

INCH-POUND

MIL-PRF-83812C (USAF)

08 Aug 2006

SUPERSEDING

MIL-PRF-83812B (USAF)

17 Aug 2001

## 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 Departments and Agencies of the Department of Defense.

#### 1. SCOPE.

1.1 Description. This document covers a commercial, diesel-engine-driven, four wheel drive, adverse terrain forklift truck, which are air-transportable in C-130, C-141, C-17 and C-5 aircraft.

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

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, 4, or 5 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 of documents cited in sections 3, 4, or 5 of this specification, whether or not they are listed.

##### 2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

Comments, suggestions, or questions on this document should be addressed to WR-ALC/GBZO-ENV, 380 Richard Ray Blvd Ste 104, Robins AFB GA 31098. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <http://assist.daps.dla.mil>

AMSC N/A

FSC 3930

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### FEDERAL STANDARD

FED-STD-595/14052 Green, Gloss  
FED-STD-595/30313 Brown, Lusterless

### COMMERCIAL ITEM DESCRIPTIONS

A-A-52557 - Fuel Oil, Diesel; For Posts, Camps and Stations.  
A-A-59295 - Corrosion Preventative Compounds, Cold Application.

### DEPARTMENT OF DEFENSE HANDBOOKS

MIL-HDBK-1791 - Designing For Internal Aerial Delivery in Fixed Wing Aircraft.

(Copies of these documents are available online at [www.assist.daps.dla.mil/quicksearch/](http://www.assist.daps.dla.mil/quicksearch/) or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents are those cited in the solicitation or contract.

### AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

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

(ASME documents may be obtained at [www.asme.org](http://www.asme.org) or from the American Society of Mechanical Engineers, at P.O. Box 2900 Fairfield NJ 07007)

### AMERICAN WELDING SOCIETY (AWS)

AWS D14.1/D14.1M

(AWS documents may be obtained at [www.aws.org](http://www.aws.org) or from American Welding Society 550 N.W. LeJeune Rd., Miami, FL 33126

### INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO 3411 - Human Physical Dimensions, Recommended Practice  
ISO 3471 – Earth-moving Machinery-Roll-Over Protective Structures, Laboratory Tests and Performance Requirements  
ISO 6682 – Earth-moving Machinery – Zones of Comfort and Reach for Control

(Electronic copies of this document are available from <http://www.iso.ch> or International Organization for Standardization, American National Standards Institute (ANSI), Inc., P.O. Box 2900 Fairfield NJ 07007)

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### SOCIETY OF AUTOMOTIVE ENGINEERS (SAE)

- SAE J98 - Personnel Protection for General Purpose Industrial Machines
- SAE J185 - Access Systems for Off-Road Machines
- SAE J386 - Operator Restraint System for Off-Road Work Machines
- SAE J551-1 - Performance Levels and Methods of Measurement of Electromagnetic Compatibility of Vehicles, Boats, and Machines
- SAE J553 - Circuit Breakers
- SAE J1598 - Laboratory Testing of Vehicle and Industrial Heat Exchangers for Durability under Vibration-Induced Loading
- SAE J925 - Minimum Service Access Dimensions for Off-Road Machines
- SAE J994 - Alarm – Backup – Electric Laboratory Performance Testing
- SAE J1176 - External Leakage Classifications for Hydraulic Systems
- SAE J1511 - Steering for Off-road, Rubber-Tired Machines

(SAE documents may be obtained at [www.sae.org](http://www.sae.org) or from Society of Automotive Engineers Inc., 400 Commonwealth Drive, Warrendale, PA 15096)

### TIRE AND RIM ASSOCIATION, INC. (TRA)

Tire and Rim Association Yearbook

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

### UNDERWRITERS LABORATORIES INC.

- UL 299 Dry Chemical Fire Extinguishers
- UL 711 Rating and Fire Testing of Fire Extinguishers

(UL documents may be obtained at <http://ulstandardsinfolnet.ul.com/catalog> or hardcopies and CD's can be found at COMM 2000 1414 Brook Drive Downers Grove, IL 60515)

**2.4 Order of precedence.** In the event of a conflict between the text of this document and the references cited herein, (except for related specification sheets), the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specified exemption has been obtained.

### 3. REQUIREMENTS.

**3.1 Description.** The forklift (referred to as “forklift” or “truck” in this document) shall be the supplier’s standard, commercial, rigid or articulated frame forklift, or a front end loader modified with a forklift attachment in place of the scoop bucket. If the truck is rigid frame type, it shall have operator selected 2-wheel/4-wheel crab steering, and operator selected 2-wheel/4-wheel drive. If the truck is the articulated frame type, it shall have operator selected 2-wheel/4-wheel

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drive, except as noted in (see 3.13). Whatever type is furnished, it shall meet all requirements specified in this document. The truck shall be air transportable in C-130, C-141, C-17 and C-5 aircraft, as a reference only, refer to MIL-HDBK-1791. The truck shall be equipped with, but not limited to, instruments, components and accessories that are standard on the commercial product, whether specified herein or not.

3.2 First article. The contractor shall when specified (see 6.2), furnish one complete truck for first article inspection and demonstration and test in accordance with (see 4.2 and 4.3) of this document. The truck shall be a pre-production unit that shall be identical to all trucks produced on this contract. If the contractor determines it is necessary to make configuration changes during production, pre-approval must be obtained from WR-ALC. All testing shall be observed and approved by Government representatives. The approved first article truck shall be refurbished to a like new condition and delivered as soon as possible.

3.3 First article report. The first article inspection report shall include a detailed description of the inspection (see 4.2) and demonstration and test (see 4.3.1) performed. All deficiencies encountered and actions taken to correct the deficiencies shall be included in the report. Approval of the first article test report shall not relieve the contractor of their responsibility to furnish trucks that meet the requirements of this document.

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

3.5 Operating environment. The truck, with type A winterization system, shall be capable of operating in temperatures ranging from  $-65^{\circ}\text{F}$  to  $+125^{\circ}\text{F}$ . The truck, with type C winterization system, shall be capable of operating in temperatures ranging from  $-25^{\circ}\text{F}$  to  $+125^{\circ}\text{F}$ .

3.6 Human factors. The truck shall provide for operation and maintenance by personnel ranging from small person normally clothed, through large person arctic clothed, in accordance with ISO 3411 and SAE J925. This shall include, but not be limited to all travel, load motion, and steering controls; entry to the operator's seat and access to all fluid level check points.

3.7 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. All surface areas subject to personnel standing or walking shall have a nonskid, tread-plate, or expanded metal surface. A commercial fire extinguisher shall be mounted on the truck in an easily accessible location. The fire extinguisher shall be a minimum 2-1/2 pound capacity ABC type, or equivalent. The fire extinguisher shall be UL299 listed and UL711 tested.

3.8 Seatbelts and operator's restraint.

3.8.1 Seat belt. An operator's seat belt with a retractor shall be installed. The seat belt must conform to SAE J386, Type One. However, the installation of a lap belt alone will not be considered as adequate occupant restraint.

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3.8.2 Additional restraint. Additional restraint devices designed to ensure the operator's body remains entirely within the protection of the frame and overhead guard in the event of tip over will also be provided. The restraint system shall not interfere with operator access or mobility, or the vehicles operation. (i.e. special seat, shoulder belt, etc.)

