



SLOVENSKI STANDARD
SIST EN 1454:2000
01-april-2000

Portable, hand-held, internal combustion cutting-off machines - Safety

Portable, hand-held, internal combustion cutting-off machines - Safety

Tragbare, handgeführte Trennschleifmaschinen mit Verbrennungsmotor - Sicherheit

Tronçonneuses a disque, portatives, a moteur thermique - Sécurité

Ta slovenski standard je istoveten z: EN 1454:1997

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ICS:

25.140.01 Ü[} æ[![åæ[æ[] [[z}[Hand-held tools in general

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EUROPEAN STANDARD

EN 1454

NORME EUROPÉENNE

EUROPÄISCHE NORM

August 1997

ICS 25.140.01

Descriptors: sawing machines (tools), portable equipment, heat engines, safety of machines, accident prevention, hazards, safety measures, dimensions, design, equipment specifications, acoustic measurement, verification, technical notices, marking

English version

Portable, hand-held, internal combustion cutting-off machines - Safety

Tronçonneuses à disque, portatives, à moteur
thermique - Sécurité

Tragbare, handgeführte Trennschleifmaschinen
mit Verbrennungsmotor - 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.

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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

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 151 "Construction equipment and building material machines - Safety", the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by February 1998, and conflicting national standards shall be withdrawn at the latest by February 1998.

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

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this standard.

The Annex A is normative and contains "Method of noise measurement", the Annex B is normative and contains "Method of vibration measurement", the Annex C is normative and contains "Verification of the safety requirements" and the Annex D is informative and contains "Symbols".

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 is a Type C-standard as stated in EN 292.

The machinery concerned and the extent to which hazards are covered are indicated in the scope of this standard.

This standard does not describe technical measures for the reduction of noise and vibration. Various measures for the reduction of noise and vibration are included in guidelines which can be used by the manufacturer, are given in the relevant literature or are published by the responsible technical working groups.

1 Scope

1.1 This European Standard is applicable to machines which are designed for cutting -off mainly building construction materials but which could also be used for cutting metal according to the specific type of cutting-off wheel (see figure 1) selected.

NOTE: For nominal dimensions and peripheral speed of cutting-off wheel see 5.7.1.

This European Standard specifies design and construction requirements including safety, performance and testing for portable, hand-held internal combustion engine cutting-off machines (see figure 1). Additionally this European Standard specifies the information to be provided by the manufacturer on safe working practices.

1.2 This European Standard deals with all significant hazards pertinent to cutting-off machines when they are used as intended (see 3.12 of EN 292-1:1991) and under the conditions foreseen by the manufacturer (see clause 4). This European Standard specifies the appropriate technical measures to eliminate or reduce risks arising from the significant hazards.

1.3 This European Standard applies primarily to machines which are manufactured after the date of approval of the standard by CEN.

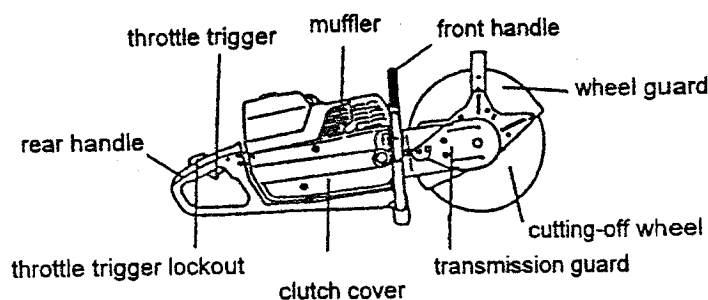


Figure 1: Cutting-off machine

2 Normative references

This European Standard incorporates by dated or undated references, 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 294:1992 | Safety of machinery - Safety distances to prevent danger zones being reached by the upper limbs |
| EN 563:1994 | Safety of machinery - Temperatures of touchable surfaces - Ergonomic data to establish temperature limit values for hot surfaces |
| ENV 1070 | Safety of machinery - Terminology |
| ENV 25349:1992 | Mechanical vibration - Guidelines for the measurement and the assessment of human exposure to hand-transmitted vibration |
| EN 28662-1:1992 | Hand-held portable power tools, measurement of vibration at the handle - Part 1: General |
| EN 61260:1995 | Electroacoustics - Octave-band and fractional-octave-band filters |
| EN ISO 3744:1995 | Acoustics - Determination of sound power levels of noise sources using sound pressure - Engineering method in an essentially free field over a reflecting plane (ISO 3744:1994) |
| EN ISO 11201:1995 | Acoustics - Noise emitted by machinery and equipment - Measurement of emission sound pressure levels at the work station and at other specified positions - Engineering method in an essentially free field over a reflecting plane (ISO 11201:1995) |
| ISO 266:1975 | Acoustics - Preferred frequencies for measurements |
| ISO 7293:1983 | Forestry machinery - Portable chain saws - Engine performance and fuel consumption |
| IEC 651:1979 | Sound level meters |

3 Definitions - Terminology - Symbols and abbreviations

For the purposes of this standard the definitions stated in ENV 1070 apply. Additional definitions specifically needed for this standard are added below (see also figure 1).

