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Mobile road construction machinery — Safety —

Part 5:
Mobile Specific requirements for paver-finishers

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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 of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 195, *Building construction machinery and equipment*.

ISO 20500 consists of the following parts, under the general title *Mobile road construction machinery — Safety*:

— *Part 1: Common requirements*

— *Part 2: Specific requirements for road-milling machines*

— *Part 3: Specific requirements for soil-stabilising machines and recycling machines*

— *Part 4: Specific requirements for compaction machines*

— *Part 5: Specific requirements for paver-finishers*

— *Part 6: Specific requirements for mobile feeders*

— *Part 7: Specific requirements for slip form pavers and texture curing machines*

A list of all parts in the ISO 20500 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This International Standard is a type C standard as stated in ISO 12100.

The machinery concerned and the extent to which hazards, hazardous situations and events are covered are indicated in the scope of this International Standard.

When provisions of this type C standard are different from those which are stated in type A or B standards, the provisions of this type C standard take precedence over the provisions of the other standards for machines that have been designed and built according to the provisions of this type C standard.

Mobile road construction machinery — Safety —

Part 5:
Mobile Specific requirements for paver-finishers

1 Scope

This part of ISO 20500, together with part 1, deals with all significant hazards for paver-finisher when they are used as intended and under the conditions of misuse which are reasonably foreseeable by the manufacturer associated with the whole life time of the machine (see Annex D).

The requirements of this part are complementary to the common requirements formulated in ISO 20500-1.

This document does not repeat the requirements from ISO 20500-1, but adds or replaces the requirements for application for paver-finisher.

The following significant and relevant hazards are not covered in this document:

— Lightning.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

DHHS (NIOSH) Publication Number 97-105:1997, *Engineering Control Guidelines for Hot Mix Asphalt Pavers*

EN ISO 13857:2008, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2008)*

ISO 2867:2011, *Earth-moving machinery — Access systems*

ISO 3744:2010, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Engineering methods for an essentially free field over a reflecting plane*

ISO 7096:2000, *Earth-moving machinery — Laboratory evaluation of operator seat vibration*

ISO 11201:2010, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a work station and at other specified positions in an essentially free field over a reflecting plane with negligible environmental corrections*

ISO 12100:2010, *Safety of machinery — General principles for design — Risk assessment and risk reduction*

ISO 15878, *Road construction and maintenance equipment — Asphalt pavers — Terminology and commercial specifications*

ISO 20500-1, *Mobile road construction machinery — Safety — Part 1: Common requirements*

ISO 29042-4:2009, *Safety of machinery — Evaluation of the emission of airborne hazardous substances — Part 4: Tracer method for the measurement of the capture efficiency of an exhaust system*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
paver-finisher
mobile self-propelled machine (either rubber-tyred or crawler-mounted) specifically designed to receive, convey, distribute, profile and compact paving material (for example concrete asphalt) using the floating/self-levelling screed method (see Figures C.1 and C.2)

3.1.1
pre-compaction screed paver-finisher
machine that compacts the paving material by the profile of the front of the screed plate, the angle of attack of the screed (draft angle) and the weight of the screed. (see Figure C.3)

3.1.2
compaction screed paver-finisher
machine fitted with, in addition to the pre-compacting system, a single additional compaction system which may consist of vibrators or tamper bars (see Figures C.4 and C.5)

3.1.3
high-compaction screed paver-finisher
machine fitted with, in addition to the pre-compacting system, at least two compaction systems which may consist of vibrators, tamper bars or pressure bars (see Figures C.6, C.7 and C.8)

3.2
emission reducing device (ERD)
system to extract or reduce emissions from bitumen or other volatile or suspended substances from the screed area and the paver-operator's stations of a paver finisher

3.3
ERD Indicating Device
means to visually provide to the operator the information, whether the ERD is operating within the designed operating-range

3.4
hot mix asphalt (HMA)
asphalt mix produced at temperatures between 140 and 190 °C

Note 1 to entry: European Asphalt Pavement Association, 2015 ◦ "Hot mixes are produced at a temperature between 150 and 190 °C." http://www.eapa.org/asphalt.php?c=78

Note 2 to entry: National Asphalt Pavement Association (NAPA) QIP 125 publication: Warm-Mix Asphalt: Best Practices 3rd edition (January 2012) Page 5: "Conventional hot-mix asphalt (HMA) is typically produced at temperatures from 280 °F to 320 °F (140 °C to 160 °C).

