

Forklift Operator and Supervisor Training

# FORKLIFT SAFETY TOOLKIT



# Know Your Responsibilities

Use these resources to help you understand your legal obligations and responsibilities.

Employers, Supervisors, and Forklift Operators must know and comply with laws and standards for forklift operations in their geographic region, including training and certification requirements.

## Laws and Standards

Below are some links to begin your journey to learn the laws and standards for your geographic area.

### Canada

[Occupational Health and Safety \(OH&S\)](#)

- Writes basic legislation



Each Province Ministry of Labor creates its own set of laws and fines violators based on those provincial laws.

[CSA Group](#)

- Creates standards for Canadian forklift operations
- CSA standards align with American National Standards Institute (ANSI) standards
- Provincial laws mirror CSA standards



Canadian workers must follow Canadian CSA B335 standards.

### United States

[Occupational Safety & Health Administration \(OSHA\)](#)

- Writes labor laws
- Fines violators



Some states and territories have their own OSHA-approved workplace safety and health programs.

[American National Standards Institute \(ANSI\)](#)

- Writes the most up-to-date standards for the design, safe use, and training requirements for forklifts
- These standards are not laws, but OSHA can fine employers who violate ANSI standards (B56.1 & B56.6)



OSHA references ANSI in several codes governing our industry:

- CFR 1910.178 for general guidance

# Know Your Responsibilities

Use these resources to help you understand your legal obligations and responsibilities.

## Responsibilities by Role

Everyone must work together to promote safety and compliance with laws and standards.



- Provide a work environment that meets all legal requirements and standards
- Empower the Supervisor to enforce laws and standards
- Ensure the Operator is trained and competent to operate the forklift



- Enforce that the Operator is trained and authorized to operate each assigned forklift
- Choose the right forklift for each job
- Inform the Operator of any job site requirements, including potential hazards
- Monitor the Operator's performance to ensure laws and standards are followed



- Meet the training, authorization, and familiarization criteria to operate a forklift
- Operate each forklift safely
- Identify and report hazards
- Report all accidents as directed

## Training and Certification

Employers must provide Operators with the necessary training, authorization, and familiarization before they operate a forklift. Supervisors must be qualified to supervise Forklift Operators.

**What does Familiarization include?** Each machine is different. A qualified person must familiarize an Operator with a specific make or model before the Operator can use it. This includes:

- Locate the manuals
- Explain the function of each safety device
- Discuss specific warnings and instructions
- Review operating characteristics specific to the make and model
- Explain control functions specific to the make and model



Operators must review the Operator's Manual and job site policies prior to operating a forklift. Be thorough during the Familiarization process. It will save you time and may save your life.

## Recertification

Operators and Supervisors must renew their forklift certification every 3 years. Some provincial laws require renewal prior to 3 years. Operators may be required to go through retraining or additional training prior to the expiration.

# Choose the Right Forklift for Each Job

Use this worksheet to assess your project needs and determine the right type of forklift for each job.

To complete each project safely and efficiently, you must choose the right forklift for each job. To choose the right forklift, you must:

- Determine your project needs
- Compare the capabilities of different types of forklifts to your project needs



You will need to consider different factors for different jobs. Never choose a forklift just because it is easily accessible or because you have used it before.

## Determine Your Project Needs

Answer these questions to determine what you need to consider when choosing a forklift for a project.

Define the Work	Notes
What material are you lifting?	
How high do you need to land the load?	
How much weight are you lifting?	
What accessories will you need to complete the work?	

Assess the Environment	Notes
How close can you get the forklift to the work area?	
Will you be indoors or outdoors?	
How wide is the space you'll be working in?	
What type of surface will you be working on? <ul style="list-style-type: none"><li>▪ Is it flat or uneven?</li><li>▪ How much weight can it hold?</li></ul>	
What potential hazards could you encounter?	

Plan the Approach	Notes
What is the path like the drop-off area for the materials and the work area?	
Is the terrain flat or sloped? Smooth or rugged?	
Any additional considerations?	

# Choose the Right Forklift for Each Job

Use this worksheet to assess your project needs and determine the right type of forklift for each job.

