



SLOVENSKI STANDARD
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Safety of woodworking machines - Tenoning machines - Part 3: Hand fed tenoning machines with sliding table for cutting structural timbers

Sicherheit von Holzbearbeitungsmaschinen - Zapfenschneid- und Schlitzmaschinen - Teil 3: Abbundmaschinen mit von Hand bewegtem Schiebetisch

Sécurité des machines à bois - Tenonneuses - Partie 3: Machines à avance manuelle et à table roulante pour la coupe des éléments de charpente de toit en bois

Ta slovenski standard je istoveten z: EN 1218-3:2001

ICS:

79.120.10 Lesnoobdelovalni stroji Woodworking machines

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ICS 79.120.10

English version

Safety of woodworking machines - Tenoning machines - Part 3:
Hand fed tenoning machines with sliding table for cutting
structural timbers

Sécurité des machines à bois - Tenonneuses - Partie 3:
Machines à avance manuelle et à table roulante pour la
coupe des éléments de charpente de toit en bois

Sicherheit von Holzbearbeitungsmaschinen -
Zapfenschneid- und Schlitzmaschinen - Teil 3:
Abbundmaschinen mit von Hand bewegtem Schiebetisch

This European Standard was approved by CEN on 30 September 2001.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 142 "Woodworking machines - Safety", the secretariat of which is held by BSI.

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 April 2002, and conflicting national standards shall be withdrawn at the latest by April 2002.

This document 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).

For relationship with EC Directive(s), see informative annex ZA, which is an integral part of this document.

Organisations contributing to the preparation of this European Standard include European Committee of Woodworking Machinery Manufacturers Association "EUMABOIS".

The annexes A, B, C and D are normative and annexes E and ZA are informative.

This standard includes a Bibliography.

The European Standards produced by CEN/TC 142 are particular to woodworking machines and complement the relevant A and B Standards on the subject of general safety (see introduction of EN 292-1 : 1991 for a description of A, B and C standards).

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

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0 Introduction

This European Standard has been prepared to be a harmonised standard to provide one means of conforming to the essential safety requirements of the Machinery Directive, and associated EFTA regulations. This European Standard is a type "C" standard as defined in EN 292-1 : 1991.

The extent to which hazards are covered is indicated in the scope of this European Standard.

The requirements of this European Standard concern designers, manufacturers, suppliers and importers of hand fed tenoning machines with sliding table for cutting structural timbers.

This European Standard also includes information to be provided by the manufacturer to the user.

Common requirements for tooling are given in EN 847-1 : 1997.

1 Scope

This European Standard sets out the requirements and/or the measures to remove the hazards and limit the risks on hand fed tenoning machines with sliding table for cutting structural timbers, hereinafter referred to as "machines".

This European Standard does not apply to :

- machines where the tenon is produced by means of milling tools;
- machines designed for a tool spindle speed exceeding 6000 min⁻¹;
- machines where the cuts are made on both ends of the workpiece during one cycle;
- combined machines used for tenoning (see EN 940 : 1997);
- the tenoning attachment on a vertical spindle moulding machine (see EN 848-1 : 1998).

This European Standard covers the hazards relevant to this machine as listed in clause 4.

For Computer Numerically Controlled (CNC) machines this European Standard does not cover hazards related to Electro-Magnetic Compatibility (EMC).

This European Standard is primarily directed to machines which are manufactured after the date of issue of this European Standard.

2 Normative references

This European Standard incorporates by dated or undated reference 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 (including amendments).

EN 292-1 :	1991	<i>Safety of machinery - Basic concepts, general principles for design - Part 1 : Basic terminology and methodology.</i>
EN 292-2 :	1991	<i>Safety of machinery - Basic concepts, general principles for design - Part 2 :</i>
EN 292-2/A1 :	1995	<i>Technical principles and specifications.</i>
EN 418 :	1992	<i>Safety of machines - Emergency stop equipment - Functional aspects – Principles for design.</i>
EN 847-1 :	1997	<i>Tools for woodworking - Safety requirements – Part 1 : Milling tools and circular sawblades.</i>

EN 954-1 :	1996	<i>Safety of machinery - Safety related parts of control systems - Part 1 : General principles for design.</i>
EN 982 :	1996	<i>Safety requirements for fluid power systems and components – Hydraulics.</i>
EN 983 :	1996	<i>Safety requirements for fluid power systems and components – Pneumatics.</i>
EN 1088 :	1995	<i>Safety of machinery - Interlocking devices associated with guards – Principles for design and selection.</i>
EN 60204-1 :	1992	<i>Safety of machinery - Electrical equipment of machines - Part 1 : General requirements (IEC 204-1 : 1992, modified).</i>
EN 60529 :	1991	<i>Degree of protection provided by enclosures (IP code) (IEC 60529 : 1989).</i>
EN 60825-1 :	1994	<i>Safety of laser products - Part 1 : Equipment classification, requirements and users guide (IEC 60825-1 : 1993).</i>
EN 60947-4-1 :	1992	<i>Low voltage switchgear and control gear - Part 4 : Contactors and motor starters - Section 1 : Electromechanical contactors and motor starters (IEC 60947-4-1 : 1990).</i>
EN 60947-5-1 :	1997	<i>Low voltage switchgear and control gear - Part 5 : Control circuit devices and switching elements – Section 1 : Electromechanical control circuit devices (IEC 60947-5-1 : 1997).</i>
EN ISO 3743-1 :	1995	<i>Acoustics – Determination of sound power levels of noise sources - Engineering methods for small, moveable sources in reverberant fields - Part 1 : Comparison method for hard wall test rooms (ISO 3743-1 : 1994).</i>
EN ISO 3743-2 :	1996	<i>Acoustics – Determination of sound power levels of noise sources - Engineering methods for small, moveable sources in reverberant fields - Part 2 : Method for special reverberation test rooms (ISO 3743-2 : 1994).</i>
EN ISO 3744 :	1995	<i>Acoustics – Determination of sound power levels of noise sources using sound pressure engineering methods in an essentially free field over a reflecting plane (ISO 3744 : 1994).</i>
EN ISO 3746 :	1995	<i>Acoustics – Determination of sound power levels of noise sources using sound pressure – Survey method employing an enveloping measurement surface over a reflecting plane (ISO 3746 : 1995).</i>
EN ISO 4871 :	1996	<i>Acoustics – Determination and verification of noise emission values of machinery and equipment (ISO 4871 : 1996).</i>
EN ISO 9614-1 :	1995	<i>Acoustics - Determination of sound power levels of noise sources using sound intensity - Part 1 : Measurement at discrete points (ISO 9614-1 : 1993).</i>
EN ISO 11202 :	1995	<i>Acoustics - Noise emitted by machinery and equipment – Measurement method of emission sound pressure levels at the workstation and at other specified positions survey method in situ (ISO 11202 : 1995).</i>
EN ISO 11204 :	1995	<i>Acoustics - Noise emitted by machinery and equipment - Measurement of emission sound pressure levels at the workstation and at other specified positions - Method requiring environmental corrections (ISO 11204 : 1995).</i>
EN ISO 11688-1 :	1998	<i>Acoustics - Recommended practice for the design of low noise machinery and equipment - Part 1 : Planning (ISO/TR 11688-1 : 1995).</i>
ISO 286-2 :	1988	<i>ISO system of limits and fits - Part 2 : Tables of standard tolerance grades and limit deviations for holes and shafts.</i>

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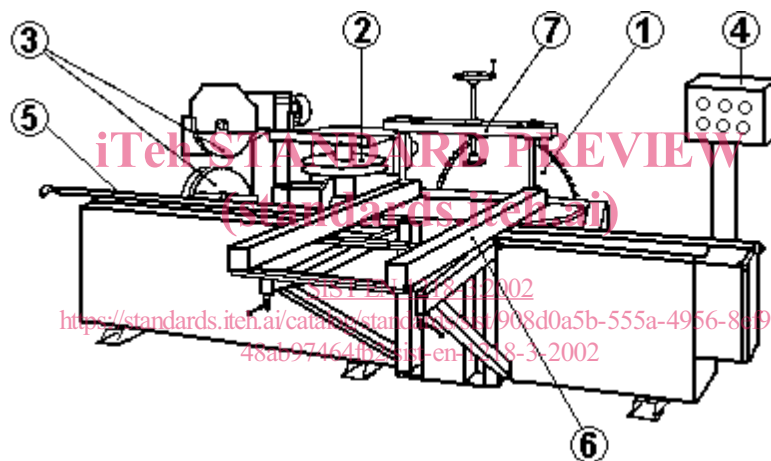
ISO 3745 :	1977	<i>Acoustics - Determination of sound power levels of noise sources - Precision methods for anechoic and semi-anechoic rooms.</i>
HD 21.1 S3 :	1997	<i>Polyvinyl chloride insulated cables of rated voltages up to and including 450/750v - Part 1 : General requirements.</i>
HD 22.1 S3 :	1997	<i>Rubber insulated cables of rated voltages up to and including 450/750v - Part 1 : General requirements.</i>
HD 22.4 S3 :	1995	<i>Rubber insulated cables of rated voltages up to and including 450/750 V - Part 4</i>
+ A1 :	1999	<i>: Cords and flexible cables (IEC 60245-4 : 1994, modified).</i>

3 Terms and definitions

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

3.1 Terms

The main parts of the machine and their terminology are illustrated in Figure 1.



Key	1	Main sawblade
	2	Horizontal sawblades
	3	Vertical sawblades
	4	Controls
	5	Sliding table guide
	6	Sliding table
	7	Workpiece clamping bridge

NOTE This figure is intended only to illustrate terms. For clarity not all necessary guards are shown

Figure 1 — Terminology

3.2 Definitions

3.2.1

hand fed tenoning machine with sliding table for cutting structural timbers

machine designed for the production of cuts, for jointing structural timbers, on one end of a workpiece during one cycle. The cuts are made by means of sawblade(s) mounted on one or more spindles (see Figure 1)

3.2.2

cuts for jointing structural timber

machined projections including tenons on the end of a workpiece to facilitate the joining of workpieces (see Figure 2)

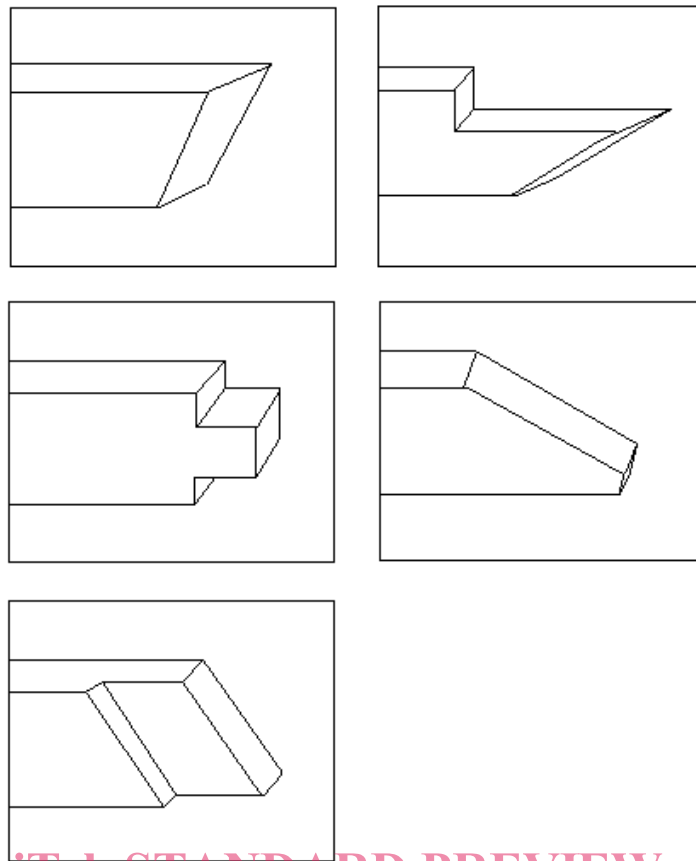


Figure 2 — Examples of saw cuts for joining structural timber

3.2.3

hand feed

manual holding and/or manual guiding of the workpiece (or of a machine element incorporating a tool). Hand feed includes the use of a hand operated carriage on which the workpiece is placed manually or clamped (and the use of a demountable power feed unit)

NOTE The words in brackets are not applicable to this machine.

3.2.4

ejection

unexpected movement of the workpiece, parts of it or part of the machine from the machine during processing

3.2.5

run-up time

time elapsed from the actuation of the start control device until the spindle reaches the intended speed

3.2.6

run-down time

time elapsed from the actuation of the stop control device up to spindle standstill

3.2.7

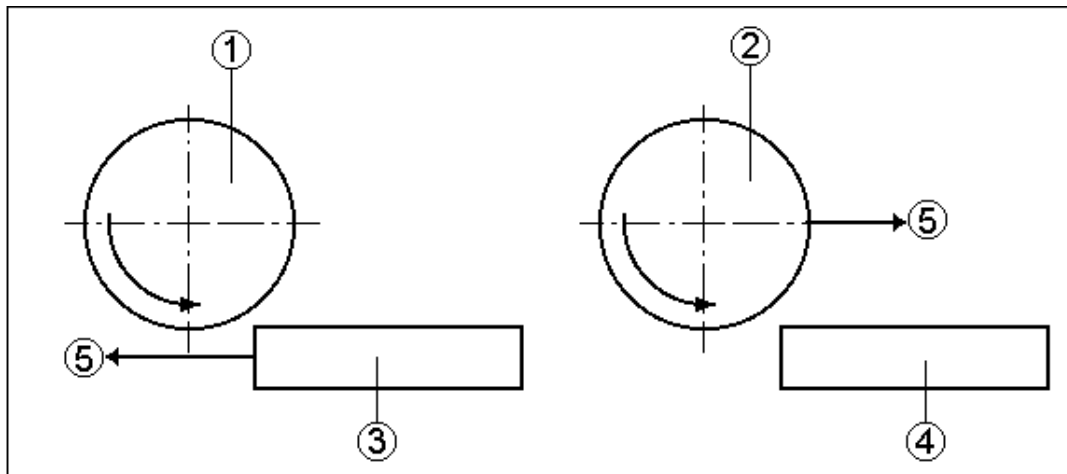
transportable machine

machine, which is located on the floor, stationary during use and equipped with a device, normally wheels, which allow it to be moved between locations

3.2.8

cutting against the feed

when the relative direction of the tool to the workpiece is as illustrated in Figure 3



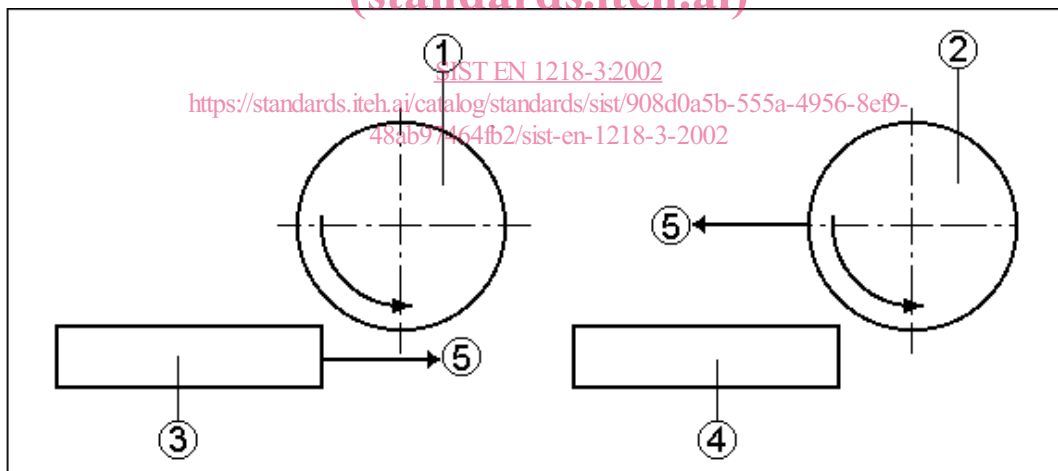
Key	1	Fixed sawblade
	2	Sawblade
	3	Workpiece
	4	Fixed workpiece
	5	Feed direction

Figure 3 — Rotational direction of the tool relative to the workpiece feed during cutting against the feed

**3.2.9
climb cutting**

when the relative direction of the tool to the workpiece is as illustrated in Figure 4

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Key	1	Fixed sawblade
	2	Sawblade
	3	Workpiece
	4	Fixed workpiece
	5	Feed direction

Figure 4 — Rotational direction of the tool relative to the workpiece feed during climb cutting

**3.2.10
machine actuator**

power mechanism used to effect motion of the machine

**3.2.11
confirmation**

statements, sales literature, leaflets or other, where a manufacturer (supplier) declares either the characteristics of e.g. a material or product or the compliance of the material or product to a relevant standard

4 List of hazards

This European Standard deals with hazards listed and relevant to the machines as defined in the scope :

- for significant hazards by defining safety requirements and/or measures or by reference to relevant type B standards;
- for hazards which are not significant e.g. general, minor or secondary hazards by reference to relevant type A or B standards, especially EN 292-1 : 1991 and EN 292-2 : 1991/A1 : 1995.

These hazards are listed in Table 1 in accordance with annex A of EN 292-2 : 1991/A1 : 1995.

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Table 1 — List of hazards

Number	Hazard	Relevant subclause of this European Standard
1	<p>Mechanical hazards (caused for example by :</p> <ul style="list-style-type: none"> - shape - relative location - mass and stability (potential energy of elements) - mass and velocity (kinetic energy of elements) - inadequacy of the mechanical strength. <p>Accumulation of Potential energy by :</p> <ul style="list-style-type: none"> - elastic elements (springs), or - liquids or gases under pressure, or - vacuum. <p>of the machine parts or workpieces)</p>	
1.1	Crushing hazard	5.2.1, 5.2.7, 5.2.8
1.2	Shearing hazard	5.2.7, 5.2.8
1.3	Cutting or severing hazard	5.2.2, 5.2.3, 5.2.4, 5.2.7, 5.2.8
1.4	Entanglement hazard	5.2.3, 5.2.4, 5.2.6, 5.2.7
1.5	Drawing-in or trapping hazard	5.2.7, 5.2.8
1.6	Impact hazard	Not relevant
1.7	Stabbing or puncture hazard	Not relevant
1.8	Friction or abrasion hazard	Not relevant
1.9	High pressure fluid injection hazard	5.3.7, 5.3.8
1.10	Ejection of parts (of machinery and processed materials/workpieces)	5.2.2, 5.2.3, 5.2.5, 5.2.6, 5.2.8
1.11	Loss of stability (of machinery and machine parts)	5.2.1
1.12	Slip, trip and fall hazards in relationship with machinery (because of their mechanical nature)	Not relevant
2	Electrical hazards, caused for example by :	
2.1	Electrical contact (direct or indirect)	5.3.4, 5.3.16, 5.3.17
2.2	Electrostatic phenomena	Not relevant
2.3	Thermal radiation or other phenomena such as ejection of molten particles, and chemical effects from short circuits, overloads, etc.	Not relevant
2.4	External influences on electrical equipment	5.1.1, 5.3.4, 5.3.12
3	Thermal hazards, resulting in :	
3.1	Burns and scalds, by a possible contact of persons, by flames or explosions and also by the radiation of heat sources	Not relevant
3.2	Health damaging effects by hot or cold work environment	Not relevant
4	Hazards generated by noise, resulting in :	
4.1	hearing losses (deafness), other physiological disorders (e.g. loss of balance, loss of awareness)	5.3.2
4.2	interference with speech communication, acoustic signals, etc.	5.3.2
5	Hazards generated by vibration (resulting in a variety of neurological and vascular disorders)	Not relevant
6	Hazards generated by radiation, especially by :	
6.1	electrical arcs	Not relevant
6.2	Lasers	5.3.13, 6.3
6.3	Ionising radiation sources	Not relevant
6.4	Machines making use of high frequency electro magnetic fields	Not relevant

(continued)

Table 1 — List of hazards (concluded)

Number	Hazard	Relevant subclause of this European Standard
7	Hazards generated by materials and substances processed, used or exhausted by machinery for example :	
7.1	Hazards resulting from contact with or inhalation of harmful fluids, gases, mists, fumes and dusts	5.3.3
7.2	fire and explosion hazard	5.3.1, 5.3.3, Annex E
7.3	Biological and microbiological (viral or bacterial) hazards	Not relevant
8	Hazards generated by neglecting ergonomic principles in machine design (mismatch of machinery with human characteristics and abilities) caused for example by :	
8.1	unhealthy postures or excessive efforts	5.1.2, 6.3
8.2	inadequate consideration of human hand/arm or foot/leg anatomy	5.1.2, 6.3
8.3	neglected use of personal protection equipment	6.3
8.4	inadequate area lighting	Annex E
8.5	mental overload or underload, stress, etc.	Not relevant
8.6	human error	6.3
9	Hazard combinations	Not relevant
10	Hazards caused by failure of energy supply, breaking down of machinery parts and other functional disorders, for example :	
10.1	failure of energy supply (of energy and/or control circuits)	5.1.6, 5.2.5
10.2	unexpected ejection of machine parts or fluids	5.3.16
10.3	failure, malfunction of control system (unexpected start-up, unexpected overrun)	5.1.1
10.4	errors of fitting	5.2.3, 6.3
10.5	overturn, unexpected loss of machine stability	5.2.1
11	Hazards caused by (temporary) missing and/or incorrectly positioned safety related measures/means, for example :	
11.1	all kinds of guards	5.2.7
11.2	all kinds of safety related (protection) devices	5.1.1, 5.2.7
11.3	starting and stopping devices	5.1.2, 5.1.3, 5.1.4
11.4	safety signs and signals	6.2
11.5	all kinds of information or warning devices	6.2, 6.3
11.6	energy supply disconnecting devices	5.3.16
11.7	emergency devices	5.1.5
11.8	feeding/removal means for workpieces	5.2.5, 5.2.6
11.9	essential equipment and accessories for safe adjusting and/or maintaining	5.3.17
11.10	equipment evacuating gases, etc.	5.3.3, 6.3

5 Safety requirements and/or measures

For guidance in connection with risk reduction by design, see clause 3 of EN 292-2 : 1991/A1 : 1995 and in addition :

5.1 Controls

5.1.1 Safety and reliability of control systems

For the purposes of this European Standard a safety related control system is one from and including the initial manual control or position detector to the point of input to the final actuator or element e.g. motor. The safety related control systems of this machine (see EN 954-1 : 1996) are those for :

- starting (see 5.1.3);
- normal stopping (see 5.1.4);
- emergency stop (see 5.1.5);
- the braking system (see 5.2.4);