INCH-POUND

MIL-PRF-83812A (USAF)
7 MAY 97
SUPERSEDING
MIL-T-83812
25 MAY 90

PERFORMANCE SPECIFICATION

TRUCK, FORKLIFT, 10,000 AND 13,000 POUND CAPACITY, ADVERSE TERRAIN

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

1. SCOPE

1.1 Scope. This document covers a diesel-engine-driven, four wheel drive, adverse terrain forklift truck, that is air-transportable in C-130, C-141 and C-5 aircraft.

1.2 Classification. Forklifts should be one of the following types as specified (see 6.2.b):

Type I: 10,000 pound capacity at 48 inch load center
Type II: 13,000 pound capacity at 54 inch load center

2. APPLICABLE DOCUMENTS

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

2.2 Government documents.

2.2.1 Specifications and Standards. The following specifications and standards form a part of this document to the extent specified herein. Unless otherwise specified, the applicable issue of these documents are those listed in the specific issue of the Department of Defense Index of

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use improving this document should be addressed to: WR-ALC/LVR, 225 Ocmulgee Court, Robins AFB GA 31098-1647, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A FSC 3930

Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.2.c).

SPECIFICATIONS

FEDERAL

A-A-52557 - Fuel Oil, Diesel; For Posts, Camps and Stations

(Unless otherwise indicated, copies of the above specification(s) and standard(s) are available from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.3 Non-Government publications. The following document(s) 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 DoD Index of Specifications and Standards (DoDISS) cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2.c).

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME B56.6-1992 - Safety Standard for Rough Terrain Forklift Trucks

(Application for copies should be addressed to the American Society of Mechanical Engineers, 345 East 47th Street, New York, NY 10017)

SOCIETY OF AUTOMOTIVE ENGINEERS, INC. (SAE)

SAE J98 - Personnel Protection for General Purpose Industrial Machines
SAE J185 - Construction and Industrial Equipment, Access Systems for
SAE J386 - Operator Restraint System for Off-Road Work Machines
SAE J551 - Performance Levels and Methods of Measurement of Electromagnetic Compatibility of Vehicles and Devices
SAE J833 - Human Physical Dimensions
SAE J898 - Control Locations for Off-Road Work Machines
SAE J925 - Minimum Service Access Dimensions for Off-Road Machines
SAE J994 - Alarm, Backup, Electric Performance Test and Application
SAE J1040 - Performance Criteria for Rollover Protective Structure (ROPS) for Construction, Earth Moving, Forestry and Mining Machines
SAE J1176 - External Leakage Classification for Hydraulic Systems
SAE J1511 - Steering for Off-road, Rubber-Tired Machines

(Application for copies should be addressed to the Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096-0001)

THE TIRE AND RIM ASSOCIATION, INC. (TRA)

The Tire and Rim Association Yearbook, current edition

(Application for copies should be addressed to The Tire and Rim Association, Inc., 175 Montrose West Avenue, Suite 150, Copley, OH 44321)

2.4 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 First article. When specified (see 6.2.d), a sample shall be subjected to first article inspection in accordance with 4.2.

3.2 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible provided that the material meets or exceeds operational and maintenance requirements, and promotes economically advantageous life cycle cost.

3.2.1 Dissimilar metals. Unless suitably protected against electrolytic corrosion, dissimilar metals shall not be used in intimate contact with each other.

3.3 Operating environment. The truck shall be able to operate in any ambient temperatures between -25 to +125 degrees F.

3.4 Winterization.

3.4.1 Type A winterization. When specified (see 6.2.e), the truck shall be furnished with type A winterization which shall allow truck to start and operate in an ambient temperature of -65° F, and maintain the operator's cab at an internal temperature of at least +40° F.

3.4.1.1 Power plant heaters. If the use of engine coolant, engine oil or battery heaters is elected, then all heaters shall operate on 110 volt, alternating current. A three wire, 25 foot long cable of adequate capacity for all heaters being used simultaneously shall be provided. A storage location shall be provided on the truck to stow the cable when not in use.

3.4.2 Type C winterization. When specified (see 6.2.e), the truck shall be furnished with type C winterization which shall allow truck to start and operate in an ambient temperature of -25° F, and maintain the operator's cab at an internal temperature of at least +40° F.

3.5 Human factors. The truck shall be operable and maintainable by personnel ranging from a small person normally clothed through a large person arctic clothed in accordance with SAE J833, SAE J898 and SAE J925. This shall include all travel, load motion, and steering controls, entry to the operator's seat, and access to all fluid level check points. The force on the service brake shall

not exceed 80 pounds to meet the requirements of 3.35.11. The force required to fully set the parking brake shall not exceed 70 pounds if hand operated or 150 pounds if foot activated.

