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Woodworking machines — Safety —

Part 10: Building site saws (contractor saws)

Machines à bois — Sécurité —

Partie 10: Scies de chantier

Reference number
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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 39, *Machine tools*, Subcommittee SC 4, *Woodworking machines*.

This document is intended to be used in conjunction with ISO 19085-1:2017, which gives requirements common to different machine types.

A list of all parts in the ISO 19085 series can be found on the ISO website.

This corrected version of ISO 19085-10:2018 incorporates the following corrections:

— the sentence about list item o) has been moved from 8.2.1 to 8.3.1;

— additional information has been added in 8.3.2 g);

— minor editorial corrections have been made.

This corrected version of ISO 19085-10:2018 corrects 8.3.1.

Introduction

The ISO 19085 series of International Standards provides technical safety requirements for the design and construction of woodworking machinery. It concerns designers, manufacturers, suppliers and importers of the machines specified in the Scope. It also includes a list of informative items that the manufacturer will need to give to the user.

This document is a type-C standard as stated in ISO 12100.

The machinery concerned and the extent to which hazards, hazardous situations or hazardous events are covered are indicated in the Scope of this document.

When requirements of this type-C standard are different from those which are stated in type-A or type-B standards, the requirements of this type-C standard take precedence over the requirements of the other standards for machines that have been designed and built according to the requirements of this type-C standard.

The full set of requirements for a particular type of woodworking machine are those given in the part of ISO 19085 applicable to that type, together with the relevant requirements from ISO 19085-1:2017, to the extent specified in the Scope of the applicable part of ISO 19085.

As far as possible, in parts of ISO 19085 other than ISO 19085-1:2017, safety requirements are referenced to the relevant sections of ISO 19085-1:2017, to avoid repetition and reduce their length. The other parts contain replacements and additions to the common requirements given in ISO 19085-1:2017.

Thus, Clauses 5, 6, 7 and 8, with their subclauses and the annexes of this document, can either

— confirm as a whole,

— confirm with additions,

— exclude in total, or

— replace with specific text

the corresponding subclauses or annexes of ISO 19085-1:2017.

This interrelation is indicated in the first paragraph of each subclause or annex right after the title by one of the following statements:

— “This subclause of ISO 19085-1:2017 applies.”;

— “This subclause of ISO 19085-1:2017 applies with the following additions.”, or “This subclause of ISO 19085-1:2017 applies with the following additions, subdivided into further specific subclauses.”;

— “This subclause of ISO 19085-1:2017 does not apply.”;

— “This subclause of ISO 19085-1:2017 is replaced by the following text.”, or “This subclause of ISO 19085-1:2017 is replaced by the following text, subdivided into further specific subclauses.”.

Specific subclauses and annexes in this part of ISO 19085 without correspondent in ISO 19085-1:2017 are indicated by the introductory sentence: “Subclause (or annex) specific to this part of ISO 19085.”

Clauses 1, 2, 4 replace the correspondent clauses of ISO 19085-1:2017, with no need for indication since they are specific to each part of the series.

NOTE Requirements for tools are given in EN 847-1:2013.

Woodworking machines — Safety —

Part 10:
Building site saws (contractor saws)

1 Scope

This document gives the safety requirements and measures for displaceable building site saws, designed to cut wood and materials with similar physical characteristics to wood, hereinafter referred to as "machines".

NOTE 1 For the definition of *displaceable machine*, see ISO 19085-1:2017, 3.5.

It deals with all significant hazards, hazardous situations and events as listed in Clause 4, relevant to the machines, when operated, adjusted and maintained as intended and under the conditions foreseen by the manufacturer including reasonably foreseeable misuse. Also, transport, assembly, dismantling, disabling and scrapping phases have been taken into account.

NOTE 2 For relevant but not significant hazards, e.g. sharp edges of the machine frame, see ISO 12100:2010.

The machine can also be fitted with a device for the saw blade to be manually raised and lowered through the table, whose hazards have been dealt with.

This document does not apply to the following:

a) machines with a maximum saw blade diameter smaller than 350 mm or greater than 500 mm;

b) hand-held woodworking machines, including any adaptation permitting their use in a different mode, i.e. bench mounting;

c) machines with a device to tilt the saw blade for angle cutting, machines with more than one saw blade rotational speed and machines equipped with a sliding table;

NOTE 3 Hand-held motor-operated electric tools are covered by IEC 62841-1 together with IEC 62841-2-5.

