



SAFE OPERATION WITH FORK LIFT TRUCKS

Doc 165/25

Revision of Doc 165/17

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Prepared by the Safety Advisory Council
Published in February 2025

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Amendments from 165/17

Section	Change
	Addition of pictures
	General review
7.3	New paragraph : Vehicle mounted fork lift truck

NOTE Technical changes are marked on the side

1. Introduction

Forklift trucks (FLT) and mechanically operated pallet trucks are important elements in mechanical handling practices as the gases industry seeks to improve safe working conditions and reduce manual handling.

Since years, a high number of forklift-trucks as well as electrically operated pallet-lifters are in use for good efficiency and safer as well as ergonomically more responsible work practices.

Handling loads with forklift trucks and pallet trucks makes handling tasks easier, such as moving, lifting or handling loads. Particular attention to safety rules and standards is essential. The tasks carried out with mechanical handling equipment entail particular hazards. However, the use of this equipment should not entail a risk to the operator, to the persons present in the work area where mechanical handling equipment is operating or all other operators working around them.

Preventing accidents can only be achieved by making sure that all workers are aware of the risks of forklift truck use. This includes pedestrians in the vicinity of FLT's, so that everybody can react appropriately in case of an undesirable event.

Forklift trucks and pallet trucks shall only be operated by trained and qualified personnel. This is in addition to any statutory requirements.

2. Scope and Purpose

2.1. Scope

To describe the minimum safe practices required to operate forklift trucks and mechanically operated pallet trucks in the industrial gases industry.

2.2. Purpose

To help prevent and reduce the number of accidents that occur by providing recommendations on risk prevention, suitable maintenance practices and correct driver selection and training.

3. Definitions

3.1. Publication terminology

3.1.1. Shall

Indicates that the procedure is mandatory. It is used wherever the criterion for conformance to specific recommendations allows no deviation.

3.1.2. Should

Indicates that a procedure is recommended.

3.1.3. May

Indicates that the procedure is optional.

3.1.4. Will

Used only to indicate the future, not a degree of requirement.

3.1.5. Can

Indicates a possibility or ability.

3.2. Technical definitions

3.2.1. Centre of the Load

Distance from the centre of gravity of the load to the heels of the forks.

3.2.2. Cockpit or cabin (cab)

Position where the forklift truck driver sits and controls the vehicle.

3.2.3. Forks

Pronged arms that are introduced under the load in order to move it. The forks are normally of fixed length but they may also be designed to be extended from the forklift cab by means of a mechanical or a hydraulic system or with fork extensions (see Figure 1)



Figure 1 Fork extensions

3.2.4. Forklift or forklift truck

Small industrial vehicle with a power operated forked platform in front that can be inserted under loads to lift and move them. The driver of the forklift truck sits in a cabin mounted on the forklift truck.

3.2.5. Leverage

The stability of forklifts is based on the leverage principle. In a forklift, the point of support is the contact of the front wheels with the floor.

3.2.6. Mast

Mast supports and raises the forks. Movement of the mast and forks is operated hydraulically and supported by a chain or other mechanical element.

3.2.7. Motors

Forklift motors can be classified into two groups, internal combustion engines: with petrol, diesel or liquefied petroleum gas as fuel or electric motors: a group of batteries supplies electric current to a central motor or to several motors mounted on the driving wheels.

Both types of motors have specific safety requirements for refuelling or recharging and when they are to be used in zoned areas where there is a risk of flammable gases being present.

3.2.8. Pallet truck / pallet lifter / transpallet

Manually operated, mechanically assisted device for lifting and moving loads where the operator stands on the ground adjacent to the truck or on a small platform attached to the back of the truck. A pallet

truck is power assisted to enable the operator to physically guide the forks into the opening on the pallet, lift the load on the forks and transport the load on the truck. A pallet truck generally has only a short lifting height.



Figure 2 Typical pallet truck

4. Technical safety features

4.1. Forklift trucks

There are a number of features of fork lift trucks that are important for safe operations, and these include but are not limited to the items below.



Figure 3 Typical fork lift truck

4.1.1. Safety canopy

The safety canopy protects the driver from falling loads as well as providing protection in the event of the FLT turning over.

4.1.2. Shock-absorbing ergonomic seat

This is a seat is fitted with shock absorbing systems that absorb vibrations.

4.1.3. Exhaust pipe insulation

This is insulating material that wraps around the exhaust pipe preventing it from coming into contact with materials or persons thus avoiding potential burn injuries or fires. A catalytic converter is recommended for indoor handling activity.

4.1.4. Fork arms

The fork arms shall be sufficiently long to extend slightly from the load they are handling and shall be adjusted to suit the width of the load.

The use of fork extensions is permitted only if they are suitable for the load to be lifted, are specified by the forklift manufacturer, and a thorough risk assessment has been conducted by the user (gas company).

4.1.5. Emergency engine stop

The emergency stop stops the engine automatically in an emergency or abnormal situation.

4.1.6. Immobilisation brake

The immobilisation brake protects against unintended movement.

4.1.7. Reversing acoustic and visual signals

Alerts others to the presence of a reversing fork lift truck, especially when the visibility of the driver could be impaired.

This includes warning devices to make pedestrians and other vehicles aware of the position of the FLT and can include flashing orange lights, rotating beacons and devices such as BlueSpot™.

4.1.8. Doors

Doors can assist in protecting the driver if the vehicle overturns but are not a substitute for wearing a seatbelt.

4.1.9. Safety belt

A safety belt is fitted to ensure driver safety, especially in case the vehicle overturns, and is mandatory in some countries.

4.1.10. Reversing mirrors

Reversing mirrors allow the driver to have a good view of the area behind him before reversing. Some FLTs also use rear mounted cameras.

4.1.11. Load handling accessories:

These include equipment such as clamps, lateral movement devices, buckets and hoists that aid load handling movements.

4.1.12. Speed limiters and load weight limiters

The use of both speed limiters and load weight limiters are recommended.

4.1.13. Tyres

There are two types of tyres in use, solid and pneumatic tyres. Both have different characteristics and the correct selection is appropriate. Solid tyres will cause more vibration and pneumatic tyres will handle differently when loading or unloading loads.

Tyres need to be regularly checked and changed when there are signs of wear in excess of manufacturers recommendations or damage.

4.1.14. Engine start limiter

A limiter that stops the FLT being started when the driver is not seated on the FLT seat is recommended to prevent the FLT being started without a driver in place and in control.

4.1.15. FLT selection

To select the correct FLT a number of points need to be considered, and these include:

- height of doors and ceilings.

- width of doors and corridors;
- floor resistance; and
- workplace environment.

It is recommended to use, where possible, an electrically powered FLT.

When a FLT is selected, an additional 100 kg should be added to maximum anticipated load of the FLT. This additional allowance is for accessories and unforeseen circumstances. An FLT should never be selected at the limit of the maximum load required.

If used on public roads, forklift trucks and/or pallet trucks shall be classified and operated in compliance with traffic rules.

4.2. Pallet trucks



Figure 4 Typical pallet truck, platform pallet truck and controls

There are a number of features of pallet trucks that are important for safe operations, and these include, but are not limited to the items below

4.2.1. Forks

The forks on a pallet truck differ from those on a forklift truck in that support wheels are mounted at the front of the fork and that the forks can only be raised a short height. These forks are usually positioned manually.

4.2.2. Horn

The horn is a device to produce an acoustic signal to warn of any dangers.

4.2.3. Lifting/Lowering control

Located on the control column. Its function is to pick up, raise and lower the load.

4.2.4. Safety gear inverter

The safety gear inverter is a push button used to stop the pallet truck immediately and reverse a few centimetres.

4.2.5. Stand on platform (stand on rider)

There are two types of stand on platform (or stand on rider)

- A standing platform where the driver is not protected: and
- On board platform surrounded by side protection.

5. General safety instructions

The duties of the person who has site responsibility for FLT operations shall include:

- Ensuring that operators receive documented training and information for the safe operation of FLT and pallet trucks;
- Ensuring resources are available to maintain forklift trucks and pallet trucks in accordance with manufacturers' recommendations and operating company standards;
- Establishing traffic rules on the site and communicate them clearly to staff and visitors; and
- Ensuring the work tasks can be safely completed in the time allowed.

The driver of the FLT duties shall include:

- Ensuring that the daily pre-use inspection and condition monitoring of the FLT have been completed before using the FLT;
- Preventing use of the FLT and inform the manager in case of any problem with it;
- Checking correct operation of the acoustic and visual alarms and signals at all times;
- Ensuring that they have good visibility at all times, when reversing, either using a camera and/or mirrors and/or looking behind (over the shoulder); there are also FLT models on the market, that have the option to rotate the cockpit for 90° or even 180°;
- Paying full attention to the driving activity, especially when reversing;
- Respecting traffic rules including speed limits and pedestrian crossings;
- Travelling with caution, respecting pedestrian areas;
- Avoiding sudden manoeuvres or changes in direction;
- Slowing down and ensure a good view before turning;
- Respecting the FLT operating rules including load weight, distribution, stability, dimensions and handling rules;
- Have the FLT Load-Diagram visibly available inside the cab and consider it for all loads;

- Checking the loading and unloading area for tidiness and cleanliness;
- Always driving with the load down, and never manoeuvre with the load raised;
- When travelling down a slope, always drive with the load behind and pay particular attention;
- When travelling up or down a slope, the load should always be facing uphill;
- Avoiding travelling across a slope;
- Avoiding the edges of loading docks, potholes, trenches and road shoulders;
- Only adjusting or exchanging mobile elements such as the fork arms or attachments if trained and authorised;
- Never handle mobile elements of the vehicle while the motor is running;
- Comply with good parking practices, never block emergency or safety equipment, park in a safe area and lower the fork arms; and
- One system of driver retention **MUST** be used at all times: wear a seat belt, or if not fitted ensure that the cab doors are closed or side restraints are in position.
- When the FLT is not being used:
 - Ensuring the forklift is parked in the correct area, without obstructing doors, access, exits or any safety equipment;
 - Forks are at the floor level;
 - Immobilisation break is on;
 - Removing the keys or have key-pads with individual codes;
 - Any immobilisation device that prevents the use of the forklift by unauthorized personnel is engaged; and
 - If there is a slope, ensuring a wedge (wheel chock) is place in front of a wheel.
- Not carrying passengers inside the cabin or outside and never transport people standing on the forks (or platform);
- Come to a complete stop at blind corners and sound horn when it is not sure if people are nearby;
- Never driving over straps, belts, planks or ropes;
- Not stopping abruptly as the load may slide off;
- No horse-play with a forklift;
- Never climbing on the mast;
- If operating in an ATEX^[1] zones, ensure the FLTs are suitable for that zone;

¹ References are shown by bracketed numbers and are listed in order of appearance in the reference section.