

## SAFETY AND ENVIRONMENTAL COMPLIANCE MANUAL C-19

Section C: Environment, Health, and Safety Program  
Number/Title: C-19/Powered Industrial Truck and Forklift Program  
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### I. Purpose

The Powered Industrial Truck and Forklift Program ensures the proper and safe operation of powered industrial trucks (PITs) and forklifts in accordance with Title 29 *Code of Federal Regulations*, part 1910.178, Powered Industrial Trucks (29 C.F.R. 1910.178). All PIT operators at NCI at Frederick must be enrolled in this program.

### II. Definitions

**Powered industrial truck or forklift (PIT/forklift):** Any mobile power-propelled truck used to carry, push, pull, lift, stack, or tier materials. Powered industrial trucks can be ridden or controlled by a walking operator. Earth-moving and over-the-road haulage trucks are not included in the definition.

The following definitions help to explain the principle of stability.

**Center of gravity:** The point on an object at which all of the object's weight is concentrated. For symmetrical loads, the center of gravity is at the middle of the load.

**Counterweight:** The weight that is built into the truck's basic structure and is used to offset the load's weight and to maximize the vehicle's resistance to tipping over.

**Fulcrum:** The truck's axis of rotation when it tips over.

**Grade:** The slope of a surface, which is usually measured as the number of feet of rise or fall over a hundred foot horizontal distance (the slope is expressed as a percent).

**Lateral stability:** A truck's resistance to overturning sideways.

**Line of action:** An imaginary vertical line through an object's center of gravity.

**Load center:** The horizontal distance from the load's edge (or the fork's or other attachment's vertical face) to the line of action through the load's center of gravity.

**Longitudinal stability:** A truck's resistance to overturning forward or rearward.

**Moment:** The product of the object's weight times the distance from a fixed point (usually the fulcrum). In the case of a PIT/forklift, the distance is measured from the point at which the truck will tip over to the object's line of action. The distance is always measured perpendicular to the line of action.

**Track:** The distance between the wheels on the same axle of the truck.

**Wheelbase:** The distance between the centerline of the vehicle's front and rear wheels.

### **III. Responsibilities**

#### **A. Environment, Health, and Safety**

1. Administers the NCI at Frederick Powered Industrial Truck and Forklift Program
2. Adds and removes employees from the program as required by the employees' supervisors
3. Develops a training program and ensures training of employees in safety operation and procedures related to all PITs/forklifts at NCI at Frederick
4. Develops an evaluation program for enrollees to properly assess their skills after the hands-on practice period
5. Ensures that each PIT/forklift operator is competent to operate a PIT or forklift safely, as demonstrated by the successful completion of the training and evaluation
6. Maintains all training and evaluation records of Powered Industrial Truck and Forklift Program enrollees in the current Occupational Health Manager (OHM) database as well as the Environment, Health, and Safety (EHS) database

#### **B. Supervisors**

1. Notify EHS of potential new program enrollees of and personnel to be removed from the program
2. Supervise and take an active role in the hands-on practice training of employees in the appropriate PIT/forklift, which takes place after the classroom training provided by EHS
3. Ensure that only those individuals that are enrolled in the Powered Industrial Truck and Forklift Program use and drive the PIT/forklift
4. Enforce the proper and safe use of all PITs/forklifts under their authority
5. Refer employees to EHS for retraining as needed based upon performance, near misses, or repeated unsafe actions
6. Administer refresher training as needed, see IV.D.2 below (EHS may assist upon request.)

#### **C. Employees**

1. Receive the proper classroom instruction, hands-on training, and evaluation before attempting to operate a PIT/forklift
2. Follow all rules and drive/operate a PIT/forklift in a safe manner
3. Only drive and operate a PIT/forklift for which they are trained and authorized to drive and operate
4. Always wear a safety belt when operating a PIT/forklift

### **IV. Program Elements**

#### **A. Training – classroom**

1. Training shall consist of a combination of formal instruction (e.g., lecture, discussion, interactive computer learning, videos, written material), practical

training (demonstrations performed by the trainer and practical exercises performed by the trainee), and evaluation of the operator's performance in the workplace.

2. Training shall include information regarding:
  - a. Operating instructions, warnings, and precautions for the types of PITs/forklifts the operator will be authorized to operate
  - b. Differences between a PIT/forklift and an automobile
  - c. PIT/forklift controls and instrumentation: where they are located, what they do, and how they work
  - d. Engine or motor operation
  - e. Steering and maneuvering
  - f. Visibility (including restrictions due to loading)
  - g. Fork and attachment adaptation, operation, and use limitations
  - h. Vehicle capacity
  - i. Vehicle stability
  - j. Any vehicle inspection and maintenance that the operator will be required to perform
  - k. Refueling and/or charging and recharging of batteries
  - l. Operating limitations
  - m. Any other operating instructions, warnings, or precautions listed in the operator's manual for the type of vehicle that the employee is being trained to operate
  - n. Workplace-related topics, covering:
    - i. Surface conditions upon which the vehicle will be operated
    - ii. Composition of loads to be carried and load stability
    - iii. Load manipulation, stacking, and unstacking
    - iv. Pedestrian traffic in areas where the vehicle will be operated
    - v. Narrow aisles and other restricted places where the vehicle will be operated
    - vi. Hazardous (classified) locations where the vehicle will be operated
    - vii. Ramps and other sloped surfaces that could affect the vehicle's stability
    - viii. Closed environments and other areas where insufficient ventilation or poor vehicle maintenance could cause a buildup of carbon monoxide or diesel exhaust
    - ix. Other unique or potentially hazardous environmental conditions in the workplace that could affect safe operation

- B. Training – hands-on practice
  - 1. Upon successful completion of the classroom training, trainees will be allowed a three- or four-week period to practice under the direct supervision of a certified forklift driver on a PIT/forklift assigned prior to the formal EHS evaluation.
  - 2. Trainees may operate a PIT/forklift only under the direct supervision of persons who have the knowledge, training, and experience to train operators and evaluate their competence and where such operation does not endanger the trainee or other employees.
- C. Training – evaluation
  - 1. The evaluation may consist of EHS staff observing the employee operating the PIT/forklift during normal duties or may be a staged course designed to evaluate essential skills.
  - 2. For Facilities Maintenance and Engineering (FME) the practice sessions will be scheduled and instructed by EHS staff.
  - 3. The FME course may be set up following the course plan in Attachment 1, FME Course Layout. The course for a non-FME employee allows for more flexibility and may be set up in a manner to demonstrate competency in safely operating a PIT/forklift as required by their job tasks. All tests for competency are performed under EHS oversight. EHS may alter the course if needed.
- D. Training – refresher
  - 1. Refresher training, including an evaluation of the effectiveness of that training, shall be conducted as required to ensure that the operator has the knowledge and skills needed to operate a PIT/forklift. The supervisor may conduct the refresher training.
  - 2. Refresher training in relevant topics shall be provided to the operator when:
    - a. The operator has been observed to operate the vehicle in an unsafe manner
    - b. The operator has been involved in an accident or a near-miss incident
    - c. The operator has received an evaluation that reveals that the operator is not operating the truck safely
    - d. The operator is assigned to drive a different type of truck
    - e. A condition in the workplace changes in a manner that could affect safe operation of the truck
  - 3. Refresher evaluations will occur once every three years by EHS staff.
- E. Powered industrial truck operations
  - 1. General safety
    - a. Approved PITs/forklifts shall bear a label or some other identifying mark indicating approval by the testing laboratory.

- b. Modifications and additions that affect capacity and safe operation shall not be performed by the employee or user without the manufacturer's prior written approval.
- c. PITs/forklifts shall not be driven up to anyone standing in front of a bench or other fixed object.
- d. No person shall be allowed to stand or pass under the elevated portion of any PIT/forklift, whether loaded or empty.
- e. Personnel shall not be permitted to ride on PITs/forklifts unless an approved manufacturer accessory designed for passengers is utilized.
- f. The employer shall prohibit arms or legs from being placed between the uprights of the mast or outside the running lines of a PIT/forklift.
- g. When a PIT/forklift is left unattended, the load-engaging means shall be fully lowered, controls shall be neutralized, power shall be shut off, and brakes set. Wheels shall be blocked if a PIT/forklift is parked on an incline.
- h. A PIT/forklift is unattended when the operator is 25 feet or more away from the vehicle, but it remains in his or her view, or whenever the operator leaves the vehicle and it is not in his or her view.
- i. When the operator of a PIT/forklift is dismounted and within 25 feet of the truck still in his view, the load-engaging means shall be fully lowered, controls neutralized, and the brakes set to prevent movement.
- j. A safe distance shall be maintained from the edge of the ramp or platform while on any elevated surfaces, docks, platforms, or freight cars. PITs/forklifts shall not be used for opening or closing freight doors.
- k. Brakes shall be set and wheel blocks shall be in place to prevent movement of trucks, trailers, or railroad cars while loading or unloading. Fixed jacks may be necessary to support a semitrailer during loading or unloading when the trailer is not coupled to a tractor. The flooring of trucks, trailers, and railroad cars shall be checked for breaks and weakness before they are driven onto.
- l. There shall be sufficient headroom under overhead installations, lights, pipes, sprinkler systems, etc.
- m. An overhead guard shall be used as protection against falling objects. It should be noted that 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.
- n. A load backrest extension shall be used whenever necessary to minimize the possibility of the load, or part of it, falling rearward.
- o. Do not park PITs/forklifts in front of fire aisles, access to stairways, and fire equipment shall always be kept clear.

