



SLOVENSKI STANDARD

SIST EN 500-4:2000

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Mobile road construction machinery - Safety - Part 4: Specific requirements for compaction machines

Mobile road construction machinery - Safety - Part 4: Specific requirements for compaction machines

Bewegliche Straßenbaumaschinen - Sicherheit - Teil 4: Besondere Anforderungen an Verdichtungsmaschinen

Machines mobiles pour la construction de routes - Sécurité - Partie 4: Exigences spécifiques pour engins de compactage

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Ta slovenski standard je istoveten z: EN 500-4:1995

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EUROPEAN STANDARD

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English version

Mobile road construction machinery - Safety - Part 4: Specific requirements for compaction machines

Machines mobiles pour la construction de routes
- Sécurité - Partie 4: Exigences spécifiques
pour engins de compactage

Bewegliche Straßenbaumaschinen - Sicherheit -
Teil 4: Besondere Anforderungen an
Verdichtungsmaschinen

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
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Contents

		page
	FOREWORD	4
0	INTRODUCTION	5
1	SCOPE	5
2	NORMATIVE REFERENCES	5
3	DEFINITIONS	5
3.1	Compaction machines	5
3.1.1	Rollers for ride-on operators	6
3.1.2	Walk-behind rollers	6
3.1.3	Towed rollers	6
3.1.4	Vibratory plates and vibratory rammers	6
3.1.5	Explosion rammers	6
3.2	Braking systems	6
4	LIST OF HAZARDS	6
5	SAFETY REQUIREMENTS	6
5.1	Lighting	6
5.2	Design of the machine in relation to its operation and handling	6
5.2.1	Attachments for lighting and loading	7
5.2.2	Attachments for the tie down of the machine	7
5.2.3	Towing	7
5.2.4	Walk-behind rollers	7
5.3	Operator's station	8
5.4	Operator's seat	8
5.5	Controls	8
5.6	Starting	8
5.7	Stopping	8
5.7.1	Emergency stopping SIST EN 500-4:2000	8
5.7.2	Braking systems http://standards.iteh.ai/catalog/standards/sist/en-500-4-2000	9
5.8	Danger of falling off, access to operator's station and to service points	10
5.9	Precautions against hazards caused by moving parts	10
5.10	Hazard due to roll-over	10
6	INSTRUCTION HANDBOOK	10
7	MARKING	10
8	VERIFICATION OF SAFETY REQUIREMENTS/MEASURES	10

	page
Annex A (normative) Braking systems	11
Annex B (normative) Remote infrared controls for rollers with attending operator	15
Annex C (normative) Roll over protective structure (ROPS)	19

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Foreword

This European Standard was prepared by the Technical Committee CEN/TC 151 "Construction equipment and building material machines - Safety" of which the secretariat is held by DIN.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EC Directive(s).

The Annex A is normative and contains "Braking systems", the Annex B is normative and contains "Remote infrared controls for rollers with attending operator" and the Annex C is normative and contains "Roll over protective structure (ROPS)".

EN 500 "Mobile road construction machinery - Safety" comprises the following parts:

- Part 1: Common requirements
- Part 2: Specific requirements for road-milling machines
- Part 3: Specific requirements for soil stabilization machines
- Part 4: Specific requirements for compaction machines
- Part 5: Specific requirements for joint cutters
- Part 6: Specific requirements for paver-finishers.

This European Standard shall be given the status of a National Standard, either by publication of an identical text or by endorsement, at the latest by Mars 1996, and conflicting national standards shall be withdrawn at the latest by Mars 1996.

According to the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom.

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0 Introduction

This part of EN 500 contains additional requirements to EN 500-1: 1995 "Common requirements". The clauses of this standard have the same numbering as those of EN 500-1: 1995.

1 Scope

This part of EN 500 specifies the safety requirements for compaction machines as defined in clause 3 and deals with the significant hazards pertinent to compaction machines, when used as intended and in conditions foreseen by the manufacturer.

2 Normative references

This draft European Standard incorporates by dated or undated references, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 500-1:1995	Mobile road construction machinery - Safety - Part 1: Common requirements
EN 23164:1985	Earth-moving machinery - Deflection limiting volume (DLV)
prEN 23450:1994	Earth-moving machinery - Braking systems of rubber-tyred machines - Performance requirements and test procedures
EN 60204-1:1991	Electrical equipment of machines - Part 1: General requirements
ISO 3471:1986	Earth-moving machinery - Roll-over protective structures - Laboratory tests and performance requirements
ISO 6683:1981	Earth-moving machinery - Seat belts and seat belt anchorages
IEC Report 664/664 A	Insulation coordination within low voltage systems, including clearances and creeping distances for equipment

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3 Definitions

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For the purposes of this standard the following definitions apply.

3.1 Compaction machines: Machines which compact materials, e.g. rock fills, soil or asphalt surfacing, through a rolling, tamping or vibrating action of the working tool. They may be self-propelled, towed, walk-behind or attachment type machines.

Compaction machines are subdivided as follows:

3.1.1 Rollers for ride-on operators: Self propelled compaction machines with one or more metallic cylindrical bodies (drums) or rubber tyres; the operator's station is an integral part of the machine.

