

**SPECIFICATION
FOR
TRUCKS, FORKLIFT, ELECTRIC**

(This specification is released for procurement purposes until revised or rescinded.)

SCOPE

This specification covers the requirements for electric motor powered, industrial type forklift trucks from 3,000 to 8,000 pounds rated lift capacity at 24" load center. The forklifts covered may be used in indoor and occasionally outdoor applications over asphalt, concrete, and other smooth surfaces.

I. CLASSIFICATION

Eight classes of forklift are specified. Within each class, several user-specified options are allowed. These options are identified herein, under section VIII, ORDERING DATA. The requirements given below are minimum requirements except for right angle stack.

Class	Type	Lift Capacity At 24" Load Center (lbs)	Electric Motor (hp)	Right Angle Stack (in) ¹	Weight Without Battery (lbs)
1	Sit Down, 4-wheel, Electric	3,000	14	86	4,900
2	Sit Down, 4-wheel, Electric	5,000	10	90	6,300
3	Sit Down, 4-wheel, Electric	8,000	28	112	10,000
4	Sit Down, 3-wheel, Electric	3,000	6	76	6,000
5	Stand Up, 3-wheel, Electric	3,000	5	70	5,200
6	Stand Up, 3-wheel, Electric	5,000	9	80	6,200
7	Stand Up, Narrow Aisle Electric	3,000	7.5	70	4,900
8	Stand Up, Narrow Aisle Electric	4,000	7.5	80	4,900

¹ The value indicates the maximum allowable minimum right angle stack measured without a load and with zero tolerance on the aisle width.

II. APPLICABLE STANDARDS

The following documents shall form a part of this specification to the extent described herein under "Requirements." The issue or revision for the respective document which is in effect on date of bid opening shall apply, except where specifically otherwise called for.

ANSI/ITSDF B56.1 - Safety Standard for Low and High Lift Trucks

Federal Occupational Safety and Health Act Standards

NFPA 505 - Fire Safety Standard for Powered Industrial Trucks Including Type Designations, Areas of Use, Conversions, Maintenance, and Operations

State Occupational Safety and Health Act Standards

UL 583 - Standard for Safety Electric-Battery-Powered Industrial Trucks

ANSI/ITSDF standards may be obtained from:
Industrial Truck Standards Development Foundation
1750 K Street NW, Suite 460
Washington, DC 20009

Federal OSHA standards may be obtained from:
U.S. Department of Labor
200 Constitutional Avenue, NW
Washington, DC 20210

NFPA standards may be obtained from:
National Fire Protection Association
1 Batterymarch Park
Quincy, MA 02169-7471

State OSHA standards may be obtained from:
N.C. Department of Labor
4 West Edenton Street
Raleigh, NC 27611

UL standards may be obtained from:
Underwriters' Laboratories, Inc. (UL)
Publications Stock
333 Pfingsten Road
Northbrook, IL 60062

III. REQUIREMENTS

A. GENERAL

The lift truck shall be of conventional design and heavy duty construction. It shall be complete with the manufacturer's standard forks and all necessary operating accessories customarily furnished by the manufacturer.

1. Standard Product

The lift truck shall be essentially the standard product of the manufacturer, differing only in respects necessary to meet special requirements of this specification and the Invitation For

Bids. The component parts of the unit need not be products of the same manufacturer. The lift truck offered shall be a new, current production model.

2. Use Conditions

Design and construction shall be such that a fully charged lift truck will withstand continuous eight hour service without requiring a recharging of the battery until the end of the eight hour shift. This includes lifting and transporting capacity loads with forks and other special material handling attachments. Components, particularly of the electrical system, shall resist the harmful effects of dust and water.

3. Ease of Maintenance

The design of the lift truck shall permit ready accessibility for servicing, replacement, and adjustment of component parts and accessories, with minimum disturbance of other elements.

B. SAFETY

1. Occupational Safety and Health Act

The truck shall be furnished with all applicable equipment and accessories as required by the Occupational Safety and Health Act. The lift truck shall be designed not to exceed current OSHA requirements for noise at ear level of the seated operator for 8-hour exposure.

2. National Fire Protection Agency

The truck shall conform to the applicable requirements of NFPA 505.

3. Industrial Truck Standards Development Foundation

The truck shall conform to the applicable requirements of ANSI/ITSDF B56.1.

4. Underwriters' Laboratories

The truck shall conform to the applicable requirements of UL-583.

5. Protective Features

Provide skid resistant floor plates and steps for operator safety.

C. MOTOR

The truck shall be furnished with an electric motor with sufficient power and torque to meet the performance and operational requirements of this specification.