## Compare Different Types of Forklifts

To choose the right forklift for each job, you must understand what each type of forklift offers. The basic types of forklifts are:

- Warehouse Forklifts
- Vertical Mast Rough Terrain Forklifts
- Telehandler Rough Terrain Forklifts

This table shows the range of capabilities and features typically available for each forklift type. Specifications vary depending on the model. For example, some telehandler rough terrain forklifts may be equipped with outriggers. After you choose the type of forklift, look at what different models offer and select the machine that meets your project needs.



**Warehouse Forklifts**



**Vertical Mast Rough Terrain Forklifts**



**Telehandler Rough Terrain Forklifts**

### Type of Lift

Vertical	✓	✓	
Telescopic Boom			✓

### Environment

Indoor	✓		
Outdoor		✓	✓

### Maximum Lift Height

20 ft. (6 m)	✓		
22 ft (6.7 m)		✓	
75 ft (22 m)			✓

### Maximum Lift Capacity

6000 lbs (2721 kg)		✓	
15000 lbs (6803 kg)			✓
36000 lbs (16329 kg)	✓		

# Choose the Right Forklift for Each Job

Use this worksheet to assess your project needs and determine the right type of forklift for each job.



**Warehouse Forklifts**



**Vertical Mast Rough Terrain Forklifts**



**Telehandler Rough Terrain Forklifts**

## Power Source

Dual Fuel (gas and propane)	✓	✓	✓
Diesel	✓	✓	✓
Electric	✓		✓

## Wheels and Tires

Solid	✓	✓	✓
Foam-Filled	✓	✓	✓
Air-Filled	✓	✓	✓

## Common Safety Devices

Overhead Guard	✓	✓	✓
Static Strap	✓		✓
Outriggers			✓
Oscillating Axle			✓

## Other Considerations

Attachments Available	✓	✓	✓
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# Conduct a Pre-Start Inspection

Use this job aid to review basic guidelines for conducting a pre-start inspection.

Always complete a pre-start inspection prior to operating a forklift. This job aid outlines basic steps of the inspection process. Refer to each forklift's Operator's Manual for additional guidance.

## Conduct a Forklift "Walk Around" Inspection

### Key Inspection Items for a "Walk Around"

- Review the forklift's Operator's Manual
  - Basic operations
  - Inspection and maintenance tasks
  - Emergency procedures
  - Any special requirements from the manufacturer
- Ensure all manuals are stored on the machine
- Inspect and wear the PPE required for the job
- Inspect the condition of placards and hazard labels
- Inspect the condition of the tires, including their lug nuts
- Inspect the engine:
  - Oil
  - Fan belts
  - Battery
  - Radiator
- Inspect hydraulic, propane, and fuel systems  
*See Inspect Hydraulic, Propane, and Fuel Systems for details.*
- Inspect the forks:
  - Blade
  - Shank
  - Angle
  - Height difference
  - Thickness
  - Positioning lock
  - Markings
  - Mounting hooks
- Tighten any loose nuts and bolts
- Inspect hoses, cables, and wiring for leaks and frays
- Test horns and alarms
- Inspect the condition of the Operator's compartment, grab handles, and steps
- Inspect mirrors
- Look for any loose or missing parts and remove any debris
- On a Telehandler Forklift, inspect the boom system, including:
  - Connectors
  - Hoses
  - Cylinders
  - Pins
  - Carriage lock pin
  - Carriage pin keeper
- Inspect any additional parts required by the manufacturer  
*See the Operator's Manual for details.*




Don't forget to look under the machine.

# Conduct a Pre-Start Inspection

Use this job aid to review basic guidelines for conducting a pre-start inspection.

## Inspect Hydraulic, Propane, and Fuel Systems

Follow the guidelines below and any instructions in the Operator's Manual to inspect hydraulic, propane, and fuel systems safely. Always wear the required PPE.

System Type	General Guidance
Hydraulic Systems	<p>Check the indicator while the forklift is on level ground. Never add hydraulic fluid to a forklift. If the hydraulic level is low, call for service.</p> <p><b>Important:</b> Relieve stored energy and pressure before you begin maintenance. Do not put your hands around hydraulic lines or connections.</p>
Propane Systems	<p>To change a propane tank on dual fuel Warehouse Forklifts:</p> <ol style="list-style-type: none"><li>1. Wear the right PPE (gloves, safety glasses/goggles).</li><li>2. Close the propane tank valve.</li><li>3. Start and run the forklift until the engine stops.</li><li>4. Turn the key switch off.</li><li>5. Disconnect the propane tank hose.</li><li>6. Inspect the connections, hose, and valve.</li><li>7. Reconnect the new tank hose and latches.</li><li>8. Open the valve slowly and look for any leaks.</li></ol> <p><b>Note:</b> A leak is indicated by frost. If you observe a leak, close the valve.</p> <div style="border: 1px solid black; padding: 5px;"> Propane is <b>40 degrees BELOW ZERO</b>. Do NOT put your hands near hoses or couplings. Do not use damaged tanks, hoses, or couplings.</div>
Fuel Systems	<p>Check the type of fuel and the amount of fuel the forklift has. To refuel safely:</p> <ul style="list-style-type: none"><li>• Shut the engine off.</li><li>• Do not smoke and keep away from sparks and flames (<i>ex. welding stations</i>).</li><li>• Do not overfill the tank.</li></ul>



# Conduct a Pre-Start Inspection

Use this job aid to review basic guidelines for conducting a pre-start inspection.

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## Inspect Controls

To inspect the forklift controls:

1. Enter the forklift using 3-4 points of contact.
2. Adjust the seat.
3. Fasten your seatbelt.
4. Make sure the parking brake is set and the gear shifter is in neutral.
5. Review any hazard labels.
6. Study the controls and their purpose.
7. Turn on the machine.
8. Check the function of each switch with the engine running.
9. Check the brakes forward and backward.
10. Make sure the backup alarm is working.
11. Check the mast/boom:
  - a. Straight mast – Raise, lower, and tilt the mast to ensure it is functioning properly.
  - b. Telehandler – Raise, lower, extend, and retract the boom, and make sure the boom angle and tilt frame indicators are functioning.
12. Test any other systems outlined in the Operator's Manual.

## Report Issues and Defects

Operators are required to report any issues they find during an inspection. When an issue occurs:

1. Place a red tag on the machine.
2. Take the key from the machine.
3. Notify your Supervisor.

**Supervisors:** Call a technician to make any repairs. Do NOT use the machine until the repairs are made.

# Conduct a Risk Assessment

Use this job aid to review basic guidelines for conducting a Risk Assessment.

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Hazards in the work environment can cause different types of accidents, including but not limited to:

- Tip overs
- Falling materials
- Collisions
- Electrocution

Each work environment is different. Risk Assessments help identify potential hazards and determine how to manage the risk. Operators must:

- Conduct a Risk Assessment prior to operating a forklift
- Report any potential hazards to the Site Supervisor



Supervisors must inform Operators of any known potential hazards at a job site and provide guidance on how to manage identified risk.

## Identify Potential Hazards

To identify potential hazards:

1. Walk the job site and look for anything that could cause harm.

*Examples:*

- *Inadequate ground support*
- *Other moving equipment in the work area*
- *Overhead obstacles, including power lines*

2. Ask other workers or your Supervisor for their observations and feedback.

3. Use these resources for guidance:

- Any job site safety evaluations in use by the general contractor
- Government and regulatory sites, such as [CSA Group](#) and [ANSI](#)
- Operator's Manual for the forklift
- Safety Data Sheets (SDS) for hazardous chemicals
- Past accident records or documentation on current control measures

## Manage Risk

Use control measures to manage any identified risks. For example, use a barricade to keep pedestrians from accessing the forklift and the work area.

Different risks require different control measures. When selecting control measures, ask yourself:

- Can I eliminate the risk altogether?
- If not, how can I reduce the risk?



You may need to change your control measures throughout your project to adjust to changes in the work environment.

# Conduct a Risk Assessment

Use this job aid to review basic guidelines for conducting a Risk Assessment.

## Conduct a Risk Assessment

This section provides basic guidance for conducting a Risk Assessment.



