



Powered industrial trucks—Test methods for verification of visibility

Part 1: Sit-on and stand-on operator trucks and variable-reach trucks up to and including 10 t capacity



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

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Australian Standard[®]

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methods for verification of visibility**

**Part 1: Sit-on and stand-on operator
trucks and variable-reach trucks up to
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PREFACE

This Standard was prepared by the Standards Australia Committee ME-026, Industrial Trucks.

The objective of this Standard is to provide designers and manufacturers of powered industrial trucks with the requirements and test procedures for visibility with fork arms. It does not cover trucks with a load.

This Standard is identical with, and has been reproduced from, ISO 13564-1:2012, *Powered industrial trucks—Test methods for verification of visibility*, Part 1: *Sit-on and stand-on operator trucks and variable-reach trucks up to and including 10 t capacity*.

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

- (a) In the source text ‘this part of ISO 13564’ should read ‘Australian Standard’.
- (b) A full point substitutes for a comma when referring to a decimal marker.

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.

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	
3691	Powered industrial trucks—Safety code	2359	Powered industrial trucks
3691-1	Part 1: General	2359.6	Part 6: Self-propelled industrial trucks, other than driverless trucks, variable- reach trucks and burden-carrier trucks (ISO 3691-1:2011, MOD)

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AUSTRALIAN STANDARD

Powered industrial trucks—Test methods for verification of visibility**Part 1:**

Sit-on and stand-on operator trucks and variable-reach trucks up to and including 10 t capacity

1 Scope

This part of ISO 13564 specifies the requirements and test procedures for all-round visibility of self-propelled industrial trucks with a rated capacity up to and including 10 000 kg, and industrial variable-reach trucks with a rated capacity up to and including 10 000 kg, with a sit-on or stand-on operator, without load, and equipped with fork arms or load platform as defined in ISO 5053.

It is not applicable to

- low-lift straddle carriers (as defined in ISO 5053:1987, 3.1.3.2.3),
- high-lift straddle carriers (as defined in ISO 5053:1987, 3.1.3.1.11),
- trucks with an elevating operator position, when the operating position is elevated,
- trucks with a rated capacity greater than 10 000 kg,
- rough-terrain variable-reach trucks,
- container-handling trucks,
- side loaders.

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 3691-1:2011, *Industrial trucks — Safety requirements and verification — Part 1: Self-propelled industrial trucks, other than driverless trucks, variable-reach trucks and burden-carrier trucks*

ISO 5053:1987, *Powered industrial trucks — Terminology*

3 Terms and definitions

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

3.1

industrial variable-reach truck

industrial truck equipped with longitudinal articulating or telescopic and elevating boom(s) (swivelling horizontally by no more than $\pm 5^\circ$), not including rough-terrain variable-reach trucks

3.2

truck profile

contour which is determined by the largest rectangular width and length parallel to the longitudinal axis of the truck, including the front vertical surface of the fork arms

NOTE The blades of the fork arms are not taken into account.

3.3

seat index point

SIP

point on the central vertical plane of the seat

NOTE Adapted from ISO 5353:1995, definition 3.1.

3.4

standing index point

STIP

perpendicular projection of the mid-axis of the standing operator in the normal operating position

NOTE For determination of the STIP, see Figure 4.

3.5

adjusted standing index point

ASTIP

adjusted STIP located relative to the STIP, as provided in 6.1.3, to simulate body movement of the operator during truck operation

3.6

forward direction

forward direction of travel, dependent on the type of truck and according to ISO 3691-1:2011, Annex A.

3.7

manoeuvring

motion of an industrial truck at slow speed and for short distances

NOTE Manoeuvring can include movements such as operation in narrow aisles, when turning, passing objects close by, load pick-up and put-down, approaching and retreating from loads, and other operations not included when travelling.

3.8

travelling

movement of the truck over relatively long distances and open areas up to the maximum speed

3.9

lighting equipment

system of lights that represents the range of positions of the operator's eyes, including head and body movement

See Figures 2 and 3.