3.1.2 Walk-behind rollers: Self-propelled compaction machines with one or more metallic cylindrical bodies (drums) or rubber tyres in which the operating facilities for travelling, steering, braking and vibrating are disposed in such a way that the operation of the machine has to be undertaken by an attending operator or by remote control in accordance with Annex B.

3.1.3 Towed rollers: Compaction machines with one or more metallic cylindrical bodies (drums) or rubber tyres which do not possess an independent drive system and where the operator's station is to be found on a tractor unit.

3.1.4 Vibratory plates and vibratory rammers: Compaction machines with mainly flat base plates which are made to vibrate. They are operated by an attending operator or as an attachment to a carrying machine.

3.1.5 Explosion rammers: Compaction machines with mainly a flat pad as the compacting tool which is made to move in a predominantly vertical direction by explosion pressure. The machine is operated by an attending operator.

3.2 Braking system: System affecting all machine components between the operator and the wheels/drums in contact with the ground, which bring the machine to a stop.

4 List of hazards

See EN 500-1: 1995.

5 Safety requirements

5.1 Lighting

See EN 500-1: 1995.

5.2 Design of the machine in relation to its operation and handling

To prevent dangerous vertical swinging of the steering element (handle bar) of the single-drum walk-behind rollers, movement of the handle shall be not less than 0,2 m and not more than 1,4 m above the ground (see figure 1).

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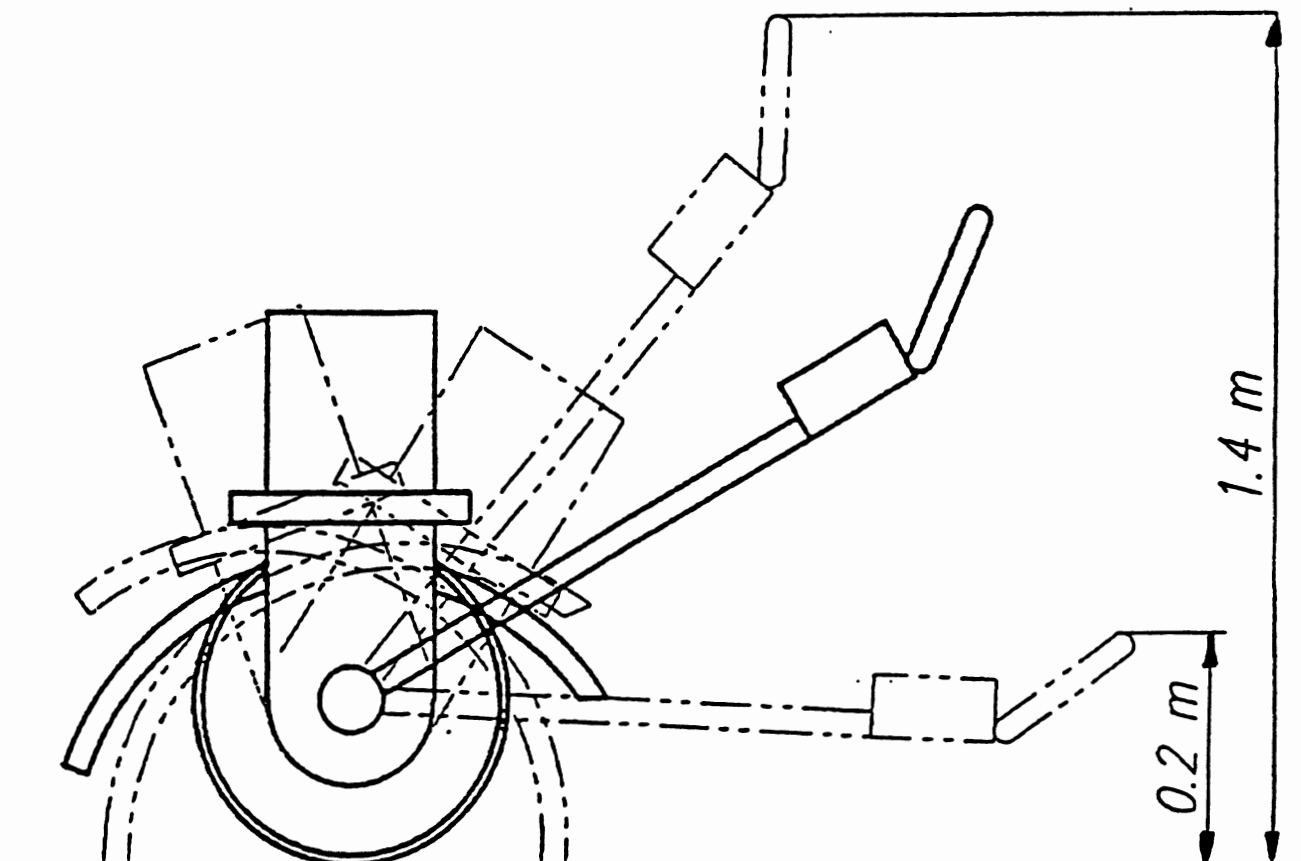


Figure 1: Vertical swinging of single-drum walk-behind rollers

5.2.1 Attachments for lighting and loading

See EN 500-1: 1995.

