

This is a preview of "ISO 10896-2:2016". [Click here to purchase the full version from the ANSI store.](#)

First edition
2016-02-15

Rough-terrain trucks — Safety requirements and verification —

Part 2: Slewing trucks

*Chariots tout-terrain — Exigences de sécurité et vérifications —
Partie 2: Chariots rotatifs*



Reference number
ISO 10896-2:2016(E)

© ISO 2016



COPYRIGHT PROTECTED DOCUMENT

© ISO 2016, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

This is a preview of "ISO 10896-2:2016". Click here to purchase the full version from the ANSI store.

Contents

	Page
Foreword	vi
Introduction	vii
1 Scope	1
2 Normative references	2
3 Terms and definitions	3
4 Requirements	8
4.1 General.....	8
4.1.1 Sharp edges and acute angles.....	8
4.1.2 Stored energy components.....	8
4.1.3 Boom extension and angle indicators.....	8
4.2 Starting/moving.....	8
4.2.1 Unauthorized starting.....	8
4.2.2 Unintended movement.....	9
4.2.3 Uncontrolled motion.....	9
4.2.4 Powered travel movement.....	9
4.2.5 Non-activation of the parking brake.....	9
4.2.6 Inching pedal.....	9
4.3 Brakes.....	9
4.3.1 General.....	9
4.3.2 Failure of energy supply.....	9
4.4 Electrical and electronic systems.....	10
4.4.1 General.....	10
4.4.2 Degree of protection.....	10
4.4.3 Electrical connections.....	10
4.4.4 Over-current protective devices.....	10
4.4.5 Batteries.....	10
4.4.6 Battery disconnection.....	10
4.5 Controls.....	11
4.5.1 General.....	11
4.5.2 Differential locking.....	11
4.5.3 Steering controls.....	12
4.5.4 Load-handling controls.....	13
4.5.5 Multi-function controls.....	13
4.5.6 Stabilizing device control.....	13
4.5.7 Sway/levelling control.....	14
4.5.8 Axle oscillation locking.....	14
4.5.9 Auxiliary hydraulic control.....	14
4.6 Power systems and accessories.....	14
4.6.1 Exhaust systems.....	14
4.6.2 Cooling systems.....	14
4.6.3 Tanks and pressure vessels.....	14
4.7 Stabilizing devices.....	15
4.8 Design requirements for maintenance purposes.....	15
4.8.1 General.....	15
4.8.2 Tilttable cab support device.....	16
4.9 Systems for lifting, tilting and reaching.....	16
4.9.1 Chains and wire ropes.....	16
4.9.2 Hydraulic system.....	17
4.9.3 Maximum load-lowering speed.....	17
4.9.4 Limitation of stroke.....	17
4.9.5 Fork arms, attachments, and quick couplers.....	18
4.9.6 Slewing brake.....	18
4.10 Normal operating position.....	18

This is a preview of "ISO 10896-2:2016". Click here to purchase the full version from the ANSI store.

4.10.1	General requirements.....	18
4.10.2	Storage of operator's manual.....	18
4.10.3	Hot parts.....	18
4.10.4	Pipes and hoses.....	18
4.10.5	Normal operating position equipped with enclosed cab.....	18
4.10.6	Operator's seat.....	20
4.10.7	Control panels and symbols on displays.....	21
4.11	Operator access.....	22
4.11.1	General requirements.....	22
4.11.2	Enclosed cab openings.....	22
4.12	Protective measures and devices.....	23
4.12.1	Hot parts.....	23
4.12.2	Protection against crushing, shearing, and trapping.....	23
4.12.3	Guards.....	23
4.12.4	Safety signs.....	23
4.12.5	Engine compartment.....	23
4.12.6	Fenders.....	23
4.12.7	Roll-over protective structures (ROPS) and falling object protective structures (FOPS).....	23
4.12.8	Tiltable cab.....	24
4.12.9	Audible warning devices.....	24
4.13	Stability.....	24
4.14	Visibility.....	24
4.15	External lighting devices.....	24
4.16	Fire protection.....	24
4.16.1	Fire resistance.....	24
4.16.2	Fire extinguisher.....	24
4.17	Retrieval, transportation, lifting, and towing.....	24
4.17.1	General.....	24
4.17.2	Retrieval.....	24
4.17.3	Tie-down.....	25
4.17.4	Lifting.....	25
4.17.5	Towing.....	25
4.17.6	Transportation.....	25
4.18	Noise.....	25
4.19	Structural calculations.....	25
4.19.1	General.....	25
4.19.2	Loads and forces.....	25
4.19.3	Calculations.....	27
5	Verification of requirements and safety measures.....	28
5.1	General.....	28
5.2	Functional verification.....	28
5.3	Structural verification.....	28
5.3.1	Test loads.....	28
5.3.2	Static test.....	29
5.3.3	Dynamic testing.....	29
5.4	Maximum load-lowering speed verification.....	30
5.5	Load holding.....	30
6	Information for use.....	30
6.1	General.....	30
6.2	Operator's and maintenance manuals.....	30
6.3	Marking.....	32
6.4	Load charts.....	33
6.4.1	Trucks with load-carrying attachments.....	33
6.4.2	Trucks with non-load-carrying attachments.....	34
Annex A (informative) List of significant hazards.....		35

This is a preview of "ISO 10896-2:2016". [Click here to purchase the full version from the ANSI store.](#)

Annex B (normative) Attachments and quick couplers	40
Annex C (informative) Consistency of direction of motion for load-handling controls	43
Annex D (informative) Examples of regular and occasional loads	45
Bibliography	46

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 4, *Rough-terrain trucks*.

ISO 10896 consists of the following parts, under the general title *Rough-terrain trucks — Safety requirements and verification*:

- *Part 1: Variable-reach trucks*
- *Part 2: Slewing trucks*
- *Part 4: Additional requirements for variable-reach trucks handling freely suspended loads*
- *Part 5: Interface between rough-terrain truck and integrated personnel work platform*
- *Part 6: Tilting operator's cabs*
- *Part 7: Longitudinal load moment systems*

Safety requirements and verification of lorry-mounted trucks is addressed by ISO 20297-1.

This is a preview of "ISO 10896-2:2016". [Click here to purchase the full version from the ANSI store.](#)

Introduction

Variable-reach trucks are known by a variety of terms, including “telehandlers” and “multi-purpose handlers”.

The rough-terrain variable-reach trucks covered by this part of ISO 10896 are designed to transport loads to and place them on elevated work areas and can be driven on unimproved or disturbed terrain.

They can also be equipped with a variety of attachments (e.g. mowers, sweepers).