
**Rough-terrain trucks — Non-integrated
personnel work platforms —**

Part 1:
**Design, safety requirements and
verification**

*Chariots tout-terrain — Plate-formes de personnel non-intégrées —
Partie 1: Conception, exigences de sécurité et vérification*

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 110, *Industrial trucks*, Subcommittee SC 4, *Rough-terrain trucks*.

ISO 18479 consists of the following parts, under the general title *Rough-terrain trucks — Non-integrated personnel work platforms*:

- *Part 1: Design, safety requirements and verification*
- *Part 2: User requirements*

Introduction

This part of ISO 18479 is one of a set of International Standards produced by ISO/TC 110/SC 4 as part of its program of work regarding standardization of terminology, general safety, performance and user requirements for rough-terrain trucks (hereafter also referred to as *trucks*).

This part of ISO 18479 only addresses the design and safety requirements for non-integrated personnel work platforms and does not address the rough-terrain truck itself. See ISO 10896-1.

This part of ISO 18479 is a type-C standard as stated in ISO 12100.

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Rough-terrain trucks — Non-integrated personnel work platforms —

Part 1: Design, safety requirements and verification

1 Scope

This part of ISO 18479 defines design criteria and safety requirements for non-integrated personnel work platforms (PWPs) which, if approved for use on the rough-terrain truck, can be fitted and secured to the forks, carriage or attachment bracket of a rough-terrain truck to elevate occupants with or without materials and tools to raised work positions without any controls in the platform to control movement.

Design, safety requirements and test methods for variable-reach rough-terrain trucks are covered in ISO 10896-1.

Personnel work platforms equipped with controls which affect movement of the rough-terrain truck are excluded from this part of ISO 18479.

The requirements of this part of ISO 18479 shall apply except where national or local regulations are more stringent.

This part of ISO 18479 is not applicable to non-integrated personnel work platforms manufactured before the date of its publication.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 2867, *Earth-moving machinery — Access systems*

ISO 10896-1, *Rough-terrain trucks — Safety requirements and verification — Part 1: Variable-reach trucks*

ISO 12100, *Safety of machinery — General principles for design — Risk assessment and risk reduction*

ISO 16368, *Mobile elevating work platforms — Design, calculations, safety requirements and test methods*

ISO 18479-2, *Rough-terrain trucks — Non-integrated personnel work platforms — Part 2: User requirements*¹⁾

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 10896-1, ISO 12100, ISO 16368, ISO 18479-2 and the following apply.

1) To be published.

3.1
non-integrated personnel work platform
non-integrated PWP

attachment used to lift occupants, tools and materials to elevated work heights without any controls in the platform to control movement fitted to a rough-terrain truck

3.2
ductile material

material that has a minimum elongation before failure of 10 % and adequate notch impact strength at the lowest operating temperature for which the non-integrated PWP is rated

3.3
non-ductile material
brittle material

fibreglass-reinforced plastic material or other materials that do not meet the requirement for ductile materials

3.4
occupant(s)

competent and authorized personnel in the non-integrated PWP who provide direction to the truck operator regarding the positioning of the non-integrated PWP

4 Safety requirements and/or protective/risk reduction measures

4.1 General

Non-integrated PWPs shall comply with the safety requirements and/or protective/risk reduction measures of this Clause.

In addition, the non-integrated PWP shall be designed according to the principles of ISO 12100 for relevant but not significant hazards which are not dealt with by this part of ISO 18479.

If the rough-terrain truck manufacturer approves the use of a non-integrated PWP with a rough-terrain truck, the truck manufacturer shall indicate the non-integrated PWPs which are approved for use formally to the user (i.e., the operators manual or in an official communication).

4.2 Compliance

The manufacturer of the rough-terrain truck shall ensure that the requirements detailed in this Clause are met as part of its approval for use process.

4.3 Actual capacity

The combined mass of the non-integrated PWP, occupants, equipment and materials shall not exceed the truck's actual capacity as indicated on the load chart of the truck for which the non-integrated PWP is approved for use by the truck manufacturer.

Where a non-integrated PWP is used on a truck for which there is no load chart, the combined mass of the non-integrated PWP, occupants, equipment and materials shall not exceed one-third of the actual capacity of the truck.

The non-integrated PWP shall be marked in accordance with [6.2](#).

4.4 Non-integrated PWP design requirements

4.4.1 Non-integrated PWP materials and dimensions

The work platform shall be made of non-flammable material(s), i.e. materials that will not sustain a flame after the ignition source has been removed.

The work platform floor dimensions which shall not exceed two times the load centre distance listed on the truck nameplate, measured parallel to the longitudinal centre plane of the truck, nor have a transport width greater than the overall width of the truck (measured across the load bearing tires) plus 250 mm on either side.

4.4.2 Guardrail systems

4.4.2.1 Protection

Protection means shall be provided on all sides of the non-integrated PWP to prevent the fall of occupant(s) or materials. The protection means shall be securely fastened to the non-integrated PWP and shall, as a minimum, consist of guardrails at least 1,0 m high, toeguards at least 0,1 m high and intermediate guardrails not further than 0,55 m from either guardrail or toeguards.

Non-integrated PWPs fitted to rough-terrain trucks in those countries where national regulations allow, a minimum of 0,9 m may be applied instead of 1,0 m for the guardrail height [this recognizes national variations in physical stature of occupant(s)].

Vertical posts can be used instead of an intermediate guardrail if the clear horizontal distance between those posts is no more than 180 mm maximum. Clear horizontal space between guardrail segments shall not exceed 120 mm.

Clear horizontal space between toeguard segments shall not exceed 15 mm.

The guardrails shall be constructed to withstand a concentrated load of 890 N, applied at the least favourable position in the least favourable direction without causing permanent deformation of the guardrails.

Guardrails may be folding provided that they remain securely fastened to the non-integrated PWP and are equipped with locking pins secured against unintentional disengagement and loss, or an equally effective means of locking.

4.4.2.2 Anchorage(s)

Anchorage(s) for the connection of a lanyard(s) shall be provided on the non-integrated PWP. These anchorage(s) shall meet the following requirements:

- Each arrest anchorage used as part of a fall arrest system or fall restraint system shall be capable of withstanding a static force of 16 kN without reaching ultimate strength. For anchorages rated for more than one occupant, the strength requirement shall be increased by 20 % for each additional occupant. This strength requirement shall only apply to the anchorage and its attachment to the non-integrated PWP in all possible load directions and shall not be taken into account for the stability calculation and test.
- Each restraint anchorage used as part of a fall arrest system or fall restraint system shall be capable of withstanding a static force of 3 kN without reaching ultimate strength. For anchorages rated for more than one occupant, the strength requirement shall be multiplied by the number of occupants. This strength requirement shall only apply to the anchorage and its attachment to the non-integrated PWP in all possible load directions and shall not be taken into account for the stability calculation and test.

The number of anchorages provided on the non-integrated PWP shall equal or exceed the number of occupants allowed on the platform as determined by the non-integrated PWP manufacturer. More than one occupant may attach to a single anchorage if the anchorage is rated for more than one occupant.

The anchorages shall be so designed to accept the personal protective equipment. Exposed edges or corners shall be relieved either with a radius of at least 0,5 mm or a 45° chamfer.

The non-integrated PWP manufacturer shall identify each lanyard anchorage. The identification shall specify the maximum number of lanyards that can be attached at each location.

Verification shall be carried out by means of a design check and by visual examination.

4.4.2.3 Openings in guardrails for entrance and exit

The non-integrated PWP shall have an opening for entrance and exit. Any part of the guardrail system that is movable for the purpose of access to the non-integrated PWP shall not fold or open outwards. It shall be designed to fasten in the closed position. The gate shall return automatically to the closed and fastened position. Inadvertent opening shall be prevented. Sliding or vertically hinged intermediate guardrails which return automatically to their protective position do not need fastening. Consideration should be given to ease of entry and exit.

The minimum opening width for the purpose of access to the non-integrated PWP shall be 420 mm.

On non-integrated PWPs with fixed top guardrails, the opening shall not be less than 800 mm high and 420 mm wide.

Wherever possible, the opening dimensions should be at least 920 mm high and 645 mm wide.

Verification shall be carried out by visual examination.

4.4.2.4 Chains or ropes

Chains or ropes shall not be used as guardrails or access gates.

Verification shall be carried out by visual examination.

4.4.3 Load supporting elements

The structural safety factor for the non-integrated PWP shall not be less than 2:1 for ductile materials (based on minimum yield strength) and 5:1 for non-ductile materials (based on minimum ultimate strength) used for all load supporting structural elements and non-integrated PWP attachment means.

Verification shall be carried out by functional test.

4.4.4 Floor of the platform

The floor of the non-integrated PWP shall be slip-resistant and self-draining. Any opening in the floor or between the floor and toeboards or access gates shall be dimensioned so as to prevent the passage of a sphere of 15 mm diameter.

Trap doors in the floor of the non-integrated PWP are not permitted.

Verification shall be carried out by visual examination.

4.4.5 Non-integrated PWP personnel access

If access to the non-integrated PWP floor, in the lowered position, is greater than 500 mm from the ground, an access system shall be provided for access to the non-integrated PWP in accordance with ISO 2867. Successive steps shall not be more than 350 mm apart.

Verification shall be carried out by visual examination.

4.4.6 Platform connection and position

Means shall be provided to securely attach the non-integrated PWP to the truck, and to prevent the non-integrated PWP from inadvertent pivoting. This means shall be retained with the truck or the non-integrated PWP.

Means shall be provided so that the non-integrated PWP can only be centred laterally on the truck and retained against the vertical face of the forks, carriage or attachment bracket.

Verification shall be carried out by means of a design check and visual examination.

4.4.7 Protection from moving parts

The non-integrated PWP shall be so designed to protect the occupants of the non-integrated PWP from any moving part of the rough-terrain truck that presents a hazard.

Verification shall be carried out by visual examination.

5 Verification of safety requirements and/or protective/risk reduction measures

5.1 General

All safety measures of [Clause 4](#) should contain self-evident means for verification. If this means is not self-evident, prescribed methods of verification have been provided with the requirement.

6 Information for use

6.1 Manufacturer's plate

6.1.1 The following information shall be provided by the manufacturer of the non-integrated PWP and shall be legibly and permanently marked on the non-integrated PWP:

- a) name and address (city, state and country are mandatory) of the manufacturer of the non-integrated PWP;
- b) model designation;
- c) serial number;
- d) maximum mass of the non-integrated PWP;
- e) non-integrated PWP capacity (including occupants, equipment and materials) and maximum number of occupants allowed on the non-integrated PWP;
- f) if fitted with hydraulics, the maximum hydraulic operating pressure recommended by the non-integrated PWP manufacturer;
- g) designation of compliance with requirements of this International Standard applicable to the manufacturer.

6.1.2 Additionally, for fork mounted non-integrated PWP, the maximum and minimum length of the forks that the non-integrated PWP is intended to be used with.