



Industrial trucks—Verification of stability

Part 11: Industrial variable-reach trucks



This Australian Standard® was prepared by Committee ME-026, Industrial Trucks. It was approved on behalf of the Council of Standards Australia on 10 June 2015. This Standard was published on 30 June 2015.

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
-

This Standard was issued in draft form for comment as DR AS ISO 22915.11:2015.

Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

Keeping Standards up-to-date

Australian Standards® are living documents that reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued.

Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments that may have been published since the Standard was published.

Detailed information about Australian Standards, drafts, amendments and new projects can be found by visiting www.standards.org.au

Standards Australia welcomes suggestions for improvements, and encourages readers to notify us immediately of any apparent inaccuracies or ambiguities. Contact us via email at mail@standards.org.au, or write to Standards Australia, GPO Box 476, Sydney, NSW 2001.

Australian Standard[®]

**Industrial trucks—Verification of
stability**

Part 11: Industrial variable-reach trucks

Originated as AS 2359.18—2008.
Revised and redesignated as AS ISO 22915.11:2015.

COPYRIGHT

© Standards Australia Limited

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher, unless otherwise permitted under the Copyright Act 1968.

Published by SAI Global Limited under licence from Standards Australia Limited, GPO Box 476, Sydney, NSW 2001, Australia

ISBN 978 1 76035 107 6

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
22915 Industrial trucks—Verification of stability	AS ISO 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO will not be held responsible for identifying any or all such patent rights.

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

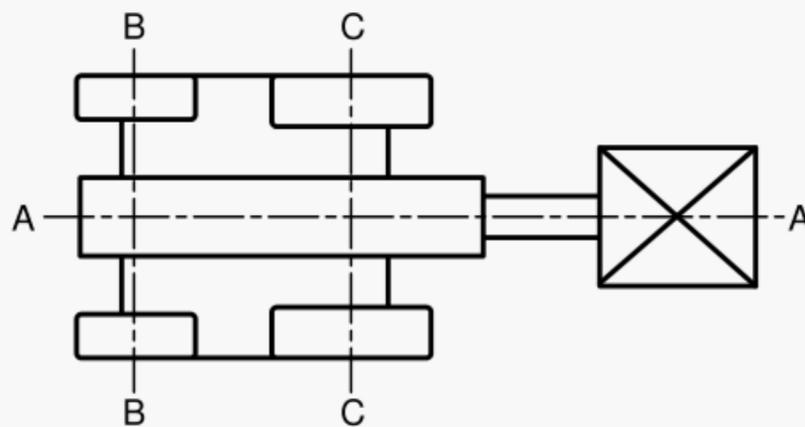
4.1 General

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			
	Lateral		x	x	x
Direction of load-handling device	Load leading	x			
	Load trailing				
Mode of operation	Travelling	x		x	
	Stacking/retrieving	x	x		x
Load at load centre	With	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	
Position of fork arms	Horizontal	x	x		x
	Full rearward			x	
Stabilizer device and/or axle-locking device (if so equipped)	With	x	x		
	Without	x	x	x	x
Lateral frame levelling device (if so equipped)	With		x		
	Without	x	x	x	x
Tilt-table angle for actual capacity	≤ 10 000 kg	4 %	6 %	(15 + 1,4v) % max. 50 %	6 %
	>10 000 kg	3,5 %			
v maximum travel speed of the unladen truck, km/h					

Table 1 (continued)

