



Industrial trucks—Verification of stability

Part 11: Industrial variable-reach trucks



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The following are represented on Committee ME-026:

- Australian Industrial Truck Association
 - Australian Industry Group
 - Construction and Mining Equipment Industry Group
 - Hire and Rental Industry Association of Australia
 - Safety Institute of Australia
 - WorkCover New South Wales
 - WorkSafe Victoria
-

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Australian Standard[®]

Industrial trucks—Verification of stability

Part 11: Industrial variable-reach trucks

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PREFACE

This Standard was prepared by the Standards Australia Committee ME-026, Industrial Trucks, to supersede AS 2359.18 *Powered industrial trucks, Part 18: Stability tests for industrial variable-reach trucks*.

The objective of this Standard is to provide designers and manufacturers of industrial variable reach (tele-handlers) with the test criteria when conducting stability tests. It is to be used in conjunction with AS ISO 22915.1, *Industrial trucks—Verification of stability, Part 1: General*.

This Standard is identical with, and has been reproduced from ISO 22915-11:2011, *Industrial trucks—Verification of stability, Part 11: Industrial variable-reach trucks*.

This first edition of ISO 22915-11 cancels and replaces ISO 13562-1:2000, of which it constitutes a technical revision.

As this Standard is reproduced from an International Standard, the following applies:

- (a) In the source text ‘this part of ISO 22915’ should read ‘Australian Standard’.
- (b) A full point substitutes for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to Australian or Australian/New Zealand Standards, as follows:

<i>Reference to International Standard</i>		<i>Australian Standard</i>	
ISO		AS	
5053	Powered industrial trucks— Terminology	2359	Powered industrial trucks
		2359.7	Part 7: Terminology
		AS ISO	
22915	Industrial trucks—Verification of stability	22915	Industrial trucks—Verification of stability
22915-1	Part 1: General	22915.1	Part 1: General

Only normative references that have been adopted as Australian or Australian/New Zealand Standards have been listed.

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AUSTRALIAN STANDARD

Industrial trucks—Verification of stability**Part 11:**
Industrial variable-reach trucks**1 Scope**

This part of ISO 22915 specifies tests for verifying the stability of industrial variable-reach trucks, equipped either with fork arms or with load-handling attachments.

It is not applicable to those trucks designed for handling freight containers; nor is it applicable to rough-terrain variable-reach trucks, which are covered by ISO 22915-14.

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 3691-2, *Industrial trucks — Safety requirements and verification — Part 2: Self-propelled variable-reach trucks*

ISO 5053, *Powered industrial trucks — Terminology*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 3691-2 and ISO 22915-1 and the following apply.

3.1**variable-reach truck**

counterbalanced lift truck with an articulating boom, telescopic or not, non-slewing as defined in ISO 5053 or having a slewing movement of not more than 5° on either side of the truck's longitudinal axis, used for stacking loads

NOTE 1 The load-handling means may be mounted directly on the lifting means or on an auxiliary mast fixed at the end of the lifting means.

NOTE 2 Variable-reach trucks may be fitted with a rigid or articulating chassis, stabilizers, axle-locking or lateral frame levelling devices as defined in ISO 3691-2, or two- or four-wheel steering or articulating chassis steering systems.

3.2**industrial variable-reach truck**

variable-reach truck designed for operation on substantially firm, smooth, level, prepared and consolidated surfaces