3.5
binder spraying system
a rigidly fixed attachment intended to spray automatically a film of binder (bitumen/emulsion) on the road surface at a predetermined rate before applying road building material

Note to entry: The system may consist of binder storage, pumps and spray bars which are fitted to the paver finisher. The system may be equipped with a heating system.

3.6
tractor
component of a paver which provides propulsion and can also receive, convey and distribute paving material

4 Safety requirements and/or protective/risk reduction measures

4.1 General

Paver-finisher shall comply with the safety requirements and/or protective/risk reduction measures of this clause. In addition, the machines shall be designed according to the principles of EN ISO 12100:2010 for relevant but not significant hazards which are not dealt with by this document.

Paver-finisher shall comply with the requirements of FprEN 474-1:2019, as far as not modified or replaced by the requirements of this part.

4.2 Visibility

4.2 of ISO 20500-1 applies with the following additions.

4.2.1 Visibility performance criteria

The machine meets the requirements of this International Standard if the measurement results show no maskings or maskings smaller than or equal to the performance criteria with direct or indirect view as specified in Table 1.

The first row for each machine type is the allowed eye spacing. The second row is the allowed number and the width of maskings.

Table 1 — Visibility performance criteria

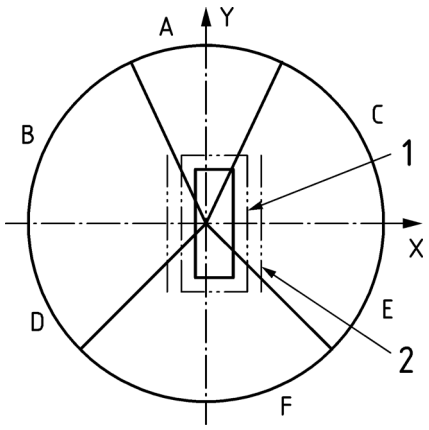
Basic width of tractor, m	A	B	C	D	E	F	RB/SB
≤1,4m	205 -------- 1 - 700	205 -------- 0	205 -------- 0	205 -------- 1 - 300	205 -------- 1 - 700	205 -------- 1 - 700	405 ------ 300
>1,4m	205 -------- 1 - 700	205 -------- 2 – 300 or 1 - 700	205 -------- 2 – 300 or 1 - 700	205 -------- 2 - 700 or 1 - 1300	205 -------- 2 - 700 or 1 - 1300	205 -------- 2 - 700 or 1 - 1300	405 ------ 300

4.2.2 Visibility performance criteria for the rectangular boundary RB and side boundary SB

The machine meets the requirements of the standard if the measurement results show no maskings or maskings smaller or equal to the acceptable maskings (300 mm) when evaluated using the eye spacing specified in Table 2 for the RB and where applicable in addition for the SB, and using the test object height Z for the SB and Y for each region RB as specified in Table 2.

Table 2 — Vertical test object height by machine width, region of the RB and SB

Basic width of tractor	Side boundary SB	Region of the RB			
		Front side	Left hand side	Right hand side	Rear side
≤1,4 m	No side boundary required	Y = 1,5 m X = 1500 mm See Figure 2	Y = 1,5 m	Y = 1,5 m	Y = 1,5 m
>1,4 m	Z = 1,2 m with SB = 2000 mm See Figure 4	Y = 1,5 m X = 1000 mm See Figure 3	Y = 1,5 m	Y = 1,5 m	Y = 1,5 m



