



# THE UNIVERSITY OF MAINE SAFETY AND ENVIRONMENTAL MANAGEMENT

## Powered Industrial Trucks

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### General

The Powered Industrial Truck Policy applies to the operation of forklifts, pallet jacks, platform-mounted trucks, stand-up riding reach trucks, motorized hand trucks, and any other vehicle powered by electric or internal combustion motors that are used by UMaine employees or students to move products and materials.

The information in this policy and applicable standards should be used to train prospective industrial truck operators and provide the basis for required refresher retraining

### Regulatory Guidance

OSHA 29 CFR 1910.178, Powered Industrial Trucks  
OSHA 29 CFR 1926.602, Material Handling Equipment  
NFPA 58, Handling of LP-gases by Authorized & Qualified Persons  
NFPA 505, Fire Safety Standard for Powered Industrial Trucks Including Type Designations, Area of Use, Maintenance and Operation

### Requirements

Powered Industrial Truck operators must follow all manufacturer recommendations regarding operating and maintenance.

Departments must not alter powered industrial vehicles, unless such alteration is pre-approved by the manufacturer, and data plates and other markings are changed to reflect the alterations.

**Training:** All operators must receive both formal and practical training prior to operating a powered industrial truck. Upon completion of the training, the operators will be evaluated on their ability to operate the powered industrial vehicle. Operators receiving such training must be certified to operate the powered industrial vehicle(s), for which the practical training was completed. All training must be documented. Initial training may be obtained through the Safety and Environmental Management (SEM) office. Once the initial training is completed it is the responsibility of the supervisor to make certain that the operator is competent in safety, maneuverability and use of the truck.)

UMaine personnel providing formal training, practical training or operator evaluations must receive the powered industrial vehicle “Train-the-Trainer” class provided by the Safety and Environmental Management (SEM) Department.

- *Formal* training, typically conducted in a classroom, covers all of the applicable topics that are universal to all powered industrial vehicles. The formal training may consist of a combination of lecture, discussion, interactive computer learning, video tapes or CD/DVDs, power point presentations and other written materials including handouts.

- *Practical training or hands-on-training* covers the specific features and operations of the individual powered industrial truck that the employee or student will be operating. The practical training shall include: operating instructions, warnings, and, precautions for the types of vehicles the operator will be authorized to operate; vehicle controls and instrumentation, the locations of the controls and their purpose and operation; engine or motor operation; steering and maneuvering, visibility, including those restrictions due to loading; vehicle capacity and stability; inspection and maintenance that the operator will be required to perform; refueling and/or changing or charging of batteries and propane tanks; and, any operating limitations or workplace related topics including surface conditions, narrow aisles, pedestrian traffic or hazardous locations.
- *Operator evaluations* will be conducted by a supervisor or other designated employee who completes the powered industrial vehicle *Train-the-Trainer* course provided by SEM. The operator evaluation is a process used to determine if the newly trained operator is capable to operate the powered industrial truck in a safe manner. This evaluation will be documented using the Powered Industrial Vehicle Operator Evaluation Form (MF10068).

In addition to everyday observance, all operators are to be formally evaluated using form MF10086 every three years following their last training or evaluation. Evaluations consist of a visual determination that industrial trucks are operated in accordance with this policy. Operators must be retrained if an evaluation reveals, or if it is otherwise noticed that they lack the required understanding or operates the vehicle in an unsafe manner. If the operator is involved or has caused an accident, they must be immediately retrained.

Refresher training in all of the topics described above and any other relevant topics must be provided to powered industrial vehicle operators whenever.

1. an operator has been observed to operate the truck in an unsafe manner;
2. an operator has been involved in an accident or near-miss accident;
3. an operator has received an evaluation that reveals that the operator is not operating the truck safely ; and
4. an operator is assigned to drive a different type of truck or conditions in the workplace change in a manner that would affect the safe operations of a forklift.

### **Pre-Use Inspection**

All powered industrial trucks are to be visually inspected prior to use by the operator. The inspection is required for *every shift* during which the powered industrial truck will be used. SEM developed a Powered Industrial Truck Pre-Use Checklist to outline and document the inspection process (MF10085).

A Pre-Use Inspection is meant to identify potential hazards that may be encountered from a damaged powered industrial vehicle. If at any time the truck is found to be in need of repair, defective or in any way unsafe, the vehicle should be removed from service until it has been restored to safe operating condition.