4 Test conditions

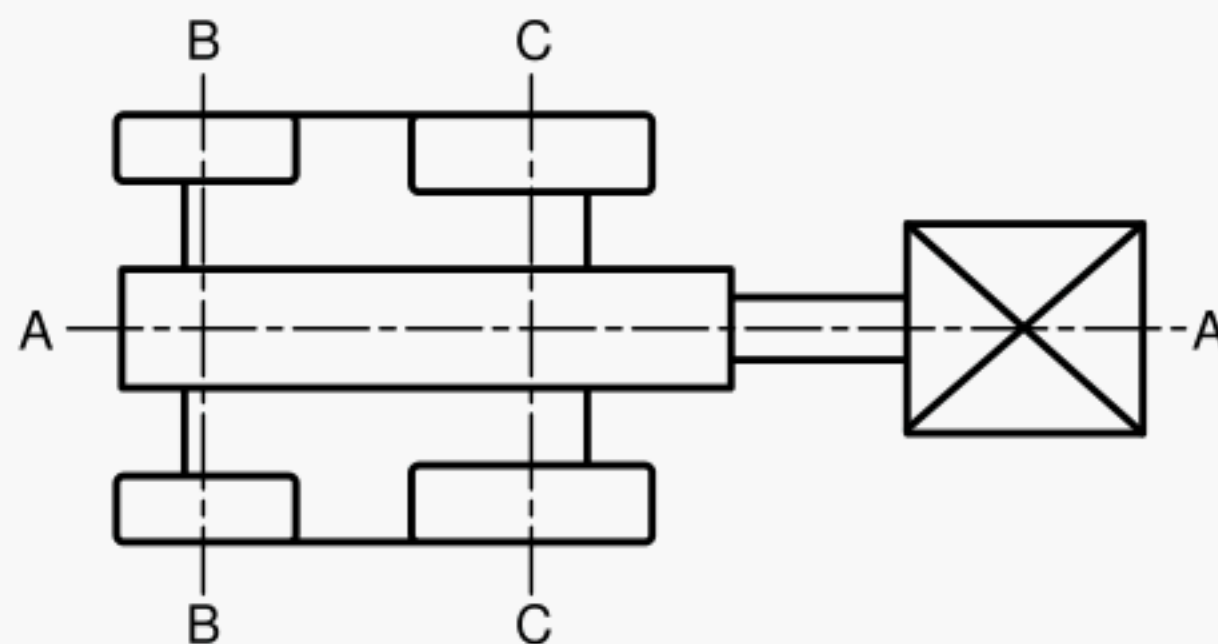
4.1 General

See ISO 22915-1.

4.2 Position of truck on the tilt table

4.2.1 Load and steer axles

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



Key

A–A longitudinal centre plane of truck

B–B steer axle (rear axle)

C–C load/drive axle

NOTE The load/drive axle may also be a steer axle on four-wheel steer trucks.

Figure 1 — Load and steer axles

4.2.2 Tests 1 and 2

The truck shall be positioned on the tilt table so that its load axle, C–C, and steer axle, B–B, 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 in a turning position with the line, M–N, parallel to the tilt axis, X–Y, of the tilt table. See Table 1.

For trucks with an articulating steer axle, the wheel on the steer axle nearest to the tilt axis, X–Y, shall be parallel to X–Y. See Table 1.

Point M is defined as follows:

- For trucks with an articulating steer axle: point M shall be the projection onto the tilt table of the intersection of the longitudinal centre plane, A–A, of the truck with the axis of the steer axle (see Table 1).
- For trucks with an articulating chassis: point M shall be the projection onto the tilt table of the intersection of the longitudinal centre plane, J–J, of the rear chassis module and the axis of the rear axle (see Table 1) when fully articulated.

- c) For trucks with axle locking: point M shall be the centre point of the area of contact between the tilt table and the rear wheel nearest to the tilt axis, X–Y, of the tilt table (see Table 1).

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 wheel (or stabilizer pad, if fitted) closest to the tilt axis, X–Y, of the tilt table.

4.3 Test load

Tests 1 and 3 shall be conducted with the test load in the least stable combination of lift and reach, with the fork arms in the horizontal position.

Test 5 shall be conducted at maximum and minimum boom extensions, at the maximum boom angle and with the fork arms in the horizontal position.

See Table 1.

4.4 Lift height

For tests simulating travel, i.e. Tests 2 and 4, the upper face of the fork arms, measured at the heel of the fork arm when fully tilted rearward, shall be positioned

- 300 mm above the tilt table for trucks of 10 t rated capacity or less, and
- 500 mm for trucks of greater than 10 t rated capacity.

See Table 1.

4.5 Lateral test procedure

For trucks fitted with selectable stabilizers and/or axle locking, Tests 1 and 3 shall be conducted both with stabilizers/axle locking engaged and disengaged.

See Table 1.

5 Verification of stability

The stability of a truck shall be verified in accordance with Table 1.

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 3691-2.

Table 1 — Verification of stability

Test criteria		Test 1	Test 2	Test 3	Test 4	Test 5
Direction of test	Longitudinal	x	x			
	Lateral			x	x	x
Direction of load-handling device	Load leading	x	x			
	Load trailing					
Mode of operation	Travelling		x		x	
	Stacking/retrieving	x		x		x
Load at load centre	With	x	x	x		
	Without				x	x
Lift/reach position	Max. and min. boom extension at max. boom angle					x
	Least stable combination	x		x		
	Travel		x		x	
Position of fork arms	Horizontal	x		x		x
	Full rearward		x		x	
Stabilizer device and/or axle-locking device (if so equipped)	With	x		x		
	Without	x	x	x	x	x
Lateral frame levelling device (if so equipped)	With			x		
	Without	x	x	x	x	x
Tilt-table angle for actual capacity	≤ 10 000 kg	4 %	18 %	6 %	(15 + 1,4 _v) % max. 50 %	6 %
	>10 000 kg	3,5 %			(15 + 1,4 _v) % max. 40 %	
v maximum travel speed of the unladen truck, km/h						

