DRAFT INTERNATIONAL STANDARD

ISO/DIS 15878

ISO/TC **195**	Secretariat: **SAC**
Voting begins on: **2019-10-25**	Voting terminates on: **2020-01-17**

Road construction and maintenance equipment — Paver-finishers — Terminology and commercial specifications

Équipement pour la construction et l'entretien des routes — Finniseurs — Terminologie et spécifications commerciales

ICS: 01.040.93; 93.080.10

This document is circulated as received from the committee secretariat.

Reference number
ISO/DIS 15878:2019(E)

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Published in Switzerland

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Foreword

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ISO 15878 was prepared by Technical Committee ISO/TC 195, *Building construction machinery and equipment*.

This second/third/... edition cancels and replaces the first/second/... edition (), [clause(s) / subclause(s) / table(s) / figure(s) / annex(es)] of which [has / have] been technically revised.

Introduction

Paver-finishers are used in road construction and for maintenance to place and pre-compact paving material using the floating/self-levelling screed method. The weight of the screed and its forward motion combined with additional vibrating and reciprocating elements are used to pre-compact the mixes to form a mat.

The design type of an paver-finisher is typically determined according to the following criteria:

- Type of tractor
  - — wheeled (see Figure A.1);
  - — steel crawler-mounted with replaceable track plates (see Figure A.2);
  - — rubber crawler-mounted (see Figure A.3).
- Method of mix transfer from hopper to the screed
  - — by slat conveyor (see Figure A.4);
  - — by auger (see Figure A.11);
  - — by gravity.
- Screed type
  - — fixed width (see Figure A.4);
  - — hydraulically extendable (see Figure A.12);
  - — extendable using bolt-on extensions.

Road construction and maintenance equipment — Paver-finishers — Terminology and commercial specifications

1 Scope

This document provides terminology and commercial specifications for paver-finishers used in road construction and maintenance processes for the placement and pre-compaction of paving materials. It covers the machine and its components and establishes parameters for technical characteristics for both.

This document does not cover terms and commercial specifications for road wideners which can perform similarly to a paver-finisher under certain conditions.

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 3046-1:2002, *Reciprocating internal combustion engines — Performance — Part 1: Declarations of power, fuel and lubricating oil consumptions, and test methods — Additional requirements for engines for general use*

ISO 3911:2004, *Wheels and rims for pneumatic tyres — Vocabulary, designation and marking*

3 Terms and definitions

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

3.1
paver-finisher
mobile self-propelled machine consisting of a tractor and a free floating screed intended for the placement and pre-compaction of paving material using the floating/self-levelling screed method

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.

3.1.2
compaction screed paver-finisher
machine fitted with, in addition to the pre-compacting system, a single additional compaction system.

Note 1 to entry: The additional compaction system can include vibrators, tamper bars or pressure bars.

3.1.3
high-compaction screed paver-finisher
machine fitted with, in addition to the pre-compacting system, at least two compaction systems.

Note 1 to entry: The additional compaction systems can include vibrators, tamper bars or pressure bars.

3.2
adjustable width strike-off
adjustable width mouldboard
movable blade at the leading edge of a fixed screed for varying screed width

Note 1 to entry: For an example, see Figure A.5.

3.3
angle of approach
angle between the GRP and a plane tangent to the forward tyres or tracks of the machine and passing through the lowest point of any structure or component forward of the tyres or tracks which limits the magnitude of the angle

Note 1 to entry: (See Figure A.18, angle α1.)

3.4
angle of departure
angle between the GRP and a plane tangent to the rear tyres or tracks of the machine and passing through the lowest point of any structure or component behind the tyres or tracks which limits the magnitude of the angle

Note 1 to entry: (See Figure A.18, angle α2.)

3.5
apron
area of the hopper in front of the conveyor

Note 1 to entry: For an example, see Figure A.9.

3.6
asphalt fume control system
system that collects paving material fumes and exhausts them away from the operator and crew

3.7
paver-finisher operator
person whose primary functions are to control paver speed, direction and laying of paving material

3.8
paver-finisher operator station
designated location(s) from which the operator controls the functions of the paver

3.9
automatic feeder system control
system for automatic control of the flow of paving material to the screed

3.10
automatic screed control
system for automatic control of the mat profile in relation to an external physical reference or 3D coordinates

3.11
bevel edger
attachment for putting a sloped surface on the edge of the mat

3.12
bracing
device for bracing the screed when built up for large working widths

3.13
conveyor tunnel
passageway through which paving material moves from the hopper to the auger/screed

Note 1 to entry: For an example, see Figure A.4.

3.14
cut-off plate
attachment used in conjunction with the screed end plate to reduce the effective screed width

3.15
conveyor
device for transferring paving material from the hopper to the spreading auger

Note 1 to entry: Examples include slat-type or auger-type.

Note 2 to entry: For examples, see Figure A.4 and Figure A.11.

3.16
conveyor capacity C
capacity derived from the following equation:

$$C = D \cdot A \cdot S \cdot E$$

where:

D the paving material bulk density (1,75 t/m^3);

A the tunnel area, in m^2, as measured at the tunnel opening (total for all conveyors);

S the maximum conveyor speed, in m/min, in paving mode, multiplied by 60;

E coefficient of conveyor efficiency (noting the conveyor efficiency used in the calculation).

3.17
conveyor flow gate
device for adjustment of the height of paving material being transferred by the conveyor

Note 1 to entry: For an example, see Figure A.4.

