INTERNATIONAL STANDARD

ISO 22915-5

First edition
2014-07-01

Industrial trucks — Verification of stability —

Part 5: Single-side-loading trucks

Chariots de manutention — Vérification de la stabilité —

Partie 5: Chariots à chargement latéral

Reference number
ISO 22915-5:2014(E)

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Foreword

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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).

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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 2, *Safety of powered industrial trucks*.

This first edition cancels and replaces the first edition (ISO 13563-1:2001), of which it constitutes a minor revision.

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 5: Single-side-loading trucks*

— *Part 7: Bidirectional and multidirectional trucks*

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

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

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

— *Part 11: Industrial variable-reach trucks*

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

— *Part 13: Rough-terrain trucks with mast*

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

— *Part 15: Counterbalanced trucks with articulated steering*

— *Part 16: Pedestrian-propelled trucks*

— *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*

— *Part 22: Lateral- and front- stacking trucks with and without elevating operator position*

The following parts are under preparation:

— *Part 24: Slewing variable-reach trucks*

Industrial and RTT lorry-mounted trucks are to form the subject of a future part 23.

Industrial trucks — Verification of stability —

Part 5: Single-side-loading trucks

1 Scope

This part of ISO 22915 specifies the tests to verify the stability of single-side-loading trucks with tiltable or non-tiltable mast or fork arms. It is applicable to trucks fitted with fork arms and/or attachments.

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 3691-1, *Industrial trucks — Safety requirements and verification — Part 1: Self-propelled industrial trucks, other than driverless trucks, variable-reach trucks and burden-carrier trucks*

ISO 22915–1, *Industrial trucks — Verification of stability — Part 1: General*

ISO 5053, *Powered industrial trucks — Terminology*

3 Terms and definitions

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

3.1
normal operating conditions when travelling
travelling with the mast or fork arms tilted backwards if capable and the load retracted and in the lowered (travelling) position or resting on the load carrying deck

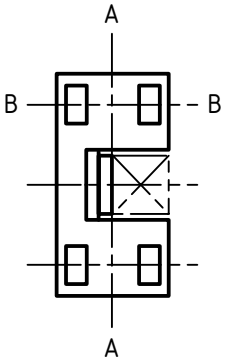
4 Test conditions

4.1 General

See ISO 22915-1.

4.2 Position of the truck on the tilt table

The indication of the articulating steer axle is the centre line of the axle. The allocation of the indication is defined in Figure 1.



Key

A-A longitudinal centre plane of the truck

B-B articulating steer axle

Figure 1 — Articulating steer axle, longitudinal centre plane

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.

Point N is the centre point of the area of contact between the tilt table surface and a non-articulating wheel or stabilizer pad. Point M is defined as follows.

a) For trucks with an articulating steer axle, B-B, designed to articulate approximately about the longitudinal centre plane of the truck, A-A, the projection onto the tilt table of the point of intersection of the longitudinal centre plane of the truck with the axis of this articulating axle, see Figure 1.

b) For trucks without an articulating axle or with axle locks or stabilizers in use, the centre point of the area of contact between the tilt table surface and another wheel or stabilizer pad.

When the truck rating is related to the use of stabilizers, suspension locks, etc., such devices shall be used during the tests. If the truck can be used without their engagement, an additional test shall be carried out in this condition.

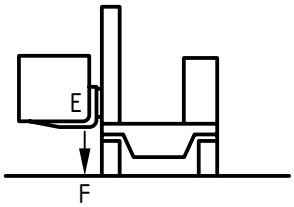
4.3 Position of the load datum point

Tests 1 and 5 shall be conducted with the horizontal position of the load datum point, E, see Figures 2, 3, and 4, unchanged when elevated from its lowered position.

By means of a plumb-line or other suitable equipment, set the mast vertical. Elevate the fork and the prescribed test load to approximately 300 mm above the tilt table. With the front face of the fork arm shank vertical, establish a point, E, on the fork or fork carrier having a fixed relationship to the centre of gravity of the test load. Point E, shall be used to provide a reference datum, F, on the tilt table. When the mast is elevated, a new point, F_1, on the tilt table may occur, as shown in Figure 3. By the following adjustments this new point, F_1, can be returned to the original location of F.

For trucks with tiltable masts, changes in the location of F_1 shall be corrected by varying the tilt of the mast within the limits provided by the design of the truck.