Table 1 (continued)

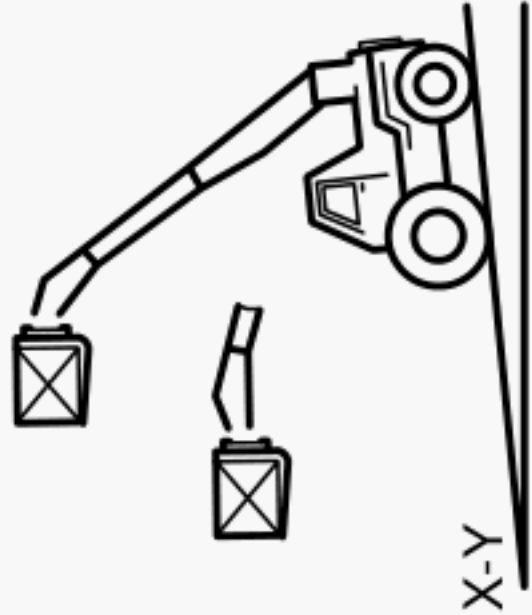
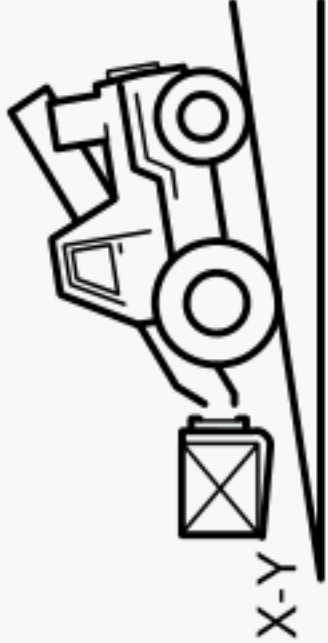
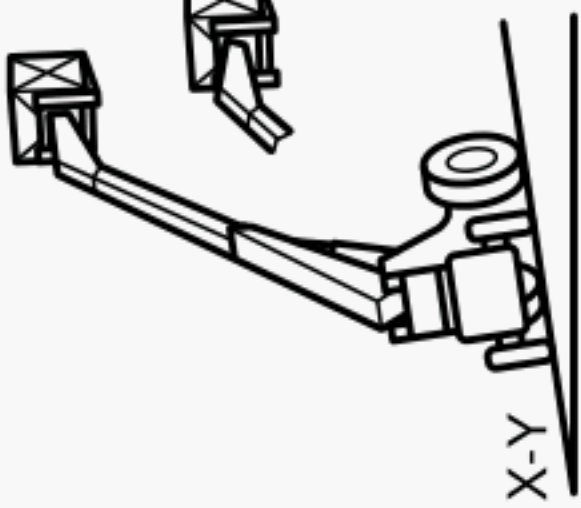