3.18
crown
angle between a section of screed and the horizontal.

Note 1 to entry: A positive crown is defined as the outer end of the screed lower than the inner end.

Note 2 to entry: (See Figure A.24.)

3.19
crown control
device that shapes the screed to form a mat with the desired crown

Note 1 to entry: For an example, see Figure A.9.

3.20
extendable screed
screed with permanently mounted extensions that can be extended or retracted to change the mat width when the paver is in operation

Note 1 to entry: For an example, see Figure A.12.

3.21
extension slope
angle (maximum positive to maximum negative) between the extension and the adjacent section of the screed

Note 1 to entry: Positive slope is defined as the outer end of the extension lower than the inner end.

Note 2 to entry: (See Figure A.25.)

3.22
fixed width screed
screed with a constant width that can only be changed by adding or removing extensions

Note 1 to entry: For an example, see Figure A.4.

3.23
grade & slope control (automatic)
system for control of the longitudinal profile of the mat following a physical reference

Note 1 to entry: Examples include a joint, string line, curb, the base, a mobile reference, a slope beam or following a 3D coordinate reference.

3.23.1
three-dimensional (3D) grade control
system that uses a 3-dimensional coordinate as a reference to control the profile of the pavement

Note 1 to entry: This can include lateral control of the tractor or screed.

Note 2 to entry: For an example, see Figure A.9.

3.23.2
three-dimensional (3D) paver control
system that uses 3-dimensional coordinate as a reference to control the profile of the pavement and either the width and/or direction of the pavement

3.24
grade sensor
device that provides a vertical reference measurement

3.25
ground reference plane
GRP
plane on which the machine is placed for measurements: in the case of the base machine, a hard, level surface; in the case of equipment and attachments, either a hard, level surface or compacted earth

Note 1 to entry: The surface used depends on the intended use of the machine and its equipment and attachments. This needs to be defined when developing specific ISO terminology standards or commercial specifications.

[SOURCE: ISO 15143-2:2010, 3.3.3.9]

3.26
hopper
component of the paver-finisher which receives the paving material from an external source

Note 1 to entry: For an example, see Figure A.4.

3.27
hopper capacity
struck volume of the paver-finisher hopper including the volume of the conveyor in front of the rear hopper wall

3.28
hopper insert
device to increase hopper capacity

3.29
machine clearance circle
diameter of the smallest circle which will enclose the outermost point of the vehicle projection with the machine in operating configuration while executing its sharpest practical turn

Note 1 to entry: (See Figure A.21, dimension R1.)

3.30
mass (operating)
mass of the machine in operating configuration with a 75 kg operator

Note 1 to entry: On wheeled machines, the mass of the tyre ballast is included (if provided or recommended by the machine manufacturer).

Note 2 to entry: The use of a hopper insert could greatly increase the operating mass.

3.31
mass (shipping)
mass of the machine as shipped by the manufacturer including those standard components detached and shipped loose with the machine

3.32
mat
paving material that has been placed by a screed or strike-off

3.33
material feed system
combined conveyor and auger components that transfer paving material from the hopper and distribute it in front of the screed

Note 1 to entry: For an example, see Figure A.4.

3.34
material feed sensor
device used to detect the quantity of paving material in front of the screed

Note 1 to entry: For an example, see Figure A.9.

3.35
material retaining plate
<material limiting plate>
attachment installed in front of a spreading auger extension to prevent the paving material from flowing forwards

3.36
mobile grade reference
towed attachment that provides an independent reference for the automatic grade control

Note 1 to entry: For an example, see Figure A.9.

3.37
overall height (operating mode)
vertical height from the GRP to the highest point of the machine with the machine in operating configuration

Note 1 to entry: (See Figure A.20, dimension H3)

3.38
overall height (shipping)
vertical distance from the GRP to the highest point of the machine in shipping configuration

Note 1 to entry: (See Figure A.23, dimension H4).

3.39
overall length (operating mode)
longitudinal distance between the extreme front and rear points of the machine with the machine in operating configuration

Note 1 to entry: (See Figure A.22, dimension L1);

3.40
overall length (shipping)
longitudinal distance between the extreme front and rear points of the machine with the machine in shipping configuration

Note 1 to entry: (See Figure A.22, dimension L2);

3.41
overall width (operating mode)
minimum transverse distance between the extreme points of either side of the machine with the machine in operating configuration, but with the hopper wings raised

Note 1 to entry: (See Figure A.21, dimension W2)

3.42
overall width (shipping)
transverse distance between the extreme points on the sides of the machine with the machine in shipping configuration

Note 1 to entry: (See Figure A.21, dimension W2);

3.43
paving speed
maximum forward speed over a hard, horizontal surface in the designated paving speed range

3.44
push-roller
device that contacts the tyres of the paving material delivery vehicle

Note 1 to entry: For an example, see Figure A.4.

3.45
screed
device towed behind the tractor to strike off, compact, contour and smooth the paving material

Note 1 to entry: to entry For an example, see Figure A.12

Note 2 to entry: to entry Depending on the type of screed, the following paving material compaction systems are identified:

— static compaction: the paving material is compacted by the weight of the screed extruding the material through the profile of the front of the screed plate and also due to the draft angle (angle of attack) of the screed plate (see Figure A.13);

— dynamic compaction: in addition to the static compaction, additional compaction system, which can consist of vibrators, pressure bars and/or tamper bars, is fitted (see Figure A.14 and Figure A.15);