The types of items that are inspected are:

- broken or cracked points in weld points on the mast or any obvious damage;
- the roller tracks are greased and the chains are free to travel;
- the tines on forklifts should be equally spaced and free from cracks along the blade and at the heels;
- hydraulic fluid levels;
- hydraulic line and fittings for excessive crimping or wear;
- lift and tilt the cylinders to look for damage or leaking fluid and inspect the mounting hardware;
- the tires for excessive wear, splitting or missing tire material;
- and, check the pneumatic tires for proper pressure.

The inspection should also consist of a power source inspection. For battery power vehicles, the six below items should be inspected for, using proper PPE such as gloves, goggles, long-sleeved shirts and battery resistant aprons:

1. holes or cracks;
2. securely sealed cells;
3. frayed cables;
4. broken insulation;
5. tight connections, and;
6. clogged vent caps.

For propane powered trucks, all LP-gas containers shall be examined by the operator before replacing. The following defects or damage shall be evaluated:

- dents, scrapes and gouges of the pressure vessel;
- damage to the valves and liquid level gauge;
- debris in the relief valve;
- damage to or loss of the relief valve cap;
- any indication of leakage at the valves or threaded connections.

### **Preventative Maintenance**

All powered industrial trucks are to be placed in a preventative maintenance program. All repairs and maintenance provided for the powered industrial trucks will be performed by authorized personnel with the skills and knowledge to conduct these services in a safe manner. Some general things to consider prior to

performing maintenance are as follows:

1. Do not use open flames to check for electrolyte levels in batteries or liquid fuel in tanks.
2. Do not conduct repairs to fuel and ignition systems of forklifts in areas where fire hazards exist.
3. Disconnect batteries prior to repairing electrical systems.
4. Use only replacement parts equivalent with those in the original design.
5. Do not alter the relative positions of various parts from how they were received from the manufacturer. Do not add any parts not supplied by the manufacturer or delete any parts supplied by the manufacturer. No additional counter-weighting of forklifts is permitted unless approved by the manufacturer.
6. Keep forklift mufflers in proper working condition and free of debris.
7. Keep the forklift in clean condition, free of lint, excess oil and grease.
8. When antifreeze is used in an engine-cooling-system, only approved glycol-based material shall be used.

### **Fuel Handling and Storage**

1. Liquid fuels such as gasoline and diesel not stored in underground or aboveground storage tanks shall be stored in approved safety cans.
2. The engine shall be stopped and the operator shall not be on or inside the vehicle during the refueling process.
3. A soap solution should be used to check for leaks. A match or open flame shall not be used for the leak test.
4. Smoking is prohibited in the container refilling area and in the exchange area during the container-exchange task.
5. Cylinders for Liquefied Petroleum gas (LPG) shall be stored in the following manner:
  - Cylinders in storage having individual LPG capacity greater than one pound shall be positioned so that the relief valve is in direct communication with the vapor space of the cylinder.
  - Cylinders not in use shall be protected by screw-on type caps, collars or closed, plugged or capped cylinder outlet valves.
  - Cylinders stored within buildings shall not be located near exits, stairwells, or in areas normally intended to be used for the safe egress of occupants or near athletic fields or other areas of public gathering.
  - Cylinders stored within buildings frequented by the public shall not exceed an LPG capacity of one pound per cylinder and be limited to a total combined capacity for all cylinders of less than 200 pounds of LPG.
  - Cylinder storage within buildings not frequented by the public shall be limited to a total maximum quantity of no more than 300 pounds of LPG per storage location. Empty cylinders that have been in LPG service shall be considered as if full for the purposes of determining the maximum permissible quantity of LPG allowed.

- Cylinder storage locations outside of buildings shall be at least five feet away from any doorway or openings in a building or for buildings with only one means of egress, cylinders shall be no closer than 10 feet from any doorway or opening.
- Cylinders must be at least 20 feet from any automotive fuel dispenser and be enclosed with at least a six foot high industrial type fence, chain link fence or equivalent protection.
- There must be at least two means of egress from the enclosure, unless the enclosure is not over 100 square feet in area, the containers are not filled within the enclosure, and the point of transfer is within 3 feet of the gate.
- The enclosure must have lighting provided to illuminate storage containers, containers being loaded, control valves and other equipment if operations are normally conducted during evening hours.

### **Battery Handling and Storage**

There shall be a designated battery charging area. The charging station or area shall be located in designated charging areas that provide flushing and neutralizing of spilled electrolyte, fire protection, protection of charging apparatus from damage by vehicles, and adequate ventilation for dispersal of battery gassing fumes such as hydrogen.