NOTE 4 Machines with the device to tilt the saw blade for angle cutting, machines with more than one saw blade rotational speed and machines equipped with a sliding table are considered as table saws, covered by ISO 19085-9.

This document is not applicable to machines intended for use in potentially explosive atmospheres or to machines manufactured prior to the date of its publication.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 4871:1996, *Acoustics — Declaration and verification of noise emission values of machinery and equipment*

ISO 7960:1995, *Airborne noise emitted by machine tools — Operating conditions for woodworking machines*

ISO 12100:2010, *Safety of machinery — General principles for design — Risk assessment and risk reduction*

ISO 13849-1:2015, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design*

ISO 13857:2008, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs*

ISO 19085-1:2017, *Woodworking machines — Safety — Common requirements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12100:2010, ISO 13849-1:2015, ISO 19085-1:2017 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

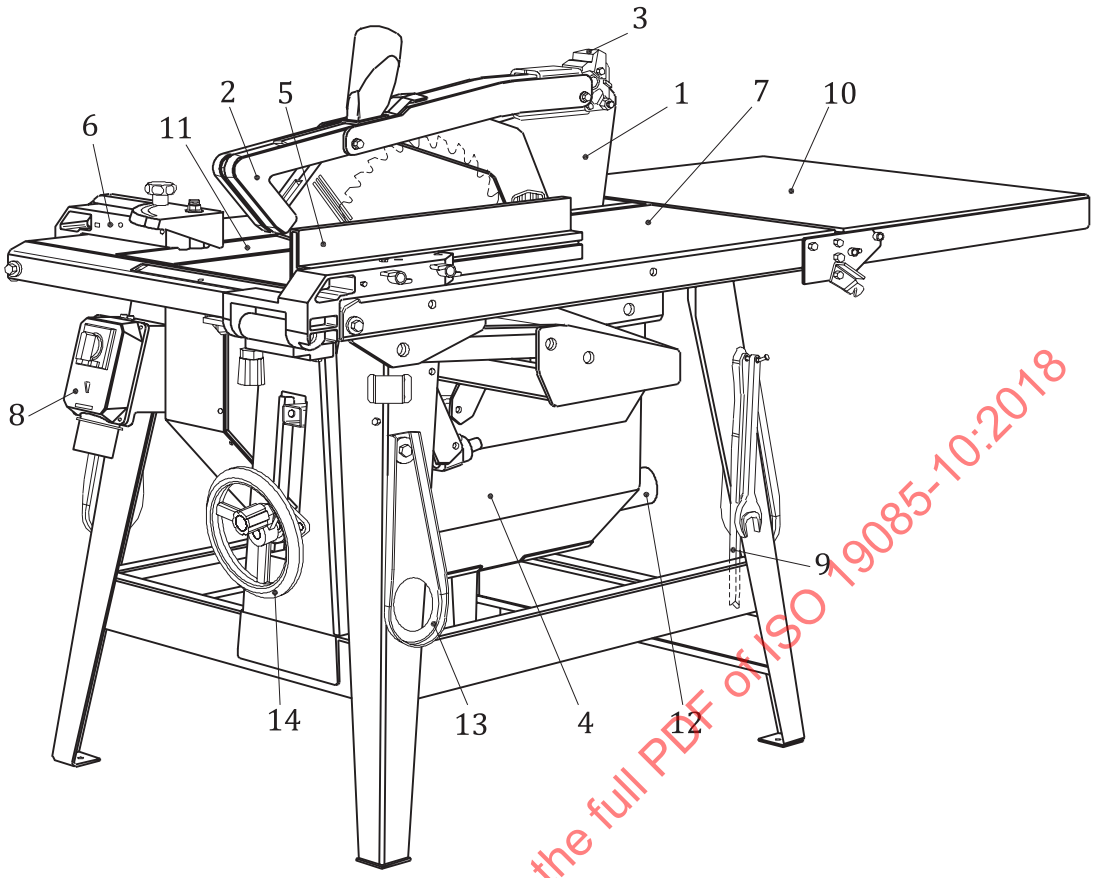
— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
building site saw
contractor saw
displaceable hand-fed machine fitted with a saw blade mounted under the table designed for use on building sites outdoor and equipped with integral provisions for lifting, e.g. lifting eyes

Note 1 to entry: The saw blade is mounted on a horizontal spindle below the table. The machine can have the device for the saw blade to be raised and lowered through the table. An example is given in Figure 1.