3.8.3 Decal. A warning decal shall be provided advising of the hazards of tip over and the importance of using the restraint system.

3.9 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 truck shall be designed for a structural safety factor (based on yield strength) of at least three times the test load.

3.9.1 Rated load. The rated load capacity for the Type I shall be 10,000 pounds at a horizontal and vertical load center of 48 inches. The rated load capacity for the Type II shall be 13,000 pounds at 54 inch horizontal load center, and 48 inch vertical load center.

3.9.2 Test load. The test load capacity for the Type I shall be 5,000 pounds at a horizontal and vertical load center of 48 inches. The test load capacity for the Type II shall be 6,500 pounds at 54 inch horizontal load center, and 48 inch vertical load center.

3.9.3 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.

3.10 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 start within five minutes in any ambient temperature (and with the truck initially stabilized at ambient temperature) from  $-25^{\circ}\text{F}$  to  $+125^{\circ}\text{F}$ . Glow plugs or other accessories working off the cranking batteries and auxiliary fluid priming systems which are permanently mounted on the truck and normally used in starting the vehicle may be used.

3.10.1 Diesel fuel. The engine shall operate on diesel fuel in accordance with A-A-52557 without detrimental effects on the engine, or its performance.

3.10.2 Alternate fuel. Either the engine or forklift manufacturer shall certify that the engine is capable of operating on JP-8 conforming to MIL-DTL-83133 for 400 hours, during normal commercial or military situations, without detrimental effect on the engine. Some power loss is expected, but the forklift shall be able to perform normal operations. A certification letter should be included in the first article test report. An example of a previous certification letter is shown in Figure 1.

3.11 Fuel system.

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3.11.1 Fuel tank. The fuel tank shall be of sufficient capacity to allow a minimum 8 hours of continuous operation without refueling. The tank filler neck shall be designed to operate with an OPW ([www.opw-fc.com](http://www.opw-fc.com)) fuel nozzle model 295AF. The dimensions for the OPW 295AF are available on their web site, [https://www.opw-fc.com/product\\_detail.aspx?pid=181](https://www.opw-fc.com/product_detail.aspx?pid=181).

3.11.2 Drain plug. The fuel tank shall be equipped with a drain plug at the lowest point of the tank and located, or a drain line provided, so that any 5 gallon container (preferably a container that can be sealed) can be positioned to take the draining fuel. The drain plug shall be protected by its location or by a guard.

3.12 Engine exhaust. The exhaust system shall incorporate a muffler, and shall terminate at a location clear of the operator's station. A means shall be furnished to prevent rain water intrusion into the exhaust system.

3.13 Power train. The transmission shall be the full torque, power-shift type in combination with a torque converter. 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. The transmission shall provide for positive inching or declutch control throughout the entire engine rpm range, in both forward and reverse directions. The inching or declutch control shall permit lifting of rated load, at maximum engine speed, while the transmission is in a forward or reverse gear, with no vehicle motion. If the truck is a rigid frame model it shall have operator selected 2-wheel/ 4-wheel drive. If the truck is an articulated model, it shall have a rear axle disconnect unless there is negligible difference in the path of travel of the front and rear wheels while negotiating turns.

3.14 Hydraulic system. The hydraulic system shall consist of all hydraulic components necessary for operation of the forklift, including a filter. All hydraulic hoses shall have a working pressure equal to or greater than the hydraulic system maximum relief valve setting. The hydraulic fluid fill point shall be properly labeled. The hydraulic fluid shall comply with the requirements of MIL-PRF-83282.

3.14.1 Hydraulic reservoir. The hydraulic reservoir filler shall be of sufficient inside diameter to accept a filler tube of at least 1.56 inches outside diameter.

3.14.2 Fail-safe hydraulic lift system. The truck shall be equipped with a fail-safe hydraulic lift system which will automatically prevent load lowering and fork forward tilting in the event of electrical, hydraulic or pneumatic failure; hydraulic or pneumatic failure includes any component, line or hose. Check valves have been used in the past to prevent load lowering. Pressure relief valves or regulators shall be provided in the hydraulic and pneumatic systems to prevent overpressure. In addition, a means shall be provided to manually override the system to allow safe and slow lowering (not more than 10 feet per minute) of loaded or unloaded forks.

3.14.3 Hydraulic schematic.

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3.14.3.1 Metal Plate. A corrosion resistant plate containing the hydraulic schematic of the forklift 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.

3.14.3.2 Durable Material. If the hydraulic schematic could be provided on a durable material, it would be acceptable to store it in the cab. For example: A book with hard plastic pages (tear resistant & smear resistant).

3.15 Fork spacing and side shift. The forks shall be capable of being adjusted laterally by hydraulic power, and meeting the requirements of (see 3.48.17). Rigid frame type trucks only shall be capable of side shifting the forks by hydraulic power and meeting the requirements of (see 3.48.18).

3.16 Forks and fork carriage assembly. The forks and fork carriage shall have the following dimensions and restrictions:

- a. Length of forks:  $72 \pm 1$  inches.
- b. Width of forks: 8 inches (maximum).
- c. Thickness of forks: 2.5 inches maximum, except bend in forks heel may exceed 2.5 inches.
- d. Fork tip thickness: 0.5 inches (maximum).
- e. Bottom taper of forks: 30 inches (minimum), from tip of forks rearward.
- f. Fork carrier assembly width: Shall not exceed the overall width of the forklift under any circumstances.

3.17 Load backrest. A metal backrest shall be provided, either as an integral part of the fork carriage, or as a removable part thereof. The top of the backrest shall be 44 to 56 inches above the horizontal load carrying surfaces of the forks. The lowest portion of the backrest shall be from 1.0 to 10.0 inches above the top surfaces of the forks. Two ring type devices to restrain the load shall be located on the load backrest at 30.0 inches  $\pm$  4.0 inches above the load carrying surfaces of the forks. The devices shall have a minimum inside diameter of 2.0 inches, and made of a material not more than 0.75 inches thick. The devices 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 both devices. Location of the devices shall not interfere with positioning the load against the backrest.

3.18 Fork back-guard. A removable fork back-guard shall be installed above the load backrest (see 3.17) to prevent small containers from falling rearward off the forks. The guard shall not obstruct operator view. Its height shall be such that the total height of the load backrest and the fork back-guard shall be 80.0 to 82.0 inches when measured from the ground.

3.19 Instruments. In addition to the instruments supplied on the standard commercial forklift, an hour meter shall be installed in the instrument panel. All instruments, except the hour meter shall be lighted when the front floodlights (see 3.20.2) are illuminated.

3.20 Electric system. The electrical system shall consist of all electrical components necessary for operation of the truck. The forklift shall have sufficient electrical grounding to prevent static discharge.



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3.20.1 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.

3.20.2 Lighting. There shall be at least two forward and two rearward directed floodlights and at least one additional floodlight that is adjustable from the operator's compartment. Tail light(s), and brake stop light(s) shall be installed. All lights shall be protected by location or guards. Individual operator controlled switches shall be provided for the front lights, the rear lights, and the adjustable light. If a rotary switch provides all possible options that the individual switches provide, then the rotary switch is acceptable. When specified (see 6.2), the truck shall be equipped with a rotating beacon light.

3.20.3 Batteries. Except when Type A Winterization is specified (see 6.2), the batteries shall be the maintenance-free type.

