FORKLIFT OPERATIONS AND SAFETY TRAINING MANUAL

SMSA Training & Organizational Development – November 2014

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FORKLIFT OPERATING AND SAFETY PROCEDURES

Introduction

Before proceeding to your work environment, you need to understand the safety rules associated with forklifts. You may notice some of the rules listed may be redundant with other training. This repetition is intended to reinforce the importance of safety. In fact, you will find references to safety throughout this manual.

In this section, we will cover all safety rules that you are required to know in order to operate a forklift in a safe and efficient manner.

The first portion of this section covers the preoperation of the forklift and inspection of the workplace. The second portion deals with the rules for operating the forklift, including driving and stacking restrictions.

Vehicle and Workplace

As a forklift operator, you are responsible to:

1. Know and adhere to the vehicle's "load rating."

2. Be aware of the effect that attachments have on this rating and adjust the load accordingly. Use attachments for their intended purpose only.

3. Do a complete pretrip inspection. Special attention should be paid to the tires, warning equipment, hydraulic lifts, steering, brakes, and forks. Make sure the forklift is equipped with overhead guard and load backrest adequate for the load.

4. Never use damaged or unsafe equipment. Malfunctions must be reported immediately with the forklift tagged inoperable and the key removed. Do not operate the forklift until it has been repaired.

5. Be aware of any low clearances such as pipes, sprinklers, or low doorways.

6. Be sure that the floor you operate on can support the combined weight of the forklift and load.

7. Use only approved forklifts in hazardous locations.

8. Report any conditions in the workplace that could affect safety, such as wet floors, oily/greasy spots, or obstructions in aisles. Fire aisles, access to stairways, and fire equipment must be kept clear.

9. Outside operators must report holes, ruts, obstacles.

Operating Techniques

1. Always travel with the forks as close to the floor as possible, with or without a load.
2. Always face the direction in which you are traveling.
3. When carrying a large or bulky load that blocks your vision, travel in reverse. Always look where you are going.
4. Do not drive over objects lying on the floor.
5. Maintain a healthy mental attitude. Be a courteous and careful driver.
6. When making a turn, reduce your speed to a safe level.
7. Keep a safe distance behind other forklifts traveling in the same direction. Never drive side by side.
8. Stop and sound your horn at blind corners and doorways. If your vehicle is equipped with mirrors, use them. MAKE SURE the tailswing area is clear before turning.
9. Stop before backing up. If you change directions too quickly, you may lose your load. Stop and start smoothly.
10. Cross railroad tracks diagonally and never park closer than 8 feet to the center of a railroad track.
11. When parking, lower the forks to the ground, set the parking brake, and turn the engine off.
12. Make sure to space your forks to fit the load; this maintains the proper balance.
13. Handle only stable loads within specified weight and load center. Verify from capacity plate before attempting to lift.
14. Do not double up loads. Make two safe trips.
15. Do not add counter weights, like extra passengers on the forklift. Split the load.
16. SPACE the forks as far apart as load allows and center load between forks. Keep load against backrest.
17. DO NOT handle loose loads higher than the load backrest.

18. OPERATE the forklift only from operator's seat or control station.

19. DO NOT move the forklift if anyone is between it and stationary object.

20. Pick up the entire load. Ensure that the forks are completely under the skid.

21. When raising and carrying loads, the upright should be tilted back slightly.

22. Never tilt a raised load forward unless it is directly over the loading area.

23. Stacks should never be straightened out by pushing against them with the forks or with the end of the forklift.

24. Stay away from the edge of loading docks, and never use the forklift to open or close freight doors.

25. Always use a proper dock board. Steel plates shift and are dangerous. Before traveling over a dock board, check its capacity and be sure it’s secured.

26. Before entering a truck or trailer, make sure its brakes are set and it is chocked. Semi-trailers not coupled to tractors must have fixed jacks to prevent upending.

27. Absolutely no riders on any type of forklift unless it is specifically designed for riders.

28. Keep your hands and feet inside the operating compartment of the forklift.

29. Keep yourself and others clear of the upright.

30. Watch out for pedestrians and never allow anyone to stand or walk under a raised upright whether loaded or unloaded.

31. If a forklift is to be used as an elevator, be sure to use an approved safety platform.

32. Slow down on wet or slippery surfaces.

33. Do not let unauthorized people drive your forklift.

34. Do NOT push or tow a disabled vehicle with a forklift.

35. When parking, be sure to put the transmission in neutral, set the parking brake, turn off the work lights, lower the forks, and remove the key.

36. Avoid parking on an incline. If unavoidable, chock the wheels.

37. SLOW DOWN before turning - especially without a load. FAILURE to follow these instructions can cause the forklift to tip over! DO NOT JUMP off if the forklift tips! HOLD the steering wheel firmly. BRACE your feet. LEAN FORWARD and AWAY from the point of impact.

38. Charge the batteries only in designated area.

39. Turn off engine when fueling.

40. Avoid sparks or open flame. Provide ventilation.

41. Keep vent caps clear when charging battery.

42. Disconnect the battery during servicing.

43. Report all accidents immediately.

44. The forklift should be used only for its intended purpose – to move materials.

Finally, unless otherwise specified, the general rules of driving an automobile apply. You should:

- Travel on the right side of a main traffic aisle
- Stop at all intersections
- Sound the horn when visibility is limited or when changing directions
- Slow down when approaching corners
- Stop and start smoothly
- Always watch out for and yield for pedestrians

Forklift Components

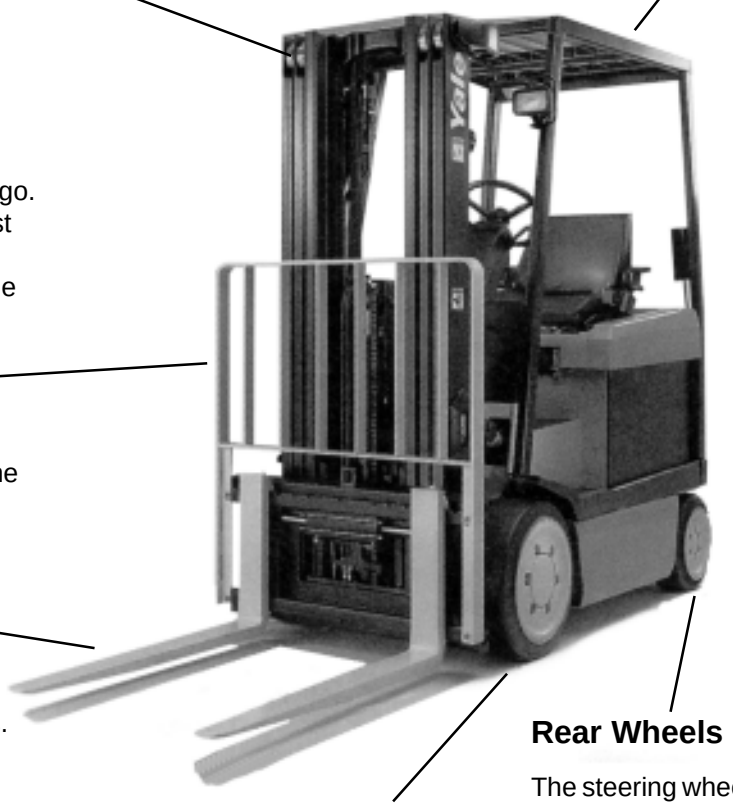
4-WHEELED, SIT-DOWN

Mast

Supports the carriage and guides movement of the forks and backrest. It moves up and down, and tilts forward and back.

Overhead Safety Cage

Protects the driver in the event that freight falls off the upraised blades. Also known as the overhead guard.



Carriage

The part of the mast that actually engages the cargo. It consists of the backrest and forks, as well as the blade adjustment and side shift mechanisms.

Backrest

The section behind the forks, used to stabilize the load and protect the operator.

Forks

Used to engage, lift, and stabilize the load. Also known as blades or tines.

Front Wheels

The front wheels are both the drive and the braking wheels.

Rear Wheels

The steering wheels. They allow excellent maneuverability, but cause the front and rear end to swing wide in turns.

Tires

Class I tires are the solid (cushioned) type; designed to be used on smooth surfaces, i.e., warehouse environment.

▲ **Forklifts with solid rubber tires have poor traction when the floor is wet or rough.**

▲ **Do not cover the overhead safety cage with plastic.**

3-WHEELED, SIT DOWN

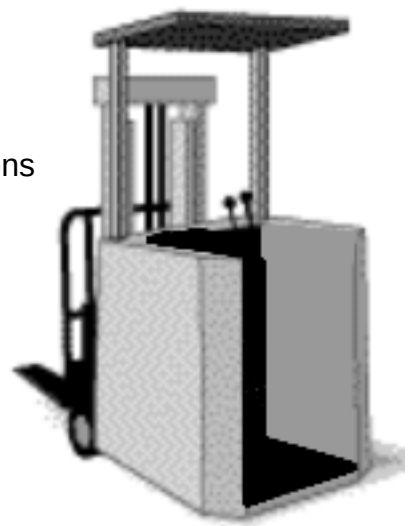
This lift has all the standard features of the four-wheeled model with the exception of only a single, rear steering wheel.

This provides a tighter turning radius, but makes the lift less stable.

RIDER STAND UP

This type of lift is also of the counter balance family.

It is designed for use in situations where the operator needs to frequently mount and dismount.