1. Electric Motor

Electric forklifts shall have 36 volt lead acid rechargeable battery unless otherwise stated in the Invitation For Bids. Drive motor and hydraulic motor shall be AC three-phase induction-type motor with fully sealed-for-life bearings. Motors shall be temperature rated with Class F insulation.

2. Electrical System

The battery shall be installed so as to absorb the shocks incurred during use of the truck. In addition, unless specified otherwise in the Invitation For Bids, the truck shall be provided with manufacturer's standard size battery(ies).

D. HYDRAULIC SYSTEM

Power for the hydraulic system shall be furnished by hydraulic pump(s), gear driven by the motor. The lift and tilt cylinders shall be hydraulically operated. The system shall be equipped with relief and bypass valves to provide protection from excessive overloading pressures. A replaceable oil filter to filter all of the hydraulic oil shall be included. The lift system shall incorporate a means of gradually lowering the load in case of failure of, or damage to, the hydraulic hose attached to the lift cylinder(s).

E. HYDRAULIC CONTROL VALVES

A three-function hydraulic control valve shall be furnished as a minimum to permit the easy addition of attachments later.

When hydraulically operated accessories are to be furnished with the truck (side shift attachment, bale clamps, etc.), the required control valve(s), hydraulic hoses, hose reel, connectors and all other necessary items to operate the attachment shall be furnished and installed.

F. CHASSIS AND FRAME

The frame and related structure shall be of integral, one piece, heavy steel plate welded construction with sections designed to resist distortion or permanent deformation caused by the stresses of handling capacity loads.

The frame shall be designed to withstand maximum stresses under normal operating conditions, and in addition, provide adequate support for attaching any device approved by the manufacturer for use in combination with the lift truck.

1. Mast and Carriage Assembly

Lift height shall be as stated in the Invitation For Bids. If free lift or a maximum lowered height are required, these shall be specified in the Invitation For Bids. The mast shall be of the roller telescopic type and designed to withstand, without deformation, the stresses induced by capacity loads. Adequate means shall be provided in the mast to compensate, by adjustment or replacement, for wear between sliding surfaces or lateral rolling contacts. The mast and carriage shall each have a suitable method of resisting thrust introduced by off-center loading. The mast shall have a minimum tilt angle of five (5) degrees forward and six (6) degrees backward.

2. Forks

Fork length shall be 42 inches unless otherwise stated in the Invitations For Bids. The forks shall be capable of withstanding, without permanent deformation, 300 percent of the rated load. They shall be Industrial Truck Association (ITA) hook mounted to the lift carriage, with lateral adjustment of the forks provided.

3. Load Backrest

A metal backrest, removable without disturbing any other component, shall be furnished. The backrest shall be manufacturer's standard height, width, and capacity, and of sufficient strength to prevent a rated load, 48" or less in height, from forcing the backrest against the uprights when the mast is at maximum rear tilt. The backrest shall be firmly attached to the lift carriage.

G. WHEELS AND TIRES

1. Wheels

The truck tires shall be mounted on steel, malleable or cast iron wheels, with tapered roller bearings. The wheel and tire assembly shall clear any part of the truck and mast structure by at least 1/4" under all conditions of operation.

2. Tires

Tires shall be of the industrial cushion type, unless otherwise specified in the Invitation For Bids. Where flat base rim wheels are involved, the tire shall be fitted to the rim in accordance with tire manufacturer's recommendations. On spilt wheels, the tires shall be secured to eliminate lateral or circumferential slippage. Tires shall be provided with "non-skid" treads.

H. STEERING

An automotive type steering wheel, mounted on a steering column, shall turn the steer wheels. Clockwise rotation of the steering wheel shall provide right hand turning of the truck when in forward motion. Manufacturer's current production power steering system shall be provided. Provision shall be made for lubrication of all friction points by easily accessible grease fittings. Steering shall be self-centering with no handwheel kickback.

I. BRAKES

1. Service Brakes

Service brakes shall be of the self-adjusting, regenerative type. They shall be in compliance with ANSI/ITSDF B56.1. The brake mechanism shall be easily accessible for servicing. The service brakes are to be operable with the motor off.

2. Parking Brake

The truck shall be equipped with an automatic parking brake activated when the operator leaves the seat or platform and which shall be in compliance with ANSI/ITSDF B56.1.

J. INSTRUMENT PANEL

The truck shall have an instrument panel convenient to and easily visible to the operator, and equipped with manufacturer's standard gauges and/or warning lights. At a minimum, the instrument panel shall include speedometer, battery discharge gauge, and hour meter.