3.20.4 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. When specified (see 6.2), the truck shall be equipped with a heavy-duty alternator.

3.20.5 Master switch. A keyless master switch, with an identification plate, shall be installed in a convenient location to permit disconnect of the battery from all electrical load.

3.20.6 Wiring schematic.

3.20.6.1 Metal plate. A corrosion resistant metal plate containing the electrical schematic of the forklift shall be 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.

3.20.6.2 Durable material. If the wiring schematic could be provided on a durable material, it would be acceptable to store it in the cab. For example: A book with hard plastic pages (tear resistant & smear resistant).

3.20.7 Electrical accessories wiring. When specified (see 6.2), the truck shall be equipped with a 12V converter, an outlet, and all associated wiring.

3.20.8 Radio preparation package. When specified (see 6.2), the truck shall be equipped with mounting hardware and all associated wiring necessary to install a radio.

3.21 Preparation, primer, paint, and rust proofing.

3.21.1 Preparation and primer. All surfaces normally painted by the forklift manufacturer shall be prepared and primed using procedures compatible with the final paint.



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3.21.2 Rust proofing. When specified (see 6.2), tropical rust proofing shall be provided. This should be considered a premium rust proofing package usually consisting of an additional coating. The truck shall be treated with a corrosion preventative compound complying with A-A-59295. Many of these vehicles are used in tropical/coastal environments and experience high humidity and salt spray. Therefore, they usually exhibit high levels of corrosion in the areas listed below. At a minimum, these areas shall be coated.

- |                          |  |
|--------------------------|--|
| 1. Cab, interior         | 6. Locations where dissimilar metals come in contact |
| 2. Cab, exterior         | 7. Area above fuel tank(s)                           |
| 3. Seams                 | 8. Engine oil pan & transmission oil pan             |
| 4. Welds                 | 9. Radiator support structure                        |
| 5. Hidden recessed areas | 10. Battery box                                      |

3.21.3 Paint.

3.21.3.1 Green. Unless otherwise specified (see 6.2), the final paint shall be a standard, commercially available, polyurethane closest to gloss green, color number 14052 of FED-STD-595. If you have a process that is more durable than a polyurethane top coat and are willing to certify it for the warranty period, it is acceptable.

3.21.3.2 Desert sand. When specified (see 6.2), the final paint shall be a standard, commercially available, polyurethane closest to no-gloss tan, color number 30313 of FED-STD-595. If you have a process that is more durable than a polyurethane top coat and are willing to certify it for the warranty period, it is acceptable.

3.22 Marking. Markings must be made with paint. Markings for green trucks shall be black paint, and desert sand trucks shall be white paint. 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) in 1-1/2 inch high letters on the lifting arms, mast, or front of truck.
- b. "NO RIDERS" in 2 inch high letters on each side of truck.

3.23 Data plate. A corrosion resistant plate shall be permanently installed on the instrument panel, or another visible protected location. The following information shall be on the plate:

Nomenclature  
 Make and model  
 Manufacturers' serial number (VIN)  
 Registration number  
 Asset NSN number  
 Vehicle curb weight (lbs)  
 Payload, maximum (lbs)  
 Gross weight, max (lbs)  
 Date of delivery  
 Warranty \_\_\_\_\_ month \_\_\_\_\_ miles

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Contract number  
US Property

3.24 Instruction plates. All warning and instruction plates normally installed by the forklift manufacturer, describing procedures or safety items shall be included.

3.25 Noise limits. The sound level measured at the operator's station shall not exceed 84 dB (A). If the sound level is above 84 dB(A), the contractor shall provide a hazardous noise warning plate stating that operator's hearing protection is required when operating this truck. The plate shall be made of a corrosion resistant material and shall be at least 4.0 inches square. It shall have black lettering on a yellow background and shall be located to be visible as the operator enters the cab, or is seated. Sound level shall not exceed 93 dB (A).

3.26 Maintainability. The forklift shall be capable of being mechanically maintained by one person not to exceed 1 hour using common tools except where otherwise specified (see 6.2). The following items are provided as examples:

- a. Remove, replace and adjust all engine-driven belts - 3/4 hour.
- b. Remove and replace alternator - 3/4 hour.
- c. Remove and replace all hydraulic system filters, screens, and strainers - 1 hour.
- d. Remove and replace engine coolant system hoses - 1 hour.
- e. Drain engine oil, remove and replace engine oil filter, and refill crankcase - 1/2 hour.
- f. Remove and replace fuel filter elements - 1/2 hour.
- g. Remove, replace and connect battery - 1/2 hour.
- h. Drain transmission fluid, remove and replace all transmission filters and refill transmission in 1 hour.
- i. Remove and replace starter - 1 hour.
- j. Bleed and adjust brakes and refill master cylinder (if applicable), 2 men - 1 hour.
- k. Remove and replace floodlights and taillight bulbs - 1/4 hour each bulb.
- l. Lubricate all lubrication fittings with 2 strokes per fitting - 1 hour.

3.27 Servicing. The following items shall be easily accessible for inspection and servicing with the engine at operating temperature, without subjecting personnel to injury or burns. The items shall be in a covered area(s) that can be accessed (opened and closed) by one person without the need for tools:

- a. Engine oil dipstick, oil filler, oil drain plug and fuel filter.
- b. Transmission fluid level indicator and filler tube.
- c. Radiator or engine coolant filler cap.
- d. Hydraulic fluid reservoir level indicator and filler.
- e. Battery for inspection, jumper cable attachment and removal.
- f. Power steering reservoir (if provided).

3.28 Service brakes. Full air, air-over-hydraulic, or hydraulic-over-hydraulic type, foot controlled, all-wheel, service brakes shall be provided.

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3.29 Parking brake. The parking brake actuation shall be independent from the service brakes. The control shall be located within reach of the seated operator and in a position to permit easy and safe movement on and off the vehicle.

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

3.31 Air-transport mode. The air-transport mode shall be the fully operational truck with only the following items removed, if necessary. To meet the air transportability requirements, refer to MIL-HDBK-1791 as a guide only:

- a. Cab (see 3.38).
- b. Conveyorized fork attachment (see 3.45).
- c. Counterweight(s) (see 3.35).
- d. Cab lifting device (see 3.39).
- e. Operator's seat may be removed or partially removed, but shall comply with requirements specified in (see 3.33).

3.32 Conversion to and from air-transport mode. Conversion from operational to air-transport and from air-transport to operational mode shall take not more than 90 minutes each, using five people and only common hand tools (wrenches, screwdrivers, etc) with no damage to truck or components. No other equipment or vehicle (cranes, other forklifts, etc) shall be required for the conversion to or from the air-transport mode. The pressure in the tires can not be reduced or increased from operational level when converting to or from air-transport mode. As a guide only refer to MIL-HDBK-1791.

3.33 Operation in air-transport mode. The operator must be able to drive the truck onto and off of all aircraft listed (see 1.1) for this spec. This will require that the operator be at, or below, the height specified in (see 3.34.d) and still be able to safely control the truck.

3.34 Weights and dimension. Limiting weights and dimensions shall be as follows:

- a. Maximum length, including forks: 26.5 feet for Type I, 28.0 feet for Type II.
- b. Maximum width: 102 inches.
- c. Maximum height in operational mode: 126 inches.
- d. Maximum height in air-transport mode: 102 inches.
- e. Maximum weight in air-transport mode: 13,000 pounds on each axle.

