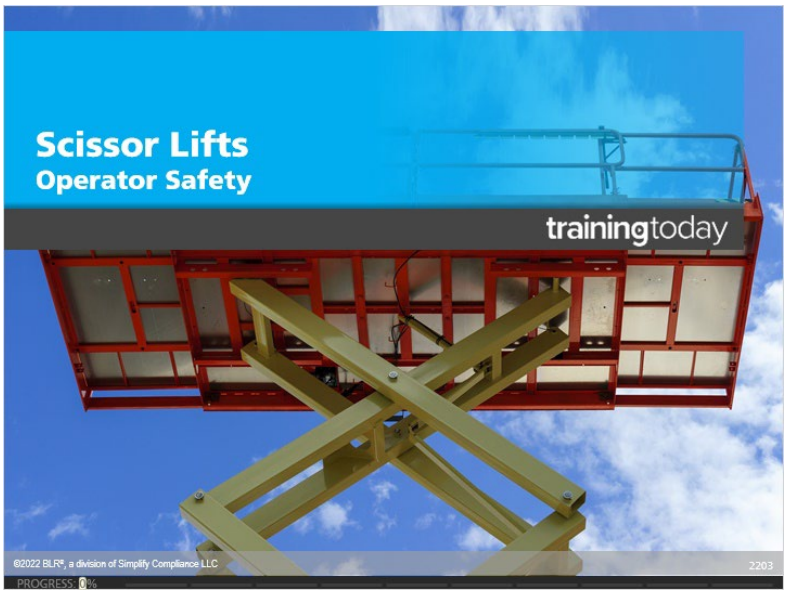
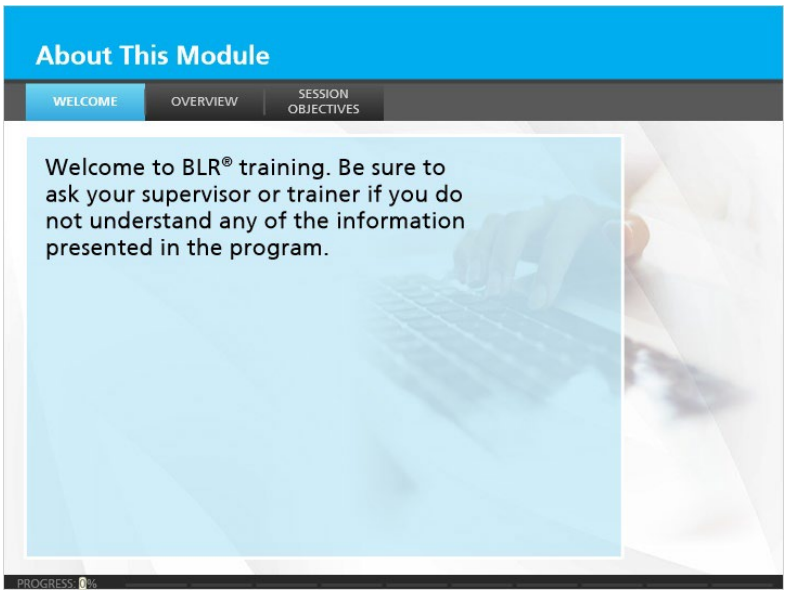
Scissor Lifts: Operator Safety

Introduction



About This Module



Welcome

Welcome to BLR® training. Be sure to ask your supervisor or trainer if you do not understand any of the information presented in the program.

Overview

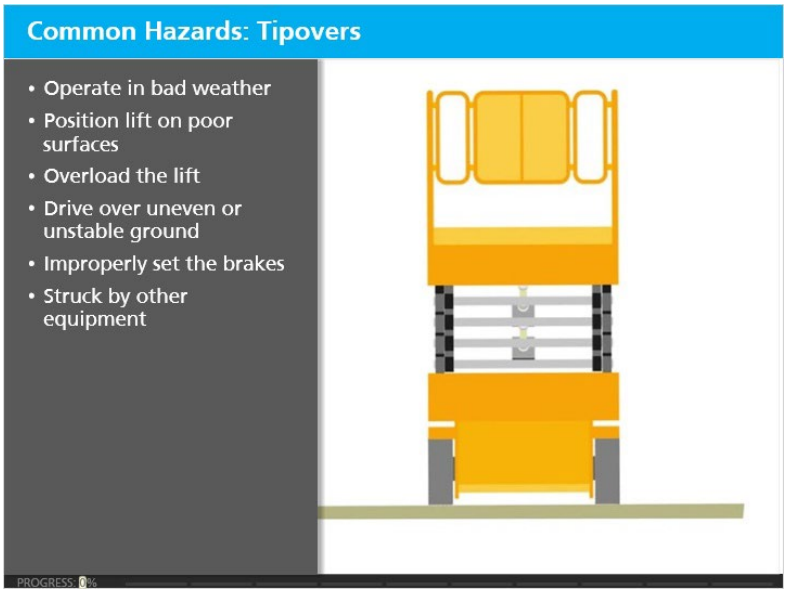
Today we're going to talk about how to safely operate scissor lifts. Although scissor lifts are regularly used to work at heights across a wide variety of industries, including construction, retail, manufacturing, warehousing, education, telecommunications, and entertainment, they can be extremely hazardous if operated improperly. Sadly, workers using scissor lifts are injured or killed every year because they were not trained to address common hazards, including those posed by tipovers, weather, equipment failure, and electrical wires. Fortunately, there are many precautions you can take as a scissor lift operator to minimize the risk of injury to yourself, your coworkers, and passersby.

Session Objectives

At the completion of this module, the participant will be able to:

- Recognize the hazards of operating scissor lifts;
- Identify common features of scissor lift equipment;
- Inspect scissor lifts and maintain them in a safe working condition;
- Demonstrate safe stabilization, positioning, and operation of scissor lifts;
- Lift loads, tools, and other work materials properly; *and*
- Prevent falls through safe work practices and by wearing the appropriate personal protective equipment, more commonly referred to as PPE.

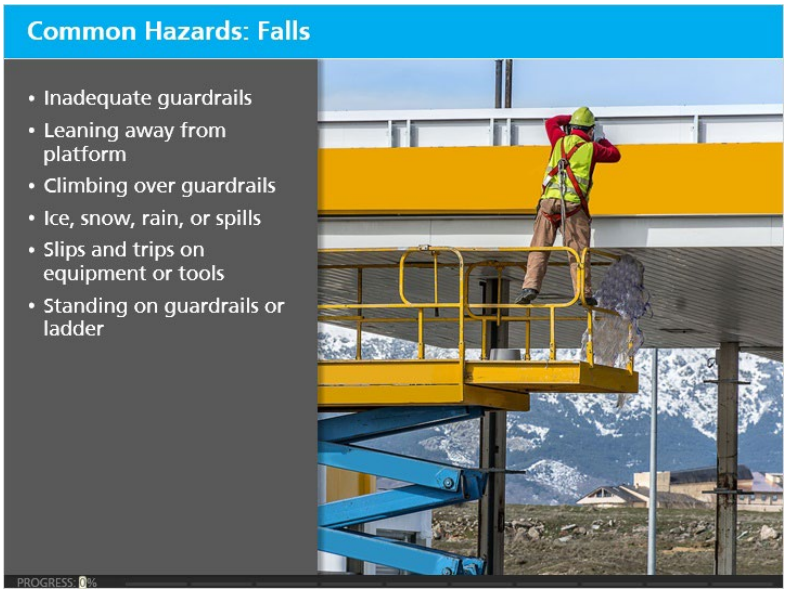
Common Hazards: Tipovers



Scissor lifts can be dangerous if they are operated by someone who is not familiar with the possible hazards. One common hazard of working with scissor lifts occurs when equipment tips over. Tipovers can occur if you:

- Operate the lift in unfavorable weather conditions, such as high winds, snow, sleet, hail, or rain;
- Position the lift on soft or unlevel surfaces or on weak utility covers, such as a sprinkler valve box;
- Overload the lift with heavy objects or too many passengers;
- Drive the lift over uneven or unstable ground while it is in an elevated position;
- Elevate the lift and improperly set the brakes; *or*
- Are struck by other equipment.

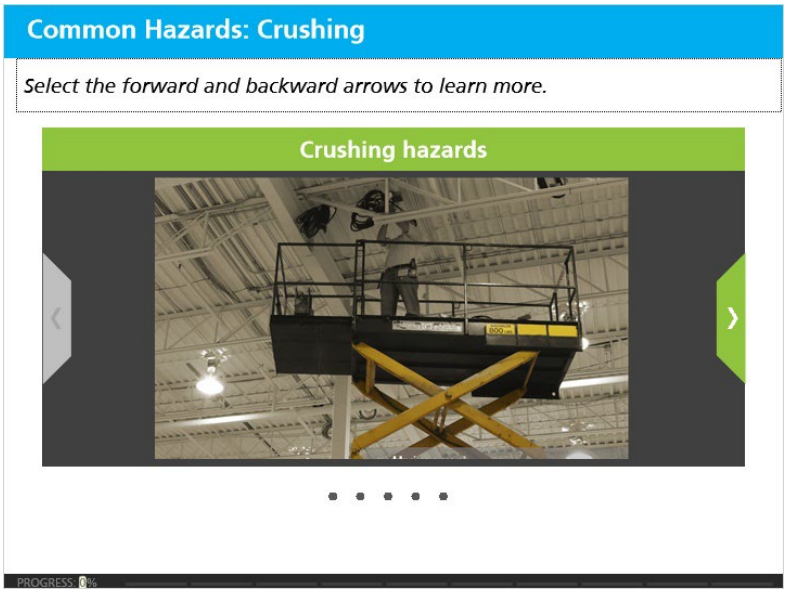
Common Hazards: Falls



Falls are another common scissor lift hazard and are the most frequent cause of scissor lift injuries. Falls can be caused by:

- Broken, missing, or damaged guardrails;
- Leaning away from the lift platform;
- Climbing over the guardrails;
- Ice, snow, rain, or spills on the lift platform;
- Slips or trips on equipment or tools used on the platform; *or*
- Standing on the guardrails or a ladder on the lift platform to gain more height.

Common Hazards: Crushing

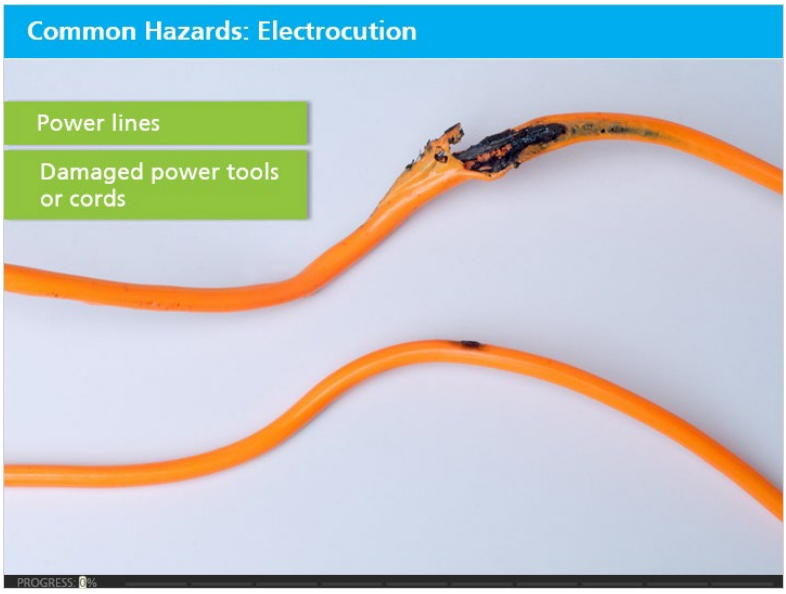


Scissor lifts also present crushing hazards similar to vehicles and other mobile equipment. In one tragic accident, a worker on a scissor lift was installing bolts on two overhead steel beams. The platform controls were not protected against unintentional operation, and the worker accidentally activated the elevation control. The platform elevated and the worker was caught between an overhead beam and the scissor lift's guardrail. As the platform continued to rise, the worker was fatally crushed.

Select the forward and backward arrows to learn how similar injuries can occur:

- If a limb or other body part gets caught between the scissor arms or between the top rail and an overhead structure;
- If the platform controls are accidentally operated;
- When a moving scissor lift is near a fixed object;
- When a moving vehicle and a scissor lift are operating closely; *or*
- When a scissor lift passes under a fixed object, such as a door frame or a support beam.

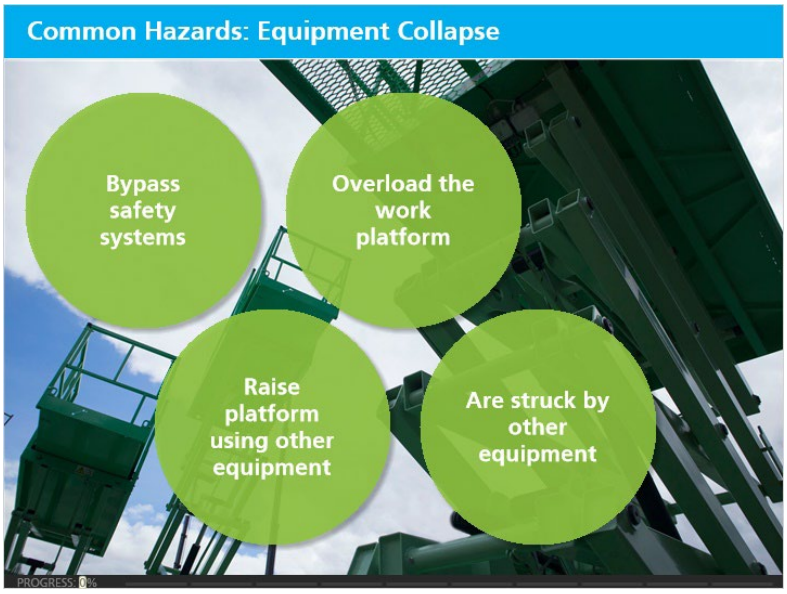
Common Hazards: Electrocution



You should also be aware of electrocution hazards when operating scissor lifts.

- If a scissor lift is positioned too close to energized power lines, the lift or worker can contact the power lines or electricity can arc from the power lines to the scissor lift or worker, causing electrocution and thermal burns.
- Because metal frame scissor lifts are conductive, power tools and cords that have damaged insulation can electrify the entire lift. This poses a risk of electrocution to the worker holding the tool or cord, any workers on the lift, and anyone who comes in contact with the lift at a height or on the ground.

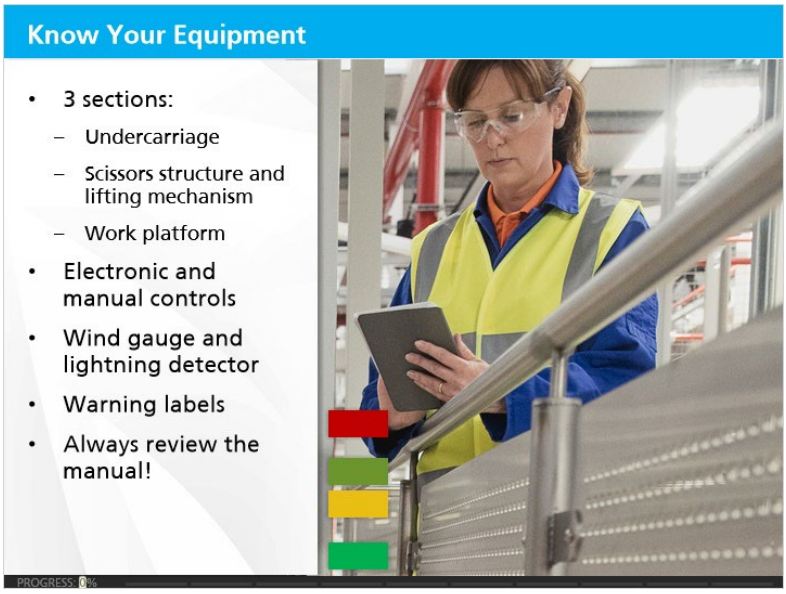
Common Hazards: Equipment Collapse



Finally, although rare, scissor lifts can collapse if you:

- Bypass the safety systems;
- Overload the weight on the work platform beyond the manufacturer's recommendations;
- Raise the work platform with equipment other than the scissor mechanism, such as a forklift; *or*
- Are struck by other moving equipment on the worksite.

Know Your Equipment



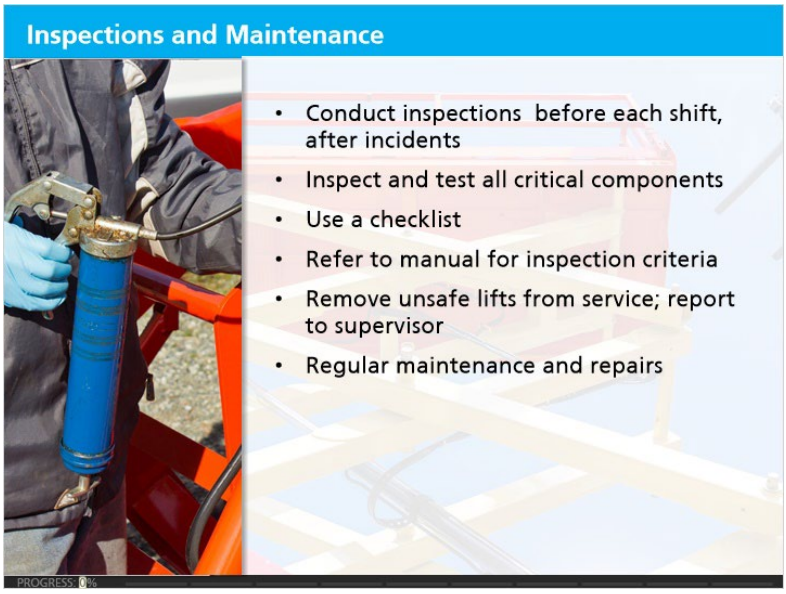
One of the best ways to avoid these hazards is by familiarizing yourself with your scissor lift equipment before you begin operation.

- Scissor lifts have three main sections. The undercarriage, which houses the propulsion and wheels, serves as the base for the scissor mechanism. Some scissor lifts are equipped with counterbalance weights or legs called outriggers that extend to provide greater stability when the platform is elevated. The next section includes the scissors structure and lifting mechanism, which can be hydraulic, pneumatic, or mechanical. This lifting mechanism moves the work platform straight up and down using crossed beams that function in a scissor-like fashion, and it can be powered by gasoline, diesel, or electricity. On top is the work platform, which includes guardrails and a gate for entry.
- Controls are found in both the bottom and top sections of the lift. Make sure you know where all the controls are located and how to operate both the electronic controls and any manual emergency backup systems. Controls should be easily accessible and clearly marked as to their function, and the lower controls should be able to override the upper controls. Never operate the lower-level controls without the permission of workers on the platform unless there is an emergency.
- Your scissor lift may be equipped with a wind gauge, called an anemometer, and it may also have a lightning detector. Be sure you understand how to read both of these indicators before you operate the lift.
- The scissor lift will also be labeled with warning signs or placards. Always read these labels, which include information about the lift's maximum intended load, including the rated number of occupants; the maximum platform height; the make, model, and

serial number; and the manufacturer's name and address. The safety alert symbol, which depicts a triangle containing an exclamation point, is typically used to signal potential personal injury hazards. Always follow these safety messages to avoid injury or death. Language written or indicated in red is typically used to alert you to the presence of an imminently hazardous situation that *will* result in death or serious injury if not avoided. Orange is used to indicate a potentially hazardous situation that *could* result in death or serious injury. Yellow, when used in conjunction with the safety alert symbol, is used to signal a potentially dangerous situation that may cause minor or moderate injury. Yellow used without the safety alert symbol indicates a situation that may result in property damage. Green is used to indicate operation or maintenance information.

- Always review the manufacturer's manual and operating instructions before you operate a scissor lift. The manual is the best resource for safety information about your specific scissor lift equipment. Pay particular attention to the weight limits, instructions for raising and lowering the lift, and instructions for moving and positioning the lift.

Inspections and Maintenance

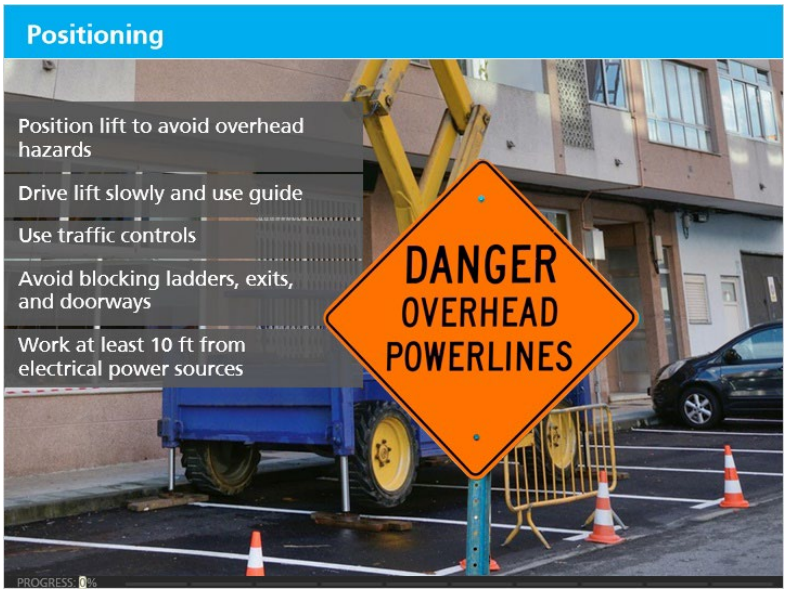


Before operating the scissor lift, you also need to conduct a visual inspection.

- To be effective, these inspections must occur before each work shift and after any incident that could affect the structural integrity of the equipment. Skipping an inspection could be life threatening.

- To conduct a scissor lift inspection, walk around the lift to make sure it is in good working order. Check all safety devices, emergency controls, fall protection equipment, and other critical components. Inspect and test all controls on both the ground and the platform before each use to be sure they are operating correctly. Make sure controls are protected against inadvertent operation. Look at the tires to make sure they are not damaged or in need of repair, and verify that the emergency stop button and emergency lowering device, if present, are appropriately labeled and functioning. Check all guardrails, midrails, chains, bars, and gates to make sure they are in place and in good condition. Verify that brakes, once set, will hold the scissor lift in position. Warning labels must be legible. Make sure that there are no air, hydraulic, or fuel system leaks; cracked welds; or loose or missing parts. If the scissor lift will be used outdoors, check that the wind gauge and lightning detector, if present, are functioning properly. If the lift is equipped with outriggers, inspect them for wear or damage.
- You may want to use a checklist to ensure that all lift components are reviewed during each inspection and to document your inspection for other operators.
- Because each make and model of a scissor lift is different, the inspection criteria may differ depending on the manufacturer's recommendations. The manufacturer may also recommend additional periodic inspections, such as on a quarterly or annual basis. Refer to the operating manual for the specific criteria for your lift.
- If you discover that any piece of equipment is defective, damaged, or unsafe, take the lift out of service immediately, tag it or lock the controls to make them inoperable, and report it to your supervisor. If the scissor lift has a key, secure the key away from other potential operators.
- Scissor lifts should also receive regular preventive maintenance to ensure that they are in good condition. Repairs should be made as needed according to the manufacturer's recommendations. Using substitute parts or alternative repair methods could result in the equipment failing and lead to an incident. Before making any modifications to a lift, you must consult and get written permission from the manufacturer.

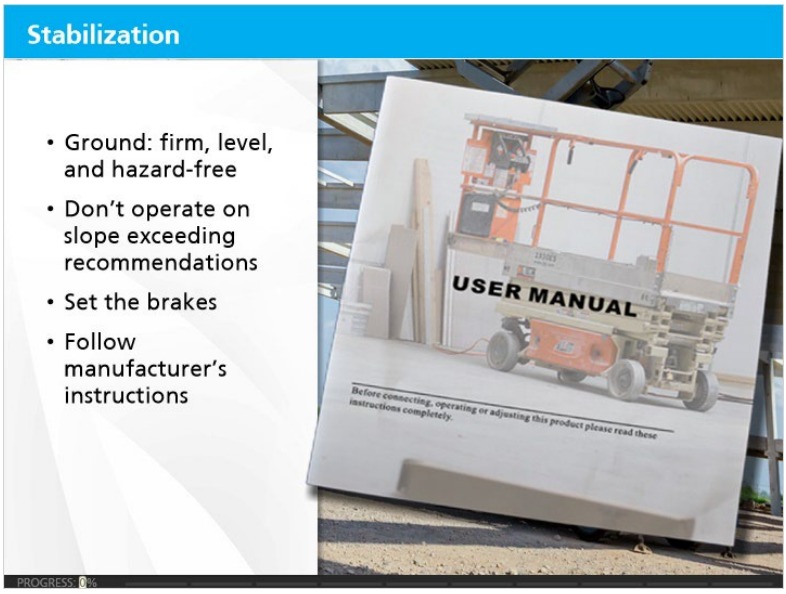
Positioning



Once you have completed your equipment inspection and it's time to operate the scissor lift, it's critical that you position the lift safely to protect yourself and others from crushing hazards, tipovers, and electrical hazards.