3.1 Work operations

3.1.1 Cutting

The use of an abrasive cutting-off wheel to cut work pieces.

3.2 Controls

3.2.1 Carburettor setting

3.2.1.1 Idle speed adjuster

A device, normally a screw, acting on the throttle, for adjusting the idle speed.

3.2.1.2 Low speed mixture adjuster

A device, normally a screw, for adjusting the fuel delivery at idling speed.

3.2.1.3 High speed mixture adjuster

A device, normally a screw, for adjusting the fuel delivery at full throttle.

3.2.2 Engine speed limiter

A device to limit the maximum engine speed.

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3.2.3 Choke

A device for enriching the fuel air mixture in the carburettor, to aid starting.

3.2.4 Decompression valve

A device for lowering the compression in the cylinder, to aid starting.

3.2.5 Stopping device

A device for stopping the engine.

3.2.6 Primer

A device for supplying extra fuel, to aid starting.

3.2.7 Throttle lock

A device for temporarily setting the throttle in a partially open position, to aid starting.

3.2.8 Throttle lock-out

A device that prevents the accidental operation of the throttle trigger until manually released.

3.2.9 Throttle trigger

A device for controlling the engine speed.

3.3 Handle

A device designed to facilitate safe and easy control of the machine in all operating positions foreseen by the manufacturer.

3.3.1 Front handle

3.3.1.1 Standard front handle

A support handle located at or towards the front of the engine housing.

3.3.1.2 Wrap around front handle

A special type of front handle which extends from the left to the right side of the engine housing (see figure 3).

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3.3.2 Rear handle

A support handle located at or towards the rear of the engine housing.

3.4 Safety devices

3.4.1 Cutting-off wheel guard

A cutting-off wheel guard is an enclosure for the cutting-off wheel.

3.4.2 Clutch cover

A protective cover over the clutch and the drive pulley.

3.4.3 Throttle trigger lockout (safety trigger)

A device that prevents the accidental operation of the throttle trigger.

3.4.4 Transmission guard

A device between the engine and the cutting equipment to prevent accidental contact with the transmission.

3.5 Cutting equipment

3.5.1 Bonded abrasive cutting-off wheel

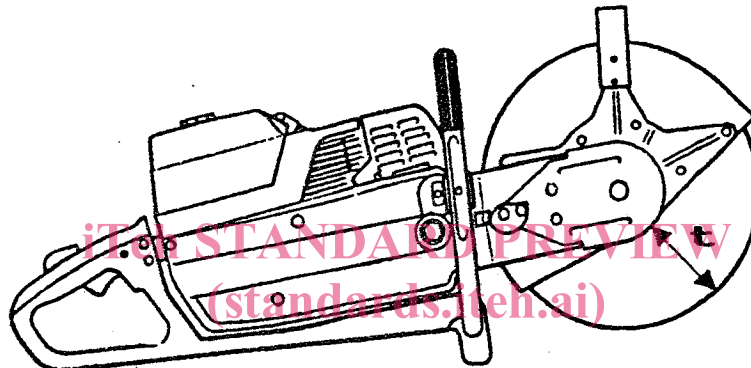
A wheel composed of abrasive particles bonded together by an appropriate binder and incorporated, if necessary, some appropriate form of reinforcement.

3.5.2 Diamond and CBN-abrasive cutting-off wheel

A wheel made of metal or other materials of similar properties, which has diamond, CBN-particles or other suitable abrasive particles bonded to its rim.

3.5.3 Maximum depth of cut

The depth t to which the cutting-off wheel can enter the workpiece (see figure 2).



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Figure 2: Cutting equipment - Depth of cut t

3.6 Miscellaneous definitions

3.6.1 Clutch

A device for connecting and disconnecting the driven member to and from a rotating source of power.

3.6.2 Muffler, silencer

Device for reducing engine exhaust noise and directing the exhaust gases.

NOTE: The muffler may contain a catalytic converter.

3.6.3 Machine spindle

Shaft of the cutting-off machine which supports, retains and drives the cutting-off wheel in connection with the flanges.

3.6.4 Speed

NOTE: All speeds not otherwise stated given in min^{-1} .

3.6.4.1 Idle speed

Lowest stable speed as recommended by the manufacturer, at which the engine runs reliably and the cutting-off wheel does not rotate.

