

Fermilab



Forklift Operator Training

Student Booklet

FN000014

Revised: February 2012

Powered Industrial Trucks:

-The importance of Safety -

- NIOSH calculates that approximately 100 Deaths and 20,000 injuries occur annually in the U.S. due to forklifts.
- The costs incurred by forklift related accidents are estimated to be over \$100,000,000
- 20% of forklift incidents involve a forklift striking a pedestrian.

Powered Industrial Trucks:

A **POWERED INDUSTRIAL TRUCK – PIT** is any vehicle, such as lift truck, fork truck, motorized hand truck or any other specialized industrial truck, that is powered by electric motors or internal combustion engines.

(29 CFR 1910.178 does not apply to compressed air or nonflammable compressed gas operated trucks.)

POWERED INDUSTRIAL TRUCKS

- OSHA 1910 .178 General Industry
- OSHA 1926 .602 (c) Construction
- States ;
- all PIT's must meet the building requirements of
- American National Standards
- ANSI B56.1-1969 as of 1999

TRAINING REQUIREMENTS

- Formal instruction
 - Practical operating evaluation
- Your company may require a written comprehensive test

Site Specific – Equipment Specific

POWERED INDUSTRIAL TRUCKS

vi All Industrial trucks in use shall meet the applicable requirements and design, construction, stability, inspection, testing, maintenance and operation, as defined by ANSI B56.1-1969 , Safety Standards for PIT's

Therefore;

by incorporating by reference the same ANSI standard that was the source document for CFR 1910.178, this provision imposes the identical truck operator training requirements on the construction industry as they apply to general industry.

Powered Industrial Trucks:

- Types and Characteristics of Forklifts -

Powered industrial trucks are divided 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

POWERED INDUSTRIAL TRUCKS

Training shall occur

- EVERY THREE YEARS FROM INITIAL DATE
or
- WHEN THE PIT CLASS CHANGES
- WHEN WORK ENVIRONMENTS CHANGE
- WHEN AN ATTACHMENT OR MODIFICATION HAS BEEN MADE TO THE VEHICLE

Transfer of training can occur when the classification is the same, and the operator is NOW witnessed in the safe demonstration of use and understanding of work site hazards associated with the new employment.

Powered Industrial Trucks:

- Refresher training -

Refresher training must be provided 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 is assigned to drive a different truck, or
- A condition in the workplace changes in a manner that could affect safe operation of the truck.

Powered Industrial Trucks:

- Types and Characteristics of Forklifts -
Class I – Electric motor rider trucks



The weight of these trucks usually counterbalance the weight that is carried on the forks with the front axle as the fulcrum. This type of truck is often used indoors because it does not emit exhaust



Powered Industrial Trucks:

- Types and Characteristics of Forklifts -

Class II – Electric motor narrow aisle trucks

The weight of the load is often more spread out and does not use an axle as a fulcrum. The operator must wear a harness for fall protection if the platform must be elevated with the forks such as the order picker or turret trucks.



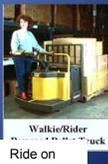
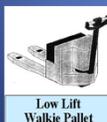


Powered Industrial Trucks:

- Types and Characteristics of Forklifts -

Class III – Electric motor hand or hand/rider trucks

These trucks are used for transporting pallets. They generally do not lift the load very high off the ground. Some can be ridden while others must be walked beside.





Powered Industrial Trucks:

- Types and Characteristics of Forklifts -

Class IV – Internal combustion engine trucks (Solid/Cushion Tires)

Class IV trucks use a tank of combustible gas such as LPG to power the truck. The tires on the Class IV trucks are solid rubber or are filled with foam to prevent punctures



Sit Down Rider Fork

Powered Industrial Trucks:

- Types and Characteristics of Forklifts -

Class V – Internal combustion engine trucks (Pneumatic Tires)



Sit Down Rider - Gas-Pneumatic Tires

Class V trucks use a tank of combustible gas such as LPG to power the truck. The tires on the Class V trucks are reinforced and filled with air.

Powered Industrial Trucks:

- Types and Characteristics of Forklifts -



Class VI – Electric and Internal combustion engine Tractors



These tractors are commonly seen in salvage yards or to tow large planes. They are designed to push, pull or carry very large loads.

Powered Industrial Trucks:

- Types and Characteristics of Forklifts -

Class VII – Rough terrain trucks

Rough terrain trucks are most useful in construction to lift and transport loads on the job site. Each has its advantages.



The Straight-mast forklift has more stability while transporting materials



The Extended-reach forklift can raise loads to elevated areas or across trenches.

Powered Industrial Trucks

READ AND REVIEW

**ALL MANUFACTURERS OPERATION MANUALS
ASSOCIATED WITH THE EQUIPMENT YOU ARE
USING**

KNOW

**ALL YOUR WORKSITE HAZARDS
PRIOR TO OPERATION**

Powered Industrial Trucks:

- Training -

OSHA requires all potential forklift operators to attend forklift training before operating equipment.

The training must cover:

- Truck related topics
- Workplace related topics
- The requirements of the 29 CFR 1910.178 Standard

Powered Industrial Trucks:

- Training -

Truck related topics include, but are not limited to:

- Operating Instructions, Warnings and Precautions
- Differences between the Truck and the Automobile
- Truck Controls and Instrumentation
- Engine or Motor Operation
- Steering and maneuvering
- Stability Triangle Vertical and Horizontal
- Classification and Purpose
- Visibility (including restrictions)
- Fork and Attachments Adaptation, Operation, and Use Limitations
- Operating Limitations
- Vehicle Capacity
- Vehicle Inspections and Maintenance
- Refueling or Recharging of Batteries

Powered Industrial Trucks:

- Training -

Workplace related topics include, but are not limited to:

- Surface Conditions
- Composition of loads being carried
- Load manipulation, stacking and unstacking
- Pedestrian traffic in areas to be operated
- Narrow aisles and other restricted areas
- Hazardous locations
- -Ramps and other sloped surfaces
- Closed environments and other areas of insufficient ventilation
- Other Unique or potentially hazardous environmental conditions in the work place.

Powered Industrial Trucks:

- Parking -

If the operator leaves the vehicle out of sight or is farther than 25 feet the lift should be shut off.

- Place transmission in NEUTRAL
- Apply the parking BRAKE
- Lower the fork TIPS to the ground
- Do not block paths or fire fighting equipment
- NEVER park on a slope



Powered Industrial Trucks:

- Transporting Loads -

- Inspect loads to ensure that they are properly secure, won't shift during travel and that the load is not too heavy for the lift.
- When approaching the load, adjust forks as wide as possible and position them at the correct level before picking up the load.
- Drive forward till the load rests against the mast and level the forks.

Powered Industrial Trucks:

- Attachments -

Some forklifts can use platforms to raise and lower personnel. These platforms are the only approved method for raising anyone standing or sitting on the forks. Fall protection devices must be used.

There are many other attachments that can be used. Each attachment must have a plate stating the weight capacity. Remember that these attachments can change the load center of gravity and then diminish the load capacity.





Booms come in all variations of size and shape



ATTACHMENTS

Safel pick up uneven loads and keep them level.
Spread can range from 8" to 72" in 4" increments.

Total loading capacity is 4000 lbs.
Center clevis can be adjusted in 4" increments.
Clevis slides between two 5" channels.

ADJUSTABLE SPREADER BEAMS

Cap. (lbs.)	Spread Min.	Max.	Upper Ball W x L / Lower Ball W x L	Headroom	Wt. (lbs.)
2500	8"	6'	2-1/2 x 5" / 1-1/2 x 4-1/2"	15-3/4"	132
4000	10"	6'	3 x 5-1/2" / 2 x 4"	16-1/4"	276
8000	12"	8'	4 x 7-1/4" / 3 x 5-1/4"	23-1/4"	443

Additional upper and lower balls available.





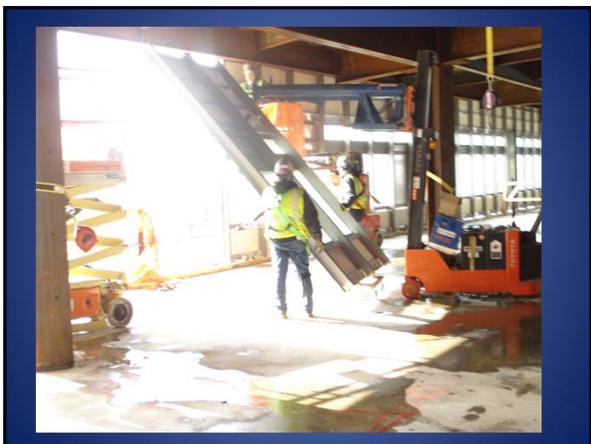


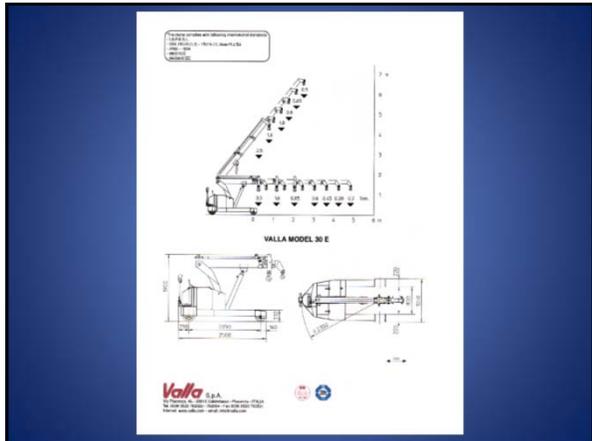


SPREADER BARS



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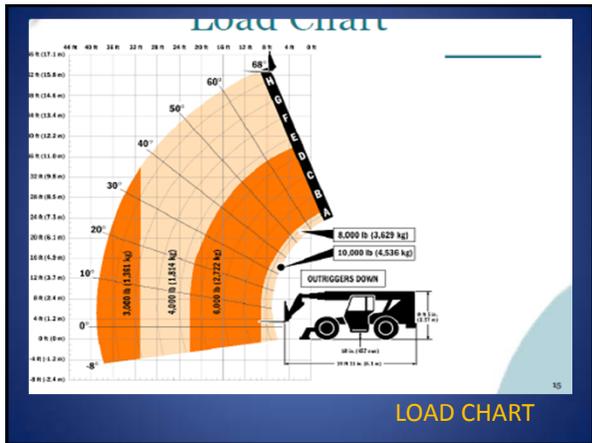