3.35 Counterweight(s). If it is necessary to remove counterweight(s) to reduce the axle weights to 13,000 pounds, they shall be removed and installed by a furnished crane or hoist, and individual weights shall weigh not more than 900 pounds. Five men are the maximum number of personnel allowed to assist in the removal of the counterweight(s). Remember, safety should always be the top priority. An optional method shall be to remove and install the counterweights by a system on the truck that uses its own power to lower and raise counterweight(s) to and from installed position, to and from ground level. In this case, the 900 pound maximum weight does not apply.

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3.36 Steering. The forklift shall have power steering. In the event of a power failure the forklift shall be equipped with an emergency power steering mechanism (mechanical or electrical) conforming to SAE J1511. This supplement power steering mechanism shall allow the vehicle to be controlled while moving.

3.37 Load handling controls. All load motion controls shall be right hand operation and shall be of the self-centering type, i.e. controls shall return to the neutral position when released.

3.38 Cab. The truck shall be equipped with an enclosed cab that shall incorporate the overhead protection requirements of ASME B56.6-1992, and roll over protective structure (ROPS) requirements of ISO 3471. There shall be a door on each side; or one door and one side, front, or rear window that meets the emergency exit requirements of SAE J185. There shall be at least two windows, one on each side, which can be opened for ventilation. The doors and windows shall be capable of securely locking in both the closed and open positions. A minimum clearance of 39 inches from seat to underside of cab, when measured in accordance with ASME B56.6-1992 shall be provided. The cab shall be equipped with an internal rear view mirror. When specified (see 6.2), the truck shall be equipped with any of the following options. These options shall not interfere with the requirements in ASME B56.6-1992 (a) Cab air conditioning (b) Rear window sunscreen (c) Front sun visor (d) external rear view mirrors

3.38.1 Removable cab. If the cab must be removed to meet air transportability requirements, a cab lifting device shall be provided. Any electrical connection that must be separated for cab removal shall be the quick-disconnect type.

3.38.2 Adjustable cab. If the vehicle is designed to operate with the cab in only one position, the ROPS/FOPS is only required in that position. If the vehicle is designed to operate with the cab in each discrete position, the ROPS/FOPS is required in each discrete position.

3.39 Cab lifting device. The cab lifting device shall be capable of being securely stored on the forklift when not in use. It shall be capable of lowering and raising the cab from the installed position to and from ground level.

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

3.41 Towing hitch. A pintle type, towing hitch shall be installed at the center rear of the truck, with the center of the hitch opening 22 to 30 inches above ground level. The pintle shall be capable of sustaining a rearward, horizontal force of at least 3 times the gross vehicle weight (GVW) of the forklift.

3.42 Towing lugs. Two lugs, one on each side of the towing hitch, used for towing or securing safety chains shall be installed. The lugs shall be of sufficient diameter to accept common chains and hooks 3 inches diameter and capable of sustaining a rearward, horizontal force of at least 3 times the GVW of the truck for a maximum of 500 feet.

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3.43 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 5 MPH tables. When specified (see 6.2), the manufacturer shall provide a balanced wheel and tire assembly.

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

3.45 Conveyorized fork attachment. The truck shall be equipped with two conveyorized fork attachments (one for each fork) to be used for the transfer of 88 inch wide by 108 inch Air Force HCU-6E aluminum pallets loaded; 10,000 pounds for Type I and 13,000 pounds for Type II. The pallets shall be picked up with the 108 inch dimension lateral to the forks (perpendicular to centerline of truck). The following features shall be included:

- a. Each conveyor shall securely attach to each fork and shall remain securely attached during all pallet loading and unloading operations.
- b. Each conveyor shall have two rows of rollers (one row on each side of the fork tine).
- c. The rollers shall be sized, located, and spaced so that the conveyor provides lateral and longitudinal support to the pallet described in (see 3.45), without pallet damage or excessive wear, during loading and unloading.
- d. Each conveyor roller shall be of adequate diameter, width, and wall thickness to support the transfer of the loaded pallet specified in (see 3.45).
- e. A quick attach/detach reversible, dual purpose "toe" shall be incorporated on the leading edge of each unit between the longitudinal rows of rollers. The one edge of the "toe", when exposed for use, shall provide a nonmetallic bumper to prevent metal contact with the aircraft. The other edge of the "toe", when exposed for use, shall provide a wedge, equipped with varying diameter rollers, to permit sliding of the conveyorized forks beneath a loaded pallet resting on the ground.
- f. An area on the truck shall be provided to store the conveyorized attachments.

3.46 Slinging and tie-downs. Permanently installed slinging and tie-down devices, which 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. All devices should be easily accessible and minimize the need to crawl under the vehicle when securing it. All devices shall be capable of accepting a chain and hook with an outside diameter of 3.00 inches through its opening, and shall have a structural safety factor of 2.3 to 1, based on static load. The notation "LIFT HERE" or "TIEDOWN" shall be stenciled in paint near each lifting and tie-down device, in the color specified in 3.22. There shall be a permanently installed, corrosion resistant, metal plate that shows the center of gravity location in the air-transport mode, and tie-down instructions for all aircraft pertaining to this specification (see 1.1). Refer to MIL-HDBK-1791 as a guide only.

3.47 Winterization. (Minimum Requirements).

3.47.1 Type A winterization. When specified (see 6.2), the truck shall be furnished with Type A winterization that shall protect to -65° F and shall consist of the following:

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3.47.1.1 Power plant heaters. Engine coolant, engine oil and battery heaters shall be provided. All heaters shall operate on either (110 volts @ 60 Hz) or (220 volts @ 50 Hz) alternating current. A three wire, 25 feet long weatherproof cable of adequate capacity for all heaters being used simultaneously shall be provided. The cable shall be able to connect to NATO and American connectors. A stowage place shall be provided on the truck to keep the cable when not in use. The heaters shall be as follows:

- a. The coolant heater shall be installed in the engine block or lower coolant inlet hose. A coolant circulating pump, driven by a 110 volt or 220 volt alternating current motor shall be provided when a coolant inlet hose heater is furnished. The heater shall have adequate capacity to maintain engine coolant at a temperature of 10° F in an ambient temperature of -65° F. It shall be controlled to limit engine coolant to not more than 150° F.
- b. An engine oil heater with adequate capacity to maintain engine oil at a temperature of at least +10° F in an ambient temperature of -65° F shall be furnished. It shall be controlled to limit engine oil temperature to not more than 150° F.
- c. A battery heater shall be provided. It shall have adequate capacity to maintain battery electrolyte at a temperature of at least +10° F in an ambient temperature of -65° F, and shall have a thermostat to limit temperature of the electrolyte to not more than +80° F.

3.47.1.2 Cab. The cab shall meet the requirements of (see 3.38), and shall also contain thermal insulation, if necessary, to meet the heating requirements of (see 3.47.1.3).

3.47.1.3 Heater and defroster. The heater shall be of sufficient capacity to maintain temperature of +40° F at cab floor level in an ambient temperature of -40° F.

3.47.1.4 Cold starting aid. A measured shot ether system or glow plug(s) shall be provided to assist in engine cold temperature starting.

3.47.1.5 Anti-freeze engine. To protect the engine from freezing, the coolant system shall be protected to -65° F with antifreeze.