An area for quick drenching or flushing of the eyes, such as an emergency eyewash station, must be provided at or near the charging area. The affected individual must be able to reach this emergency eyewash station within 10 seconds.

Smoking and other ignition sources are prohibited in the charging areas. No smoking signs must be posted. Additional precautions shall be taken to prevent open flames, sparks or electric arcs in battery charging areas.

### **Charging Batteries**

The following steps shall be undertaken when charging powered industrial truck batteries:

1. Properly position the forklift and apply the brake before attempting to change or charge the battery.
2. Rubber gloves must be worn when handling lead-acid batteries. Eye and or face protection, such as a face shield, must be worn when connecting a battery to a charger. Long-sleeved shirts and a rubber apron shall also be worn.
3. Chargers must be turned off when leads are being connected or disconnected.
4. All leads and cables must be checked and in good condition.
5. When removing batteries, vent caps must be kept firmly in place to avoid electrolyte splashing. When charging batteries, ensure vent caps are

- functioning and the battery or compartment cover(s) are open to dissipate heat. When charging is complete. Be sure to replace the vent cap firmly.
6. Keep all tools and other metallic objects away from the top of uncovered batteries.
  7. Properly position and secure reinstalled batteries in the powered industrial truck..
  8. Reinstalled batteries or new batteries shall be equivalent to or shall be rated higher than the battery type indicated on the vehicle nameplate.
  9. Any additional safety requirements or operating procedures specified by the manufacturer of the forklift, battery or charging system must be followed.

### **Safe Operating Procedures**

Only authorized and trained personnel will operate Powered Industrial Trucks. The following safety precautions shall be followed:

1. All Powered Industrial Trucks (PIT) must be equipped with back-up alarm, and seat belts. The operator must wear seatbelts at all times while operating the vehicle.
2. The operator will perform daily pre-use inspections.
3. Any safety defects (such as hydraulic fluid leaks; defective brakes, steering, lights, or horn; and/or missing fire extinguisher, lights, seat belt, or back-up alarm) will be reported for immediate repair or the PIT will be taken out of service.
4. Operators will follow the proper recharging or refueling safety procedures.
5. Loads will be tilted back and carried no more than six inches from the ground. Loads that restrict the operator's vision will be transported backwards.
6. PIT operators will obey posted speed limits and slow down on wet floors and going around turns.
7. PIT operators in high lift areas will wear hard hats.
8. Operator will sound the horn and use extreme caution when meeting pedestrians, making turns, and cornering.
9. Passengers may not ride on any portion of a PIT. Only the operator will ride the PIT.
10. PITs will not be used as a man lift.
11. Aisles will be maintained free from obstructions, marked, and wide enough (six-foot minimum) for vehicle operation.
12. Lift capacity will be marked on all PITs. Operators will assure the load does not exceed rated weight limits.
13. When unattended, PITs will be turned off, forks lowered to the ground, and the parking brake applied.
14. All PITs (with the exception of pallet jacks) will be equipped with a multi-purpose dry chemical fire extinguisher.
15. Operators must report all accidents, regardless of fault and severity, to the Supervisor.

16. When loading trailers, dock plates or other trailer securing devices will be used. Operators will assure dock plates are in good condition and will store them on edge when not in use.
  17. Trailers will be parked squarely to the loading area and have wheels chocked in place. Operators will follow established docking/undocking procedures.
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## **Operations**

If at any time a powered industrial truck is found to be in need of repair, defective, or in any way unsafe, the truck must be taken out of service until it has been restored to safe operating condition.

1. Vehicles must not be driven up to anyone standing in front of a bench or other fixed object.
  2. No person will be allowed to stand or pass under the elevated portion of any truck, whether loaded or empty.
  3. Unauthorized personnel may not ride on powered industrial vehicles.
  4. Arms or legs may not be placed between the uprights of the mast or outside the running lines of the truck.
  5. When a powered industrial vehicle is left unattended, load engaging means must be fully lowered, controls neutralized, power shut off, and brakes set. Wheels must be blocked if the truck is parked on an incline.
  6. A safe distance must be maintained from the edge of ramps or platforms while on any elevated dock, platform, or freight car. Trucks must not be used for opening or closing freight doors.
  7. There must be sufficient headroom under overhead installations, lights, pipes, sprinkler system, etc.
  8. An overhead guard must be used as protection against falling objects. An overhead guard is intended to offer protection from the impact of small packages, boxes, bagged material, etc., representative of the job application, but not to withstand the impact of a falling capacity load.
  9. A load backrest extension must be used whenever necessary to minimize the possibility of the load or part of it from falling rearward.
  10. Vehicles must not be parked so as to block fire aisles, access to stairways, or fire equipment.
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## **Traveling**

All traffic regulations must be observed, including authorized speed limits. A safe distance must be maintained, approximately three vehicle lengths from the vehicle ahead, and the vehicle must be kept under control at all times.

1. The right of way must be yielded to students, pedestrians, ambulances, fire trucks, or other vehicles in emergency situations.

2. Do not pass other vehicles traveling in the same direction at intersections, blind spots, or other dangerous locations.
  3. The driver must slow down and sound the horn at cross aisles and other locations where vision is obstructed. If the load being carried obstructs forward view, the driver must travel with the load trailing.
  4. Railroad tracks must be crossed diagonally wherever possible. Parking closer than eight feet from the center of railroad tracks is prohibited.
  5. The driver must look in the direction of and keep a clear view of the path of travel.
  6. Grades must be ascended and descended slowly. When ascending or descending grades in excess of 10 percent, loaded vehicles must be driven with the load upgrade. On all grades, the load and load engaging means must be tilted back if applicable, and raised only as far as necessary to clear the road surface.
  7. Under all travel conditions the vehicle must be operated at a speed that will permit it to be brought to a stop in a safe manner.
  8. Stunt driving and horseplay are prohibited.
  9. The driver must slow down on wet and slippery floors.
  10. Dock board or bridge plates must be properly secured before they are driven over. Dock board or bridge plates must be driven over carefully and slowly and their rated capacity never exceeded.
  11. Avoid running over loose objects on the roadway surface.
  12. While negotiating turns, reduce speed to a safe level by turning the hand steering wheel in a smooth, sweeping motion. Except when maneuvering at a very low speed, the hand steering wheel must be turned at a moderate, even rate.
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## **Loading**

Only stable or safely arranged loads can be handled. Exercise caution when handling off-center loads that cannot be centered.

1. Only loads within the rated capacity of the vehicle can be handled.
2. Adjust the long or high (including multiple-tiered) loads that may affect capacity.
3. Vehicles equipped with attachments must be operated as partially loaded vehicles when not handling a load.
4. A load engaging means must be placed under the load as far as possible. The mast must be carefully tilted backward to stabilize the load.

Use extreme care when tilting the load forward or backward, particularly when high-tiering. Tilting forward with *load engaging* means elevating is prohibited except when to pick up a load. An elevated load may not be tilted forward except when the load is in a deposit position over a rack or stack. When stacking or tiering, use only enough backward movements as necessary.



## Responsibilities

**Directors and Department Heads** shall verify that supervisors perform all functions outlined in this policy.

**Supervisors** are required to:

- Implement the preventative maintenance plan recommended by the manufacturer;
- Ensure powered industrial vehicle operators are trained in accordance with this policy and manufacturer recommendations;
- Ensure that operator evaluations are performed initially and every three years, as noted in this policy;
- Ensure that operators perform pre-use inspections and maintain those inspection logs for 6 months.
- Maintain adequate training records that are readily available for an internal or external inspection.
- Enforce all rules related to the safe and proper operation of the powered industrial vehicle.

**Employees and Students** are required to undergo training in accordance with this policy, perform pre-use inspections, and operate powered industrial vehicles in a safe manner, as outlined in this policy and in the training sessions.

**The Safety and Management Department** provides formal powered industrial vehicle training or powered industrial vehicle *Train-the-Trainer* classes when requested, and will periodically review the department training records for compliance with the requirements.

## Definitions

Powered Industrial Vehicles (or trucks), are mobile, power-propelled vehicles used to carry, push, pull, lift, stack or tier materials. These include forklifts, fork trucks, platform lift trucks, motorized hand trucks, pallet jacks and other specialized power industrial vehicles when they are used to move equipment or products.

## For Additional Information

Contact your Department Safety Coordinator or the Department of Safety and Environmental Management at 581-4055.

Powered Industrial Truck Pre-Use Checklist (MF10085)  
Powered Industrial Truck Operator Evaluation Form (MF10086)  
Forklift Operator Training Certification (MF10087)

## Document History

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