Approximate Weights

Concrete	150 #
Crushed Stone	92 #
Sheetrock	50 #
Lumber	25 #
Sand	92 #
Plywood	38 #
Brick	84 #

Powered Industrial Trucks

Subpart CC Cranes and Derricks in Construction

CFR 1926.1401 ~ 1926.1404 ~ 1926.1425

Effective November 8, 2010

How does a Crane Standard Effect the
lifting of your material on a job-site

Subpart CC

OSHA 1926.1400

covers all equipment with a manufactured maximum
capacity of over 2000 pounds
used in construction work.



Tele-handlers with winch attachments



Tele-handlers with forks EXEMPT

Powered Industrial Trucks

• Powered industrial trucks (forklifts) are
exempt if being used with forks and other attachments.

• Exception: When the forklift is equipped with a winch that can hoist
and lower a load and move the load horizontally,
it is not exempt.

These machines are exempt



EXEMPT



This machine is **not** exempt



Subpart CC

Come-a-long or Chain falls

- Any machine or equipment that uses a come-a-long or chain fall to do lifting is **EXEMPT**





Jib Crane Attachment



Jib Hoist Attachment

Subpart CC

- **§ 1926.1400 Scope.**
- (a) This standard applies to power-operated equipment, when used in construction, that can hoist, lower and horizontally move a **suspended load.**

Such equipment includes, but is not limited to:

- articulating cranes (such as knuckle-boom cranes);
- crawler cranes;
- floating cranes;
- cranes on barges;
- locomotive cranes;
- mobile cranes (such as wheel mounted, rough-terrain, all-terrain, commercial truck mounted, and boom truck cranes);
- **multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load;**
- industrial cranes (such as carry-deck cranes);
- dedicated pile drivers; service/mechanic trucks with a hoisting device;

Subpart CC

- a crane on a monorail;
- tower cranes (such as a fixed jib, i.e., "hammerhead boom"), luffing boom, and self-erecting);
- pedestal cranes;
- portal cranes;
- overhead and gantry cranes;
- straddle cranes;
- sideboom cranes;
- derricks;
- and variations of such equipment.

• **Attachments.** *This standard applies to equipment included in this section when used with attachments. Such attachments, whether crane-attached or suspended include, but are not limited to: hooks, magnets, grapples, clamshell buckets, orange peel buckets, concrete buckets, drag lines, personnel platform, augers or drills and pile driving equipment.*

Subpart CC

• **Exclusions.** *This subpart does not cover:*

- Machinery included in paragraph (a) of this section while it has been converted or adapted for a non-hoisting/lifting use. Such conversions/adaptations include, but are not limited to, power shovels, excavators and concrete pumps.
- Power shovels, excavators, wheel loaders, backhoes, loader backhoes, track loaders. This machinery is also excluded when used with chains, slings or other rigging to lift suspended loads.
- Automotive wreckers and tow trucks when used to clear wrecks and haul vehicles.
- Digger derricks when used for augering holes for poles carrying electric and telecommunication lines, placing and removing the poles, and for handling associated materials to be installed on or removed from the poles. Digger derricks used in work subject to 29 CFR part 1926, subpart V, must comply with 29 CFR 1910.269. Digger derricks used in construction work for telecommunication service (as defined at 29 CFR 1910.268(s)(40)) must comply with 29 CFR 1910.268.

Subpart CC

Exclusions

- Machinery originally designed as vehicle-mounted aerial devices (for lifting personnel) and self-propelled elevating work platforms.
 - Telescopic/hydraulic gantry systems.
 - Stacker cranes.
- **Powered Industrial Trucks (forklifts), except when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load.**
- Mechanic's truck with a hoisting device when used in activities related to equipment maintenance and repair.
 - Machinery that hoists by using a come-a-long or chainfall.
 - Dedicated drilling rigs.
 - Gin poles when used for the erection of communication towers.
 - Tree trimming and tree removal work.
 - Anchor handling or dredge-related operations with a vessel or barge using an affixed A-frame.
 - Roustabouts.
 - Helicopter cranes.

OSHA 1926.1408 & ASME B30.5 Minimum Clearances during Operation — "TABLE A"

Voltage
(Nominal, kV,
Alternating Current) Minimum Clearance in Feet

Up to 50	10
Over 50 to 200	15
Over 200 to 350	20
Over 350 to 500	25
Over 500 to 750	35
Over 750 to 1000	45
Over 1000	(as established by utility owner)

Subpart CC

OSHA 1926.1411 & ASME B30.5 Minimum Clearances in Transit — "TABLE T"

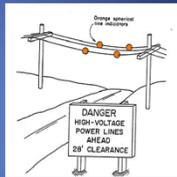
Voltage (Nominal, kV, Alternating Current)	Minimum Clearance in Feet
Up to 0.75	4
Over 0.75 to 50	6
Over 50 to 345	10
Over 345 to 750	16
Over 750 to 1,000	20
Over 1000	(as established by utility owner)

No load, boom lowered. Specifically when a crane is travelling under or near a power line on a construction site with no load. Cranes travelling with a load is governed by the "in operation" minimum clearances in "Table A".

OSHA 1926.1412 - Defining the Work Zone

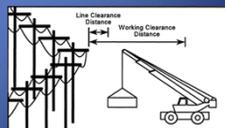
- The work zone must be defined by either:
 - Option 1:** Erecting boundary markings such as flags or,
 - Setting and using a range limiting device on the crane,
 - and prohibiting the operator from operating the crane past those boundaries.
 - Option 2:** Defining the work zone as the area 360 degrees around the crane, up to the equipment's maximum working radius.

20' ≤ 350kV
50' > 350kV



MSAD REQUIRES

DESIGNATED SPOTTER
MUST BE A QUALIFIED
SIGNAL PERSON



Subpart CC

CRANE SIGNAL PERSON TRAINING

GOOD FOR 5 YEARS

HAND – VOICE – AUDIBLE - NEW SIGNALS

WHEN :

NOT IN VIEW OF THE OPERATOR
TRAVELING
TRAVELING OBSTRUCTED
THE OPERATOR DETERMINES IT'S NECESSARY
EXTENDING OUTRIGGERS/STABILIZERS AND CAN NOT
SEE THEM (NOT IN VIEW)

REQUIRED TO HAVE A CRANE SIGNAL PERSON

DE-ENERGIZE 20' MIN CLEARANCE FIND VOLTS

ELECTROCUTION

THE FOLLOWING SLIDES
ARE OF A GRAPHIC NATURE
OF AN ELECTROCUTION

PLEASE FEEL FREE TO LEAVE THE ROOM



TILT FORK DOWN MOVE FORKS FORWARD MOVE FORKS BACK











§ 1926.1400 Scope.

(a) This standard applies to power-operated equipment, when used in construction, that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: articulating cranes (such as knuckle-boom cranes); crawler cranes;

(b) Attachments. This standard applies to equipment included in paragraph (a) of this section when used with attachments. Such attachments, whether crane-attached or suspended include, but are not limited to: hooks, magnets, grapples, clamshell buckets, orange peel buckets, concrete buckets, drag lines, personnel platforms, augers or drills and pile driving equipment.

(c) Exclusions. This subpart does not cover:

(5) Machinery originally designed as vehicle-mounted aerial devices (for lifting personnel) and self-propelled elevating work platforms.

(8) Powered industrial trucks (forklifts), **except when configured to hoist** and lower (by means of a winch or hook) and horizontally move a suspended load.

Powered Industrial Trucks:

- Transporting Loads -

Lift the load high enough to clear the floor or rack and then tilt the mast back slightly.

Once clear from obstruction, lower the mast to a few inches off the ground to clear any obstacles while traveling.

If the load is too tall and obstructs your view, drive backwards or have a spotter.

Powered Industrial Trucks:

- Basic Driving Safety -



- Seat belts must be worn on at all times while driving a powered industrial truck if available
- Keep all body parts in the operator's cabin at all times
- Only operate trucks in designated safe areas. Make sure the surface is clean and free of spills or debris

Powered Industrial Trucks:

- Basic Driving Safety -



- Be alert to the surroundings. Watch for obstructions, low hanging items, lights, sprinkler heads or pedestrians.
- Never go too fast. Forklifts should never be driven faster than allows for a safe stopping distance.
- Slow down and sound horn at all intersections

Powered Industrial Trucks:



- Basic Driving Safety -

- Never follow another truck closer than 3 truck lengths.
- Never allow riders anywhere on the vehicle.
- Always travel with the load as close as safely possible to the ground.
- Always cross tracks or other bumps in the path at an angle to maintain two wheels on the ground.

Powered Industrial Trucks:

- Ramps -

- Always inspect the surfaces the lift will be traveling on. Make sure that any ramps or trailer floor surfaces can support the weight.
- Never drive across a slope at an angle because the lift could tip over.
- Before entering a trailer, rail car or truck, make sure the brakes are set on the trailer, the wheels are blocked and are properly supported so that they don't tip while you are driving in them.
- Always approach ramps with the load facing up hill. If the load is facing downward, there is a good chance that it will be lost.



Heavy on the High Side (when possible)



Powered Industrial Trucks:

- Fuel and Batteries -

- Combustion fuel trucks
- Check the emissions annually on all combustible fuel trucks
- Only refuel in designated "No Smoking" areas
- Remove propane tanks prior to refilling. When replacing the tank, ensure the tank location pin is properly aligned before securing the tank.

Powered Industrial Trucks:

- Fuel and Batteries -

Battery powered trucks

- Make sure battery connections are tight before operating
- Test the battery's electrolyte level (remember to use Personal Protective Equipment)
- Battery charging should only be done in designated No smoking areas. The charging produces flammable hydrogen gas.

Powered Industrial Trucks:

- Fuel and Batteries -

Battery powered trucks

- Don't turn the charger ON till the battery is connected
- Make sure the battery is secured in the compartment. Batteries that move may cause the lift to overturn
- Clean spills immediately

Powered Industrial Trucks:

- Conclusion -

Operators must complete a training course before operating any powered industrial truck.

Always wear a seat belt while operating a powered industrial truck (Mandatory at Fermilab if so equipped).

Approach tracks or any bumps in the road at an angle to maintain at least 2 wheels on the ground.

Turn off trucks anytime that you are more than 25 feet away or out of sight of the truck.

Attachments can change the center of gravity and cause a truck to tip over more easily.

The Commonwealth of Massachusetts

Department of Public Safety

One Ashburton Place, Room 1301

Boston, Massachusetts 02108-1618

Phone (617) 727-3200

Fax (617) 727-5732

IMPORTANT INFORMATION FOR HOISTING OPERATORS LICENSES

APPLICANTS PLEASE READ THE FOLLOWING:

The examination is based on thorough and practical knowledge of all working parts of the hoisting machinery that the applicant is applying for, as well as safe operating practices, safety inspection of the equipment, hand signals and the Massachusetts General Laws and Regulations as they apply to Hoisting. All applicants should know all operating instructions provided by the manufacturer's operating manuals. Crane and Excavator operators shall know the national standard hand signals found in 520 CMR 6.00 in order to pass the crane and excavator examination.

All candidates for the examination should have a thorough knowledge of the Massachusetts General Laws, Chapter 146, Sections 53 - 55 and Sections 64 - 67 and the Massachusetts Regulations 520 CMR 6.00 for hoisting machinery. These regulations are printable from the Public

Safety website at: <http://www.mass.gov/dps>. You may also obtain all of the above Laws and Regulation at your local library, and/or the State House Bookstore at: www.state.ma.us/sec/spr or (617) 727-2834 or in the Springfield area at: (413) 784-1376.

YOU WILL BE NOTIFIED OF YOUR EXAM DATE BY MAIL APPROXIMATELY 2 WEEKS BEFORE.

EXAMS TAKE PLACE THE LAST WEEK OF EVERY MONTH:

[FOR EXAMPLE IF YOUR APPLICATION IS PROCESSED IN JANUARY YOU SIT IN FEBRUARY ETC.]

• Application for a D.O.T. Physical can now be down loaded off our website: <http://www.mass.gov/dps>

THE FOLLOWING HOISTING ENGINEER CLASSIFICATION CODES ARE AS FOLLOWS:

- HA= Hoisting Apprentice (**Note: Must be Registered with the Department of Labor and Workforce Development**) 617-626-5409
- 1A=All hoisting equipment(except electric and air powered hoisting equipment) including clutch machines, derricks, guy derricks, stiff legs,
Chicago booms, gin poles, lattice booms.
- 1B=Equipment with telescoping booms with or without wire ropes.
- 1C= Equipment hydraulic telescoping booms without wire ropes and forklifts.
- 2A=Crawler and rubber-tired excavators, backhoes and loaders.
- 2B=Backhoes and front-end loaders.
- 2C=Front-end loaders.
- 3A=Electric and air powered hoisting equipment.
- 4A=Unrestricted, 4B=Drill Rigs, 4C=Pipeline Side booms, 4D=Concrete Pumps, 4E=Catch Basin Cleaners, 4F=Sign-Hangers, 4G=Mowers.

- 2B=Backhoes and front-end loaders.
- 2C=Front-end loaders.
- 3A=Electric and air powered hoisting equipment.
- 4A=Unrestricted, 4B=Drill Rigs, 4C=Pipeline Side booms, 4D=Concrete Pumps, 4E=Catch Basin Cleaners, 4F=Sign-Hangers, 4G=Mowers.

All applicants must provide:

- 1 photo 1"x1.25",
- A legible copy of a valid driver's license,
- Copy of D.O.T. Medical certificate, or medical examiner's cert. in accordance with the Federal Motor Carrier Safety Regulations (49 CFR 391.41-391.49)
- Application processing fee is a Non-Refundable \$75.00.
- Applicants: You must be at least 18 years of age.
- *The Department will not return any of your*

OTHER RESOURCE MATERIALS FOR STUDY MAY BE FOUND AT:

- Construction Safety Regulations: 29 CFR 1926 OSHA (website: www.osha.gov) or 1-800-321-OSHA(6742)
- Dig Safe (website: www.digsafe.com) or Tel: 1-888-dig-safe(344-7233)
- Owner's Manuals and/or Safety Manuals (website: <http://www.aem.org> or www.jjkeller.com)
- Bob's Rigging and Crane Handbook: Pellow Engineering Services, Inc. Owner: Don Pellow 406 West 50th Street, Kansas City, Missouri 64112-2310 (Website) www.donpellow.com Phone/Fax: 816-931-4113 / Phone/Fax 1-877-473-5569 Toll free
- The Mobile Crane Manual: Construction Safety Association of Ontario, 21 Voyage Court South., Entbicoke, Ontario M9W 5M7 Canada (www.csao.org) or Tel: (800) 781-2726
- Equipment Training Resources, 9245 Reseda blvd. #740, Northridge, CA 91324 Tel: 818-360-5431 Fax: 818-360-6758 (www.equiptrain.com)

POWERED INDUSTRIAL TRUCKS

OPERATOR TRAINING GUIDE

INDUSTRIAL FORK LIFTS

Safety First Aerial Lift Safety Training, Inc.

708 - 977 - 9106

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MORE THAN 100 DEATHS PER YEAR

95,000 INJURIES EACH YEAR

OSHA 1910.178 – 1999

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OSHA

Occupational Safety and Health Administration

Has revised regulations to create a safer work environment thereby eliminating accidents and deaths

It is the trainees responsibility to fully understand all responsibilities associated with the safe operation of the Powered Industrial Truck (PIT) and equipment for which they are being instructed.

Each trainee must show and achieve proficiency in the PIT's 'hands-on' operation of the equipment and achieve 100% on the classroom written examination. Anything less than 100% would imply that it is okay to compromise jobsite safety, which is never acceptable.

Each trainee should participate in the training seminar, including classroom activities, classroom discussion and 'hands-on' equipment operation. By successfully completing this course, the trainee will also be expected to identify and correct unsafe operation or potential accidents and hazards associated with their work environment and observed of other operators.

1. Why are you here ?

2. Who is responsible and the key ingredient for *your* safety? circle one

a) your employer b) your union c) workman's comp d) yourself only e) superintendent f) your family

3. There are 7 classifications of Powered Industrial Trucks or more commonly called forklifts. Each individual is required to be trained on the classification of forklift being used in their work environment.

Classifications

Class 1	ELECTRIC MOTOR RIDER TYPES	SOLID RUBBER TIRES
Class 2	ELECTRIC MOTOR NARROW AISLE	SOLID RUBBER TIRES
Class 3	ELECTRIC MOTOR HAND TRUCK	
CLASS 4	COMBUSTIBLE ENGINE	SOLID AND PNEUMATIC TIRES
CLASS 5	COMBUSTIBLE ENGINE	PNEUMATIC TIRES ONLY
CLASS 6	ELECTRIC AND COMBUSTIBLE ENGINE	
CLASS 7	ROUGH TERRAIN AND TELESCOPIC	

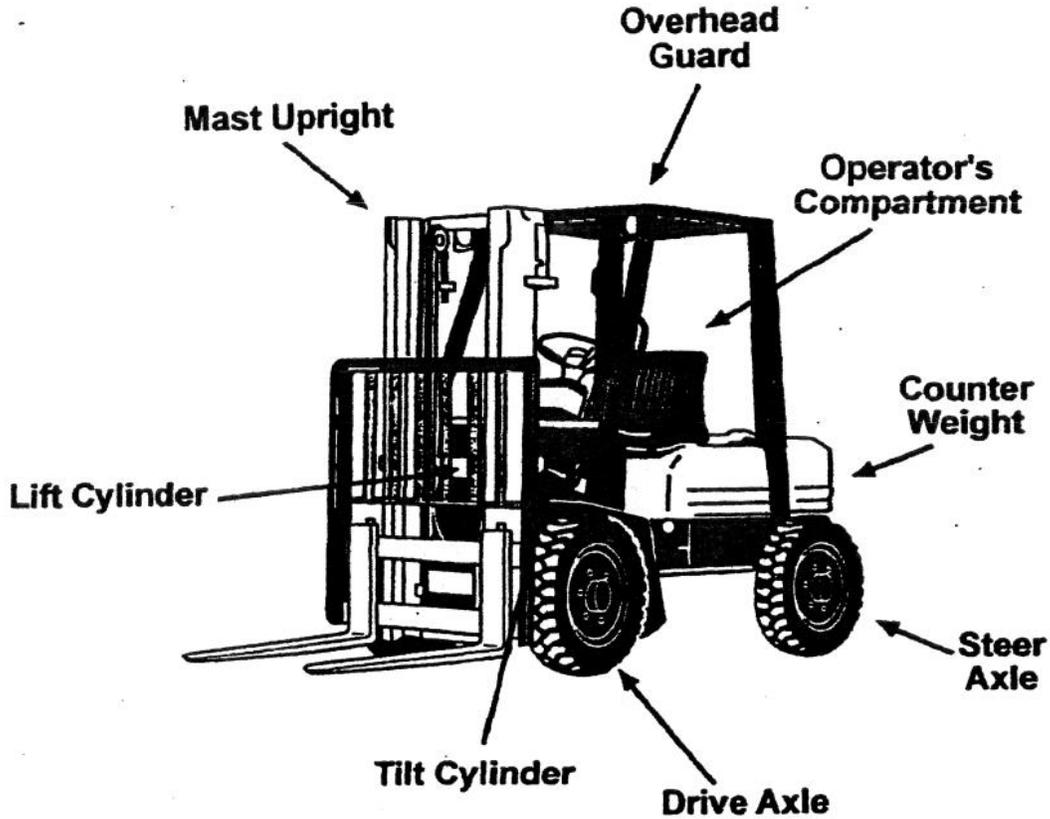
4. Which classification of PIT - forklift are you being trained on today? _____

5. OPERATORS MUST BE TRAINED EVERY THREE YEARS AS STATED BY OSHA REGULATIONS AND REQUIREMENTS.

IF THERE HAS BEEN A MODIFICATION, EQUIPMENT CHANGE OR ACCIDENT WITHIN THE THREE YEARS OF TRAINING, THE OPERATOR OF THE FORKLIFT MUST FIRST BE TRAINED ON THE CHANGES AND MODIFICATION PRIOR TO OPERATION

DESIGN OF THE FORKLIFT

Lift Truck Components



Counterweight	Provides stability for carrying loads; built into the rear of the lift truck.
Drive Axle	Powers the direction of the lift truck travel.
Lift Cylinders	Provides power to raise and lower loads.
Mast Upright	The portion of the lift truck frame on which loads are carried, raised, and lowered.
Operator's Compartment	Fit over a person comfortably; contains all the controls.
Overhead Guard	Protects operator from falling loads, and in the event of a lift truck tip over.
Steer Axle	Controls the direction of the lift truck travel.
Tilt Cylinders	Control tilting the mast forward and backward.

Forklift Vs Car

9. Note some differences between a car and forklift, material hoist.

Forklift is different from a passenger vehicle. The forklift does not carry passengers, and steers differently which make it more difficult to steer, stop and see when loaded.

10. All controls differ from manufacturer to purpose and design, but all brakes and gas pedals are the same. **TRUE** **FALSE**
11. Seat belts are to be worn when available. **TRUE** **FALSE**
 When a seat is removed from damage,
 The new seat must have a seat belt.

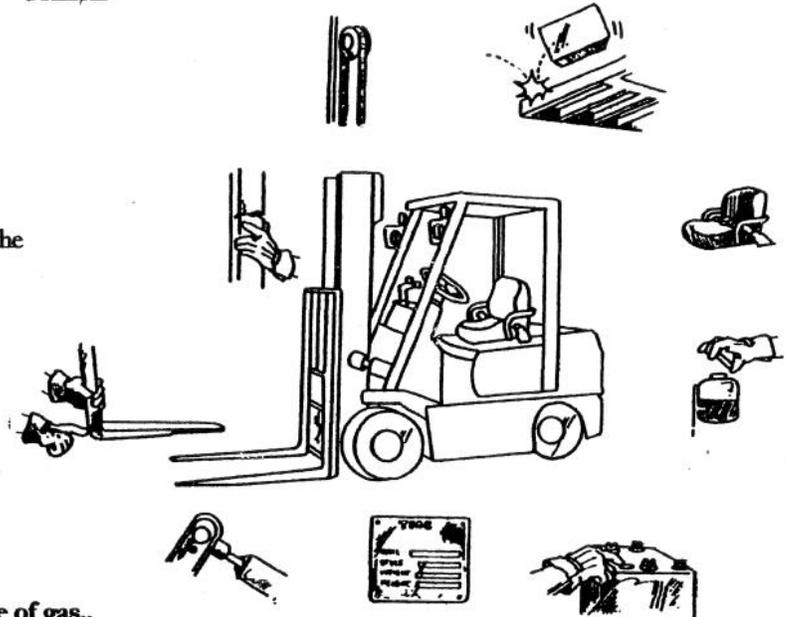
PRE-USE INSPECTION

The pre-use inspection is meant to reveal potential hazards prior to use of the forklift. It should be accomplished each and every time the operator uses the forklift when either at the beginning of the shift, or after another has used the forklift, no matter what the length of time was.

Although you may not be a mechanic, you are looking for damage to anything that appears to be missing, cracked or worn.

Liquid Propane, Gas and Combustible Engines require special care and observance for leaks, loose valves and nozzles.

Do not start a forklift if you smell or detect the presence of gas..



12. Circle all that apply when checking the power source.

- | | | | | | |
|---------------|---------------------|--------------------|------------------|----------------|-----------------|
| Cables | Battery Connections | Corrosion of Parts | Fuel Tank Damage | Loose Valves | Hand Protection |
| Frayed Wiring | Loose Connections | No Lit Cigarette | Damage | Eye Protection | Odor of Gas |

- ✓ Gages and electrical component must be check along with the functions, lights and horns for proper operation.
- ✓ Put the forklift through its normal maneuvers and check lift, tilt brakes, steering, lights, warning lights and horns.
- ✓ Fluid levels - Coolants, oil levels and hydraulic oil must also be up to specified requirements prior to use.

See the example inspection sheet attached or refer to your company inspection sheet

WHY TRUCKS TIP OVER

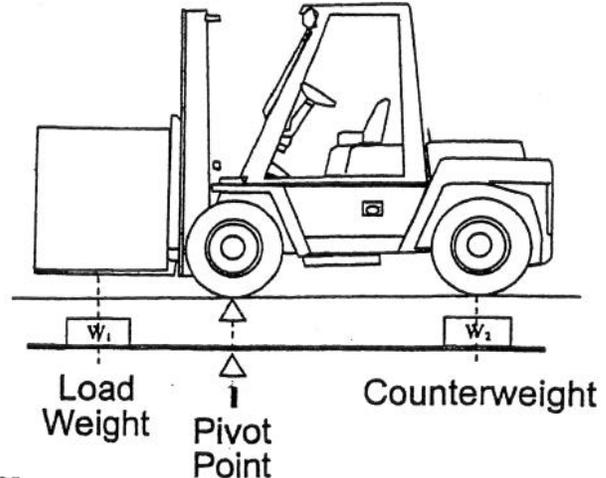
Rated load capacity, leverage, and center of gravity are three principles you need to understand.

The center, or fulcrum of any forklift is at the front wheels.

The load should always be located as close to the front wheels for stability

Where the load sits is just as important as how much it weighs

The rated load capacity is severely reduced when the load center moves from the fulcrum or center. Keeping the downward force of the load (CG) within the stability triangle keeps the truck from shifting or tumbling off your forks.

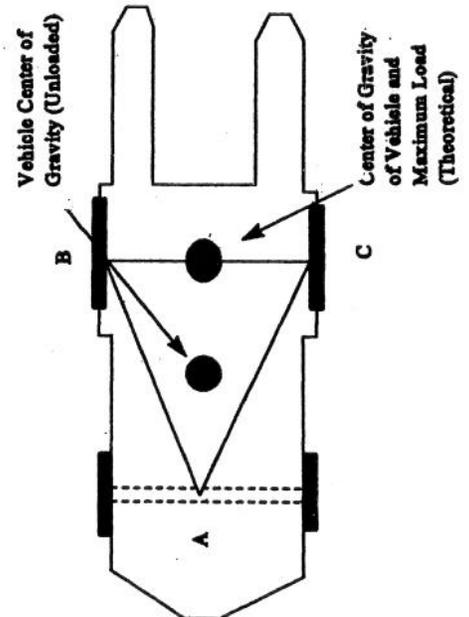


“The Stability Triangle”

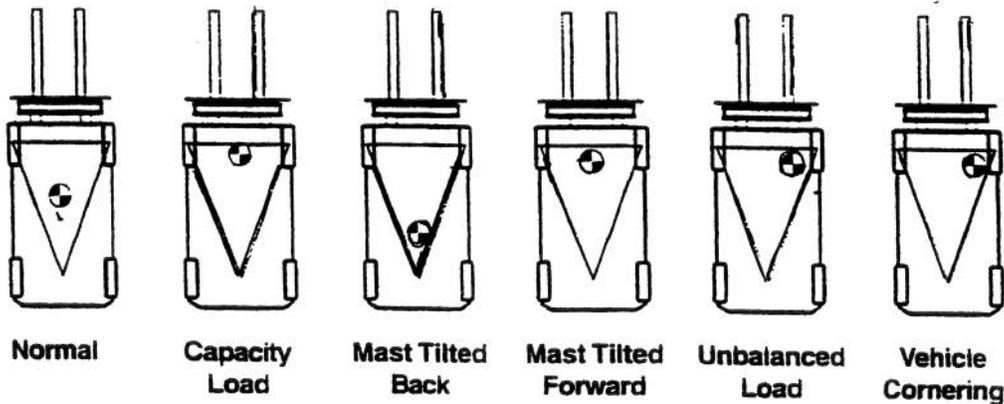
The design of the forklift is based on a stability triangle. The front axle, with its drive wheels, acts as the base of the triangle and supports the weight of the load. The sides of the stability triangle meet at the point where the forklift steers, either at a single wheel or in the middle of the steering axle on 4-wheel models.

Allowing the load to move outside the stability triangle makes both the truck and the load less stable and subject to tipping, rolling, or dropping the load.

When the vehicle is loaded, the combined center of gravity (CG) shifts towards line B-C. Theoretically the maximum load will result in the CG at the line B-C. In actual practice, the combined CG should never be at line B-C. The addition of counterweight will cause the truck CG to shift toward point A and result in less stability laterally.



Notice how the CG changes in each application and review your work environment and potential hazards associated with your application.



SURFACE APPLICATIONS

TIRES play an important role in the safety and use of your material handler. Each type of tire has a specific use as required by the manufacturer.

13. Beware of _____ and _____ that may cause the load to shift while operating on uneven surfaces.
14. Beware of _____ surfaces.
15. Water filled holes should be _____.

Get the right axle and wheel type for the application / task.
You should only operate equipment on a firm level surface.

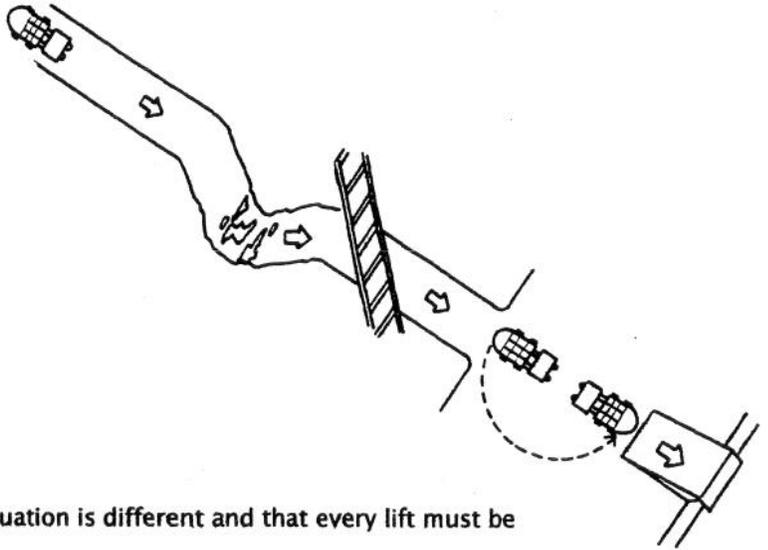
READ THE MANUFACTURERS MANUAL

16. The professional operator knows that each and every situation is different and that every lift must be _____.

17. The load becomes less stable when : Circle all that apply

When the load is raised On slopes (front- to-back or side-to-side) When tilting loads On uneven terrain

18. Rated capacity effects stability. The _____ of each load should be noted and made available to the operator prior to each lift.
19. Know your lift trucks _____, and do not exceed its limit as stated in the operators manual.



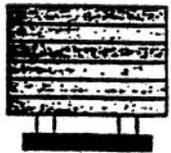
ELECTROCUTION

20. Forklifts are not _____ insulated and do not provide protection from or contact to _____.
21. Beware of mast _____ and material that may connect to electrical currents.
Be aware of your surroundings and overhead obstructions that may cause the load to shift, or energize your machine.
Do not touch or operate a forklift if it or it's load contacts energized power lines.

LOADING AND UNLOADING

22. The pallet should be inspected for damage prior to lift. Some items to look for are _____.

Approach the load squarely and with forks level.
Adjustable forks should be placed at the outer edges of the load.
The forks should be placed under the load as far as possible.
The load should be against the back of the fork carriage.
After the load has been picked up, the mast should be tilted backwards, enough to stabilize the load.



CORRECT



INCORRECT



If there is a load in front of the load you are lifting, lift without tilting the carriage and enough to clear the other load.

Travel with the load as close to the ground as possible (1-3 # at the heel - 4-7" from the tips)
Stay out of pedestrians way.

22. Pedestrians have the right of way because : _____
- a) They can't move as fast as the truck
 - b) They need to get to their jobs fast
 - c) The forklift operator should always be in control of his vehicle at all times
 - d) The pedestrian should know the rules of the 'right-away'

The operator will always come to a stop at the stack area before elevating the load.
 Stop at the front of the stack, place controls in neutral
 - apply parking brake, or inch brake and raise the load to stack height, with mast tilted backwards.

MAKE SURE YOU HAVE ENOUGH CLEARANCE

Square up, level the forks and drive the rest of the way in.
 Lower the load to the stack or seated position.
 Set the top load squarely on the stack

When the load is seated, lower the forks to clear the load and not hook the load on the removal.

NEVER RAISE OR LOWER THE LOAD UNLESS AT A FULL STOP.

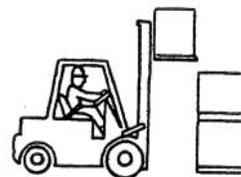
Back out slowly ensuring a clear path of travel.
 Pedestrians have the right of way at all times.
 All lifting, elevating and lowering motions will be done Slowly.

The higher the load - the less stable your forklift becomes.

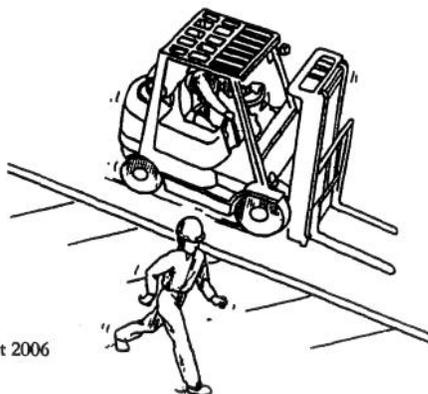
Driving Tips

- Stay in your lane
- Drive at a pace no faster than a quick walk
- Never stand under the fork while raised
- Never lift personnel
- Keep load close to the floor with mast tilted
- Never leave a forklift running unattended
- Do not drive up to someone in an enclosed area
- Drive in reverse when your vision is impaired
- Slow down for turns - Stay in Control

STACKS



How does this apply to your operation ?



STACKS



When working with high stacks, approach and travel are the same. One difference is the higher you lift, the less stable your forklift and your load become.

To remove a load from a high stack:



Stop straight on and approximately a foot away from the stack. Raise the mast until the forks are at the right height – Move forward slowly until the load is flush with the back of the forks.

Lift the load high enough to clear the items below, ensure there are no obstructions and look over both shoulders before backing up. Back straight out to clear the edge of the stack.



The load should be level and the truck should be at a stop. Then lower the load to the traveling position.

Tilt the load back and move slowly.

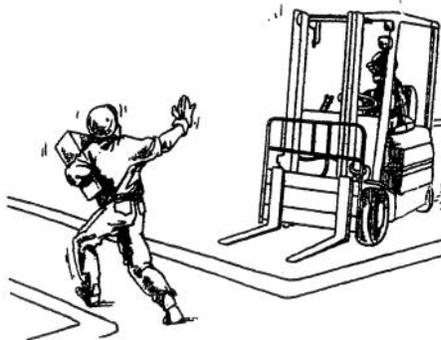
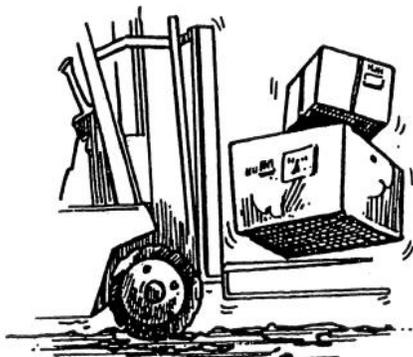
Never raise or lower you're a load unless you are at a full stop. Never attempt to turn with your mast raised. Always approach the load straight on and remove it by backing straight back.

Make sure you have enough overhead clearance.

SPECIAL HAZARDS

Hazardous locations, environments and activities surround all jobsites and you may have your own special hazards.

List as many as you can think of _____



SPECIAL HAZARDS

All fork truck use is hazardous some more severe than others, as environments that may not allow use of a fork truck. Food products, pharmaceuticals, or any combustible or chemical environment; vapors, grains, particles and chemical exposure can have a reaction with your fork truck, and create a highly flammable or explosive situation. You are to know your environment company rules and restrictions as well as state, federal and local laws associated with your job and environment.

Activities such as slopes, floor grates, docks and ramps are also hazardous.

When operating on slopes;

LOADED

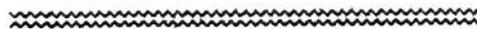
Stay back from the edge.

Never turn around on the slope.

Drive with your load on the uphill side.

Drive forward – up slopes loaded

Drive down slopes in reverse –Loaded



When forks are empty and unloaded,

Drive in reverse, up a slope unloaded

Drive forward down the slope – unloaded



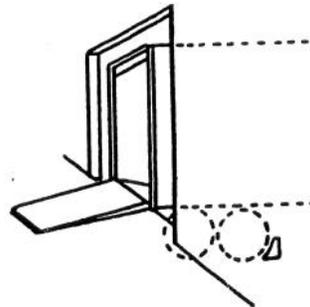
UNLOADED



Delivery Truck Drivers are your responsibility.

You – the Fork Truck Operator, need to know at all times

- Where the delivery truck driver is, and, if they have
- Chocked the wheels, inside tires
- Set the delivery truck parking brake(s)
- Check the delivery truck floor for support
- Locked the docking plate, if available
- Clear the area of slippery surfaces

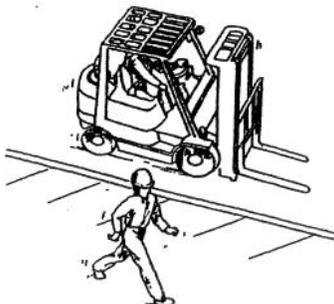


Working with Rail Cars, or Side Load Trailers, the same applies.

All work surfaces should be checked for soundness and support of your vehicle. Ice, oil, water or snow can be considered hazardous to your work environment.

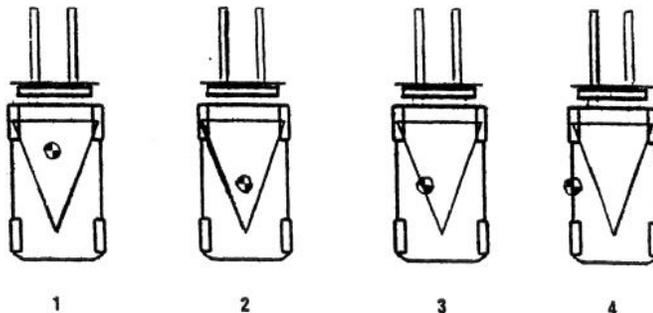
What other surfaces can effect the stability and control of your fork truck?

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Forklift Safety Awareness Quiz

1. Because a forklift weighs more than a car, it is easier to brake to stop. TRUE FALSE
2. A forklift driver must always look..
 - a) Forward when driving loaded
 - b) Around the load
 - c) In the mirrors
 - d) In the direction of travel
3. When driving on ramps with a load, you must always keep the load uphill, even if it means driving in reverse down the ramp? TRUE FALSE
4. Who is responsible for your safety at your worksite, doing your job?
 - a) Your supervisor
 - b) Your team leader or foreman
 - c) Your company safety director
 - d) Yourself
5. A forklift operator's first concern should be
 - a) Making sure the vehicle is in good working order
 - b) Checking shift changes for the load/unload schedule
 - c) Stabilizing the forks used on all trucks
6. When driving on a ramp, it is OK to turn your forklift around. TRUE FALSE
7. To lift people with a forklift, the operator must
 - a) Use a pallet to provide a platform
 - b) Move near a wall for fall protection
 - c) Ensure the people don't weigh too much
 - d) None of the above
8. Pedestrians always have the right-of-way, no matter how much of a load you are carrying? TRUE FALSE
9. When the surface moves, this affects driving conditions and braking ability. TRUE FALSE
10. The forklift operator should always drive over railroad tracks on an angle. TRUE FALSE
11. The forklift operator is responsible to know
 - a) The weight of the load, by the bill of lading
 - b) If the load will fit on the forks, or if it needs to be divided
 - c) The work surface to be driven on, level - unlevel
 - d) The rated capacity of the forklift
12. Which of these, center of gravity positions will create the forklift to turn over?



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POWERED INDUSTRIAL TRUCKS (PIT's)

INTRODUCTION

Forklifts, tow-motors and other powered material handling equipment are used throughout Fermilab to perform a variety of functions. Equipment of this type is often grouped together under the title "powered industrial trucks." The use of powered industrial trucks creates a potential for serious injury and property loss. This chapter contains procedures to ensure that the operation, inspection, and maintenance of powered industrial trucks are conducted in a safe manner and that operators are qualified to operate the truck safely.

APPLICABILITY

This chapter applies to any powered industrial trucks (commonly referred to as fork trucks) used at Fermilab. Examples include:

- Sit Down Rider, Counter-Balanced Truck (Solid and Pneumatic Tires)
- Narrow Aisle Trucks (Solid Tires)
- Hand Trucks or Hand/Rider Trucks (Solid Tires)
- Internal Combustion Engine Trucks (Solid or pneumatic tires)
- Electric and Internal Combustion Engines Tractors (Solid and pneumatic Tires)
- Rough Terrain Forklift Trucks (Pneumatic Tires)
- Magnet Movers
- Walk-Behinds with Elevating Mechanisms

Excluded from the scope of this chapter are construction, grounds keeping, and farm equipment such as wheel loaders, mobile cranes, bulldozers, crawler loaders, snow plows, hay bale loaders and tree removal equipment.

DEFINITIONS

Attachments – A device added to the PIT, either designed and built by the user, purchased from a commercial supplier, or provided by the manufacturer of the PIT, other than the conventional forks, and intended to carry the load. Examples include non-conventional forks, fork extensions, extension booms, non-conventional or special or unique load handlers, rotating devices, side shifters, load stabilizers and jib crane booms. A removable attachment is an attachment that can be mounted on the forks, or in place of the forks on the carriage, by means of such conventional fasteners as bolts, pins, etc., and does not require the disassembly of any other portion of the lifting system to install or remove.

Bulldozing - The action that results when an operator would have one pallet on the forks, then use the load to push other pallets ahead of the truck. Bulldozing may also involve having two pallets arranged vertically on the forks plus pushing up to six pallets (single or double stacked) out in front of the truck.

Electric pallet truck - An electrically-powered pallet truck.

Employee - For the purpose of this chapter includes Fermilab direct hired personnel, term and temporary employees and contract technicians.

Forklift truck - A self-loading truck equipped with load carriage and forks for transporting and tiering loads. There are eleven truck designations that are applicable: D, DS, DY, E, ES, EE, EX, G, GS, LP and LPS.

Free Rigging - The direct attachment to or placement of rigging equipment (slings, shackles, rings, etc) onto the tines of a P.I.T. for a below-the-tines lift. This type of lift does not use an approved lifting attachment.

Lead Evaluator - An individual whose purpose is to evaluate the Operator Evaluators among divisions/sections. This evaluation is aimed at ensuring evaluation maneuvers and protocols are standard and objective.

Magnet Movers - A vehicle or tractor-trailer combination, which is equipped for the purpose of lifting, moving and setting beam line magnets or other such large heavy objects in the beam line enclosures. The trailer may be pulled or pushed by the tractor. Lift tables on wheels are excluded from this definition unless they are towed by a tractor while carrying a load.

Non-employee - This category defines subcontractors and their employees, users, experimenters, graduate students, experimental collaborators, visiting or guest scientists and engineers, and DOE employees.

Operator Evaluator - Individual assigned by the division and section to evaluate the performance phase of an operator's training.

Pallet truck - A self-loading, low lift truck equipped with wheeled forks of dimensions to go between the top and bottom boards of a double-faced pallet and having wheels capable of lowering into spaces between the bottom boards so as to raise the pallet off the floor for transporting.

Powered Industrial Trucks (PIT) - Equipment designed to move, lift, carry, stack, push, and pull a load. This includes forklifts, electric pallet movers, walk-behinds with elevating mechanisms, and magnet movers. PIT's may be electrically-powered, gasoline-powered, LP- gas-powered, or diesel. See ASME B56.1 for information on all the types of truck configurations.

Qualified Operator - An individual deemed competent by management after successfully completing the Training and Qualification requirements of this chapter.

Qualified Person - A person who, by possession of a recognized degree in an applicable field or a certificate of professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter and work.

Split-forking - The action that results when the operator moves two palletized loads by inserting one fork in each pallet.

Tractors - An industrial tractor, tugger or locomotive designed exclusively for towing a trailer or other load on wheels at speeds of 5 mph or less. Generically used brand names jeep, towmotor and donkey are often used to describe these vehicles. The tractor may be hitched to a load at either end, if two appropriate hitches are provided by the manufacturer or user. A locomotive may have rail cars hitched at both ends at once. Farm tractors in agricultural service, lawn mowing tractors, and licensed road-going tractors are excluded from this definition.

POLICY

The operation, inspection, maintenance, and testing of powered industrial trucks and associated equipment shall be in accordance with mandatory standards. For powered industrial trucks, these standards are:

- 29 CFR 1910, Subpart N, OSHA General Industry Standards, Materials Handling and Storage
- 29 CFR 1926.602 (c), (d) - Material Handling Equipment
- ASME B56.1 - Safety Standard for Low Lift and High Lift Trucks

Requirements applicable to all powered industrial trucks are highlighted in this Chapter. Other requirements may exist that are specific to a certain style, size, or use of a particular piece or type of equipment. The appropriate standards are to be consulted by those assigned responsibility for powered industrial truck operations to identify specific requirements, recommendations, and guidance for the safe operation and use of this equipment. Assistance with the implementation of these standards can be obtained from division/section ES&H personnel and the ES&H Section, if requested.

Another source of information is the DOE Hoisting and Rigging Manual available for review in the ES&H Section or in division/section ES&H offices. This manual is not part of the Work Smart Standards but it is available as a reference.

RESPONSIBILITIES

Division/Section Heads shall:

- Implement the requirements associated with the use of powered industrial trucks.

- Ensure that powered industrial truck operators are trained and qualified to perform their assigned duties.
- Appointing Operator Evaluators.
- Ensure that inspections are performed.
- Arrange for the review of attachment Engineering Notes by qualified persons or committee.
- Keep an open file of all Engineering Notes for attachments used in their division/section.

Business Services Section shall:

- Be responsible for the maintenance and maintenance records of all powered industrial trucks owned and operated by Fermilab.
- Distribute of inspection, testing and maintenance reports to the division/section head upon request.

ES&H Section shall:

- Coordinate with training providers to obtain qualified trainers.
- Maintain the lesson plan and training materials.
- Maintain documentation of all classroom training, on-the-job training and evaluations.
- Review and keep a file of Lead Evaluator's annual report of Operator Evaluators.
- Appoint Lead Evaluator

TRAINING AND QUALIFICATIONS

Employee - Operator training and qualification shall include those requirements identified in regulatory standards (29CFR1910.178). In addition, the prospective powered industrial truck operator must hold a valid drivers license from any of the fifty states.

Non-employee - Qualification of non-employees requesting to operate powered industrial trucks owned by Fermilab shall be made by a qualified Operator Evaluator of the division/section responsible for the equipment to be operated. In all cases, where previous training and experience is used as the basis for accepting qualification, such training and experience shall be certified in writing by the employer as meeting the requirements of 29CFR1910.178. When there are special hazards/features associated with a particular piece of equipment, e.g., unfamiliar controls or modifications to the original design, a qualified division/section Operator Evaluator will determine whether the operator(s) (including professional contract operators and contract riggers) shall receive documented job instructional training from Fermilab supervisory personnel. In addition, the prospective powered industrial truck operator must hold a valid drivers license from any of the fifty states.

In the case of subcontractor personnel follow the procedures under the section "Loaning of Powered Industrial Trucks."

Qualification Training - Qualification training shall include both a classroom and a performance phase. At a minimum, the training shall meet the learning objectives specified in Fermilab Training Course No. FN000014/Forklift Operator Training. Demonstration of the operator's

abilities to perform all activities expected or anticipated for the job will be part of the qualification process during the performance phase.

The performance evaluation must be conducted in the environment similar to where the employee is expected to operate the PIT. Employees who operate powered industrial trucks in several locations throughout the Laboratory are required to be evaluated on one representative PIT that the employee is expected to operate.

Magnet Mover operators are to be evaluated in the tunnels and enclosures.

A designated division/section Operator Evaluator shall observe such demonstrations and document the performance results on the "Fermilab - Forklift Operator Evaluation Form" (see attached). Documents reflecting successful demonstration of operator abilities shall be maintained in the TRAIN database. Operator qualification is for a period of three (3) years unless withdrawn within that period by the operator's supervisor. Re-qualification training will include both a classroom phase and a performance phase.

Certification records - Training records certifying operator qualification shall include the name of the trainee, date of training, and the signature of the trainer or evaluator.

Remedial training - Remedial training will be provided to individuals who do not successfully pass the qualification course. The course instructor or Operator Evaluator will determine the level of remedial training required. Remedial training will be provided also to operators involved in an accident, a near-miss incident, or who are observed operating a forklift in an unsafe manner. The employee's supervisor in consultation with the division/section senior safety officer will determine the level of remedial training needed under these circumstances.

INSPECTIONS

Daily Pre-use Inspections - A safety inspection shall be completed for each powered industrial truck and any attachment prior to the start of each shift, or prior to the first use of the day for equipment not in continuous service. A qualified operator shall conduct the inspection, and preferably one that is familiar with the specific equipment. The inspector shall review the elements listed on the checklist provided for guidance at the end of this chapter. Daily pre-use inspections are not required to be documented.

Daily inspections are not required for equipment that is not in service. Prior to being placed back into service, the daily inspection shall be completed by a qualified operator.

Preventative Maintenance Inspection - A documented inspection shall occur at least every six months as part of the Preventative Maintenance and Repair program described in this chapter.

Attachment Periodic Inspection - A documented, annual inspection. Inspection frequency may be modified if so specified in the engineering note.

EVALUATOR PROGRAM

The ES&H Section will designate a Fermilab Lead Evaluator in writing. This Lead Evaluator will in turn conduct evaluations every three years of the designated division/section Operator Evaluators. The intent of this program is to standardize the manner and rigor in which evaluations are administered. The lead evaluator will submit a yearly report to the ES&H Section by October 1 listing all the division/section Operator Evaluators who have completed their checks during the prior fiscal year. This report will list the name, employee number, div/sec, the type of trucks the evaluator can conduct evaluations for and a facsimile of the signature of the person evaluated.

ATTACHMENTS

Scope

All PIT attachments owned by Fermilab or by collaborating institutions and used at Fermilab shall meet all requirements of this FESHM chapter.

PIT attachments provided and used by outside contractors in execution of their contract work are outside the scope of the following engineering note procedure but must adhere to the balance of this FESHM Chapter.

Engineering Note Procedure

1. Engineering Notes: An Engineering Note shall be prepared by a qualified person for all PIT attachments owned by Fermilab or by collaborating institutions and used at Fermilab whether purchased or fabricated at Fermilab or a collaborating institution. The minimum format for the Engineering Note is shown in the appendix of this chapter.
 - a. Engineering Notes for all attachments shall include:
 - Attachment unique identifier.
 - Identification of PIT(s) or class of PIT(s) for which it is designed.
 - Allowable operating parameters: load rating, operation envelope, etc.
 - Operating instructions, if required for safe operation.
 - Inspection frequency and criteria.
 - b. Engineering Notes for attachments designed at Fermilab or other non-commercial institutions (such as Universities or other Laboratories) shall include design compliance calculations to verify that the attachment meets, as a minimum, the requirements of ASME B56.1 and 29 CFR 1910, as well as demonstrating a safety factor greater than or equal to 3 on yield strength for all load bearing components.
 - c. Engineering Notes for attachments purchased from a commercial source engaged in the manufacturing of PIT attachments shall include any manufacturer's documentation

(Certificate of Test, copies of the Operator's Manual, Inspections and Maintenance Instructions, etc.)

- d. Engineering Notes for all attachments that affect the capacity and safe operation of the PIT(s) for which they are designed shall include written approval from the PIT(s) manufacturer(s) or record of the PIT(s) manufacturer's negative or non-response to request for approval. A negative or non-response from the manufacturer does not necessarily disqualify the engineering note from approval.
 - e. Engineering Notes for all attachments must specifically address the stability of the PIT/attachment/load combination as required by ASME B56.1 unless written approval from the PIT(s) manufacturer(s) has been obtained (see (d) above).
 - f. Engineering Notes for all attachments must specifically address the strength of load bearing PIT components unless written approval from the PIT(s) manufacturer(s) has been obtained (see (d) above).
 - g. Modifications to PIT attachments (whether designed at Fermilab or other non-commercial institutions such as Universities or other Laboratories or purchased from a commercial source engaged in the manufacturing of lifting fixtures) shall be documented in the Engineering Notes.
 - h. Load tests shall be documented in the Engineering Note.
2. Review of Engineering Notes: All PIT attachment Engineering Notes shall be reviewed by a qualified person for compliance with the requirements of this chapter.
 3. Amendment of Engineering Notes: All subsequent changes in usage that could affect the safety of personnel or the capability of performance of the attachment shall require an amendment to the original Engineering Note. This amendment shall be reviewed in the same manner as the original note.
 4. Similar Attachments: Attachments that are manufactured or fabricated to meet previously engineered, fabricated and reviewed attachments need not have the full engineering analysis repeated. Documentation shall be provided by reference to an existing approved Engineering Note and the detailing of all differences. A load test shall still be required.

Attachment/Pit Identification

1. All attachments will be assigned a unique identifying ID by the responsible division/section to facilitate periodic inspections.
2. All attachments shall display the ID, maximum elevation with the load laterally centered, the attachment weight, and where applicable, the attachment load rating.
3. Removable attachments shall be labeled to list the PIT or class of PIT(s) for which the attachment has been designed.
4. For attachments that affect the capacity or safe operation of the PIT(s) for which they are designed, capacity, operation, and maintenance instruction plates, tags, or decals on the PIT(s) shall be modified accordingly.
5. Attachments shall be removed from service if the required markings are not legible.

Attachment Load Test

1. All PIT attachments shall be acceptance load tested prior to initial use. The load rating should not be more than 80% of the maximum load utilized during the test. The test shall be documented in the Engineering Note including signature of the qualified person overseeing the test.
2. Specialized commercially manufactured PIT attachments which have certificates of test or existing devices which have documented evidence of having successfully passed a load test do not need to be re-load tested. Supporting documentation shall be included in the Engineering Note. The only deviation to this occurs when the attachment has been altered, repaired, or modified. In this case a qualified person must be consulted; they may require further testing.

Attachment Inspections

All attachments used in the course of operating a powered industrial truck must be inspected periodically and used in accordance with ASME B56.1 and the manufacturer's requirements and recommendations. Inspection frequency shall be determined by the engineer and/or user-based on the service. Minimum inspection criteria shall incorporate the items as noted in this chapter and ASME B56.1. At a minimum, each attachment will be inspected visually before each use. Each division/section shall document the periodic inspections using the forms provided at the end of this chapter as an example.

OPERATIONS

Powered Industrial trucks shall only be used in the environment, atmospheres and surfaces for which they are designated by the manufacturer for use. *Note: See 29 CFR 1910.178(c).*

Installation of Operator Restraint Systems (Seat Belts) - All powered industrial trucks with seats shall be fitted with seatbelts. Those PIT's for which retrofit kits are not available are exempt from this requirement. Division/Section Heads shall notify the ESH Section of any powered industrial truck that cannot be retrofitted.

Use of Seat Belts - Seat belt use is mandatory at all times when the operator is seated on the truck and the truck is equipped with seat belts. Notify the building manager if seatbelts were installed but are missing and tag the truck "Out of Service" until seat belts can be installed.

