



FPST 2023 Industrial and Occupational Safety

Powered Industrial Trucks

1



Definition

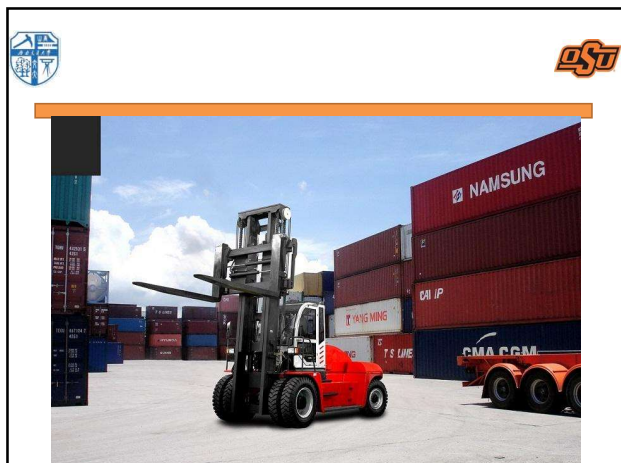


- 29 CFR 1910.178
- Powered Industrial Truck
 - A mobile, power-propelled truck used to carry, push, pull, lift, stack or tier materials(ASME)
 - Commonly known as forklifts, pallet trucks, rider trucks, forktrucks, or lift trucks
 - Can be powered through electric or internal combustion engines

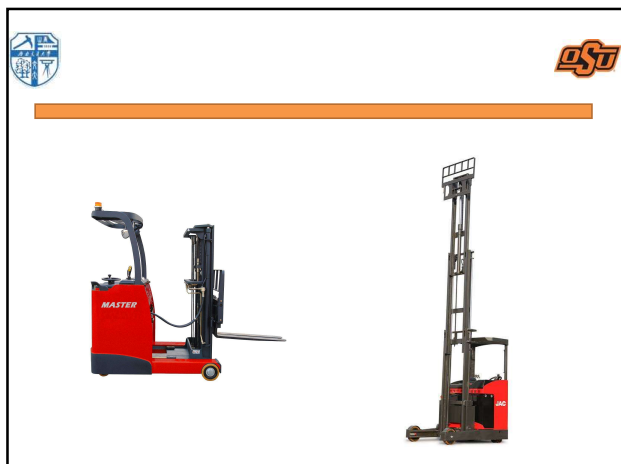
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Dangerous Machines



[Man Killed in Forklift Accident at New Jersey Warehouse ...](#)

[Jun 7, 2019 - The federal Occupational Safety and Health Administration was notified about the accident. Copyright 2019 The Associated Press. All rights ...](#)

[Construction worker critically injured after forklift accident at ...](#)

[A forklift fell onto the 51-year-old man as some heavy equipment was being moved. ... Posted: Oct 1, 2019 / 05:57 AM CDT / Updated: Oct 1, 2019 / 06:16 PM CDT ... This is an archived article and the information in the article may be outdated.](#)

[Worker Injured after Forklift Accident at Museum of Science ...](#)

[www.safvilew.com : blog : construction-worker-critical ...](#)
Oct 1, 2019 - CHICAGO (October 1, 2019) - A construction worker was critically injured Monday after being pinned under a forklift at the Museum of Science.

[Construction worker dies after Rohnert Park forklift accident ...](#)

[www.sfxchronicle.com : crime : article : Construction ...](#)
Feb 27, 2019 - Construction worker dies after Rohnert Park forklift accident. ... 27, 2019. Comments. A paramedic vehicle. Photo: Filipa Ioannou. A 19-year-old ...

[Woman dies after 'forklift accident' at Adams County business ...](#)

[Sep 11, 2019 - Skip to Article ... Updated Sep 11, 2019: Posted Sep 11, 2019 ... A woman has died after being involved in a "forklift accident" at an Adams ... to UPMC Harover Hospital after the accident which occurred around 5:20 p.m. ...](#)

[www.news-mex.com.au : topic : forklift-accident](#)

Browse the latest [articles](#), photo galleries and videos relating to Topic Section.

[Worker dies after being pinned by forklift at east El Paso ...](#)

[kvis.com : news : el-paso : 2019/11/13 : person-dies-](#)

Published November 13, 2019 5:47 am ... EL PASO, Texas -- A worker died in an overnight industrial accident after being pinned by a forklift at a distribution ...

[Worker dies in forklift accident | News | enidnews.com](#)

[www.enidnews.com : worker-dies-in-forklift-accident : a-](#)

Mar 20, 2020 - ENID, Okla. — AdvancePierre Foods has identified a man who died after an accident at its Willow Production Facility.