3.47.2 Type C winterization. When specified (see 6.2), the truck shall be furnished with Type C winterization that shall protect to -25° F and shall consist of the following:

3.47.2.1 Starting aid. Glow plug(s) or a measure shot ether injection system shall be furnished.

3.47.2.2 Cab. The cab shall meet the requirements of (see 3.38), and shall also contain thermal insulation, if necessary, to meet the heating requirements of (see 3.47.2.3).

3.47.2.3 Cab heater and defroster. The heater shall have sufficient capacity to maintain a temperature of at least +40° F at cab floor level in an ambient temperature of -20° F.

3.47.2.4 Anti-freeze engine. To protect the engine from freezing, the coolant system shall be protected to -25° F with antifreeze.

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3.48 Performance.

3.48.1 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 5 fpm over the entire lift range. Maximum fork lift speed for unloaded or rated load shall not exceed 60 fpm.

3.48.2 Lowering speed. The lowering speed of the forks with rated load shall be no less than 40fpm (not to exceed 65 fpm). The lowering speed of the unloaded forks shall be no less than 20fpm (not to exceed 65 fpm). The forks, either unloaded or with rated load, shall lower at a controlled rate, i.e., no free-fall, uncontrolled operation, jerking, or condition which could cause damage to the lift system or forklift is permitted.

3.48.3 Travel speed. The travel speed with rated load shall be at least 15 miles per hour (mph) in forward direction, and not less than 9 mph in reverse.

3.48.4 Lift height. The lift height, with rated load on the forks and the forks horizontal, shall be not less than 75 inches when measured from ground to top surfaces of level forks.

3.48.5 Longitudinal slope operation. The truck, with rated load, shall be capable of ascending and descending a 20 % slope (11.3°) at a minimum of 2 mph when the load is in the uphill direction during both ascent and decent. It shall also be capable of accelerating upslope from a complete stop to at least 2 mph on a 20 % slope (11.3°).

3.48.6 Lateral slope operation. With rated load on the forks, the truck shall be capable of full circle operation, in both directions, at maximum steer angle, at a speed of not less than 2 mph, on a 15 % slope (8.5°).

3.48.7 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, when the hydraulic fluid is initially at ambient temperature.

3.48.8 Turning radius. The maximum turning radius of the truck, measured to outside of the tires, shall be 20 feet for the Type I, and 26 feet for the Type II.

3.48.9 Fork tilt. With no load on the forks, the minimum rearward tilt shall be 20°, and the minimum forward tilt shall be 10°. Tilting the forks from the maximum rearward tilt position to the horizontal position with rated load on the forks shall take at least 4 seconds.

3.48.10 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 ( $\pm 2^\circ$ ), 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 both forks, both empty and fully loaded.

3.48.11 Ground clearance. Ground clearance, with rated load on the forks, shall be a minimum 12 inches.



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3.48.12 Stability. The truck shall meet the “longitudinal stability stacking”, “longitudinal stability travel”, “lateral stability stacking”, and “lateral stability travel” stability requirements of ANSI B56.6.

3.48.13 Service brakes. The service brakes shall stop the truck with rated load, within the distance specified in the Stopping Distance Method of ANSI B56.6, with not more than 80 pounds of force on the brake pedal. The service brakes shall meet the Drawbar Drag Method of ANSI B56.6, except a drawbar drag equal to 25 % of truck gross weight shall be produced with not more than 80 pounds of force on the brake pedal.

3.48.14 Parking brake. The parking brake shall be capable of holding the fully loaded truck, on a minimum 20 % grade, in both up and down slope directions. The force required to fully set the parking brake shall be not more than 70 pounds, if hand actuate, or 150 pounds if foot activated.

3.48.15 Electromagnetic interference (EMI). The truck shall comply with the EMI requirements of SAE J551-1, 2, & 11. For SAE J551-2 Emissions, the frequency shall be in the range of 30 to 1000 MHz. For SAE J551-11 Susceptibility, the frequency range shall be in the range 100 kHz to 18 GHz. The field strength shall be 20 Volts/meter from 100 Hz to 200 MHz. The field strength shall be 50 Volts/meter above 200 MHz.

3.48.16 Fork lateral spacing. The forks shall be capable of spreading to at least 60 inches when measured between the centerline of the forks. They shall be capable of closing to not more than 18 inches, again measured between centerlines of the forks.

3.48.17 Fork side shifting. The forks on rigid frame type trucks shall be capable of side shifting at least 4 inches off center, in both directions, throughout the fork spread specified in (see 3.48.16).

3.48.18 Fork visibility. The operator, without leaving his seat and while maintaining full control of the truck, shall be able to see at least one fork tip at any fork height, fork tilt, or fork spacing when there is no load on the forks. In addition, the forklift shall meet the forklift visibility requirements shown in Figure 2. Using Figure 3 as an example, Figure 2 was based on the users need for improved visibility. Since every vehicle has different design configurations, generic drawings were required. The reference plane B should provide an unobstructed view. Note: Most manufacturers have a range of data points for the drivers’ eye point. This is due to seat physical differences (5<sup>th</sup> percentile female through the 95<sup>th</sup> percentile male). It would be acceptable to show the “best” and the “worst” sight lines.

3.49 Special tools. The contractor shall supply any special tools or equipment peculiar to, and only used on this forklift. One set of tools is required for each truck.

3.50 Workmanship. The workmanship shall be high quality when compared to industry standards. There shall be no rough edges on machined or flame cut components. All welds shall be smooth and continuous. The contractor’s welders and procedures shall be qualified to meet

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the applicable welding codes of American Welding Society (AWS) or American Society of Mechanical Engineers (ASME).

3.51 Parking Block. The truck shall be equipped with the means of securing four parking blocks. The blocks should be easily accessible. The dimensions of each block are 5.50 X 7.50 X 20.00 inches (see Figure 4).

3.52 Air Compressor. When specified (see 6.2), the truck shall be equipped with an auxiliary air compressor equal to or better than the electrical air compressor from Gast Manufacturing Co., Model 3HBB-19-M323. (see link listed below) The compressor shall be equipped with a universal air coupler.

<http://www.gastmfg.com/pdf/piston/specsht/3h31.pdf>

3.53 NATO Plug. The truck shall be equipped with a NATO Plug equivalent to NSN 5935-01-044-8382.

#### 4. VERIFICATION.

4.1 Classification of inspections. The inspections shall be classified as follows:

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

4.2 First article inspection. The first article shall be submitted in accordance with (see 3.2). The first truck and its components, contractor drawings and literature, and vendor literature shall be compared to Section 3 of this document to verify compliance. The truck shall then be subjected to the conformance inspection specified in (see 4.3).

4.3 Conformance inspection. The following conformance inspection may be performed in any order, as determined by the contractor. Occurrence of any of the following conditions during the testing specified (see 4.3.1 thru 4.4.3) shall be cause for rejection of the truck:

- a. Inability to meet specified performance requirements or inability to complete any test.
- b. Permanent deformation, over-heating, malfunctions, leakage of water, transmission fluid, engine oil, fuel, lubrications, hydraulic fluid, etc, in excess of Class 3, for dust free conditions and Class 3D for dusty conditions in accordance with SAE J1176.
- c. Any binding, jerking, or uneven operation of any component or system.
- d. Any wearing, galling, gouging or other material removal.

4.3.1 Conformance testing and demonstration. Unless otherwise specified (see 6.2), conformance testing and demonstrations shall be conducted at the ambient temperature and climatic conditions existing at the place of testing and demonstration. Only that maintenance established by the contractor shall be performed during the demonstration. All distance and time measurements, and other required data obtained during the testing shall be recorded and included in the first article test report.

4.3.2 Loading. There are two different loading conditions required for testing and demonstrations.

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4.3.2.1 Rated load. The rated load for the Type I shall be a 10,000 pound (+200, -0) pound cube, 96 inches on each side, with a center of gravity located at the geometrical center of the cube. For Type II, the rated load shall weight 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.

4.3.2.2 Test load. The test load for the Type I shall be a 5,000 pound (+200, -0) pound cube, 96 inches on each side, with a center of gravity located at the geometrical center of the cube. For Type II, the test load shall weight 6,500 (+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.

4.3.3 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 as specified (see 3.48.4). Nonconformance with 3.48.4 shall be cause for rejection.

4.3.4 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. Lower rated load, at maximum lowering speed (fully open lowering control) and abruptly stop the load at 1 to 2 foot height. 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. Remove load and raise forks to maximum lift height. Measure time required to lower forks to ground level. Calculate the unloaded fork lowering speed. Nonconformance with (see 3.48.1 or 3.48.2) shall be cause for rejection.

4.3.5 Travel speed. Operate the truck at maximum speed in both forward and reverse directions with rated load in load carry position. Inability to obtain the speed specified in (see 3.48.3) shall be cause for rejection.

4.3.6 Longitudinal slope operation. Drive the truck forward with rated load in uphill position onto a ramp, hill, or other suitable surface with a slope specified in (see 3.48.5). Stop the truck on the slope, and then accelerate up the slope reaching a steady measured speed. The truck shall descend the slope, with the load in the uphill position, at a safe, measured speed. Inability to reach the speeds specified in 3.48.5 shall be cause for rejection.

4.3.7 Lateral slope operation. Operate the truck in clockwise direction, full circle operation, with rated load, on a slope and at the speed specified in (see 3.48.6). Operate the same except in counterclockwise direction. Any tire losing contact with the ground, or any unsafe operation shall be cause for rejection.

4.3.8 Drift. Raise rated load to maximum lift height, with hydraulic fluid at ambient temperature. Place forks in horizontal position and shut off engine. Measure from ground to top surface of one fork. Let truck sit for time specified in (see 3.48.7). Using the same fork and reference points, measure from ground to top surface of fork. Nonconformance with 3.48.7 shall be cause for rejection.

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4.3.9 Turning radius. With rated load on forks, operate truck in clockwise direction, at maximum steering angle, for at least one complete full circle. Determine turning radius by measuring to outside of tires. Repeat in counterclockwise direction. Nonconformance with (see 3.48.8) shall be cause for rejection.

4.3.10 Fork tilt. On a level surface, raise unloaded forks to approximately 4 feet above ground level. As specified (see 3.48.9) tilt forks to full rearward position and measure tilt angle then tilt forks full forward and measure angle of tilt. Nonconformance with 3.48.9 shall be cause for rejection.

4.3.11 Fork tine operation. Position unloaded forks horizontal and approximately 3 to 5 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 (see 3.48.10) while being raised and lowered. Repeat with rated load on forks and forks at approximately five degrees rear tilt. Again verify that forks maintain the tolerance specified in (see 3.48.10) throughout total movement. Inability to maintain the fork tilt within tolerance specified in 3.48.10 while raising and lowering empty or loaded forks shall be cause for rejection.

4.3.12 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 as specified (see 3.48.11). Nonconformance with 3.48.11 shall be cause for rejection.

4.3.13 Stability. Conduct the “longitudinal stability stacking”, “longitudinal stability travel”, “lateral stability stacking”, and “lateral stability travel” tilting platform tests of ANSI B56.6. Failure to meet the minimum tilting requirements specified in ANSI B56.6 shall be cause for rejection.

4.3.14 Service brakes. Demonstrate that the service brakes can stop the truck with rated load, and can meet the drawbar drag test, as specified in 3.48.13. Failure to meet all requirements of 3.48.13 shall be cause for rejection.

4.3.15 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 (see 3.48.14), for at least 3 minutes. Measure the force required to apply the parking brake. Nonconformance with all requirements of 3.48.14 shall be cause for rejection.

4.3.16 Electromagnet interference (EMI). Test the truck to determine compliance with EMI SAE J551 (see 3.48.15). Failure to meet the requirements of 3.48.15 shall be cause for rejection.

4.3.17 Fork visibility. Position unloaded forks at various lift heights, tilts, and spacing to verify that the visibility requirements of (see 3.48.18) can be met. Failure to meet 3.48.19 shall be cause for rejection.

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4.3.18 Starter disconnect switch. Start the engine and let it run for at least 10 seconds. Energize the starter switch (move to “off” then “on” position if applicable) while the engine is running. Any evidence of starter engagement while the engine is running shall be cause for rejection. With the engine not running, place transmission selector in the lowest forward gear and energize the starter switch. Repeat for all forward and reverse gears. Any evidence of starter engagement while transmission is in any gear shall be cause for rejection.

4.3.19 Overload. Perform a stress analysis of the truck to determine all critical stress points. Apply strain gauges or other suitable instrumentation at all these critical stress points to measure stress 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. Use three times the test load, as determined in (see 3.9). Apply this load to the forks. The center of gravity of the 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, hydraulic fluid leaks, etc. 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. Failure to meet these requirements shall be cause for rejection.

4.3.20 Fail safe hydraulic 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 hydraulic line(s) that supply pressure to the lift system. Remeasure vertical distance from ground to same point on fork surface. A drop of more than 0.5 inch shall be cause for rejection. Measure fork tilt. Disconnect hydraulic line(s) that supply pressure to prevent forward tilting. Remeasure fork tilt. A change of more than  $\pm 2^\circ$  of tilt shall be cause for rejection. Use the over-ride provided to lower rated load to ground at not more than speed specified in (see 3.14.2).

4.3.21 Fork lifting mechanism. Raise the rated load from ground level to maximum lift height and lower back to ground. This shall be considered one cycle. Repeat until 100 cycles have been completed. This is a severe test of the hydraulic system so raising and lowering may be stopped after every 10 cycles for a 5 minute cooling period of the hydraulic system. Inability to complete the test, binding or erratic movement, any failure of the lifting system, or overheating of the hydraulic fluid shall be cause for rejection.

4.3.22 Fork spacing and side shift mechanism. The forks on rigid frame trucks shall be side shifted with the rated load from extreme left to extreme right position, and back to extreme left. This shall be considered one cycle. Repeat until 100 cycles have been completed. This is an extreme test of the hydraulic system and side shifting may be stopped after 20 cycles to allow cooling of the hydraulic fluid. For both rigid and articulated frame trucks, with no load on the forks, the forks shall be adjusted from their most closed position to most open position and then returned to most closed position. This shall be considered one cycle. Repeat until 100 cycles have been completed. For both side shifting and fork spacing, any binding, erratic movements,

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inability to complete either test, failure of either system, or overheating of the hydraulic fluid shall be cause for rejection.