Exception: Magnet movers and towmotors when used in tunnels and enclosures.

Prohibited and Restricted Work Practices:

- The practice of split-forking is prohibited.
- The practice of bulldozing is prohibited unless specifically authorized in writing by the line manager. Only stable or safely arranged loads shall be handled. Caution shall be exercised when handling off-center loads which cannot be centered.
- The use of a spinner knob on the steering wheel is not allowed except on stand-up rider trucks where steering is designed to be accomplished with one hand and a steering wheel is used or, if the powered industrial truck is equipped with an anti-kickback device on the steering mechanism. The operator must exercise caution when using a spinner knob to avoid over-controlling the vehicle that would cause the vehicle to tip over.
- Free rigging is prohibited unless specifically authorized in writing by the line manager and after a Job Hazard Analysis has been performed per [FESHM 2060](#) Work Planning and Hazard Analysis.

Procurement or Significant Modification - Divisions/Sections wishing to purchase or modify existing PIT's shall prepare the technical specifications in consultation with BSS- Transportation Services to ensure the standardization of equipment and that provisions are in place to address maintenance requirements.

PIT Nameplate(s) and Marking - Every truck shall have a durable, corrosion-resistant nameplate, legibly inscribed with the following information: truck model, serial number, truck weight and designation of compliance with the mandatory requirements of ASME B56.1, *Safety Standard for Low and High Lift Trucks*, applicable to the manufacturer and rated capacity.

Repair - Repairs on all powered industrial trucks will be conducted by the Transportation Services Department of the Business Services Section, or, as their agent, a qualified vendor working under the direction of the Transportation Services Department.

Acceptance Testing - The Business Services Section shall arrange for documented inspection and testing of a new powered industrial truck before placing in service or after extensive repairs to a damaged one are made. The owner shall be provided with copies of acceptance testing documentation.

Control of Access to Powered Industrial Trucks - Means shall be provided to prevent forklifts, tow-motors, and other powered industrial trucks from use by unqualified personnel (e.g., restricting access, locking operating controls, removing ignition keys, posting each truck with a sign that states: "Trained Personnel Only" or other appropriate measures). This is the responsibility of the division/section who owns the equipment.

Damage to Powered Industrial Trucks - When a powered industrial truck is damaged in an accident, it will be tagged and locked "out of service" by the division/section responsible for the truck. Owners will investigate and document incidents resulting in damage to a powered industrial truck. Do not return to service until repaired and, if applicable, until acceptance testing has been completed (See Acceptance Testing paragraph above).

PREVENTATIVE MAINTENANCE AND REPAIR PROGRAM

The Business Services Section (BSS) will administer a maintenance and repair program for all powered industrial trucks owned by Fermilab divisions and sections. This program will provide for semi-annual preventive inspections and maintenance for all equipment; and for any unforeseen maintenance and repair work necessary to keep the equipment in safe operating condition.

Frequency of preventive maintenance inspections, other than semi-annual, will be determined by the owner based on use.

These services shall be conducted by the Transportation Services Department of the Business Services Section or, as their agent, a qualified maintenance contractor determined by a "Request for Proposal (RFP) with Qualifications" to assure professional services. The program will be carried out in conjunction with the division/section head responsible for the equipment. The division/section head is responsible for ensuring that all powered industrial trucks within their areas of responsibility are included in the program and shall establish and inform BSS of times of availability. All costs for inspection, testing, and maintenance shall be the responsibility of the division/section that owns the equipment.

Note: Maintenance and repair of rental powered industrial trucks and associated equipment is the responsibility of the vendor as per contract documents unless the division/section administering the contract specifies otherwise.

LOANING OF POWERED INDUSTRIAL TRUCKS

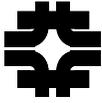
Loaning of a powered industrial truck to sub-contractor personnel must follow the requirements found in [FESHM 7010](#). The owner of the PIT must fill out the Sub-Contractor Acceptance And Use Of Fermilab Tools/Equipment form #20 found in [FESHM 7010](#) and verify that the operator meets the training requirements established in this chapter or the training requirements published in the Code of Federal Regulations.

DRIVING POWERED INDUSTRIAL TRUCKS ON FERMILAB MAIN ROADS

At times it may be necessary to drive a powered industrial truck on Fermilab roads. These are slow moving vehicles that may introduce a collision hazard because of their slow speeds. The owner of the truck shall request an escort from the security services to follow the truck to its destination. The security vehicle needs to have all security emergency lights and strobes ON. Another vehicle may provide escort if Security is not able to provide the service. The escort vehicle must have the emergency flashers ON. A powered industrial truck equipped with a rotating yellow light or yellow strobe light and an operating horn does not need an escort as long as the rotating yellow light or yellow strobe and the horn are in working condition and the lights turned ON. A powered industrial truck without a yellow strobe or rotating beacon requires an escort when transiting.

Escort duties are only required when transiting:

- Wilson Road
- Pine Street
- Batavia Road
- Eola Road
- Road A
- Road B
- Road D



Fermilab Forklift Operator Evaluation Form

Operator Name	ID No.	Evaluator Name	ID No.		
Date of Evaluation	Equipment Operated				
Operator Behaviors	Good	Fair	Poor	N/A	Comments
Pre-use Check (Controls & Braking & Limits)					
1. Perform the Operators Daily Checklist	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2. Move Forks to Upper Limits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3. Lower Forks but Not to Ground	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4. Move Mast All the Way Forward	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5. Move Mast All the Way Back	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6. Move Truck Slightly Forward and Brake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7. Move Truck Slightly Backward and Brake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Picking up a load					
1. Square up on the center of the load	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2. Stop with the fork tips about 1 foot from the load	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3. Clear personnel from the area of the load	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4. Level the forks; then slowly drive forward until the load contacts the carriage.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5. Lift the load carefully and smoothly until it is clear	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6. Tilt the mast back slightly to stabilize the load	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7. Look over both shoulders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8. After out and stopped, lower the load to travel height	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Traveling					
1. Do not raise or lower the load and forks while traveling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2. Maintain a safe speed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3. Observe all traffic rules, warning signs, floor load limits, and overhead clearances	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4. Keep arms and legs inside the forklift	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5. Follow other vehicles at a safe distance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6. Slow down when cornering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7. Use the horn to alert others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8. Travel with the load facing uphill while on a ramp or incline.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
9. Stop smoothly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Operator Behaviors	Good	Fair	Poor	N/A	Comments
Putting Down A Load					
1. Make sure there is sufficient clearance for the load	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2. Clear personnel from the area near the load	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3. Square up to the location; then stop about 1-foot away	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4. Raise the load to placement level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5. Move slowly forward	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6. If the load is on the pallet, lower it into position and lower the forks further	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7. Look over both shoulders before backing out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8. Back strait out until the forks have cleared	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
9. Lower the forks to traveling position	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Parking					
1. Fully lower the forks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2. Neutralize the controls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3. Set the brakes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4. Turn off the power	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5. If parked on an incline, block the wheels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6. Park only in authorized areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Fueling and Battery Recharging (Comments Only)					
1. Engine off.					
2. Fire extinguisher nearby.					
3. Use required personal protective equipment as required by the Div/Sec instructions					
4. Safe fueling and battery recharging procedures followed.					
5. Spills cleaned up immediately					

Based on my evaluation, the operator has **successfully** completed the evaluation and is qualified to operate the following equipment.

Based on my evaluation, the operator **has not demonstrated** competence in operating the equipment.

Equipment Type

Evaluator Signature

Operator Signature



Operator's Daily Checklist By Week		Truck No.		Week Ending (Date)	
Visual Checks	Hour Meter Reading	Date	Date	Date	Date
		Ok	Needs Attn Or Repair	Ok	Needs Attn Or Repair
1. Fluid levels- Oil, Radiator,Hydraulic (Driver replenish)	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Leaks- Hydraulic, Oil, Battery, Fuel	<input type="checkbox"/>				
3. Tires- Condition and Pressure	<input type="checkbox"/>				
4. Forks, Top Clip retaining pin and heel- Condition	<input type="checkbox"/>				
5. Load backrest Extension- solid attachment	<input type="checkbox"/>				
6. Hydraulic hoses, Mast chains & Stops	<input type="checkbox"/>				
7. Safety Warnings – attached and legible	<input type="checkbox"/>				
8. Operator manual – Located on truck and legible	<input type="checkbox"/>				
9. Capacity Plate – attached; information matches model & Serial Nos and attachments.	<input type="checkbox"/>				
10. Seat Belt – Buckle and retractor working smoothly	<input type="checkbox"/>				
Operational Checks					
1. Accelerator Linkage	<input type="checkbox"/>				
2. Parking Brake	<input type="checkbox"/>				
3. Brakes (report to supervisor immediately)	<input type="checkbox"/>				
3. Steering (report to supervisor immediately)	<input type="checkbox"/>				
4. Drive Control – Forward and Reverse	<input type="checkbox"/>				
5. Tilt Control – Forward and Back	<input type="checkbox"/>				
6. Hoist and Lowering Control	<input type="checkbox"/>				
7. Attachment Control	<input type="checkbox"/>				
8. Horn	<input type="checkbox"/>				
9. Lights	<input type="checkbox"/>				
10 Back-up Alarm	<input type="checkbox"/>				
11. Battery load test (Electric powered trucks only- Watch battery indicator while holding lift lever. If needle moves to red area, battery does not have sufficient charge to operate truck properly)	<input type="checkbox"/>				
Checked By					
Initials					

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