SAFETY

Driving Habits

You are already familiar with the operation of an automobile. You have a valid driver's license and know how a car steers, brakes, accelerates and corners. *A forklift is not a car!*
It steers with the rear wheels. When driving forward, the back end swings wide, it does not follow smoothly like the rear of a car. When driving backward, the forklift blades (or *tines*) swing wide. Either end of a forklift can injure people or damage cargo.

Always apply the rules of common sense, courtesy, and safety when operating forklifts or working in forklift areas. OSHA statistics report that 85 people are killed each year in forklift accidents and 35,000 are injured.

Cars are designed with the center of gravity as low as possible, so they can corner easily and not tip over. Forklifts raise or lower their center of gravity when raising or lowering cargo. As we will see in the section titled *Stability Triangle*, an unstable forklift can tip over easily.

Seatbelts

If a forklift is equipped with a seatbelt or personal restraint device, they **must** be worn. This is because, if driven recklessly, forklifts can tip over fairly easily. There is a popular belief that the best thing to do when a forklift tips over is to jump clear. This is a very dangerous belief.

The natural tendency when jumping is to jump down. When people jump to the downside of a tipping forklift, they jump directly under the forklift's overhead safety cage. *An OSHA study shows that 41% of all forklift fatalities result from people being crushed by the overhead cage while attempting to jump clear of a tipping forklift.*

If those operators were wearing seatbelts, they would simply ride the forklift over and end up sitting sideways on the warehouse floor…unhurt, embarrassed, but alive.

▲ **Buckle up…in the car and on the forklift!**

Visibility

The driver's view from a forklift is blocked by the mast, hydraulic cylinders, chains, carriage backrest, overhead guard, and usually, the load being transported. Many injuries could have been avoided if the operator had better visibility. You must be constantly aware of the people and equipment around you. Always drive in the direction that gives you the greatest field of view.

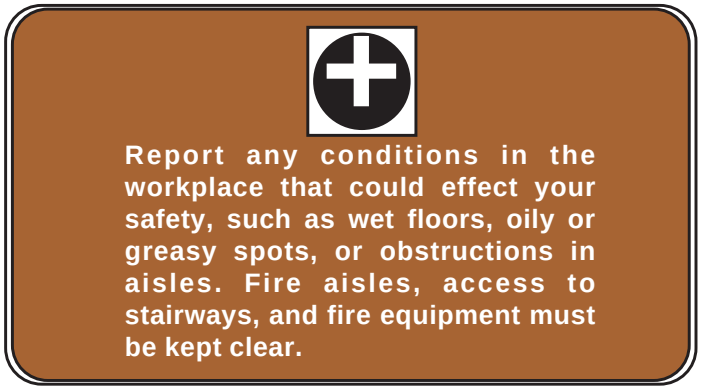
When driving a forklift, don't just turn your head; swivel your whole body in the seat. You get a better field of view, and there is less strain on your neck and back. When in doubt, use a guide to assist you. Remember to drive the forklift in reverse, wherever possible.

Whenever possible, face the direction you are driving.

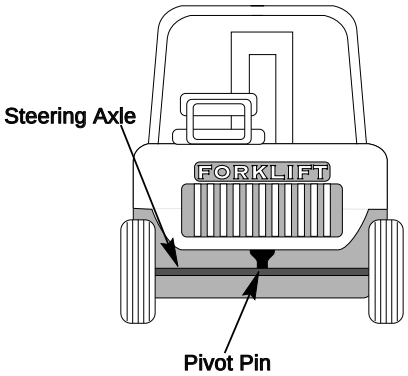
Pedestrians

Forklifts and people are naturally found close together. Wherever there are forklifts, there are people; loading or unloading trucks or containers, building pallets, and scanning freight. Since these "pedestrians" are not always paying attention to their surroundings, it is your job to see and warn them.

Use your horn when changing directions, or when entering or leaving a blind intersection. Use the horn when exiting a truck. Use the horn when driving past a doorway that opens into the warehouse area. In short, **use your horn!**

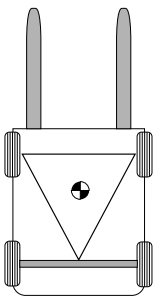


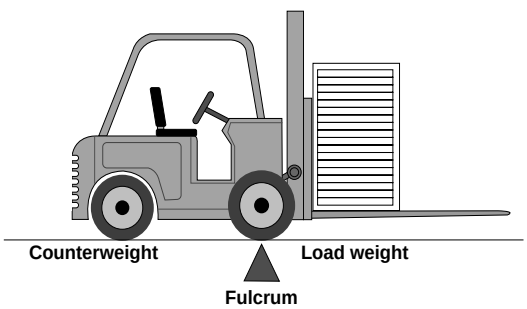
The Stability Triangle



The rear (steering) wheels on a forklift are mounted by a pivot pin in the center of the axle. The pivot pin allows these wheels to move up and down in order to negotiate uneven surfaces. This is called a *three-point suspension system,* that is why the forklift is so maneuverable. The drawback of this suspension is that it is not as stable as the four-point system found on cars.

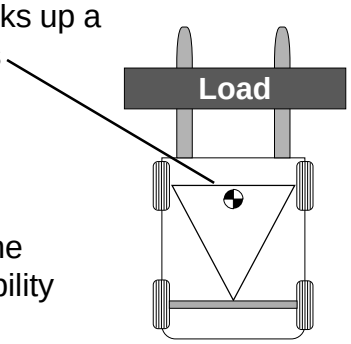
You can see the three points of the triangle (two front wheels and the pivot pin on the back axle) in this illustration. The symbol in the middle of the triangle (◒) marks the center of gravity (CG), or center of balance, of the empty forklift. As long as the CG stays inside the support zone (the stability triangle), the forklift will stay on its wheels. The closer the CG gets to the side of the triangle, the less stable the forklift becomes. When the CG moves outside the triangle, the forklift will tip over.



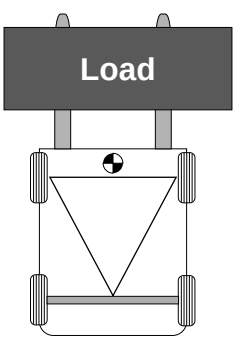


A forklift is really a lever or seesaw on wheels. The *fulcrum* (the pivot point) is the front axle and wheels. The load up front is balanced by the weight in the back of the forklift. The weight at the rear of the forklift counterbalances the weight of the load like a seesaw.

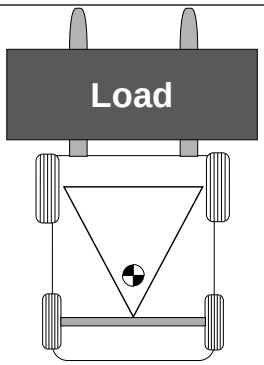
When the forklift picks up a load, the CG moves forward.

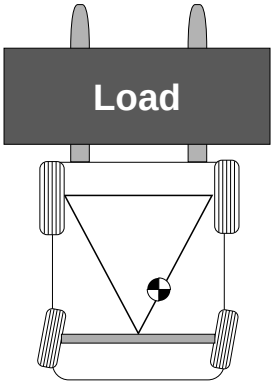


If you exceed the rated capacity (the weight limit shown on the *Capacity Plate*) of the forklift, the CG moves outside the stability triangle and the forklift will tip over forward. When this happens, the rear (steering) wheels lift off the ground and the ability to steer is lost.



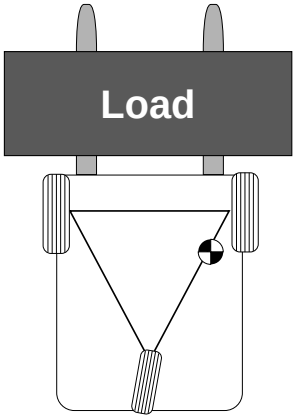
Even when a load is within the rated capacity of the forklift, it is still possible to get into trouble. Reckless driving can shift the CG outside the triangle and tip the vehicle over. Driving with a heavy load raised high in the air can also produce problems. As you raise the load and tilt it back, the forklift's CG moves back, closer to the sides of the stability triangle.

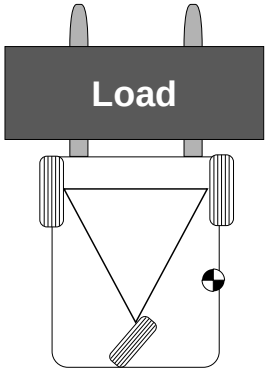




If you were to drive the forklift around a corner quickly, the forklift's CG moves even closer to the edge of the stability triangle.

This imbalance is compounded with three-wheeled models.





At this point, the forklift is so unstable that any small bump or debris on the warehouse floor, could shift the CG far enough outside the triangle to cause a tip over.

Always pick up any debris lying around and dispose of it properly. If a loaded forklift bumps over the obstacle, it can tip over.

Capacity Plate

Every forklift has a capacity plate attached near the operator's station. The information on this plate is provided by the manufacturer to help operate the forklift safely.

Read this plate whenever you get on a forklift. If you do not know the weight of the forklift and the weight of the load you will be carrying, you risk overloading a freight elevator, yard ramp, or some other vehicle.

If your forklift has an attachment, you must also be aware of the reduction it places on your lift capacity. Finally, if your lift is equipped with side shift, your capacity is diminished when the load is shifted to either side.

5042467700

Yale

Truck Model GP050RFNUAE086 Truck Weight 9,246 lb

Serial No. N856342

Drive Tread Width 38.0 Inches Back Tilt 6.0 Degrees

	Drive Tires	Steer Tires
Size	7.00 x 12	6.00 x 9
Type	SOLID	SOLID
Pressure	PSI	PSI

WARNING

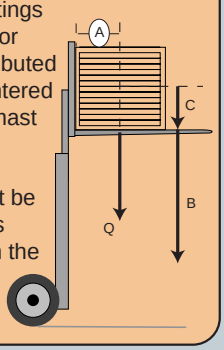
TRAINED OPERATORS AND MECHANICS ONLY

Read all cautions, notes and instructions before operating or servicing this truck.

DO NOT OVERLOAD

Capacity ratings shown are for evenly distributed laterally centered loads with mast vertical.

Trucks must be equipped as specified on the capacity plate.



Capacity Q lb. With forks	Load Center A in.	Fork Height B in.	Load Center C in.
4700	24	194	24
5000	24	153	24

Capacity Q lb. With Attachment	Load Center A in.	Fork Height B in.	Load Center C in.
4350	24	194	24
W/SS AND 48L FKS			
3300	36	194	24
W/SS AND 72L FKS			

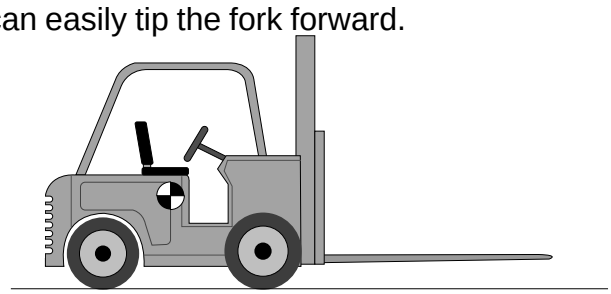
Attachment

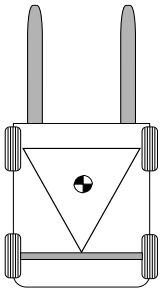
Never exceed the weight limits of the forklift. If the load is too heavy, get a bigger forklift.

The style of this capacity plate is a bit different from the previous page. Notice the heading “Capacity” shows a different weight limit for a 24" load center and a 48" load center. A load placed out on the tips of the blades has a much heavier loading effect than a load placed close to the backrest. The increased leveraging effect can easily tip the fork forward.

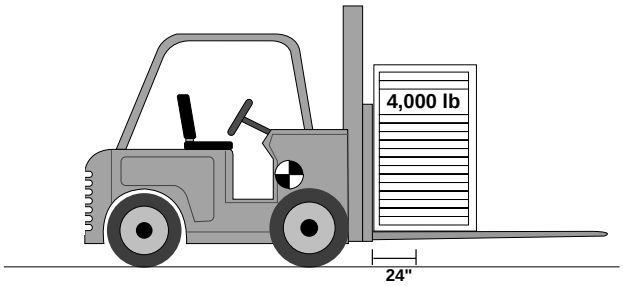
The Forklift Corporation®, Melvis, TN
Model # 1400 Serial # 9013953028
Vehicle type: Gasoline powered lift truck
Truck Weight: 7,535 lbs
Capacity: 4,000 lbs. at 24" load center - Fork Height 130"
2,000 lbs. at 48" load center - Fork Height 130"

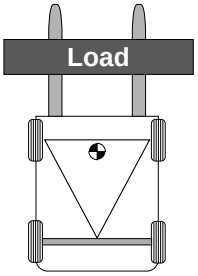
Empty Forklift

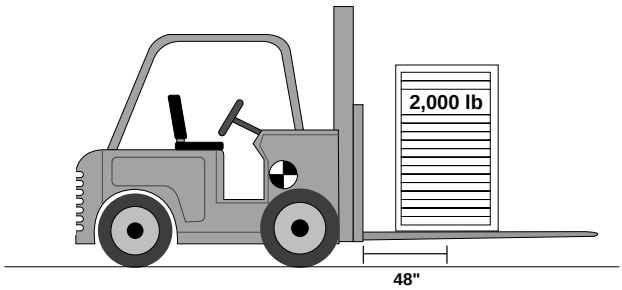




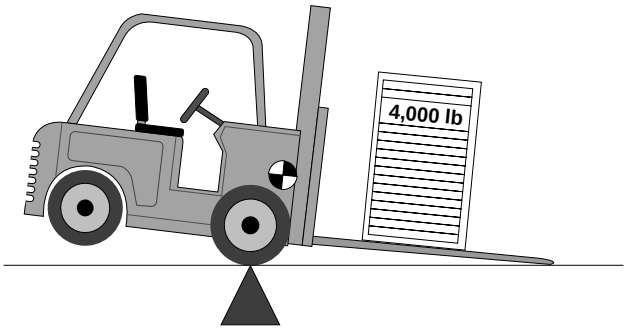
Forklift loaded within limits

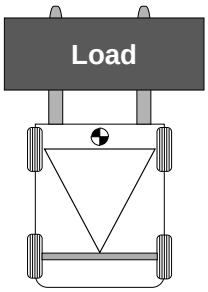






Overloaded Forklift





Pretrip Pattern

Begin the pretrip or post-trip on the left side of the vehicle, circling clockwise. You will end up sitting in the operator's seat after having done a quick, efficient inspection.

❶ Left side of the operator's station

❷ Left front wheel

❸ Front: 3 feet (1 meter) in front of blade tips

❹ Right front wheel

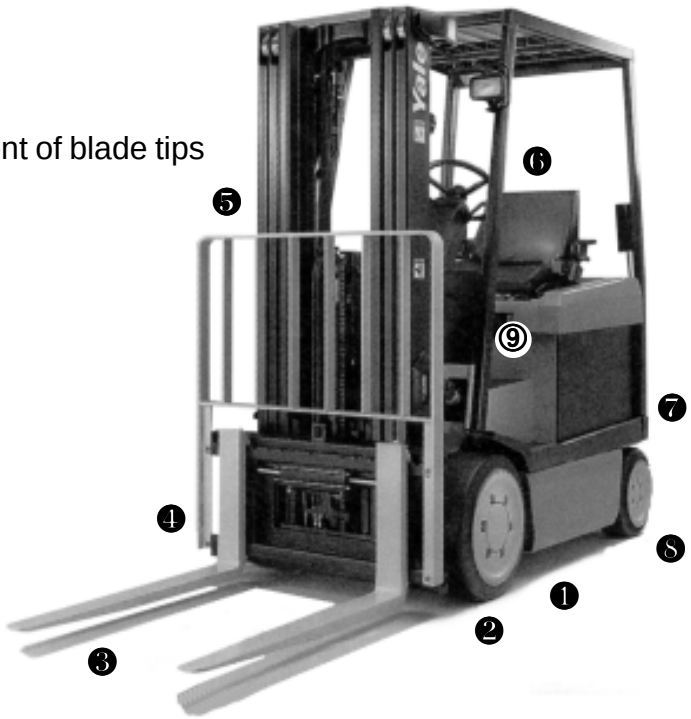
❺ Right side of the operator's station

❻ Right rear wheel

❼ Back end

❽ Left rear wheel

❾ Operator's station



Each of these inspection points will be discussed on the following pages.

▲ **Visually check the forklift. Do not touch sharp edges, hoses, wires, etc. Local procedures may restrict your inspection items.**

Inspection Points

Your administrator will walk you through complete pre/post-trip inspections during the demonstration and practice segment of the class. While still 10-15 ft (3-5 meters) away from the forklift, check for obvious problems. Is the forklift leaning to one side? Are there puddles under the vehicle? Do you see broken lights or any damage, etc.?

As you walk around the forklift, make sure the battery access panels are locked closed so they do not swing out and hit a pedestrian. After ensuring the parking brake is set, remove and stow any chocks. At any stage of the inspection, if something appears wrong, note it on the inspection form and follow local procedures to report problems.

There are specific things to check at each of the inspection points.

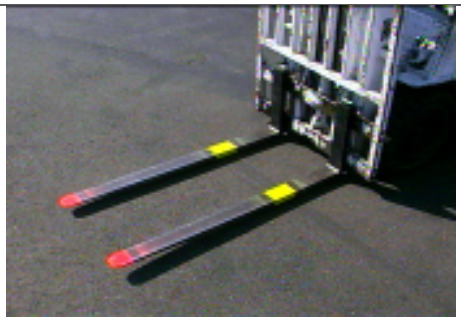
❶ Left side of the operator's station

- Check to ensure the parking brake is set, gearshift is in neutral, motor is off, and blades are lowered flat on the ground.
- If a fire extinguisher is present, ensure the gauge is reading in the green.
- Pick up any litter or trash left on the vehicle.
- Shake the overhead safety cage to ensure it is firmly bolted to the forklift. Note any cracks or other damage to the cage.

❷ Left front wheel

- Because your lift has solid rubber tires, look for any missing chunks or signs that the tire is loose on the wheel.
- Note grease and oil stains that may indicate leaking seals or brakes.
- All lug nuts should be present and tight.
- Check rim, and wheel surface. They should show only minor exterior damage.
- Remove debris or trash between mast and forklift body in area of tilt cylinder.

❸ Front: 3 ft (1 m) in front of blade tips



Inspect the general condition of the mast, the backrest and the carriage. Walk up to the mast and note the condition of the:

- Mast – Inspect for debris.
- Hydraulic Cylinders – Note any leaks.
- Chains – Note damage, rust, or wear.
- Backrest – Note any damage. Shake to ensure tightness.
- Blade Adjustment Locks – Ensure function; note any damage.
- Blades – Inspect and note any bent tips.
- Blades painted – Inspect for paint strips 42-48" from the blade tip.

If the tip of a blade is bent, it can damage cargo or slow the operation. Blade tips should be smooth and flat. This blade should be noted on the Pre-trip checklist and reported to Maintenance.

❹ Right front wheel

Inspect the same as the left front wheel.

❺ Right side of the operator's station

Inspect the same as the left side of the operator's station. In addition, you should review the rated capacity of the forklift.

❻ Right rear wheel

- Again, look for any missing chunks or signs that the tire is loose on the wheel.
- Note grease and oil stains that may indicate leaking seals or brakes.
- All lug nuts should be present and tight.
- Check rim and wheel surface. They should show only minor exterior damage.
- Plastic sheeting, strapping, and other debris can become wrapped around the axle. Remove debris, where possible and safe.

❼ Back end:

- If local procedures permit, open the battery compartment cover. The cover is heavy and may require a prop to hold it open. Check the engine area, as directed by your administrator.
- Disconnect the charger cable from the battery-charging connection.

❽ Back left wheel

Inspect the same as the rear right wheel. If you are checking a three-wheel model, you are done with wheels.

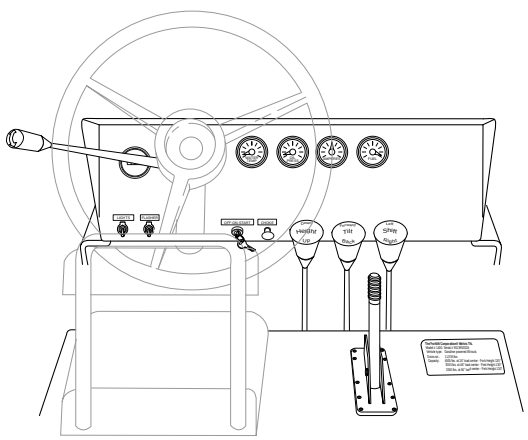
Always study the operator's manual for any new or different forklift you encounter. Designs differ from one manufacturer to another. Failure to read the directions could put you or your coworkers at risk.

Ensure you have both hands on secure handholds before placing your foot on the forklift. This *Three-Point rule* will prevent slips and falls.

Operator's Station

Climb or step onto the forklift from the side opposite the carriage control levers (normally the left side). Double ensure the forklift is in neutral, the parking brake is set, and the power is off before proceeding. Adjust the seat to a comfortable distance from the steering wheel. Fasten the seat/personal restraint belt around your front, if so equipped.

Turn the power on.



- Check the battery discharge indicator to ensure the battery indicates a full charge.
- Check the horn, safety flasher, and driving lights, if equipped.
- Check hydraulic reservoir level indicators if equipped.

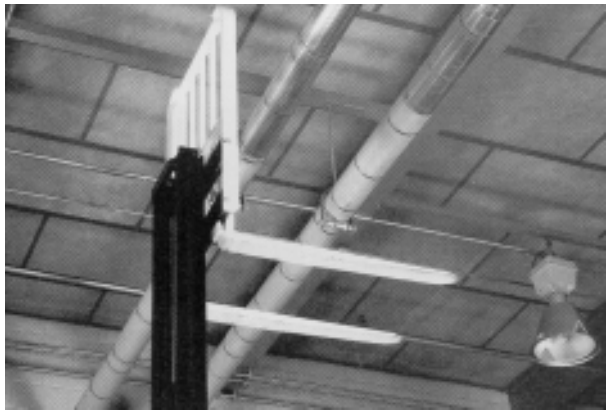
Now check the operating controls:

- Test the steering by turning the steering wheel full right, full left, then back to center (straight ahead).

Check the gauges after the forklift has been in operation for five minutes, and periodically during use to ensure the vehicle is operating within limits.

- Test the lift mechanism by raising the blades to their full height, then lowering them.

▲ **Always check the overhead clearance before raising the blades.**



- Test the tilt mechanism by first raising the blades to approximately 1 ft (30 cm) off the ground. Tilt the carriage fully forward, then fully back, and then level the blades. Leave the blades at 1 ft. (30 cm) off the ground.

- Test the side shift mechanism (if equipped) by shifting the carriage fully right, then left, and then back to center. Lower the blades to approximately 4 in. (10 cm) from the ground.

Test the brakes and transmission next. Procedures differ depending on power supply, transmission type, and control mechanisms. Your administrator will demonstrate the proper procedures for the service brakes, parking brakes, and the transmission. Be sure to sound the horn when changing directions or moving off from a stop.

The brake pedal should not go all the way to the floor! There should be no sponginess or any need to pump the brakes to make them work. Take the forklift out of service if there are brake problems.

Once you have inspected the forklift, follow local procedures for completion and distribution of a *Pre/Post-Trip Checklist*.

Post-Trip Inspection

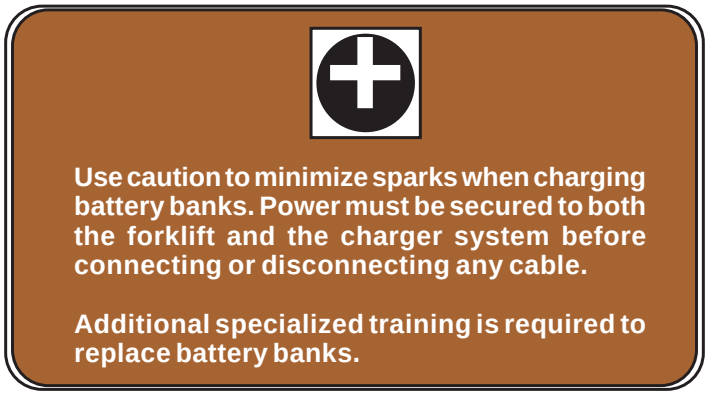
The post-trip inspection is completed at the end of the shift. Use the same procedures used in the pretrip. Problems noted in pre/post-trip inspections should be reported to the appropriate department or your manager. If a safety-related problem is discovered during the shift, it should be reported immediately.

Battery Recharging

Class I forklifts are powered by high-capacity, deep-cycle, lead acid battery banks. These batteries can be very dangerous if proper precautions are not followed.

- Always have the ignition and charger turned off before connecting or disconnecting the charger system cable to the forklift power connector.
- Because batteries generate explosive fumes, they should only be charged in a well-ventilated atmosphere.
- Keep vent caps clean.
- Keep sparks or open flame away from the battery area.

Note: Battery bank replacement is authorized to be completed only by specially trained personnel. This course does NOT qualify you in any way to exchange battery banks.



FORKLIFT OPERATION

No textbook or classroom training can teach you everything you need to be a competent forklift operator. Only time and practice can give you the skills needed to be quick, efficient and safe on a forklift.

In this section, we will look at some of the basic skills needed to become a capable operator, and some “tricks of the trade” to help you on your way.

Speed Limits

The maximum speed for forklifts is 5 mph. Since most forks do not have speedometers, the best way to obey the limit is to drive no faster than a brisk walk. If you are traveling slowly, you can perform all stops and starts smoothly. Reduce speed when driving on rough surfaces, over obstacles, near pedestrians, when cornering, or when carrying an unstable load.

Environment

Any forklift can drive on concrete floors, asphalt pavement, over potholes, and rough surfaces. But because of the solid tire design of Class I forks, you should avoid driving on rough surfaces, over obstacles, or changes in floor height. These poor surfaces degrade the handling and control of your forklift, because the tires do not soften the bumps; therefore, you must adjust your driving to suit the surface.

Forklifts of this class are designed for use indoors or in a covered environment with a smooth surface. If the operation requires outside use of these forklifts, they are not authorized to do so unless specifically modified by the manufacturer for the external environmental conditions.

Concrete and asphalt paving provide excellent traction, as long as they are dry. Rain or liquid spills will lift oil and grit from the pavement and make the surface dangerously slippery. Forklifts can easily skid when turning or slide when braking. Adjust your speed accordingly, especially when approaching areas where people are working.

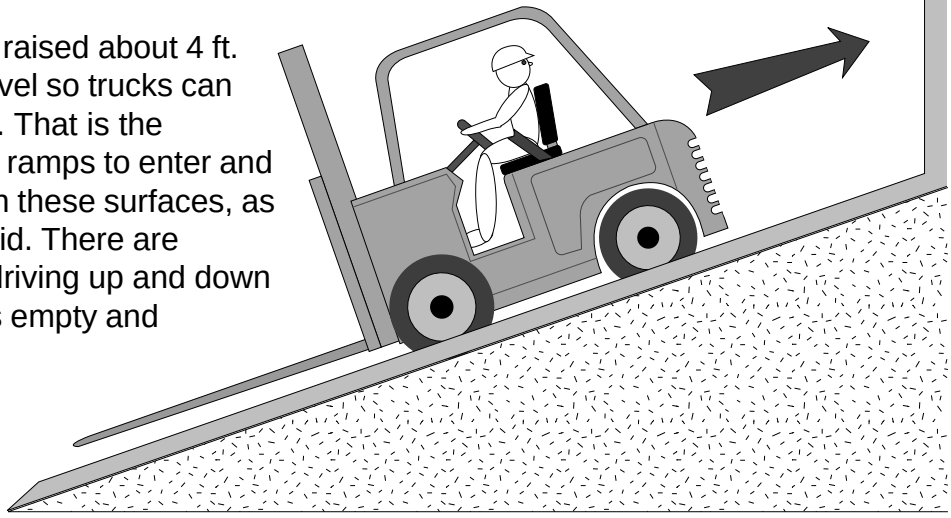
Rough Surfaces

Avoid them if you can. Your tires are not designed to operate on rough surfaces. Remember, the stability triangle if you have no choice. If you have to drive over a pothole, railroad tracks, or an obstacle on the floor, this can throw the forklift's CG outside the triangle and tip it over. The bouncing from rough surfaces can also flip cargo off the skid and it could go right under your wheels.

Approach railroad tracks and other obstacles from an angle and drive over them slowly. This will help you keep control and reduce the danger of injury or cargo damage. The best way to avoid problems is to avoid rough surfaces entirely.

Inclines

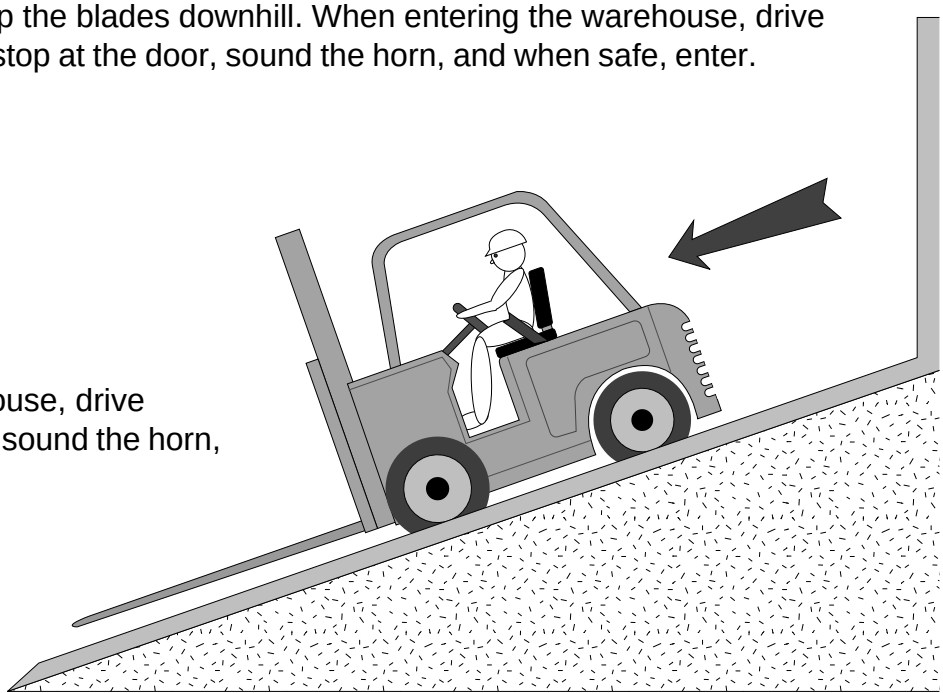
Warehouses are usually raised about 4 ft. (1.2 m.) above ground level so trucks can be loaded and unloaded. That is the reason they have sloped ramps to enter and exit. Use extra caution on these surfaces, as it is easy to tip over or skid. There are different techniques for driving up and down ramps when the forklift is empty and when it is full.



Empty

Traveling Uphill –

When driving empty, keep the blades downhill. When entering the warehouse, drive backwards up the ramp, stop at the door, sound the horn, and when safe, enter.



Traveling Downhill –

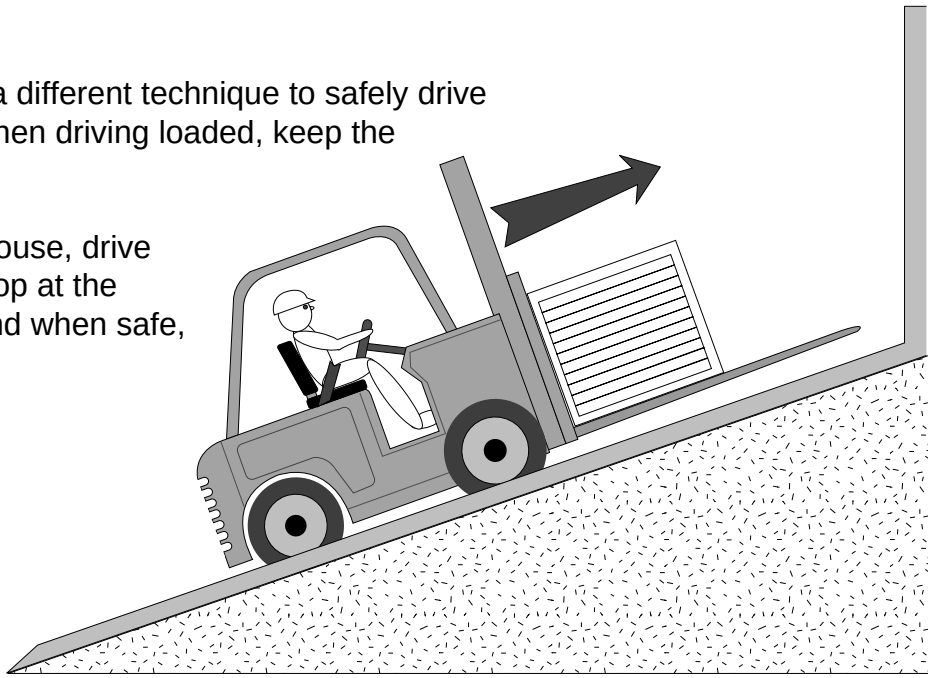
When leaving the warehouse, drive forward, stop at the door, sound the horn, and when safe, exit.

Loaded

Traveling Uphill –

A loaded forklift needs a different technique to safely drive up and down ramps. When driving loaded, keep the blades *uphill*.

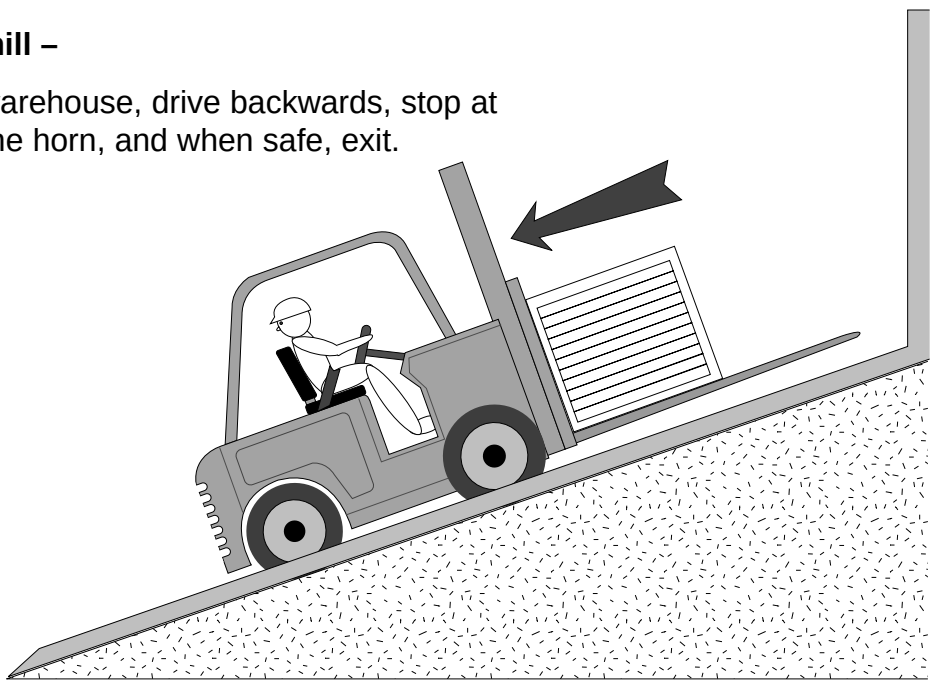
When entering a warehouse, drive forward up the ramp, stop at the door, sound the horn and when safe, enter.



▲ **Drive in reverse or use a guide when your field of view is limited. Tilt the load back as far as possible and use care, as the load may slide off the blades if the ramp is too steep.**

Traveling Downhill –

When leaving a warehouse, drive backwards, stop at the door, sound the horn, and when safe, exit.