5.2.2 Attachments for the tie down of the machine

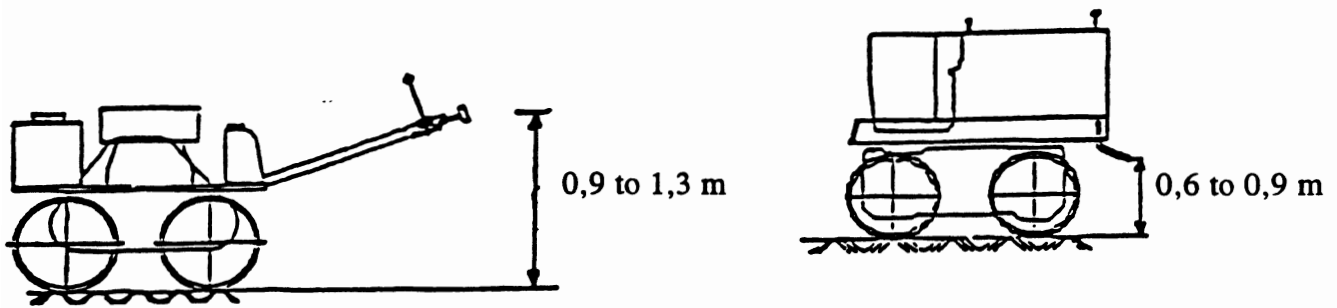
See EN 500-1: 1995.

5.2.3 Towing

See EN 500-1: 1995.

5.2.4 Walk-behind rollers standards.iteh.ai

Walk-behind rollers shall have a safety device preventing the operator from being trapped between the roller and adjacent obstacles during reverse travel. After actuation of the safety device the stopping distance of the roller shall be less than the distance remaining for the operating part of the safety device after actuation of the stopping device. After termination of the stopping process, the force at the operating part shall not exceed 230 N. The operating part of the safety device shall be arranged within the heights stated in figure 2. When the safety device has been actuated, it shall still be possible to operate the roller in the direction opposite to that which caused the actuation.



Rollers with handle bar

Trench rollers

Figure 2: Position of the safety device at walk-behind rollers

Walk-behind rollers with mechanical drive shall be so designed that a maximum reverse speed of 2 km/h can be selected.

5.3 Operator's station

The operator's position may be offset from the space envelope width centreline, provided the internal distance from the seat centreline to the side of the enclosure is not less than 295 mm.

5.4 Operator's seat

See EN 500-1: 1995.

5.5 Controls

Controls for the travel of walk-behind rollers shall upon release bring the roller to a stop (hold-to-run control). For towed-type rollers, it shall be possible to operate the vibration on and off controls from the operators' station on tractor unit.

5.6 Starting

See EN 500-1: 1995.

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NOTE: The requirement for a neutral start function does not apply to vibratory plates and vibratory rammers if they are furnished with a centrifugal clutch in their driving system.

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5.7 Stopping

Hold-to-run control for forward and reverse function is not required for vibratory plates, vibratory rammers and explosion rammers.

5.7.1 Emergency stopping

Explosion rammers shall be fitted with a device which excludes the possibility of unintentional ignition after having turned off the machine.

In the case of vibratory plates and vibratory rammers equipped with a centrifugal force clutch; the requirements for a special emergency stopping system does not apply.

5.7.2 Braking systems

5.7.2.1 Braking systems for rollers with ride-on operators

Rollers with ride-on operators shall be fitted with three braking systems, capable of working independently of each other, namely:

- A service brake system
- A secondary brake system
- A parking brake system

The performance of braking systems shall be in accordance with annex A. All brakes shall be controlled from the operator's station.

Regarding service and secondary braking systems of rollers with ride-on operators it shall be possible

- to apply the brakes on all power-driven drums and wheels;
- to apply the brake torque on each drum half and from the operator's station in the case of split drums;
- to apply the brakes to both wheels plus the drum in the case of single drum, wheel-driven rollers.

For calculation of the distribution of brake torque to each axle, the following friction coefficients shall be used according to the actual axle load and the actual rolling radius:

- Minimum 0,25 for steel drums;
- Minimum 0,50 for rubber tyres.

When applying the secondary brake, the hydrostatic drive, when provided, shall automatically return to neutral.

5.7.2.2 Braking systems for walk-behind rollers

Walk-behind rollers shall be fitted with a service and a parking brake system.

The service brake shall be able to stop the roller on such slopes on which it is capable of climbing. The holding capability is fulfilled, even if a downward creep of less than 2 m/min occurs.

When the forward and reverse control is released, the service brake shall be capable of stopping and holding the roller stationary so that any hazard to the operator or other persons in the vicinity is excluded.

The parking brake shall be capable of holding the roller stationary on a slope it is capable to climb. Creeping movement, e.g. caused by internal leakage in the hydraulics, shall not occur after applying the parking brake. Unintentional release of the parking brake shall not be possible.

5.7.2.3 Remote control of walk-behind rollers

Infrared remote controlled walk-behind rollers with attending operator shall conform to Annex B. The following shall be met: