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Road construction and maintenance equipment — Road milling machinery — Terminology and commercial specifications

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

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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 15645 was prepared by Technical Committee ISO/TC 195, *Building construction machinery and equipment*.

Introduction

This International Standard deals with road milling machinery used in the retread process, which is carried out in road maintenance.

It provides definitions of the milling machine itself and its components, and technical characteristics.

It includes figures showing milling machines with a loading device and the positioning of work tools in a rotor.

Road construction and maintenance equipment — Road milling machinery — Terminology and commercial specifications

1 Scope

This International Standard establishes the terminology, functions, types and characteristics of road milling machinery.

It is applicable to the planing of pavements made of concrete, asphalt and similar materials with a view to removing them.

2 Terms and definitions

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

2.1
road milling machinery
mobile road construction machine used to mill materials from paved surfaces

2.2
road milling carrier
machine carrying all the systems constituting the road milling machine, distributing the necessary power to operate the different devices and to ensure movement during work and transfer

2.3
cutting and milling system
power-driven cylindrical bodies on which the milling tools are fitted

NOTE The cylindrical bodies rotate during the milling operation. The tools are mostly cooled by a water sprinkler device.

2.4
levelling system
automatic or manual system used to obtain and maintain the geometry of the bottom of the cut

NOTE The geometry of the bottom refers to both the longitudinal and cross-sections. The geometrical reference is taken from the existing section or from a specific layout.

2.5
system to remove or make a cordon of aggregate material
transport system for removal and storage of loose material

NOTE The material is removed by either a front-, rear- or side-loading system, or is deposited as a cordon at the side or the back of the road milling machine.

2.6
operating mass
mass of the base machine with all standard equipment, with or without cab, with or without ROPS, etc., with operator (75 kg) and full fuel tank, and all fluid systems at their rated capacities and, when applicable, with sprinkler water tank half full

3 Description of milling machine components

3.1 General

The machine is usually equipped with all the following devices:

— traction and transport system;

— cutting and milling system;

— levelling system;

— system to remove or cordon aggregate material.

3.2 Design of milling machine types

3.2.1 Traction and transport system

The description shall include the type of ground drive system (wheels, tracks, etc.), the total number and position of wheels or tracks, the number and position of drive wheels or tracks, and the number and position of guiding wheels or tracks. The position of the rotor in relation to the wheels or tracks and the loading device is shown in Figures 1 and 2.

3.2.2 Cutting and milling system

The cutting and milling system comprises a rotor chamber and a drum sprinkler device (see Figure 3).

3.2.3 Rotor drive methods

These may be

— hydraulic,

— hydromechanical, or

— mechanical (right and/or left),

or may depend on the direction of rotation of the rotor in relation to the direction of movement.

3.2.4 Layout of tools

The layout of tools on the rotor is determined by the distance between two successive steps in the cross-section (Figure 2).

3.2.5 System for levelling and control of working depth

The following characteristics shall be given:

— level reference (ground, machine element, cord or others);

— type of sensors (laser, ultrasound, electronic or hydraulic);

— adjustment;

— manual;

— automatic.

3.2.6 System to remove or cordon aggregate materials

The description shall include the types of conveyors, their drives and the methods of positioning.

4 Commercial specifications

4.1 Characteristics of the traction and transport vehicle

4.1.1 Dimensional characteristics

The dimensions shown in Figure 1 shall be specified:

— overall length with removal system, l_1 (mm);

— overall length without removal system, l_2 (mm);

— overall width in working order (without removal system), b_1 (mm);

— overall height (without removal system), h_1 (mm);

— maximum front overhang (with removal system), l_6 (mm);

— rear overhang, l_3 (mm);

— inside turning radius, r_1 (mm);

— outside turning radius, r_2 (mm);

— distance between the rotor axis and the front wheels/tracks axis, l_5 (mm);

— distance between the rotor axis and the rear wheels/tracks axis, l_4 (mm);

— inside slewing radius of the rotor, r_3 (mm);

— outside slewing radius of the rotor, r_4 (mm);

— maximum loading height, h_2 (mm);

— slewing angle of the removal system, α (degrees)

— side-shift of the rotor to the chassis (for machines with side-shifted rotor) (mm).

4.1.2 Shipping dimensions (overall)

The following dimensions shall be specified:

— length (mm);

— width (mm);

— height (mm).

4.1.3 Mass characteristics

The following characteristics shall be given:

— load shipping mass (kg);

— operating mass (kg);

— other masses (all in kg)

  — on front axle,

  — on rear axle,

  — cab,

  — protective structure,

  — pumping and liquid adding device.

4.1.4 Engine characteristics

The following characteristics shall be given:

— engine brand and type;

— power (kW);

— revolutions (r/min);

— cooling type.

4.1.5 Transmission characteristics

The following characteristics shall be given:

— number of axles;

— number of driving axles;

— mechanical transmission;

— maximum working speed (km/h);

— maximum transfer speed (km/h).

4.1.6 Position of steering

This shall be specified as

— front, or

— rear.

4.1.7 Characteristics and type of tyres or tracks

This shall be specified as

— front, or

— rear.

4.1.8 Tank characteristics

The following characteristics shall be given:

— fuel tank capacity (dm^3);

— hydraulic oil tank capacity (dm^3);

— water tank capacity (dm^3).

4.2 Cutting and milling system characteristics

The following characteristics shall be given (see Figures 2 and 3):

— overall length (mm);

— working width of rotor, l_7 (mm);

— diameter of rotor with tools, d_1 (mm);

— number of tools;

— type of tools (with bits of sintered carbide):

  - tool in form of wand (for surfaces of cement and concrete),
  - tool in form of mushroom (for surfaces of asphalt and concrete);
- tool attachment method;
- direction of rotor rotation;
- revolutions of rotor (min^{-1});
- peripheral speeds at the end of tools (m/min);
- depth of cut in one pass, h_3 (mm);
- permissible transverse tilt angle of the chassis (in relation to the horizontal) (degrees);
- maximum rotor tilt in vertical plane (degrees);
- rotor drive method
  - hydraulic,
  - hydromechanical,
  - mechanical;
- layout of tools
  - step (mm);
- system of control of working depth
  - level reference (ground, machine element, cord or others),
  - type of sensors (laser, ultrasound, infrared or others),
  - adjustment of working depth (manual, automatic).