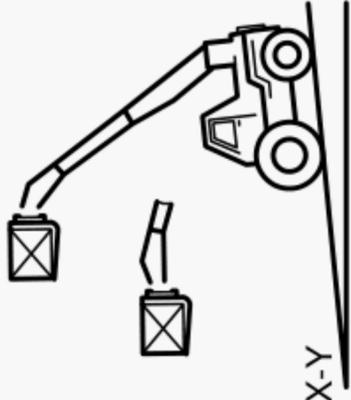
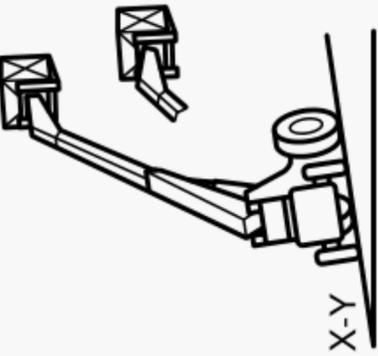
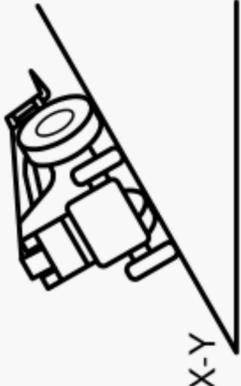
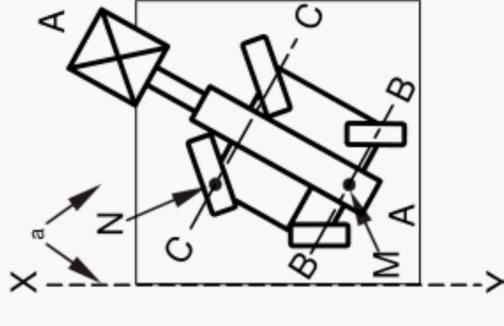
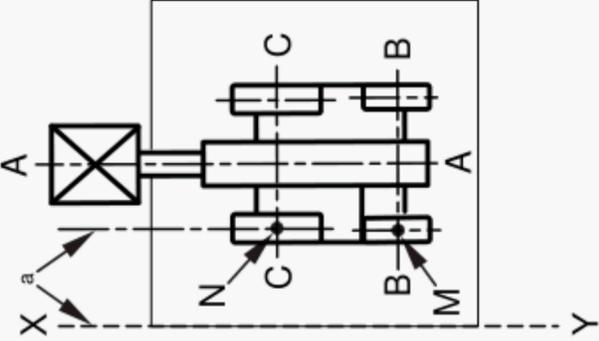
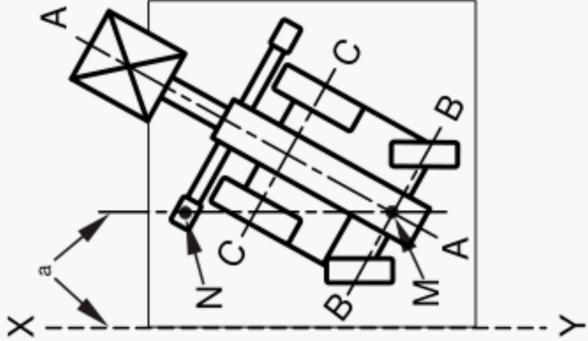
Test criteria	Test 1	Test 2	Test 3	Test 4	Test 5
Truck position on tilt table					
	<p>Articulating steer axle — As per 4.2.3 a)</p>	<p>Two-wheel steer</p>	<p>Two-wheel steer</p>	<p>Four-wheel steer</p>	<p>Articulating chassis — As per 4.2.3 b)</p>

Table 1 (continued)

Test criteria	Test 1	Test 2	Test 3	Test 4	Test 5
Truck position on tilt table			 <p style="text-align: center;">Axles locked — As per 4.2.3 c)</p>  <p style="text-align: right;">Stabilized</p>		
a Parallel. b Stabilizer axis.					

Standards Australia

Standards Australia develops Australian Standards® and other documents of public benefit and national interest. These Standards are developed through an open process of consultation and consensus, in which all interested parties are invited to participate. Through a Memorandum of Understanding with the Commonwealth Government, Standards Australia is recognized as Australia's peak non-government national standards body.

For further information visit www.standards.org.au

Australian Standards®

Committees of experts from industry, governments, consumers and other relevant sectors prepare Australian Standards. The requirements or recommendations contained in published Standards are a consensus of the views of representative interests and also take account of comments received from other sources. They reflect the latest scientific and industry experience. Australian Standards are kept under continuous review after publication and are updated regularly to take account of changing technology.

International Involvement

Standards Australia is responsible for ensuring the Australian viewpoint is considered in the formulation of International Standards and that the latest international experience is incorporated in national Standards. This role is vital in assisting local industry to compete in international markets. Standards Australia represents Australia at both the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC).

Sales and Distribution

Australian Standards®, Handbooks and other documents developed by Standards Australia are printed and distributed under licence by SAI Global Limited.

For information regarding the development of Standards contact:

Standards Australia Limited
GPO Box 476
Sydney NSW 2001
Phone: 02 9237 6000
Fax: 02 9237 6010
Email: mail@standards.org.au
Internet: www.standards.org.au

For information regarding the sale and distribution of Standards contact:

SAI Global Limited
Phone: 13 12 42
Fax: 1300 65 49 49
Email: sales@saiglobal.com



ISBN 978 1 76035 107 6

This page has been left intentionally blank.