3.6 Safety. The truck shall conform to the applicable requirements of ASME B56.6-1992, SAE J98, and OSHA standards in effect at the time of issue of the solicitation. Unless otherwise specified in the contract, the final color shall be forest green for safe operation in adverse terrain. (See 3.17.1).

3.6.1 Seat belts and operator's restraint. An operator restraint system conforming to SAE J386 shall be installed.

3.6.2 Backup alarm. When specified (see 6.2.f), a backup alarm conforming to SAE J994, type A, B or C shall be furnished.

3.7 Design. The truck shall be designed for safe operation with the rated capacity load at all lift heights, fork tilt and fork positions that the truck is capable of achieving. The rated load capacity for the type I truck shall be 10,000 pounds at a horizontal and vertical load center (see 6.3.2) of 48 inches. The rated load capacity for the type II truck shall be 13,000 pounds at 54 inch horizontal load center (see 6.3.2), and 48 inch vertical load center (see 6.3.2). Because of certain loads encountered in operational use, the truck shall be designed and manufactured to meet specific stringent structural load-bearing safety margins. A structural safety factor (based on yield strength) of at least 3.0 times the rated load, or the maximum dynamic load multiplied by 2, shall be met (see 6.4).

3.8 Engine. The truck shall be powered by a standard commercial diesel engine. Horsepower and torque shall be sufficient to provide the performance specified herein. The engine shall operate on diesel fuel conforming to A-A-52557 and JP-8 without detrimental effect on the engine, or its performance.

3.8.1 Engine exhaust. A means shall be furnished to prevent rain water intrusion into the exhaust system.

3.9 Fuel system. The truck shall be capable of continuous operation for a minimum of eight hours without refueling. The fuel tank filler neck opening shall be capable of interfacing with a fuel filler tube with an outside diameter of 2.90 inches. The fuel tank shall be capable of being fully drained to allow the truck to be air transportable.

3.10 Power train. The transmission shall provide at least two forward and two reverse speeds. Selective forward and reverse directional controls activated by the operator's foot are not acceptable. A manually shifted transmission or clutch is not acceptable. The truck shall be capable of traveling over adverse terrain (see 6.3.1) and provide the ability for the operator to select two wheel or four wheel drive.

3.11 Hydraulic system.

3.11.1 Hydraulic reservoir. The hydraulic reservoir filler opening shall be capable of interfacing with a filler tube with an outside diameter of 1.94 inches.

3.11.2 Hydraulic schematic. A corrosion resistant plate containing the hydraulic schematic of the truck shall be permanently installed in an area where normal usage will cause it no damage. The plate may be located behind a panel that can be opened by hand.

3.12 Lift system. Because of certain loads encountered in operational use, the truck shall be designed and manufactured to meet specific stringent hydraulic system safety margins. The truck shall be equipped with a fail-safe lift system which maintains safe control of the rated load if electrical, hydraulic or pneumatic system failure occurs. To prevent damage to military weapons during lifting and lowering operations, internal leakage in the lift system hydraulic components shall be limited to a maximum drift rate of 0.5 inch per hour (see 6.4). In addition, a means to prevent hydraulic or pneumatic system over pressure shall be provided.

3.13 Fork assembly. The fork assembly shall be compatible with 463L pallets of dimensions 88 inches long by 54 inches wide.

3.13.1 Conveyorized fork attachment. The truck shall be equipped with two removable conveyorized fork attachments to be used for the transfer of 54 inch wide by 88 inch long pallets as used with the 463L cargo system. The pallets may be loaded up to 10,000 pounds for type I trucks and 13,000 pounds for type II trucks. The truck shall be capable of picking up the pallet with the 88 inch dimension lateral to the forks (perpendicular to centerline of truck).

3.13.1.1 Each conveyor shall securely attach to each fork and shall remain securely attached during all pallet loading and unloading operations.

3.13.1.2 The conveyorized attachments shall be securely stowed in an area provided on the truck when not in use.

3.14 Load backrest. A backrest capable of retaining a 48” cube from falling if forklift carriage is tilted backwards shall be provided, either as an integral part of the fork carriage, or as a removable part thereof. A means to restrain the load on the forks shall be provided. Because of certain loads encountered in operational use, the truck shall be designed and manufactured to meet specific stringent structural load-bearing safety margins. The restraining device shall have a structural safety factor of at least 3 to 1 when a forward horizontal load, equal to the rated load, is equally applied to the restraining device (see 6.4).

3.15 Fork backguard. A removable fork backguard shall be installed above the load backrest (see 3.14) to prevent small containers from falling rearward off the forks. The guard shall not obstruct operator view.

3.16 Electrical system.

3.16.1 Batteries. Except when type A winterization is specified (see 6.2.e), the batteries shall be the maintenance-free type.

3.16.2 Starter switch. The starter switch shall not activate the engine starter while the engine is running, nor when the engine is not running and the transmission is in any forward or reverse gear.

3.16.3 Alternator. The alternator shall have sufficient output at normal engine operating RPM to supply full electrical operating load, including all lights, and still provide electrical current to charge the battery.

3.16.4 Lighting. The truck shall have sufficient exterior illumination to be operated at night in both forward and rearward modes. Instrument panel lighting shall be provided.

3.16.5 Master switch. A keyless master switch, with an identification plate, shall be installed in a convenient location making it possible to disconnect the battery from all electrical loads to allow for maintenance actions.

3.16.6 Wiring schematic. A corrosion resistant metal plate containing the electrical schematic of the truck shall be installed in an area where it can be viewed but will not be damaged when the truck is used under normal operating circumstances. The plate may be located behind a panel that can be opened by hand.

3.17 Preparation, primer and paint.

3.17.1 Green. Unless otherwise specified (see 6.2.g), the final paint shall be a standard, commercially available, polyurethane, color commonly known as "forest green."

3.17.2 Desert sand. When specified (see 6.2.g), the final paint shall be a standard, commercially available, polyurethane, of a no-gloss tan color.

3.17.3 Gray. When specified (see 6.2.g), the final paint shall be a standard, commercially available, polyurethane, of a light gray color.

3.17.4 Marking. Markings for green trucks shall be black paint, and desert sand trucks shall be white paint. Lusterless gray trucks shall have no markings. The following markings shall be applied in the indicated locations:

a. Vehicle capacity ("10,000 POUNDS" for type I, or "13,000 POUNDS" for type II) on the lifting arms, mast, or front of truck.
b. "NO RIDERS" on each side of truck.

3.18 Item identification. A corrosion-resistant plate shall be permanently installed on the instrument panel, or other visible, protected location. The following information shall be on the plate:

Truck, Forklift

Capacity: "10,000 pounds at 48 inch load center" for type I, or "13,000 pounds at 54 inch load center" for type II
National stock number:
Contract number:
Serial number:
Model number:
Registration number:
Manufactured by:
  Address:
US Property

3.19 Instruction plates. All warning and instruction plates describing safety items or procedures to be followed during operation and servicing shall be included.

3.20 Noise limits. The sound level measured at the operator's station shall not exceed 90 dB(A). If the sound level is between 84 and 90 dB(A) see 6.2.h.

3.21 Maintainability. Provisions shall be made for adjustment, servicing, or replacement of parts and components. Dimensions of hand or arm access openings shall be in accordance with SAE J925 for arctic clothing.

3.21.1 Conversion to and from air-transport mode. Conversion from operational mode (see 6.3.4) to air-transport mode (see 6.3.5), and from air-transport mode to operational mode shall take not more than 90 minutes. The conversion shall be accomplished by no more than two persons equipped with only common hand tools. No other equipment or vehicle shall be used for the conversion to or from the air-transport mode. Tire air pressure can not be reduced or increased from operational mode when converting to or from air-transport mode.

3.22 Operation in air-transport mode. The truck must be capable of being driven onto and off of C-130 and C-141 aircraft. This will require that the operator be at, or below, the height specified in 3.25.b and still be able to control the truck (see 6.5).

3.23 Cab. The truck shall be equipped with an enclosed cab that shall incorporate the overhead protection requirements of ASME B56.6-1992, the roll over protective structure (ROPS) requirements of SAE J1040, and the emergency exit requirements of SAE J185. If the cab must be disassembled for removal, the heaviest section shall not weigh more than 70 pounds. Any electrical connection(s) that must be separated for cab removal shall be the quick-disconnect type.

3.23.1 Cab lifting device. If the cab must be removed for air-transport, and the cab is removed as a whole unit, a cab lifting device shall be provided. The lifting device shall be securely stored on the truck when not in use.

3.24 Servicing. All lubrication points and fluid reservoirs shall be easily accessible for inspection and servicing.

3.25 Weights and dimensions. Limiting weights and dimensions shall be as follows (see 6.5):

a. Maximum height in operational mode: 126 inches (to allow for C-130 aircraft tail clearance).

b. Maximum height in air-transport mode: 102 inches. (The C-130 rear cargo opening is 120 inches wide by 108 inches high. A six inch clearance is required for cargo entering the aircraft).

c. Maximum weight in air-transport mode: 13,000 pounds on each axle.