8



Dangerous Machines



- Watch Video:
 - Top 10 Forklift Accidents

9



PIT Fatalities



- Approximately 85 forklift deaths and 34,900 serious injuries each year due
- In the United States, approximately one person is killed in a forklift accident on average every 3 days
 - Most deaths occur when a forklift operator jumps from a lift truck that is rolling over
 - 42% of the forklift fatalities
 - The leading cause of death involving lift trucks

10



PIT Fatalities

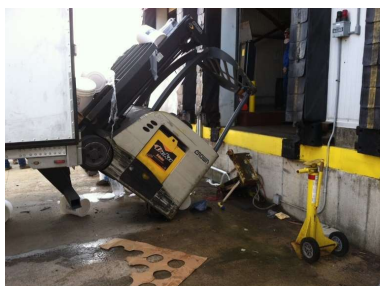


- According to the National Institute for Occupational Safety and Health (NIOSH), the three most common types of forklift injuries happen when:
 - A forklift overturns
 - Workers are hit, struck, crushed or pinned by a forklift
 - A worker falls from a forklift
- Non-serious injuries related to forklift accidents are 61,800 each year.
 - Collisions with structures such as storage racks and fixed equipment

11



- It is estimated that 20 - 25% of the accidents are caused by inadequate training



12



Why Are Forklift Trucks So Dangerous?

- Stability
- Visibility
- Fires & Explosions



13



PIT Terms

- Center of Gravity
 - Directly affects the safe lifting capacity of the PIT
 - Positioning the load's center of gravity as close as possible to the center of the PIT helps keep the vehicle from turning over
 - Speed of travel, centrifugal force from turning, load height, mast tilt, ground slope, and other factors affect the location of the combined center of gravity
- Load Center
 - The distance of the center of gravity from the vertical part of the forks
 - Keeping the load as close as possible to the vertical part of the forks will help keep the load from causing the truck to tip forward
- Stability Triangle
 - This is a triangle formed by the front axle and the rear center point inline with rear axle. The combined center of gravity (load center plus vehicle center of gravity) must stay within the stability triangle to maintain stability

14



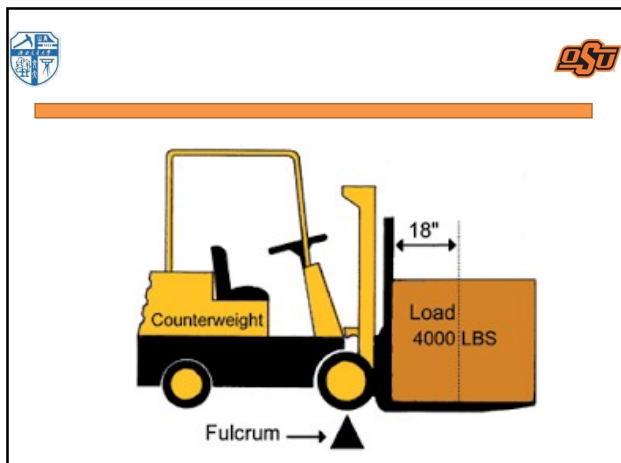
Stability Triangle

Watch Videos

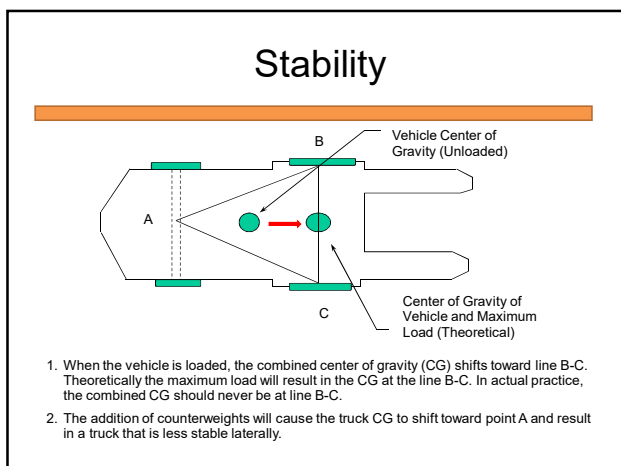
Forklifts 1

Forklifts 2

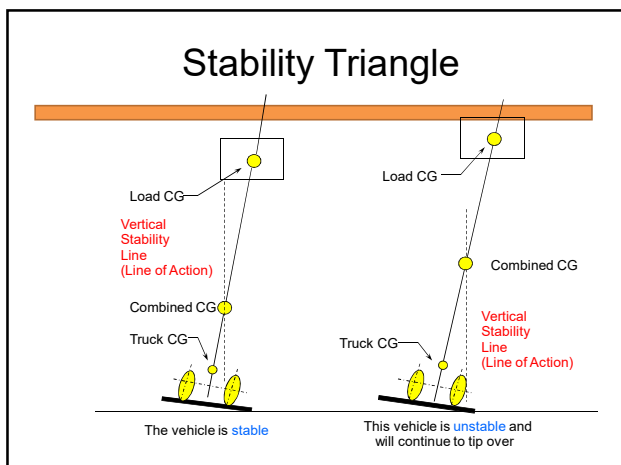
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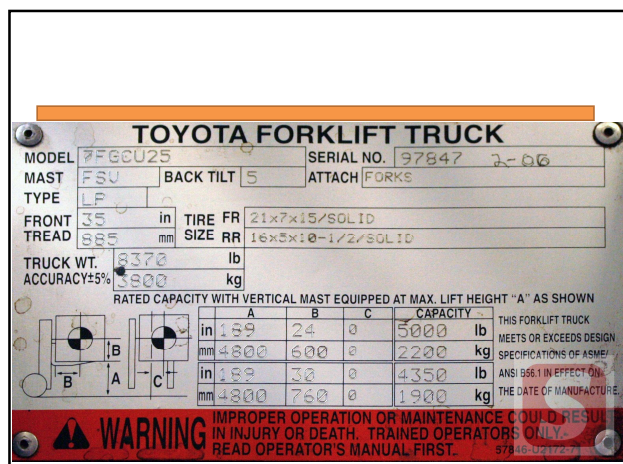
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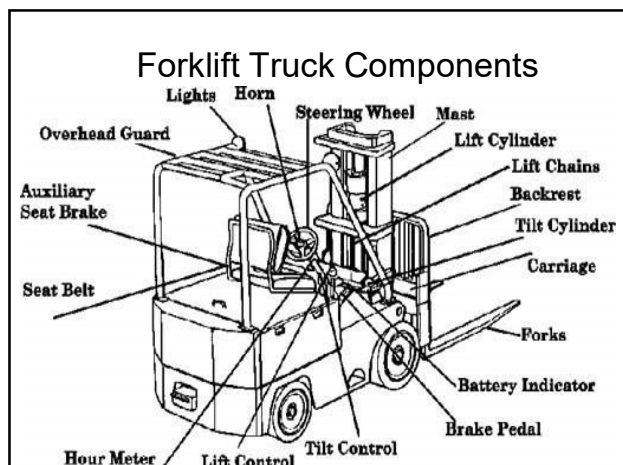
How much does a PIT weigh?

- Service is generally 1.5 to 2 times the lifting capacity
- Example, forklift rated to lift 5,000 pounds
- weight of forklift will be between 7,500 and 10,000 pounds

19



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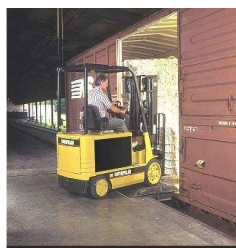
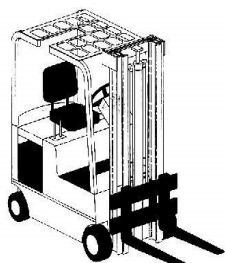
Classes of Trucks



- Class I - Electric Motor Rider Trucks
- Class II - Electric Motor Narrow Aisle Trucks
- Class III - Electric Motor Hand or Hand/Rider Trucks
- Class IV - Internal Combustion Engine Trucks
- Class V - Internal Combustion Engine Trucks
- Class VI - Electric & Internal Combustion Engine Tractors
- Class VII - Rough Terrain Forklift Trucks

22

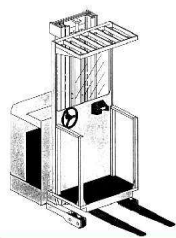
Class I Electric Motor Rider Trucks



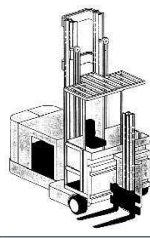
Sit Down Rider - Electric

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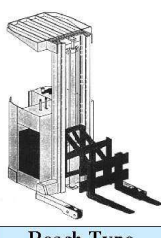
Class II - Electric Motor Narrow Aisle Trucks



