2021 OVERVIEW SERIES: SAFE USE AND OPERATION OF FORKLIFTS
FACT SHEET

LENGTH: 21 MINUTES

PROGRAM SYNOPSIS:
Forklifts, also called lift trucks or powered industrial trucks, are powerful machines that are invaluable in the movement of products and materials in warehousing, industry and construction. These useful machines can also be extremely dangerous and are involved in many incidents of property damage, injuries and fatalities each year. OSHA regulates their use and requires operators of powered industrial trucks to receive general training on their operation as well as "hands-on" practical training.

PROGRAM OBJECTIVES:
After watching the program, the participant should be able to explain the following:
- The training requirements needed to operate a forklift safely;
- A forklift's handling and stability characteristics;
- How to perform the pre-operational and operational inspections;
- How to properly lift and place loads;
- Operating safely around pedestrians and other safety considerations;
- The measures to take to operate safely around loading docks and trailers.

INSTRUCTIONAL CONTENT:

OVERVIEW
- Forklifts, also called lift trucks or powered industrial trucks, are powerful machines that are invaluable in the movement of products and materials in warehousing, industry and construction.
- These useful machines can also be extremely dangerous and are involved in many incidents of property damage, injuries and fatalities each year.
- The Occupational Safety and Health Administration, OSHA, regulates their use and requires operators of powered industrial trucks to receive general training on their operation as well as "hands-on" practical training on the specific type of powered industrial truck they will be certified to operate.
- Only those persons who are certified and authorized by their employer may operate a forklift or powered industrial truck.
- Forklift operators must understand the function of all operating controls and test each control as part of the vehicle's pre-operational inspection. The pre-operational inspection must also include checking the tires, looking for leaks and verifying the presence and operation of all the safety equipment and features.
- A forklift is much heavier than a similar sized automobile and handles much differently.
- Due to their heavy weight, a lift truck requires additional stopping distance, and the various steering configurations of the wheels can allow the rear end of the lift, as well as other parts, to swing wide and collide with objects or nearby personnel. Operators must drive with caution at all times.
- Many forklift fatalities occur when a forklift turns over. The stability of a forklift is impacted by the weight of the load, the position of the load, the condition of the traveling surface and if the surface is level.
- A certified operator must understand how to read the lift's data plate to determine its maximum capacity for a given "load center" or for the extended distance of the load away from the lift.
- A lift truck will become more unstable as a load is raised or extended. This is why you should not raise, lower or extend a load while traveling. The load should be carried low to the ground and as close to the lift as possible.

- A forklift can also become unstable and tip-over when it is not traveling on a level surface. This is why lift operators must use extreme caution on ramps, inclined surfaces and uneven terrain.
- For maximum stability, only travel straight up or down an incline; never travel at an angle on a sloped surface. Be aware that potholes, deep ruts, soft or unstable soil and drop-offs can also cause a lift to tilt and possibly tip-over.
- Operators of powered industrial trucks must keep a sharp lookout for pedestrians. Never allow anyone to pass under an elevated load and do not drive the lift directly towards pedestrians standing in front of walls, posts and other solid objects.
- Come to a complete stop at all intersections and sound your horn to alert others of your presence.
- Powered industrial trucks should be operated at a slow, safe speed that enables hazards to be avoided or the vehicle stopped quickly when necessary.

TRAINING REQUIREMENTS

- The required OSHA training for a forklift operator is the same no matter if the forklift is to be used in general industry or in construction.
- It is the employer's responsibility to implement an operator training program and ensure that only trained operators who have successfully completed the training program are allowed to operate powered industrial trucks. To help achieve this, employers may issue certification cards as a way to document the certification process.
- Operator training must include both formal and practical training. Examples of formal training include video-based training or classroom training, while practice training includes vehicle demonstrations and practical exercises.
- The training program must include a practical evaluation of the operator's ability to operate the forklift in a workplace setting. Part of this training must include "hands-on" training for the specific type of powered industrial truck they will be certified to operate.
- Operator training includes some of the following required information: the information that can be found in the operator's manual, the function of each control including the accelerator, brake, transmission and mast controls, the location of the vehicle's data plate and the important information it contains, the unique handling characteristics of the lift truck, the factors that affect the forklift's stability and the common loads to be lifted and transported.
- All powered industrial truck training and evaluation must be conducted by a person with the necessary knowledge, training and experience to train operators and evaluate their competency.
- An evaluation of each trained operator must be conducted during the initial training and at least once every 3 years.
- Refresher training will be required anytime an operator has been observed driving unsafely, been involved in an incident or near-miss or has received an evaluation that indicates unsafe operation.
- Refresher training will also be required if an operator has been assigned to drive a different type of lift or if workplace conditions affecting safe operation have changed.
- An operator evaluation is required after completing any required refresher training.

HANDLING AND STABILITY CHARACTERISTICS

- A forklift is much heavier than a similar sized automobile and handles much differently.
- Due to their heavy weight, a lift truck requires additional stopping distance, and the various steering configurations of the wheels can allow the rear end of the lift, as well as other parts, to swing wide and collide with objects or nearby personnel. Operators must drive with caution at all times.
- As an operator you must understand the unique handling characteristics of the powered industrial truck you plan to operate.
- The stability of a forklift is impacted by the weight of the load, the position of the load, the condition of the traveling surface and if the surface is level.

- Never overload a forklift. A certified operator must understand how to read the lift's data plate to determine its maximum capacity.
- The data plate will list the truck's maximum lifting capacity for a specified "load center."
- The "load center" is the distance from the forklift's mast to the center of gravity of the load. This distance can vary depending on the size of the pallets used or the size and shape of the load to be carried.
- Forklifts with telescopic booms and various types of reach trucks have the ability to extend the load away from the truck's base. This reduces the forklift's capacity and can easily cause a tip-over if caution is not taken.
- These types of extended reach industrial trucks have additional information on the data plate or on a load chart that lists its capacity at various reach distances and angles.
- A powered industrial truck will become more unstable as a load is raised or extended.
- This is why you should not raise, lower or extend a load while traveling. The load should be carried low to the ground and as close to the lift as possible.
- A forklift can also become unstable and tip-over when it is not traveling on a level surface. This is why lift operators must use extreme caution on ramps, inclined surfaces and uneven terrain.
- For maximum stability, only travel straight up or down an incline. Never travel at an angle on a sloped surface. Also, always keep the load facing uphill when carrying a load on an incline.
- Be aware that potholes, deep ruts, soft or unstable soil and drop-offs can also cause a forklift to tilt and possibly tip-over.
- Inspect the traveling surface prior to operating a forklift to avoid these types of tip-over hazards.

THE PRE-OPERATIONAL INSPECTION

- A pre-operational or "pre-use" inspection must be conducted prior to using a forklift for the first time each day or the first time each shift.
- Many organizations use a detailed checklist for this purpose. If this is the case, always follow your organization's pre-operational checklist.
- Otherwise, start your inspection by looking all around and under the vehicle for fluid leaks. Then, inspect the tires for damage and proper inflation if applicable.
- Next, inspect the forks for damage or excessive wear. Be sure to check the condition of their retaining pins and take a close look at each fork's heel area.
- Visually verify that hydraulic hoses show no evidence of damage or leaks and that the mast chain and securing pins do not look worn or loose.
- Do NOT place your hands into the mast area. If necessary, use an assist device to assess chain tension.
- The driver's area and cab should be free of any debris or obstructions.
- Inspect that any overhead protection, guarding and other safety devices are in place and undamaged.
- Confirm the presence of a properly charged and inspected fire extinguisher.
- If the forklift has a seatbelt, it must be undamaged and in good operating condition. Also, ensure that the operator's manual is onboard.
- Other inspection elements will vary based on the type of fuel used to power the forklift. Always wear the appropriate PPE for the fuel system being inspected.
- On propane powered trucks, make sure the tank is properly mounted and secure. Inspect the tank for dents, cracks or other damage.
- Make sure the hoses and connectors are in good condition and that no leaks exist. And finally, ensure that the pressure relief valve is pointing up and that the tank has enough fuel for your operation.
- On battery powered trucks, make sure the electrolyte level in each cell is good and that the battery is appropriately charged. Inspect all cables and connectors for damage, exposed wires or loose connections.
- Verify that the battery restraint devices are in good shape and secure. And finally, make sure the battery compartment latch is securely closed.

- On internal combustion engines, visually inspect the belts, hoses and radiator. Check the fluid levels of the brake reservoir, engine oil and coolant. Check the fuel gauge to confirm there is enough fuel for your planned activity.
- If you discover any damage or defect during the pre-operational inspection, tag the vehicle out of service and follow your organization's policies to initiate a repair.
- After successfully completing the "pre-operational" inspection, the next step is to conduct a brief "operational" inspection of all control functions, safety devices and the brakes.

THE OPERATIONAL INSPECTION

- The required "operational inspection" of a powered industrial truck should only take place after the completion of a "pre-operational" inspection.
- The purpose of the operational inspection is to test all driving and control functions.
- First, inspect the area around and above the lift to ensure adequate clearance from all hazards prior to testing the full operating range of all controls. Then, safely board the lift and turn on or start the engine.
- Start by raising the mast and forks to their maximum position and lowering them back down. Then raise the forks to eye level and test the full range of the mast tilt.
- After returning the mast to the fully retracted position, shift the forks fully left and right if the forklift is equipped with this feature.
- Next, if the lift is an extended reach lift or a forklift with a telescopic boom, test the full range of its reach and then return it to the fully retracted position.
- After testing each control, lower the forks to a safe position just a few inches above the floor. Next, engage the parking brake and test its holding power against a slight acceleration.
- Then test the transmission, brakes and backup alarm by shifting into forward, traveling a short distance, and then stopping by applying the brakes. Then shift into reverse to test the backup alarm and then drive the lift in reverse to return to the original starting position.
- Also, confirm the operation of the horn, warning lights, dashboard or other control panels and the headlights and/or running lights if applicable.
- While testing the lift's operation, all movements should be smooth and there should not be any excessive shaking, vibrations or unusual noises.
- If you discover any control mechanism or function that may be working improperly, tag the vehicle out of service and follow your organization's policies to initiate a repair.

LIFTING AND PLACING PALLETIZED LOADS

- Pallets come in a wide variety of shapes and sizes, but one thing they all have in common is a gap or opening that allows a forklift's forks to be inserted into or under the pallet.
- To properly insert the forks into a pallet, the forklift must squarely face the pallet and the forks need to be level to the floor. The spacing between the forks must match the spacing between the pallet's openings.
- The mast-tilt control is used to level the forks. The spacing between the forks is adjustable by releasing the latch pin and sliding the fork manually. Check the operator's manual if you're unsure.
- Once level and spaced properly, the forks should be placed at the height appropriate for insertion into the pallet and the forklift driven forward until the pallet is gently seated against the back of the mast.
- Seating the load fully against the back of the mast is important for load stability and also conforms with the common load positions used to calculate the lift's capacity as reflected on the data plate.
- To raise the load, use the lifting control to raise the forks a few inches off the ground and then tilt the mast backward a few degrees to cradle the load against the backrest. Sound the horn and look around for pedestrians before traveling with the load.
- Keeping the load low to the ground while traveling increases stability, prevents a blocked view and is less hazardous to pedestrians.
- To place the load at its new destination, first re-level the forks, then lower the load to the ground.

- However, DO NOT lower the forks all the way to the ground. The forks should not drag the ground or contact the pallet while backing away. There needs to be space above and below the forks in order to back away from a pallet cleanly.
- When lifting or placing palletized loads onto elevated storage racks, make sure the lift comes to a complete stop before raising the forks into position. Then drive forward slowly and fully insert the forks into the pallet.
- Lift the pallet just enough to clear the rack, then tilt the mast back slightly to cradle the load against the backstop. Sound your horn and look behind the forklift for pedestrians before backing up.
- Only travel in reverse the distance necessary for the pallet to safely clear the rack, then lower the pallet to a safe carrying height before traveling.
- If you have used an extended reach forklift to lift a load, be sure to fully retract the extension before traveling with the load.

PEDESTRIAN SAFETY

- As the operator of a powered industrial truck, ensuring the safety of pedestrians and co-workers is a primary responsibility.
- Because forklifts and pedestrians travel in common aisles and work areas, it is critical that each keep a sharp lookout for the other.
- Forklifts should always yield the right of way to pedestrians.
- When pedestrians are nearby, proceed slowly and be prepared to stop if they approach your vehicle or appear likely to cross your path. Come to a complete stop anytime a pedestrian is within 3-feet or 1-meter of the lift truck.
- Forklift operators must stop and sound their horn at all intersections, doorways, corners and blind spots to alert others of their presence.
- After sounding the horn, look in all directions and proceed with caution. Be sure to take advantage of any mirrors installed for this purpose.
- When a pedestrian needs to cross the path of a forklift, making eye contact and signaling when it is safe to cross is a good way to prevent forklift and pedestrian incidents.
- Forklift operators must also prevent any co-worker or pedestrian from passing under a raised load or placing themselves between the forklift and any fixed wall or solid object.
- Similarly, never maneuver a raised load over any co-workers and never drive the lift directly towards a pedestrian and any solid object.
- Always sound the horn and look in all directions before moving the lift truck and be sure to look behind the truck before backing up.
- Never allow a co-worker to ride on the forklift, unless the lift is designed for passengers by the manufacturer.
- Also, never elevate a co-worker on the forks or on a pallet. This is very dangerous and is never allowed.

OTHER SAFETY CONSIDERATIONS

- In addition to driving safely, there are other safety considerations a forklift operator should be aware of.
- When entering and exiting the vehicle, be sure to maintain three points of contact with the lift at all times and proceed with caution.
- Always wear your seatbelt and keep your hands, arms and feet inside the protective area of the forklift at all times. Do not grip the outside of the safety cage while operating in reverse. This creates a serious crushing hazard should the lift collide with a fixed object.
- Maintain a safe following distance of at least three truck lengths between you and any other vehicles you may be following.
- If you must travel with a load that obstructs your forward view, drive in reverse with the load behind you.
- To prevent unauthorized operation of your forklift, remove the key and secure it according to your company's policies anytime you are going to be 25 feet or more away.

LOADING DOCK AND TRAILER SAFETY

- A loading dock is an elevated platform designed to be level with the trailer of an 18-wheeler so forklifts can easily enter the trailer to load or unload materials.
- Any time a trailer is not backed into a loading dock, there is potential for a forklift to fall off the edge and extreme caution must be used by the lift operator to stay a safe distance from the exposed edge.
- To prevent a trailer from rolling away from the dock while being loaded, the trailer's wheels must be securely chocked.
- Some facilities also utilize a mechanical trailer locking system. When this is the case, forklift operators must ensure the lock is engaged before entering the trailer.
- When trailers are not supported by an attached truck, a sturdy jack stand must be installed to prevent the trailer's support legs from collapsing under the added weight of the lift truck and load.
- Also, before entering any trailer with a forklift, the trailer's flooring must be inspected for any indication that it will not support the weight of the forklift.
- Do not drive a forklift into a trailer if there is anyone inside.
- When entering a trailer proceed slowly and be aware that your eyes may need time to adjust to the changing light conditions.
- Before driving over bridge plates or dock boards, make sure they are properly secured and rated to support the combined weight of the lift truck and load.
- Loading dock operations can be busy and crowded. Forklift operators must use extreme caution and stay alert for pedestrians and other forklifts at all times.

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ANSWERS TO THE REVIEW QUIZ

1. a
2. d
3. a
4. b
5. e
6. a
7. b
8. a
9. a
10. a

2021 OVERVIEW SERIES: SAFE USE AND OPERATION OF FORKLIFTS
REVIEW QUIZ

Name_____Date_____

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

1. Only those persons who are certified and authorized by their employer may operate a forklift or powered industrial truck.

a. True
b. False

2. The stability of a forklift is impacted by _____.

a. The weight of the load
b. The position of the load
c. The condition of the traveling surface
d. All of the above

3. Forklift operator training must include a practical evaluation of the ability to operate the forklift in a workplace setting.

a. True
b. False

4. The data plate will list the truck's maximum lifting capacity for a specified _____.

a. Temperature
b. Load center
c. Fuel source
d. Type of load

5. Which of the following is part of the pre-operational inspection?

a. Look for fluid leaks
b. Inspect tires
c. Check forks for damage
d. Visually inspect hydraulic hoses
e. All of the above

6. While testing a forklift's operation, all movements should be smooth and there should not be any excessive shaking, vibrations or unusual noises.

a. True
b. False

7. When placing palletized loads onto elevated storage racks, it is not necessary for the forklift to come to a complete stop before raising the load.

a. True
b. False

8. Forklift operators must stop and sound their horn at all intersections and doorways.

a. True
b. False

9. Before entering a trailer with a forklift, the trailer's wheels must be securely chocked.

a. True
b. False

10. Before entering any trailer with a forklift, the trailer's flooring must be inspected for any indication that it will not support the weight of the forklift.

a. True
b. False