

Title: Forklifts and Powered Industrial Trucks	Document No.: OCS-101
	Revision No.: Initial Date: September 2, 2015
	Approved By: Avraham Boruchowitz, CSP, CHMM

1.0 Introduction

- 1.1 The Radford University Forklift and Powered Industrial Truck Safety Program applies to all staff members who operate and/or are responsible for forklifts and/or powered industrial trucks. A powered industrial truck is a mobile, power propelled truck used to carry, push, pull, lift, or stack materials. Powered industrial trucks include forklifts, platform lift trucks, motorized hand trucks and other specialized industrial trucks powered by electric or internal combustion engines. Vehicles that are used for earth moving and over-the-road hauling are excluded from this definition.
- 1.2 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.
- 1.3 Tens of thousands of injuries occur in U.S. workplaces each year from accidents involving powered industrial trucks. Ten percent of all serious industrial accidents are due to powered industrial trucks. Injuries usually involve employees being struck by lift trucks or falling while standing or working from elevated pallets and tines. Many employees are injured when lift trucks are driven off loading docks or when the lift falls between a dock and an un-chocked trailer. Most incidents also involve property damage, including damage to overhead sprinklers, racking, pipes, walls, machinery, and other equipment.

2.0 Responsibilities

- 2.1 The Radford University Office of Environmental Health and Safety (EHS) is responsible for the following:
 - Updates and revisions to the written Forklifts and Powered Industrial Trucks Safety Program;
 - Ensure forklift and powered industrial truck training programs meet applicable requirements;
 - Provide program oversight.
- 2.2 Department Supervisors or department heads of areas where forklifts and/or powered industrial trucks are used are responsible for the following:



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- Designating and identifying personnel authorized to operate forklifts and powered industrial trucks (do not allow unauthorized use of the equipment);
- Ensuring authorized operators have received proper training and certification (every 3 years) prior to operating a forklift or powered industrial truck. It is the supervisors responsibility to ensure operators are certified;
- Ensure all safety and manufacturer regulations and instructions are followed;
- Ensure forklifts and powered industrial trucks are maintained in proper working order and repaired when necessary.

2.3 Authorized Operators of forklifts and/or powered industrial trucks are responsible for the following:

- Attending and passing classroom and evaluation of competence training prior to operating a forklift or powered industrial truck;
- Performing and documenting forklift/powered industrial truck pre-use inspections;
- Reporting all vehicle maintenance issues to his/her supervisor and removing the equipment from service if necessary;
- Operating and maintaining equipment in a safe manner at all times.

3.0 Training

3.1 Operators must be trained and authorized by Environmental Health and Safety (EHS) before operating powered industrial trucks. Training must consist of both formal instruction and practical evaluation covering safe operating practices and OSHA regulations. All new operators, regardless of previous experience, will be trained.

3.2 Training in general safety practices and OSHA regulations will be provided by the EHS. EHS will also maintain all training records. An experienced and knowledgeable operator will conduct the driving test and evaluate the competence of drivers. There are a handful of certified drivers who are authorized to conduct this driving test.

3.3 Training will include the following topics:

- Operating instructions, warnings, and precautions.
- Differences between a powered industrial truck and an automobile.
- Controls and instrumentation.
- Engine operation.
- Steering, maneuvering, and visibility.
- Fork and attachment operation.



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- Vehicle capacity and stability.
- Inspection and maintenance procedures.
- Refueling or charging of batteries.
- Operating limitations.
- Surface conditions where the vehicle will be operated.
- Composition of loads and load stability.
- Load manipulation and stacking.
- Pedestrian traffic.
- Narrow aisles and ramps.
- Hazardous locations and environments that could cause a buildup of carbon monoxide or exhaust fumes.
- OSHA regulations.

3.4 Appropriate retraining will be provided by EHS when the:

- Operator operates the truck in an unsafe manner.
- Operator is involved in an accident or near-miss incident.
- Operator is assigned to drive a different type of powered industrial truck.
- Operator receives an evaluation revealing unsafe practices.
- Conditions in the workplace change in a manner that could affect the safe operation of the truck.

3.5 Operators will be certified to drive a powered industrial truck. The certification will include the name of the operator, the date of testing, the date of the evaluation, and the name of the person(s) conducting the training and evaluation. Authorized drivers will be issued a wallet certificate to operate powered industrial trucks and must have the certificate with them when operating the truck.

3.6 Retraining in safety procedures and OSHA regulations will be conducted every three years by EHS.

3.7 An evaluation of driver performance will be conducted every three years by an driver authorized to conduct the performance.

4.0 Pre-Use Forklift/Industrial Truck Inspections

4.1 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. Pre-use applies to each shift when multiple shifts are in place utilizing the equipment. The pre-use inspection checklist must include the following general items:

- Identification of the industrial truck/forklift.



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- Name of person conducting the inspection.
- Date/time of inspection.
- Inspection of equipment condition when not powered on.
- Inspection of equipment operation and controls when powered on.

4.2 Appendix A provides a sample pre-use inspection checklist for use on most forklifts/industrial trucks. Items to be noted on an inspection when performing an inspection include:

- Maladjustment and excessive wear of components that may interfere with proper operation of control mechanisms.
- Contamination of control mechanisms by lubricants or other foreign matter.
- Proper operation of safety devices.
- Deterioration or leakage of air into hydraulic systems.
- Malfunctioning, excessive deterioration, dirt, or moisture in electrical system.
- Steering, braking, and locking devices.
- Excessively worn or damaged tires.

4.3 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.

4.4 Appropriate methods for removing a forklift from service can be found in the Lockout/Tagout Control of Hazardous Energy Program.

4.5 Inspection documents should be maintained by the department supervisor, or their designee, for recordkeeping purposes.

5.0 Maintenance of Forklifts/Industrial Trucks

5.1 Any forklift/industrial truck found not safe for operation must be immediately removed from service under the Lockout/Tagout program.

5.2 Maintenance to be conducted on any forklift/industrial truck shall not be performed in a hazardous location (Class I, II, and III). Utilize Lockout/Tagout procedures to control hazardous energy sources during maintenance operations.

5.3 All repairs shall be made by an authorized service technician. Forklifts/industrial trucks shall be deemed safe for operation following all maintenance activities.



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5.4 All modifications and additions must not be performed or attached without written approval from the manufacturer.

6.0 Equipment

6.1 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.”

6.2 Forklifts and industrial trucks must be marked with a nameplate identifying its approval under ANSI B56.1-1969.

6.2.1 Additional information on the nameplate should include the designation of the industrial truck as outlined in Table 1, below:

Designatio	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

Table 1

6.3 Forklifts shall have horns or other warning devices that are loud enough to be heard above other noises in the area. Flashing lights shall be placed on the overhead guard if noise is excessive. Forklifts should have automatic backup alarms.



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- 6.4 Auxiliary lighting shall be provided on the truck in areas where general lighting is less than two lumens per square foot.
- 6.5 A load backrest extension shall be used whenever necessary to minimize the possibility of the load falling backwards. The load shall not exceed the top of the backrest. Placing extra weight on the rear of the lift truck to counterbalance the front load is not permitted.
- 6.6 Trucks capable of lifting loads higher than the operator's head or where there is a hazard from falling objects, must be equipped with an overhead guard. The guard is not designed to protect the operator from a full capacity load.
- 6.7 Hazardous moving parts such as gears, chains, and sprockets shall be guarded.
- 6.8 Seat belts are required to be worn. If the forklift does not have a seatbelt installed, the manufacturer should be contacted for a retrofit kit.
- 6.9 The operator's manual for the forklift/industrial truck should be available to operators at a central location or on the lift itself. Operators should take the time to review operating instructions and safety guidelines.

7.0 Fuel/Battery Handling, Storage, and Filling

- 7.1 Liquid Fuels (gasoline/diesel fuel):
 - 7.1.1 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).
 - 7.1.2 Engines must be turned off before fuel tanks are filled. Refueling should be in specifically designated areas, where ventilation is adequate to carry fuel vapors away. "No Smoking" signs must be posted in areas where fuel is stored or handled.
- 7.2 Liquefied Petroleum (LP):
 - 7.2.1 LP fuels shall be stored in accordance with NFPA Storage and Handling of Liquefied Petroleum Gases (NFPA No.58-1969).
 - 7.2.2 Engines must be turned off before LP tanks are replaced/exchanged. LP



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fuels should be handled in designated areas and “No Smoking” signs must be posted in these areas.

7.3 Batteries:

- 7.3.1 Facilities utilizing battery powered forklifts/industrial trucks shall have clearly designated battery charging stations within the facility.
- 7.3.2 Equipment shall be provided at the charging stations to allow for flushing and neutralizing spilled electrolyte, fire protection, and adequate ventilation. An approved emergency shower and eyewash station must be readily available.
- 7.3.3 Sufficient means for handling batteries (e.g. overhead hoist) must be provided based on types of batteries being utilized at the facility.
- 7.3.4 Use caution when filling batteries with electrolyte. Use only approved filling apparatus’ to conduct filling. Use appropriate personal protective equipment (PPE).
- 7.3.5 When charging batteries, acid shall be poured into water, water shall not be poured into acid.
- 7.3.6 During charging operations, vent caps will be removed to avoid electrolyte spray. Care shall be taken to ensure vent caps are operating properly. Battery or compartment covers must be open to dissipate heat.
- 7.3.7 Precautions shall be taken to prevent open flames, sparks, or electric arcs in battery charging/changing areas. Tools and other metallic objects will be kept away from the tops of uncovered batteries.
- 7.3.8 Smoking is not permitted in battery charging/changing areas and “No Smoking” signs must be posted.
- 7.3.9 Employees charging and changing batteries shall be authorized to do the work, trained in the proper handling, and required to wear protective clothing including eye protection, long sleeves, aprons, and gloves.

8.0 Safe Operation, Traveling, and Loading

Operating powered industrial trucks carries considerable responsibility. Reckless or careless driving will not be tolerated. All traffic regulations must be observed, including facility speed limits. Trucks must be kept under control at all times. Operators shall always look in the direction of travel.

- 8.1 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:



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- 8.1.1 Trucks shall not be driven up to anyone standing in front of a fixed object.
 - 8.1.2 Passing under a raised load or other elevated portion of a truck is prohibited.
 - 8.1.3 Unauthorized persons shall not “ride” on a forklift unless the forklift is equipped with a proper passenger area.
 - 8.1.4 Operators must keep hands and feet inside the forklift at all times.
 - 8.1.5 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.
 - 8.1.5.1 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.
 - 8.1.5.2 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.
 - 8.1.6 Maintain a safe distance from edges of ramps or platforms.
 - 8.1.7 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.
 - 8.1.8 Ensure sufficient head room under overhead installations such as lights, sprinklers, pipes, etc.
 - 8.1.9 An overhead guard shall be in place on the truck to provide protection against falling objects.
 - 8.1.10 Only approved industrial trucks shall be used in hazardous locations.
 - 8.1.11 Ensure aisles, passage ways, and access to fire equipment and emergency exits remain clear at all times.
 - 8.1.12 If at any time a forklift/industrial truck is found to be in need of repair, defective, or in anyway unsafe, the truck must be immediately taken out of service until it is restored to safe operating condition.
 - 8.1.13 Lighting shall be sufficient to ensure safe operation of a forklift/industrial truck.
 - 8.1.13.1 If general facility lighting is insufficient (less than 2 lumens per square foot) auxiliary lighting must be provided on the forklift.
 - 8.1.14 Ventilation shall be sufficient to prevent the accumulation of gases from petroleum powered industrial trucks.
- 8.2 Safe traveling while operating a forklift/industrial truck is essential to maintaining a safe workplace. The following travelling safety points shall be implemented to the operation of trucks:
- 8.2.1 Safe distances must be maintained. Approximately three (3) truck lengths



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- from the truck ahead must be maintained.
- 8.2.2 Other trucks traveling in the same direction must not be passed at intersections, blind spots, or other dangerous locations.
 - 8.2.3 Observe all traffic regulations while operating a forklift including speed limits.
 - 8.2.4 The right of way shall be yielded to ambulances, fire trucks, or other emergency vehicles.
 - 8.2.5 When approaching an intersection at aisles or other locations where vision is obstructed, the operator shall slow down, sound the horn, and ensure no pedestrians or other trucks are in the area. Large convex mirrors should be installed at blind corners. The operator should lightly tap the horn to warn pedestrians when approaching from behind.
 - 8.2.6 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.
 - 8.2.7 Cross railroad tracks diagonally.
 - 8.2.8 Always ascend/descend grades slowly. On all grades, forks shall be tilted back and raised only as far as necessary to clear the road surface. Low gear or the slowest speed should be used when descending a grade.
 - 8.2.8.1 If traveling on an incline greater than 10%, the load shall be maintained upgrade to prevent tipping.
 - 8.2.8.2 On all grades, forks shall be tilted back and raised only as far as necessary to clear the road surface. Low gear or the slowest speed should be used when descending a grade.
 - 8.2.9 When traveling with a load, the forks shall be tilted back and raised only enough to provide clearance in the direction of travel.
 - 8.2.10 Stunt driving and horseplay is prohibited.
 - 8.2.11 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.
 - 8.2.11.1 Under all travel conditions, forklifts must be operated at a speed that will permit it to be brought to a stop in a safe manner.
 - 8.2.12 Ensure no debris or loose objects are in the path of travel.
 - 8.2.12.1 Never run over loose objects on the roadway surface.
 - 8.2.13 Dockboards/bridge plates shall be secured in place prior to traveling over them. Never exceed their rated weight capacity.
 - 8.2.13.1 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



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other effective means to permit safe handling.

8.2.13.2 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.

8.2.14 Elevators should be approached slowly. Check to make sure the weight of the truck, load, and driver do not exceed the capacity of the elevator. Once on the elevator, the controls should be put in neutral, the brakes set, and the engine shut off.

8.2.15 While negotiating turns, speed must be reduced to a safe level by turning the steering wheel in a smooth, sweeping motion. Except when maneuvering at a very low speed, the steering wheel shall be turned at a moderate, even rate.

8.2.16 Operators should not make quick starts, jerky stops, or turns at excessive speeds. Extreme caution should be used on turns, ramps, grades, or inclines. A safe distance shall be maintained from the edges of elevated ramps or platforms.

8.2.17 Unauthorized personnel shall not ride on trucks. It is the responsibility of the operator to keep unauthorized individuals off the truck.

8.3 Parking forklifts/industrial trucks:

8.3.1 Trucks shall only be parked in designated areas. Trucks shall not be parked in an aisle, doorway, or in any way that obstructs equipment or material.

8.3.1.1 Fire aisles, access to stairways, doorways, and fire equipment shall be kept clear.

8.3.2 When a truck is left unattended, forks shall be fully lowered, controls put in neutral, power shut off, key removed, and the brakes set.

8.3.2.1 Unattended means the operator is greater than 25 feet from the vehicle, or the vehicle is not in view, regardless of the distance.

8.3.3 Wheels shall be blocked if the truck is parked on an incline.

8.3.4 When the operator is dismounted and the truck is within 25 feet and in view of the operator, the forks shall be fully lowered, controls neutralized, and the brakes set.

8.4 Caution must be taken when moving loads and 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:

8.4.1 Loads to be handled must be stable and safely arranged to permit safe



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handling. Caution must be exercised when handling off-center loads.

8.4.1.1 Loading should not be done to a height that blocks the view ahead or makes it likely the load may fall.

8.4.2 Ensure the rated capacity of the forklift/industrial truck is not exceeded by the load to be handled. Operators must never operate a truck with an overload. The rated capacity should be marked on the truck. Loads should not be lowered or raised en route.

8.4.3 When picking up a load, the load engaging means (fork) shall be placed under the load as far as possible and the mast tilted backward to stabilize the load.

8.4.4 Use extreme care when tilting loads backward and forward, especially during high tier movement and/or storage.

8.4.4.1 Tilting forward with forks elevated is not permitted except to pick up a load.

8.4.4.2 Elevated loads must not be tilted forward unless the load is in a deposit position over a rack or stack.

8.4.4.3 When stacking or tiering, only enough backward tilt to stabilize the load shall be used.

8.4.5 When standard forks are used to pick up round objects, such as drums, care must be used to ensure that the tips do not puncture the object or push it into other workers.

8.4.6 When loading/unloading trucks/trailers, ensure the truck/trailer brakes are set and wheels blocked to prevent movement. Fixed jacks may be necessary to support trailers not connected to trucks/tractors.

8.4.7 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.

8.4.8 Powered industrial trucks should only be used for the purpose for which it is designed. Trucks should not be used to bump skids, push piles, move other trucks, or used as a hoist.

9.0 Recordkeeping

9.1 Department supervisors and EHS shall maintain the following documentation:

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 current copy of this policy, Forklifts and Powered Industrial Trucks,



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OCS-101.

10.0 Document Revision History

Revision	Section(s) Changed	Change(s) Made:	Date
00	All	Initial Draft	9/2/15

11.0 Document Author(s): Avraham Boruchowitz, CSP, CHMM



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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.
