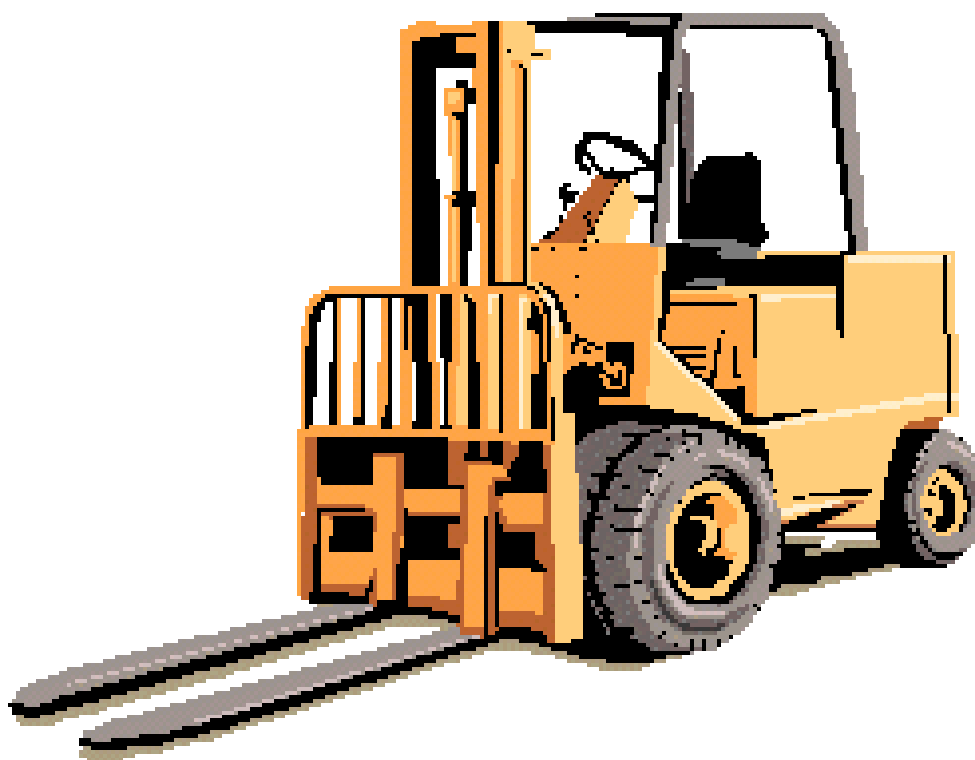
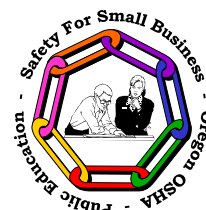


Safety for Small Business

Powered Industrial Truck Safety



0206



Powered Industrial Truck Safety

A powered industrial truck is defined as a mobile, power-driven vehicle used to carry, push, pull, lift, stack, or tier material.

All nameplates and markings must be in place and legible.

All modifications and additions which affect the safe operation and capacity of the truck must be approved by the manufacturer. The approval from the manufacturer must be in writing. If using front-end attachments (other than the manufacturers') the truck must be marked accordingly.

There are 12 truck designations: **D, DS, DY, E, ES, EE, EX, G, GS, LP, LPS, CNG**

Diesel, Electric, Gasoline, Liquefied Patroleum, Compressed Natural Gas

The purpose of these designations (or types) inform the user where the trucks can safely be operated (I.e. flammable areas, dusty environments, etc.). The **D, DS, DY, ES, EE, EX, GS, and LPS** have additional safeguards to the electrical, fuel, and/or exhaust systems.

An overhead guard must be provided when there are hazards of falling objects (i.e. boxes, containers, bagged material, etc.). The overhead guard is not designed to withstand the entire load.



Norlift of Oregon, Inc.



Norlift of Oregon, Inc.

A load backrest must be provided when handling small objects or unbanded units.

S T A B I L I T Y

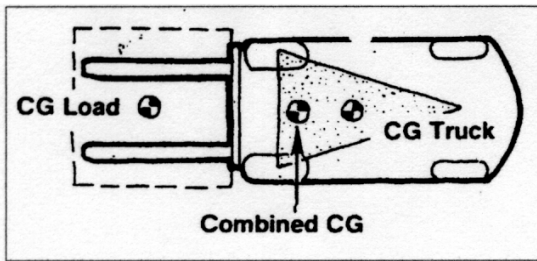
The lift truck is based on the principle of two weights balanced on opposite sides of a pivot (fulcrum). The forward wheels are the fulcrum. This is the same principle used for a teeter-totter. The load on the forks must be balanced by the weight of the lift truck.



The center of gravity is the single point about which an object is balanced in all directions. Every object has a CG. When the lift truck picks up a load, the truck and load have a new combined CG.

Fulcrum Point

Powered Industrial Truck Safety



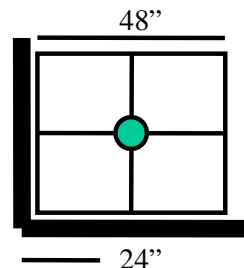
The stability of the lift truck is determined by the location of its CG, or if the truck is loaded, the combined CG.

Think of riding a tricycle around corners. If you lean forward you will overturn as you moved your CG to the narrowest portion of the trike. If you lean back applying your weight on the two rear wheels while taking a turn, you will not tip as you moved your CG to the widest portion.

In order for the lift truck to be stable (not tip over to the side) the CG must stay within the area of the lift truck represented by a triangle drawn between the drive wheels and the pivot of the steering axle. This triangle is routinely called the stability triangle.

The center of gravity, and therefore the stability, of the loaded truck is affected by a number of factors including size, weight, shape, and position of the load. Also, the height to which the load is elevated, the amount of forward or backward tilt, tire pressure, and the dynamic forces created when the truck is moving. These dynamic forces are caused by things like acceleration, braking, operating on uneven surfaces or on an incline, and turning. If the CG moves forward of the drive axle the truck will tip forward. If the CG moves outside of the line represented by the lines drawn between the drive wheels and the steer axle pivot, the lift truck will tip to the side. These factors must be considered when traveling with an unloaded truck, as well, because **an unloaded truck will tip over to the side easier than a loaded truck** with its load in the lowered position.

The distance from the heel of the forks to the center of the load is called the load center. Most lift trucks are rated at a load center of **24** inches. When the load is carried at a greater distance than the load center, the maximum capacity of the truck is **decreased**. The use of special attachments instead of forks will also **reduce** the capacity of the lift truck.



When loading trucks, trailers, and rail cars, ensure parking brakes are set and wheels chocked. Inspect the loading surface for weak sections, holes, rot, etc. Inspect the landing gear and consider using fixed jacks to support the nose from upending.

Vertical mast forklifts can be used to lift workers as long as a safety platform (“basket”) with a standard railing is used and secured to the carriage. Shear point guarding must also be provided between the worker(s) and the mast. The forklift must be attended while workers are in it and always consider the weight in relation to the trucks capacity and stability.

Forklifts must be removed from service when they are not in safe operating condition. Forklifts should be inspected before and after each shift and should include items such as, but not limited to, brakes, steering, forks/carriage, mast chain components, data plate, tires, counterweight, mast, overhead guard, control levers, horn, lights, etc.

Operator Elements

Each powered industrial truck operator must be competent to operate a powered industrial truck safely. 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. Trainees can operate the truck in areas where it does not endanger the trainee or other employees.

Operator training must consist of a combination of:

- 1) Formal/Classroom (*lecture, group activities, videos, computer, workbooks, quizzes, etc.*)
- 2) Practical (*demonstrations by trainer; demonstrations/exercises by trainee*)
- 3) Evaluation of the operator's performance in the workplace

The training & evaluations must be conducted by persons who have the knowledge, training, and experience to train operators and evaluate their competence.

Training must cover *truck-related topics* including all operating instructions, warnings, and precautions for the types of trucks the operator will operate; differences between the truck and the automobile; controls and instrumentation: location, 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 (weight and load center); vehicle stability (with and without load and attachments); vehicle inspection and maintenance the operator will be required to perform; refueling and/or charging and recharging batteries; operating limitations; any other operating instructions, warning, or precautions listed in the operator's manual for the type of vehicle which the employee is being trained to operate. *Workplace-related topics including* surface conditions where the vehicle will be operated; composition of probable loads 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; operating in hazardous (classified) locations; operating the truck on ramps and other sloped surfaces that could affect the vehicle's stability; other unique or potentially hazardous environmental conditions that exist or may exist in the workplace; operating the vehicle in closed environments and other areas where insufficient ventilation or poor vehicle maintenance could cause a buildup of carbon monoxide or diesel exhaust; and the requirements of this section.

Retraining must be conducted when:

The operator has been observed to operate the vehicle in an unsafe manner; the operator has been involved in an

Don't forget

accident or near-miss incident; the operator has received an ***to train the***

evaluation the reveals he/she is not operating the truck safely; ***pedestrians!***

the operator is assigned to operate a different type of truck; or condition in the workplace changes in a manner that could affect safe operation of the truck.



An evaluation of the performance of each powered industrial truck operator must be conducted at least every 3 years.

Employers are required to “certify” that each operator has been trained and evaluated as required by this rule. Documentation must include the *name of the operator, the date(s) of the training and evaluation, and the identity of the trainer/evaluator.*

Powered Industrial Truck Safety Module 13

Employee Name: _____

Date: _____

Quiz

1. Operators should inspect their lift trucks _____ and _____ each shift.
2. The distance from the heel of the forks to the center of the load is called _____.
3. An _____ truck is much more unstable than a properly _____ lift truck.
4. Modifications and/or additions which affect the _____ and _____ must be approved by the manufacturer. This approval must be in _____.
5. When loading trucks/trainers, ensure the _____ are set and wheels are _____.
6. **T F** A safety platform with a standard railing must be used when lifting workers.
6. **T F** Forklifts can still be operated even though lacking a data plate.
6. **T F** Some truck designations indicate additional safety features.
6. **T F** Overhead guards are only intended to protect operators from small falling objects (boxes, containers, etc.) not the entire load.
6. **T F** Forklift safety training should not include pedestrians.

Extra Credit

All of the following effect the truck's stability except:

- Tire inflation pressure
- Position of the load on the forks
- Acceleration and braking
- Loadweight and size
- Truck speed, especially while turning
- Center of gravity of the load
- Current checking account balance
- Height of the forks or attachment while traveling/turning
- Sharpness of turn
- Floor or ground conditions