - AT
Navy - MC
Air Force - 84

Review interest:
Navy - MS

User interest:
Army - ME
Navy - YD

Preparing activity:
Army - AT

Project No. 2320-0968

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SPECIFICATION ANALYSIS SHEET

Form Approved
Budget Bureau No. 22-R255

INSTRUCTIONS: This sheet is to be filled out by personnel, either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity. Comments and suggestions submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or serve to amend contractual requirements.

SPECIFICATION

MIL-T-45331F

ORGANIZATION

CITY AND STATE

CONTRACT NUMBER

MATERIAL PROCURED UNDER A

☐ DIRECT GOVERNMENT CONTRACT ☐ SUBCONTRACT

1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?

A. GIVE PARAGRAPH NUMBER AND WORDING.

B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES

2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID

3. IS THE SPECIFICATION RESTRICTIVE?

☐ YES ☐ NO *(If "yes", in what way?)*

4. REMARKS *(Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)*

SUBMITTED BY *(Printed or typed name and activity - Optional)*

DATE

DD FORM 1 JAN 66 1426

REPLACES EDITION OF 1 OCT 64 WHICH MAY BE USED.