4.3 Drum sprinkler device

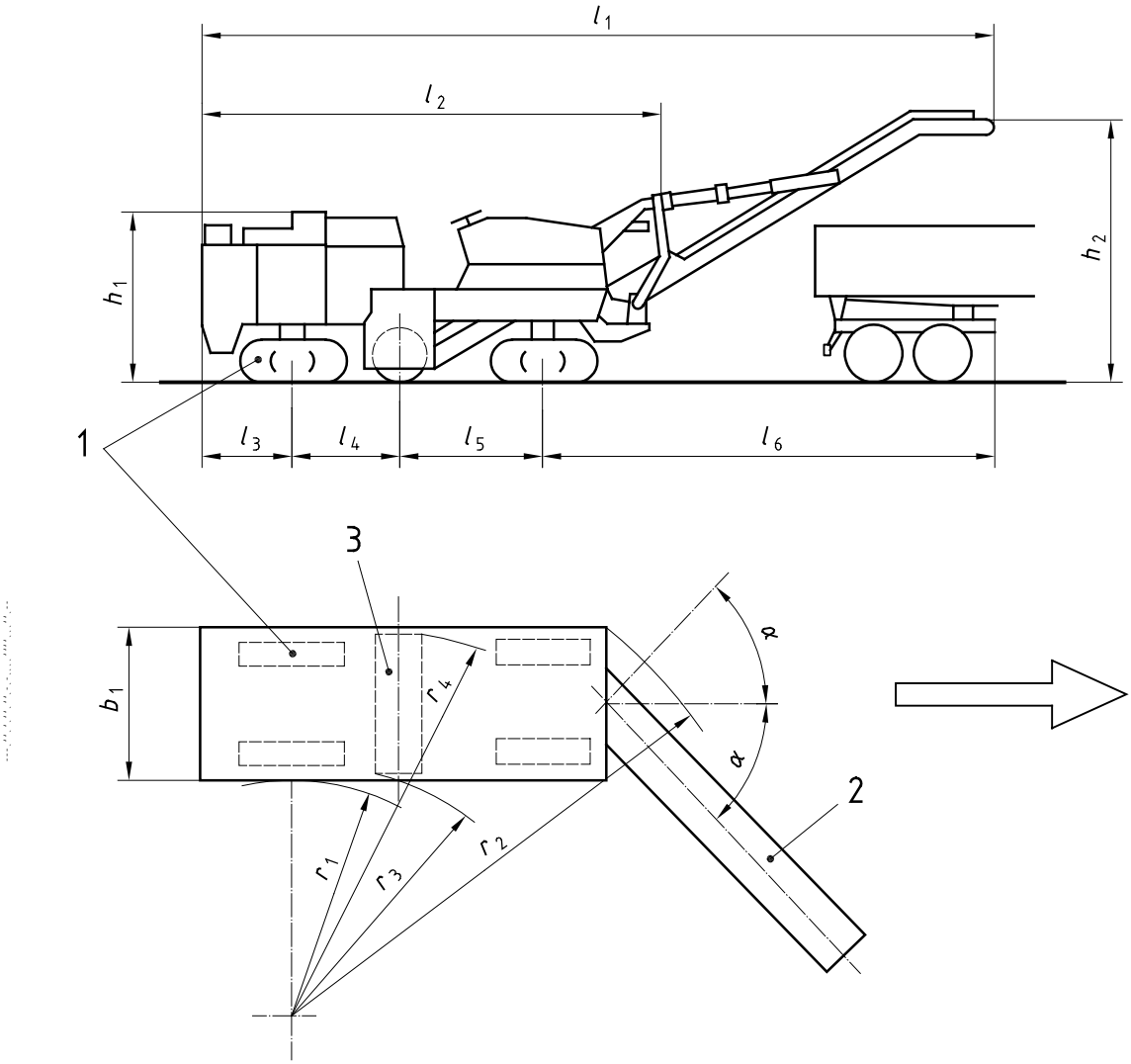
The following characteristics shall be given:

- water pump delivery (m^3/min);
- pressure in water supply system (MPa);
- number of spray nozzles.

4.4 System to remove or cordon aggregate materials

The following characteristics shall be given:

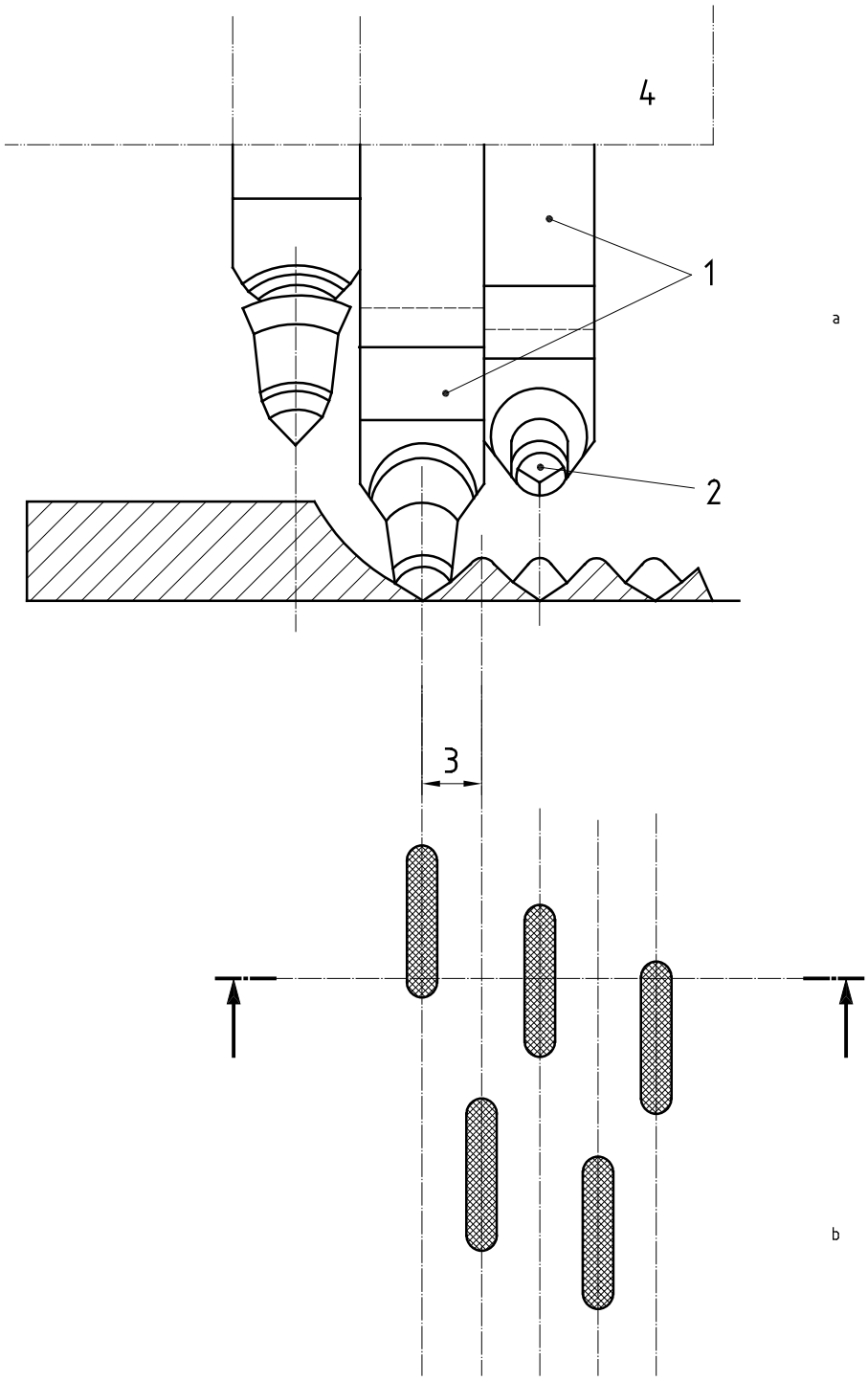
- type of conveyor (belt, drag slat or other);
- output of conveyor (kg/h);
- width of conveyor (mm);
- conveyor drive method (hydraulic, hydromechanical, mechanical);
- system of conveyor positioning (hydraulic, hydromechanical, mechanical)
- overall length with removal system folded (mm).



Key

1	Tracks		
2	Removal system		
3	Rotor		
l_1	Overall length (with removal system)		
l_2	Overall length (without removal system)	h_2	Maximum loading height
l_3	Rear overhang	b_1	Overall width (without removal system)
l_4	Distance between the rotor axis and the rear wheels/tracks axis	r_1	Inside turning radius
l_5	Distance between the rotor axis and the front wheels/tracks axis	r_2	Outside turning radius
l_6	Maximum front overhang (with removal system)	r_3	Inside slewing radius of the rotor
h_1	Overall height (without removal system)	r_4	Outside slewing radius of the rotor
		α	Slewing angle of the removal system

Figure 1 — Dimensional characteristics of a milling machine with removal system



[a] Pavement cross-section and tool attachment

[b] Top view of tool tracks

Key

1 Tool holder
2 Cutting tools
3 Step
4 Rotor

Figure 2 — Positioning of the working tools in a rotor

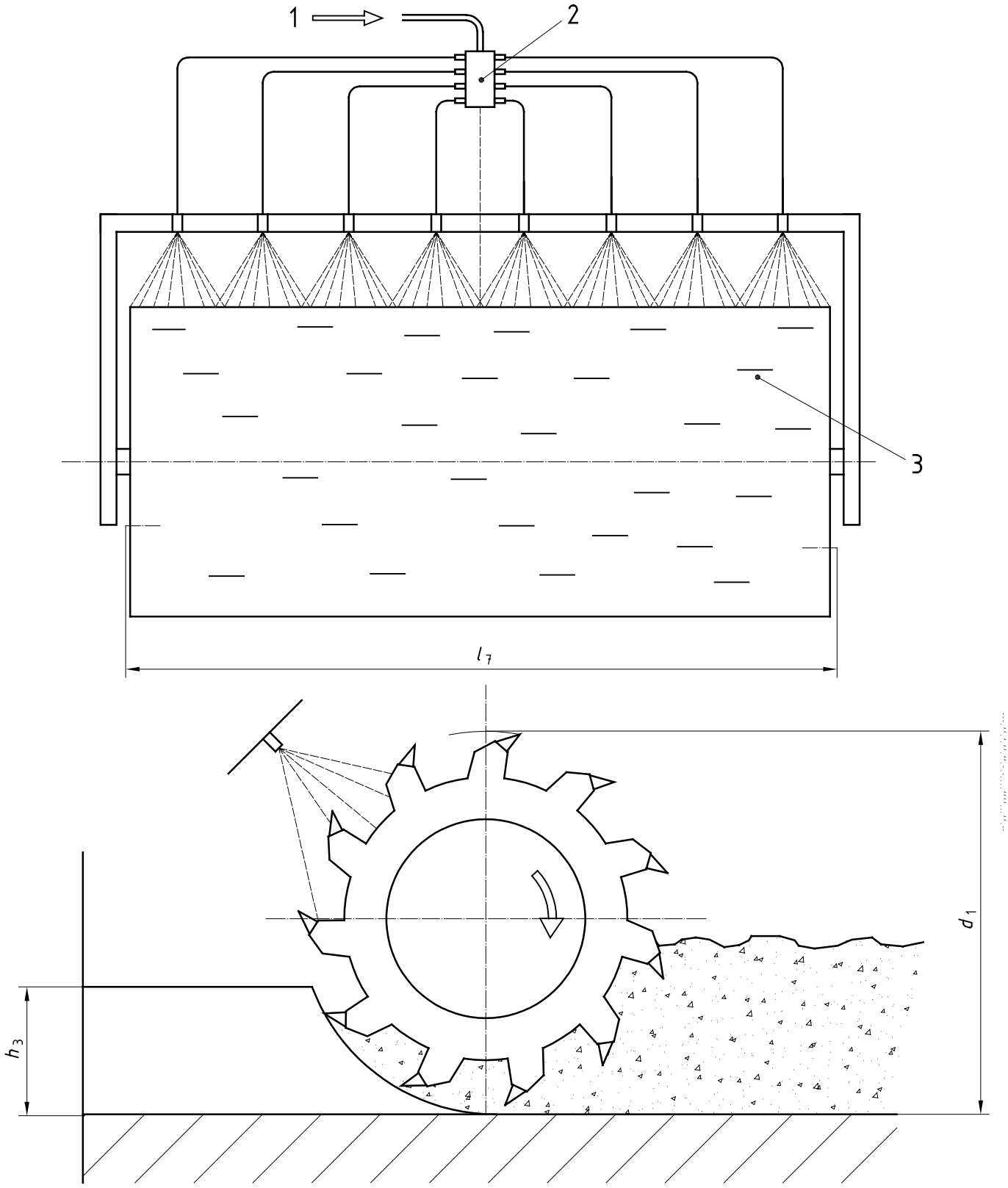


Figure 3 — Rotor chamber and the drum sprinkler device

Key

1	Water supply
2	Distribution block
3	Rotor
l_7	Working width of rotor
d_1	Diameter of rotor with tools
h_3	Depth of cut in one pass

Figure 3 — Rotor chamber and the drum sprinkler device (*continued*)

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