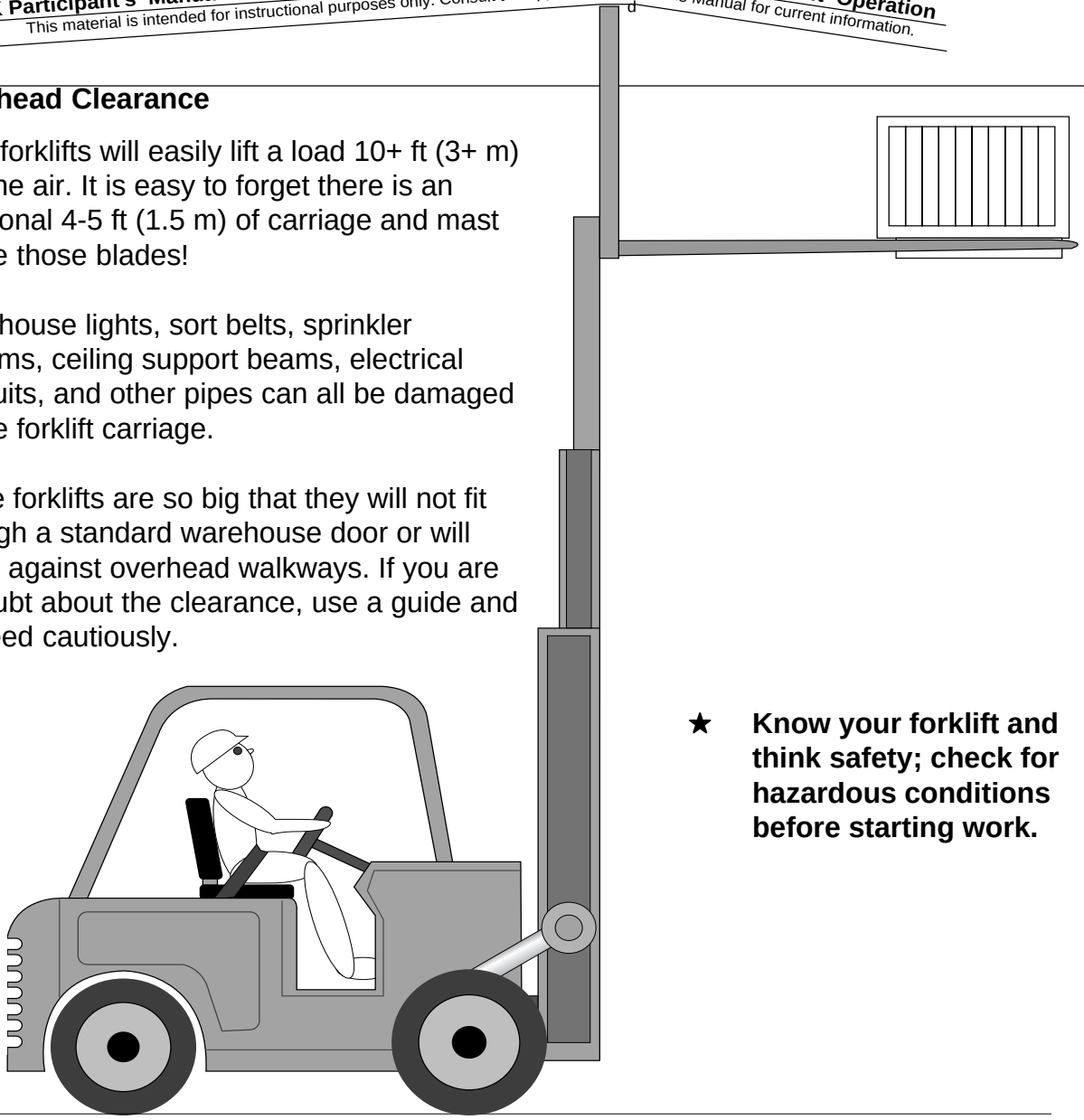


Overhead Clearance

Most forklifts will easily lift a load 10+ ft (3+ m) into the air. It is easy to forget there is an additional 4-5 ft (1.5 m) of carriage and mast above those blades!

Warehouse lights, sort belts, sprinkler systems, ceiling support beams, electrical conduits, and other pipes can all be damaged by the forklift carriage.

Some forklifts are so big that they will not fit through a standard warehouse door or will crash against overhead walkways. If you are in doubt about the clearance, use a guide and proceed cautiously.

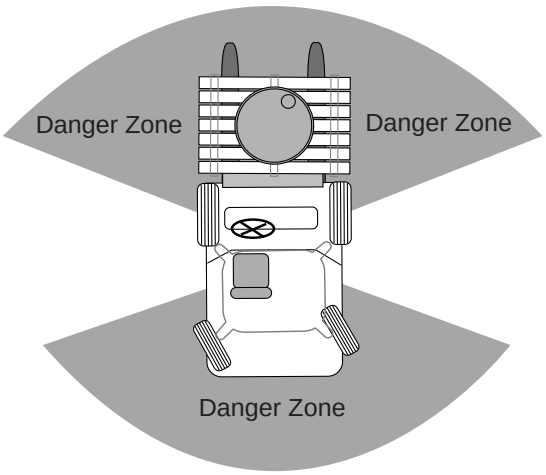


★ **Know your forklift and think safety; check for hazardous conditions before starting work.**

Forklifts should be pretripped at the beginning of each shift. If you get on a different forklift during the shift, test the brakes!

Danger Zones

The danger zone on your car is the front third of the vehicle. That is, the end that turns and has the potential to injure people or property. That danger zone is the height of the car (about 3 ft or 1m.)

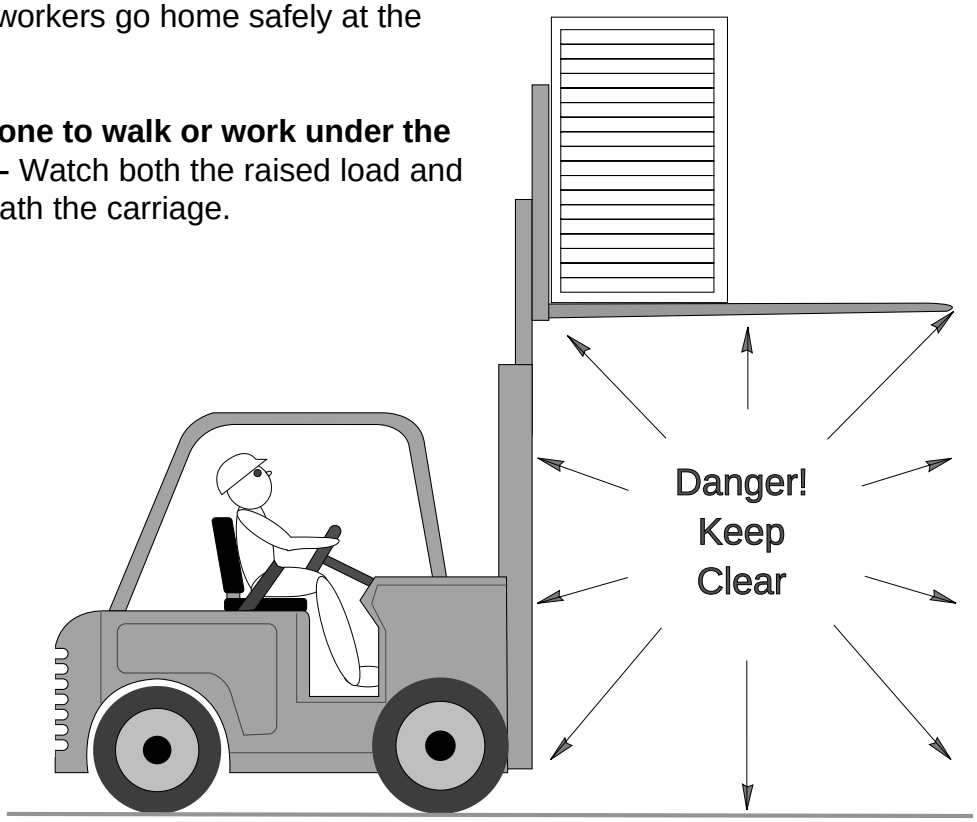


A forklift has *two* danger zones: the front third and the back third. The danger zone in front is the height of the mast (10 ft or 3 m.) The one in back is about 3 ft (1 m) tall. Each end of a forklift can injure people or property. You must be alert to all the pedestrians around you, especially those people inside the danger zones.

Use the horn to warn your coworkers. Sound it at blind intersections, when changing directions, and when approaching pedestrians. Remember, we work in a noisy environment and that people may not always hear the forklift or its horn. *You are the primary safety device on the forklift.*

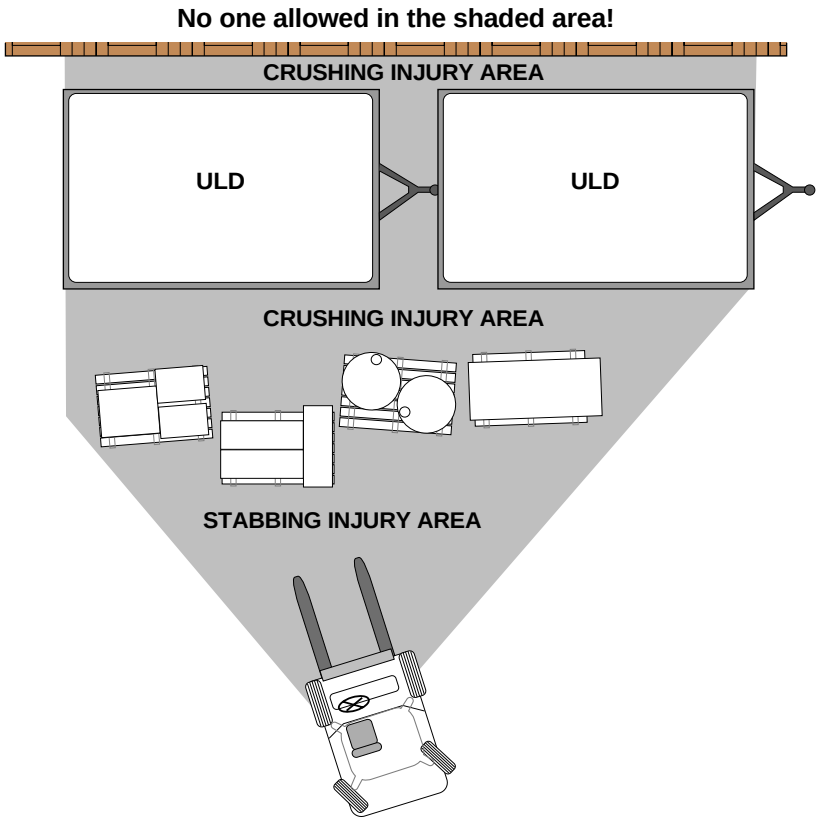
The following common-sense safety rules will help ensure you and your coworkers go home safely at the end of the day.

1. **Never allow anyone to walk or work under the raised carriage –** Watch both the raised load and the area underneath the carriage.



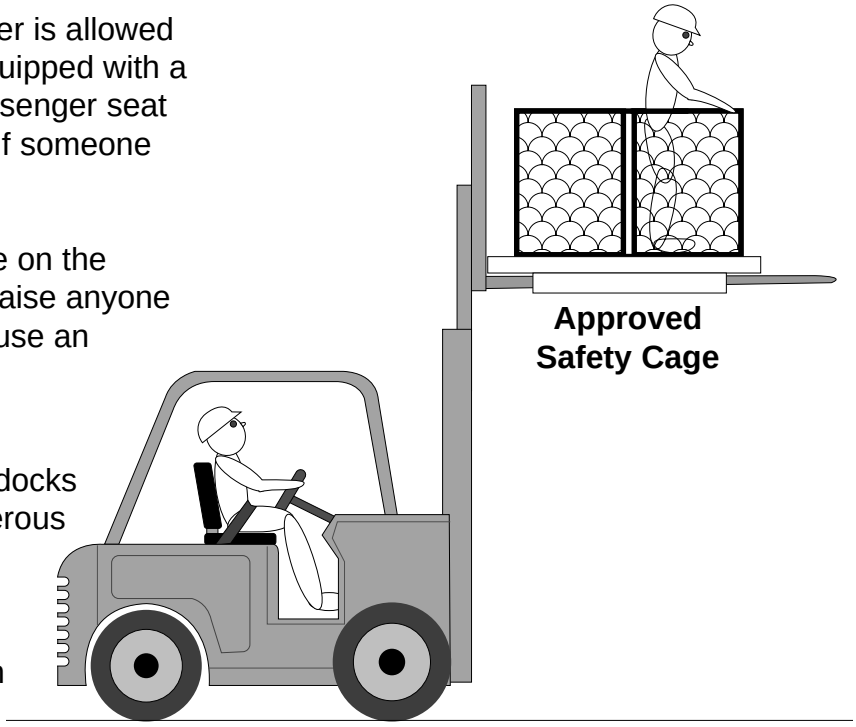
2. **Never drive (or back) toward someone when they are *against the wall* –** More people are badly injured by being crushed between a forklift and a wall (or ULD, or other solid object) than are injured when they are hit and bounce off. Never drive toward anyone who has a wall or other solid object behind them.

   In addition, never allow anyone to walk behind a ULD when loading or unloading. If you should misjudge a distance and strike the ULD, they can be crushed and seriously injured.



3. No Riders – Only the driver is allowed on a forklift, unless it is equipped with a permanently mounted passenger seat equipped with a seatbelt. If someone wants a ride, just say no.

Never allow anyone to ride on the forklift blades, and never raise anyone on the blades unless you use an approved safety cage.

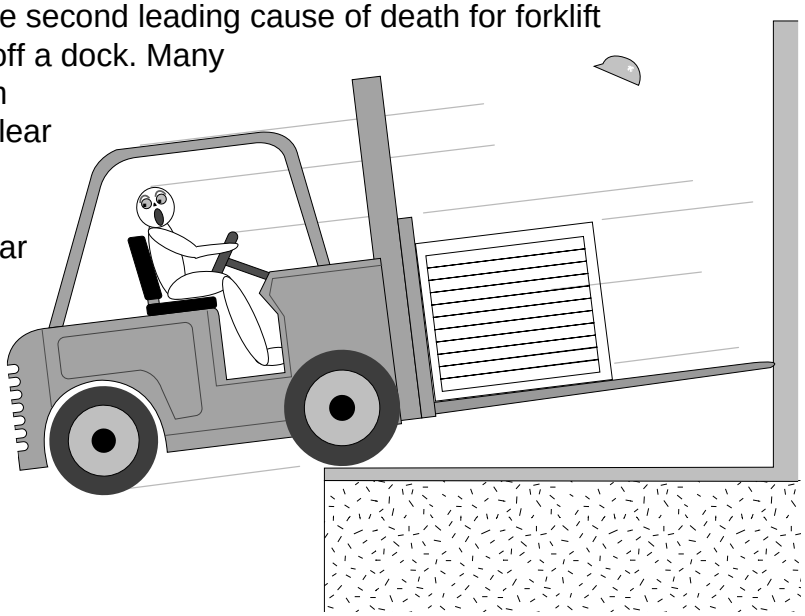


4. Watch the Edge – Truck docks are one of the most dangerous areas for forklifts.

Special - precautions must be taken when working in and around trucks and trailers. As you shall see now, special precautions must be taken when *no* trucks or trailers are present.

▲ Watch the Edge! – The second leading cause of death for forklift operators is from driving off a dock. Many deaths have resulted from operators trying to jump clear of the forklift and being crushed. Once again, the safest thing to do is to wear your seatbelt and…

▲ Watch the Edge!



5. **Closed Environments –** The only forklift safe to operate in a closed environment is an electric forklift because the battery does not consume oxygen or give off any fumes. The exception to this is when the batteries are recharging.

Load Stability

More freight is damaged by being raised and carried improperly than by any other cause. Freight falls off the blades, tumbles off skids, bounces from the stack, and gets crushed by forklift wheels. There are some general rules which will help you transport loads and prevent damages.

1. **Spread the forks to fit the load –** *One size fits all* only works with stretch socks. Forklift blades must be adjusted to fit the load. This maintains the proper balance. If the blades are too close together, the freight can easily fall off. Blades should be spread as wide as possible under a load to provide balance and stability.

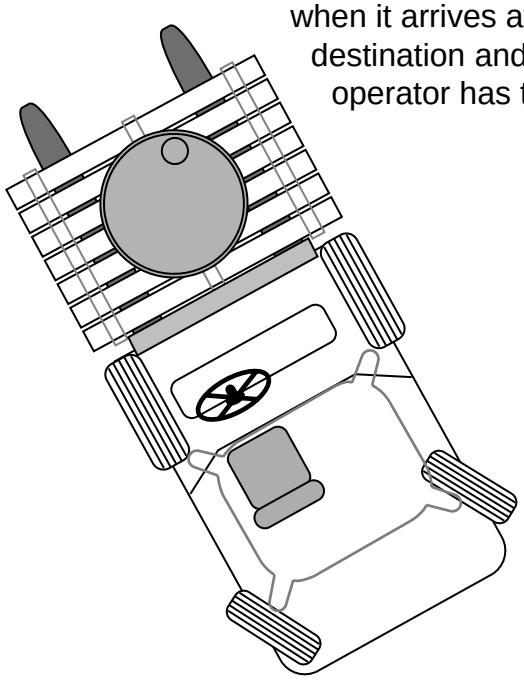
2. **Never lift unstable loads –** Improperly stacked freight will fall off the skid. It takes just as much time to stop and properly restack a skid before you first pick it up as it does to restack it when it falls off. The advantage is that there is much less danger of damaging cargo or injuring people by doing the right thing first.

3. **Raise the load just enough to clear obstructions –** Travel with the load as close to the ground as possible. The lower you can keep a load (as long as it does not drag on the ground or over obstacles) the more stable it is. When cargo is carried low to the ground, it is less likely to be bounced off the skid and under the forklift wheels.

4. **Loads should be picked up at the center of balance –** In the photograph to the right, the operator has engaged a load by driving directly under the center of the skid. Unfortunately, the load was placed on the skid incorrectly. This operator is risking a spill.

Here, the operator has engaged the same load by driving under the skid to one side. Not the preferred method; however, more of the drum's center of balance is over the blades. The operator has a better chance of getting this freight to its destination.

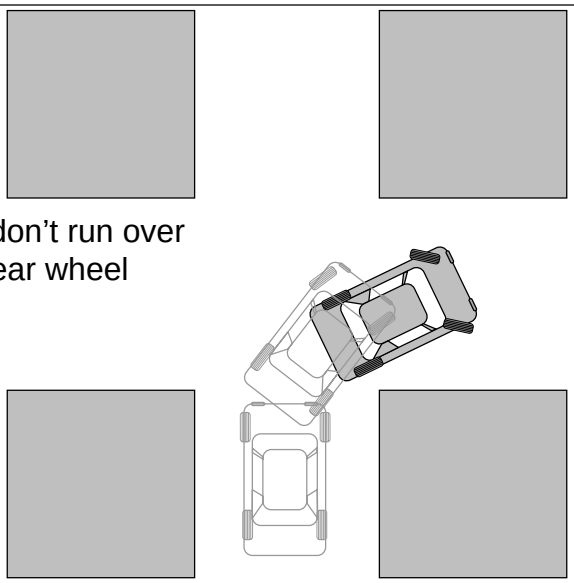
The **best way** for this load to be lifted is for the operator to park the forklift, move the load to the center of the skid, then transport it. Not only is the possibility of a spill reduced, the freight is stable when it arrives at its final destination and the next operator has to forklift it.



It takes less time to properly balance a load in the first place than it does to clean up a spill afterward.

Cross rough pavement or uneven surfaces, like railroad tracks diagonally. Go slowly, and the load will remain stable.

