



# Powered Industrial Trucks OSHA 29 CFR 1910.178

## INTRODUCTION

### Forklift Accidents:

- OSHA estimates 100 forklift injuries every day
- Cause over 91 deaths each year
- 36,500 serious injuries each year
- 90% of all forklifts will be involved in an injury accident in their service life
- OSHA says about 25% are caused, in part, by inadequate training

Proper training for a forklift operator must take into account:

- Using the correct lift for the task
- Different operating conditions
- Size and type of the load
- Type and condition of the surface on which the vehicle is being operated
- Other factors that can adversely affect vehicle operation

All Powered Industrial Truck (PIT) operators must be trained in every type of equipment they will use. The PIT permit must indicate every type or class of PIT the user is permitted to operate.

The PIT permit is valid for three years from the date of issue.

### What You Need to Know About OSHA's Revised Forklift Regulations

Having remained virtually unchanged since 1971, OSHA's training requirements for powered industrial trucks were in dire need of revision. OSHA responded to complaints from industry associations and updated its standards.

- a training program based on the trainee's prior knowledge and skill;
- a knowledge of what types of powered industrial trucks are used in the workplace;
- the monitoring of hazards in the workplace; and
- the operator's demonstrated ability to handle a powered industrial truck safely.

Evaluation of each operator's performance is required as part of the initial and ongoing training at least once every three years.

The required training will include formal instruction such as:

- Lectures
- Discussions
- Interactive computer learning, and/or
- Videotape or written material
- It will also include practical training requirements such as demonstrations performed by the trainer and practical exercises performed by the trainee. Employers will also have to evaluate operator performance in the workplace as part of the training.

OSHA estimates the new standard will save \$83 million in reduced direct costs, such as medical savings, administering workers' compensation and value of lost output. Moreover, another \$53 million annually may be saved in reduced accident-related property damage.

The standard will apply to the estimated one million powered industrial trucks used to carry, push, pull, lift, stack or tier material. It will not apply to vehicles used for earth moving or over-the-road hauling. "It is easier to do a job right than to explain why you didn't."

## Program Manual Contents

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## OSHA'S REQUIREMENTS

### § 1910.178 Powered Industrial Trucks – Operator Training

#### Operator Training

##### 1. Safe Operation

- The employer shall ensure that each powered industrial truck operator is competent to operate a powered industrial truck safely, as demonstrated by the successful completion of the training and evaluation specified in this paragraph.
- Prior to permitting an employee to operate a powered industrial truck (except for training purposes), the employer shall ensure that each operator has successfully completed the training required by this paragraph, except as permitted by paragraph 5.

##### 2. Training Program Implementation

- Trainees may operate a powered industrial truck 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.
- Training shall consist of a combination of formal instruction (i.e., lecture, discussion, interactive computer learning, video tape, 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.
- All operator training and evaluation shall be conducted by persons who have the knowledge, training and experience to train powered industrial truck operators and evaluate their competence.

##### 3. Training Program Content

Powered industrial truck operators shall receive initial training in the following topics, except in topics, which the employer can demonstrate are not applicable to safe operation of the truck in the employer's workplace.

###### A. PIT related topics:

- Operating instructions, warnings and precautions for the types of truck the operator will be authorized to operate;
- Differences between the PIT and an automobile;
- Truck controls and instrumentation: where they are located, what they do, and how they work;
- Engine or motor operation;
- Steering and maneuvering;
- Visibility (including restrictions due to loading);
- Fork and attachment adaptation, operation and use limitations;
- Vehicle capacity;
- Vehicle stability;
- Any vehicle inspection and maintenance that the operator will be required to perform;

- Refueling and/or charging and recharging of batteries;
- Operating limitations;
- Any other operating instructions, warnings or precautions listed in the operator's manual for the types of vehicle that the employee is being trained to operate.

###### B. Work-related topics:

- Surface conditions where the vehicle will be operated;
- Composition of loads to be carried and load stability;
- Load manipulation, stacking and unstacking;
- Pedestrian traffic in areas where the vehicle will be operated;
- Narrow aisles and other restricted places where the vehicle will be operated;
- Hazardous (classified) locations where the vehicle will be operated;
- Ramps and other sloped surfaces that could affect the vehicle's stability;
- Closed environments and other areas where insufficient ventilation or poor vehicle maintenance could cause a buildup of carbon monoxide or diesel exhaust;
- Other unique or potentially hazardous environmental conditions in the workplace that could affect safe operation.