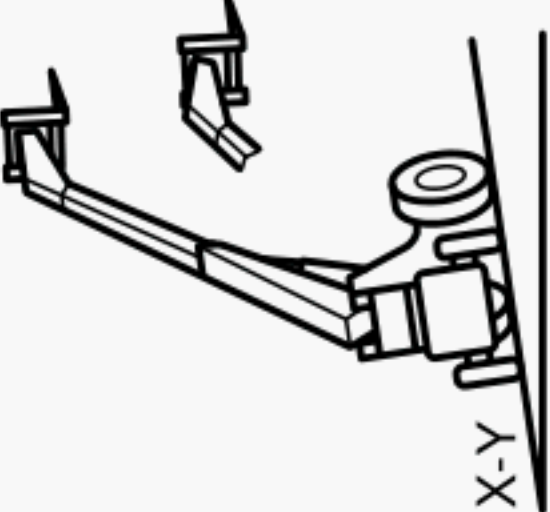
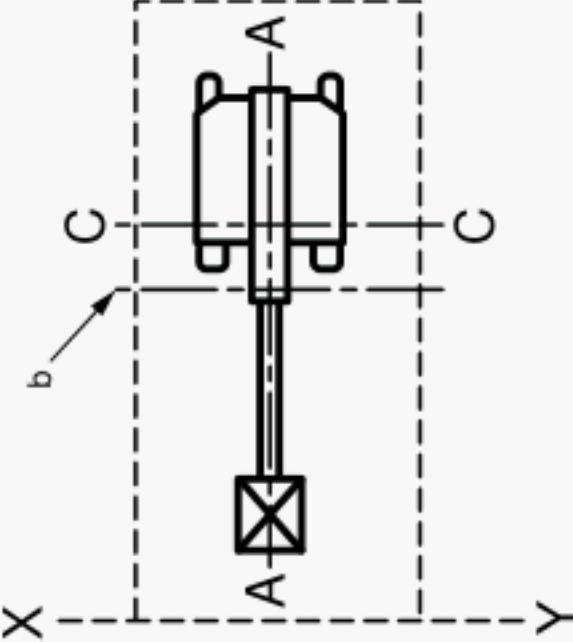
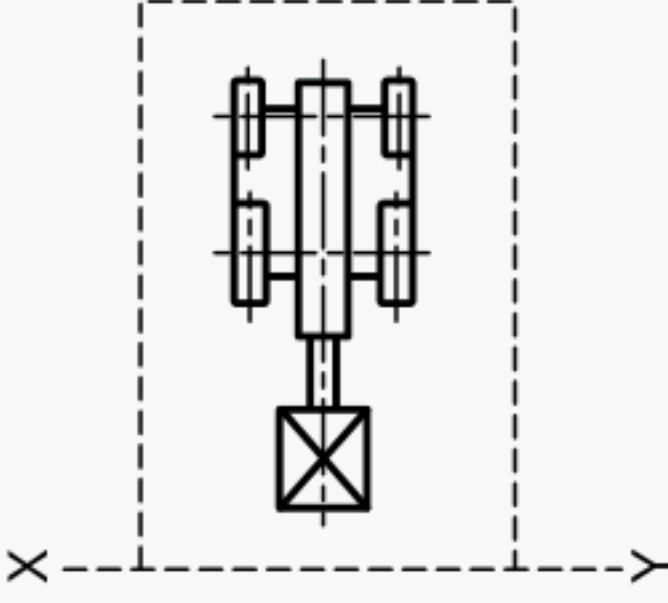
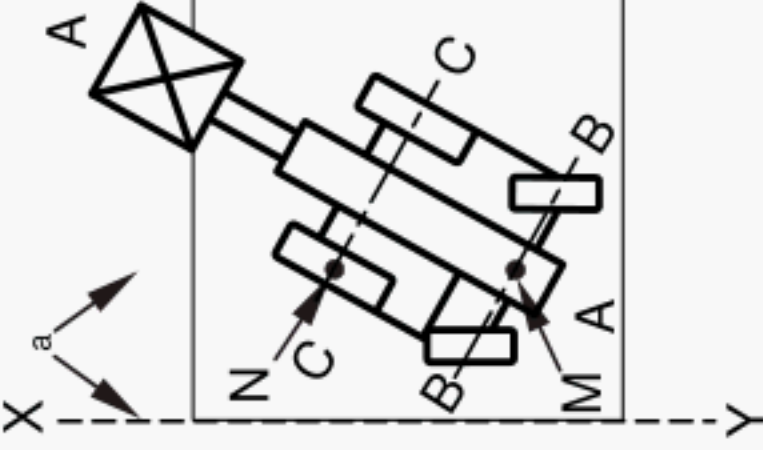
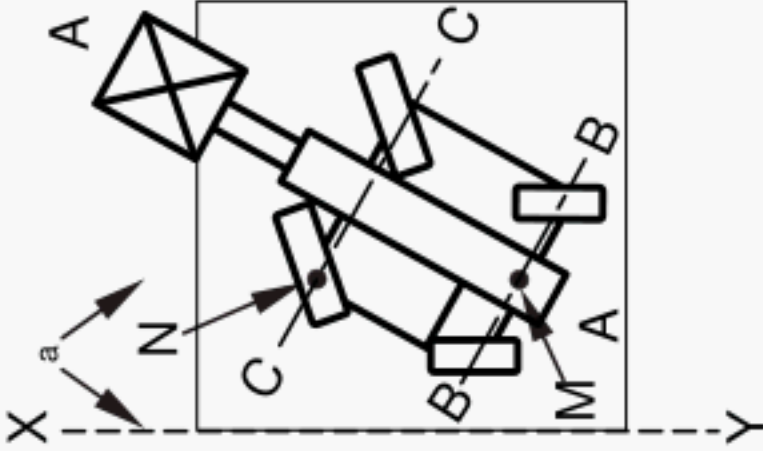
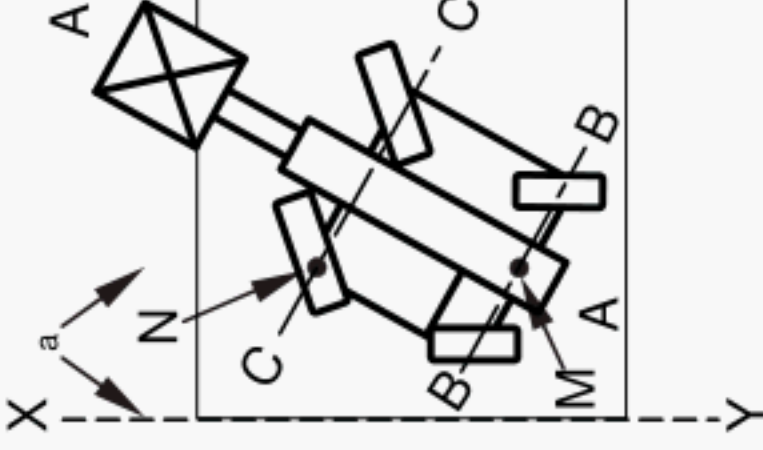
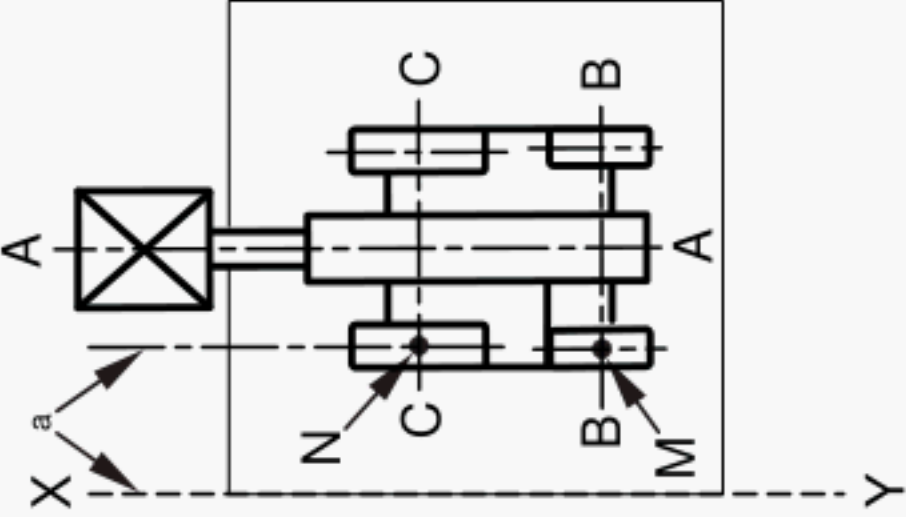
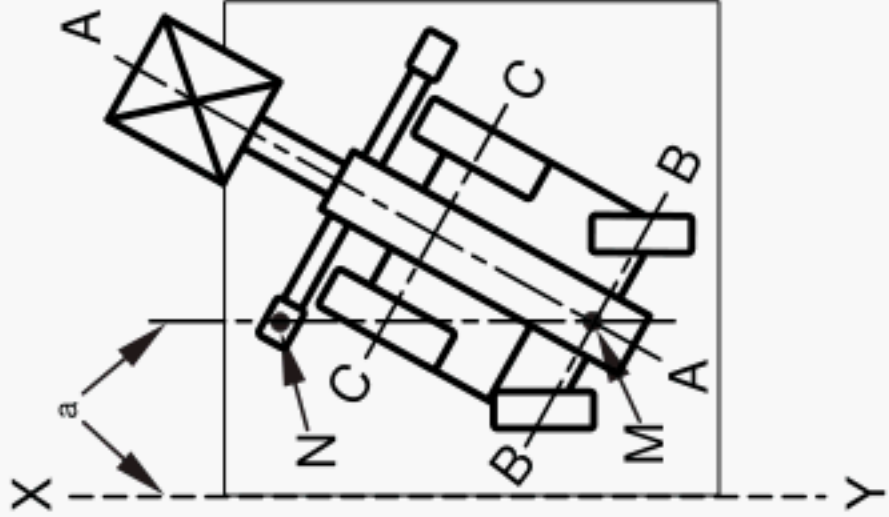
Test criteria	Test 1	Test 2	Test 3	Test 4	Test 5
Truck position on tilt table					
					
	Articulating steer axle — As per 4.2.3 a)	Two-wheel steer	Two-wheel steer	Four-wheel steer	Articulating chassis — As per 4.2.3 b)

Table 1 (continued)

Test criteria	Test 1	Test 2	Test 3	Test 4	Test 5
Truck position on tilt table			<div><p>Axles locked — As per 4.2.3 c)</p><p>Stabilized</p></div>		

a Parallel.

b Stabilizer axis.

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