- Before operating the lift, conduct a work area inspection and look for overhead obstructions such as branches, building overhangs, door frames, beams, and utility structures, and position the lift to prevent being struck or crushed by these hazards. Never position yourself between an overhead hazard and the guardrail.
- Drive the lift slowly, and communicate with a ground guide when operating or moving the scissor lift around the worksite to help you avoid obstructions, pedestrians, and other vehicles.
- Use traffic controls such as cones, barricades, and signage around the scissor lift to prevent other workers, vehicles, and passersby from getting too close to the work zone.
- Avoid blocking ladders, exits, and doorways. If you must block one of these areas, have a coworker on the ground notify others and assist with exiting should an emergency occur.
- If you are working outside, make sure the lift is at least 10 feet away from electrical power sources like energized power lines and transformers. The higher the voltage of the electrical power source, the further away you will need to be. If your job task requires work near an electrical source, you must have the required electrical training, appropriate PPE, and an approved insulated lift.

Stabilization



You also need to stabilize the scissor lift before you begin operation to prevent tipovers and collapse.

- As part of your work area inspection, make sure that the ground or surface where you will be operating the scissor lift is firm and level and does not have any ground depressions, pits, holes, drop-offs, debris, loading dock areas, or other potential hazards. Never operate a scissor lift on weak utility covers like sprinkler valve boxes. Inspect the path to be traveled for extension cords, tools, or other obstructions before moving the lift.
- Do not operate a scissor lift on a slope, grade, or ramp that exceeds the manufacturer's recommendations.
- Remember to set the brakes before raising the lift.
- Follow the manufacturer's instructions for operating the scissor lift vertically and while in transit. Never exceed the vertical reach limits, and keep in mind that some lifts are not designed to move horizontally when the platform is in an elevated position.

Fall Protection

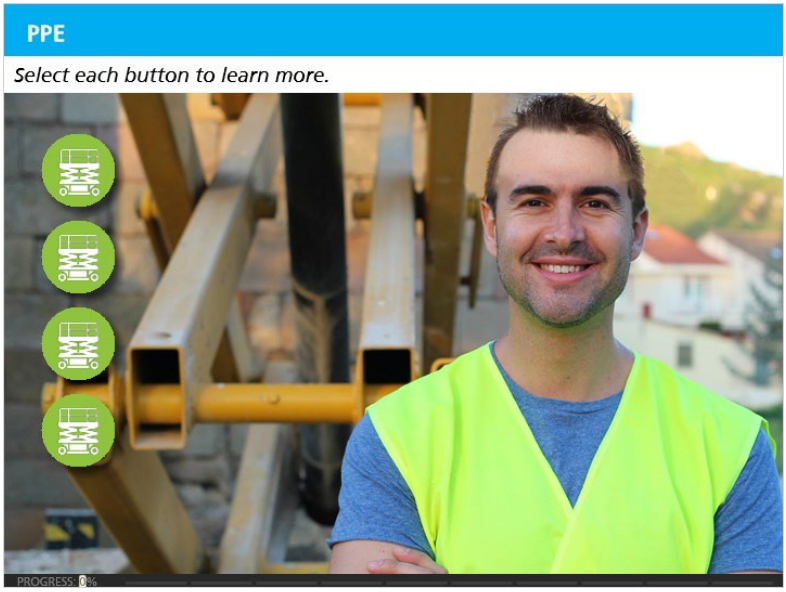
As we mentioned earlier, falls are the most common cause of scissor lift injuries and fatalities. For that reason, it's important that you understand your fall protection equipment and follow safe work practices.

- All scissor lifts are equipped with a guardrail system, which is the primary method of fall protection. Before operating the scissor lift, check that the guardrails are in place and in good condition. Never use a lift with missing, broken, or damaged guardrails. Close and secure the guardrail gate before elevating the platform.
- Because of the guardrail system, OSHA does not require you to wear personal fall protection, such as safety harnesses and lanyards, unless the guardrails are inadequate; your work tasks require you to remove a gate or guardrail or to leave the work platform more than 10 feet above a lower level; or the operating manual recommends additional fall protection. However, some employers may require the use of personal fall protection for other reasons. If you are using personal fall protection, anchor the system to the work platform if anchorages are provided or to an adjacent building. Never anchor fall protection to a guardrail.
- When working on an elevated platform, do not sit or stand on the guardrails. Never climb any object, ladder, plank, or guardrail to gain greater height, and do not climb from the platform to an adjacent building.
- Position the scissor lift close enough to your work to keep the work within easy reach so you can avoid leaning or reaching too far away from the lift.
- Keep the work platform as clear and uncluttered as possible. Ice, snow, rain, or liquids on the platform can cause slips and falls, and equipment, tools, and other materials

can create tripping hazards.

- Never move a scissor lift with an elevated work platform without the express consent of the workers on the platform. If the scissor lift is designed to be moved while extended, make sure each worker on the lift is aware of the move before it begins.

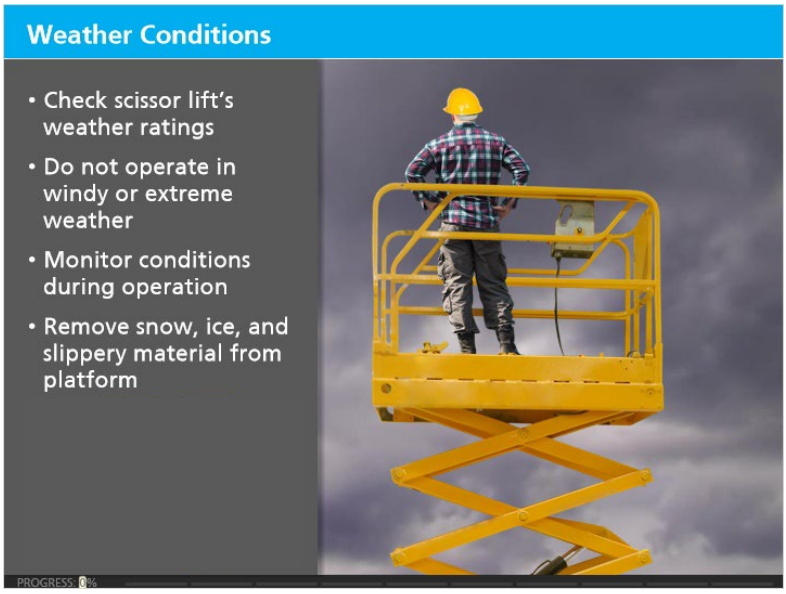
PPE



Your employer will conduct a hazard assessment for operating scissor lifts at your worksite to determine what PPE should be required. Select each button to see what, at a minimum, you will be required to wear:

- A hard hat;
- Safety eyewear;
- Safety toe boots or shoes;
- Personal fall protection if the lift's guardrails are inadequate or if your tasks require you to remove a gate or guardrail or leave the platform.

Weather Conditions



If you're operating a scissor lift outdoors, be vigilant about weather conditions.

- Be sure your scissor lift is rated for outdoor use, and review the operating manual for the lift's weather-related specifications. Scissor lifts are generally limited to wind speeds below 28 miles per hour (mph).
- Do not operate in windy or extreme weather conditions, including when there are weather warnings in effect for winds in excess of 28 mph or thunderstorms or when lightning is observed. You should also use caution in rain, snow, sleet, or hail.
- Regularly monitor the weather conditions as you operate and work on the scissor lift. Pay attention to your wind gauge and your lightning detector if your lift has them. If you are concerned for your safety at any time, lower the lift, stop your work activities, and notify your supervisor.
- Never work on a scissor lift platform covered with snow, ice, or other slippery material except as needed to remove it.

Handling Materials

While operating a scissor lift, make sure you handle tools, equipment, and other materials safely to prevent tipovers, electrocution, and injuries to people below.

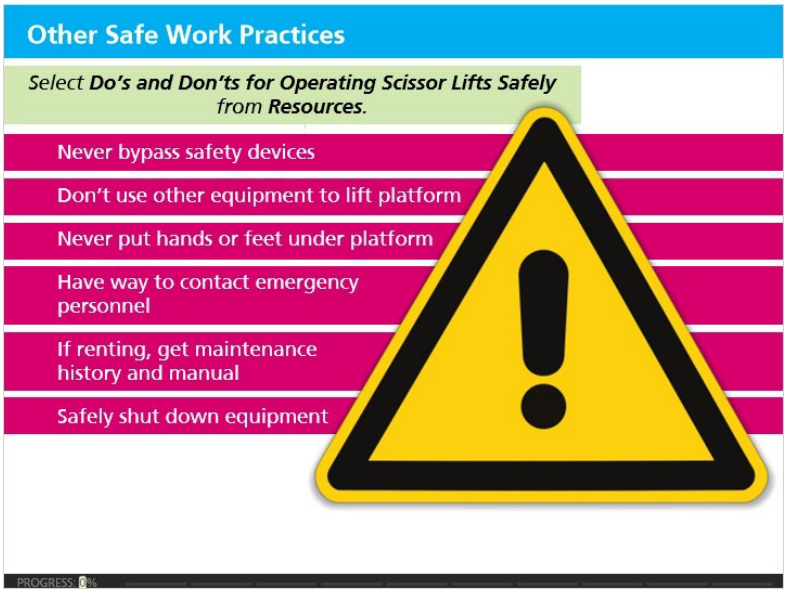
- Never load the work platform beyond the manufacturer's maximum rated capacity. Extra weight can cause the lift to become top heavy and tip over or collapse. Consult the scissor lift's warning label or manual for the specific load rating allowances, and make sure you consider the weight of all personnel on the platform as well as any tools or equipment you will be using.
- Do not carry objects larger than the platform. Scissor lifts are not designed to hold large, heavy loads that extend beyond the edges of the platform. As a scissor lift extends its arm, this type of load will cause the lift to become unbalanced and tip over. For the same reason, never attach or rig fixed or overhanging loads to any part of the lift, and never use a scissor lift as a crane or lifting device.
- To protect workers and pedestrians below the lift, do not allow anyone to walk under awkward or heavy loads being lifted to the platform. Use traffic controls to prevent access to the work zone if necessary.
- Because metal frame scissor lifts conduct electricity, only use electrically powered equipment with ground-fault circuit interrupters, or GFCIs, especially when working outdoors or in wet conditions. Make sure all power cords used on the scissor lift are properly grounded and approved for outdoor or wet conditions when necessary, and inspect the cords for wear before and during your work. Do not hang equipment from or set equipment on power cords, which could damage them, and do not place cords where they could become a tripping hazard. Never mix and match two-prong extension cords with three-prong tools or equipment.

