



THE OHIO STATE UNIVERSITY

The Ohio State University
Forklift and Powered Industrial Truck Safety Program

**Plan prepared by:
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1.0 Introduction

- 1.1 The Ohio State University Forklift and Powered Industrial Truck Safety Program applies to all OSU staff members who operate and/or are responsible for forklifts and/or powered industrial trucks. Powered industrial trucks include forklifts, platform lift trucks, motorized hand trucks and other specialized industrial trucks powered by electric or internal combustion engines. The Occupational Safety and Health Administration (OSHA) and National Fire Protection Agency (NFPA) have established rules and guidelines for the protection of workers and facilities relating to powered industrial trucks in 29 CFR 1910.178 *Powered Industrial Trucks*; and NFPA 505 *Fire Safety Standard for Powered Industrial Trucks including Type, Designation, Areas of Use, Conversions, Maintenance and Operations*, which are incorporated into this plan.

2.0 Responsibilities

- 2.1 OSU Environmental Health & Safety - The Ohio State University Office of Environmental Health & Safety (EHS) is responsible for the following:
 - 2.1.1 Updates and revisions to the written Forklift and Powered Industrial Truck Safety Program;
 - 2.1.2 Ensure forklift and powered industrial truck training programs meet applicable requirements;
 - 2.1.3 Provide program oversight.
- 2.2 Department Supervisors – Supervisors or department heads of areas where forklifts and/or powered industrial trucks are operated are responsible for the following:
 - 2.2.1 Designating and identifying personnel authorized to operate forklifts and powered industrial trucks;
 - 2.2.2 Ensuring authorized operators have received proper training prior to operating a forklift or powered industrial truck;
 - 2.2.3 Ensure forklifts and powered industrial trucks are maintained in proper working order and repaired when necessary.
- 2.3 Authorized forklift/powered industrial truck operators – Operators of forklifts and/or powered industrial trucks are responsible for the following:
 - 2.3.1 Attending and passing classroom and evaluation of competence training prior to operating a forklift or powered industrial truck;
 - 2.3.2 Performing and documenting forklift/powered industrial truck pre-use inspections;
 - 2.3.3 Reporting all vehicle maintenance issues to his/her supervisor and removing the equipment from service if necessary;
 - 2.3.4 Operating and maintaining equipment in a safe manner at all times.

3.0 Vehicle Requirements

3.1 All forklifts and powered industrial trucks must be designed and constructed to meet minimum American National Standards Institute (ANSI) requirements established in the “American National Standard for Powered Industrial Trucks, Part II, ANSI B56.1-1969”.

- 3.1.1 All forklifts and industrial trucks should be marked with a nameplate identifying its approval under ANSI B56.1-1969.
- 3.1.2 Additional information on the nameplate should include the designation of the industrial truck as outlined in Table 1.

Designation	Description
“D”	Diesel engine powered
“DS”	Diesel engine powered with additional safeguards to the exhaust, fuel and electrical systems
“DY”	Diesel engine powered with the safeguards of the DS units AND do not have any electrical equipment and are equipped with temperature limitation features
“E”	Electrically powered
“ES”	Electrically powered with additional safeguards to prevent emission of hazardous sparks
“EE”	Electrically powered with the safeguards of ES units AND all electrical equipment is completely enclosed
“EX”	Electrically powered with the safeguards of ES and EE, AND are constructed to be used in atmospheres containing flammable vapors or dusts
“G”	Gasoline engine powered
“GS”	Gasoline powered with additional safeguards to the exhaust, fuel and electrical systems
“LP”	Liquefied petroleum gas powered
“LPS”	Liquefied petroleum gas powered with additional safeguards to exhaust, fuel and electrical systems

- 3.1.3 If a forklift or industrial truck is to be used in an area containing potentially hazardous atmospheric conditions, it is the responsibility of the operator and supervisor to ensure the correct forklift designation is available for use. Any operation of a forklift in a potentially hazardous atmosphere should be approved by the Office of Environmental Health & Safety.

4.0 Training

4.1 Initial Training: Supervisors must ensure all forklift operators are adequately trained prior to operating a forklift/industrial truck. Training must consist of both formal instruction and practical evaluation.

- 4.1.1 Formal instruction includes lecture, discussion, online, video, and or written training and must consist of the following elements, when applicable.