Note 2 to entry: The machine can have the possibility to be connected to a chip and dust extraction system.



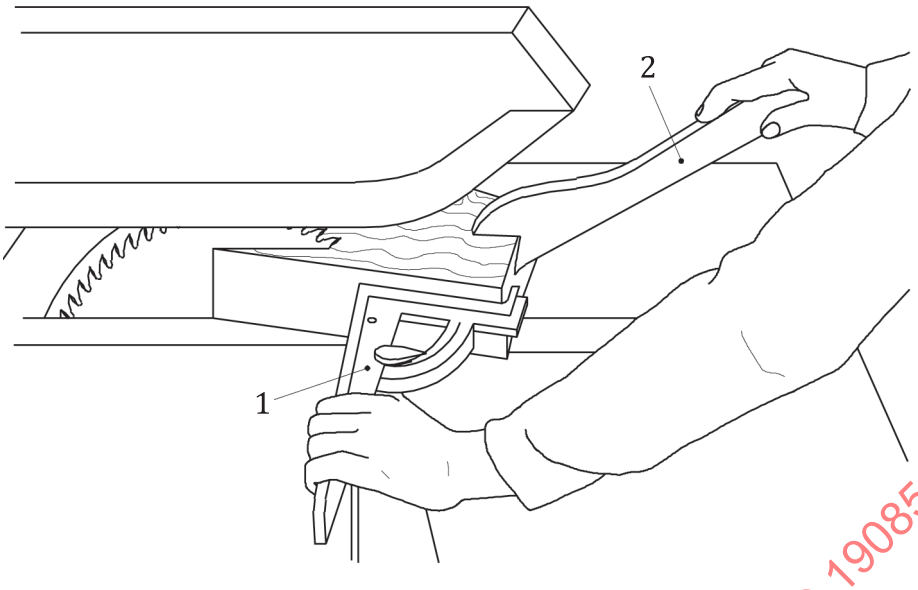
Key

1	riving knife	8	controls on the front side
2	saw blade guard	9	push block/ push stick
3	saw blade guard support	10	extension table
4	fixed guard beneath table	11	table insert
5	rip fence	12	exhaust outlet (optional)
6	cross-cut fence	13	lifting eyes
7	machine table	14	cutting height adjustment (optional)

Figure 1 — Example of a building site saw

3.2
wedge cutting device
integral device to the machine to cut wedges with different angles

Note 1 to entry: An example of a wedge-cutting device is shown in Figure 2.



Key

1 wedge cutting device

2 push stick

Figure 2 — Example of a wedge cutting device

4 List of significant hazards

This clause contains all significant hazards, hazardous situations and events (see ISO 12100), identified by risk assessment as significant for the machines as defined in Clause 1 and which require action to eliminate or reduce the risk. This document deals with these significant hazards by defining safety requirements and/or measures or by reference to relevant standards.

These hazards are listed in Table 1.

Table 1 — List of significant hazards

No.	Hazards, hazardous situations and hazardous events	ISO 12100:2010	Relevant section of ISO 19085-10:2018
1	**Mechanical hazards related to**		
	— Machine parts or work-pieces due to		
	a) shape	6.2.2.1, 6.2.2.2, 6.3	6.3, 6.6, 6.8, 6.9.2, 6.10, 7.5, 7.14
	b) relative location		5.2, 6.6, 6.10
	e) mechanical strength		6.2, 6.3, 6.4, 6.9, 6.10, Annexes D, F, G and I
	— Accumulation of energy inside the machinery due to		
	f) elastic elements (springs)	6.2.10, 6.3.5.4	6.3
1.3	Cutting or severing hazard		6.6.2, 6.10, 6.11, 8.3.2
2	**Electrical hazards due to**		
2.1	Contact of persons with live parts (direct contact)	6.2.9, 6.3.5.4	7.4, 7.13
2.2	Contact of persons with parts which have become live under faulty conditions (indirect contact)	6.2.9	7.4, 7.13
4	**Hazards generated by noise, resulting in**		