4.3.23 Noise level. Measure noise level at operator's ear with the engine operating at maximum rpm and while lifting rated load. Nonconformance with (see 3.25) shall be cause for rejection. If noise level is between 84 and 93 dB (A), the noise warning plate described in (see 3.25) shall be on all trucks delivered on this contract.

4.3.24 Conversion to air-transport mode. With truck in operational mode (see 3.30), convert to air-transport mode (see 3.31) within the time frame, and using only the personnel and equipment specified in (see 3.32). Verify that the counterweight(s) can be removed, and meet the requirements, as specified in (see 3.35). Verify that the cab can be removed, and meet the requirements, as specified in (see 3.38). Nonconformance with 3.32, 3.35, or 3.38 shall be cause for rejection.

4.3.25 Air transportability verification. With the truck in the air transport mode, verify that it can meet all air transport requirements. For reference only refer to MIL-HDBK-1791, including all dimensional and weight limitations of (see 3.34). Inability to meet all of these requirements shall be cause for rejection.

4.3.26 Conversion to operational mode. With the truck in air-transport mode, convert to operational mode within the time frame, and using only the personnel and equipment specified in (see 3.32). Verify that the counterweight(s) can be reinstalled and meet the requirements, as specified in (see 3.35). Verify that the cab can be reinstalled, and meet the requirements, as specified in (see 3.38). Nonconformance with 3.32, 3.35, or 3.38 shall be cause for rejection.

4.3.27 Maintainability. Perform the maintenance functions described in (see 3.26). Inability to perform any function in the time specified and number of personnel specified shall be cause for rejection.

4.3.28 Load backrest restraints. Apply a forward, horizontal force of 3.0 times rated load to load restraint devices for 10 minutes. 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, broken welds, etc, which shall be cause for rejection.

4.3.29 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 the rated load, with dimensions of 88 by 108 inches. Place pallet lower surface on blocks, 4.0 inches above ground; so that truck will pick up pallet as described in (see 3.45). 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, if not, this shall be cause for rejection. 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



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backrest. Ensure pallet moves completely over by conveyORIZED attachment during the transfer. Then transfer pallet back to original position off the forks. This shall be considered one cycle. Repeat until 25 cycles have been completed. Any longitudinal movement of the attachment, in relation to the forks, in excess of 0.5 inch shall be cause for rejection. Remove test load after final cycle and inspect attachment. Any deformation, cracks, or other structural failure, or any loosening or separation of components of the attachment shall be cause for rejection.

4.3.30 Fork and fork carriage. Measure both forks length, width, thickness, thickness at tip, and bottom taper. Nonconformance with (see 3.16.a through 3.16.e) shall be cause for rejection. If applicable, side shift forks to extreme right, and then to extreme left positions, ensuring that the fork carriage does not exceed the overall width of the forklift in either case. Nonconformance with (see 3.16.f) shall be cause for rejection.

4.3.31 Truck operations. Operate the truck for a total of 40 hours. No failures shall occur during the 40 hours of operation. A failure for this test is considered as any malfunction that can not be corrected within 30 minutes by adjustment, repair, or replacement, which may cause cessation of operation, degradation of performance capability below levels specified in this document, damage to truck that would result from continued operation of the truck, personnel safety hazard, or any condition specified in (see 4.3). Failure to complete this test as specified (see 4.3), or occurrence of any failure shall be cause for rejection.

4.4 Production trucks inspection. All trucks produced by the contractor shall be inspected and subjected to the tests contained in (see 4.4.1, 4.4.2, and 4.4.3). Occurrence of any of the conditions listed in (see 4.3) shall be cause for rejection.

4.4.1 Examination of product. The truck shall be examined to determine compliance with this document.

4.4.2 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, and operate horn, windshield wipers, lights, heater, defroster, and other components during this one mile drive. Occurrence of any conditions listed in (see 4.3) shall be cause for rejection.

4.4.3 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. Occurrence of any conditions listed in (see 4.3) shall be cause for rejection.

## 5. PACKAGING.



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5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When 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 the 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 the 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 will be used primarily to load and unload palletized cargo to and from military aircraft. It will also be used to handle loads of various sizes and weights, up to the rated load. The truck will operate on hard paved surfaces, soft soil, mud, snow, and sand, on level and hilly terrain.

6.2 Acquisition requirements. Acquisition documents will specify the following:

- a. Title, number and date of this document.
- b. Type of forklift required (see 1.2).
- c. ASSIST (Acquisition Streamlining and Standardization Information System) to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.2.1, and 2.3).
- d. When first article is required (see 3.2).
- e. Batteries, if Type A winterization is specified (see 3.20.3)
- f. When tropical rust proofing is required (see 3.21.2)
- g. Unless otherwise specified, final paint color shall be forest green (see 3.21.3.1).
- h. When specified, final paint shall be no-gloss tan (see 3.21.3.2).
- i. Maintainability as specified (see 3.26).
- j. When Type A or Type C winterization is required (see 3.47.1 and 3.47.2).
- k. Conformance testing and demonstrations, if different (see 4.3.1).
- l. Packaging as specified (see 5.1).
- m. Rotating beacon light (see 3.20.2)
- n. External rear view mirrors (see 3.38)
- o. Heavy-duty alternator (see 3.20.4)
- p. Cab air conditioning (see 3.38)
- q. Rear Window sunscreen (see 3.38)
- r. Front sun visor (see 3.38)
- s. Electric accessories wiring (see 3.20.7)
- t. Radio preparation package (see 3.20.8)
- u. Air Compressor (see 3.52)
- v. Wheel and tire assembly (see 3.43)

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### 6.3 Subject term (key word) listing.

Diesel engine driven  
Material handling  
463L system

6.4 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.

