



Powered Industrial Truck Plan

Florida Institute of Technology (Florida Tech)

Environmental Health & Safety (EH&S)

150 W University Blvd, Melbourne, FL 32901

Email: ehs@fit.edu

Website: <https://www.fit.edu/office-of-environmental-health-and-safety/>

REVISION HISTORY

Revision Number	Revision Date	Revised By	Description of Change
00	2021-02-18	C. Cherrito	Initial plan creation and implementation.

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PURPOSE

This plan is designed to provide guidance to Florida Tech personnel that operate a powered industrial truck (forklift). The goal is safe operation of the equipment, no personnel injury or damage to property through fostering safety.

RESPONSIBILITIES

Environmental Health & Safety (EHS)

Addresses safety needs of faculty, staff, and students through compliance assessments, and training assistance.

All Users

Follows all safety procedures specified by EHS, their supervisor, instruction/operator manuals and University policies and procedures.

TYPES & FUNDAMENTALS

This plan reviews the classes of commonly used powered industrial trucks. It also summarizes the major types of power sources used in powered industrial trucks and reviews safe practices for refueling and battery charging/charging operations. Finally, this plan reviews the major parts of a powered industrial truck, including some of the potential hazards and possible solutions associated with each part.

Types:

The following are classes of commonly used powered industrial trucks. This classification does not include all powered industrial trucks covered by the OSHA standard [[29 CFR 1910.178\(a\)](#), [29 CFR 1910.178\(b\)](#) and [29 CFR 1910.178\(c\)](#)].



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](#)

Power Sources:

The two main power sources for powered industrial trucks are internal combustion, which uses a traditional engine that runs on liquid petroleum gas (LPG), compressed natural gas (CNG), gasoline, diesel, or other fuel, and electric, which uses an on-board battery. This section provides information on these power sources, including some of the potential hazards and possible solutions associated with their use and with refueling and battery charging/changing operations.

Other power sources that may become more widespread in the future include fuel cells and hybrid systems. Hydrogen fuel cells will have zero emissions and quiet operation plus the ability to be refueled as quickly as gasoline engines. Hybrid systems will use a combination of fuel cells and batteries.



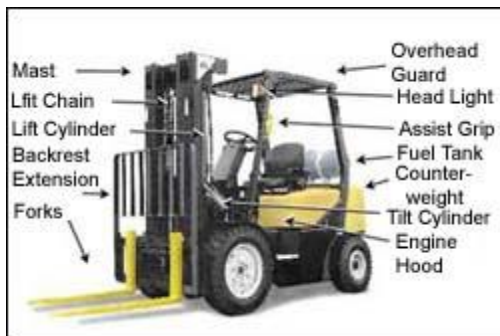
[Internal Combustion \(IC\)](#)



[Electric](#)

Parts:

The following are the major parts of a forklift. This discussion focuses on the most common types of forklifts. Be sure to read the operator's manual for your forklift and follow the manufacturer's recommendations.



Mast and Carriage:

The mast is the vertical assembly that does the work of raising, lowering, and tilting the load. The mast supports the carriage that allows its vertical movement with the hydraulic lift. The carriage is made of flat metal plates that move along the mast by chains or are directly attached to the hydraulic cylinder. The hydraulic lift cylinder supplies the power to lift the load.

Forks:

The forks (also known as tines or blades) carry the load. They have a heel where they curve upward and an upright shank where they are attached to the carriage

Attachments:

Powered industrial trucks often use various attachments in place of traditional forks. These attachments increase the versatility of the truck, but can present important safety considerations, including stability, capacity, and visibility.

Nameplate:

Each operator is required to be aware of the truck specifications on the nameplate and what they mean. If there is a special attachment, it must be listed on the nameplate.

Danger, Warning and Caution Labels:

In addition to the nameplate, forklifts may have other warning labels or decals that provide safety information to operators. Safety labels should be clearly visible to the operator and must be replaced if missing, damaged, or illegible.

Under one classification system, there are three types of warning labels or decals:

- **DANGER** means if the danger is not avoided, it will cause death or serious injury.
- **WARNING** means if the warning is not heeded, it can cause death or serious injury.
- **CAUTION** means if the precaution is not taken, it may cause minor or moderate injury.

Controls:

Before operating a forklift, read and study the operator's manual discussion on controls. Locate each control and understand how to use each one.

- **Forward/Reverse Directional Controls**
The directional control allows the operator to move the forklift forwards or backwards.

Directional controls can be column mounted (mounted on the steering column) or foot operated (controlled by shifting the accelerator pedal side to side).

- **Hydraulic Lift Controls**

Forklifts have hydraulic lift controls to raise and lower the forks and to tilt the forks. Visually inspect the hydraulic controls before each use and test that they are working properly.

See **Load Handling** for more information on lifting loads.

- **Pedals**

Forklifts have accelerator and brake pedals that operate similarly to these pedals in other vehicles. Some forklifts also have a clutch, which allows shifting into higher forward gears.

The inching pedal gives the operator more control of the forklift in tight places.

- **Parking Brake**

Forklifts are equipped with a parking brake. Be sure to set the parking brake when leaving a forklift and block the wheels if the forklift is parked on an incline.

Instruments:

Forklifts have a variety of instruments on the dashboard. Read your operator's manual and become familiar with each of the warning lights and gauges on the dashboard. Never operate a forklift if a warning light or gauge signals an unsafe condition.

- Instrument Panel
- Oil Pressure Gauge
- Temperature Gauge/Light
- Transmission Temperature
- Fuel Gauge
- Hour Meter
- Battery Discharge Indicator

Battery:

This section reviews the parts of batteries used in electric forklifts. For information on battery use, maintenance, recharging, and changing.

Overhead Guard:

An overhead guard is designed to protect the operator from falling objects.

Tires:

There are several different types of forklift tires, depending on how the forklift is used. Common types of forklift tires include pneumatic, solid, and polyurethane. As part of the daily inspection of the forklift, check tire condition, including cuts and gouges, and check pressure for air-filled tires.

Other Safety and Warning Devices:

Forklifts can incorporate many warning and safety devices to help protect operators, pedestrians, other forklift operators and others.

Warning and Safety Devices: Powered industrial trucks may be equipped by the manufacturer with the following safety devices:

- Seat belts and similar restraints
- Horns
- Backup alarms that sound when forklift reverses
- Fire extinguisher
- Warning lights that flash
- Directional signals and brake lights
- Mirrors

OPERATING THE FORKLIFT

Safely operating a forklift requires preparation, anticipation and careful attention in order to maintain control of the vehicle at all times. This module will identify recommended practices associated with each of the following operations:

Pre-operation

Inspect and maintain the forklift before use. A vehicle that is in need of repair, defective or in any way unsafe should be removed from service. The problem should be recorded on a log and reported to a supervisor immediately. This section discusses pre-operation and operational inspections that operators should perform to ensure that forklifts will operate safely. Only operators who have been trained and evaluated in accordance with [29 CFR 1910.178\(l\)](#) can operate forklifts.

Traveling and maneuvering

Use good operating practices to prevent accidents. Forklift operators must follow safe operating rules at all times. Operators must always maintain control of the forklift, keep a proper lookout, and operate the forklift at speeds safe for the particular operation and worksite conditions.

Load handling

Identify the hazards and recommended practices for each step in the load handling process (including an in-depth discussion on load composition). Forklifts are used for picking up, transporting, stacking and unstacking loads. Please following manufactures/owner's manual for safe loading instructions.

UNDERSTANDING THE WORKPLACE

Safely operating a forklift requires awareness of the conditions at your workplace. This module will identify potential hazards and possible solutions for the following aspects of the workplace:

Physical Conditions: Surface or ground conditions are an important part of safe lift truck operation. Operating surfaces must be strong enough to support the forklift, its load and its operator. They must also be free of holes, grease, oil or obstructions that could cause the lift truck to skid or bounce, and possibly tip over.

Pedestrian Traffic: Many pedestrians or bystanders are injured in forklift-related accidents. These injuries can occur when forklifts strike pedestrians or when pedestrians are struck by falling loads.

Ramps and Grades: Forklift operators should follow certain general rules of the road when traveling on ramps and other inclines.

Loading Docks: Loading docks can be dangerous places for forklifts. Falls from a loading dock in a forklift can be fatal.

Narrow Aisles: Conventional rack storage systems were designed for the counterbalanced lift truck which requires about a 12 ft (144 in) aisle width. Narrow aisle storage systems provide more storage space but require reach trucks and order pickers to operate in much narrower aisle widths.

Elevators: Potential Hazards

Overloading. Know the combined weight of the load and the truck.

Damage to floor.

Insufficient overhead clearance and space in elevator.

Requirements and Recommended Practices:

Ensure the elevator has a rated capacity to safely lift the combined weight of the load and the truck.

Approach elevators slowly and enter squarely after the elevator car is properly leveled. Once on the elevator, neutralize the controls, shut off the power, and set the brakes. [29 CFR 1910.178(n)(12)]

Ensure adequate overhead clearance for truck and space in elevator for the truck and operator.

Enclosed and Hazardous Areas: Only designated types of forklifts can be used in certain hazardous locations in the workplace:

Designated Locations

Indoor Air Quality

Carbon Monoxide

TRAINING ASSISTANCE

Only trained and competent operators shall be permitted to operate a powered industrial truck. All powered industrial truck operators must be trained and certified competent trainer. [29 CFR 1910.178(l)]

Training requirements

Refresher training

Certification

Developing your own training program

REFERENCES

29CFR 1910.178: Powered industrial truck