Table 1 *(continued)*

No.	Hazards, hazardous situations and hazardous events	ISO 12100:2010	Relevant section of ISO 19085-10:2018
4.1	Hearing loss (deafness), other physiological disorders (loss of balance, loss of awareness)	6.2.2.2, 6.3	7.2, 8.3
4.2	Interference with speech communication, acoustic signals		8.3
7	**Hazards generated by materials and substances (and their constituent elements) processed or used by the machinery**		
7.1	Hazards from contact with or inhalation of harmful fluids and dusts	6.2.3, 6.2.4	7.3, 8.3
7.2	Fire hazard	6.2.4	7.1
8	**Hazards generated by neglecting ergonomic principles in machinery design**		
8.1	Unhealthy postures or excessive effort	6.2.7, 6.2.8, 6.2.11.12, 6.3.5.5, 6.3.5.6	5.2, 7.5
8.2	Hand-arm or foot-leg anatomy	6.2.8.3	7.5
8.4	Local lighting	6.2.8.6	8.3
8.5	Mental overload and underload, stress	6.2.8.5	8.3
8.6	Human error, human behaviour	6.2.8, 6.2.11.8, 6.2.11.10, 6.3.5.2, 6.4	8.3
8.7	Design, location or identification of manual controls	6.2.8.f, 6.2.11.8	5.2, 7.5
8.8	Design or location of visual display units	6.2.8, 6.4.2	5.2, 7.5
10	**Unexpected start up, unexpected overrun/overspeed (or any similar malfunction) from**		
10.1	Failure/disorder of the control system	6.2.11, 6.3.5.4	5.1, 7.13
10.2	Restoration of energy supply after an interruption	6.2.11.4	5.9, 7.7
10.3	External influences on electrical equipment	6.2.11.11	5.1, 7.9
10.6	Errors made by the operator (due to mismatch of machinery with human characteristics and abilities; see 8.6)	6.2.8, 6.2.11.8, 6.2.11.10, 6.3.5.2, 6.4	7.5, 8.3
11	**Impossibility of stopping the machine in the best possible conditions**	6.2.11.1, 6.2.11.3, 6.3.5.2	5.4, 7.12
13	**Failure of the power supply**	6.2.11.1, 6.2.11.4	5.8
14	**Failure of the control circuit**	6.2.11, 6.3.5.4	5.1
15	**Errors of fitting**	6.2.7, 6.4.5	7.12
16	**Break-up during operation**	6.2.3	6.2
17	**Falling or ejected objects or fluids**	6.2.3, 6.2.10	6.9
18	**Loss of stability/overturning of machinery**	6.3.2.6	6.1, 8.3, Annex C

5 Safety requirements and measures for controls

5.1 Safety and reliability of control systems

This subclause of ISO 19085-1:2017 applies.

5.2 Control devices

This subclause of ISO 19085-1:2017 applies with the following additions.

The normal stop control device for the saw blade shall be positioned adjacent to the start control device. Both shall be positioned on the front side of the machine (see Figure 1).

Verification: By checking the relevant drawings, measurement and inspection of the machine.

5.3 Start

This subclause of ISO 19085-1:2017 is replaced by the following text.

Start or restart shall only be possible by actuation of the start control device provided for this purpose. Unintended actuation shall be impeded, e.g. by a control device with shroud. The SRP/CS for prevention of unexpected start/restart shall achieve PL_r = c.

Verification: By checking the relevant drawings and/or circuit diagrams, inspection of the machine and relevant functional testing of the machine.

5.4 Safe stops

5.4.1 General

This subclause of ISO 19085-1:2017 applies.

5.4.2 Normal stop

This subclause of ISO 19085-1:2017 applies.

5.4.3 Operational stop

This subclause of ISO 19085-1:2017 does not apply.

5.4.4 Emergency stop

This subclause of ISO 19085-1:2017 does not apply.

5.5 Braking function of tool spindles

This subclause of ISO 19085-1:2017 applies.

5.6 Mode selection

This subclause of ISO 19085-1:2017 does not apply.

