



Powered Industrial Truck Safety Guide

POWERED INDUSTRIAL TRUCK SAFETY POLICY

Updated 08/22/2002

INTRODUCTION

PURPOSE

This policy has been developed to promote a positive and proactive approach to safe Powered Industrial Truck operation and provide training for employees and students who operate Duke lift trucks, tow motors and other specialized industrial material handling machines.

DEFINITIONS:

Employee - Any person or student hired on a full-time, part-time or temporary basis, who is compensated for services rendered.

Powered Industrial Truck/ Lift Truck - Duke owned/leased industrial vehicle used for materials handling that is powered by an electric motor or internal combustion engine. Material handling machines include, but are not limited to, fork lifts, tow motors, lift rolls, motorized pallet jacks, order pickers, platform rider trucks, high lift straddle trucks and other pedestrian/rider-controlled lifts.

Powered Industrial Truck (PIT) Operator/ Lift Truck Operator – Any Duke employee who operates a powered industrial truck.

RESPONSIBILITIES

DEPARTMENTS SHALL:

- Designate, to Human Resources, positions where employees are required to operate powered industrial trucks as “driving positions” per the Vehicle Safety Policy.
- Schedule safety training for each newly hired PIT Operator with the Occupational & Environmental Safety Office **prior** to allowing the employee to operate any powered industrial truck.
- Ensure that newly hired PIT Operators who have attended safety training, but have not received their Duke operator’s license, operate only under the supervision of a Duke-licensed operator.
- Maintain their powered industrial trucks in good operating condition and document the inspections of each vehicle prior to its use.
- Discipline employees who do not follow this safety policy.

OCCUPATIONAL & ENVIRONMENTAL SAFETY OFFICE (OESO) SHALL:

- Maintain the Powered Industrial Truck Safety Policy and monitor compliance.
- Provide training to all new PIT Operators, periodic evaluations of experienced PIT Operators, and re-training in accordance with OSHA regulations.

EMPLOYEES SHALL:

- Operate all powered industrial trucks in a safe manner and comply with the requirements of this policy.
- Report to Employee Occupational Health and Wellness (EOHW) any changes in medical condition that may affect their driving ability.

PROCEDURES:

TRAINING:

- All employees who are required to operate a powered industrial truck shall attend a Powered Industrial Truck Safety class ***prior*** to the operation of any powered industrial truck ***regardless of previous experience***.
- The classroom training shall consist of a safety lecture and written test. Those employees successfully completing the written test will be allowed to operate a powered industrial truck under the supervision of a Duke-licensed operator.
- Upon completion of a minimum of two hours of hands-on operating of a powered industrial truck under the supervision of a Duke-licensed operator, an employee may contact OESO to schedule an operator test. The operator test will be conducted with the Department's powered industrial truck and in the Department work area.
- Only upon successful completion of the safety lecture, written test, supervised hands-on training and operator test will an employee receive a Duke Powered Industrial Truck Operator's License. That license will expire three years from the date of issue.
- All PIT Operators shall be retrained by their Department when new equipment is introduced, existing equipment is modified, operating conditions change, an operator's performance is unsatisfactory or by OESO due to changes in OSHA requirements or this policy.
- Periodic re-evaluation of PIT Operators will occur at least once every three years. The re-evaluation will consist of a written exam and operator test.

OPERATOR'S LICENSE:

- All PIT Operators shall be 18 years or older.
- All PIT operators shall possess a valid state driver's license from the state in which they reside and observe the restrictions placed on that license including (but not limited to) corrective lenses.
- All PIT operators shall complete the initial training and periodic evaluations of their performance as outlined in the Training section.

LIFT TRUCK REQUIREMENTS:

- All powered industrial trucks owned or leased shall be of the approved type and conform to the design requirements of ASME/ANSI B56-1.1988.
- OESO shall determine the hazard classification of any atmosphere or location where lift trucks are to be utilized. Departments will be responsible to utilize only lift trucks designated for that location or area. However, lift trucks having a greater safeguard than the designation for that area may be used.
- All lift trucks designated for use in hazardous locations shall bear a label or some other identifying mark indicating approval by a testing laboratory.
- All nameplates, data plates and warning decals provided by the manufacturer shall be in place and maintained in a legible condition.
- The Department shall not perform modifications and additions that affect capacity and safe operation without prior written approval from the manufacturer. Capacity, operation and maintenance instruction plates, tags or decals shall be changed accordingly.
- If the lift truck is equipped with front-end attachments other than factory installed attachments, the Department shall request from the manufacturer that the truck be marked to identify the attachments and show the approximate weight of the truck and attachment combination at maximum elevation with load laterally centered.
- All newly purchased “rider” lift trucks shall be equipped with an operator restraint system (seatbelt, harness, etc.). (All “rider” lift trucks manufactured prior to 1991 that do not currently have an operator restraint shall be retrofitted by the manufacturer if the manufacturer has a retrofit program in place and at the Department’s expense. It shall be the responsibility of the Department to investigate whether the manufacturer has a retrofit program.)
- All “High Lift Rider” trucks shall be equipped with an overhead guard. The overhead guard shall not be covered with any opaque rain covering or shield that would interfere with the operator’s overhead vision.
- All lift trucks operated in areas where general lighting is less than 2 lumens per square foot shall be equipped with auxiliary lighting.
- Lift trucks with internal combustion engines shall not be operated in areas where carbon monoxide levels may exceed Permissible Exposure Limits.
- Steering knobs may be used only on lift trucks with a steering system design that does not produce road reaction feedback and must be designed such that the steering knob is grasped from the top and must be inside the periphery of the steering handwheel.
- Lift trucks shall be equipped with a load backrest to prevent the load from falling toward the truck when the load is elevated and tilted backward.

- All lift trucks shall be equipped with an operational horn in its original location as provided by the manufacturer.
- All lift trucks shall be equipped with a back-up alarm. Lift trucks that do not currently have a back-up alarm shall be retrofitted with a back-up alarm approved by the manufacturer at the Department's expense.
- A manufacturer's "Operator's Manual" shall remain on the lift truck at all times.

AREA REQUIREMENTS:

- Low clearances shall be identified and clearly marked with appropriate warning signs.
- Permanent aisles shall be designated, clearly marked and kept clear of all obstructions.
- Load-bearing columns and mechanical systems (process-piping, fire sprinkler system piping, etc.) that are present adjacent to traffic lanes used by lift trucks shall be protected from damage by stanchions or other acceptable means.
- Every effort shall be made to keep pedestrian traffic separated from lift truck operations.

MAINTENANCE OF LIFT TRUCKS:

- The operator shall conduct a complete lift truck safety inspection prior to the operation of the lift truck (at least daily or before each shift). If two or more operators share the lift truck during a shift, the Department will appoint an operator to conduct the inspection for that shift.
- The operator will use the Lift Truck Safety Inspection Form to conduct the safety inspection (See attachment). Lift Truck Safety Inspection forms shall be kept on file for a period of 30 days and are subject to review by OESO. Documentation of repairs made to the lift truck shall be maintained with the lift truck's preventive maintenance (PM) records.
- Deficiencies or any mechanical defect that would prevent the safe operation of the lift truck will be corrected or repaired immediately by authorized personnel or the lift truck will be removed from service, parked and lock-out/tag-out procedures initiated until such repairs are completed.

Lock-out/tag-out procedures are as follows:

1. A chain shall be passed through the steering wheel and around the overhead guard supports.
2. Both the supervisor and the employee shall lock the ends of the chain with two differently keyed padlocks.
3. The two keys will be removed and secured in a safe place.
4. A lock-out tag will be placed on the chain and signed by both the employee and the supervisor.

5. After repairs are completed, the tag and locks may be removed.
- Preventive maintenance shall be performed as recommended by the manufacturer.
 - No repairs shall be made to lift trucks in locations where flammable gases, flammable vapors or combustible dusts are present.
 - Repairs to the fuel and ignition systems that involve fire hazards shall be conducted only in locations designated for such repairs.
 - All lift trucks shall be kept in a clean condition, free of lint, excess oil and grease. Noncombustible agents should be used for cleaning trucks. Solvents with a low flash point (below 100 °F) shall not be used.
 - The battery shall be disconnected prior to repairs to the electrical system.
 - All parts of any lift truck requiring replacement shall be replaced only by parts equivalent as to safety with those used in the original design.
 - Lift trucks shall not be altered so that the relative positions of the various parts are different from what they were when originally received from the manufacturer nor altered either by the addition of extra parts not provided by the manufacturer or by the elimination of any parts.

FUELING:

- The storage and handling of liquid fuels such as gasoline and diesel fuel shall be in accordance with NFPA Flammable and Combustible Liquids Code (NFPA 30-1969) and Volume V, NC Building Code, Fire Prevention.
- The storage and handling of liquefied petroleum gas shall be in accordance with NFPA Storage and Handling of Liquefied Petroleum Gases (NFPA 58-1969) and Volume V, NC Building Code, Fire Prevention.
- Fuel tanks shall not be filled while the engine is running.
- Spillage shall be avoided. Spillage of oil or fuel shall be reported to OESO for information on appropriate clean up. The fuel tank cap shall be replaced before starting the engine.
- No lift truck shall be operated with a leak in the fuel system. The truck shall be placed out of service until the leak has been corrected.
- Open flames shall not be used for checking gasoline level in fuel tanks.
- The LP gas tank shall be shut off when "garaging" the lift truck (leaving the lift truck in a closed space or room or leaving the truck out of service for 8 hours or more).

BATTERY CHARGING:

- Battery charging areas shall be designated for that purpose and properly marked.
- If electrolyte is handled, facilities shall be provided for flushing and neutralizing spilled electrolyte, for protecting charging apparatus from damage by trucks, for

adequate ventilation for dispersal of fumes from gassing batteries and for fire protection. Safety equipment shall be provided in each battery charging area.

This equipment includes, but is not limited to:

- face shields, rubber aprons and rubber gloves;
 - acid resistant floor covering and
 - a fire extinguisher.
- A carboy tilter or siphon shall be provided for handling electrolyte.
 - When handling electrolyte, an eyewash station and emergency shower in compliance with ANSI Z358.1-1998 shall be provided and shall be located within 25 feet of the battery charging area.
 - When charging batteries, acid and water shall be mixed externally and then poured into the battery. Note: Acid shall be poured into water; water shall not be poured into acid.
 - Open flames shall not be used for checking electrolyte level in storage batteries.
 - When necessary, a conveyor, overhead hoist, dolly or other material handling equipment and proper spreader bar shall be provided for moving batteries.
 - Reinstalled batteries shall be properly positioned and secured in the truck.
 - Batteries shall be of a size and weight between the minimum and maximum listed on the truck data plate. Batteries less than the maximum size shall be located as far to the rear as possible and shimmed to stay there, thus providing the proper counterweight.
 - Trucks shall be properly positioned and the brake applied before attempting to change or charge batteries.
 - The charger should always be shut off prior to connecting or disconnecting the battery. Always plug the charger into the battery plug, not the truck plug and make sure the charger voltage is the same as the battery voltage.
 - Care shall be taken to assure that vent caps are functioning. The battery (or compartment) cover(s) shall be open to dissipate heat, but vent caps shall be kept in place to avoid electrolyte spray or splatter.
 - Smoking shall be prohibited in the charging area and the area posted with "No Smoking" signs. Precautions shall be taken to prevent open flames, sparks or electric arcs in the battery charging area.
 - Tools and other metallic objects shall be kept away from the top of uncovered batteries.

LIFT TRUCK OPERATIONS:

EMPLOYEE SAFETY:

- Only the lift truck operator is allowed on the lift truck. Other employees shall not be permitted to ride on the side or back, stand on a pallet being transported or to stand on the forks.
- Operators shall use the operator restraint (seatbelt, harness, etc.) provided by the manufacturer at all times while operating the lift truck.
- All personnel shall keep their arms, hands, legs or feet clear of areas between the uprights of the mast, outside the running lines of the lift truck, from moving parts and within the confines of the overhead guard supports or lift cage/ platform.
- No person shall be allowed to stand or pass under the elevated portion of any lift truck, whether loaded or empty.
- Lift trucks shall not be driven up to anyone standing in front of a bench or other fixed object.
- No operator shall engage in any activity involving the use of hands other than those required to operate the vehicle. This includes, but is not limited to: eating, drinking, smoking, reading, etc.
- No operator shall wear radio headsets, carry or listen to audio devices such as radios and tape players, wear headsets or use cellular phones or portable radios except that equipment issued by the Department for safety or communication.

TRAVELING:

Operators are responsible for the safe operation of the lift truck. Stunt driving and horseplay shall not be permitted. Operators will adhere to the following while traveling with a lift truck:

- Ensure that there is always sufficient clearance under doorways and overhead installations such as lights, pipes, sprinkler systems, fire alarm systems, etc.
- Operate the lift truck at a speed that will permit it to be brought to a stop in a safe manner.
- Reduce speed while negotiating turns. Start the turn by turning the steering wheel in a smooth, sweeping motion. Avoid sudden moves that can cause objects to fall off the load or make the truck tip over.
- Avoid holes, bumps, wet spots, obstacles, quick starts and stops.
- Always yield to ambulances, fire trucks or other vehicles in emergency situations.
- Always yield to pedestrians. Stay to the right except in areas where someone could step out in the line of travel such as doors, racks, bins or intersections.
- Do not pass pedestrians in congested areas.

Supplement I

- Sound your horn before overtaking pedestrians or when coming up on them from the rear.
- Do not pass trucks traveling in the same direction, from their blind spots or other dangerous locations.
- Slow down and sound the horn at cross aisles and other locations where vision is obstructed.
- Scan from side-to-side while looking in the direction of travel. Travel with the load trailing whenever the load obstructs the operator's view.
- Cross railroad tracks and other obstacles diagonally whenever possible.
- Ascend and descend grades slowly. When ascending or descending grades in excess of 10 percent, loaded trucks shall be driven with the load upgrade. When empty, grades should be taken with the load engaging means (forks) downgrade. On all grades the load and load engaging means shall be kept straight or slightly tilted back and raised only as far as necessary to clear the road surface.
- Never turn on an incline greater than 10 percent.
- Cross dockboards and bridgeplates slowly and never exceed their rated capacity.
- Avoid running over loose objects on the roadway surface. Stop and pick the objects up.
- Never travel side by side and always keep three truck lengths apart when following other lift trucks.
- Keep the load low while traveling.
- Beware of rear end swing steering. Always maintain the appropriate distance to clear objects.
- Always stay well clear from the edges of loading docks, ramps and other elevated surfaces or drop-offs.

LOADING:

- Only loads within the rated capacity of the truck shall be lifted. Load capacity shall be adjusted for long or high (multi-tiered) loads.
- Only stable and safely arranged loads shall be lifted. The lift truck operator shall take steps to stabilize unstable loads through the use of shrink-wrapping, banding or other means. Extreme caution shall be exercised when handling off-center loads that cannot be centered.
- The forks shall be placed under the load as far as possible; the mast shall be maintained straight up or tilted slightly backward to stabilize the load.
- Extreme care shall be used when tilting the load forward or backward, particularly when high tiering.

- Tilting the mast forward with the load-engaging means elevated is prohibited except to pick up a load.
- An elevated load shall not be tilted forward except when the load is in a deposit position over a rack or stack.
- When stacking or tiering, only enough backward tilt to stabilize the load shall be used.
- Never attempt to carry a load on just one fork as with a sling or other carrying device.

TRUCK AND RAILROAD CAR LOADING:

- The flooring of trucks, trailers and railroad cars shall be checked prior to entrance for breaks and weaknesses. Scrap materials and floor coverings should be removed to ensure floor integrity beneath.
- The brakes of highway trucks shall be set and wheel chocks placed under the rear wheels to prevent the trucks from rolling while they are boarded with lift trucks.
- Fixed jacks shall be installed to support a semitrailer and prevent upending during loading or unloading when the trailer is not coupled to a tractor.
- Wheel stops or other recognized positive protection shall be provided to prevent railroad cars from moving during loading or unloading or while dockboards or bridge plates are in position.
- Lift truck forks or attachments shall not be utilized for opening or closing freight doors, railroad car doors or moving railroad cars or trucks unless designed specifically for this task by the manufacturer.
- Dockboards and bridgeplates shall have a high friction surface, marked with their rated capacity and shall be properly secured prior to driving over them.

USE OF ELEVATORS:

- Ensure that the combined weight of the lift truck and its load does not exceed the capacity of the elevator before entering an elevator.
- Approach all elevators slowly and then enter squarely with the load engaging attachment entering first. Once on the elevator, the controls shall be neutralized, power shut off and the brakes set.

USE OF LIFT CAGES/ PLATFORMS

Whenever a truck is equipped for lifting personnel, the following additional precautions shall be taken for the protection of personnel being elevated:

- Only commercially designed and manufactured cages/ platforms meeting ANSI Standards B56.1.7.34 may be utilized. NO hand built or temporary units may be used.

The cage/ platform shall have:

Supplement I

- a non-slip floor surface, no less than 4 feet by 4 feet;
 - a high mesh screen toward the upright;
 - 42" high railings and 4" toe plate on all sides;
 - a railing and gate that shall hold 200 lbs of horizontal push without giving;
 - a gate that only swings inward and works easily;
 - fork channels under the floor; and
 - a chain or other positive locking device utilized to ensure the cage is secured to the fork carriage.
- Whenever the controls elevate with the platform, means shall be provided whereby personnel on the cage/ platform can shut off power to the lift truck ("kill switch").
 - Protection from overhead hazards/ falling objects as necessary for the operating conditions shall be provided.
 - The lift truck operator shall remain at the controls. Only minor adjustments or movements may be made and only at creep speed. Traveling with the lift cage elevated is prohibited.

PARKING:

Operators are responsible for the safe parking of their lift truck. When parking a lift truck or when a lift truck will be left unattended (the operator is more than 25 feet from the lift truck or the lift truck is not in his view), the operator will adhere to the following:

- Make sure that the lift truck is a safe distance from the edge of ramps or platforms while on any elevated dock, or platform, or freight car. Parking within 8 feet from the center of railroad tracks is prohibited.
- Never park the lift truck where it may block an exit, block a stairway, hallway, door, fire equipment, fire extinguishers or electrical service panel.
- Fully lower the forks.
- Shut off all controls.
- Set the brakes.
- If on an incline, chock the wheels.
- Remove the key from the ignition.

ACCIDENT REPORTING:

- Operators are responsible to report all accidents, regardless of damage or injury immediately to the supervisor. Supervisors shall notify OESO.
- If injured, initiate procedures for medical treatment if necessary and complete an A-016 form.

- Notify the Corporate Risk Management Office if there is a property loss or injury to non-employees.

REFERENCES

- Fleet Safety Policy (Safety Manual Section II, Chapter 6)
- Occupational Safety and Health Administration Regulations
- ASME/ANSI Standards
- National Fire Protection Association Standards (NFPA)
- NC Building Code, Volume V Fire Prevention

Duke University Powered Industrial Truck Safety Inspection Form

Instructions: The operator shall inspect lift trucks prior to each work shift. Deficiencies noted on the inspection form shall be corrected prior to operation. If the deficiencies cannot be corrected, the lift truck shall not be used and lock-out/tag-out procedures initiated according to the Powered Industrial Truck Safety Policy.

Truck Make: _____ Model: _____ S/N: _____

Engine Powered Trucks			Battery Powered Trucks		
Inspection Item	OK	Repair	Inspection Item	OK	Repair
1) Visual Inspection			1) Visual Inspection		
2) Engine Oil Level			2) Battery Water Level		
3) Radiator/ Coolant			3) Battery Cleanliness		
4) Service Brake/ Pedal			4) Service Brake/ Pedal		
5) Horn			5) Horn		
6) Neutral Start Feature			6) Plugging – (Walkies/ Walkie Riders)		
7) Steering Mechanism			7) Steering Mechanism		
8) Hoist Mechanism (Mast Chains)			8) Hoist Mechanism (Mast Chains)		
9) Forks			9) Forks		
10) Service Brake/ Stop			10) Service Brake/ Stop		
11) Park Brake			11) Park Brake		
12) Safety Equipment			12) Safety Equipment		
13) Data Plate & Decals			13) Data Plate & Decals		
14) Fire Extinguisher			14) Fire Extinguisher		
15) Seat Belt			15) Seat Belt		

Comments: _____

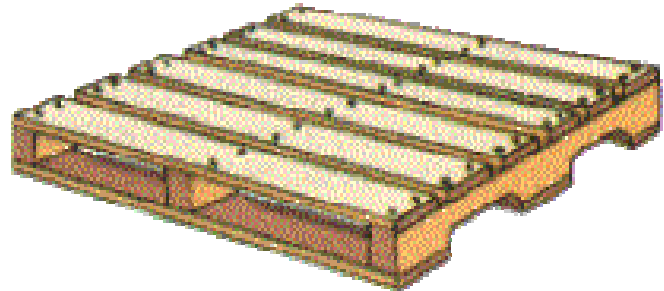
Operator's Name: _____ Date: ____/____/____

Supervisor's Signature: _____ Date: ____/____/____

Repairer's Signature: _____ Date: ____/____/____

*** This form must be kept on file for 30 days and is subject to review by the Occupational & Environmental Safety Office (OESO). Documentation of repairs made to the lift truck shall be maintained with the lift truck's preventive maintenance (PM) records.

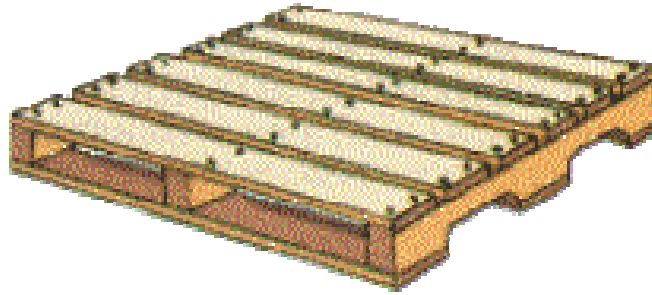
SOME IMPORTANT TIPS FOR PALLET USE



1. Standardize unit loads to fit the pallets to be used. Underhang or overhang can contribute to product damage.
2. Make sure unit loads are not stacked higher than specified.
3. Never use pallets that are distorted or are not square, particularly if they are used in an automated handling environment.
4. Train all operators in the proper use of pallet handling equipment to ensure low cost handling and safety.
5. Provide good lighting in your storage areas to facilitate rapid and efficient movement of goods.
6. Establish good Work Rules and Habits. Get the workers involved.
7. Never permit lift truck operators to slide pallets around with one fork in order to line them up.
8. Remind all fork truck operators not to enter or withdraw from pallet openings with tilted forks.
9. Never enter pallets, loaded or unloaded, on the run. A pallet can sustain major damage to the leading edge as a result of this practice.
10. Design an efficient, effective accounting system for controlling pallet exchanges and minimizing disposals, costs and problems.

Source: National Wood Pallet and Container Association (NWPCA)

TEN WAYS TO SPOT A DEFECTIVE PALLET



1. Any corner leg broken such that the leg cannot rest on a level surface.
2. Any corner leg that is missing.
3. Any center leg that is broken or missing such that the legs cannot rest on a level surface.
4. Any two support legs that are broken such that the legs cannot rest on a level surface.
5. Any two support legs that are missing.
6. If 25% or more of the pallet deck is deformed such that the deformation is greater than $\frac{1}{2}$ inch below the normal surface of the pallet.
7. Any crack 10 inches or longer which extends through the center of the pallet (structural foam plastic, and twin-sheet thermoform units only).
8. Any crack six inches or longer which extends through the center of the pallet (press wood units only).
9. A hole in the pallet deck greater than the surface area of the opening in the pallet deck for a leg.
10. Pallet deck deformation that includes cracks and holes along the pallet edges of three inches or more into a leg assembly or pallet surface.

Source: United States Postal Service

Duke University Powered Industrial Truck

Hands-On Training

I have received at least two hours of hands-on training from a Duke-licensed operator within my Department on the Powered Industrial Truck (PIT) that I am expected to use. This training included safely performing the following: inspecting, traveling, loading & unloading, using required attachments, fueling/charging, and parking/ garaging my Department's PIT.

Name: _____

Signature: _____

Duke ID#: _____

Department: _____

Date: _____

Contact OESO at 684-5996 to schedule an Operator's Test once you have completed this training requirement. This page should be given to the trainer at the Operator's Test to document completion of this requirement.

Duke University Powered Industrial Truck

Powered Industrial Truck Safety Guide

I have received a copy of Duke University's Powered Industrial Truck Safety Policy and received training on the same.

I understand that this training is only the first step toward becoming a Duke-licensed Powered Industrial Truck (PIT) Operator and that I must also successfully complete the written exam, hands-on training within my Department, and an Operator's Test in order to receive my license.

Name: _____

Signature: _____

Duke ID#: _____

Department: _____

Date: _____

This page should be given to the trainer at the end of the training session to document your attendance at the training.