Order Picker



Turret Truck



Reach Type
Outrigger

24



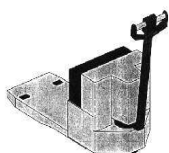
Rider Reach Truck



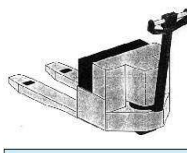
Order Picker

25

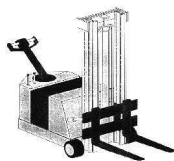
Class III - Electric Motor
Hand or Hand/Rider Trucks



Low Lift Platform



Low Lift
Walkie Pallet



High Lift
Counterbalanced

26




Walkie Powered
Pallet Truck




Walkie/Rider
Powered Pallet Truck


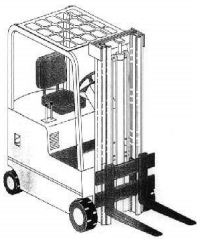
27





Class IV - Internal Combustion Engine Trucks







Sit Down Rider Fork
- LPG


Fork, counterbalanced (cushion/solid tires)

28




Class V - Internal Combustion Engine Trucks







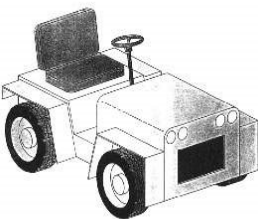
Sit Down Rider - Gas-
Pneumatic Tires

29




Class VI - Electric & Internal Combustion Engine Tractors






30








Class VII - Rough Terrain Forklift Trucks




- Straight-mast forklift
- Extended-reach forklift




31



Visibility



- The load itself can block the view and necessitate driving with the load trailing
- Blind corners present problems of pedestrian traffic, especially at corners where visibility is limited

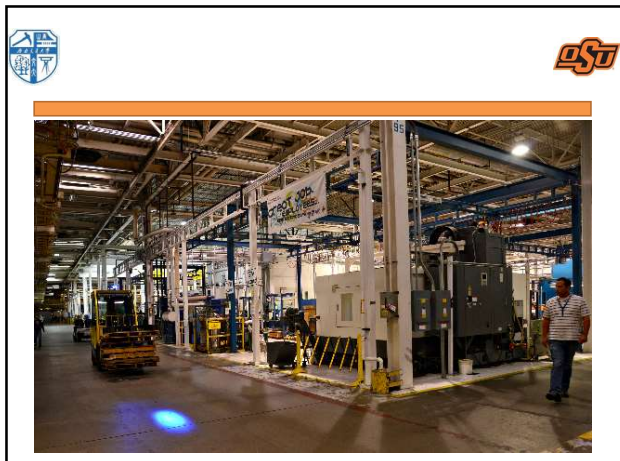


32





33



34



Fires & Explosions



- The engines and motors can be dangerous ignition sources for flammable vapors, dusts, and fibers
 - design of such engines and motors is a costly matter
 - the specification of the right industrial truck for the right job: no more, no less
- The more fire-safe models, the more expensive

35



Operators



- Truck Selection
- Safeguards
- Operating Principles
- Inspection and Maintenance
 - Watch video:
 - Forklift Inspection

36



Truck Selection



- The hazard of fires and explosions
- The operations
- Fueling
 - Watch videos:
 - Forklift Battery change
 - Forklift Refueling
- Guarding
- Training of drivers
- Maintenance

37



Safeguards



- Head protection
- A backup alarm that works whenever the truck backs up is a best practice
- Every truck should have a nameplate showing the weight of the truck and its related capacity
- Placing extra weight on the rear of a lift truck to counterbalance an overload is never permitted

38



Operating Principles



- Operators can prevent traffic accident by using the same safe practices that apply to highway traffic.
- Avoid collisions, look in the direction of travel, maintaining a clear view of it.
- Trucks should cross railroad tracks diagonally whenever possible and park at least 8 feet from the centerline of tracks.
- Disabled trucks should be moved by towing with a tow bar and safety chain.
- Watch video:
 - Trailer Loading

39



Maintenance



- Maintenance personnel should thoroughly inspect powered industrial trucks on a regular basis and give them a complete overhaul after regular periods of operation.
- Operators should make daily inspections of controls, brakes, tires, and other moving parts.
- Have to be inspected after every shift if continuous used for safety.
- No latitude is permitted concerning defective industrial trucks, to prevent them from being operated.

40



Operator Qualification



- Training prior to use
- Performance Evaluation every 3 years
- Re-training if Performance Evaluation shows problem
- Re-training if Accident Investigation shows operator error
- No licensure required
- Some companies have policies
 - Watch Video:
 - Operator Qualification

41