K. OPERATOR'S SEAT

An operator's cushion seat with cushion backrest and adjustable forward and reverse (minimum of 4") shall be located within easy reach of all controls. Seat shall come equipped with a retractable seat belt. Forklift shall have a "dead man switch" which will shut off forklift if the operator leaves the seat.

Sit-down forklifts shall have the operator seat accessible from both the right and left side of the forklift.

L. CONTROLS

All switch and lever type controls shall be provided with position markings either at the switch or lever, or in the case of directional speed controls, on a diagram visible to the operator. Lift and tilt controls shall be self-centering lever(s) conveniently located for right hand operation.

M. HORN

The truck shall be equipped with a horn with a push button mounted on the center of the steering wheel.

N. LIGHTS

The truck shall be equipped with an industrial strobe light, headlights and turn signals.

O. BACKUP ALARM

The truck shall be equipped with a visual and audible reverse warning signal.

P. PERFORMANCE

1. Lifting and Lowering Speeds

Speed of lift with rated capacity load on the forks shall not be less than 75 feet per minute (FPM) over the entire distance from ground level to maximum fork height. Speed of lowering forks with rated capacity load should not exceed 120 FPM.

2. Gradeability

Truck shall be capable of ascending a 14% grade on a dry concrete surface, with and without rated load. Trucks shall be able to accelerate from a dead stop when carrying rated load.

Q. ACCESSORIES

1. Overhead Guard

A driver's overhead guard, fabricated from steel bars or tubing, shall be installed on the truck. A minimum of 39" from top of operator's seat to underside of guard shall be provided. Guard design shall not interfere with operation of the truck, nor with normal movements of the operator when entering, leaving, or operating the truck.

2. Side Shift Attachment

If specified in the Invitation For Bids, the truck shall be equipped with a side shift attachment. The side shift shall be hydraulically operated to move forks at least 4" either side of center with capacity load. Controls for the side shift operation shall be located for convenient right hand operation.

R. PAINT

The truck shall be painted manufacturer's standard color(s) over a proper rust prohibitive primer.

S. ENGLISH REQUIREMENT

All written documentation including safety placards, manuals, labels, and other such written communication on or about this equipment shall be supplied in at least English.

IV. WARRANTY

The contractor warrants to the owner that the truck furnished under this specification will be new and of good material and workmanship and agrees to replace promptly any part or parts which by reason of defective material or workmanship shall fail under normal use, free of negligence or accident, for a minimum period of 12 months or 2,000 hours (whichever occurs first) from date of acceptance. Such replacement shall include all parts, labor, and travel to user's facility and be free of any charge to the owner or his representative.

V. SERVICE, PARTS, AND MANUALS

Unless otherwise stated in the Invitation For Bids, one (1) operator's manual, one (1) service manual, and one (1) parts book shall be furnished with each lift truck.

The successful bidder shall provide at user's site complete instruction covering all aspects of safe and proper operation of the delivered lift truck and its complete routine maintenance. This instruction is to be provided to all the user's forklift truck operators, and is to be presented upon delivery of the truck unless otherwise scheduled by the user. Instruction period is to be for a minimum of two (2) hours, and all costs therefore are to be included in the bid price.

VI. ACCEPTANCE EVALUATION AND QUALITY ASSURANCE

The inspection procedure and acceptance criteria shall be as specified in the Invitation For Bids.

VII. DELIVERY AND PAYMENT

Delivery of and payment for trucks under this specification shall be in accordance with the terms and conditions of the Invitation For Bids. The contractor shall be responsible for any packing, packaging, or protection required to insure delivery in an undamaged condition.

VIII. ORDERING DATA

Purchasers should exercise any desired option offered herein and should state the following in the Requisition and Invitation For Bids:

1. Title, number, and date of this specification
2. Class
3. Specify 48V system, if additional power is required
4. Forklift lift height (min.)
5. Overall forklift height with forks lowered and width (max.) for entryway access (must be documented)
6. Collapsed mast height (max.), if critical for intended use
7. Free lift height (min.), if required
8. Underclearance beneath mast assembly loaded (min.), if critical for intended use
9. Fork length, if other than specified
10. Solid pneumatic, or pneumatic tires, if required
11. Side shift attachment, if desired. (See Item III. E.)
12. Special attachments: bale clamps, paper roll clamps, squeeze clamps, etc. (See Item III. E.)
13. If other than manufacturer's standard alternator and battery is required.
14. If other than manufacturer's standard gauges and warning lights are required.
15. If other than manufacturer's standard backrest is required.
16. Inspection requirements
17. Additional lights or alarms, if required
18. Padlocked fuel caps, if required
19. Fire extinguisher, if required

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