- 4.1.1.1 Specific operating instructions, warnings, limitations, and precautions specific to the type of industrial truck to be utilized by the operator;
- 4.1.1.2 Differences between the forklift/industrial truck and a vehicle;
- 4.1.1.3 Equipment controls and instrumentation including their location and proper operation;
- 4.1.1.4 Operating the motor/engine;
- 4.1.1.5 Steering and maneuverability;
- 4.1.1.6 Visibility, including limitations when loading/unloading;
- 4.1.1.7 Fork use and attachment adaptation, operation and limitations (when applicable);
- 4.1.1.8 Vehicle capacity and stability limitations;
- 4.1.1.9 Completing equipment pre-use inspections;
- 4.1.1.10 Refueling and/or battery changing/charging; and
- 4.1.1.11 Specific workplace operation of the forklift including the following.
 - 4.1.1.11.1 Handling loads specific to the operation of the forklift/industrial truck;
 - 4.1.1.11.2 Operating in narrow aisles and/or around pedestrian traffic;
 - 4.1.1.11.3 Operating on sloped surfaces;
 - 4.1.1.11.4 Ventilation while using forklifts/industrial trucks; and
 - 4.1.1.11.5 Use restrictions based on hazardous locations.
- 4.1.2 Practical evaluation includes demonstration performed by the trainer and practical exercises performed by the trainee in order to ensure competence by the operator when utilizing an industrial truck.
 - 4.1.2.1 Practical evaluation should be conducted utilizing the industrial truck(s) to be used by the operator.
 - 4.1.2.2 Practical evaluation should simulate typical work to be conducted with the industrial truck and may consist of the following:
 - 4.1.2.2.1 Performing pre-use inspections
 - 4.1.2.2.2 Safe operation of the industrial truck

4.1.2.2.3 Handling a load

4.1.2.2.4 Maneuverability

4.2 Refresher training: Refresher training may be necessary due to certain circumstances as follows:

4.2.1 The operator is observed operating the vehicle in an unsafe manner;

4.2.2 The operator is involved in an accident or near-miss incident;

4.2.3 The operator receives an evaluation revealing unsafe practices;

4.2.4 There is a change in workplace conditions affecting operation of an industrial truck;

4.2.5 There is a change in the type of industrial truck being utilized in the workplace.

4.3 Certification: Forklift/Industrial Truck operators shall be certified by their supervisor prior to operating a forklift/industrial truck. This certification must be documented and include the following.

- Operator name
- Date of training
- Date of evaluation
- Trainer name.

4.3.1 Forklift/Industrial Truck operators must be recertified every 3 years.

5.0 Safe Operation, Traveling and Loading

5.1 Operation of a forklift/industrial truck must be done in a safe manner to prevent injury to the operator or pedestrians in the area; and to prevent damage to property during operation. Safe operation of a forklift/industrial truck includes the following practices.

5.1.1 No one under the age of 18 can operate a forklift.

5.1.2 Trucks shall not be driven up to anyone standing in front of a fixed object.

5.1.3 Passing under a raised load or other elevated portion of a truck is prohibited.

5.1.4 Unauthorized persons shall not "ride" on a forklift unless the forklift is equipped with a proper passenger area.

5.1.5 Operators must keep hands and feet inside the forklift at all times.

- 5.1.6 When left unattended, forklift load engaging means (forks) shall be in the lowered position, controls neutralized, power shut down, and brakes set. If parked on an incline, wheels shall be blocked.
 - 5.1.6.1 A forklift/industrial truck is considered unattended when the operator is 25 feet, or more, away from the truck or whenever the truck is not in direct view of the operator.
 - 5.1.6.2 If an operator dismounts a forklift and remains within 25 feet of the truck, the forks shall be lowered, controls neutralized, and brakes set to prevent movement.
 - 5.1.7 Maintain a safe distance from edges of ramps or platforms.
 - 5.1.8 Forks shall not be used for purposes other than those specified by the truck manufacturer such as opening doors, raising persons to elevated areas, etc.
 - 5.1.9 Ensure sufficient head room under overhead installations such as lights, sprinklers, pipes, etc.
 - 5.1.10 An overhead guard shall be in place on the truck to provide protection against falling objects.
 - 5.1.11 Only approved industrial trucks shall be used in hazardous locations.
 - 5.1.12 Ensure aisles, passage ways, and access to fire equipment and emergency exits remains clear at all times.
 - 5.1.13 If at any time a forklift/industrial truck is found to be in need of repair, defective, or in any way unsafe, the truck must be immediately taken out of service until it is restored to safe operating condition.
 - 5.1.14 Lighting shall be sufficient to ensure safe operation of a forklift/industrial truck.
 - 5.1.14.1 If general facility lighting is insufficient (less than 2 lumens per square foot) auxiliary lighting must be provided on the forklift.
 - 5.1.15 Ventilation shall be sufficient to prevent the accumulation of gases from petroleum powered industrial trucks.
- 5.2 Safe traveling while operating a forklift/industrial truck is essential to maintaining a safe workplace. The following traveling safety points shall be implemented to the operation of trucks.
- 5.2.1 Observe all traffic regulations while operating a forklift including speed limits.
 - 5.2.2 The right of way shall be yielded to ambulances, fire trucks or other emergency vehicles.
 - 5.2.3 Other trucks shall not be passed when traveling in the same direction.