###### C. The requirements of this section

#### 4. Refresher Training & Evaluation

Refresher training, including an evaluation of the effectiveness of that training, shall be conducted as required as stated below to ensure that the operator has the knowledge and skills needed to operate the powered industrial truck safely.

- Refresher training in relevant topics shall be provided to the operator when:
  - The operator has been observed to operate the vehicle in an unsafe manner;
  - The operator has been involved in an accident or near-miss incident;
  - The operator has received an evaluation that reveals that the operator is not operating the truck safely;
  - The operator is assigned to drive a different type of truck; or
  - A condition in the workplace changes in a manner that could affect safe operation of the truck.
- An evaluation of each powered industrial truck operator's performance shall be conducted at least once every three years.

#### 5. Avoidance of Duplicative Training

If an operator has previously received training, and such training is appropriate to the truck and working conditions encountered, additional training in that topic is not required if the operator has been evaluated and found competent to operate the truck safely.

## 6. Certification

The employer shall certify that each operator has been trained and evaluated as required.

The certification shall include the name of the operator, the date of training, the date of evaluation, and the identity of the person(s) performing the training or evaluation.

## §1910.178 (M) & (N) – Industrial Truck Operations

### (M) Truck Operations

1. Trucks shall not be driven up to anyone standing in front of a bench or other fixed object.
2. No person shall be allowed to stand or pass under the elevated portion of any truck, whether loaded or empty.
3. Unauthorized personnel shall not be permitted to ride on powered industrial trucks. A safe place to ride shall be provided where riding of trucks is authorized.
4. The employer shall prohibit arms or legs from being placed between the uprights of the mast or outside the running lines of the truck.
5.
  - i. When a powered industrial truck is left unattended, load engaging means shall be fully lowered, controls shall be neutralized, power shall be shut off, and brakes set. Wheels shall be blocked if the truck is parked on an incline.
  - ii. A powered industrial truck is unattended when the operator is 25 ft. or more away from the vehicle which remains in his view, or whenever the operator leaves the vehicle and it is not in his view.
  - iii. When the operator of an industrial truck is dismounted and within 25 ft. of the truck still in his view, the load engaging means shall be fully lowered, controls neutralized, and the brakes set to prevent movement.
6. A safe distance shall be maintained from the edge of ramps or platforms while on any elevated dock, or platform or freight car. Trucks shall not be used for opening or closing freight doors.
7. 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.
8. There shall be sufficient headroom under overhead installations, lights, pipes, sprinkler system, etc.
9. 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.

## FORKLIFT SAFETY GUIDELINES

Because of their weight, their mobility and the potential for driver error, forklifts present some safety challenges. That's why it is so important that we are all clear on the following guidelines that can help prevent forklift-related accidents and injuries.

### When Operating a Forklift:

- Adhere to all posted plant speed limits.
- Maintain a safe distance from the forklift ahead of you – at least three truck lengths.
- Keep the forklift under control at all times.
- Yield the right of way to emergency vehicles.
- Do not attempt to pass other forklifts.
- Check your blind spot for hidden dangers.
- Keep a clear view of the path of travel.
- Slow down whenever you approach a cross aisle or any area in which your vision may be obstructed.
- Sound the horn before crossing any intersection.
- Ascend or descend grades slowly.
- Never engage in any kind of horseplay or stunt driving.
- Slow down for wet or slippery floors.
- Do not attempt to run over loose objects in the roadway surface.
- When turning, reduce speed to a safe level by turning the hand steering wheel in a smooth, sweeping motion.
- When Transporting A Load:
  - Carry only stable loads which are arranged safely.
  - Use extreme caution if you must transport a load that must be carried off center.
  - Carry only loads which fall within the forklift's rated capacity.
  - Use utmost caution when tilting the load forward or backward.

### When Fueling a Forklift:

- Do not fill fuel tanks while the engine is running.
- Avoid any spillage.
- If a spill does occur, carefully wash away or completely evaporate the spillage.
- Replace the fuel tank cap before restarting the engine.
- Never use an open flame to check electrolyte levels in storage batteries or gasoline levels in fuel tanks.
- Never operate a forklift with a leak in the fuel system until the leak has been fixed.

10. A load backrest extension shall be used whenever necessary to minimize the possibility of the load or part of it from falling rearward.
  11. Only approved industrial trucks shall be used in hazardous locations.
  12. Whenever a truck is equipped with vertical only, or vertical and horizontal controls elevatable with the lifting carriage or forks for lifting personnel, the following additional precautions shall be taken for the protection of personnel being elevated.
    - i. Use of a safety platform firmly secured to the lifting carriage and/or forks.
    - ii. Means shall be provided whereby personnel on the platform can shut off power to the truck.
    - iii. Such protection from falling objects as indicated necessary by the operating conditions shall be provided.
  13. [Reserved]
  14. Fire aisles, access to stairways, and fire equipment shall be kept clear.
- (N) Traveling**
1. All traffic regulations shall be observed, including authorized plant speed limits. A safe distance shall be maintained approximately three truck lengths from the truck ahead, and the truck shall be kept under control at all times.
  2. The right of way shall be yielded to ambulances, fire trucks, or other vehicles in emergency situations.
  3. Other trucks traveling in the same direction at intersections, blind spots, or other dangerous locations shall not be passed.
  4. 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.
  5. Railroad tracks shall be crossed diagonally wherever possible. Parking closer than 8 feet from the center of railroad tracks is prohibited.
  6. The driver shall be required to look in the direction of, and keep a clear view of the path of travel.
  7. Grades shall be ascended or descended slowly.
    - i. When ascending or descending grades in excess of 10 percent, loaded trucks shall be driven with the load upgrade.
    - ii. [Reserved]
    - iii. 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.
  8. 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.
  9. Stunt driving and horseplay shall not be permitted.
  10. The driver shall be required to slow down for wet and slippery floors.
  11. Dockboard or bridgeplates, shall be properly secured before they are driven over. Dockboard or bridgeplates shall be driven over carefully and slowly and their rated capacity never exceeded.
  12. 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.
  13. Motorized hand trucks must enter elevator or other confined areas with load end forward.
  14. Running over loose objects on the roadway surface shall be avoided.
  15. 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.

## CERTIFICATE OF TRAINING

### POWERED INDUSTRIAL LIFT TRUCK TRAINING – OPERATIONAL

Employee's Name \_\_\_\_\_

Company/Department \_\_\_\_\_

OSHA 29 CFR Subpart N – Materials Handling and Storage, 1910.178 describes methods to use for compliance with powered industrial lift truck operations, maintenance, inspection and training.

This is to certify that I have attended the above training program which has informed me of the following:

\_\_\_\_\_ Proficiency demonstrated in safe handling of industrial lift truck

\_\_\_\_\_ Safe travel habits exercised in operation of lift truck

\_\_\_\_\_ Awareness of mechanical components and their function

\_\_\_\_\_ How to handle mechanical emergencies while operating equipment

\_\_\_\_\_ Safe loading and unloading procedures

\_\_\_\_\_ Practiced general safe operating procedures

\_\_\_\_\_ travel loaded                      \_\_\_\_\_ stacking loads

\_\_\_\_\_ travel unloaded                      \_\_\_\_\_ dropping loads

\_\_\_\_\_ Inspection of equipment to determine safe operating condition

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Employee's Signature \_\_\_\_\_

Date \_\_\_\_\_

## R-D-F FORKLIFT EVALUATION FORM

### PERFORMANCE TEST FOR FORKLIFT OPERATORS

Employee's Name \_\_\_\_\_

Date \_\_\_\_\_

- |  |  |
|--|--|
| <input type="checkbox"/> Familiarity with truck controls.              | <input type="checkbox"/> Approached load properly.   |
| <input type="checkbox"/> Drove under control.                          | <input type="checkbox"/> Lifted load properly.   |
| <input type="checkbox"/> Gave proper signals when turning.             | <input type="checkbox"/> Lowered load smoothly/slowly.   |
| <input type="checkbox"/> Slowed down at intersections.                 | <input type="checkbox"/> Load balanced properly.   |
| <input type="checkbox"/> Stops smoothly/completely.                    | <input type="checkbox"/> Carried parts in approved containers.   |
| <input type="checkbox"/> Forks under load all the way.                 | <input type="checkbox"/> Did place loads within marked areas.  |
| <input type="checkbox"/> Checked bridge-plates/ramps.                  | <input type="checkbox"/> Did drive backward when required.   |
| <input type="checkbox"/> Did stack loads evenly and neatly.            | <input type="checkbox"/> Did place forks on the floor when parked, controls neutralized, brake etc, power off. |
| <input type="checkbox"/> Did check load weights.                       | <input type="checkbox"/> Sounded horn at intersections.  |
| <input type="checkbox"/> Followed proper instructions for maintenance. | <input type="checkbox"/> Clear view of direction of travel.  |
| <input type="checkbox"/> Obeyed signs.                                 | <input type="checkbox"/> Turned corners correctly.   |
| <input type="checkbox"/> Maneuvered properly.                          | <input type="checkbox"/> Traveled with load at proper height.  |
| <input type="checkbox"/> Yielded to pedestrians.                       |  |

Total Rating \_\_\_\_\_

## EQUIPMENT LIST

Date of Evaluation \_\_\_\_\_

Evaluator: \_\_\_\_\_

### Straight Mast Forklifts

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

### Walk Behind Forklifts

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

## FORKLIFT CHECKLIST

### Component Tires

Check for:

- No excessive wear, splitting or missing tire material
- Good rim condition
- Tight wheel nuts
- No separation of rubber and rim
- Proper tire pressure (if pneumatic tires are used)
- Proper tires used for forklift and surfaces

### Cylinders and Hydraulic Lines

Check:

- Hydraulic fluid at proper levels
- No damage to or fluid leaking from lift and tilt cylinders
- Mounting hardware on cylinders is secure
- Hydraulic lines okay
- Hoses okay
- Secure connections at fittings

### Chains

Check:

- Chains are clean and lubricated
- Chains have no visible wear
- Chains have equal tension

### Engine

Check:

- Engine has no loose or frayed wiring
- Air filter okay
- Oil filter okay
- Proper oil level
- Transmission fluid okay
- Radiator fluid okay
- No visible leaks under forklift

### Horns and Lights

Check:

- Horns work properly
- Lights work properly

### Energy System

Check for battery powered forklifts:

- Battery mounting secure
- Battery casing in good shape
- All connections secure
- Proper fluid level
- Vent holes are clear

Check for gas, propane or diesel fueled forklifts:

- Fuel tanks have no cracks, broken welds or other damage
- All valves and couplings okay
- Mounting hardware is secure

### Forks

Check:

- Forks are centered on carriage
- Forks are equally spaced
- Forks have no cracks or other damage
- Forks are right for the job
- Locking pins work correctly

### Carriage, Mast and Backrest

Check carriage, mast and backrest for:

- No visible damage
- Secure mountings
- No broken welds
- Roller tracks are lubricated

### **Guards**

Check:

- No broken welds
- Mounted securely
- No visible damage

### **Specification Plate**

Check:

- Identification plate is readable

### **Gauges**

Start forklift and check:

- All gauges work properly
- All indicators work properly
- Moving parts work smoothly and properly

### **Mast and Tilt Cylinders**

- Lift carriage to its maximum height
- Lower carriage to just above the floor
- Carriage moves smoothly and completely

### **Parking Brakes**

- Set parking brake and accelerate
- Parking brake prevents the forklift from moving

### **Accelerator, Transmission and Service Brakes**

Release parking brake and check:

- Forklift accelerates smoothly
- Brakes slow forklift without jerking or locking
- Brakes are not too soft
- Forklift moves forward properly
- Forklift moves backward properly
- Backup signal sounds when moving in reverse

### **Steering**

Check:

- Steering wheel turns while stopped
- Steering wheel turns while moving
- Steering wheel turns forklift smoothly and precisely
- No strange noise
- No hesitation

***Forklift is Safe to Operate***

## **POWERED INDUSTRIAL TRUCKS – PRE-TEST EXERCISE**

### **True or False Questions – Circle the Correct Answer**

- T F It is a safety violation to lift/raise anyone with a forklift unless a safety platform with guardrails is provided.
- T F It is appropriate to smoke while driving a forklift or electric pallet jack.
- T F Before making a turn, an operator must slow down to a very slow speed to prevent equipment from overturning.
- T F As an operator, you are required to obey company safety regulations.
- T F If no one is nearby, it is appropriate to drive faster than the safe speed of six miles per hour (walking speed).
- T F All accidents and injuries must be reported immediately to the supervisor.
- T F It is the forklift operator's responsibility to examine the decking of a trailer before driving into or on it.
- T F When empty, the forks should not be raised higher than 2–4 inches off the floor.
- T F Reporting to the supervisor that there is play in the steering wheel can prevent an accident.
- T F When changing an L.P.G. tank, the operator should wear gloves.
- T F When driving an electric forklift, it is safe to drive with a low-charged battery.
- T F The operator must keep their entire body inside the running lines of the powered industrial truck.
- T F The pedestrian has the right-of-way.
- T F When carrying a tall load, the operator should drive backwards.
- T F Excessive tilting or fast moves can result in an overturned forklift and a spilled load.