Key

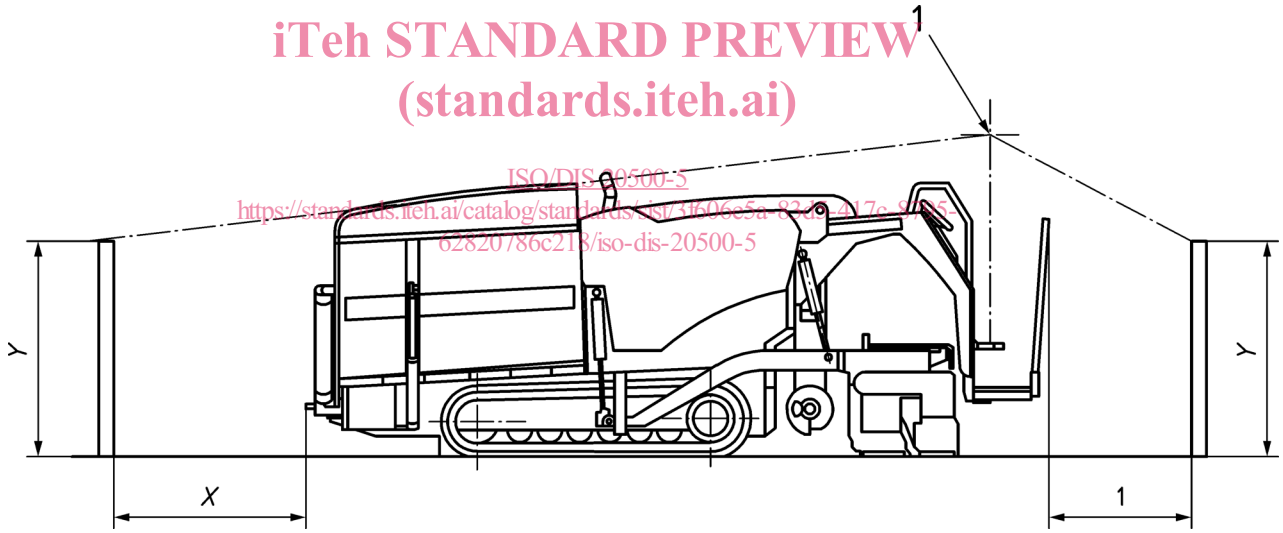
1 Rectangular boundary

2 Side boundary

A, B, C, D, E, F sectors of vision

Figure 1 — Setup of machines

Dimensions in metres



Key

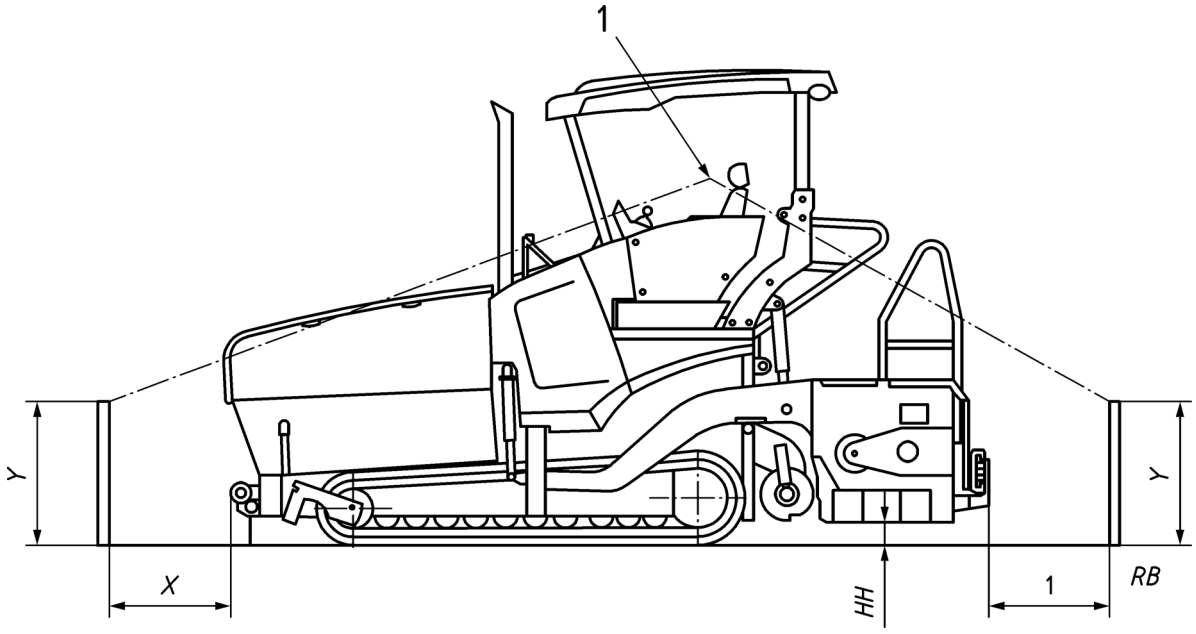
X Distance between machine and RB to the front

