

HIGH-IMPACT FORKLIFT OPERATOR TRAINING

This easy-to-use Leader's Guide is provided to assist in conducting a successful presentation. Featured are:

INTRODUCTION: A brief description of the program and the subject that it addresses.

PROGRAM OUTLINE: Summarizes the program content. If the program outline is discussed before the video is presented, the entire program will be more meaningful and successful.

PREPARING FOR AND CONDUCTING THE PRESENTATION: These sections will help you set up the training environment, help you relate the program to site-specific incidents, and provide program objectives for focusing your presentation.

REVIEW QUESTIONS AND ANSWERS: Questions may be copied and given to participants to document how well they understood the information that was presented. Answers to the review questions are provided separately.

ATTENDANCE RECORD: Document the date of your presentation as well as identify the program participants. The attendance record may be copied as needed.

INTRODUCTION

Nearly 1,000,000 powered industrial trucks are used in the workplace today. They are produced in many different sizes and models, and help us perform a wide variety of tasks. While these machines assist us in lifting and moving heavy loads, they can also be extremely dangerous to operate. Each year, powered industrial trucks account for more than 100,000 injuries and over 100 deaths. To prevent accidents that result in personal injury and property damage, forklift operators must possess the physical and mental ability to operate this equipment safely.

The eight forklift accidents re-created in this video will show your employees the life-threatening consequences of incorrect and unsafe lift truck operation. As a result, operators and pedestrians will be motivated to make an ongoing commitment to safety in areas where forklifts are present. They will also understand the three basic areas of forklift safety.

Instructional topics include common causes of forklift accidents, lift truck stability and safe driving procedures. Pre-operational inspection, types of forklifts, lifting/moving loads and operation in hazardous areas are also covered in this program.

*Accidents re-created in this program are based on OSHA investigations or company records. Details have been changed in the interest of confidentiality and instructional clarity. Be aware that these accident reenactments are graphic in nature!

PROGRAM OUTLINE

THREE BASIC AREAS OF POWERED INDUSTRIAL TRUCK SAFETY

Operators must understand these three basic areas of forklift safety:

- ❶ The characteristics, operation and limitations of the vehicle in use;
- ❷ The hazards due to the characteristics of the area where the lift truck will be operated;
- ❸ The general safety rules that apply to all powered industrial trucks and their operation.

CAUSES OF FORKLIFT ACCIDENTS AND INJURIES

- Most people working around forklifts are aware of their presence, but they may become involved in an accident when a lift truck travels in a direction that they didn't expect.

- Operator inattention, blocked vision and blind intersections are often factors in accidents that involve forklifts running over pedestrians.

- Most forklift fatalities occur when lift trucks overturn.
- Many accidents occur when workers violate safe work procedures and fall from raised forks or from pallets on the forks used as lifts.
- Operators are often injured when their arms, legs or other body parts are struck or caught as the lift truck sideswipes a wall or storage rack.
- Other accidents involve pedestrians who are struck by falling loads or get crushed between the forklift and a fixed object or other vehicle.

CENTER OF GRAVITY AND THE STABILITY TRIANGLE

- The Stability Triangle consists of three points: one at each of the front wheels and one at the center of the rear axle.
- When the center of gravity of the lift truck moves outside the Stability Triangle, the vehicle will turn over.
- The center of gravity of an unloaded truck is located near the center of the truck. When the vehicle is loaded, the center of gravity shifts forward in the direction of the load.
- As the load is raised up the mast, the center of gravity of the vehicle, combined with the load's center of gravity, produces a new center of gravity.
- As long as this combined center of gravity and the vertical stability line remain inside the Stability Triangle, the vehicle is stable.
- When this vertical stability line (line of action) moves outside the triangle, the truck will tip over.
- Tests have proved that in the event of a tip over, fewer fatalities occur when the operator stays inside the lift truck cage.

DRIVING LIFT TRUCKS SAFELY

- Always drive at a safe speed. Avoid quick stops and sharp turns at high speeds.
- Always maintain a safe distance between your vehicle and other trucks. Be aware of pedestrians in the area.
- Sound your horn to announce your presence at intersections.
- Allow ample stopping distance for pedestrians, other forklifts and company property.
- Keep in mind that while an automobile uses the front wheels for steering, the lift truck uses the rear wheels. Be aware of objects and pedestrians that may be in the path of the wide swinging rear end of the truck.
- Remember that you will lose the ability to steer if the rear wheels are raised above the floor.
- Under no circumstances should you allow anyone to ride with you inside the forklift or on the forks.

OTHER DRIVING TIPS

- Plan your driving route carefully. Try to avoid obstructions and heavy pedestrian traffic.

- Keep your eyes on the path of travel and pay attention to any changes in the travel surface that could contribute to falling loads or overturning.
- Look for oil, grease and water that could hinder stopping and turning ability.
- When driving through an area, keep the load as low as possible so that it will clear obstructions. Typically, this is six to twelve inches.
- You must always face the direction in which you are driving. If the load blocks the forward view, you must drive and face rearward.
- Be sure to keep your hands and feet inside the cage area at all times.
- Never move a lift truck without clear visibility.

PRE-OPERATIONAL INSPECTION

- Before beginning your work period, make sure you inspect the equipment for safe operation.
- Test the horn, lights, brakes and backup warning device. Inspect the hydraulic hoses and connections for leaks.
- Look for cracks or splits in the forks. Check under the vehicle to make sure it is free of debris.
- Make sure the controls are functioning properly and the equipment works as it should.
- While operating the fork and mast controls, look for malfunctions. If you discover a problem, note it on your checkout sheet and notify the proper authority.
- Never attempt to make repairs on any lift truck unless you have been trained and authorized to do so by your company.

PARKING THE VEHICLE

- Never leave a running forklift unattended.
- If you are going to be more than 25 feet from the vehicle or it will be out of your sight, you must lower the forks to their lowest position, turn off the motor, set the parking brake and remove the key.
- If you are doing this on an incline, you must chock the wheels.

TYPES OF FORKLIFTS

- Forklifts are classified in seven classes. These are determined by the type of work that the forklift was designed to do:

Class 1: Electric motor, sit down rider, counter-balanced trucks (solid or pneumatic tires)

Class 2: Electric motor, narrow aisle trucks (solid tire)

Class 3: Electric motor hand trucks or hand/rider trucks (solid tire)

Class 4: Internal combustion engine trucks (solid tires)

Class 5: Internal combustion engine trucks (pneumatic tires)

Class 6: Electric and internal combustion engine tractors (solid or pneumatic tires)

Class 7: Rough terrain trucks (pneumatic tires)

- More importantly, you must know the type of vehicle you are using and in which areas it may and may not be used. Forklift types are determined by their power source and safeguards. See page 8 for a listing of the 11 types.

- Equipment type and class can be found on the identification plate located on the vehicle. Other information found here includes load capacity and the load centers that are used.
- If you don't understand the data found on the information plate, check with your supervisor.

SLOPED SURFACES

- When traveling upgrade, keep the load uphill. Also, when carrying a load down a grade, keep the load uphill.
- Avoid turning while moving on a grade to prevent the forklift from tipping over.

LIFTING AND MOVING LOADS

- Before picking up any load, make sure it's stable and does not exceed the load capacity of your truck. If there is any problem, it must be corrected before moving.
- Special attachments can cause instability. Also, partially filled containers can shift when their center of gravity moves.
- Odd shaped loads or loads that exceed the load center dimensions can cause the center of gravity to shift forward. This can cause the forklift to tip forward.
- Before lifting a pallet load, adjust the width of the forks for maximum stability.
- Drive the forks into the pallet to the correct depth. After engaging the load, tilt it back slightly to secure it against the mast.
- Before moving the load, make sure the surrounding area is clear of pedestrians and obstructions.
- If the load is to be stacked on a rack, first place the load at the correct height and then position it over the desired location.
- Tilt the load forward and lower the pallet onto the rack. Make sure it is in the correct position.
- Before backing out, make sure you have safe clearance behind and around the truck. If it is safe to move, lift the forks a little to clear the pallet and back out slowly.

TRAILERS AND LOADING DOCKS

- Before entering a trailer or a rail car with a lift truck, make sure co-workers in the area are not in danger.
- Be sure that the dock or bridge plate is secured and that the trailer floor is sound. The trailer wheels should be chocked or prevented from rolling by some other means.
- Some docks are fitted with automatic locking devices to restrain movement of the trailer. These often use a light system that allows the transport driver to know when loading or unloading is complete and it is safe to move the trailer.
- Whatever system is used by your facility, be sure the wheels of the transport vehicle are secured.

ACCIDENTS AND THEIR SAFETY LESSONS

Opening Accident

While horseplaying, a forklift operator reached out to catch a ball thrown by a co-worker. The operator's arm struck a ladder in the aisle and the resulting accident injured several other employees and killed a maintenance worker at the loading dock.

Safety Lessons:

- *Those working around forklifts must treat them with respect.*
- *Avoid horseplay at all times.*
- *Industrial trucks demand full attention at all times.*

Accident 1: Pedestrian's Foot Crushed By Forklift

A pedestrian employee at the plant walked up to a forklift to chat with the operator. When the forklift moved slowly, it crushed the pedestrian's foot.

Safety Lessons:

- *Pedestrians should always be aware of lift trucks near them and keep a safe distance away.*
- *Co-workers can never predict when lift trucks will move and in what direction they will travel.*
- *Operators must be alert at all times to dangers to others near them.*

Accident 2: Speeding and Turning On Ramp Results in Tip Over and Operator Death

Dennis Hilton, in a hurry to leave the shift to go on vacation, climbed on his forklift and headed toward the ramp and loading dock. Traveling at a high rate of speed, he turned onto the ramp and the forklift overturned. His head struck the ground and then the cage of the forklift crushed him.

Safety Lessons:

- *Never use excessive speed when driving a lift truck.*
- *Always slow down when traveling on ramps.*
- *Don't allow haste to cause you to ignore proper operating procedures.*

Accident 3: Careening Load Strikes and Seriously Injures Pedestrian

In an attempt to hastily complete his workday, Gerald Wiendsdorf rushed toward an intersection with a loaded pallet on his forklift. He had forgotten to lower the load. A co-worker who didn't work in the area on a regular basis was passing through the intersection. When Gerald spotted the pedestrian, he stopped abruptly. The load fell forward on top of the pedestrian's head.

Lessons:

- *Always lower loads before traveling.*
- *Avoid sudden stops when driving forklifts.*
- *Slow down at blind intersections.*
- *Never allow hurrying to become more important than safety.*

Accident 4: Rider's Arm Severed By Service Truck After Fall From Forklift

Merrylee Boykin and Doris Jacobs, maintenance workers at the plant, finished their work on the second shift and proceeded to clock out. Merrylee begged Doris to ride on the forklift because she was too tired to walk. They both knew this was against the rules. As they approached an intersection, a maintenance service cart was pulling out. When Doris hit the brakes to miss the cart, Merrylee was thrown off the forklift. Her arm went under the forklift and was amputated when the vehicle traveled over it.

Safety Lessons:

- *Never allow riders on a truck that is designed for only one person.*
- *Always follow all safety rules, whether or not there is a chance you may be caught.*
- *Pay extra attention when approaching intersections.*

Accident 5: Unauthorized Employee Loses Control of Unattended Forklift and Smashes Co-Worker

Although he knew he shouldn't have left his vehicle unattended, Leonard Shepard thought it would be okay just for a moment while he went to talk to a co-worker. Two maintenance workers approached the area and needed to access the exit door that was behind the forklift. Although he was unauthorized to operate the truck, one of the workers attempted to move the forklift. He lost control and the vehicle crushed his co-worker against a steel column.

Safety Lessons:

- *Never leave a running forklift unattended.*
- *Always follow procedure for parking a forklift: lower forks to lowest position, shut off engine, set the brake and take the key.*
- *Never operate a forklift unless you have been trained and authorized.*
- *Don't let time pressure compromise your safety.*

Accident 6: Explosion Caused When Operator Enters Hazardous Environment With Wrong Type of Forklift

Carlos Mandro went to the storage area to get the type EX forklift truck he needed to use in the paint department. He learned that the truck had a bad leak and was out of service. He decided to use another truck that was parked next to it. He knew that a type EX truck was required in the paint area, but he didn't think it would matter this one time. Besides, they needed him to bring more paint right then. When he got to the paint room, sparks from the regular lift truck set off a terrible explosion.

Safety Lessons:

- *Always be sure the lift truck you are using is suited to the work and the environment. Check the identification plate on the vehicle for this important information.*
- *Never let time pressure compromise your commitment to safety*
- *Ask your supervisor for guidance when you are in a situation where time pressure may force you to violate good safety practices.*

Accident 7: Partially Filled Tank Falls From Forks and Strikes Pedestrian

A forklift operator attempted to move a steel tank from an old production area. He didn't bother to find out that the tank was only partially full of liquid. When the forklift turned, the tank's center of gravity shifted and the tank fell on a nearby co-worker.

Safety Lessons:

- *Always be sure lift truck and load are stable before lifting or moving.*
- *Be sure all loads are within the capacity of your truck.*
- *Be sure all movements are smooth. Avoid quick starts, stops and turns.*

Accident 8: Forklift Crashes To The Ground After Dock Plate Falls

Ralph had been ordered by his supervisor to stop loading one trailer and start loading another immediately. In an effort to quickly comply with the supervisor's directions, he neglected to secure the dock plate or chock the wheels of the trailer. As the forklift traveled in and out of the trailer, the trailer gradually moved away from the dock. Finally, the dock plate fell to the ground. At the same time, Ralph backed the lift truck out of the trailer and crashed on the concrete below.

Safety Lessons:

- *Always check to see that a trailer is safe before working it: wheels chocked or otherwise secured, floor sound and dock plate secured.*
- *Never let time pressure compromise your commitment to safety*

TYPES OF FORKLIFTS

Type D – Diesel powered: few safeguards against hazards

Type DS – Diesel powered: more safeguards than Class D, such as exhaust, fuel and electrical safety features

Type DY – Diesel powered: more safeguards than Class DS and has no electrical equipment, but includes a temperature limitation feature

Type E – Electric powered: few safeguards against fire and electrical shock hazards

Type ES – Electric powered: more safeguards than Class E, such as spark-arresting features and suppression of surface sparks

Type EE- Electric powered: more safe guards than Class ES, by enclosing all electrical equipment

Type EX – Electric powered: more safeguards than Class EE, constructed for use around certain flammable vapors, dusts and fibers

Type G – Gasoline powered: few safeguards against fire hazards

Type GS – Gasoline powered: more safeguards than class G, such as fuel, exhaust and electrical system features

Type LP – Propane gas powered: few safeguards against fire hazards

Type LPS – Propane gas powered: more safeguards than Class LP, such as fuel, exhaust and electrical system safety features

PREPARE FOR THE SAFETY MEETING OR TRAINING SESSION

Review each section of this Leader's Guide as well as the videotape. Here are a few suggestions for using the program:

Make everyone aware of the importance the company places on health and safety and how each person must be an active member of the safety team.

Introduce the videotape program. Play the videotape without interruption. Review the program content by presenting the information in the program outline.

Copy the review questions included in this Leader's Guide and ask each participant to complete them.

Copy the attendance record as needed and have each participant sign the form. Maintain the attendance record and each participant's test paper as written documentation of the training performed.

Here are some suggestions for preparing your videotape equipment and the room or area you use:

Check the room or area for quietness, adequate ventilation and temperature, lighting and unobstructed access.

Check the seating arrangement and the audiovisual equipment to ensure that all participants will be able to see and hear the videotape program.

Place or secure extension cords to prevent them from becoming a tripping hazard.

CONDUCTING THE PRESENTATION

Begin the meeting by welcoming the participants. Introduce yourself and give each person the opportunity to become acquainted if there are new people joining the training session.

Explain that the primary purpose of the program is show viewers the catastrophic consequences of forklift accidents and how operators and pedestrians alike must maintain a continual commitment to safety to prevent these accidents. Be sure to tell participants that the accidents in this program are very graphic in nature!

Introduce the videotape program. Play the videotape without interruption. Review the program content by presenting the information in the program outline. Copy the "Accidents and Their Safety Lessons" portion of this leader's guide and hand out to the participants.

Lead discussions about forklift accidents that have occurred at your facility and what should have been done to prevent them. Use the review questions to check how well the program participants understood the information.

After watching the videotape program, the viewer will have a basic understanding of the following:

- The three basic areas of forklift safety;
- Common causes of forklift accidents and resulting injuries;
- Forklift stability and causes of tip over;
- Rules for safely driving and parking the vehicle;
- Procedures for lifting and moving loads;
- What to look for when performing a pre-operational inspection.

HIGH-IMPACT FORKLIFT OPERATOR TRAINING
REVIEW QUESTIONS

Name _____ Date _____

The following questions are provided to check how well you understand the information presented during this program.

1. Most fatalities that involve forklifts occur when _____.
 - a. a pedestrian is ran over by a forklift
 - b. a co-worker falls from raised forks
 - c. a forklift overturns
 - d. a pedestrian is struck by a falling load

2. When a forklift has been loaded, the center of gravity _____.
 - a. shifts towards the rear of the truck
 - b. shifts forward in the direction of the load
 - c. remains near the center of the truck

3. What should you do if a large load you are moving blocks your forward view?
 - a. lean out of the cage and look around the load
 - b. have a co-worker serve as a spotter to guide you in the desired direction
 - c. stand up and look over the load
 - d. drive and face towards the rear

4. If you are going to be more than 25 feet from your vehicle, what are you required to do?
 - a. lower the forks
 - b. turn off the motor and set the parking brake
 - c. remove the key
 - d. all of the above

5. You should keep the load uphill at all times whether you are traveling up or down a grade.
 - a. true
 - b. false

6. Tests have indicated that in the event of tip over, _____ deaths occur when operators remain inside the lift truck cage than when they jump out.
 - a. more
 - b. fewer
 - c. the same amount

7. Which of the following is a difference between an automobile and a forklift?
 - a. forklifts steer with rear wheels
 - b. forklifts do not have horns
 - c. forklifts are not designed to carry passengers
 - d. both a and b
 - e. both a and c

8. To find out details about a particular forklift's type and class as well as data concerning load capacity and load centers, consult the _____.
 - a. operator control panel
 - b. the daily checkout sheet
 - c. information plate on the vehicle
 - d. none of the above

ANSWERS TO THE REVIEW QUESTIONS

1. c

2. b

3. d

4. d

5. a

6. b

7. e

8. c