INTERNATIONAL STANDARD

ISO 22915-3

First edition
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Industrial trucks — Verification of stability —

Part 3: Reach and straddle trucks

Chariots de manutention — Vérification de la stabilité —

Partie 3: Chariot à mât ou à fourche rétractable

Reference number
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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 22915-3 was prepared by Technical Committee ISO/TC 110, *Industrial trucks*, Subcommittee SC 2, *Safety of powered industrial trucks*.

This first edition of ISO 22915-3 cancels and replaces ISO 3184:1998, of which it constitutes a technical revision. It also incorporates the Technical Corrigendum ISO 3184:1998/Cor.1:2000.

ISO 22915 consists of the following parts, under the general title *Industrial trucks — Verification of stability*:

— *Part 1: General*

— *Part 2: Counterbalanced trucks with mast*

— *Part 3: Reach and straddle trucks*

— *Part 4: Pallet stackers, double stackers and order-picking trucks with operator position elevating up to and including 1 200 mm lift height*

— *Part 7: Bi-directional and multi-directional trucks*

— *Part 8: Additional stability test for trucks operating in the special condition of stacking with mast tilted forward and load elevated*

— *Part 10: Additional stability test for trucks operating in the special condition of stacking with load laterally displaced by powered devices*

— *Part 20: Additional stability test for trucks operating in the special condition of offset load, offset by utilization*

— *Part 21: Order-picking trucks with operator position elevating above 1 200 mm*

The following parts are under preparation:

— *Part 5: Single side loading trucks*

— *Part 9: Counterbalanced trucks with mast handling freight containers of 6 m (20 ft) length and longer*

— *Part 11: Industrial variable reach trucks*

— *Part 12: Industrial variable reach trucks handling freight containers of 6 m (20 ft) length and longer*

— *Part 14: Rough-terrain variable reach trucks*

— *Part 15: Counterbalanced trucks with articulated steering*

— *Part 16: Pedestrian-propelled trucks*

— *Part 17: Burden and personnel carriers*

Industrial trucks — Verification of stability —

Part 3: Reach and straddle trucks

1 Scope

This part of ISO 22915 specifies the tests for verifying the stability of reach trucks (with retractable mast or fork) and straddle trucks, equipped with tilting or non-tilting masts or fork arms and having a rated capacity up to and including 5 000 kg.

It is also applicable to such trucks operating under the same conditions when equipped with load-handling attachments.

2 Normative references

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

ISO 5053, *Powered industrial trucks — Terminology*

ISO 22915-1, *Industrial trucks — Verification of stability — General* [1)]

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5053 and ISO 22915-1 apply.

4 Test conditions

4.1 General

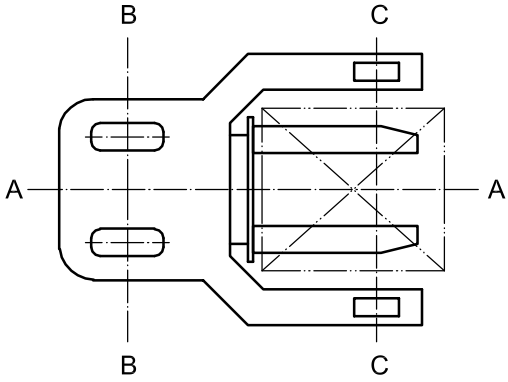
See ISO 22915-1.

4.2 Position of truck on tilt table

4.2.1 Load and drive/steer axles

The load and drive/steer axles are defined by Figure 1.

1) To be published.



Key

A–A longitudinal centre plane of truck

B–B drive/steer axle

C–C load axle

Figure 1 — Load and drive/steer axles

4.2.2 Tests 1, 2, 6, 7 and 8

The truck shall be positioned on the tilt table so that its drive/steer axle, B–B, and load axle, C–C, are parallel to the tilt axis, X–Y, of the tilt table. See Table 1.

4.2.3 Tests 3, 4 and 5

The truck shall be positioned on the tilt table with the line, M–N, parallel to the tilt axis, X–Y, of the tilt table. See Table 1.

Point M is defined as follows:

a) For trucks with a single non-articulating drive (steer) wheel: point M shall be the vertical projection onto the tilt table of the point of intersection between the centreline of the drive/steer axle and the centreline of the drive wheel width.

b) For trucks with a non-sprung castor wheel point:

   1) for tests carried out on the castor wheel side of the truck, point M shall be the vertical projection onto the tilt table of the point of intersection between the centreline of the castor wheel axle and the midpoint between the castor wheel or the two castor wheels, with the non-sprung castor being positioned with the centreline of the castor wheel axle nearer to the centre plane of the truck;

   2) for tests carried out on the drive (steer) wheel side of the truck, point M shall be the vertical projection onto the tilt table of the point of intersection between the centreline of the drive/steer axle and the centreline of the drive wheel width.

c) For trucks with a drive/steer axle in an articulating frame articulated in the centre plane of the truck: point M shall be the vertical projection onto the tilt table of the point of the intersection between the lateral axis of the articulating frame and the centre plane, A–A, of the truck.

d) For trucks with a sprung castor wheel and a single non-sprung drive (steer) wheel: point M shall be the vertical projection onto the tilt table of the point of intersection between the centreline of the drive wheel axle and the centreline of the drive wheel width, with the axle of the drive wheel positioned at right angles to the tilt axis.

e) For trucks with non-articulated dual drive (steer) wheels in pivoting mounting: point M shall be the vertical projection onto the tilt table of the point of intersection between the centreline of the drive axle and the centreline of the width of the drive wheel closer to the tilt axis, with the axle of the drive wheels positioned at right angles to the tilt axis.

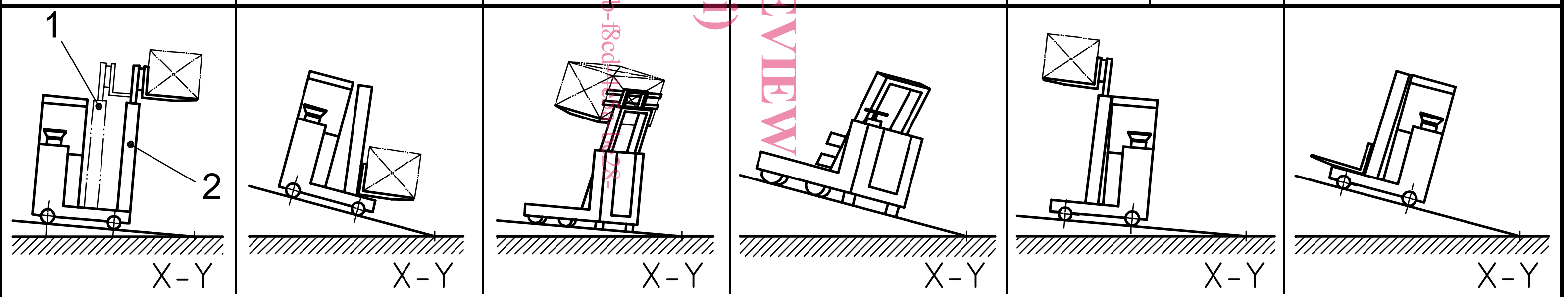
f) For trucks with non-articulated, non-sprung chassis castors: point M shall be the vertical projection onto the tilt table of the point of intersection between the centreline of the castor wheel width, with the non-sprung castor positioned with the centreline of the castor wheel axle nearer to the centre plane of the truck.

g) For trucks with a non-articulated, single-drive wheel (steered) on the centre plane, A–A, and sprung castor wheels: point M shall be the vertical projection onto the tilt table of the point of intersection between the centreline of the drive wheel axle and the centreline of the drive wheel width, with the axle of the drive wheel positioned at right angles to the tilt axis. The castor wheel closest to the tilt axis shall be positioned at right angles to the tilt axis and the castor wheel axle shall be nearer to the centre plane of the truck.

As shown in Table 1, point N is defined as the centre point of the area of contact between the tilt table surface and the load front wheel closest to the tilt axis, X–Y, of the tilt table.

Table 1 — Verification of stability

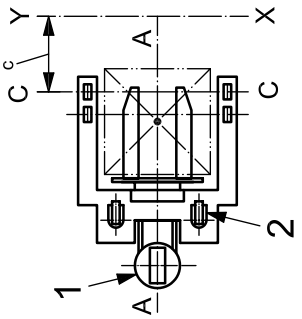
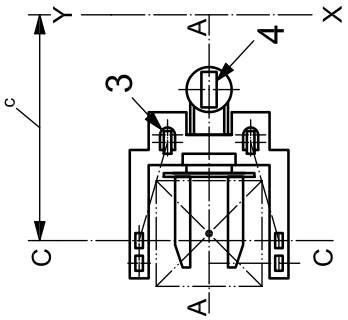
Test criteria		Test 1	Test 2	Test 3	Test 4	Test 5	Test 6	Test 7	Test 8
Direction of test	Longitudinal	x	x				x	x	x
	Lateral			x	x	x			
Direction of load handling device	Load leading	x	x						
	Load trailing						x	x	x
Mode of operation	Travelling		x			x			x
	Stacking/ retrieving	x		x	x		x	x	
Load at load centre	With	x	x	x			x		
	Without				x	x		x	x
Lift height	Maximum	x		x	x		x	x	
	Travel		x			x			x
Position of carrying device	Extended	x[a]							
	Retracted		x	x	x	x	x	x	x
Position of mast	Vertical	x		b	b	b			
	Full rearward		x						
Tilt-table angle		4 %	18 %	6 %	8 %	(15 + 1,1v) % or 50 % max.	14 %	14 %	(15 + 0,5i + 1,55v) % (40 + 0,5i) % max.
Truck position on tilt table									



Key

1 position for straddle trucks
2 extended (for reach trucks)

Table 1 (*continued*)

Test criteria	Tests 1, 2, 6,7 and 8
Truck position on tilt table	As per 4.2.2 — Tests 1 and 2  As per 4.2.2 — Tests 6, 7 and 8  **Key** 1 articulated steering and driving axle (any wheel position permitted in test) 2 non-articulated, non-sprung castors (any wheel position permitted in test) 3 non-articulated, non-sprung castors turned towards load 4 articulated steering and driving axle (longitudinal direction)