Y Vertical Test Object Height on the RB

1 FPCP

Figure 2 — Side view of a paver-finisher basic width < 1,4 m

Dimensions in metres



Key

HH – Screed height

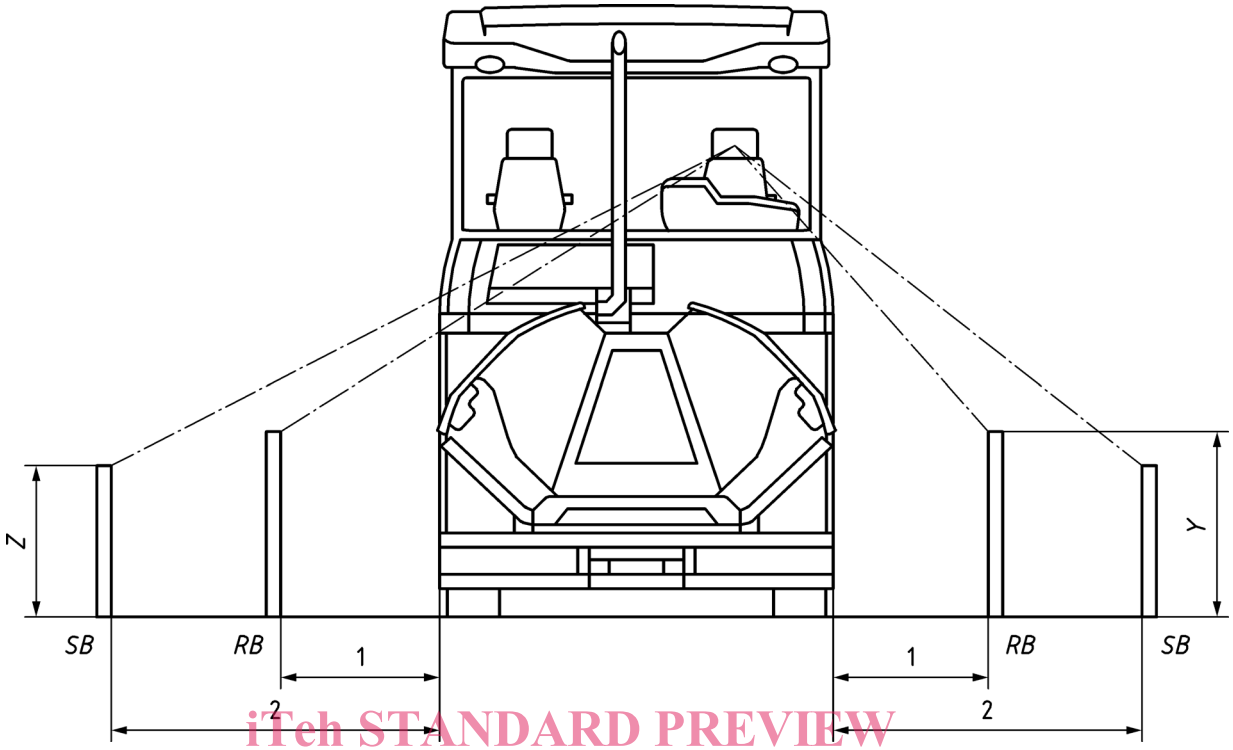
X Distance between machine and RB to the front

Y Vertical Test Object Height on the RB

1 FPCP

Figure 3 — Side view of a paver-finisher basic width > 1,4 m

Dimensions in metres



Key

X Distance between machine and RB to the front

Y Vertical Test Object Height on the RB

Z Vertical Test Object Height on the SB

Figure 4 — Front view of a paver-finisher

4.3 Operator's station

4.4 of ISO 20500-1 applies with the following exception:

— 4.4.2 of ISO 20500-1, first paragraph, does not apply for paver-finishers;

— 4.4.3 of ISO 20500-1, first paragraph does not apply for paver-finishers with an operating mass below 7250 kg.

4.4 Operator's seat

4.5.2 of ISO 20500-1 applies with the following addition:

According to ISO 7096, the vibration level at the driver seat is so low that this seat does not require a suspension for the attenuation of transmitted vibration (see clause 1.4 of ISO 7096).

4.5 Controls and indicators

4.6 of ISO 20500-1 applies with the following addition: