

# Forklift Training for Trainers



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## Course Overview

This training program is designed to meet or exceed Federal and State requirements. The course is divided into two main parts:

1. Train the trainer workbook, including types of forklifts, regulations, capacity and stability concepts and practical skills exercise.
2. Operator training workbook, including power point with speaker notes, exercises, and competency test.

## Course Objectives

As trainers it is our responsibility to ensure that every forklift operator is competent to operate their forklift in a safe manner regardless of their previous experience. After completing this course, you will be able to:

- Teach the stability dynamics of forklifts to potential operators using schematics of the Stability Triangle
- Educate forklift operators on the requirements of applicable regulations
- Incorporate required truck-related and workplace-related topics into a comprehensive forklift operator training program
- Use a checklist to conduct and document forklift operator evaluations



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## Introduction

Whether you call them forklifts or lift trucks, powered industrial trucks are used in practically every industry. It seems everywhere you look these days, lift trucks are unloading trailers at department stores, stacking products in a warehouse, or loading materials at a construction site. Powered industrial trucks are also moving lumber in sawmills, lumber yards and dropping stock in grocery store aisles.

With well over one million lift trucks in operation today, emphasis must be placed on both operator and pedestrian safety. This program will help prepare you to better understand safety regulations governing these pieces of equipment in addition to providing you with assistance in developing training for your lift truck operators and other affected employees. (OR-OSHA)

## Statistics

OSHA estimates there are about 85 forklift fatalities and 34,900 serious injuries every year in the United States.

### **Main causes of fatalities**

- 42% Forklift overturned
- 25% Crushed between vehicle and a surface
- 11% Crushed between two vehicles
- 10% Struck or ran over by a forklift
- 8% Struck by falling material
- 4% Fall from platform on the forks

### **Where fatalities occur**

- Manufacturing
- Construction
- Wholesale Trades
- Transportation
- Retail Trade
- Mining



## **Power Industrial Truck - Definition**

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

- Commonly known as forklift, pallet truck, rider trucks, or lift truck
- Can be powered by combustion engines or electric motors

### **Classes of Commonly Used Powered Industrial Trucks\***

The Industrial Truck Association has placed powered industrial trucks into seven classes.

- Class I - Electric motor rider trucks
- Class II - Electric motor narrow aisle trucks
- Class III - Electric motor hand trucks or hand/rider trucks
- Class IV - Internal combustion engine trucks (solid/cushion tires)
- Class V - Internal combustion engine trucks (pneumatic tires)
- Class VI - Electric and internal combustion engine tractors
- Class VII - Rough terrain forklift trucks