3.10**test body**

body that simulates an obstacle, e.g. a person in stooped position, and with which the visibility conditions are evaluated

See Figure 5.

3.11**test screen**

surface with which the visibility conditions while travelling forward are evaluated

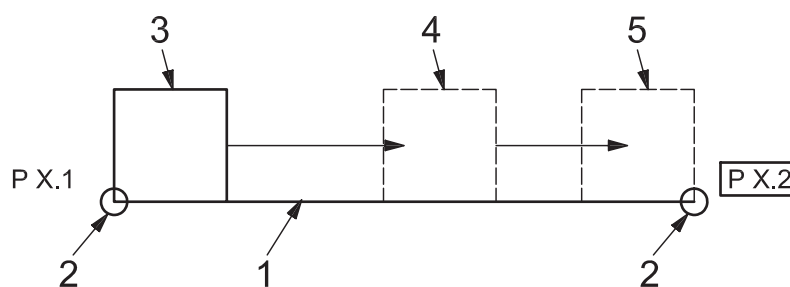
3.12**normal operating position**

position in which the operator is able to control all functions for driving and load handling as defined by the manufacturer

3.13**test path**

path marked on the floor around the industrial truck to be tested and on which the test body is moved for the visibility measurement tests

See Figures 6, 7 and 8.

**Key**

- 1 test path
- 2 test path end point
- 3 test body at end point P X.1
- 4 test body moved along entire length of test path, not extending past end points
- 5 test body at end point P X.2

Figure 1 — Top view of test path

3.14**illuminated area**

surface on the test body or test screen which is illuminated by at least one light of the lighting equipment

3.15**dark shadow**

surface on the test body or test screen which is not illuminated by any light of the lighting equipment

NOTE When checking for dark shadows on the test body or test screen, the shadow cast by an object, e.g. clipboard or hand, can help to identify dark shadow areas.

3.16**direct visibility**

illumination of the test body and test screen without the use of auxiliary equipment

3.17**indirect visibility**

illumination of the test body and test screen with the use of auxiliary equipment

3.18**auxiliary equipment**

equipment used to compensate the limitation of direct visibility by, for example, mirrors or camera/monitor systems

4 Truck configuration**4.1 Testing**

The test shall be conducted with an unladen truck on a level, horizontal floor. The truck shall be equipped with a load platform or two fork arms of a length up to dimension A in Figures 6, 7 and 8, centrally spaced at an outside distance within the normal fork arm adjustment range of the specific configuration tested.

Tests shall be conducted on a truck with basic configuration, not equipped with any attachment, load or other variable/optional equipment. The test shall be valid for the specific configuration tested. The test method of this part of ISO 13564 applies to all configurations and additional tests for various types of mast, external fuel tank, counterweights, cab, etc. are required for those configurations that adversely affect visibility.

4.2 Height of load-carrying surface**a) For all trucks except industrial variable-reach trucks**

The load-carrying surface of the fork arms, measured at the heel end, shall be positioned from 100 mm to 300 mm above the floor.

b) Industrial variable-reach trucks, low-mount boom

For industrial variable-reach trucks with a boom pivot point height lower than the height of the SIP + 650 mm, the load-carrying surface of the fork arms, measured at the heel end, shall be positioned 100 mm to 300 mm above the floor.

c) Industrial variable-reach trucks, high-mount boom

For industrial variable-reach trucks with a boom pivot point height equal to or higher than the height of the SIP + 650 mm, the load-carrying surface of the fork arms, measured at the heel end, shall be positioned 500 mm to 900 mm above the floor.

4.3 Tilt of the mast or load-carrying surface**a) Travelling tests**

The mast or load-carrying surface shall be tilted rearward to the maximum, but by not more than 10°, for all travelling tests. If the means of tilting the mast or load-carrying surface is accomplished by tilting the truck chassis, these tests shall be performed with the chassis horizontal.

b) Manoeuvring tests

The mast shall be vertical or the load-carrying surface horizontal for all manoeuvring tests.

c) Fork arm or load platform tests

The mast shall be vertical or the load-carrying surface horizontal for the fork arm or load platform test.