3.26 Steering. Power steering, with emergency steering conforming to SAE J1511, shall be provided.

3.27 Load handling controls. All load motion controls shall be controlled by the operator's right hand and shall be self-centering such that they return to the neutral position when released.

3.28 Heater and defroster. The heater and defroster normally provided on the contractor's standard commercial model shall be provided.

3.29 Towing hitch. A pintle-type towing hitch shall be installed at the center rear of the truck.

3.30 Towing lugs. Towing lugs shall be furnished of sufficient diameter to accept common chains and hooks of 3.0 inches diameter, so that the truck can be towed from the front. The lugs shall be capable of sustaining a forward, horizontal force of at least three times the GVW of the truck to meet air transportability requirements.

3.31 Tires. The tires shall be pneumatic, with an off-road tread pattern. Tire loading shall not exceed the tire load limits specified in Tire and Rim Association Yearbook when using the off-the-road five MPH tables.

3.32 Parking brake. A parking brake shall be provided.

3.33 Horn. The manufacturer's standard horn shall be provided.

3.34 Slinging and tie downs. Permanently installed slinging and tie down devices that enable the truck to be lifted in its normal travel position and to be tied down to the floor of a transportation medium shall be provided. The notation "LIFT HERE" or "TIE DOWN" shall be stenciled near each lifting and tie down device, in the color specified in 3.17. There shall be a permanently installed, corrosion resistant, metal plate that shows the center of gravity location and tie down instructions for the air-transport mode in C-130, C-141 and C-5 aircraft.

3.35 Performance.

3.35.1 Lifting speed. The forks with rated load shall be able to raise at a speed of not less than 40 feet per minute (fpm) over the entire distance from ground level to maximum lift height. With the engine idling at engine manufacturer's idle speed, the unloaded forks shall be able to raise at a speed of not less than five fpm over the entire lift range.

3.35.2 Lowering speed. The lowering speed of the forks with rated load shall be not more than 65 fpm. The lowering speed of the unloaded forks shall be not less than 10 fpm.

3.35.3 Travel speed. The travel speed with rated load shall be at least 15 miles per hour (mph) in forward direction, and not less than nine mph in reverse.

3.35.4 Lift height. The forklift shall be capable of raising the rated load a minimum of 75 inches when measured from ground to top surfaces of level forks.

3.35.5 Drift. The lift assembly shall be capable of holding the rated load at maximum lift height for 60 minutes with not more than 0.5 inch of vertical drift.

3.35.6 Turning radius. The truck shall be capable of operating in a confined area and have a maximum turning radius of 20 feet for the type I, and 26 feet for the type II.

3.35.7 Fork tilt. With no load on the forks, the minimum rearward tilt shall be 20 degrees, and the minimum forward tilt shall be 10 degrees.

3.35.8 Fork tine operation. As the forks are raised from there lowest position to maximum lift height and lowered back to lowest position, the forks shall remain at their initial fork tilt, within plus or minus 2.0 degrees, with no change to the tilt control lever. The initial fork tilt can be any tilt that the truck is capable of, not just horizontal. This applies to forks both empty and fully loaded.

3.35.9 Ground clearance. The truck, with rated load on the forks, shall have a ground clearance of not less than 12 inches.

3.35.10 Stability. The truck shall meet the longitudinal stability stacking, longitudinal stability travel, lateral stability stacking, and lateral stability travel stability requirements of ASME B56.6-1992.

3.35.11 Service brakes. The service brakes shall stop the truck with rated load, within the distance specified in the Stopping Distance Method of ASME B56.6-1992. The service brakes shall meet the Drawbar Drag Method of ASME B56.6-1992.

3.35.12 Parking brake. The parking brake shall be capable of holding the fully loaded truck on a 8.5 degree incline in both up and down slope directions.

3.35.13 Fork lateral spacing. The forks shall be capable of spreading to at least 60 inches and be capable of closing to not more than 18 inches when measured between the centerline of the forks to allow for interfacing with loaded 463L pallets.

3.35.14 Fork side shifting. The truck shall be capable of side shifting at least 4.0 inches off center, in both directions, throughout the fork spread specified in 3.35.13 to allow for interfacing with loaded 463L pallets.

3.35.15 Fork visibility. The truck shall be configured to allow the visibility of at least one fork tip at any fork height, fork tilt, or fork spacing when there is no load on the forks.

3.36 Electromagnetic interference (EMI). The truck shall comply with the EMI requirements of SAE J551.

3.37 Workmanship. The forklift shall be constructed in accordance with commonly accepted industrial workmanship standards.

4. VERIFICATION

4.1 Classification of inspections. The inspections requirements specified herein are classified as follows:

a. First article inspection (see 4.2).
b. Conformance inspection (see 4.3).

4.2 First article inspection. The first article truck and its components shall be compared to Section 3 of this document to verify compliance. The truck shall then be subjected to the tests specified in 4.6.2 through 4.6.26.

4.3 Conformance inspection. Conformance inspection shall include the examination described in 4.6.1 and the tests described in 4.6.27 and 4.6.28.

4.4 Test Conditions. Unless otherwise specified herein (see 6.2), all inspections shall be performed in accordance with the following test conditions.

4.4.1 All tests shall be conducted at the ambient temperature and climatic conditions existing at the place of demonstration.

4.4.2 Only that maintenance established by the contractor shall be performed during testing.

4.4.3 For test purposes, the rated load for the type I truck shall be a 10,000 pound (+200, -0 pounds) cube, 96 inches on each side, with a center of gravity located at the geometrical center of the cube. For type II truck, the rated load shall weigh 13,000 (+200, -0 pounds), and be 108 x 108 inches horizontally, by 96 inches vertically, with the center of gravity located at the geometrical center of the block.

4.5 Requirements cross-reference matrix. Table 1 provides a cross-reference matrix of the section 3 requirements tested or verified in the paragraphs below.

TABLE 1: Requirements cross-reference matrix

Requirement	Verification	Requirement	Verification
3.1	4.2	3.19	4.6.1

3.2.1	4.6.1	3.20	4.6.20
3.3	4.6.26	3.21	4.6.23
3.4.1	4.6.1	3.21.1	4.6.21
3.4.1.1	4.6.1	3.22	4.6.22
3.4.2	4.6.1	3.23	4.6.1, 4.6.21
3.5	4.6.11, 4.6.12, 4.6.15, 4.6.23, 4.6.26	3.23.1	4.6.1
3.6	4.6.1	3.24	4.6.1
3.6.1	4.6.1	3.25	4.6.1, 4.6.22
3.6.2	4.6.1	3.26	4.6.1
3.7	4.6.18	3.27	4.6.1
3.8	4.6.1	3.28	4.6.1
3.8.1	4.6.1	3.29	4.6.1
3.9	4.6.26	3.30	4.6.1
3.10	4.6.26	3.31	4.6.1
3.11.1	4.6.1	3.32	4.6.1
3.11.2	4.6.1	3.33	4.6.1
3.12	4.6.5, 4.6.19	3.34	4.6.1
3.13	4.6.25	3.35.1	4.6.2
3.13.1	4.6.25	3.35.2	4.6.2
3.13.1.1	4.6.25	3.35.3	4.6.3
3.13.1.2	4.6.1	3.35.4	4.6.4
3.14	4.6.24	3.35.5	4.6.5
3.15	4.6.1	3.35.6	4.6.6
3.16.1	4.6.1	3.35.7	4.6.7
3.16.2	4.6.17	3.35.8	4.6.8
3.16.3	4.6.1, 4.6.26, 4.6.27	3.35.9	4.6.9
3.16.4	4.6.1, 4.6.26, 4.6.27	3.35.10	4.6.10
3.16.5	4.6.1	3.35.11	4.6.11
3.16.6	4.6.1	3.35.12	4.6.12
3.17.1	4.6.1	3.35.13	4.6.13
3.17.2	4.6.1	3.35.14	4.6.14

TABLE 1: Requirements cross-reference matrix (cont.)

Requirement	Verification	Requirement	Verification
3.17.3	4.6.1	3.35.15	4.6.15
3.17.4	4.6.1	3.36	4.6.16
3.18	4.6.1	3.37	4.6.1

4.6 Tests.

4.6.1 Examination of product. The forklift truck shall be examined for compliance with requirements for materials, winterization, safety, seat belts, backup alarm, engine, engine exhaust, hydraulic system, conveyorized attachments storage, fork backguard, battery, alternator, lighting, steering, load handling controls, heater and defroster, towing hitch, towing lugs, tires, parking brake, horn, slinging and tie downs, master switch, wiring schematic, paint, weight, markings, identification, instruction plates, servicing, dimensions, roll over protective structure (ROPS), and workmanship.

4.6.2 Lifting and lowering speed. Measure distance from ground to top surface of forks in fully lowered position. Measure time required to raise rated load from ground to maximum lift height. Subtract distance from ground to top surface of forks from maximum lift height, and calculate lifting speed. The forks with rated load shall be able to raise at a speed of not less than 40 feet per minute (fpm) over the entire distance from ground level to maximum lift height. Lower rated load, at maximum lowering speed (fully open lowering control) and abruptly stop the load at a height of one to two feet. Record this time. Measure distance from ground to top surface of one fork. Subtract this figure from the maximum lift height and calculate loaded lowering speed. The lowering speed of the forks with rated load shall be not more than 65 fpm. Remove load and raise forks to maximum lift height. The unloaded forks shall be able to raise at a speed of not less than five fpm over the entire lift range. Measure time required to lower forks to ground level. Calculate the unloaded fork lowering speed. The lowering speed of the unloaded forks shall be not less than 10 fpm.

4.6.3 Travel speed. Operate the truck at maximum speed in both forward and reverse directions with rated load in load carry position (see 6.3.3). The travel speed with rated load shall be at least 15 miles per hour (mph) in forward direction, and not less than nine mph in reverse.

4.6.4 Maximum fork lift height. With rated load on the forks, with forks level and at their maximum lift height, measure from ground to top surface of one fork to determine maximum lift height. The forklift shall be capable of raising the rated load a minimum of 75 inches when measured from ground to top surfaces of level forks

4.6.5 Drift. Raise rated load to maximum lift height, with hydraulic fluid at ambient temperature. Place forks in horizontal position and shut off engine. The lift assembly shall be capable of holding the rated load at maximum lift height for 60 minutes with not more than 0.5 inch of vertical drift.

4.6.6 Turning radius. With rated load on forks, operate truck in clockwise direction, at maximum steering angle, for at least one complete full circle. Measure the radius of the circle formed by the outside edge of the tires during the turn. Repeat in counterclockwise direction. The truck shall be capable of operating in a confined area and have a maximum turning radius of 20 feet for the type I, and 26 feet for the type II.

4.6.7 Fork tilt. On a level surface, raise unloaded forks to approximately four feet above ground level. Tilt forks full forward and measure angle of tilt. Tilt forks to full rearward position and measure tilt angle. The minimum rearward tilt shall be 20 degrees, and the minimum forward tilt shall be 10 degrees.

4.6.8 Fork tine operation. Position unloaded forks approximately horizontal and three to five inches above ground level. Measure fork tilt. Without touching the tilt control lever, raise forks to maximum fork height, then lower to original position. Verify that the forks maintain the same tilt, within the tolerances specified in 3.35.8 while being raised and lowered. Repeat with rated load on forks and forks at approximately five degree rear tilt. Again verify that forks maintain the tolerance specified in 3.35.8 throughout total movement.

4.6.9 Ground clearance. Place the truck with rated load at load carry position on a level surface. Measure distance from ground to lowest point on the truck. The truck, with rated load on the forks, shall have a ground clearance of not less than 12 inches.

4.6.10 Stability. Conduct the longitudinal stability stacking, longitudinal stability travel, lateral stability stacking, and lateral stability travel tilting platform tests of ASME B56.6-1992 to determine compliance with 3.35.10.

4.6.11 Service brakes. Demonstrate that the service brakes can stop the truck with rated load, and can meet the Stopping Distance Method of ASME B56.6-1992 and the Drawbar Drag Method of ASME B56.6-1992.

4.6.12 Parking brake. Demonstrate that the parking brake can hold the truck, with rated load on the forks, in both forward and reverse directions, on the slope specified in 3.35.12, for at least 3 minutes. Measure the force required to apply the parking brake.

4.6.13 Fork lateral spacing mechanism. The fork spacing shall be operated with no load on the forks through 50 cycles. A cycle shall consist of starting at closed position, going to open position, and returning to closed position. The forks shall be capable of spreading to at least 60 inches and be capable of closing to not more than 18 inches when measured between the centerline of the forks to allow for interfacing with loaded 463L pallets.

4.6.14 Fork side shifting mechanism. The forks shall be side shifted with the rated load on the forks from extreme right to extreme left and back to extreme right 50 times. The truck shall be capable of side shifting at least 4.0 inches off center, in both directions, throughout the fork spread specified in 3.35.13 to allow for interfacing with loaded 463L pallets.

4.6.15 Fork visibility. Position unloaded forks at various lift heights, tilts, and spacings to verify that the visibility requirements of 3.35.15 can be met.

4.6.16 Electromagnetic interference (EMI). Test the truck in accordance with SAE J551 to determine compliance with 3.36.

4.6.17 Starter disconnect switch. Energize the starter switch (move to “off” then “on” position if applicable) while the engine is running to determine compliance with 3.16.2. With the engine not running, place transmission selector in the lowest forward gear and energize the starter switch to determine compliance with 3.16.2. Repeat for all forward and reverse gears.

4.6.18 Overload. Perform a stress analysis of the truck to determine all critical stress points (see 6.3.6). Apply strain gauges or other suitable instrumentation at all these critical stress points to measure stresses during this test. Place truck on level surface and position supports under the frame or front axle to relieve load on front tires. Secure the rear of the truck to compensate for the additional test load. Raise forks at least 24 inches above ground level with the forks centered on the carriage. For the test load, use the greater of three times the rated load or two times the maximum dynamic load, as determined in 3.7. Apply this test load to the forks. The center of gravity of the test load shall be located at the same place as the load center for the truck (48 inches for type I, and 54 inches for type II). Let this overload remain on the forks for at least 10 minutes. Remove the load and inspect truck structure, frame, mast or boom assembly, and hydraulic system for deformation, cracks, broken welds, and hydraulic fluid leaks. Inspect forks a minimum of 6 inches on either side of heel by magnetic particle or dye penetrant method. Record readings from strain gauges and convert to, and record, the corresponding stresses.

4.6.19 Fail safe lift system. Raise the rated load to maximum lift height with forks level. Measure vertical distance from ground to top surface of one fork. No personnel shall be under or in front of the load during the next step. Disconnect the line(s) that supply pressure to the lift system. Measure vertical distance from ground to same point on fork surface to determine compliance with 3.12.

4.6.20 Noise level. Measure noise level at operator's ear with the engine operating at maximum rpm and while lifting rated load. The sound level measured at the operator's station shall not exceed 90 dB(A). If the sound level is between 84 and 90 dB(A) (see 6.2.h).

4.6.21 Conversion to air-transport mode and operational mode. With truck in operational mode (see 6.3.4), convert to air-transport mode (see 6.3.5) within the time frame, and using only the personnel and equipment specified in 3.21.1. Verify that the cab can be removed and meet the requirements as specified in 3.23. With the truck in air-transport mode, convert to operational mode within the time frame, and using only the personnel and equipment specified in 3.21.1. Verify that the cab can be reinstalled, and meet the requirements, as specified in 3.23.

4.6.22 Air transportability verification. With the truck in the air transport mode, verify that it can meet all the air transport requirements (see 6.5) of 3.22 and the dimension and weight limitations of 3.25.

4.6.23 Maintainability. Test the truck in accordance with SAE J925 to determine compliance with 3.21.

4.6.24 Load backrest restraints. Apply a forward horizontal force of 3.0 times rated load to load restraint device. The test load may be applied to all devices at once, or 3.0 times the proportional share of the load may be applied to each device. Remove load and inspect restraint devices, welds and supporting structure for deformation, cracks, or broken welds.

4.6.25 Conveyorized fork attachment. Place one conveyorized fork attachment on each fork and secure in place using the means provided. The test load shall be a pallet loaded to 1.5 times rated load, with dimensions of 54 inches by 88 inches. Place pallet lower surface on blocks, 2.0 inches

above ground, so that truck will pick up pallet as described in 3.13.1. Drive truck forward and fully engage conveyorized fork attachment under pallet. If necessary, raise forks to just contact pallet. Ensure that forks and attachment are fully engaged with pallet. Back out truck to completely disengage pallet. Raise forks above ground to a level that allows transfer of the loaded pallet onto and off of the fork attachment. Provide some means to allow the fully loaded pallet to smoothly transfer to and from the fork attachment. Transfer pallet to conveyorized fork attachment ensuring pallet is moved until it contacts load backrest. Ensure pallet moves completely over by conveyorized attachment during the transfer. Then transfer pallet back to original position off the forks. Inspect conveyorized attachment for any deformation, cracks, or other structural failure, or any loosening or separation of components of the attachment.

4.6.26 Truck operations. The truck shall be capable of operating at least eight hours a day for a cumulative total of 40 hours without failure. In the context of this paragraph, a failure is defined as any malfunction that cannot be corrected within 30 minutes by adjustment, repair or replacement, which may cause cessation of operation, degradation of performance capabilities, damage to the truck by continued operation, or personnel safety hazard. Operate the truck at -25° for the first twenty hours, then operate at +125° for the next twenty hours using an approved test method (see 6.2.i).

4.6.27 Travel. The truck shall be driven at least 1.0 miles at varying speeds, including maximum speed. At least five right and five left turns shall be made at maximum turn angle. During the drive, the horn, windshield wipers, lights, heater, defroster, and other components shall be operated.

4.6.28 Material handling. With rated load on forks, raise forks to maximum lift height, then lower at maximum lowering speed and quickly stop at one to two feet above ground level. Repeat at least five times. If the truck has side shift capability, side shift rated load from one extreme to the other and back to original position. Repeat at least five times. With no load, move forks from minimum to maximum fork spread, and back to minimum. Repeat at least five times.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2.j). When actual packaging of materiel is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by Inventory Control Point's packaging activity within the Military Department or Defense Agency, or within the Military Department's System Command. Packaging data retrieval is available from managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

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

6.1 Intended use. The truck should be primarily used to load and unload palletized cargo to and from military aircraft. It will also be used to handle other loads of various sizes and weights, up to the rated load. The environment in the possible areas of use will require operation over snow, soft soil, adverse terrain conditions of mud and sand, in irregular and hilly terrain, and also over prepared surfaces such as concrete, asphalt, and pierced landing mat.

6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number, and date of the specification.

b. Type of forklift 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 2.2.1, 2.3)

d. When first article is required (see 3.1).

e. When type A or type C winterization is required (see 3.4).

f. When a back up alarm is required (see 3.6.2)

g. When final paint color should be other than forest green (see 3.17).

h. If the sound level is between 84 and 90 dB(A); when this condition exits, the contractor should provide a hazardous noise warning plate stating that operator's hearing protection is required when operating the truck (see 3.20).

i. Proposed test method (see 4.6.26).

j. Packaging requirements (see 5.1).

6.3 Definitions:

6.3.1 Adverse Terrain. Terrain covered in snow, or soft soil, or conditions of mud and sand in irregular, hilly terrain.

6.3.2 Load center. The horizontal load center is defined as the horizontal distance from the load carrying surface of the backrest to the center of gravity of the load. The vertical load center is the vertical distance from the upper (load carrying) surfaces of the forks to the center of gravity of the load.

6.3.3 Load carry position. The normal position of forks while traveling with the rated load.

6.3.4 Operational mode. The operational mode should be as the truck is configured to meet the performance requirements of this document, including cab and counterweights.

6.3.5 Air-transport mode. The air-transport mode should be the fully operational truck with only the following items removed, if necessary, to meet the air transportability requirements:

a. Cab (see 3.23)
b. Conveyorized fork attachment (see 3.13.1)
c. Counterweight(s) (if required)
d. Cab lifting device (see 3.23.1)
e. Operator's seat

6.3.6 Critical Stress Point. A point, or area, where the stress is greater than 50% of the yield strength of the material, when the truck has the rated load (see 3.7 and 4.6.1) on the forks.

6.4 Nuclear Certification. Refer to Air Force Instruction 91-103, Air Force Nuclear Safety Certification Program for detailed guidance.

6.5 Air Transportability. Refer to AFSC Design Handbook 1-11, Air Transportability, for detailed guidance.

6.6 Subject term (key word) listing.

Adverse terrain
Diesel engine driven
Material handling
Forklift
463L system

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

Custodian:
Air Force - 99

Preparing activity:
Air Force - 84
Agent:
Air Force - 99

(Project 3930-F033)

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.

2. The submitter of this form must complete blocks 4, 5, 6, and 7.

3. The preparing activity must provide a reply within 30 days from receipt of the form.

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I RECOMMEND A CHANGE:	1. DOCUMENT NUMBER MIL-PRF-83812A	2. DOCUMENT DATE (YYMMDD) 970507

3. DOCUMENT TITLE TRUCK, FORKLIFT, 10,000 AND 13,000 POUND CAPACITY, ADVERSE TERRAIN

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME *(Last, First, Middle Initial)*	b. ORGANIZATION	
c. ADDRESS *(Include Zip Code)*	d. TELEPHONE (Include Area Code) (1) Commercial (2) AUTOVON *(if applicable)*	**7. DATE SUBMITTED** (YYMMDD)

8. PREPARING ACTIVITY

a. NAME	b. TELEPHONE *Include Area Code)* (1) Commercial (912) 926-1183	(2) AUTOVON 468-1183
c. ADDRESS *(Include Zip Code)* WR-ALC/LVR 225 OCMULGEE COURT ROBINS AFB, GA 31098-1647	**IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:** DEFENSE QUALITY AND STANDARDIZATION OFFICE 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22401-3466 Telephone (703) 756-2340 AUTOVON 289-2340	