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Safety and Health Topic Page | Credits



## Powered Industrial Trucks (Forklift)

- Types & Fundamentals
- Operating the Forklift
- The Workplace
- Training Assistance

### Operating the Forklift

- Pre-Operation
- Traveling & Maneuvering**
- Load Handling

## Operating the Forklift: Traveling & Maneuvering

Forklift operators must follow safe operating rules at all times. Operators must always maintain control of the forklift, keep a proper lookout, and operate the forklift at speeds safe for the particular operation and worksite conditions.

- [Mounting and Dismounting](#)
- [Starting/Stopping](#)
- [Operating at Speed](#)
- [Steering, Turning and Changing Direction](#)
- [Traveling on Inclines](#)
- [Parking](#)
- [Safe Travel Practices](#)
- [Visibility](#)
- [Tipover](#)



Figure 1. Employee traveling and maneuvering a forklift.

### Mounting and Dismounting

#### Potential Hazards:

- Hitting head on overhead cage.
- Slips, trips and falls, especially feet slipping off step.

#### Requirements and Recommended Practices:

- Be sure that your hands are clean and dry to prevent slipping when grabbing handhold.
- Check your shoes for grease before entering the vehicle.
- Grasp handhold and get a good grip. Never grab the steering wheel because it could cause you to lose balance if it moves.
- Always be careful with your footing when mounting and dismounting vehicle.
- Pull or lower your body carefully into or out of cab. Dismounting is the opposite of mounting -- do not jump.
- Wear appropriate footwear to prevent skids.



Figure 2. Operator grasping hand grips when mounting the vehicle.



Figure 3. Operator dismounting a forklift.

## Starting/Stopping

### Starting

Before starting a forklift, be sure to conduct a [pre-operation inspection](#). In addition, conduct an [operational check](#) after starting the engine.

- Ensure that your way is clear. Sound your horn in warning or use a spotter if your view is obstructed.
- Proceed cautiously down the travel path watching for dangerous blind spots.



Figure 4. Stop signs posted to regulate traffic flows.

### Stopping

- Select an area to park. Do not park in an unauthorized area. Do not block an aisle or exits. Follow your company's parking procedures.
- Apply brake slowly and stop.
- Neutralize the controls.
- Set the parking brake.
- Turn off the ignition.
- If the truck is parked on an incline, block the wheels.

For more information, see [Parking](#).

## Operating at Speed

### Potential Hazards:

While traveling avoid these potential hazards:

- Tipover caused by driving too fast.
- Collision with pedestrians and obstacles caused by inattention and not being able to stop in time.

### Requirements and Recommended Practices:

Be aware of the travel conditions along your planned route:

- Under all travel conditions the truck must operate at a speed that will permit it to be brought to a stop in a safe manner. [[29 CFR 1910.178\(n\)\(8\)](#)]
- The driver must slow down for wet and slippery floors. [[29 CFR 1910.178\(n\)\(10\)](#)]
- The driver must look in the direction of, and keep a clear view of, the path of travel. [[29 CFR 1910.178\(n\)\(6\)](#)]
- The driver must slow down and sound the horn at cross aisles and other locations where vision is obstructed. If the load being carried obstructs forward view, the driver shall be required to travel with the load trailing. [[29 CFR 1910.178\(n\)\(4\)](#)]
- While negotiating turns, speed shall be reduced to a safe level by turning the steering wheel in a smooth, sweeping motion. [[29 CFR 1910.178\(n\)\(15\)](#)].
- Grades shall be ascended or descended slowly. [[29 CFR 1910.178\(n\)\(Z\)](#)].
- When ascending or descending grades in excess of 10 percent, loaded trucks shall be driven with the load upgrade. [[29 CFR 1910.178\(n\)\(7\)\(i\)](#)]
- Running over loose objects on the roadway surface shall be avoided. [[29 CFR 1910.178\(n\)\(14\)](#)].



Figure 5. Operator slows down and sounds the horn at cross aisles where vision is obstructed.



Figure 6. Observe all posted speed limits and warning signs.



Figure 7. Forklifts are less stable on turns and grades and can tipover. [View animation](#)

## Steering, Turning and Changing Direction

### Changing Direction

#### Potential Hazards:

While changing directions, be aware of these potential hazards:

- Tipover.
- Collision with a pedestrian, another vehicle or an object.

#### Requirements and Recommended Practices:

- Come to a complete stop before changing directions.
- Use a horn or warning light to warn pedestrians when reversing.



Figure 8. Operator is releasing the inching pedal, setting the direction control to forward and pressing the accelerator. (The brake is the middle pedal.)

### Reversing

Reversing can increase the chances of injury and accident. Use extreme caution when backing up.

#### Potential Hazards:

While backing up or reversing, be aware of these potential hazards:

- Pedestrians being struck by or crushed by the forklift.
- Collision with another forklift or racking.

#### Requirements and Recommended Practices:

- Keep a clear view. [[29 CFR 1910.178\(n\)\(6\)](#)]
- Look in the direction of travel. When reversing, look behind. [[29 CFR 1910.178\(n\)\(6\)](#)]
- Be aware of limited visibility, and use extreme caution when driving in reverse.
- Consider the use of ground guides, rear-view mirrors, spotters, or other aids to increase visibility.
- Consider the noise level in your workplace. Do not assume pedestrians or bystanders are able to hear a back-up alarm.
- Allow plenty of room for pedestrians. You cannot anticipate what people will do. Many have no idea how quickly forklifts accelerate and how sharply they turn.
- Never assume pedestrians or bystanders are aware of the presence of heavy equipment and the intended direction of travel.
- Do not grab the overhead guard when traveling in reverse. This could expose the operator's finger to serious injury.



Figure 9. Warning strobe light flashing as operator backs up.



Figure 10. Using pedal to shift from reverse to forward.

### Turning and Steering

#### Potential Hazards:

While steering, be aware of these potential hazards:

- Collision with pedestrians or objects due to the forklift's tail swinging to the side opposite the direction of the turn.
- Falling load following collision.
- Tipover caused by turning too sharply.

#### Requirements and Recommended Practices:

- When turning, reduce speed to a safe level. [[29 CFR 1910.178\(n\)\(15\)](#)]
- Proceed with caution when making turns, especially when working in confined areas or narrow aisles. When the lift truck turns a corner, the rear of the lift truck swings in the opposite direction of the turn.
- Anticipate the rear-end swing and start the turn as close to the inside corner as possible. Plan your route and



Figure 11. An exaggerated tail swing is caused by rear wheel steering; the operator is turning left and the rear is swinging toward the right.

anticipate turns.

- Never turn with forks elevated.
- Never turn on a grade. The forklift may tipover laterally on even a very small grade.

### Traveling on Inclines

#### Potential Hazards:

While traveling on a grade or incline, be aware of these potential hazards:

- Tipover
- Falling load

#### Requirements and Recommended Practices:

- Drive loaded trucks forward going up a ramp with the load upgrade and drive in reverse going down a ramp with the load upgrade.
- Always drive unloaded trucks with the the forks downgrade.
- Never drive with the load downgrade.
- Never turn a forklift on a grade.



Figure 12. Drive loaded trucks forward going up a ramp.

For more information, see the [Workplace: Ramps and Grades](#) module.

### Parking

An unattended vehicle is a danger to the operator and others unless it is properly secured.

#### Potential Hazards:

While parking and leaving an unattended vehicle, be aware of these potential hazards:

- Danger of an improperly parked truck being struck by personnel or objects.
- Danger of unintended movement of the truck.

#### Requirements and Recommended Practices:

A powered industrial truck is considered "unattended":

- When the operator is 25 ft. or more away from the vehicle even if it remains in his view, or whenever the operator leaves the vehicle and it is not in his view. [[29 CFR 1910.178\(m\)\(5\)\(ii\)](#)]

When a powered industrial truck is left unattended, load engaging means shall be fully lowered, controls shall be neutralized, power shall be shut off, and brakes set. Wheels shall be blocked if the truck is parked on an incline. [[29 CFR 1910.178\(m\)\(5\)\(i\)](#)]

- Select a hard, level surface.
- Do not park on a grade, unless wheels are blocked.
- Park in authorized areas only, unless the forklift is disabled. Park a safe distance from fire aisles, stairways or fire equipment. Do not block traffic. [[29 CFR 1910.178\(m\)\(14\)](#)]
- Fully engage the parking brake.
- Lower the load engaging means (lifting mechanism) fully.
- Neutralize the controls:
  - Set the direction lever in neutral, and lock the mechanism (if available).
- Tilt the mast forward slightly and lower the forks to the floor until the fork tips touch the floor.
- If the forklift is disabled, and the forks cannot be lowered to the floor, follow proper lockout/tagout procedures. [[29 CFR 1910.147](#)] Do not allow anyone to stand or pass under the forks. [[29 CFR 1910.178\(m\)\(2\)](#)]
- Turn the key to OFF, and stop the engine. Remove the key.
- Get off the forklift without jumping.

**Note:** When the operator of an industrial truck is dismounted and within 25 ft. of the truck still in his view, the load

engaging means shall be fully lowered, controls neutralized, and the brakes set to prevent movement. It is not required that the power be shut off. [29 CFR 1910.178(m)(5)(iii)]

## Safe Travel Practices

Complying with safe travel practices and OSHA regulations will improve safety in your workplace.

### Potential Hazards:

While traveling, be aware of these potential hazards:

- Overturning forklift
- Falling load
- Being struck or crushed by forklift
- Collisions

### Requirements and Recommended Practices:

- Always look in all directions before proceeding.
- Always look in the direction of travel. If the load blocks your view, travel in reverse. Keep a clear view.
- Observe all traffic regulations, including authorized plant speed limits. Maintain a safe distance, approximately three truck lengths from the truck ahead, and keep the truck under control at all times. [29 CFR 1910.178(n)(1)]
- Yield the right of way to ambulances, fire trucks, or other vehicles in emergency situations. [29 CFR 1910.178(n)(2)]
- Do not pass other trucks traveling in the same direction at intersections, blind spots, or other dangerous locations. [29 CFR 1910.178(n)(3)]
- Cross railroad tracks diagonally wherever possible. Do not park closer than 8 feet from the center of railroad tracks. [29 CFR 1910.178(n)(5)]
- Operate at a speed that will permit the truck to be brought to a stop in a safe manner under all travel conditions. [29 CFR 1910.178(n)(8)]
- Do not engage in stunt driving and horseplay. [29 CFR 1910.178(n)(9)]
- Slow down for wet and slippery floors. [29 CFR 1910.178(n)(10)]
- Properly secure the dockboard or bridgeplates before driving over them. Drive over them carefully and slowly and never exceed their stated capacity. [29 CFR 1910.178(n)(11)]
- Approach elevators slowly and enter squarely after the elevator car is properly leveled. Once on the elevator, neutralize the controls, shut off the power, and set the brakes. [29 CFR 1910.178(n)(12)]
- Separate forklift and pedestrian traffic as much as possible. Use established pedestrian walkways with guard rails and strictly enforce their use.
- Never carry passengers. [29 CFR 1910.178(m)(3)]
- Keep arms or legs inside the confines of your vehicle. [29 CFR 1910.178(m)(4)]
- Watch for surface obstructions; even a small bump can cause a load to fall off elevated forks.
- Never drive up to anyone who is in front of a bench or any other fixed object. [29 CFR 1910.178(m)(1)]
- Do not travel into a position that, if the forklift jumped forward, the brakes failed, or the wrong lever was pushed, a coworker could be pinned between the forklift and another object.



Figure 13. Operator looking in the direction of travel and keeping arms in the confines of the vehicle.



Figure 14. Operator traveling with load lowered.



Figure 15. Do not travel with the load elevated.

## Visibility

Blocked visibility, including partially blocked visibility, increases the chances of

accidents. Operators should take measures to minimize the risks.

### Potential Hazards:

When visibility is impaired, be aware of these potential hazards:

- Collision
- Falling load
- Falling off loading dock
- Worker struck or crushed by forklift



Figure 16. Operator keeping a clear view.

### Requirements and Recommended Practices:

- Keep a clear view. [29 CFR 1910.178(n)(6)]
- Look in the direction of travel. When reversing, look behind. [29 CFR 1910.178(n)(6)]
- Use spotters, rear view mirrors, or other aids to increase visibility.
- Where available, use concave mirrors when entering buildings or aisles.
- Equip forklifts with headlights where general lighting is less than two lumens per square foot. [29 CFR 1910.178(h)(2)] In general, forklifts should have headlights if working at night, outdoors, or in any area where additional lighting would improve quality.
- Drive slowly into and out of warehouses or other buildings. Going from bright daylight into a darkened warehouse may blind drivers just long enough to hit another worker, vehicle or object.
- Be especially careful on loading docks; stay away from the edge.
- Add physical barriers such as ramps, raised concrete staging areas and heavy-gauge safety chains in front of dock openings. Use protective guard rails.
- Add a "warning track" of yellow paint on the floor near dock openings.
- Slow down and sound the horn at cross aisles and other locations where vision is obstructed. [29 CFR 1910.178(n)(4)]



Figure 17. Operator's clear view of working aisle.

### Tipover

There are two basic type of tipovers in a forklift: 1) a forward tip or longitudinal tip, and 2) a lateral or side tip. The procedure to follow in the event of tipover varies depending on the type of tipover and the class of forklifts that you may use in your facility.

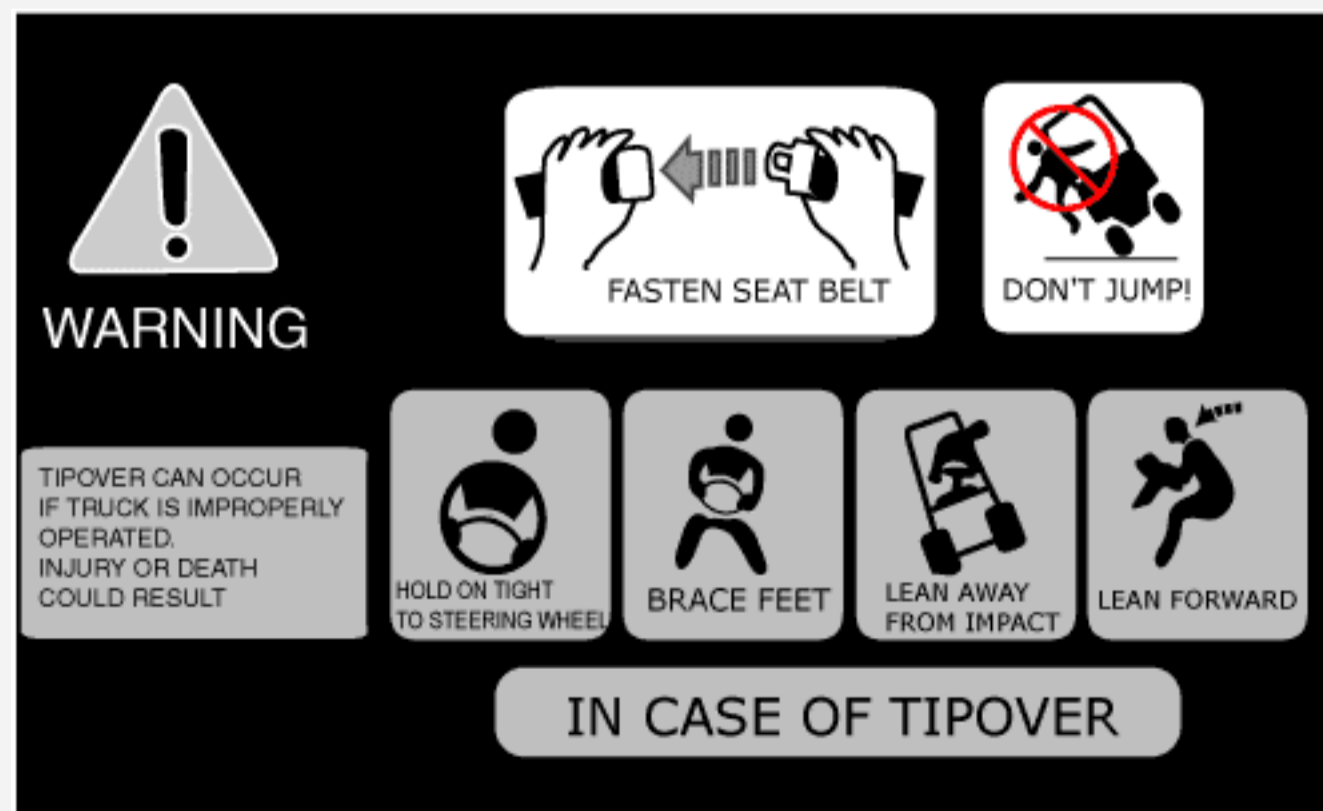


Figure 18. Example of warning label on a powered industrial truck showing actions to take in the event of a tipover of a sit-down counterbalanced truck. Note that the operator's seatbelt should already be fastened.

### IN CASE OF A TIPOVER:

For tipovers on sit-down counterbalanced trucks:

- Don't jump. Stay in the forklift.
- Hold tight to the steering wheel.
- Brace feet.
- Lean AWAY from the impact.
- Lean forward.

Note: Tipover procedures for other types of forklifts may vary. For example operators of stand-up forklifts with rear-entry access should step backwards off the forklift if a tipover occurs.

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