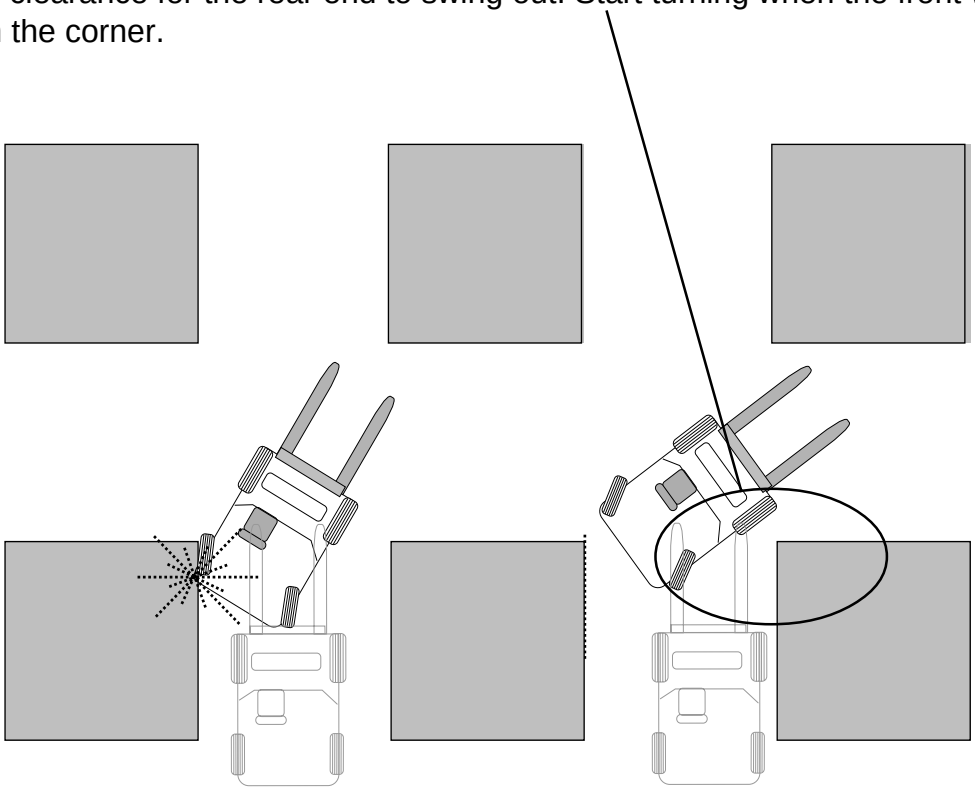
Maneuvering



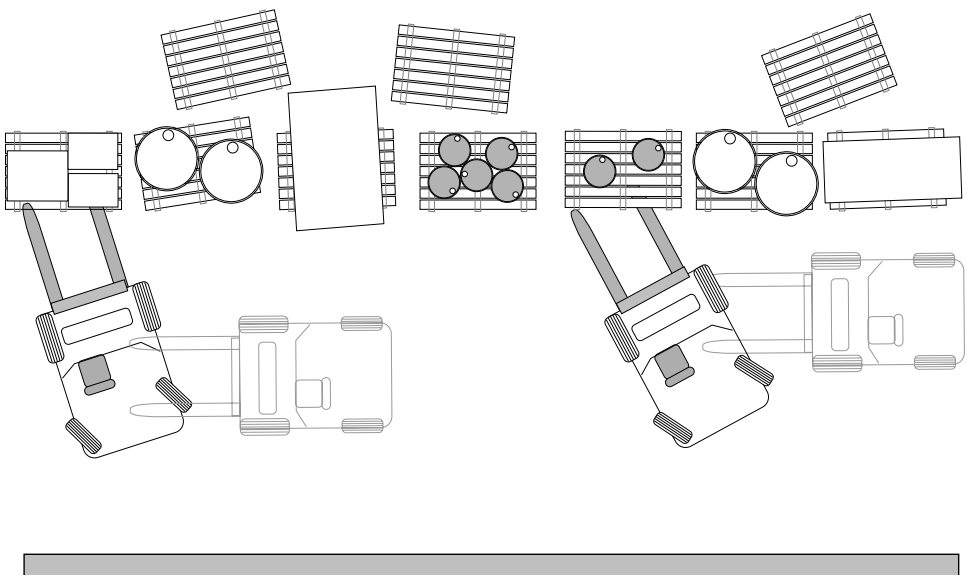
Driving a car around a corner is probably second nature to you. You instinctively know how far to enter an intersection before you begin turning the steering wheel. The front of the car turns, the back end follows around, you don't run over the curb, or hit pedestrians. Forklifts, with their rear wheel steering, feel and handle differently.

In a car, the best way to avoid problems is to begin cornering from the middle of the road. You gradually turn the front wheels when the middle of the car is even with the corner. When the rear wheels are even with the corner, you turn the front wheels the rest of the way.

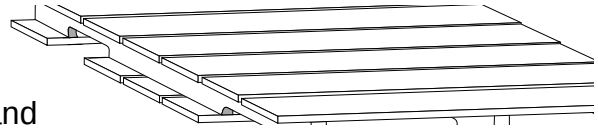
On a forklift, if you enter a turn from the middle of the aisle, the back end will swing wide, possibly hitting something. Begin the turn by hugging the inside of the corner. This will give you more clearance for the rear end to swing out. Start turning when the front wheels are even with the corner.



When turning to pick up freight, the procedure is slightly different. Begin the turn in the middle of the aisleway and cut the wheels sharply to slide the blades under the load. If you start the turn from the inside of the aisle, the sides of the blades will hit the cargo and the load will be pushed to one side.

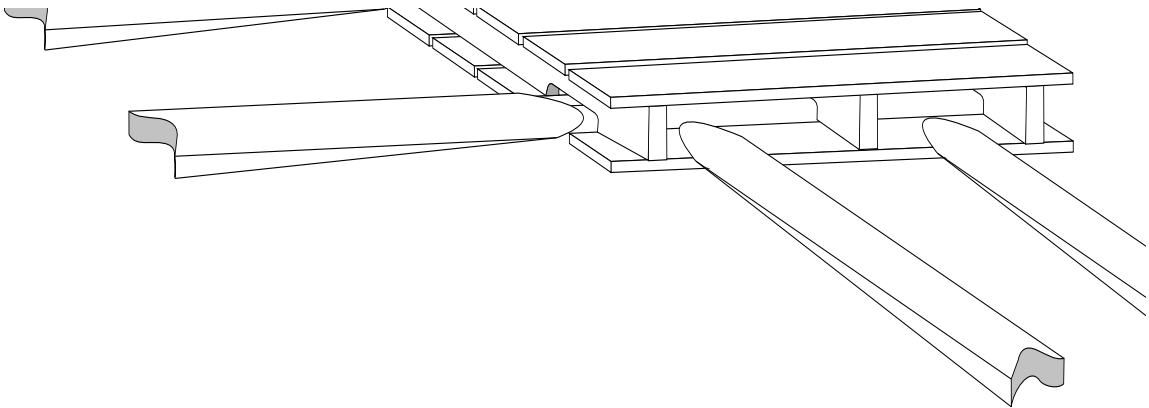


Skids



The large, flat, metal sheets we load on our aircraft are called *pallets*. The smaller, wooden objects we move freight around the warehouse on are called *skids*. They are useful for stacking and moving cargo and, provide some shoring under heavy pieces of cargo. The "slots" that the forklift blades slide into are called *tineways*.

Notice that if the blades on your forklift are adjusted properly, most skids can be picked up from either side.



Load Transportation and Handling

There are certain basic techniques involved in cargo handling. The single most important technique to expert forklift operation is *smoothness*. Gentle cornering, easy stops and starts, smooth lifting and lowering, and being aware of everything going on around you, all contribute to a **quality operation.** Each forklift has an individual "feel" to its controls. Be cautious with electric forklifts, they can move very suddenly when power is applied.

- **Lift and Tilt Controls –** Your forklift uses hydraulics to raise the load which provides a smooth initial movement when you first begin to raise or tilt a load.

- **Forklift Attachments –** There are many different material handling attachments used with forklifts. When used, the capacity plate **must** display the modified weight limitations listed for each attachment it is authorized to use.

  The most common are *barrel clamps* and *blade extensions*. Barrel clamps slide onto the ends of the blades and, when gently pressed against the side of a large barrel, close around the barrel and hold. This allows easy lifting and transportation.

  Blade extensions slide over the entire blade and extend's it's length. These can be useful when handling very large, light loads, such as empty ULDs.

Load Transportation and Handling (cont'd.)

To operate with maximum safety and to reduce damages:

- Use a guideperson whenever you have reduced visibility.
- Raise load to the minimum height necessary to safely transport. This is usually 3-4 in (7-10 cm) off the ground.
- Approach the load slowly with your forks parallel to the ground. Raise the load as level as possible. Tilt the mast back slightly to stabilize loads, if necessary.
- When driving on slopes, remember to keep the load uphill. Back *down* ramps and drive forward *up* them (as long as you can see around the load). When empty, keep the blades pointing downhill.
- After lifting a load from a stack, lower it as soon as possible. Do not travel with the load raised more than absolutely necessary.
- Approach with the load as low as possible when stacking one on top of another. Raise a load only when stacking. Avoid driving with it raised more than necessary.
- Drive in reverse wherever possible, especially when the load blocks your line of sight or there are people in the area.
- Travel slowly and smoothly with the load.
- Make sure the forks are the correct length for the job. They should be neither too long or too short.
- Adjust the forks for the best load balance.
- Travel at speeds which allow for safe stops.
- Stop before changing directions and sound the horn.
- The load is usually more stable if it is against the backrest. Remember, the forklift blades may extend out the back of the load and can damage other cargo when you set the load down.

Stay aware of the things going on around you. It is easy to concentrate so hard on the job in front of you that you forget about the people and cargo behind you.

Parking the Forklift

When parking the forklift, lower the forks to the ground, set the parking brake, and turn off the engine. Make sure the fork is not in the way of other traffic, blocking doors and fire exits.

If you are parking on the ramp, ensure the fork is not in the way of any aircraft operations or maintenance functions. Always ensure you park on a level surface. If you will not be operating the forklift again, remember to post-trip the equipment and fill out the Pre/Post Trip Form.

When parking the forklift, lower the forks to the ground, set the parking brake, and turn off the engine.