Adjustments cannot be made on trucks having non-tiltable masts, or fork carrier. Mast retraction is not permitted.

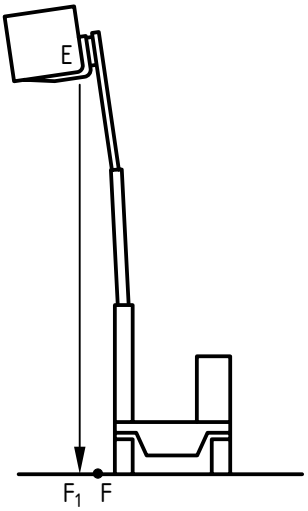


Key

E point on the inside heel of the fork arm

F reference datum on tilt table

Figure 2



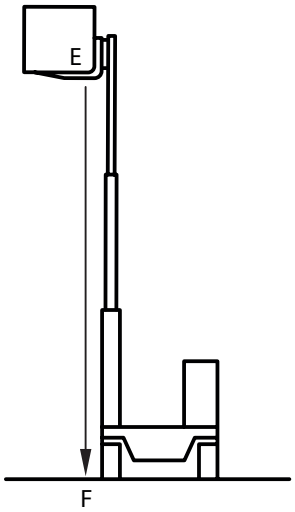
Key

E point on the inside heel of the fork arm

F reference datum on tilt table

F_1 new point on the tilt table

Figure 3



Key

E point on the inside heel of the fork arm

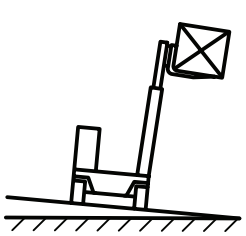
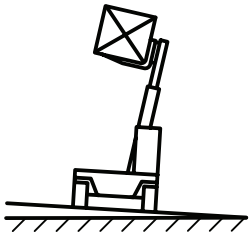
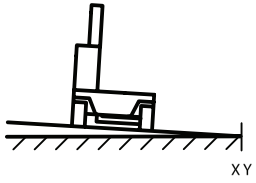
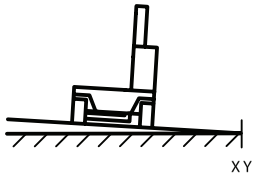
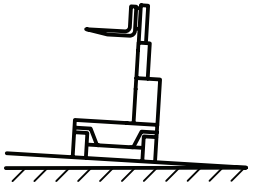
F reference datum on tilt table

Figure 4

5 Verification of stability

The stability shall be verified according to Table 1.

Table 1 — Verification of stability

Test criteria		Test 1	Test 2	Test 3	Test 4	Test 5
Direction of test	Lateral	x	x	x	x	x
Mode of operation	Travelling			x	x	
	Stacking	x	x			x
Load at load centre	With	x	x			
	Without			x	x	x
Lift height	Maximum	x	x			x
	Travel			x (see 3.1)	x (see 3.1)	
Position of load carrier device	Retracted		x	x	x	x
	Extended	x				
Position of mast	Vertical	x (see 4.3)		Position so that the truck is in the condition of least stability		x (see 4.3)
	Full rearward tilt		x			
Platform slope for rated capacity	< 5 000 kg	4 %	(8 + 0,62*v*) % (14 % max)	(18 + 0,62*v*) % (35 % max)[a]	(18 + 0,62*v*)% (35 % max [a]	(8 + 0,62*v*) % (14 % max)
	≥ 5 000 kg	3,5 %				
Truck position on tilt table						

v Maximum speed of truck, unladen, on smooth, level ground, km/h

a Parallel

[a] **Regional requirement for Japan for tests 3 and 4, platform slope for rated capacity:** (15 + 1, 1v) % (max. 40 % for trucks < 5 000 kg) (max 50 % for trucks ≥ 5 000 kg).

Table 1 — (*continued*)

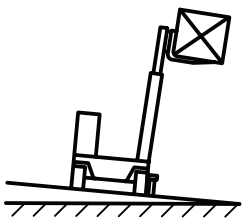
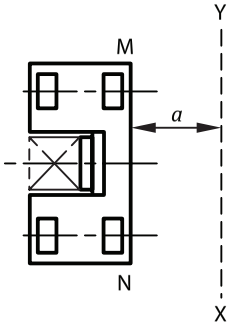
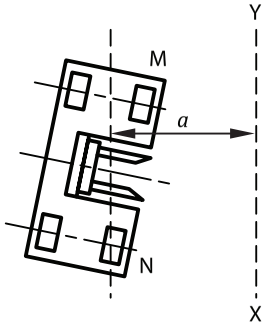
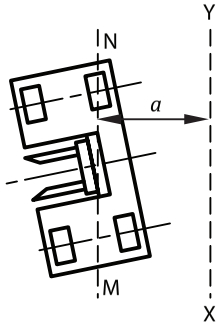
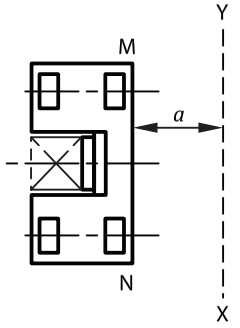
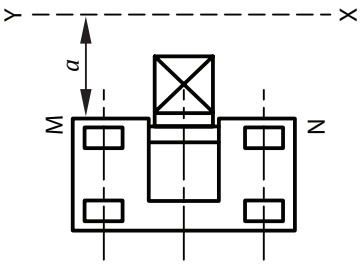
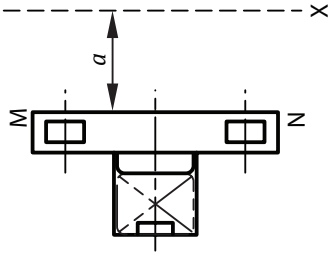
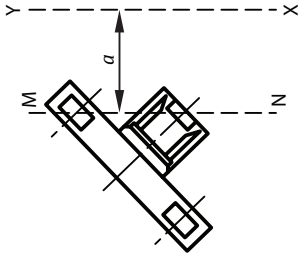
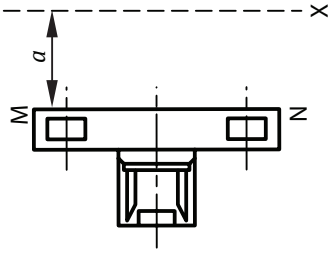
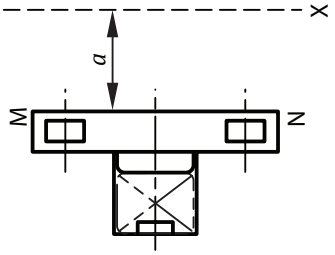
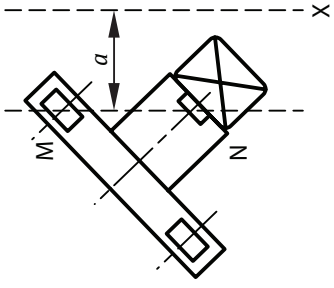
Test criteria	Test 1	Test 2	Test 3	Test 4	Test 5
Truck position on tilt table					
		As per 4.2 a)	**As per 4.2 a)**	**As per 4.2 a)**	**As per 4.2 a)**
v Maximum speed of truck, unladen, on smooth, level ground, km/h					
a Parallel					

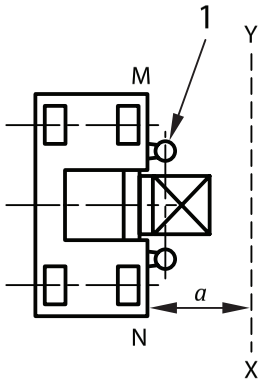
Table 1 — (*continued*)

Test criteria	Test 1	Test 2	Test 3	Test 4	Test 5
Truck position on tilt table					
	As per 4.2 b)	As per 4.2 b)	As per 4.2 b)	As per 4.2 b)	As per 4.2 b)
					
	As per 4.2 b)				

v Maximum speed of truck, unladen, on smooth, level ground, km/h

a Parallel

Table 1 — (*continued*)

Test criteria	Test 1	Test 2	Test 3	Test 4	Test 5
Truck position on tilt table	 **As per 4.2 b)**				
1 Stabilizer *a* Parallel					

6 Marking

The capacity under the operating condition, with stabilizers and/or axle locking engaged and disengaged, as determined by this stability test, shall be indicated on an information plate in view of the operator in the normal operating position according to ISO 3691-1.

ICS 53.060

Price based on 9 pages