Falling Objects

Though not a hazard for those operating and working on a scissor lift platform, falling objects are a significant danger to people walking below. Tools, equipment, ice, and other materials can fall from work activities on the platform, potentially injuring others. To protect your coworkers and pedestrians, remember to follow these safe work practices (*Select each tab to learn more*):

- Place tools and other equipment or materials away from the edge of the platform, and make sure that they are secured inside of the scissor lift.
- Hand tools or equipment to other workers—Do not throw or toss materials across the platform or to the ground below.
- Make sure all operators and workers on and below the scissor lift are wearing hard hats.
- Your scissor lift may be equipped with toeboards, screening, or paneling to prevent objects from falling. Canopies and nets may also be used at your worksite to secure dropped objects.
- Where there is a danger of tools, materials, or equipment falling from the lift platform, you may want to create a protective work zone below the lift to prevent workers and passersby from entering the area.

Other Safe Work Practices

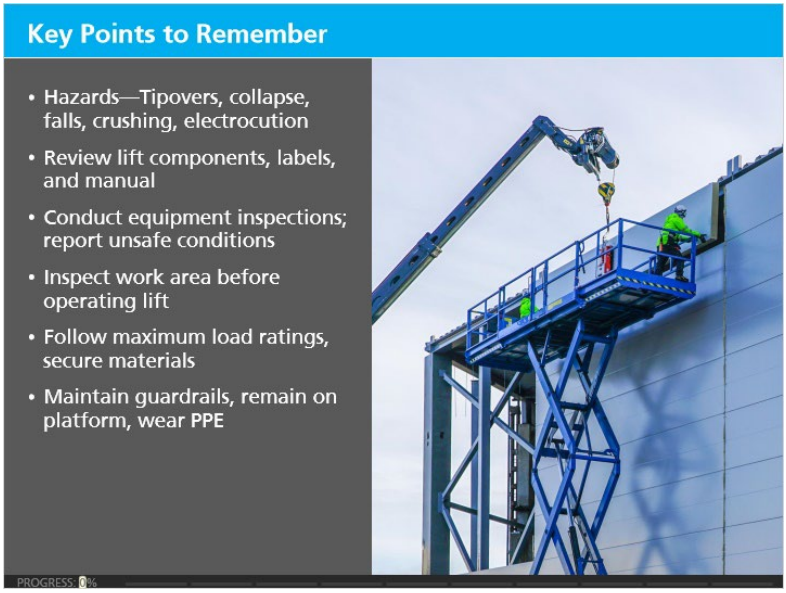


Here are some other important safety tips to keep in mind when operating a scissor lift:

- Never bypass hydraulic, mechanical, or electrical safety devices. You would be putting yourself and others in danger of severe injury and death.
- Never use equipment other than the scissor mechanism, such as a forklift, to raise the work platform, and do not jump on the platform, drive the lift recklessly, or engage in other risky behaviors when operating the lift.
- Never put your hands or feet under the platform of the scissor lift unless you need to perform maintenance. If lift maintenance is part of your job duties, disconnect the power and insert safety bars to prevent the platform from collapsing.
- Always make sure that you have a way to notify emergency personnel if there is an injury or if you need rescue.
- If you are renting a scissor lift from a supply center, make sure that a detailed maintenance check is performed first. Get the maintenance history of the lift before operating it, and be sure to ask for a copy of the operator's manual. It's a common practice for rental companies to provide you with a complete walk-around of the lift and brief training.
- Once you are finished operating a scissor lift, safely shut down the equipment by placing the controls in neutral and idling the engine to gradually cool it. Place the platform in the stowed position and turn off the power. Take any necessary steps to prevent unauthorized use of the lift, such as by securing the keys or preventing access to the equipment.

For a review of some of the information we've just gone over, select **Do's and Don'ts for Operating Scissor Lifts Safely** from **Resources**.

Key Points to Remember



We've learned a lot about how to safely operate scissor lifts today. But before we end, let's review some of the key points we've covered during this session.

- When operating scissor lifts, be alert to tipover, equipment collapse, falling, crushing, and electrical hazards.
- Minimize these hazards by familiarizing yourself with the lift's components, controls, weather gauges, warning labels, and operating manual.
- Conduct visual equipment inspections before each shift and after incidents, and report any unsafe conditions to your supervisor so that the lift can be properly maintained.
- Inspect your work area for overhead obstructions, firm and level ground, electrical power sources, and suitable weather conditions before operating your scissor lift so you can address these situations safely.
- Follow the manufacturer's maximum load ratings and secure work materials inside the work platform.
- Protect yourself from falls and other hazards by making sure your guardrail system is in good condition, remaining on an uncluttered work platform, and wearing any required PPE, such as personal fall protection, a hard hat, safety eyewear, and safety toe boots.

This concludes today's training session on Scissor Lifts: Operator Safety.

Please be sure to go back and review any information that is not completely clear. If you still have questions, ask your supervisor or trainer.