



SLOVENSKI STANDARD SIST EN 608:1999

01-julij-1999

Kmetijski in gozdarski stroji - Prenosne motorne žage - Varnost

Agricultural and forestry machinery - Portable chain saws - Safety

Land- und Forstmaschinen - Tragbare Motorsägen - Sicherheit

Matériel agricole et forestier - Scies à chaîne portatives - Sécurité

Ta slovenski standard je istoveten z: **EN 608:1994**

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EUROPEAN STANDARD

EN 608

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EUROPÄISCHE NORM

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English version

Agricultural and forestry machinery - Portable chain saws - Safety

Matériel agricole et forestier - Scies à chaîne portatives - Sécurité

Land- und Forstmaschinen - Tragbare Motorsägen - Sicherheit

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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.

The European Standards exist 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 Central Secretariat has the same status as the official versions.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Contents list

	Page
Foreword	3
0 Introduction	4
1 Scope	4
2 Normative references	4
3 Definitions	5
4 Safety requirements	6
4.1 Handles.....	6
4.2 Hand protection.....	6
4.3 Balance.....	6
4.4 Protection against injury by kickback.....	7
4.5 Chain catcher.....	7
4.6 Spiked bumper.....	7
4.7 Chip discharge.....	7
4.8 Guide bar cover.....	7
4.9 Noise emission.....	7
4.10 Vibration.....	8
4.11 Throttle trigger.....	8
4.12 Ignition switch.....	9
4.13 Protection against contact with parts under high voltage.....	9
4.14 Clutch.....	9
4.15 Carburettor adjustment.....	9
4.16 Protection against contact with hot parts.....	9
4.17 Exhaust gases.....	11
4.18 Chain lubrication.....	11
4.19 Tank openings.....	11
4.20 Chain tensioning.....	11
5 Verification of safety requirements	12
6 Information for use	13
6.1 General.....	13
6.2 Technical data.....	13
6.3 Instruction handbook.....	15
6.4 Marking.....	16
Annex A (normative) List of hazards	17

Foreword

This European Standard was prepared by the Technical Committee CEN/TC 144 "Tractors and machinery for agriculture and forestry" of which the secretariat is held by AFNOR.

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

The Annex A is normative and contains the "List of hazards"

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 March 1995, and conflicting national standards shall be withdrawn at the latest by March 1995.

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

The extent to which hazards are covered is indicated in the scope of this standard. In addition, machinery shall comply as appropriate with EN 292 for hazards which are not covered by this standard.

1 Scope

This European Standard specifies safety requirements and their verification for design and construction of portable combustion engined, hand held chain saws designed for use by one operator (see figure 1).

It describes methods for the elimination or reduction of hazards arising from their use. In addition it specifies the type of information on safe working practices to be provided by the manufacturer. It does not however give any technical requirement to reduce noise and vibration hazards. Indeed the different means available to reduce these hazards are a matter for the rule book to which the manufacturer may resort, through specialised books or specific bodies.

The list of significant hazards, which require action to reduce the risk is given at annex A.

Environmental aspects have not been considered in this standard.

This European Standard applies primarily to machines which are manufactured after the date of issue of the 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.

EN 292-1:	1991	Safety of machinery - Basic concepts, general principles for design - Part 1: Basic terminology, methodology.
EN 292-2:	1991	Safety of machinery - Basic concepts, general principles for design - Part 2: Technical principles and specifications.
EN 27182:	1991	Acoustics - Measurement at the operator's position of airborne noise emitted by chain saws. (ISO 7182:1991)
ISO 3767-5:	1992	Tractors, machinery for agriculture and forestry, powered lawn and garden equipment - Symbols for operator controls and other displays - Part 5: Symbols for manual portable forestry machinery.
ISO 3864:	1984	Safety colours and safety signs.
ISO 6531:	1982	Machinery for forestry - Portable chain saws - Vocabulary.
ISO 6533:	1993	Forestry machinery - Portable chain-saw front hand-guard - Dimensions.
ISO 6534:	1992	Portable chain-saws - Hand guards - Mechanical strength.
ISO 6535:	1991	Portable chain-saws - Chain brake performance.
ISO 7293:	1983	Forestry machinery - Portable chain saws - Engine performance and fuel consumption.

ISO 7505:	1986	Forestry machinery - Chain saws - Measurement of hand-transmitted vibration.
ISO 7914:	1986	Forestry machinery - Portable chain saws - Minimum handle clearance and sizes.
ISO 7915:	1991	Forestry machinery - Portable chain saws - Determination of handle strength.
ISO 8334:	1985	Forestry machinery - Portable chain saws - Determination of balance.
ISO/DIS 9207:	1991	Manually portable chain saws - Determination of sound power levels.
ISO 9518:	1992	Forestry machinery - Portable chain saws - Kickback test.
ISO 10 726:	1992	Portable chain saws - Chain catcher - Dimensions and mechanical strength.

3 Definitions

For the purposes of this European Standard, the definitions given in ISO 6531 apply (see figure 1).

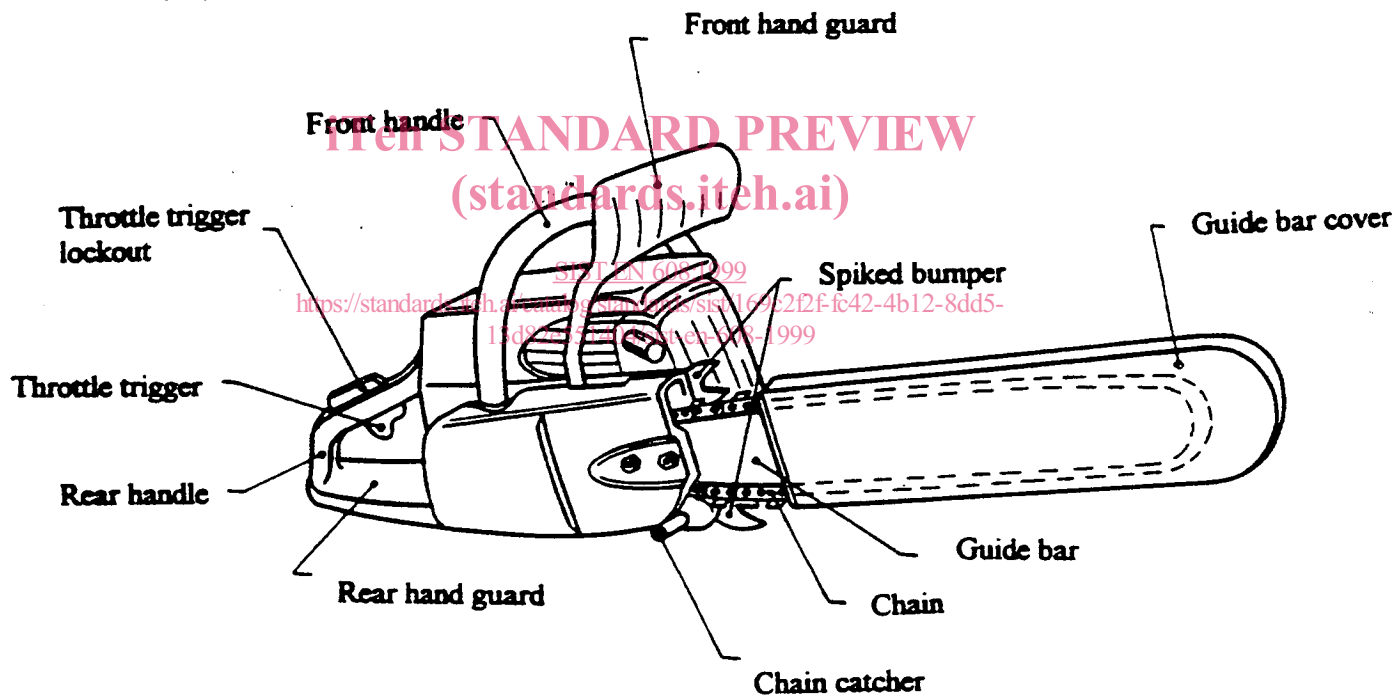


Figure 1 : Chain saw

4 Safety requirements

NOTE : The safe running of chain saws depends on both the safety requirements as described in this clause and a safe system of work associated with the use of personal protection equipment as gloves, leg protection, boots as well as eye and ear protection equipment.

4.1 Handles

Chain saws shall have a handle for each hand. These handles shall be designed so that they can be fully gripped by an operator when wearing protective gloves, provide the necessary sureness of grip by their shaping and surface and conform to the dimensions and clearances given in ISO 7914. The strength of both handles shall at least comply with ISO 7915.

The operator shall be able to stop the chain saw in a controlled manner even of failure of any vibration isolation system.

4.2 Hand protection

4.2.1 Protection at the front handle

A guard shall be fitted in the vicinity of the front handle (see figure 1), to protect the operators fingers from injury by contact with the saw chain.

The dimensions of this front hand guard shall comply with ISO 6533. Its strength shall comply with ISO 6534.

4.2.2 Protection at the rear handle

A hand guard shall be provided along the length of the right side of the bottom of the rear handle. This guard shall extend from the right edge of the handle for at least 30 mm at the guide bar side and at least 100 mm lengthwise (see figure 2).

This requirement can also be fulfilled by parts of the machine.

The strength of the rear hand guard shall comply with ISO 6534.

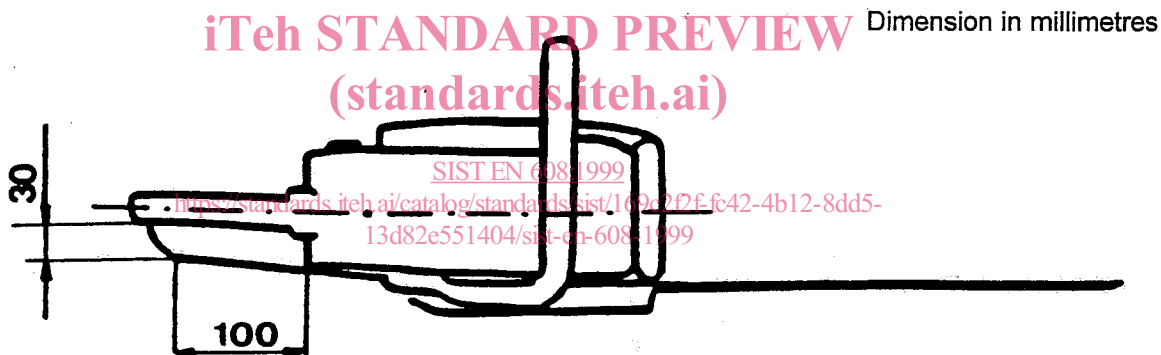


Figure 2 : Minimum dimensions of protection at the rear handle

4.3 Balance

There shall be means to evenly balance the chain saw when fitted with the manufacturer's recommended guide bars. The balance shall be tested in accordance with ISO 8334. The maximum angle of the guidebar shall not exceed 30° above and below the horizontal.

4.4 Protection against injury by kickback

4.4.1 The chain saw shall be fitted with a chain brake. It shall be possible to activate the chain brake manually by means of the front hand guard.

There shall also be a non manual system which operates the chain brake when kickback occurs.

NOTE 1 : A test method and limits is to be developed.

The computed kickback angle and chain stop angle shall be determined with cutting attachments as recommended by the manufacturer and in accordance with ISO 9518.

The computed kickback angle or chain stop angle, whichever is less, shall not exceed 45° for saws with combustion engine displacement up to 80 cm³.

NOTE 2 : Sufficient information to set a limit is not available for saws over 80 cm³.

4.4.2 The chain brake release force shall be between 20 N and 60 N.

The average braking time shall not exceed 0,12 s and the maximum braking time shall not exceed 0,15 s. Measurements of release force and braking times shall be carried out in accordance with ISO 6535.

4.5 Chain catcher

The chain saw shall be fitted with a chain catcher that conforms to the dimensions and strength requirements in ISO 10726.

4.6 Spiked bumper

The chain saw shall be equipped with a spiked bumper (see figure 1) or with provision to mount a spiked bumper.

4.7 Chip discharge

The chain saw shall be designed so that wood particles are directed below the underside of the saw when it is in upright position.

4.8 Guide bar cover

The chain saw shall be provided with a guide bar cover for safe transport (see figure 1).

4.9 Noise emission

The time-averaged emission sound pressure levels at the operator's ear, shall be measured in accordance with EN 27182.

The sound power levels from the chain saw shall be measured in accordance with ISO/DIS 9207.

For the sound pressure achievable values are given in table 1.

Table 1 : Achievable sound pressure values

Operating mode		Engine displacement cm ³		
		≤40	> 40 to 80	> 80
Idling	dB(A)	85	85	85
Racing	dB(A)	102	105	-
Full load	dB(A)	100	103	105

These achievable values do not constitute personal exposure limits, but the emission values from a machine under defined test conditions (for example, speed, load, material to be used...) and according to the measurement of the corresponding noise levels.

NOTE : The achievable sound pressure values given in table 1 are not a barrier to innovation, and they should not prevent the achievement of better values. With this in view, they will have to be revised when the state of the art evolves.

4.10 Vibration

The weighted acceleration sum shall be measured and calculated in accordance with ISO 7505.

Achievable values are given in table 2.

Table 2 : Achievable vibration values

Engine displacement		Idling m/s ²	Racing m/s ²	Full load m/s ²
≤ 80 cm ³	Front handle	12,5	12,5	12,5
	Rear handle	-	12,5	12,5
> 80 cm ³	Front handle	15,0	15,0	15,0
	Rear handle	-	15,0	15,0

These achievable values do not constitute personal exposure limits, but the emission values from a machine under defined test conditions (for example, speed, load, material to be used...) and according to the measurement of the corresponding vibration levels.

NOTE : The achievable vibration values given in table 2 are not a barrier to innovation, and they should not prevent the achievement of better values. With this in view, they will have to be revised when the state of the art evolves.

4.11 Throttle trigger

A chain saw shall be provided with a constant pressure throttle trigger that automatically reverts to the idling position and is retained in that position by the automatic engagement of a throttle trigger lock-out.

The throttle trigger shall be positioned so that it can be pressed and released with a gloved hand while holding the handle.

The throttle control linkage shall be so designed that a force equal to three times the weight of the chain saw unit (without cutting attachment and with empty tanks), applied on the rear handle in any direction, shall not increase the engine speed to a point where the clutch engages and chain movement begins.

If a throttle lock is provided for cold starting, it shall be such that the lock has to be set manually and is automatically released when the throttle trigger is operated.

4.12 Ignition switch

The machine shall be fitted with an ignition switch, which brings it to a final stop and does not depend on sustained manual effort for its operation. This device shall be so positioned that it can be operated whilst the saw is being held with both hands by an operator wearing protective gloves. The purpose and method of operation of the device shall be clearly and durably marked.

The colour of the ignition switch shall clearly contrast with the background.

4.13 Protection against contact with parts under high voltage

All parts of the motor which are under high voltage shall be so insulated that the material under high voltage cannot be touched.

4.14 Clutch

The clutch shall be so designed, that the chain does not run when the engine rotates at 1,25 times the idling speed.

4.15 Carburettor adjustment

The elements of carburettor adjustment shall be clearly and indelibly marked, for examples by symbols as given in ISO 3767-5. The markings used shall be illustrated and explained in the instruction handbook.

4.16 Protection against contact with hot parts

Hot parts such as the cylinder or parts in direct contact with the cylinder or silencer, shall be guarded against unintentional contact during normal operation of the machine. This applies to hot parts which are less than 120 mm away from the far side of the nearest handle (see figures 3 and 4) and less than 80 mm from the sides of the front handle (see figure 5).

A laterally mounted silencer shall be provided with a guard as protection against contact with the spread-out hand, i.e. hot areas shall not exceed 10 cm², if they can be reached by the test cone (see figure 6).

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