

EASTERN MICHIGAN UNIVERSITY™

POWERED INDUSTRIAL TRUCKS PROGRAM



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November 1995

EASTERN MICHIGAN UNIVERSITY

POWERED INDUSTRIAL TRUCKS PROGRAM

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EASTERN MICHIGAN UNIVERSITY POWERED INDUSTRIAL TRUCKS PROGRAM

PURPOSE

Eastern Michigan University's Powered Industrial Truck Program has been written to achieve compliance with the Michigan Department of Labor Part 21 Powered industrial Trucks standard. This standard provides the minimum safety rules for the care and use of powered industrial trucks and provides for operator safety and equipment specifications.

SCOPE & APPLICATION

All Eastern Michigan University departments using powered industrial trucks are required to comply with these procedures. This includes but is not limited to Physical Plant, Athletics, Industrial Technology, and University Stores.

DEFINITIONS

Liquid Petroleum Gas Cylinder – American Society of Mechanical Engineers (ASME) type fuel container for liquefied petroleum gas made and inspected under the ASME Boiler and Pressure Vessel Code.

Attachment – Device, other than conventional forks or load backrest extension, mounted, permanently or removable on the elevating mechanism of a truck for handling the load. Popular attachments are fork extensions, clamps, rotating devices, side shifters, load stabilizers, rams and booms.

Cantilever Truck – self-loading counter-balanced or non-counterbalanced truck equipped with cantilever load engaging means. (Appendix, Fig.1).

Capacity – When referring to trucks means:

* The capacity of a truck equipped with a load carriage and forks, or with attachments, is the maximum weight in pounds, at a specific load center which the truck, based on the strength of its various components and applicable stability, can lift to the maximum elevation of the load engaging means. Alternate capacities may be established at the same specified load center and at less than maximum elevation of the load engaging means.

* The capacity of a truck equipped with a platform is the maximum weight in pounds, at a specified load center which the truck, based on the strength of its various components, can lift to the maximum elevation of the load engaging means.

Carriage – a support structure for forks or attachments, generally roller mounted, traveling vertically within the mast of a cantilever truck.

Center Control Truck – a truck in which the operator's control position is located near the longitudinal center of the truck.

Counterbalanced Truck – a truck equipped with load engaging means wherein the whole load during normal transporting is external to the polygon formed by the wheel contacts. (Appendix, Fig. 1)

Department of Transportation type LP cylinder – fuel container for liquefied petroleum gas made and inspected under Department of Transportation regulations.

Drift – to move without control.

Electric Truck – a truck in which the principal energy is transmitted to motors in the form of electricity from a power source such as, but not limited to a battery or motor generator.

End-Control Truck – a truck in which the operator's position is located at the end opposite the load.

Fixed Platform Truck – a truck equipped with a load platform which is non-elevating.

Forks – horizontal tine-like projections, normally suspended from the carriage, for engaging and supporting loads.

Fork Height – the vertical distance from the floor to the load carrying surface adjacent to the heel of the forks with mast vertical, and in the case of a reach truck, with the forks extended.

Fork-lift Truck – a high-lift self-loading truck equipped with load carriage and forks for transporting and tiering loads.

Free Play – an uncontrolled movement.

High-lift Truck – a self-loading truck equipped with an elevating mechanism designed to permit tiering. Popular types are high-lift fork trucks, high-lift ram trucks, high-lift boom trucks, high-lift clamp trucks and high-lift platform trucks. (Appendix, Fig.1)

High Platform Truck – a self-loading truck equipped with a load platform, intended primarily for transporting and tiering loaded skid platforms. (Appendix, Fig. 2).

Industrial Tractor – designed primarily to draw 1 or more non-powered trucks, trailers or other mobile loads. (Appendix, Fig. 5).

Internal Combustion Engine Truck – a truck in which the power source is a gas, LP gas, gasoline or diesel type engine.

Issuing Authority – an employer or his designated representative who instructed and trained the operator.

Liquefied Petroleum Gas (LP gas) – fuel which is composed predominately of any of the following hydrocarbons, or mixtures of them: propane, propylene, butanes (normal butane or iso-butane) and butylenes.

Load-axle – The truck axle nearest the load.

Load backrest extension – a device extending vertically from the fork carriage frame.

Load Center – the horizontal longitudinal distance from the intersection of the horizontal loading-carrying surface and vertical load-engaging faces of the forks, or equivalent load positioning structure, to the center of gravity of the load.

Load Engaging means – a load handling device attached to a powered industrial truck for the purpose of handling a load.

Low-Lift Truck – a self-loading truck equipped with an elevating mechanism designed to raise the load sufficiently to permit horizontal movement. Popular types are low-lift platforms trucks and pallet trucks. (Appendix, Fig. 3).

Lift Platform Truck – a self-loading truck equipped with a load platform intended primarily for transporting loaded skid platforms. (Appendix, Fig. 3).