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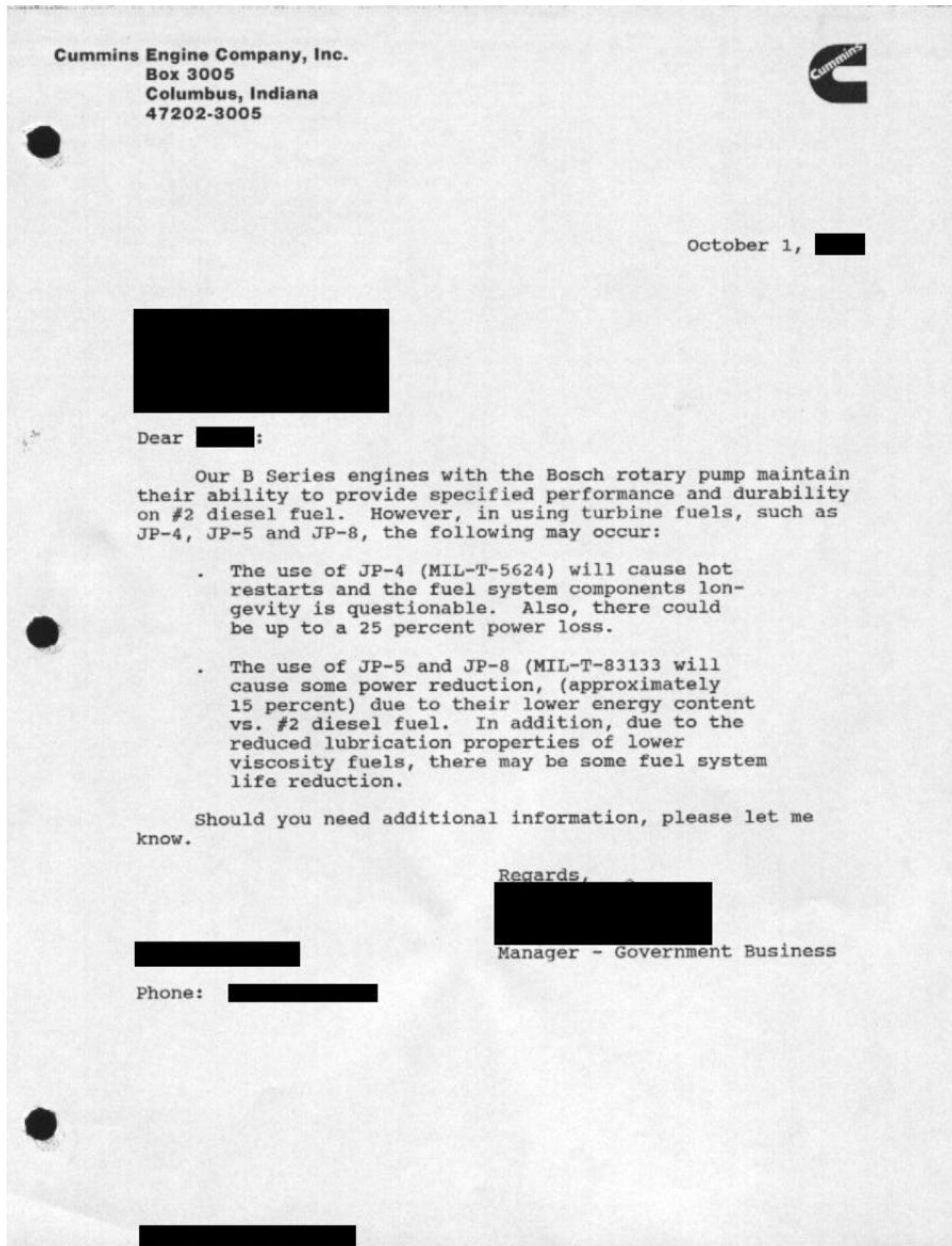


Figure 1. Alternate Fuel Certification Letter

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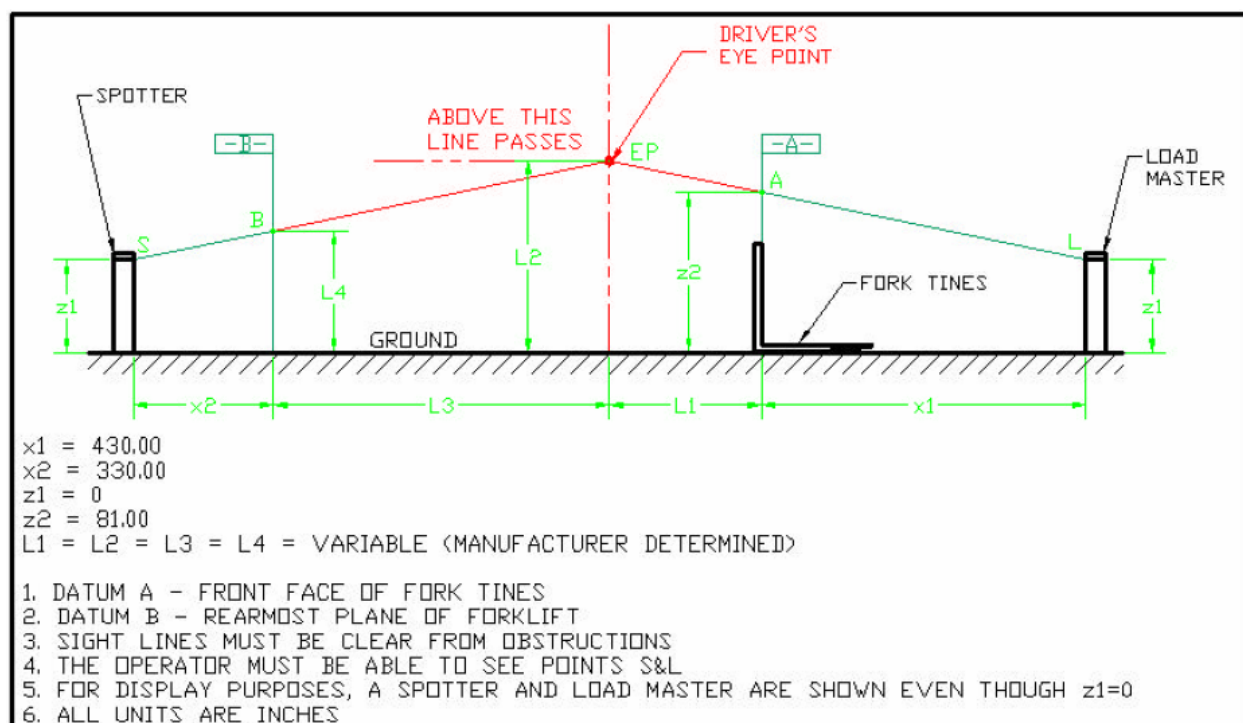


Figure 2. Visibility Criteria

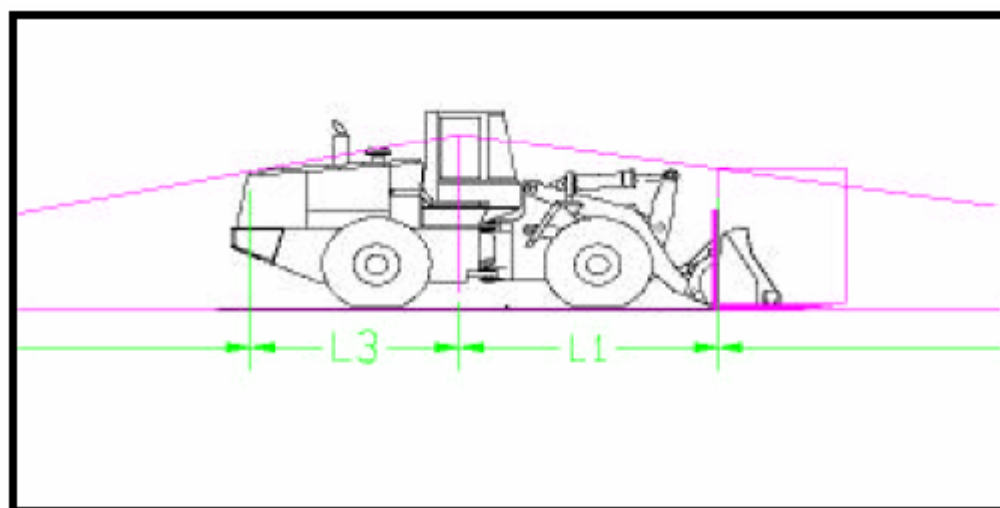


Figure 3. Visibility example

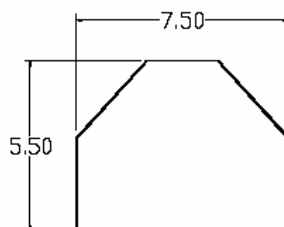


Figure 4. Parking Block cross-section

MIL-PRF-83812C

Custodian:  
Air Force – 99

Preparing activity:  
Air Force – 84

Agent:  
Air Force – 99

(Project 3930-2006-004)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <http://assist.daps.dla.mil>