

5.1 FORKLIFT AND RELATED EQUIPMENTS

Forklifts are one of the most versatile vehicles for builders. Whether you need to move heavy loads in a warehouse or construction site, forklifts can safely lift objects that humans cannot, making them indispensable on any job site.

Since there is a wide selection of styles and models available, it can be difficult to select the best forklift. Whether you're looking to rent a forklift or purchase one for your next project, our guide covers the different forklift types, their benefits and popular forklift models to help you choose the right forklift for your needs. Below we'll cover the most popular forklift types on the market, what they're used for and popular models and manufacturers.

- 
- Warehouse Forklift
 - Side Loader
 - Counterbalance Forklift
 - Telehandler
 - Heavy-Duty Forklift
 - Rough Terrain Forklift
 - Pallet Jack
 - Walkie Stacker
 - Order Picker
 - Reach Fork Truck

Warehouse Forklift:

The warehouse forklift is the most recognizable type of lift truck. It resembles a

golf cart with twin forks extending from the front. You'll most often use this forklift in a facility with many items in inventory, as it's great for loading and unloading pallets and transporting items to and from delivery vehicles.

Some of the most popular warehouse forklift models include the Hyster 36-38T, Komatsu 20 BX50 Hyster and the Toyota 3-Wheel Electric Forklift. Most industrial forklifts can lift 5,000 pounds of weight, but some heavy-duty models are capable of elevating up to 25,000 pounds. Warehouse forklifts have a few subtypes, including side loaders and counterbalance forklifts.

Key Feature: Trucks have a loading capacity of 1-5 tons

Uses: Best for raising and transporting items over short distances

Side Loader:

A subtype of the warehouse forklift, side loaders are usually found in steel service centers and manufacturing facilities with heavy and bulky items. The operator stands in a sideways compartment while a side loader unloads objects. Due to its sideways operation, side load forklifts can easily drive up alongside racks and load and unload without having to turn. This makes them suitable for navigating narrow aisles and handling long loads like timber and pipes.

Toyota, Raymond, Yale and Hyundai are some of the top brand manufacturers of side loaders.

Key Feature: Sideways compartment that moves in the direction of the load

Uses: Lifting heavy and long items like pipes and timber

Counterbalance Forklift:

The counterbalance forklift is a popular lift that features forks in the front and a weight in the back to counterbalance the weight of the load. Counterbalance forklifts have no extending arms, giving them the ability to move

directly to the load.

There are a few different types of counterbalance forklifts. The 3-wheel variant is ideal for situations requiring the operator to turn and maneuver in circles. The stand-up counterbalance forklift allows operators to easily hop on and off between loads. Popular manufacturers include Mitsubishi, Toyota and Crown.

Key Feature: Back-mounted weight that helps balance loads

Uses: Situations where circle maneuvering is necessary

Telehandler:

Also known as a telescopic forklift or a reach forklift, the telehandler is a combination of a crane and forklift with a boom and extendable arm. The twin forks attached to the arm are used to move pallets off the ground. A standard telehandler is capable of lifting 5,500 lbs of materials up to 19 feet in the air, and is great for reaching into tight spaces and odd angles.

Because of their growing popularity, manufacturers like JCB, Genie, Bobcat, Haulotte and Caterpillar produce a variety of high-quality telehandlers. Models like the JLG 1644 are adept at larger capacity jobs, while other models can lift loads up to 55 feet high.

Key Feature: Extendable arm attachment and articulating boom

Uses: Lifting loads off the ground to higher elevations

Heavy-Duty Forklift: The heavy-duty forklift — also called a large capacity forklift — combines the functionalities of a warehouse forklift with a telehandler. While it can't reach difficult angles the way a telehandler can, it is capable of lifting heavier loads much higher off the ground than a warehouse forklift. The heavy-duty forklift starts with a 30,000-lb maximum lift, but you should only need such power on specialized jobs. This makes it narrow in scope compared to the telehandler and warehouse forklift.

There are 20 popular heavy-duty forklift manufacturers on the market. Big names include NACCO Industries and Mitsubishi, and some of the popular models boast an impressive capacity of 36,000 lbs.

Key Feature: Hydraulic levers combine a balance of reach and power

Uses: Transporting heavy loads for industrial applications

Rough Terrain Forklift: Also known as a straight mast forklift, the rough terrain forklift is designed specifically for outdoor job sites with uneven surfaces. These trucks have sturdy pneumatic tires that are oversized and threaded, giving them better balance and stability to safely transport materials on rocky ground. You likely won't need one if you do most of your work indoors, but rough terrain forklifts are a must for outdoor applications and construction sites.

Popular models include the JCB 950 and CASE 588H with four-wheel drive options. Another major perk of rough terrain forklifts is that they can lift heavier loads — most models have a capacity of 6,000 lbs or 8,000 lbs.

Key Feature: Sturdy design with oversized tires and a reinforced cage cab

Uses: Outdoor jobs with uneven, rocky ground

Pallet Jack: Pallet jacks are specialized in nature. Also known as pump trucks, these forklifts aren't capable of lifting large loads due to their small size. In exchange for power, pallet jacks have a small footprint, allowing them to fit into the tightest spaces and lift small loads in tight quarters. While you sacrifice power and manoeuvrability, a pallet jack's acquisition and renting costs are much lower. Popular pallet jack models include the Mighty Lift 20 x 36 Inch Pallet Truck and Vestal Electric Pallet Truck. Buyers or renters can choose between manual pallet jacks and electric pallet jacks.

Key Feature: Compact size, powered manually or with a battery

Uses: Maneuvering pallets in tight spaces and over long distances

Walkie Stacker: Walkie stackers are unique in appearance and specific in utility.

Unlike other forklifts, these material handling vehicles don't have cabs. Instead, the operator walks behind the stacker and steers it by using an attached handle. These units lack power, manoeuvrability and speed but are ideal for situations where you need a taller pallet jack. The walkie stacker reaches much higher off the ground than traditional pallet jacks.

Current walkie stacker forklift manufacturers include Hyster, Jungheinrich and Toyota. Toyota's 6BWC20 is ideal for 4,000-lb loads, while Jungheinrich's EMC 110 is suited for narrow aisles.

Key Feature: Unique design requires the operator to walk behind the truck

Uses: Maneuvering pallets to greater heights than is possible with a pallet jack

Order Picker: An order picker is a subtype of the walkie stacker, used to pick and deliver materials from storage. Reaching heights of up to 32 feet, these machines are designed to lift operators up to warehouse racks and carry individual units. They excel in customer order warehouses and storage facilities since they can pick individual units without having to bring down full pallets. Their versatile design means they can handle items of various sizes, from auto parts to furniture.

Key Feature: Open operator window and no pallet handling

Uses: Piece-picking units and warehouse inventory applications

Reach Fork Truck:

The reach forklift is a warehouse truck used mainly for indoor work. Its key ability is to extend its forks beyond the compartment and reach into warehouse racks in a way that standard forklifts cannot. It also features an open compartment that allows the operator to have greater visibility. While excellent for indoor use, reach trucks are not suitable for outdoor work due to their minimal undercarriage clearance.

UniCarriers, Clark Materials and Yale manufacture some of the most high-quality reach forklifts.

Key Feature: Stabilizing legs and forward extending forks

Uses: Quick and precise pallet picking in indoor environments

Forklift Classifications

Forklifts are also organized based on their classification. There are seven forklift classes outlined by the Occupational Safety and Health Administration (OSHA) that describe their fuel option and use. Forklift operators must be aware of the necessary forklift safety practices for each classification and be certified on each class of forklift to operate it.

The different forklift classifications are:

Class I – Electric Motor Ride Truck

- **Fuel Type:** Electric
- **Use:** Indoor settings where air quality is a concern

Class II – Electric Motor Narrow Aisle Truck

- **Fuel Type:** Battery
- **Use:** Moving inventory in narrow or tight spaces

Class III – Electric Motor Hand Truck

- **Fuel Type:** Battery
- **Use:** Quickly unloading delivery trucks across short distances

Class IV – Internal Combustion Engine with Cushion Tires

- **Fuel Type:** Gas or diesel
- **Use:** Low-clearance situations

Class V – Internal Combustion Engine Trucks with Pneumatic Tires

- **Fuel Type:** Gas or diesel
- **Use:** Indoor and outdoor with rough surfaces

Class VI – Electric and Internal Combustion Engine Tractors

- **Fuel Type:** Battery, gas or diesel
- **Use:** Hauling or towing loads

Class VII – Rough Terrain Forklift Truck

- **Fuel Type:** Gas or diesel
- **Use:** Construction sites, uneven ground, high-elevation lifting

Forklift Sizes

Forklifts range in size depending on their function. Although they are versatile machines, you'll need the right size for the job.

Standard forklifts generally measure between 4 and 7 feet wide and from 8 to 10 feet long. Outdoor or rough terrain forklifts can be greater than 10 feet in length, while narrow aisle forklifts like walkie stackers and side loaders can measure less than 5 feet. However, if you are using a forklift in a warehouse setting, it's important to consider the aisle width. Standard counterbalance forklifts require

aisles of approximately 13 feet wide to effectively turn, navigate and move pallets.

Another measurement to consider is height. Most standard forklifts can reach heights between 10 and 15 feet, but special forklifts like the telehandler

can lift as high as 55 feet depending on the telehandler size you select.

Elements of a Forklift: While size plays an important role, a forklift's design allows it to carry an impressive amount of weight. The key elements of a forklift to consider include its lift capacity, load centre and stability. Forklifts have varying abilities in each category that must be taken into account when choosing one.

- **Lift capacity:** The amount of weight a forklift can carry safely while remaining stable
- **Load centre:** The distance from the forks to the load's centre of gravity; varies depending on the load weight, lift angle and tilt angle
- **Stability triangle:** The area under the forklift that maintains the centre of gravity and prevents the vehicle from tipping over