Mast – a support member providing the guideways permitting vertical movement of the carriage. It is usually constructed in the form of channels of similar sections providing the supporting pathway for the carriage rollers.

Motorized Hand Truck – designed to be controlled by a walking operator and used to lift, tow, carry, stock and tier materials. (Appendix Fig.4)

Motorized Hand or Rider Truck – a dual purpose truck designed to be controlled by a walking operator or by a riding operator, (Appendix, Fig. 6).

Narrow Aisle Truck – a self-loading truck primarily intended for right angle stacking in aisles narrower than those normally required by counterbalanced trucks of the same capacity. (Appendix, Fig. 10)

Non-Elevating Truck – a non-counterbalanced truck designed primarily for burden-carrying and not capable of self-loading.

Operator – an employee who has been trained, tested, and authorized by the present employer to operate a powered industrial truck.

Order Picker Truck, High-Lift – a high lift truck controlled by the operator stationed on a movable platform with the load engaging means and intended for manual stock selection. The truck may be capable of self-loading or tiering of both. (Appendix, Fig.9).

Overhead Guard – a framework fitted to a truck over the head of a riding operator.

Overall Lowered Mast Height - the maximum vertical dimension from the ground or floor to the extreme top point of the mast with the fork carriage in the fully lowered position and unloaded.

Pallet Truck – a self-loading low-lift truck equipped with wheeled forks of dimensions to go under a single faced pallet or between the top and bottom boards of a double faced pallet and having wheels capable of lowering into spaces between the bottom boards so as to raise the pallet off the floor for transportation. (Appendix, Fig. 4).

Parking Brake – a device to prevent the movement of a stationary truck.

Powered Industrial Truck or Truck – a mobile, power driven vehicle used to carry, push, pull, lift, stack, or tier material.

Reach Truck – a self-loading truck, generally high-lift, having load engaging means mounted so the means can be extended forwardly under control to permit a load to be picked up and deposited in the extended position and transported in the retracted position. (Appendix, Fig. 7).

Self-Loading – the capability of a truck to pick up, carry, set down and, in the case of high-lift types to stack or tier its load without the aid of external means.

Service Brake – device designed to bring a moving truck to a halt.

Side Loader – a self-loading truck, generally high-lift, having load engaging means mounted in such a manner that the means can be extended laterally under control to permit a load to be picked up and deposited in the extended position and transported in the retracted position. (Appendix, Fig. 8).

Straddle Truck – a general class of cantilever truck with horizontal structural wheel supported members extending forward from the main body of the truck generally high-lift, for picking up and hauling loads between its outrigger arms. (Appendix, Fig. 10).

Tire – standard solid, cushion solid, pneumatic or solid pneumatic style tire.

Tiering – a process of placing a load on or above another load.

Unattended Truck – a truck beyond the vision or more than 25 feet from the operator, whichever is less.

RESPONSIBILITIES

Supervisor...

OPERATOR SELECTION

An employee assigned to operate a powered industrial truck shall meet the following minimum requirements, except as noted below:

- Have corrected vision that meets the same requirements as those for a valid Michigan driver's license. Evidence of meeting this requirement shall be a Michigan driver's license or a doctor's certificate.
- Have effective use of all 4 limbs, unless the powered industrial truck has been modified, as prescribed in modifications, to permit operation with fewer than 4 limbs. A prosthetic device is considered a limb when capable of being used to effectively operate controls.
- Be of a height sufficient to operate the controls and to have an unobstructed view over the controls and dashboard.
- Have coordination between eyes, hands, and feet.
- Have freedom from known convulsive disorders and episodes of unconsciousness for a period of 1 year prior to obtaining a powered industrial truck operator's permit or a lesser time with the assurance from a neurologist that the disorders or episodes are under control.
- Have the ability to understand signs, labels, and instructions.

An employee assigned to operate a powered industrial truck shall meet the minimum requirements stated in this rule and shall be retested not less than every 3 years.

The requirements for effective use of all 4 limbs, height sufficient to operate the controls and dash, hand, eye, and feet coordination, and retesting at least every 3 years are optional for operators of a motorized hand low lift truck.

An employee who was operating a powered industrial truck prior to November 9th, 1972, but does not meet the requirements of the subdivisions for corrective lenses, effective use of all 4 limbs, sufficient height to have an unobstructed view over the controls and dash, hand, eye, and feet coordination, and retesting at least every 3 years, may be continued as an operator if the handicap or inability does not prove detrimental to the assigned task.

Training

Supervisors shall provide training to the employee prior to the employee's assignment as an operator of a powered industrial truck. Instruction shall include:

- Capabilities of the equipment and attachments.
- Purpose use and limitations of controls.
- How to make daily checks.
- Practice and operating assigned vehicles through their functions necessary to perform the required job.
- The state safety standards listed in this program under employee responsibilities.

Testing

Supervisors shall test an employee before authorizing the employee to operate a powered industrial truck, except a motorized hand truck. The test shall check the employees:

- Operating ability
- Knowledge of the equipment
- Knowledge of state safety standard rules, listed under employee responsibilities
- Knowledge of daily checks

A performance test shall be given to determine whether or not the employee can operate the assigned powered industrial truck through the functions necessary to perform the required work.

Eastern Michigan University will use the Department of Labor's Powered Industrial Truck testing manual. See Appendices.

An employee who has a valid permit to operate a powered industrial truck, issued by another employer, must complete EMU's training program.

Permits

Supervisors shall provide the employee with a permit to operate a powered industrial truck only after meeting the requirements prescribed in operator selection Training and testing.

A permit is optional for operators of motorized hand low lift trucks. An employee being trained is expected from the permit requirement for a period of not more than 30 days, provided the employee is under the observation of an instructor.

A permit shall be carried by the operator or be available upon request by a department representative at all times during working hours.

A permit shall indicate the type of truck an operator has been trained on and is qualified to operate.

A permit to operate a powered industrial truck shall be valid only with the employer who issued the permit, and the permit shall be issued for a period of not more than 3 years.

A permit shall contain the following information (see sample permit):

- Firm Name
- Operator's name
- Operator I.D. number, if any.
- Name of issuing authority.
- Type of truck authorized to operate.
- Operator's restrictions, if any.
- Date issued
- Date Expiring

If a restriction permit to operate is issued the permit shall state the nature of the restriction. An example permit can be found in the Appendices.

Use Restrictions

Except as stated below, a powered industrial truck shall not be used in an environment containing:

- Gases or vapors, such as but not limited to acetylene, hydrogen, oxygen, ether, gasoline, naphtha or acetone, which may be present in quantities sufficient to produce an explosive or ignitable mixture.
- Combustible mixtures of dust such as, but not limited to, metal dust, coal dust, coke dust, grain dust, flour dust, or organic dust.
- Ignitable fibers such as, but not limited to, baled waste, cocoa fiber, cotton, excelsior, kapok or oakum.

A powered industrial truck used in a hazardous environment shall be equipped as prescribed in the National Fire Protections Association Standard, 505-1969, Type Designations, Areas of Use, Maintenance and Operation of Powered Industrial Products.

Mechanical Condition & Maintenance

Supervisors shall not permit a powered industrial truck to be used if:

- The service and parking brakes do not perform their intended function.
- The fuel system leaks

- A lift cylinder of a load engaging means a downward drift of the load engaging means loaded or unloaded in excess of 5 inches in 5 minutes.
- A tilt cylinder of a mast allows a forward drift of the mast in excess of 2 degrees in 5 minutes with the mast in a vertical position and a capacity load on the fork of load engaging means.
- The steering mechanism allows free play of the steering wheel of more than ¼ turn on trucks capable of speeds up to 8 miles per hour and more than 1/8 turn on trucks capable of speeds of over 8 miles per hour.
- A hydraulic system leaks and creates a hazard for an employee and equipment area.

Repairs to a fuel and ignition system which involve a fire hazard shall be made only in a designated location. Repairs shall not be made in a location made hazardous by:

- Flammable gases or vapors
- Combustible dusts
- Ignitable fibers.

Repairs to the truck electrical system shall be made only after the battery has been disconnected.

A replacement part shall have not less than the equivalent safety of the original part.

A water muffler shall have the water maintained at not less than 75% of capacity. A water muffler equipped with a screen shall have the screen maintained to accomplish its intended purpose. When an exhaust system of this type emits sparks or flames, the truck shall be removed from service and repaired.

A truck running in excess of normal operating temperature which creates a hazardous condition shall be removed from service and repaired.

A truck shall be maintained in a condition, reasonably free of lint, excess oil and grease. Solvent with a flash point of less than 100 degrees Fahrenheit shall not be used to clean the truck. Precautions regarding ventilation, fire and toxicity shall be observed when using a cleaning agent.

A truck approved for use of 1 type of fuel may be converted to another type of fuel if the conversion qualifies the truck to its new designation, such as GS, LP or LPS. Only approved parts shall be used. The conversion shall be made only with the written approval of the manufacturer.

All repairs shall be made by authorized personnel.

Blocks & Safety Stands For Maintenance

Supervisors shall ensure the following are being provided:

- Chock blocks, support blocks, or jack stand for the maintenance department's use when repairing powered industrial trucks or their components
- Blocks or safety stands as a means of support for powered truck industrial trucks elevated from the floor by a hoist or chain fall.
- When repairing a powered industrial truck, an employee shall use chock blocks, support blocks, or jack stands if there is a hazard from movement.
- An employee shall not place his or her body under a powered industrial truck unless the powered Industrial truck is supported by properly arranged blocks or jack stand capable, in total, of supporting a minimum of 1 and ½ times the weight of the component of the truck to be repaired.

FUEL

Supervisors shall provide safety fuel cans where trucks are refueled with gasoline at other than a gas pump area.

The University shall provide a special area for refueling not less than 25 feet from the source of open flame or spark and these shall be posted to this effect.

Use and storage of LP gas shall be as specified by the Michigan General Industry Safety Standard Part 56 Storage and Handling of Liquefied Petroleum Gases.

Handling and storage of fuel, such as gasoline and diesel fuel, shall be prescribed by the Michigan General Industry Safety Standard Part 75 Flammable and Combustible liquids.

Smoking while refueling is prohibited.

The fuel level shall not be checked by use of an open flame.

Electric Trucks

Where electric trucks are used, the University shall provide a designated area for battery changing, charging of both which shall be performed by a trained and authorized employee.

Provisions shall be made in a battery charging area where batteries are removed from the truck for flushing and neutralization of spillage, for fire protection and for air movement sufficient to disperse fumes from gassing batteries.

Smoking and other sources of ignition are prohibited in these areas.

A truck shall be positioned and the brake applied before changing or charging a battery. A reinstalled battery shall be positioned and secured before releasing the truck for use.

Material handling equipment, such as, but not limited to, a conveyor or overhead hoist, shall be used for removing and replacing a battery. A spreader bar or an equivalent device shall be used with any overhead battery hoist so that the lifting stresses are vertical. A chain type powered battery hoist shall have a container to accumulate the excess lifting chain. When a hand hoist is used, an uncovered battery shall be covered to prevent the hand chain from shorting on cell connections or terminals. Tools and other metallic objects shall be kept away from the terminals.

When mixing electrolyte for battery, carboy tilter or siphon shall be provided handling electrolytes. Acid concentrate shall be poured into water; water shall not be poured into acid concentrate.

When charging a battery:

- The vent cap shall be kept in place and functioning.
- The battery or compartment covers, where provided, shall be kept open to dissipate heat and gases.

The electrolyte level shall not be checked with an open flame.

Dockboard & Plates

Supervisors shall provide dockboards and plates designed to carry the load imposed on them. The carrying capacity shall be marked on a dockboard or plate purchased after January 15th, 1971.

The dockboard or plates shall be secured in position, either by being anchored or equipped with devices which will prevent its slipping out of position.

Hand holds, or other effective means, shall be provided to permit safe handling. Where a fork truck is used, fork loops, pockets or lugs shall be provided for safe handling.

A dockboard or plate shall have a slip-resistant surface, such as but not limited to a tread plate, designed to reduce the possibility of slipping by an employee or truck. A dockboard or plate shall be designed and maintained so the end edges will have a sufficient contact with the dock or loading platform and the carrier to prevent the dockboard or plate from rocking or sliding out of position.

A portable dockboard or plate used by a powered industrial truck to bridge an opening in excess of 18 inches shall have curbs. The height of the curb on a dockboard or plate used by a powered industrial truck with solid or cushion tires shall be not less than 15% of the diameter of the largest tire of the truck, however, the maximum curb height need not exceed 3 inches.

Order Picker Trucks, High-Lift Platforms...

Whenever an order picker truck, high-lift is equipped with vertical only or vertical and horizontal controls traveling with the lifting carriage or forks for lifting an employee, the supervisor shall assure the following are provided:

- A platform equipped with railing or other limiting device, including but not limited to a chain, strap or tether.
- A control device whereby the employee on the platform can shut off the power to the truck.
- Protection from falling objects as indicated necessary by the operating conditions.

Forklift Truck Platforms

An employee shall not be lifted or transported except when a platform is attached to the forks by enclosed sleeves, a safety chain or a mechanical device in such a manner that the platform cannot tip or slip.

A platform shall be equipped with a railing not less than 36 inches of more than 42 inches high and a toeboard. The railing shall consist of one of the following materials:

- Wood posts of at least 2x4 inches nominal stock; the top rail shall be made of two right angle pieces of not less than 1x4 inch nominal stock and an intermediate rail of 1x4 inch nominal stock.
- Steel or aluminum pipe post and rails of not less than one inch inside diameter and an intermediate rail of $\frac{3}{4}$ inch inside diameter pipe.
- Structural steel or aluminum post, rails and intermediate rail of angle iron of not less than 1x1x3/16 inch size of other shapes of equal strength.

The intermediate rail may be omitted from one side.

A toeboard shall be made of not less than 1 inch x 4 inches nominal wood stock of a material of equal strength.

Load Backrest Extensions

A certified load backrest extension, shall be used whenever necessary to minimize the possibility of a load, or part of it, falling rearward.

Spinner Knobs

A spinner knob shall not be attached to a steering handwheel of a truck unless originally equipped with such; the truck is equipped with power steering; or is equipped with an anti-kickback device on the steering mechanism. The knob shall be installed within the periphery of the handwheel.

Employee...

Daily Checks

At the start of each shift, the operator of a powered industrial truck or a qualified employee shall perform daily checks of the equipment as required by this program. Any defects affecting the safe operation of the equipment shall be repaired before use. An operator shall promptly report any defect on the powered industrial truck to the supervisor.

General Operating Procedures

An operator shall safeguard other employees at all times.

An operator shall not drive a truck up to anyone who is standing in front of a bench or fixed object.

An operator shall not allow anyone to stand or pass under the elevated portion of any powered industrial truck, whether loaded or empty.

No employee except the operator shall ride on a powered industrial truck unless the truck is provided with a passenger seat. Passenger seats on a fork lift truck shall be under the overhead guard.

An operator shall not put his or her arms or legs between the uprights of the mast or outside the running lines of a moving truck.

Parking

When leaving a powered industrial truck unattended, an operator shall fully lower the forks flat to the floor, neutralize the controls, set the brakes and shut the power off.

Whenever it is necessary to leave a truck on an incline, the truck wheels shall be blocked and the steering wheels turned toward curbing, wall or railing.

Loading Trucks & Trailers

When being boarded by a powered industrial truck, a highway truck and trailer shall have their brakes set & not less than 2 rear wheels blocked or be restrained by other mechanical means installed in a manner that will hold the trailer from movement.

The landing gear of all semitrailers shall be visually inspected immediately before the trailer is uncoupled from the tractor to assure its ability to support the imposed load.

A semitrailer less than 30 feet in length, when not coupled to a tractor and being loaded or unloaded with a powered industrial truck, shall be provided a support capable of sustaining the load at the front.

The flooring of trucks, and trailers shall be checked for breaks and weaknesses before they are driven onto.

Surveying Path of Travel

Before moving or stacking, an operator shall survey the path of travel to avoid obstacles, such as, but not limited to, pipes, light fixtures, and sprinkler systems. A safe distance shall be maintained from the edges of ramps or platforms while on an elevated dock.

Operations in Hazardous Areas

When operating a powered industrial truck in a hazardous area, only a truck specifically equipped for such an operation shall be used. See use restrictions.

Reporting Accidents

A powered industrial truck operator shall report all accidents, injuries, and near misses to their supervisors.

Clear Access

An operator shall maintain clear access of fire aisles, stairways and fire equipment when depositing loads.

Making Repairs

Operators shall not make any repairs or adjustments unless specifically authorized.

Flammables

A fuel tank shall not be filled while the engine is running. Spilled fuel shall be properly cleaned and disposed. The fuel tank cap replaced before restarting the engine.

CERTIFICATION

A powered industrial truck manufactured after the effective date of this part (January 5th, 1971) shall be certified by the manufacturer that the truck covered by this part has been produced according to the mandatory requirements of sections 3 and 4, except subsection 421 of section 4, of the American National Standards Institute USA B56.1-1969, Safety Standard for Powered Industrial Trucks.

APPROVED LABELS

A powered industrial truck which has been accepted by an approved testing laboratory shall bear a label of marking indicating such acceptance.

A nameplate, label or tag provided on such a truck shall be maintained in place and in legible condition.

EQUIPMENT

Warning Devices & Lights

A truck, except a motorized hand truck, shall be equipped with an audible device to warn of approach.

A truck used in areas where general lighting is less than 2 foot-candles shall be equipped with auxiliary lights to illuminate work in process.

Modifications

An additional counterweight not be installed by the University without written assurance from the truck manufacturer that the stability of the truck will not deviate from rule 406 of section 4 of the American National Standards Institute Standard B56.1-1969.

Other modifications affecting capacity or safety shall not be made without written approval of the manufacturer or an engineer knowledgeable on the subject. Capacity, operation, and maintenance instruction plates, tags, or decals shall be changed accordingly.

If the truck is equipped with front end attachments, the name plate shall be marked to:

- Identify the attachments
- Show the approximate weight of the truck and attachment
- Show the load capacity of the truck and attachment combination at maximum elevation of the load engaging means with load laterally centered.

Parking Brakes

The parking brake on a sit-down rider truck shall be capable of holding the truck on the maximum grade which the truck can negotiate with rated load, or on a 15% grade, whichever is lesser. The parking brake shall be manually or automatically applied and shall remain applied until released by the operator.

Tires

Tires shall be used as recommended by the truck manufacturer.

Operator Platforms

An end control, reach, narrow aisle, order picker high-lift, order picking and stacking, and motorized hand rider truck shall be equipped with a platform extended beyond the operators' position, and shall withstand a compression load equal to the weight of the loaded vehicle applied along the longitudinal axis of the truck with the outermost projection of the platform against a flat vertical surface. The back protective guard where provided shall permit rapid and unobstructed ingress of egress from the platform.

On a double end control baggage type truck or a truck which may be transported on short elevators, means should be provided to prevent accidental folding of the operator's folding platform.

On an order picker truck, high-lift:

- A removable operator platform shall be provided with a device that attaches the platform to the lifting means.

- The operator platform shall be equipped with side guard rails.
- When the platform is elevated, the horizontal travel speed of the truck shall be automatically reduced to a degree necessary to maintain stability under maximum braking load and turning.
- The removable operator platform attachment and travel speed requirements pertain only to a truck ordered after January 15, 1971.

Steering Control

Except on motorized hand and motorized hand or rider truck, the steering control on a powered industrial truck shall be confined within the plane view outline of the truck, or guarded to prevent injury to the operator during movement of the controls when passing an obstacle such as a wall, post, equipment, box or another truck.

On a motorized hand and motorized hand or rider truck, the steering handle shall be provided with a guard or device to protect the operator's hands from injury when passing an obstacle such as a wall, post, equipment box or another truck.

Load Handling Controls, General

A load handling control on a truck shall be:

- Located for right hand operation.
- A single lever may be used to perform more than 1 function. Pushbutton or pre-selected controls shall be properly identified.
- Clearly and durably identified to indicate function and direction of motion of load or equipment.
- Self-centering

Load Handling Controls: Direction of Motion & Guards

A lever or handle type control, including a toggle switch, shall be in accordance with the following table:

| Function | Of Load or Equipment | Of the Operator's Hand When Actuating the Control Handle While Facing the Load |
|-----------------------|-----------------------------|---|
| Hoist | Up | Rearward or Up |
| | Down | Forward or Down |
| Tilt | Rearward | *Rearward or Up |
| | Forward | Forward or Down |
| Reach | Retract | *Rearward |
| | Extend | Forward |
| Clamp | Clamp | Rearward or Up |
| | Release | Forward or Down |
| Side Shift | Right | Rearward or Up |
| | Left | Forward or Down |
| Rotate Laterally | Clockwise | Rearward or Up |
| | Counter-clockwise | Forward or Down |
| Rotate Longitudinally | Rearward | *Rearward or Up |
| | Forward | Forward or Down |

** The sense of rotation of the control handle is intended to be in the same direction as the desired motion of the mast of load.*

Moving parts that represent a hazard from the operator's position shall be protected by suitable guards.

A powered industrial truck manufactured before January 15th, 1971 is exempt from the load handling controls being located for right hand operation, self-centering and load handling controls direction of motion and guards requirements.

Overhead Guard On High-Lift Trucks

A high-lift truck shall be fitted with an overhead guard unless the exceptions listed below are met. The overhead guard shall be capable of supporting a uniformly distributed static load in accordance with the following table. The overhead guard is not intended to withstand the impact of a falling capacity load.

| Truck Capacity Rating (lbs.) | Static Test Load as a % of Truck Capacity Rating |
|-------------------------------------|---|
| Through 5,000 | 200% of truck rating |
| Over 5,000 through 10,000 | 10,000 + 100% of increment rating over 5,000 |
| Over 10,000 through 20,000 | 15,000 + 50% increment rating over 10,000 |

An overhead guard may be omitted from a high-lift truck if the truck is never used to lift or raise material or objects more than 72 inches measured from the floor to the forks and if all of the following are complied with:

- The load is limited to a single rack or pallet.
- The truck is not operated in an area where material or objects are stacked above the operator's head.
- A sign with lettering not less than 112-inch high is securely attached in the area of the operator's controls stating, "This truck shall not be used to lift materials above the operators head or in an area where materials are stacked above the operator's head."

A low-lift rider truck which is used to lift material stacked higher than the head of the operator, and would likely vibrate and fall back onto the operator, shall be provided with an overhead guard.

The overhead guard shall be capable of withstanding the impact of a 100-pound solid hardwood cube or equivalent, dropped a distance of 5 feet 10 times, without failure or without permanent deflection exceeding $\frac{3}{4}$ inch.

The overhead guard shall be constructed in a manner that does not interfere with visibility. Openings in the top shall not exceed 6 inches in 1 of the 2 dimensions, width or length. The guard shall be large enough to extend over the operator under all normal circumstances of truck operation, including forward tilt.

A fork truck equipped with a single-tilt cylinder shall be made to avoid injury to the operator by the overhead guard resulting from failure of this cylinder or associated parts.

On a truck where the operator is seated, a vertical clearance of not less than 39 inches should be

maintained from the point of maximum depression of the seat under the operator to the underside of the section of the overhead guard under which the operator's head moves during normal operation.

On a powered industrial truck where the operator stands on a platform, a vertical clearance of not less than 74 inches should be maintained from the platform to the underside of the section of the overhead guard under which the operator's head moves during normal operation.

Where headroom conditions limit the overall lowered height of the truck, a normal overhead guard height may be reduced.

An overhead guard is intended to offer protection from the impact of small packages, boxes, and bagged material representative of the job application, but not to withstand the impact of a falling capacity load.

Moving Trucks

Operation

An operator shall operate a powered industrial truck according to the rules of this program and in accordance with local traffic rules when on a public road.

When following another truck, a safe distance shall be maintained, approximately 3 truck lengths from the vehicle ahead and the vehicle shall be kept under control at all times.

An operator shall give the right of way to ambulances, fire trucks, or other emergency vehicles.

An operator of a rider-type powered industrial truck shall not pass another truck traveling in the same direction at intersections, blind spots, or other dangerous locations.

An operator shall cross railroad tracks diagonally whenever possible and shall not park closer than 8 ½ feet from the center of a railroad track.

Slow Down at Crossing & Obstructions

An operator shall slow down and sound the warning device at cross aisles and other locations where the operator's vision is obstructed by fixed objects.

Clear View

An operator shall look in the direction of and keep a clear view of the direction of travel. When moving loads blocking the forward visibility, the operator shall drive the truck with the load trailing.

Ascending & Descending Grades

An operator shall ascend and descend grades of 10% or more at a speed of not more than 2 miles per hour.

When ascending or descending a grade that exceeds the back-tilt of the mast, the load shall be facing upgrade.

On all grades, unloaded trucks shall be driven with the load engaging means downgrade, tilted back and raised only as far as necessary to clear the floor or road surface.

Traveling

In level areas an operator shall travel with the load engaging means elevated only sufficiently to clear obstacles on the floor or roadway.

Starts, Stops & Turns

Starts, stops and turns shall be made in a manner to prevent a load from shifting or overturning the truck.

Horseplay

Stunt driving and horseplay shall not be permitted.

Wet Floors, Dockboards, and Bridgeplates

An operator shall drive at a slow speed over wet or slippery floors.

Before driving over a dockboard or bridgeplate, an operator shall verify the dockboard or bridgeplate is secured.

Entering Elevators

An operator shall drive onto elevators only when authorized to do so.

An elevator shall be entered squarely after it is leveled to the floor. Once on the elevator, an operator shall neutralize the controls, set the brakes and shut off the power.

Motorized hand trucks shall enter an elevator and other confined areas with the load end forward.

A truck shall not enter an elevator if the combined weight of the load and truck exceeds the capacity of the elevator.

Running Over Loose Objects

An operator of a truck shall avoid running over loose objects.

LOADING SAFETY

Operator's Loading Rules

An operator shall:

- Operate a truck equipped with attachments as a partially loaded truck when not transporting a load.
- When loading a forklift truck, place the load engaging means under the load as far as possible and tilt the mast backwards to cradle the load.

- Exercise caution when tilting loads especially when they are segmented.
- Lift or transport only a load that is within the rated capacity of the truck.
- Lift or transport only a load that cannot fall out of a basket or container, or off the load engaging means during the normal movements of the truck.
- Tilt an elevated load forward only when in a deposit position over or stack.

Types of Trucks

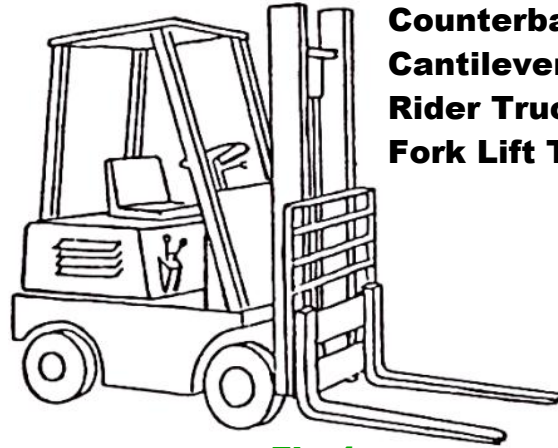


Fig.1
High-Lift Truck
Counterbalanced Truck
Cantilever Truck
Rider Truck
Fork Lift Truck

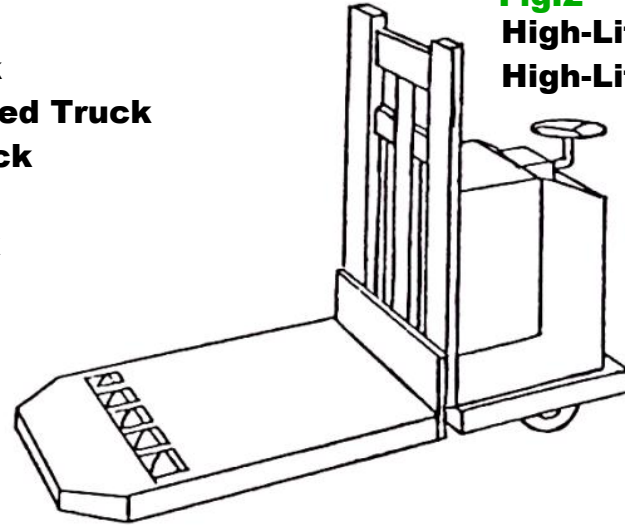


Fig.2
High-Lift Truck
High-Lift Platform Truck

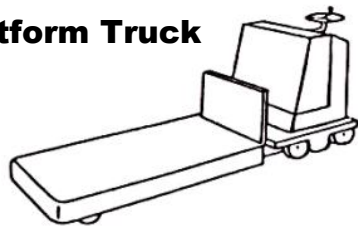


Fig.3
Low-Lift Truck
Low-Lift Platform Truck

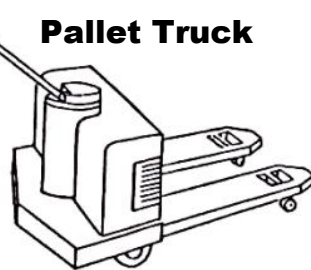


Fig.4
Motorized Hand Truck
Pallet Truck

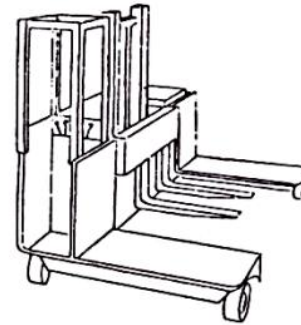


Fig.8
Side-Loader Truck

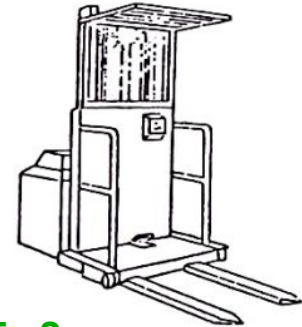


Fig.9
Order Picker Truck High-Lift

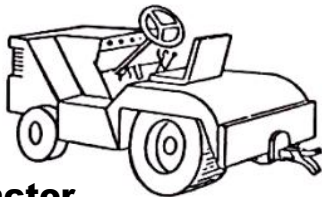


Fig.5
Industrial Tractor

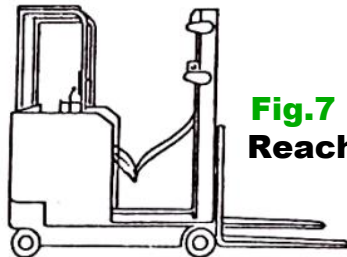


Fig.7
Reach Truck

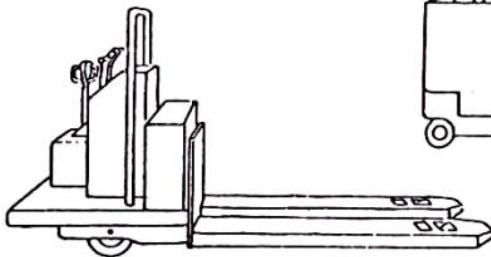


Fig.6
Motorized Hand / Rider Truck

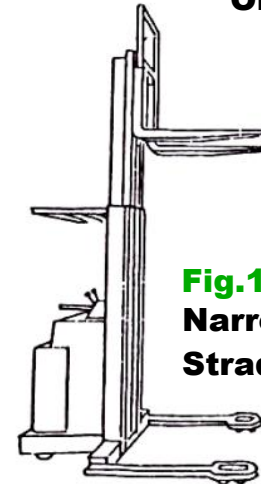


Fig.10
Narrow-Aisle Truck
Straddle Truck

EASTERN MICHIGAN UNIVERSITY FORKLIFT INSPECTION FORM

Truck No. _____ Make _____

Date _____

| | YES | NO | O.K. | Comments, Explanations, ETC. |
|---|-----|----|------|------------------------------|
| Is the forklift in good CONDITION and free of lint, excess oil and grease? | | | | |
| Any signs of oil, coolant, or fuel leaks UNDER THE FORKLIFT? | | | | |
| Check TIRES for cracks or other signs of wear. If inflatable tires, does air pressure meet the manufacturer's specifications? | | | | |
| Is the MANUFACTURER'S DATA PLATE clean and extra wear? | | | | |
| LIFT CHAINS – check for equal tension, broken pins and extra wear. | | | | |
| Check for loose bolts and cracks on OVERHEAD GUARD, BACK REST AND TILT CYLINDERS. | | | | |
| Check FORKS for damage. | | | | |
| Do the MAST and FORKS raise, lower and tilt smoothly? | | | | |
| PROPANE TANKS secured and leak checked? | | | | |
| BATTERY in good condition and charged? Are all connections tight? | | | | |
| Check the FLUIDS LEVELS for the brake fluid, engine oil, hydraulic tank and coolant. (check only when engine is cold) | | | | |
| Start the engine and check the DASHBOARD GAUGES for proper readings. | | | | |
| Do all the LIGHTS work? | | | | |
| Does the HORN work? | | | | |
| Make sure there is not excessive free play in the STEERING WHEEL. | | | | |
| Check that the CLUTCH engages properly. Does it shift roughly? | | | | |
| Hold the BRAKE down with your foot for 10 seconds. Is there any noticeable drift with the pressure? | | | | |
| Is the PARKING BRAKE working properly? | | | | |

Operator's Signature _____