## 2. Traveling

- a. All traffic regulations shall be observed, including authorized speed limits. A safe distance of approximately three truck lengths from the truck ahead shall be maintained, and the truck shall be kept under control at all times.
- b. The right of way shall be yielded to ambulances, fire trucks, or other vehicles in emergency situations.
- c. Other PITs/forklifts traveling in the same direction at intersections, blind spots, or other dangerous locations shall not be passed.
- d. The driver shall be required to 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 shall be required to travel with the load trailing.
- e. The driver shall be required to look in the direction of, and keep a clear view of, the path of travel.
- f. Grades shall be ascended or descended slowly.
- g. When ascending or descending grades in excess of 10%, loaded trucks shall be driven with the load upgrade.
- h. On all grades, the load and load-engaging means shall be tilted back, if applicable, and raised only as far as necessary to clear the road surface.
- i. Under all travel conditions, the truck shall be operated at a speed that will permit it to be brought to a stop in a safe manner.
- j. Stunt driving and horseplay shall not be permitted.
- k. The driver shall be required to slow down for wet and slippery floors.
- l. Dockboards or bridgeplates shall be properly secured before they are driven over. Dockboards or bridgeplates shall be driven over carefully and slowly, and their rated capacity never exceeded.
- m. Elevators shall be approached slowly, and then entered squarely after the elevator car is properly leveled. Once on the elevator, the controls shall be neutralized, power shut off, and the brakes set.
- n. Motorized hand trucks must enter elevators or other confined areas with the load end forward.
- o. Running over loose objects on the roadway surface shall be avoided.
- p. While negotiating turns, speed shall be reduced to a safe level by means of turning the hand steering wheel in a smooth, sweeping motion. Except when maneuvering at a very low speed, the hand steering wheel shall be turned at a moderate, even rate.

3. Loading
  - a. Only stable or safely arranged loads shall be handled. Caution shall be exercised when handling off-center loads that cannot be centered.
  - b. Only loads within the rated capacity of the truck shall be handled.
  - c. Long or high (including multiple-tiered) loads that may affect capacity shall be adjusted.
  - d. Trucks equipped with attachments shall be operated as partially loaded trucks when not handling a load.
  - e. A load-engaging means shall be placed under the load as far as possible; the mast shall be carefully tilted backward to stabilize the load.
  - f. Extreme care shall be used when tilting the load forward or backward, particularly when high tiering. Tilting forward with the load-engaging means elevated shall be 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.
4. Operation of the truck
  - a. If, at any time, a PIT/forklift is found to be in need of repair, defective, or in any way unsafe, the truck shall be taken out of service until it has been restored to safe operating condition.
  - b. Fuel tanks shall not be filled while the engine is running. Spillage shall be avoided.
  - c. Spillage of oil or fuel shall be carefully cleaned with an appropriate absorbent material. All oil or hydraulic spills outdoors should be reported to EHS at 301-846-1451.
  - d. No truck with a leak in the fuel system shall be operated until the leak has been corrected.
  - e. Open flames shall not be used for checking electrolyte levels in storage batteries or gasoline levels in fuel tanks.
5. Maintenance of PITs/forklifts
  - a. Any PIT/forklift that is not in safe operating condition shall be removed from service. All repairs shall be made by authorized personnel.
  - b. No repairs shall be made in a hazardous location.
  - c. Repairs to the fuel and ignition systems of industrial trucks involving fire hazards shall be conducted only in locations designated for such repairs.
  - d. Trucks in need of repairs to the electrical system shall have the battery disconnected prior to such repairs.