3.6.4.2 Rated spindle speed

Maximum spindle speed, at which the machine may be operated with load as determined by the manufacturer and which is marked on the machine.

3.6.4.3 Maximum spindle speed

Maximum speed, at which the spindle rotates with full open throttle and no load as determined by the manufacturer.

3.6.4.4 Maximum operating wheel speed

Maximum permitted speed of a new cutting-off wheel, as recommended by the wheel manufacturer and which is marked on the cutting-off wheel.

3.6.4.5 Maximum peripheral wheel speed (in m/s)

The peripheral speed of the new cutting-off wheel corresponding to its maximum operating wheel speed.

3.6.5 Flange assembly

A device provided to clamp and drive the cutting-off wheel e. g. a pair of flanges which shall be of the same diameter and between which a cutting wheel is clamped to mount it on the machine spindle.

3.6.6 Flange contact diameter

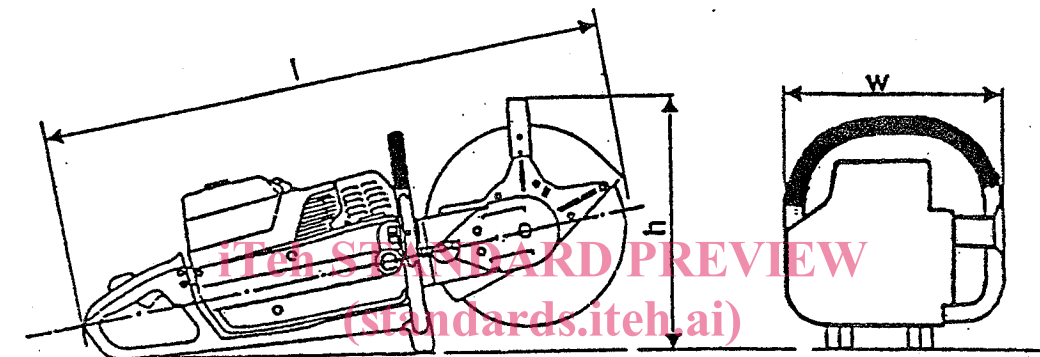
The largest diameter df of the flange contacting the cutting-off wheel (see figure 4).

3.6.7 Blotter

Washers made from some compressible material e.g. paper, card or similar material, attached to each side of the cutting-off wheel, the function of which is to smooth imperfections in the cutting-off wheel and allow a limited degree of slip when a cutting-off wheel is stalled in use.

3.7 Technical criteria for the description of a cutting-off machine

| | Unit | |
|---------|--|-------------------|
| 3.7.1 | Mass | |
| 3.7.1.1 | Machine without cutting-off wheel and empty fuel tank | kg |
| 3.7.1.2 | Machine with specified cutting-off wheel and empty fuel tank | kg |
| 3.7.1.3 | Machine with specified cutting-off wheel and full fuel tank | kg |
| 3.7.2 | Volume | |
| 3.7.2.1 | Fuel tank capacity | l |
| 3.7.3 | Cutting-off wheel | |
| 3.7.3.1 | Outer diameter, D (see figure 4) | mm |
| 3.7.3.2 | Thickness, T | mm |
| 3.7.3.3 | Arbor hole diameter, H (see figure 4) | mm |
| 3.7.3.4 | Depth of cut of the cutting-off wheel, t (see figure 2) | mm |
| 3.7.3.5 | Maximum operating wheel speed | min ⁻¹ |



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 Figure 3: External dimensions of cutting-off machine

| | | |
|---------|---|-------------------|
| 3.7.4 | External dimensions | |
| 3.7.4.1 | Length, l | mm |
| 3.7.4.2 | Height, h | mm |
| 3.7.4.3 | Width, w | mm |
| 3.7.5 | Engine | |
| 3.7.5.1 | Engine displacement | cm ³ |
| 3.7.5.2 | Maximum engine power (in accordance with ISO 7293:1983) | kW |
| 3.7.5.3 | Idling speed (idling = id) | min ⁻¹ |
| 3.7.5.4 | Rated spindle speed | min ⁻¹ |
| 3.7.5.5 | Engine speed at beginning of clutch engagement | min ⁻¹ |
| 3.7.6 | Fuel consumption (in accordance with ISO 7293:1983) | |
| 3.7.6.1 | Fuel consumption at maximum engine power | kg/h |
| 3.7.6.2 | Specific fuel consumption at maximum engine power | g/kWh |
| 3.7.7 | Equivalent sound level | |
| 3.7.7.1 | A - weighted sound pressure level | dB |
| 3.7.7.2 | A - weighted sound power level | dB |
| 3.7.8 | Vibration level at idling and at rated spindle speed | m/s ² |
| 3.7.9 | Temperature | °C |