The control measures stated below are examples. Different controls may be needed.

### Risk Assessment Basics

- Do you meet the requirements to operate a forklift?
  - Have you received proper training and authorization?
  - Have you read the Operator's Manual and familiarized yourself with the machine?
- Is the work area located in a hazardous environment?  
*Example: Contains explosive chemicals*
- Does the work area provide adequate ground support?  
See the Operator's Manual for guidance.
- Are there any ramps or slopes that could impact stability?
- Is the work area near a drop-off or hole, including any concealed by water, ice, or mud?
- Have you walked your travel route?
  - Remove any debris.
  - Cone off bumps or obstructions that can't be eliminated.
- Will you operate in narrow aisles, loading docks, or other restricted places?
- Is there other moving equipment near the work area? If so, use barricades and a spotter.
- Are there any pedestrians near the work area? If so, use barricades and a spotter.
- Is there a public roadway nearby? If so, use traffic control.
- Are there any overhead obstructions?
- Are there electrocution hazards, such as overhead power lines?
  - Follow minimum distance requirements for the job site or ask the power company to Lock Out the power.
  - Refer to Operator's Manual for additional guidance.
- Are there weather conditions to consider?
  - Wind: See the Operator's Manual for guidance.
  - Lightning: Forklifts are not insulated from conducting electricity. Do not operate a forklift when there is lightning within 6 miles (9.7 km).
- Is the area well-ventilated? If not, is there a working Carbon Monoxide Detector?
- Any additional unsafe conditions?

# Conduct a Risk Assessment

Use this job aid to review basic guidelines for conducting a Risk Assessment.

## Use Hand Signals

A spotter may be required to help forklift Operators safely operate the machine in areas such as narrow aisles, loading docks, public roadways, and near pedestrians. Shown below are common hand signals spotters use to communicate with Operators.



## Avoid Electrocutation

Forklifts are not insulated from conducting electricity. Injuries caused by electrocution result in severe injuries and are usually fatal. Keep a minimum amount of distance of 20 feet (6 m) between yourself and power lines.

Keep in mind that this is just general guidance. Power line clearance requirements may vary. For example, British Columbia requires Operators to stay 23 ft (7 m) away from power lines. Some General Contractors may require more. Additional distance is required for higher voltage areas. Make sure you follow all standards for each job site and use a spotter when possible.

In the event that you do make contact with a power line, it's very important that you follow these safety tips to keep yourself and those around you safe:

1. If you have contacted a power line, **DO NOT** step off the lift. Stay with it and try and back the lift out of the line.
2. If you cannot back it out of the line, stay with the machine and call for help.
3. If you are in danger because the lift is on fire and you must exit, **DO NOT STEP OFF**. The ground is charged and you could be electrocuted. Jump off with both arms and hands wrapped around yourself and land on both feet. Do not fall against the lift or the ground. Shuffle your feet without lifting them from the ground away from the lift and power line.

# How Much Can You Safely Lift?

Use this job aid to help determine how much you can safely lift when operating a forklift.

One of the biggest risks Operators face is overloading a forklift. Serious accidents can occur if a forklift tips over or drops a load.

Before lifting a load, you need to know how much you can safely lift. There are three questions you must be able to answer to determine the safe lifting capacity.

1. How much does the load weigh?
2. How much can the forklift lift?
3. Where is the load center?

## Calculate Load Weight

The first piece of information you need to know to avoid overloading the forklift is how much the load weighs. You may be able to determine how much the load weighs by:

- Calculating the weight
- Checking the bill of lading
- Asking your Supervisor

### Example: How Much Does this Load Weigh?



There are 8 bags in 8 layers on each pallet, and each bag weighs 50 lbs (22.7 kg). So,  $8 \times 8 \times 50 = 3,200$  lbs (1,451 kg).

## Determine Lift Capacity

Each model of forklift has a specific lift capacity, which is identified on its ID plate or load chart. To determine how much a warehouse forklift and a vertical mast rough terrain forklift can safely lift, refer to the ID plate on the machine, which accounts for any attachments.



Often, forklifts are advertised with a higher lift capacity than the one shown on the ID plate. Attachments such as side shifters, buckets, truss booms, and fork positioners “derate” the forklift, meaning it can lift less than advertised. Always refer to ID plate or load chart for actual lifting capacities of all forklifts.

# How Much Can You Safely Lift?

Use this job aid to help determine how much you can safely lift when operating a forklift.

This is a typical ID plate, which shows the following information:

**WARNING** IMPROPER OPERATION OR MAINTENANCE COULD RESULT IN INJURY OR DEATH

MODEL: FG25N      MAX FORK HEIGHT: 4340 mm / 170 in

SERIAL NO: AF17E02380      MAST: VERTICAL

ATTACH 1: SS39P25

ATTACH 2: SF-60 - SF-72

APPROXIMATE TRUCK WEIGHT		A-LOAD CENTER		B-OFFSET		CAPACITY	
kg	lbs	mm	in	mm	in	kg	lbs
4110	9030	600	24	0	0	2085	4600
		760	30	0	0	1790	3950
		915	36	0	0	1565	3450

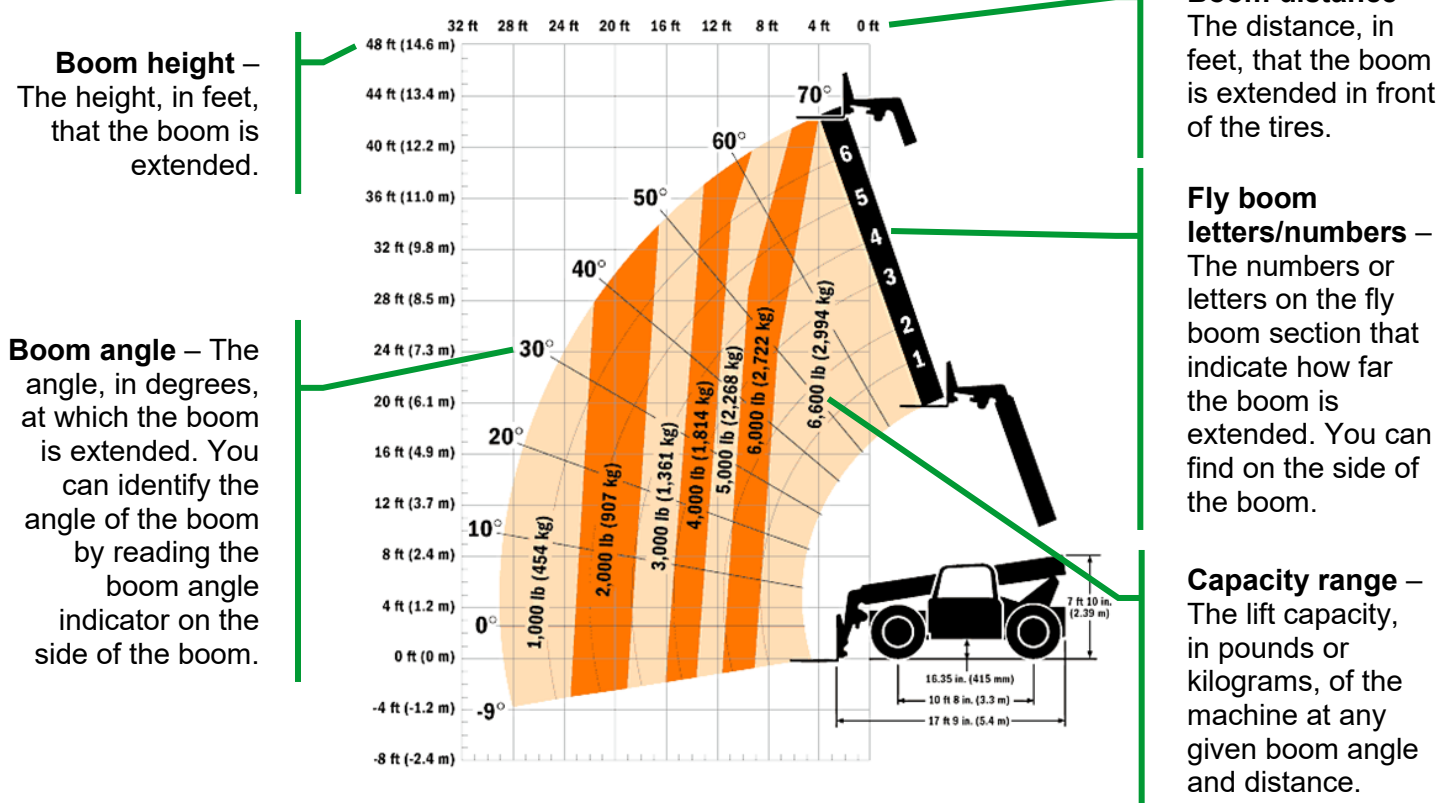
MEETS DESIGN SPECIFICATIONS OF ANSI/ITSDF B56.1 ENGLISH 93083-07801

**Annotations:**

- The approximate weight of the forklift (points to APPROXIMATE TRUCK WEIGHT)
- The capacity for various load centers (points to CAPACITY table)
- The maximum fork height (points to MAX FORK HEIGHT)
- The capacity of the forklift, which may be noted in pounds, kilograms, or both (points to CAPACITY table)

When using a telehandler forklift, the amount you can safely lift depends on how high and how far the boom is extended. You must refer to the machine's load chart, which you can find in the Operator's Manual.

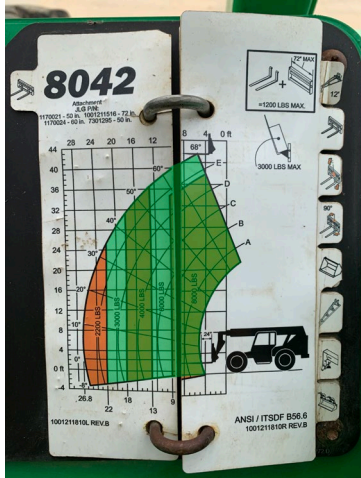
This is a typical load chart, which shows the following information:



# How Much Can You Safely Lift?

Use this job aid to help determine how much you can safely lift when operating a forklift.

## Example: How Much Can You Safely Lift?



A pallet of concrete block weighs about 3,000 lbs (1,381 kg). The green area highlighted in the load chart at left shows the area of safe capacity for this load.



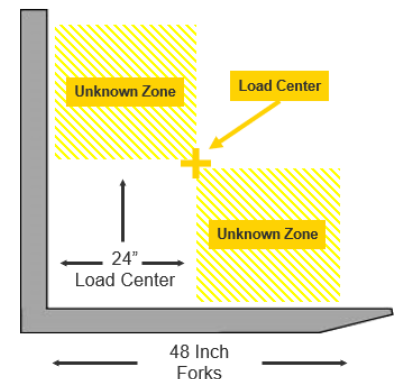
Forklifts may be able to pick up larger loads from the ground, but may tip when the mast is raised or tilted, when the boom is extended, or when the load is side shifted.

## Find the Load Center

The load center can affect how much you can safely lift.

What is a load center?

The load center is the distance, in inches, from the face of the forks to the load's center of gravity. Most forks are 48" long. Let's say you have a pallet loaded with materials that is 48" (122 cm) x 48" x 48" – a perfect fit for the forks. The center of the load is half the distance of the load vertically and horizontally. So, this load has a 24" (61 cm) load center.



What is the "standard" load center?

Most forklifts are designed to carry loads with a 24" (61 cm) load center, so the load capacities listed on ID plates and load charts are rated for 24" (61 cm) load centers.

What if my load center is less than 24"?

If your load center is less than 24" (61 cm), use the load chart as written.

What if my load center is more than 24"?

If your load center is more than 24" (61 cm), or further away from the forks, you may not be able to safely lift the load – the forklift could tip over. You'll have to use the load center of your load to calculate a new load capacity.

# How Much Can You Safely Lift?

Use this job aid to help determine how much you can safely lift when operating a forklift.

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Use the following formula to calculate the approximate lift capacity for your load:

$$\frac{\text{Original load center} \times \text{Original capacity}}{\text{New load center}} = \text{New capacity}$$

## Example: What is the Load Center?

A 5000 lb (2,268 kg) forklift is rated for a 24" (61 cm) load center. The new load center is 28" (71 cm).

$$\frac{24" \times 5000 \text{ lbs}}{28"} = 4,482 \text{ lbs (1,944 kg)}$$

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Always put the forks all the way into the load or pallet so it rests against the back vertical fork.



# Operate a Forklift Safely

Use this job aid to review basic steps you need to take to operate a forklift safely.

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To operate a forklift safely, you must:

- Read the Operator's Manual
- Follow safe practices for forklift operations

## Read the Operator's Manual

Always read the Operator's Manual before you operate a forklift. Each make and model is different, so it's important to become familiar with a machine before you operate it. You'll find details on:

- Basic operations
- Specifications, features, and limitations of the machine
- Inspection and maintenance tasks
- Potential hazards and risks
- Emergency procedures
- Accessories

Operator's Manuals may use similar formats to make it easy to find what you need. Store the manual in the provided compartment on the forklift. Do not operate a forklift without it.

## Follow Safe Practices

Build good habits to operate a forklift safely. Always follow these safe practices:

- 
- Use 3-point contact when entering and exiting the forklift
- 
- Always wear your seatbelt
- 
- Watch for blind spots
- 
- Keep the counterweight uphill when traveling up or down a slope without a load
- 
- Use frame tilt/level only to level the forklift, never to un-level it
- 
- Look up to identify any overhead hazards before lifting
- 
- Look around to identify any hazards under the load or forks before lowering
- 
- Park on a level surface or chock tires if that isn't possible
- 
- Do not leave a key in an unattended forklift
- 
- Be aware of what happens to the center of gravity as you operate the forklift
- 
- Do not drive a telehandler when the oscillating axle is locked
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# Operate a Forklift Safely

Use this job aid to review basic steps you need to take to operate a forklift safely.

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## If the Forklift Should Tip

Should the machine start to tip over, it's very important that you follow these safety tips to reduce your risk of serious injury:

- Grasp the steering wheel tightly to keep both hands inside the Operator's compartment.
- Lean away from the point of impact.
- **NEVER** attempt to jump clear. Should you attempt to jump clear, you could be injured or killed.
- This can't be repeated enough – **ALWAYS** wear your seatbelt. If a tip over occurs, your natural reaction might be to try to jump out. Your seatbelt will prevent you from jumping or falling out of the seat, keeping you within the protection of the Operator's compartment.

# Prepare for the Hands-On Evaluation

Use this job aid to prepare for the Hands-On Evaluation portion of the Forklift Certification process.

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To receive your Forklift Certification, you must complete the online/classroom portion of the course and pass a Hands-On Evaluation. As a last step in the online curriculum, you will be prompted to update your contact information and click *Notify Observer*. A qualified Evaluator will then contact you to set up the evaluation.

## What to Expect

To pass the Hands-On Evaluation, you must demonstrate your ability to:

- Familiarize yourself with different makes and models
- Conduct a Pre-Start Inspection
- Conduct a Risk Assessment
- Perform basic operations

You will be asked to safely navigate each forklift you intend to use through an obstacle course to demonstrate your ability to:

- Drive the forklift forward through a series of turns
- Stop and place the load at a desired target point
- Remove and lower the load from the target point
- Drive the forklift in reverse through the same series of turns
- Park the forklift

The types of forklifts used in the evaluation may include:

- Warehouse forklift
- Vertical mast rough terrain forklift
- Telehandler forklift



Each forklift is different. Always read the Operator's Manual prior to operating a machine and take your time learning the controls. Focus on building good habits to keep yourself and other safe.

## Avoid Common Mistakes

Pay special attention to these 10 most common mistakes during your evaluation:

1. Always maintain 3-point contact when getting on and off.
2. Always put the forks all the way into pallet.
3. Tilt the forks to cradle load.
4. Use the horn.
5. Look before backing up, use your mirrors.
6. Left foot brake, right foot accelerate.
7. Set the parking brake.
8. Shift to neutral when stopped.
9. Run the RPMs up to 2500 for smooth operation of the hydraulics.
10. Use the proper procedure for picking and placing loads.