- e. All parts that requiring replacement shall be replaced only with equivalent parts that meet the manufacturer's specifications.
- f. PITs/forklifts shall not be altered from the manufacturer's specifications. Any part changes that do not meet the manufacturer's specifications, or additional counterweighting on PITs/forklifts, shall not be done unless approved by the PIT/forklift manufacturer.
- g. PITs/forklifts shall be examined before each use by the operator, and shall not be placed in service if the examination shows any condition adversely affecting the safety of the vehicle. When industrial trucks are used on a round-the-clock basis, they shall be examined after each shift. When found, defects shall be immediately reported and corrected.
- h. Water mufflers shall be filled daily, or as frequently as necessary to prevent depletion of the supply of water to below 75% of the filled capacity. Vehicles with mufflers that have screens or other parts that may become clogged shall not be operated while such screens or parts are clogged. Any vehicle that emits hazardous sparks or flames from the exhaust system shall immediately be removed from service and not returned to service until the cause of the emission of such sparks and flames has been eliminated.
- i. When the temperature of any part of any truck is found to be in excess of its normal operating temperature, thus creating a hazardous condition, the vehicle shall be removed from service and not returned to service until the cause of the overheating has been eliminated.
- j. PITs/forklifts shall be kept in a clean condition, free of lint, excess oil, and grease. Noncombustible agents should be used for cleaning trucks. Low flash point (below 100°F) solvents shall not be used. High flash point (at or above 100°F) solvents may be used. Precautions regarding toxicity, ventilation, and fire hazard shall be consonant with the agent or solvent used.

#### F. Documentation

1. EHS will send a memo to the supervisor, copying the employee, on the location, time, and details of the class.
2. The training class slides (updated annually), written exam, and evaluation forms are located on the EHS server.
3. Upon completion of the classroom training, the employee will be assigned PIT/forklift surveillance in the OHM database by EHS staff.

#### V. References

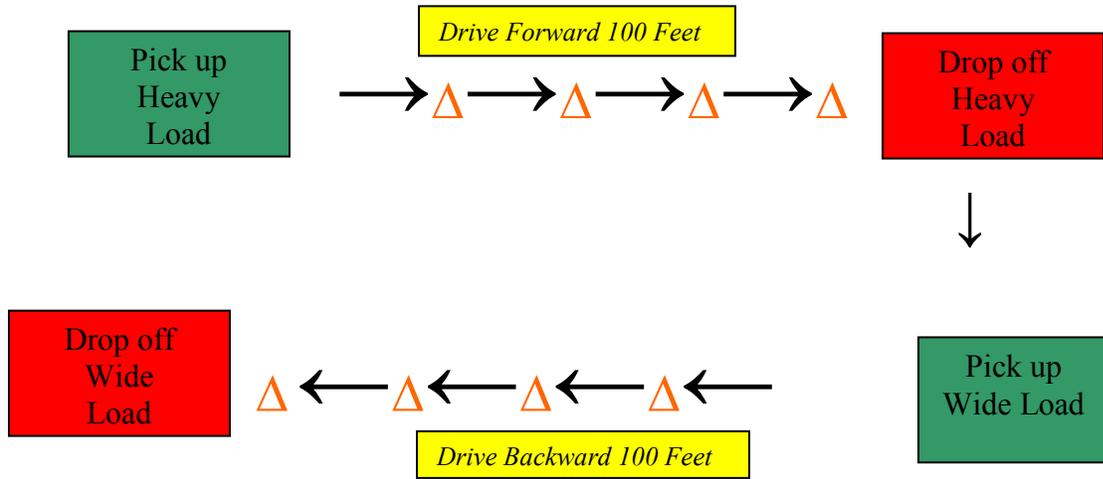
Occupational Safety and Health Administration (OSHA) 29 C.F.R. 1910.178, Powered Industrial Trucks

OSHA Safety Regulations and Labor Law Guide: [http://www.osrllg.com/osha\\_faq1.php](http://www.osrllg.com/osha_faq1.php)

#### VI. Attachment

Attachment 1, FME Course Layout

**FME Course Layout**



△ - Traffic cone: driver must weave between cones.