

FRONT END LOADER SAFETY... **HOW THEY WORK AND THEIR HAZARDS**

COURSE OUTLINE

- **It's important to fully understand the machines that you're working with before you operate them.**
 - The more you know about how they function, the better you can identify the hazards that you can encounter when using them.
- **Front-end loaders get their name from the large bucket that is attached to the "front-end" of the machine.**
 - They are very powerful and versatile pieces of equipment.
- **Front-end loaders can have a number of uses on a construction site. They can...**
 - Handle bulk materials.
 - Demolish concrete and other material.
 - Dig, excavate and level soil.
- **In many cases, they are used to move materials like gravel, dirt, and rocks.**
 - And while they are particularly popular with construction companies, they are also used in agriculture as well as material handling industries.
- **Front-end loaders are especially useful in projects that require you to transport a lot of material.**
 - Their maneuverability makes them a good choice for projects that take place within limited space as well.
- **A front-end loader has four main components...**
 - Cab.
 - Bucket.
 - Hydraulic cylinders.
 - Front and rear axles.
- **The cab is where you'll find the...**
 - Driver's seat.
 - Controls.
 - Roll Over Protective System (ROPS).
 - Falling Object Protective System (FOPS).

- **ROPS and FOPS are reinforcements that are built into the cab.**
 - They provide you with protection from falling objects or the impact of a rollover accident.
 - Most are made from steel or aluminum.
- **The bucket is attached to the front of the loader and is used to dig, haul, and transport materials on a jobsite.**
- **Hydraulic cylinders are often referred to as the “arms” of the machine.**
 - They are what lifts and tilts the bucket.
- **The front and rear axles are specially built to handle extreme loads.**
 - They attach the wheels to the loader.
- **Some front-end loaders also have “forks” that can be used instead of a bucket to lift solid objects like pallets and logs.**
- **But “forks” aren’t the only attachment you can add to a front-end loader, which makes them one of the most versatile machines on a jobsite. You can also attach...**
 - Push plates.
 - Brooms.
 - Grapples.
 - ... and augers.
- **Some of the most common front-end loader accidents on construction sites are “tip overs”.**
 - When a front-end loader falls over, it doesn’t just put the operator in danger, but any workers who are in the vicinity as well.
- **“Tip over” (or “rollover”) accidents happen when a front-end loader becomes unstable.**
 - To prevent this, you need to pay attention to the “ground conditions” you’re working on, and the front-end loader’s movement and capacity.
- **Potholes, debris, and uneven surfaces can jeopardize a front-end loader’s stability.**
 - So you should always survey your site before you start running a loader on it, and do what you can to avoid poor conditions.

- **Never rush.**
 - Moving too fast or suddenly can also cause a loader to lose its stability.
- **You need to be careful not to overload a front-end loader, as well.**
 - So you need to know both its “tipping capacity”, and its “rated operating capacity”.
- **The “tipping capacity” is the weight of the load that will cause the front-end loader to tip over in perfect conditions.**
 - But since the conditions on a construction site are rarely perfect, the “rated operating capacity” is really the heaviest load you should try to lift.
 - Typically, it’s about half of the “tipping capacity”.
- **You can find this information in the operator’s manual and on labels inside the cab.**
 - Make sure you’re familiar with the front-end loader’s limits before you start operating it.
- **Remember, attachments will affect the machine’s center of gravity in different ways and can also have a different load capacity.**
 - So be sure to read the operator’s manual for every attachment you work with as well.
 - Always use extra caution if it’s your first time using an attachment.
- **Working on a slope makes the risk of tipping over much higher.**
 - If you have to use a front-end loader on a slope, you should always travel “low and slow”.
 - Keeping the bucket low to the ground lowers a loader’s center of gravity and makes it less likely to tip over.
- **When you’re carrying a load on a slope, remember to travel forward uphill and backward downhill.**
 - The heaviest part of the machine should always be pointed uphill.
- **If your front-end loader does start to tip, do not try to jump from the cab.**
 - More people are killed trying to escape tipping accidents than from the accidents themselves.
 - Instead, make sure your seatbelt is still securely fastened, and stay where you are until help arrives.

- **The best way to stay safe while operating a front-end loader is to know what hazards you could encounter, and how to avoid them.**
 - Even though loaders are great tools, they can become very dangerous if they're in the wrong... or unprepared... hands.
- **Some of the most common hazards associated with operating front-end loaders include...**
 - “Struck-by” accidents.
 - “Crushing”.
 - “Collisions” with other vehicles and structures.
- **“Struck-by” accidents occur when a front-end loader or its load hits you or a coworker.**
 - This can lead to serious injuries, and in some cases even be fatal.
- **When you are operating a front-end loader, you always need to be aware of your surroundings.**
 - If you spot someone in your path, stop immediately.
 - Don't start moving again until they are completely out of your way.
- **If you are working anywhere near a front-end loader, you should...**
 - Wear a high visibility vest.
 - Know where the loader is at all times.
- **Following these rules can also help you avoid “crushing” accidents.**
 - These occur when you or a coworker are “run over” or “pinned against” something by a loader.
 - They can be even more catastrophic than a “struck-by” accident.
- **“Crushing” typically happens when a loader is moving in reverse.**
 - So if you are going to be backing up, always look around you and sound your horn before starting off.
- **If your front-end loader has a “backup alarm”, make sure that it's working and can be heard over the noise of your jobsite.**

- **Similarly, when a front-end loader operator isn't paying attention or doesn't have a clear view of their path, it can lead to collisions with other vehicles or structures.**
 - So when you're operating a loader, move slowly and carefully around the jobsite.
 - Remember that loaded equipment always has the right of way.
- **Be especially careful when dealing with overhead or underground utilities.**
 - Hitting an underground gas, water, or electrical line, or an overhead powerline, can be disastrous.
- **You should mark their locations before you start digging and stay away from them as much as possible as you work.**
 - You can also consult databases like the Department of Transportation's National Pipeline Mapping System (NPMS) to find information about gas and water lines, as well as hazardous liquid lines around your jobsite before you start a project.
- **If the front-end loader you're operating does come in contact with power lines, stay inside.**
 - As long as you remain in the cab, the wires can't touch you, so the current will flow through the loader itself.
- **Getting out of the cab could cause the current to change course and flow through you instead.**
 - So stay put, stay calm, and call for help.
 - The only time you should try and get out of the cab is if the loader catches fire.
- **If you see a front-end loader come into contact with power lines while you're on the ground, do not approach it.**
 - This will only put you at risk, too.
 - Instead, talk to the driver by phone or radio if you can and tell them to stay where they are.
 - Then, call for help.

*** * * SUMMARY * * ***

- **A front-end loader's major components are the cab, bucket, hydraulic cylinders, and front and rear axles. It can also use attachments like pallet forks in place of the bucket, to lift solid items.**
- **Loaders are often used to handle bulk materials, demolish structures, and for digging, excavating and leveling soil.**
- **When you are operating a front-end loader, you need to know its "tipping capacity" and its "rated operating capacity" so you don't "overload" it.**
- **"Tip overs", "struck-by" and "crushing" accidents as well as "collisions" with other vehicles are all potential hazards of working with front-end loaders.**
- **Now that you understand how front-end loaders work, and the hazards you can encounter when using them... you and your coworkers can go home safe at the end of every day.**