



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 10827.3-2022

**Industrial trucks - Safety requirements and verification - Part 3:
Additional requirements for trucks with elevating operator position and
trucks specifically designed to travel with elevated loads**

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1 Scope

This document specifies the safety requirements and verification methods for the following industrial trucks with a vertical and non-tilting mast in addition to those specified in GB/T 10827.1-2014:

- a) trucks with an elevating operator position and order-picking trucks as defined in GB/T 6104.1-2018; the lifting height of the elevating operator position and the load-handling device from the ground is greater than 1,200 mm;
- b) lateral-and front-stacking trucks defined in GB/T 6104.1-2018, which are designed to operate with a load-handling device with a lifting height of greater than 1,200 mm from the ground. When the truck is operating, the load-handling device can be lifted, lowered or side-shifted with or without a load.

These trucks are designed to operate indoors on smooth and level pavements (for example, concrete), and may be applied in guided, unguided or a combination of the two; this type of trucks is not intended for towing or jacking.

This document does not apply to stacking trucks carrying two loads, with one load on the fork and the other on the support arm. GB/T 10827.1-2014 applies to this type of trucks.

This document does not apply to trucks with the elevating operator position lifting height of not greater than 1,200 mm, or trucks specially designed to operate with an elevated load having a fork whose lifting height from the ground is not greater than 1,200 mm.

This document does not apply to low-level order pickers with the elevating operator's position not greater than 1,200 mm, which can be equipped with an additional load lifting device with a maximum lifting height of 1,800 mm.

This document deals with all major hazards, hazardous states or hazardous events listed in

Appendix A concerning the application of the machinery for the intended use by the

manufacture and the misuse under foreseeable conditions.

This document does not include hazards that may arise when the truck is used on the highway or operated in a potentially explosive atmosphere.

2 Normative References

Through the normative references in this text, the contents of the following documents constitute indispensable clauses of this document. In terms of references with a specified date, only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this document.

GB/T 6104.1-2018 Industrial Trucks - Terminology and Classification - Part 1: Types of Industrial Trucks (ISO 5053-1:2015, IDT)

GB/T 10827.1-2014 Industrial Trucks - Safety Requirements and Verification - Part 1: Self-propelled Industrial Trucks, other than Driverless Trucks, Variable-reach Trucks and Burden-carrier Trucks (ISO 3691-1:2011, IDT)

GB/T 15706-2012 Safety of Machinery - General Principles for Design - Risk Assessment and Risk Reduction (ISO 12100:2010, IDT)

GB/T 18849-2011 Powered Industrial Trucks - Brake Performance and Component Strength (ISO 6292:2008, IDT)

ISO 2860 Earth-moving Machinery - Minimum Access Dimensions

NOTE: GB/T 17299-1998 Earth-moving Machinery - Minimum Access Dimensions (idt ISO 2860:1992)

ISO 22915-21 Industrial Trucks - Verification of Stability - Part 21: Order-picking Trucks with Operator Position Elevating above 1,200 mm

NOTE: GB/T 26949.21-2016 Industrial Trucks - Verification of Stability - Part 21:

Order-picking Trucks with Operator Position Elevating above 1,200 mm (ISO 22915-21:2009, IDT)

ISO 22915-22 Industrial Trucks - Verification of Stability - Part 22: Lateral-and Front-stacking Trucks with and without Elevating Operator Position

NOTE: GB/T 26949.22-2019 Industrial Trucks - Verification of Stability - Part 22: Lateral-and Front-stacking Trucks with and without Elevating Operator Position (ISO 22915-22:2014, IDT)

ISO 24134 Industrial Trucks - Additional Requirements for Automated Functions on Trucks

NOTE: GB/T 22418-2008 Industrial Trucks - Additional Requirements for Automated Functions on Trucks (ISO 24134:2006, IDT)

For the operation with guidance system, the braking system shall comply with the requirements of Group C in Table 2 or Table 3 of GB/T 18849-2011.

4.4 Additional Requirements for Trucks with Elevating Operator Position

4.4.1 Travel speed The travel speed shall depend on the requirements for braking (see 4.4.2) and stability (see 4.6).

4.4.2 Braking device Automatic braking device shall be provided. The braking device can be a service brake or a parking brake.

4.4.3 Control device

4.4.3.1 Arrangement Except for the emergency lowering control device specified in 4.4.6, all control devices for operating the truck shall be arranged at the elevating operator position. Unless the operator is at the normal operating position, other than the emergency lowering control device, any other functions of the truck shall be in a locked state.

4.4.3.2 Fixed section control position If there are two operator positions, one is on the elevating section and one on the fixed section, then, when operating the control devices of the elevating section, the control devices of the fixed section shall be in a locked state. However, the emergency lowering control devices specified in 4.4.6 are still available.

4.4.3.3 Operator's protection When operating the truck in a very narrow aisle, measures (for example, two-hand control device or operator limit device that complies with the stipulations of ISO 13851) shall be taken to keep the operator within the range of the operating position. Any other personnel at the operating position shall also be similarly protected.

4.4.3.4 Mounting with multiple operating positions When a truck with an elevating operator position is equipped with multiple operating positions in accordance with the stipulations of 4.4.1.2 and / or 4.4.1.3 in GB/T 10827.1-2014, then, a locking switch or other devices (such as: magnetic card and password) shall be provided to activate the control device for each operating position and implement protection in accordance with the stipulations of 4.4.3.3.

4.4.4 Lifting and lowering systems

4.4.4.1 Mechanical lifting system The chains used in the operator and load lifting system shall comply with the requirements of 4.4.4.4 ~ 4.4.4.6.

4.4.4.2 Hydraulic lifting system The hydraulic lifting system shall be equipped with a device. In the event of pipe fracturing or hose bursting, this device shall be able to prevent the lifting device from lowering. This device shall be directly attached to the lift cylinder or installed inside the lift cylinder. This device shall not be released, unless the speed of lowering is limited to not greater than 0.6 m/s.

4.4.4.3 Combined lifting system The combined lifting system shall comply with the stipulations of 4.4.4.2 and 4.4.4.4 ~ 4.4.4.6.

4.4.4.4 Chains for operator lifting system

4.4.4.4.1 If chains are used to elevate / lower the operator position, then, at least two identical and independently anchored chains shall be used.

4.4.4.4.2 Devices (for example, adjustment device) shall be provided to equalize the loading of chains used for elevating and lowering the operator position. The entire length range of the chains shall be inspected without removing the covers or protective devices.

4.4.4.4.3 What is different from the stipulations of GB/T 10827.1-2014 is that the safety factor K1 of the chains shall be at least 10.

4.4.4.4.4 The end strength of each chain shall be at least 80% of the certified minimum breaking load of the chain required for the maximum practical lifting weight of the truck.

4.4.4.5 Detection of slack chain The operating lifting mechanism using chains shall be fitted with a chain slack detection device.

When the device is activated, the lifting mechanism of the operator position shall automatically stop moving downward.

4.4.4.6 Disengagement of operator position Measures (for example, travel limit or mechanical stop) shall be taken to prevent the operator position from accidentally falling off the lifting mechanism within its entire range of motion.

4.4.5 Operator's positions

4.4.5.1 Operator position Operator positions with a height of more than 1,200 mm above the ground and fixed standing operator positions with a height of more than 1,200 mm shall be equipped with devices of fall protection (for example, bars or guard rails) in all directions.

The height of the upper surface of the device shall be 900 mm ~ 1,100 mm. The measurement the manufacturer, a device shall be provided as part of the truck, to which, the walking surface is connected by means of effective engagement device, so as to prevent the walking surface from turning over and shifting [see 6.2 f)]. The application of