



Powered Industrial Trucks Safety Program

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1. Program Description

This written Powered Industrial Truck (PIT) Safety Program establishes guidelines to be followed whenever any UCR employees work with powered industrial trucks at this campus. The guidelines established are to be followed to:

- Provide a safe working environment,
- Govern operator use of powered industrial trucks, and
- Ensure proper care and maintenance of powered industrial trucks.

It is the intent of the University to comply with the requirements of Cal/OSHA Title 8, §3650 Industrial Trucks. These regulations have requirements for PIT operations, including those for battery care and charging.

2. Scope

The procedures here establish uniform requirements designed to ensure that PIT safety training, operation, and maintenance practices are communicated to and understood by all affected employees. These requirements also are designed to ensure that procedures are in place to safeguard the health and safety of all persons on campus including faculty, staff, students, and visitors.

All PIT equipment used for material handling is covered under this program, including sit-down type forklifts, stand-up forklifts, straddle trucks, narrow aisle lift trucks, walk behind forklifts, pallet jacks, etc. The Powered Industrial Truck Safety Program guidelines apply to University/Department owned powered industrial trucks, as well as all trucks rented, leased, or borrowed on a temporary basis and used by University personnel.

3. Definitions

Attachment: A device, other than conventional forks or load backrest extensions, mounted permanently or temporarily on the PIT for handling the load.

Carriage: Supports the forks/lifting attachment.

Counterbalanced Lift Truck: A PIT equipped with load engaging means wherein the entire load during normal transporting is outside the area formed by the wheel contacts.

Counterweight: located at the back of the unit to offset the weight of the load.

Cradle the Load: When loading a forklift, place the load engaging means under the load as far as possible and tilt the mast backwards to “cradle the load.”

Drive Wheels/Axle: The drive wheels are located at the front of the unit. Sometimes also called the braking axle. Acts as the fulcrum point.

Fork Height: The vertical distance from the floor to the load-carrying surface of the forks with mast vertical.

Forklift Truck: A high lift self-loading PIT equipped with a load carriage and forks for transporting and/or stacking loads.

Free Lift Height: The attainable fork height before the stated overall lowered height of the mast is exceeded by any standard part of the forks, mast or carriage assemblies, when loaded.

High-Lift Truck: A PIT equipped with a power-operated lifting device used for the transportation, stacking, and positioning of loads.

Lift: The vertical travel of the carriage with mast vertical.

Lift Speed: The average velocity in feet per minute when raising the load carriage throughout its operating range, specified as empty and/or loaded.

Load Backrest or Extension: A removable structure extending vertically from the carriage frame to provide increased support and stability for unusually high loads.

Load Center: The point at which the center of load (i.e., center of gravity) is placed ahead of the fork face or equivalent (attachment) with the load resting on the forks.

Mast or Upright Channel: Supports the vertical up and down motion of the carriage and lifting attachments.

Maximum Fork Height: The fork height attainable with the mast at the fully elevated position.

Overhead Guard: A framework fitted to a PIT over the head of a riding operator. Also known as a FOPS or falling object protective structure.

Powered Industrial Truck: Also known as a PIT, a mobile power-driven truck used for hauling, pushing, or lifting materials where normal work is normally confined within the boundaries of a place of employment.

Rated Capacity: The maximum weight, expressed in pounds, at given load center, that a PIT can safely transport and/or stack to a specified height when equipped with a standard mast, carriage and forks. The rated capacity is based on the strength of the various truck components and the amount of counterweight.

Rollover Protective Structure (ROPS): Overhead guards for rough terrain units and tractors.

Stability Triangle (Pyramid): As a load moves upward, it shifts the truck's center of gravity forward. The boundary lines where the stability of the unit is compromised

forms a pyramid. The base of the pyramid is formed by the front wheels and center of the steering axle.

Steering Wheels/Axle: The steer wheels/axle are located at the rear of the unit. The steer wheels turn sharply allowing the truck to pivot in place on the front wheels which is referred to as pivot point steering.

Telescoping Mast: A multiple mast wherein one member is stationary and the other(s) movable vertically with respect to the stationary member and supporting the fork carriage in its vertical movement. This mast permits maximum lifts substantially greater than the overall lowered height.

Tilt: The amount by which the mast structure, forks and carriage may be tipped beyond the vertical position, forward or backward.

4. Responsibilities

Department

Departmental supervisors:

- Shall designate and identify employees responsible for operating powered industrial trucks
- Shall ensure that no employee under their direction operates a PIT without proper training and certification
- Shall ensure employees are completing and verifying completion of the pre-use inspections within the current shift prior to operating
- Shall ensure that powered industrial trucks are repaired when malfunctioning
- Shall correct and discipline employees who are observed exhibiting unsafe driving practices and require re-training as necessary to ensure operator knows and can demonstrate the expectations
- Shall provide and assist in maintenance of information about PITs on UCR sites for inventory purposes. When new equipment is brought onto a UCR owned site, an inventory form must be completed by the owner/managing department. The inventory form is here:

UC Riverside Employees and Students

PIT operators:

- Shall attend and pass forklift safety training and evaluation before operating a PIT/forklift and at least every three years thereafter
- Shall operate and maintain powered industrial trucks in a safe manner and according to the training provided

- Shall possess a valid California Driver's License
- Shall report all vehicle problems to his/her supervisor

Environmental Health & Safety (EH&S)

- Shall provide program oversight
- Shall provide PIT/forklift safety training and certify that each operator has been trained and evaluated as required
- Shall review annually the UCR Powered Industrial Truck Safety Program

5. Program Components

A. Inspection

- A pre-use inspection of the PIT must be performed by the operator before each use
– Use the UCR online inspection form found here:
https://ucriverside.az1.qualtrics.com/jfe/form/SV_0kR8nReQmA2Ua9L
- The inspection has three components: the power off checks, power on checks, and the workplace safety inspection.
- The power off check should include, at minimum, the inspection of the frame, forks, carriage, tires, overhead guard, hydraulic hoses, chains, safety equipment, safety decals, and overall appearance
- The power on check must perform operational checks that include ensuring the horn, lights, audible warning, brakes, control levers, steering, and safety equipment are fully functional and in good condition.
- The workplace safety inspection checks the area to identify environmental, and external hazards like holes, electrical power lines, weather conditions, and hazardous materials.

Commented [TS1]: Comment from Sheila: do we have a checklist they can use as a standard? Does the inspection need to be document and then saved somewhere?

Commented [TS2R1]: Yes. I have created a Qualtrics form. The link will be placed in the document prior to roll out.

B. Forklift Operation

- Only employees who are trained in the safe operation of forklifts are permitted to use the forklift
- Always wear seatbelts.
- Never place any part of the body outside the running lines of the forklift or between mast uprights
- Never allow others to stand, pass, or work under the elevated portion of the forklift
- Riders are not permitted on vehicle
- Always keep a safe speed and distance while driving
- Always keep checking for obstacles or pedestrians
- Operators must be able look in the direction of travel. If load is obstructing view, operators must travel in the reverse direction. Always "cradle the load"

- Sound horn at blind spot intersections or to alert pedestrians
Ascend or descend a grade slowly with the load upgrade
- Turn engine off, lower forks, set brakes and remove key when operator is away from forklift
- Do not operate on floors, sidewalks, platforms, trailer load floors, or elevators that will not safely support the loaded vehicle

C. Load Handling

- Take special precaution when securing and handling loads
- Know truck load capacity
- Make sure load is secured on pallet
- During transport, carry load 6-8 inches off the ground
- Take extreme care when tilting loads
- Always slow down and ensure load is lowered when turning corners

D. Emergency: Tip Over

- In case vehicle starts to tip-over:
 1. **HOLD TIGHT TO STEERING WHEEL**
 2. **BRACE FEET**
 3. **LEAN AWAY FROM THE DIRECTION OF THE FALL**
 4. **NEVER JUMP OUT OF THE FORKLIFT.**

E. Maintenance

- Scheduled planned maintenance, lubrication, and inspection shall be completed according to the manufacturer's recommendations. Records for this maintenance must be kept by the owner and be readily available if requested.
- Only persons who have been certified by the manufacturer as authorized repair persons may attempt repairs. Contact your supervisor immediately if repairs are needed.
- Industrial trucks shall be kept in a clean condition free of debris, oil, and grease.
- When changing batteries of battery-electric trucks, replacement batteries shall be of the service weight that falls within the minimum/maximum range specified on the truck nameplate by the truck manufacturer.
- The truck manufacturer's capacity, operation, and maintenance instruction plates, tags, or labels shall be maintained in legible condition or replaced as necessary.

6. Reporting Requirements

- All powered industrial trucks used by University employees are required to meet the design and construction requirements for powered industrial trucks established in the American National Standards Institute (ANSI) Standard for Powered Industrial Trucks, Part II, ANSI B56.1, except for vehicles intended primarily for earth moving or over-the-road hauling. Approved trucks are required to bear a label or some other identifying mark indicating approval by the testing laboratory.
- Nameplates and markings must be in place, must not be covered over with paint which may obscure the identification information, and the nameplates must be maintained in a legible condition.
- Modifications and additions that affect capacity and safe operation without the manufacturer's prior written approval are prohibited. Capacity, operation, and maintenance instruction plates, tags, or decals must be changed to account for the attachment or modification. Prior to purchasing add-ons or attempting modification contact the EH&S Safety Engineer for review. Any manufacturer written approvals must be kept on the unit and copies must be filed with EH&S as well.
- Power-operated industrial trucks shall not be used in atmospheres containing hazardous concentrations of dust or where flammable gases or vapors are, or may be, present in quantities sufficient to produce explosive or ignitable mixtures. If the location is believed to be hazardous or contain any hazardous materials, EH&S should be consulted in advance.
- High lift rider trucks must be equipped with an overhead guard, unless operating conditions do not permit the use of the guard. The overhead guard is intended to offer protection from the impact of small packages, boxes, bagged material, etc., but not to withstand the impact of a falling capacity load.
- All new low lift and high lift trucks manufactured after June 26, 1998, through March 15, 2009 shall be labeled as meeting the design and construction requirements of Part III, ASME B56.1-1993, Safety Standard for Low Lift and High Lift Trucks or Part III of the ANSI/ITSDF B56.1-2005 standard. All low lift and high lift trucks manufactured on or before June 26, 1998, shall be labeled as meeting either the design and construction requirements of the ASME standard indicated above or Part II, of the ANSI B56.1-1975 standard.

Commented [TS3]: Comment from Sheila:
Will we have a process to ensure this step? What happens if they don't submit a copy? Should we also say to consult EH&S prior to considering any modifications?

Commented [TS4R3]: Sure. It is not very likely that we will have much of this since we only have a few forklifts and they have pretty fixed use. This is all covered in great depth during the training.

Commented [TS5R3]: There aren't really consequences other than Cal-OSHA citation.

7. Competency Assessment and Training Requirements

A. Operators must be trained by EH&S before operating a University forklift.

- All operator training and evaluation shall be conducted by persons who have the knowledge, training and experience to train powered industrial truck operators and evaluate their competence.
- Training shall consist of a combination of formal instruction (e.g., lecture, discussion, interactive computer learning, video tape, and written material), practical training

(demonstrations performed by the trainer and practical exercises performed by the trainee) and evaluation of the operator's performance in the workplace.

- Trainees may operate a powered industrial truck only:
 1. Under the direct supervision of persons who have been authorized by UCR as having the knowledge, training and experience to train operators and evaluate their competence; and
 2. Where such operation does not endanger the trainee or other employees.

B. Training and certification must be renewed at least every three years. In addition, operators must be retrained for any of the following conditions:

- 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 has received an evaluation that reveals that the operator is not operating the truck safely
- The operator is assigned to drive a different type of truck; or
- A condition in the workplace changes in a manner that could affect safe operation of the truck.

C. Training components include:

- Understanding Regulations
- Types of Forklifts
- Parts of Forklifts
- Fuel Types and Batteries
- Forklift Safety and Stability
- Safe Forklift Inspection and Operation
- Worksite Safety Conditions
- Operator Practical Evaluation

8. Information and External References

Cal/OSHA Title 8, §3650 Industrial Trucks
<https://www.dir.ca.gov/title8/3650.html>

ANSI ITSDF B56.1-2018, Safety Standard for Low Lift and High Lift Trucks
https://o365ucr.sharepoint.com/:b:/s/EHS/safety/Ea38-h10t4fEs11L5e7U4qYBkGLbx5epv8nDrPZ_BaAj3A?e=naXENg

ANSI ITSDF B56.6 – 2016, Safety Standard for Rough Terrain Forklift Trucks

https://o365ucr.sharepoint.com/:b:/s/EHS/safety/EVy0tHqPvcZKuSNOGPVrhSkBlI_juhOYja_sGIIR_6ojQQ?e=rtu61n

Video - Safe Removal and Installation of a Lift Truck Liquid Propane Fuel Tank

https://youtu.be/slbBXm_-Llc

Video – Stability Triangle 3D Animation

<https://youtu.be/FmHMeVTeaF4>

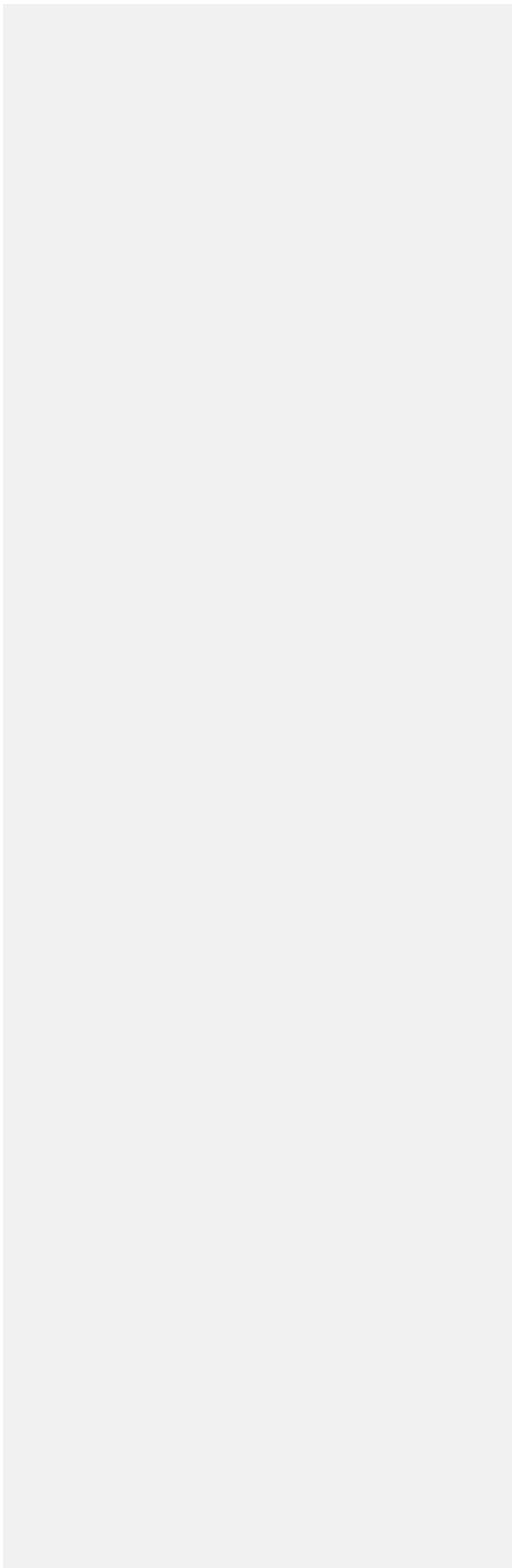
Video Playlist – How to Operate a Lift Truck 6 videos

https://www.youtube.com/playlist?list=PLd6g-RbYE8a_0FjkxG_Lws2E8zYzqZ_HP

9. Appendix A – Pre-Use Checklist

If the online pre-use checklist is not accessible you can use this paper version. Print as front and back of a single sheet if possible. Please keep the completed checklist in a binder near the lift parking /storage area, in a weather safe place, and then forward completed checklists (or legible copies) monthly to EH&S for archiving.

Powered Industrial Trucks Program



UCR Forklift Pre-Use Inspection

Inspections are required prior to use during each shift or every eight hours. If any deficiencies are found, they must be reported to your supervisor immediately. The truck must not be used until a supervisor has verified appropriate repairs and the truck deemed safe for use.

Inspected by:

Inspection Date:

Operator Number:

Department:

Forklift being inspected:

Forklift Mileage/Hour Reading:

POWER OFF CHECKS	OK	NO	N/A
Wheels and tires			
Lights and strobes			
Mirrors and visibility aids			
Engine cover panel(s)			
Engine clear of debris			
Engine belts and hoses in good condition			
Engine air filter indicator			
wires, cable, and terminals			
Battery clean, dry, & secure			
Engine oil level			
Engine coolant level			
Hydraulic oil level			
Transmission oil level			
Fluid leaks - any			
LPG tank secure and no leaks			
Hydraulic cylinders, rods, & locking pins			
Hydraulic hoses, lines, & fittings			
Capacity Plate/Load Charts			
Decals and labels			
Manufacturer's manual			
Windows/Screens/Doors			
Overhead guard/Cab			
Mast/boom			
Carriage & lifting attachments			
Counterweight and counterweight bolts			
Fire Extinguisher			
Unit overall clean usable condition			

POWER ON CHECKS	OK	NO	N/A
Seat belt in good working condition			
Unit starts and runs properly			
Instruments/system warning indicators			
Fuel level/charge level			
Horn			
Back up alarm			
Work lights and Flashing Lights			
Mast raise and lower			
Side shift			
Tilt forward and back			
Drive forward and reverse			
Brakes			
Parking brake			
Frame Leveler			

Report all problems found to your supervisor. Do not use the lift if there are problems until they are fixed. ALWAYS lockout unsafe equipment to prevent injuries.