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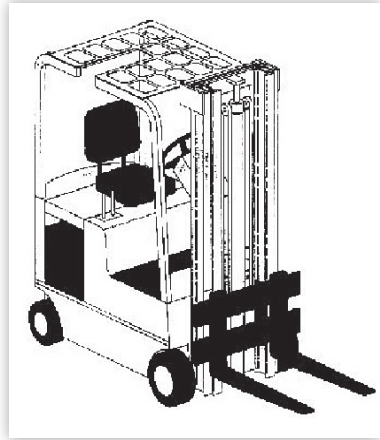
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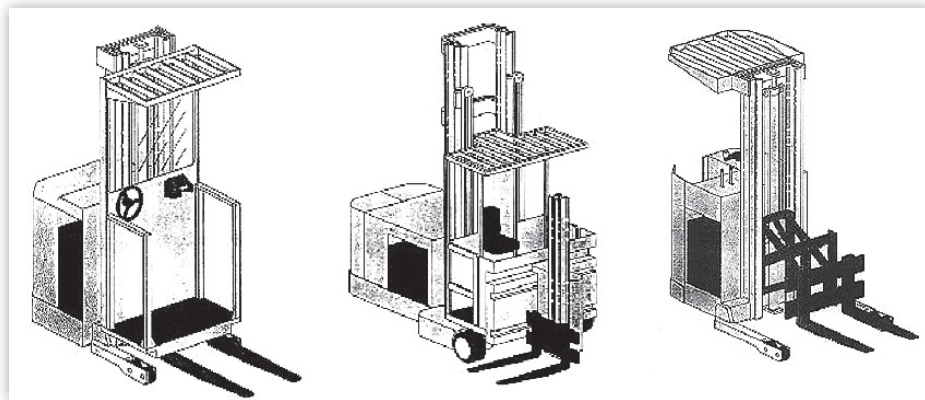
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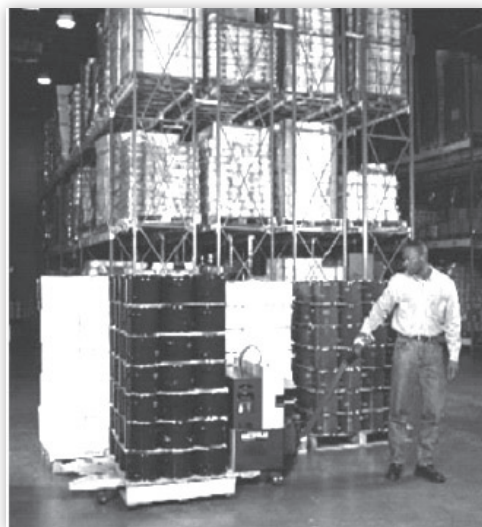
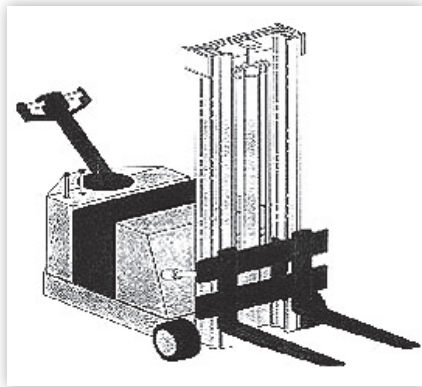
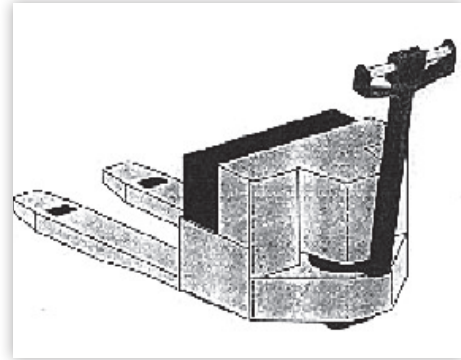
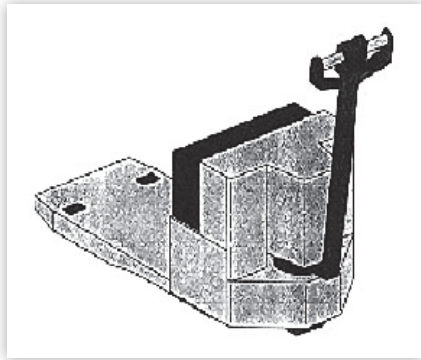
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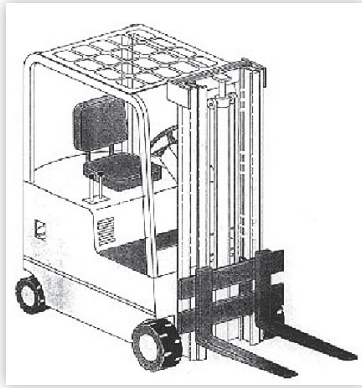
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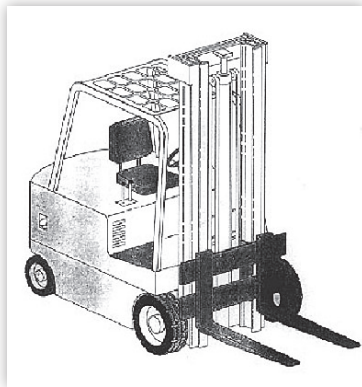
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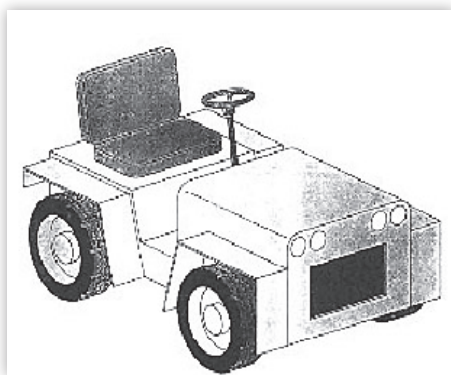
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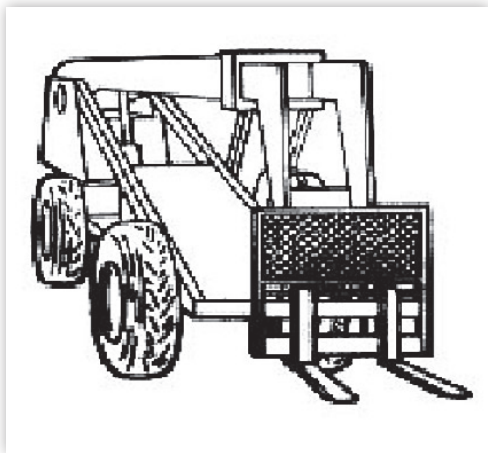
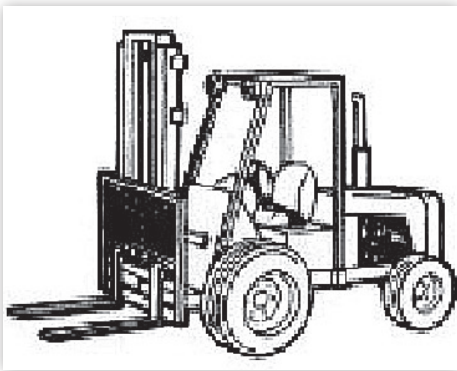


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**Class** \_\_\_\_\_



## Regulations

Forklift operator training keeps your operators and employees safe.

In addition to classroom training, all forklift operators are required to undergo an evaluation of their driving skills every three years, or when assigned to operate a different type of forklift, involved in an accident or near miss and if an operator evaluation shows the need for retraining.

## Operator Training - Safe Operation

Each employer shall ensure:

- Operator is competent...as demonstrated by successfully completing training and evaluation
- Each operator has successfully completed the training required prior to operating a powered industrial truck

## Training Program Implementation

- Trainees may operate a powered industrial truck only:
  - Under direct supervision of a person who has 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 (lecture, discussion, interactive computer learning, written material),
  - Practical training (demonstrations and exercises performed by the trainee), and
  - Evaluation of the operator's performance in the workplace

## Training Program Content

- Operators shall receive initial training in the following topics, except in topics where the employer demonstrates they do not apply to safe operation in the employer’s workplace.

<u>Forklift Related Topics</u>	<u>Workplace Related Topics</u>
Operating Instructions	Surface conditions
Controls and Instrumentation	Composition of loads
Differences Between Forklift and Automobile	Load manipulation, stacking, and unstacking
Warnings and Precautions	Pedestrian traffic
Engine or Motor Operation - Propane, Diesel, Gas, Electric	Narrow aisles and other restricted places
Steering and Maneuvering	Use of door openings
Visibility	Hazardous (classified locations)
Forks and Other Attachments	Ramps and other sloped surfaces
Capacity and Stability	Closed environments, poor maintenance causing carbon monoxide buildup
Daily Inspections and Maintenance	Any other unique or potentially hazardous conditions in the workplace
Refueling or Recharging Batteries	

## **Evaluation**

An evaluation of each powered industrial truck operator's performance must be conducted:

- After initial training
- After refresher training
- At least once every three years

### **Refresher Training**

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

Refresher training is required when:

- Unsafe operation is observed
- Accident or near-miss incidents
- Evaluation indicates need
- Different type of equipment is introduced
- Workplace condition changes

### **Avoidance of Duplicative Training (Grandfather Clause)**

- If an operator has previously received training in a topic specified in this section, and the 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



## Certification

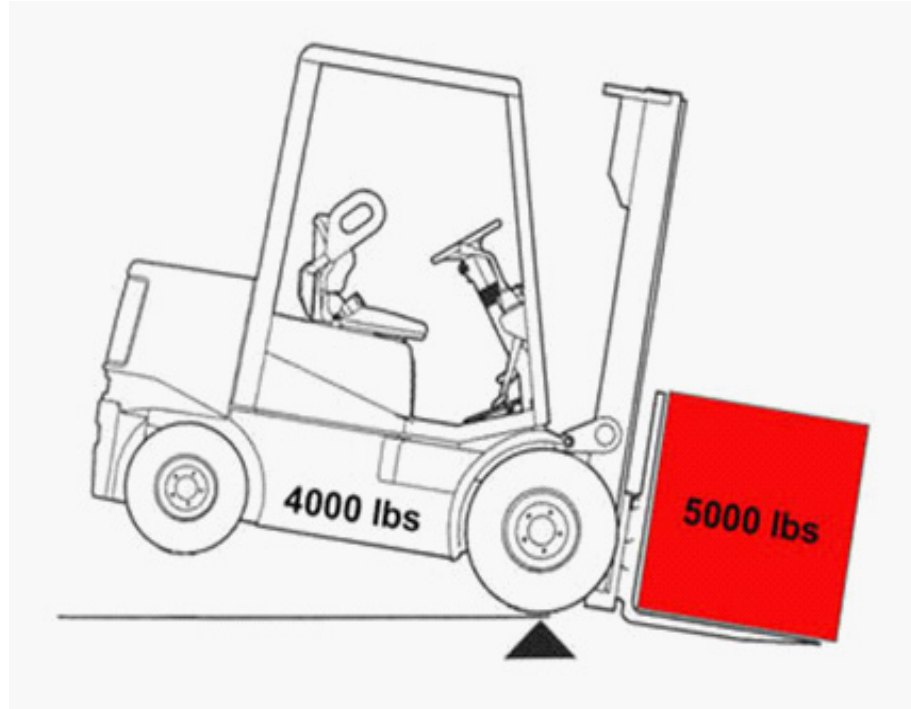
- The employer shall certify that each operator has been trained and evaluated as required by the standard
- Certification shall include:
  - Name of operator
  - Date of training
  - Date of evaluation
  - Identity of person(s) performing the training or evaluation

***Certificate of Training***  
[Example]  
This document certifies that  
***[Student's Name]***  
has successfully completed the  
***[Company Name]***  
***Powered Industrial Truck Training  
and Evaluation***

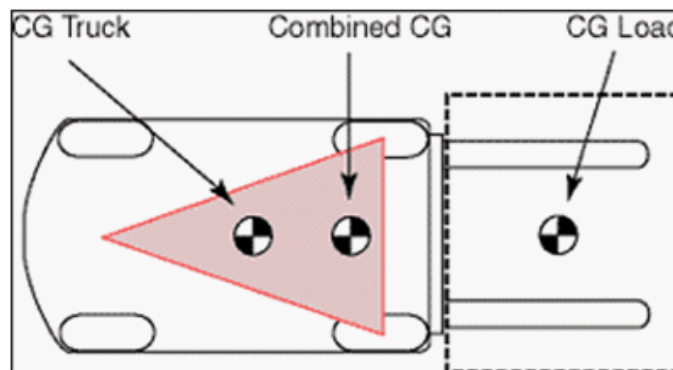
Training completed on: *[Date]*      Course instruction by: *[Trainer's Name]*

Evaluation completed on: *[Date]*      Evaluation conducted by: *[Evaluator's Name]*

## Vehicle Capacity and Stability

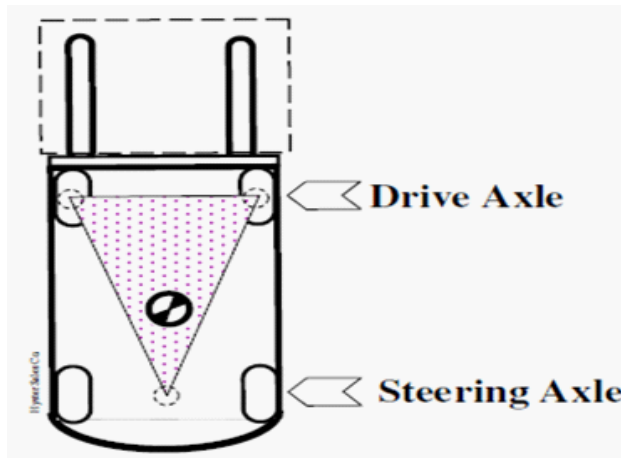


The stability of any forklift is directly affected by the capacity. Another way to look at it is that the drive wheels act as a fulcrum point.



The forklift has a center of gravity and the load has a center of gravity. As a load is lifted the two form a combined center of gravity. As long as the combined center of gravity remains inside the stability triangle, the forklift will not tip over.

## Stability Triangle



The sides of the stability triangle are formed by the center of each drive wheel and the center of the steering axle, if there are two rear wheels.

The combined forklift-load center of gravity must be inside of the stability triangle to prevent the forklift from tipping forward, falling sideways or dropping its load.



This model demonstrates how forklifts have a three point suspension and illustrates the stability triangle.

## **Forklift Stability Essentials**

Forklift stability is a major factor in many accidents. Collisions, roll overs and damaged goods are just some of the results of forklift operators not understanding forklift stability.

### **Topics covered in this DVD:**

- The Stability Triangle
- Longitudinal Stability
- Lateral Stability
- Load Capacity
- Dynamic Stability
- The Operating Environment
- Forklift Tip Over Procedures

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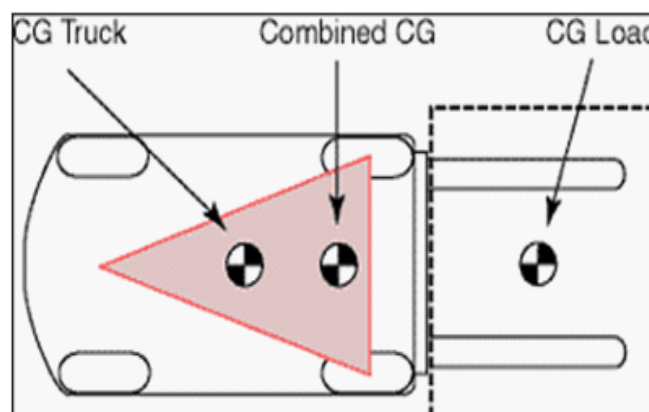
# Skills Exercise

## Stability Triangle and Combined Load Center Exercise

1. Take 5 minutes and write down how you would explain the Stability Triangle and Combined Load Center concept.
2. Break into groups of three
3. One person will be the presenter; one person will be the student and the third will watch and give feedback to the presenter.
4. Take 10 minutes to give your presentation, a few minutes for feedback and then trade places.

1. \_\_\_\_\_ Name    Instructor    Observer    Student
2. \_\_\_\_\_ Name    Student        Instructor    Observer
3. \_\_\_\_\_ Name    Observer      Student      Instructor

Notes:



## References:

- OSHA
- DOSH
- OR-OSHA
- Bottom Line Loss Control (BLLC)
- Vocam World Publishing
- Hyster Company
- Forklift Training Systems

# Forklift Definitions

## Forklift Definitions & Acronyms

**Center of Gravity:** average location of the weight of an object. It is where the load's weight is concentrated.

**Clear Height:** distance from the floor to the lowest hanging overhead. **\*\*Note:** The clear height is not always the ceiling height due to hanging HVAC units or shelving.

**Counterweight:** weight of the trucks basic structure used to offset the load and prevent tipping.

**Fulcrum:** truck's axis of rotation when it is tipping.

**Mast:** vertical assembly of the forklift that raises and lowers the load through hydraulic powered cylinders.

**Overhead Guard:** metal roof which protects the operator from falling objects.

**PIT:** Powered Industrial Trucks

**Pneumatic Tires:** tires made of reinforced rubber and filled with compressed air.

**Stability Triangle:** forklifts are designed with a three point suspension. Two are at the front end and the third is at the center of the back axle. These three points are known as "The Stability Triangle".

**Tilt Cylinders:** hydraulic cylinders mounted to the mast to assist in engaging a load.

**Walkie:** a low lift pallet jack that is walked behind.

**Wheelbase:** distance between the center line of the vehicle's front wheels and rear wheels.

**VNA:** Very Narrow Aisle

## **Vigilant Tools**

Vigilant provides you with publications to help you manage safety and health issues wisely and efficiently. These tools explain federal and state OSHA regulations and provide model forms for compliance. To obtain any of these publications, please contact your HR department, visit the member center of our website at [www.vigilantcounsel.org](http://www.vigilantcounsel.org) or contact your Vigilant staff representative.

Some of the tools related to the topics covered in this workbook include:

### **Fact Sheets**

- Accident Prevention Planning (Vigilant 3548)
- Emergency Action Plans and People with Disabilities (Vigilant 2741)
- Hazardous Energy Control (Vigilant 3913)
- Personal Protective Equipment (Vigilant 4448)
- Training Rules for Powered Industrial Truck (Forklift) Operators (Vigilant 1561)

### **Model Forms**

- Safety Inspections (Vigilant 3666)

### **Model Policies**

- General Health and Safety Policy (Vigilant 3459)
- Job Safety Training (Vigilant 3841)
- Accident Investigation (Vigilant 4430)