- 5.2.4 When approaching an intersection at aisles and other locations, the operator shall slow down, sound the horn, and ensure no pedestrians or other trucks are in the area.
 - 5.2.5 Forklifts/industrial trucks shall be driven forward unless the load being carried obstructs the view, in which case the forklift shall be driven in reverse.
 - 5.2.6 Cross railroad tracks diagonally.
 - 5.2.7 Always ascend/descend grades slowly.
 - 5.2.7.1 If traveling on an incline greater than 10%, the load shall be maintained upgrade to prevent tipping.
 - 5.2.8 When traveling with a load, the forks shall be tilted back and raised only enough to provide clearance in the direction of travel.
 - 5.2.9 Stunt driving and horseplay is prohibited.
 - 5.2.10 Maintain a safe operating speed at all times including when operating on wet/slippery floors, while negotiating turns; and when operating around other trucks/pedestrians.
 - 5.2.11 Ensure no debris or loose objects are in the path of travel.
 - 5.2.12 Dockboards/bridge plates shall be secured in place prior to traveling over them.
 - 5.2.12.1 Portable dockboards must be strong enough to carry the load being imposed on them; secured in position by anchors or other devices to prevent slipping; and be equipped with handholds or other effective means to permit safe handling.
 - 5.2.12.2 Powered dockboards shall be designed and constructed in accordance with Commercial Standard CS202-56 (1961) "Industrial Lifts and Hinged Loading Ramps" published by the US Department of Commerce.
 - 5.2.12.3 Dockboards put into initial service on or after January 17, 2017 are designed, constructed, and maintained to prevent transfer vehicles from running of the dockboard edge.
 - 5.2.12.4 Exception to Paragraph 5.2.12.3 of this section. When the employer demonstrates there is no hazard of transfer vehicle running off the dockboard edge, the employer may use dockboards that do not have run-off protection.
- 5.3 Caution must be taken when loading and unloading trucks/trailers with industrial trucks/forklifts. The following precautions should be taken to prevent accidents, injuries, and/or property damage during loading and unloading events.
- 5.3.1 Loads to be handled must be stable and safely arranged to permit safe handling.
 - 5.3.2 Ensure the rated capacity of the industrial truck/forklift is not exceeded by the load to be handled.

- 5.3.3 When picking up a load, the load engaging means (forks) shall be placed under the load as far as possible and the mast tilted backward to stabilize the load.
- 5.3.4 Use extreme care when tilting loads backward and forward, especially during high tier movement and/or storage.
- 5.3.5 When loading/unloading trucks/trailers, ensure the brakes are set and wheels blocked to prevent movement. Fixed jacks may be necessary to support trailers not connected to trucks/tractor.
- 5.3.6 The flooring within trailers shall be sufficient to support the loads as well as the industrial truck/forklift being utilized to load/unload the trailer.

6.0 Pre-Use Forklift Inspections

- 6.1 Prior to the use of a forklift/industrial truck by an operator, a pre-use inspection must be completed to ensure safe operation of the equipment at all times.
 - 6.1.1 Pre-use applies to each shift when multiple shifts are in place utilizing the equipment.
- 6.2 The pre-use inspection checklist must include the following general items:
 - 6.2.1 Identification of the industrial truck/forklift.
 - 6.2.2 Name of person conducting the inspection.
 - 6.2.3 Date/time of inspection.
 - 6.2.4 Inspection of equipment condition when not powered on.
 - 6.2.5 Inspection of equipment operation and controls when powered on.
- 6.3 Appendix A provides a sample pre-use inspection checklist for use on most forklifts/industrial trucks.
- 6.4 If at any time a deficiency is noted during the pre-use inspection, the forklift/industrial truck must be removed from service and repaired by an authorized mechanic prior to being placed back into operation.
- 6.5 Inspection documents should be maintained by the department supervisor, or their designee, for recordkeeping purposes.

7.0 Maintenance of Forklifts/Industrial Trucks

- 7.1 Any forklift/industrial truck found not safe for operation, must be immediately removed from service.

- 7.2 Maintenance to be conducted on any forklift/industrial truck shall not be performed in a hazardous location (Class I, II, and III)
- 7.3 Utilize Lockout/Tagout procedures to control hazardous energy sources during maintenance operations.
- 7.4 All repairs shall be made by an authorized service technician.
- 7.5 Forklifts/industrial trucks shall be deemed safe for operation following all maintenance activities.

8.0 Fuel/Battery Handling, Storage and Filling

8.1 Liquid Fuels (gasoline/diesel fuel):

- 8.1.1 Liquid fuels for operation of forklifts/industrial trucks shall be stored in accordance with the NFPA Flammable and Combustible Liquids Code (NFPA No. 30-1969).

8.2 Liquefied Petroleum:

- 8.2.1 LP fuels shall be stored in accordance with NFPA Storage and Handling of Liquefied Petroleum Gases (NFPA No. 58-1969).

8.3 Batteries:

- 8.3.1 Facilities utilizing battery powered forklifts/industrial trucks shall have clearly designated battery charging areas within the facility.
 - 8.3.1.1 Equipment shall be provided at the charging stations to allow for flushing and neutralizing spilled electrolyte, fire protection, and adequate ventilation.
- 8.3.2 Sufficient means for handling batteries must be provided based on the types of batteries being utilized at the facility.
- 8.3.3 Use caution when filling batteries with electrolyte. Use only approved filling apparatus' to conduct filling.
- 8.3.4 When charging batteries, acid shall be poured into water, water shall not be poured into acid.
- 8.3.5 Smoking is not permitted in battery charging/charging areas.

9.0 Recordkeeping

- 9.1 Department supervisors shall maintain documentation of the following:

- 9.1.1 Training certifications for all forklift/industrial truck operators including names and dates of training; and the equipment they are certified to operate.
- 9.1.2 Pre-use inspection checklists
- 9.1.3 Maintenance records for each forklift/industrial truck.
- 9.1.4 Accident reports involving forklifts/industrial trucks
- 9.1.5 A copy of the Forklift & Powered Industrial Truck Safety Program.

Appendix A: Sample Powered Industrial Truck Pre-Use Inspection Form

Powered Industrial Truck (Forklift) Inspection Form

PIT Type:	ID #:
Location:	
Inspected by:	Date:

PROCEDURES	CONDITION			COMMENT
	OK	Poor	N/A	
KEY OFF				
Inspect:				
Overhead guard				
Hydraulic cylinders				
Mast assembly				
Lift chains and rollers				
Forks				
Tires				
LPG tank and locator pin				
LPG tank hose				
Gas gauge				
Check the engine oil level				
Examine the battery				
Inspect the hydraulic fluid level				
Check the engine coolant level				
Eyewash bottle				
Fire extinguisher				
Instruction/warning placards in place and legible				
KEY ON				
Front, tail, and brake lights				
Fuel gauge (if diesel)				
Windshield wiper				
Heater				
ENGINE RUNNING				
Check the gauges				
Oil pressure indicator lamp				
Ammeter indicator lamp				
Ammeter				
Hour Meter				
Water Temperature Gauge				
Steering				
Brakes				
Horn				
Seat belt operational				
Check the operation of load-handling attachments				
Check the transmission fluid level				

NOTE: If any item above requires maintenance or repair, remove the PIT from operation (Lock Out/Tag Out) and notify supervisor. KEEP INSPECTION CHECKLIST WITH EQUIPMENT.

	Signature	Date
Person completing inspection:		
Person completing repairs (if applicable):		

Record dates of repair below or on back of sheet.