5.7 Spindle speed changing

5.7.1 Spindle speed changing by changing belts on the pulleys

This subclause of ISO 19085-1:2017 does not apply.

5.7.2 Spindle speed changing by incremental speed change motor

This subclause of ISO 19085-1:2017 does not apply.

5.7.3 Infinitely variable speed by frequency inverter

This subclause of ISO 19085-1:2017 does not apply.

5.8 Failure of any power supply

This subclause of ISO 19085-1:2017 applies.

5.9 Manual reset control

This subclause of ISO 19085-1:2017 does not apply.

5.10 Enabling control

This subclause of ISO 19085-1:2017 does not apply.

5.11 Machine moving parts speed monitoring

This subclause of ISO 19085-1:2017 does not apply.

5.12 Time delay

This subclause of ISO 19085-1:2017 applies.

6 Safety requirements and measures for protection against mechanical hazards

6.1 Stability

6.1.1 Stationary machines

This subclause of ISO 19085-1:2017 does not apply.

6.1.2 Displaceable machines

This subclause of ISO 19085-1:2017 applies with the following additions.

The machine shall pass the frame rigidity test of Annex F.

Verification: By checking the relevant drawings, inspection of the machine and performing the rigidity test of Annex F.

6.2 Risk of break-up during operation

This subclause of ISO 19085-1:2017 applies with the following additions.

The machine table slot shall be lined with easily machinable material (see ISO 19085-1:2017, 3.3).

Verification: By checking the relevant drawings and inspection of the machine.

6.3 Tool holder and tool design

6.3.1 General

This subclause of ISO 19085-1:2017 applies with the following additions.

Saw spindles shall be manufactured from steel with an ultimate tensile strength of at least 580 N mm^{-2}.

Verification: By checking the relevant drawings and by measurement.

6.3.2 Spindle locking

This subclause of ISO 19085-1:2017 applies.

6.3.3 Circular saw blade fixing device

This subclause of ISO 19085-1:2017 applies.

6.3.4 Flange dimensions for circular saw blades

This subclause of ISO 19085-1:2017 applies.

6.4 Braking

6.4.1 Braking of tool spindles

This subclause of ISO 19085-1:2017 applies.

6.4.2 Maximum run-down time

This subclause of ISO 19085-1:2017 applies.

6.4.3 Brake release

This subclause of ISO 19085-1:2017 applies.

6.5 Safeguards

6.5.1 Fixed guards

This subclause of ISO 19085-1:2017 applies.

6.5.2 Interlocking movable guards

6.5.2.1 General

This subclause of ISO 19085-1:2017 does not apply.

6.5.2.2 Movable guards with interlocking without guard locking

This subclause of ISO 19085-1:2017 does not apply.

6.5.2.3 Movable guards with interlocking and guard locking

This subclause of ISO 19085-1:2017 does not apply.

6.5.3 Hold-to-run control

This subclause of ISO 19085-1:2017 does not apply.

6.5.4 Two hand control

This subclause of ISO 19085-1:2017 does not apply.

6.5.5 Electro-sensitive protection equipment (ESPE)

This subclause of ISO 19085-1:2017 does not apply.

6.5.6 Pressure sensitive protection equipment (PSPE)

This subclause of ISO 19085-1:2017 does not apply.

6.6 Prevention of access to moving parts

6.6.1 General

This subclause of ISO 19085-1:2017 does not apply.

6.6.2 Guarding of tools

This subclause of ISO 19085-1:2017 is replaced by the following text, subdivided into further specific subclauses.

6.6.2.1 Access to the saw blade above the machine table

An automatically adjustable guard shall restrict access to the saw blade above the machine table. It shall be fitted to the riving knife or to the machine separately from the riving knife. In the latter case, it shall be mounted to the machine with a support not being in line with the riving knife (see Figure 1).

The saw blade guard shall be in accordance with the following requirements:

a) It shall be made of transparent material.

b) A front opening in the guard shall provide an unobstructed view of the saw blade and the cutting line to a machine operator feeding the material to be cut. Position and size of the opening shall be such that the operator does not need to assume an unnatural position, e.g. slouching or bend-over. The dimensions of this opening shall be such that a test probe with the dimensions given in Annex J does not reach the saw blade through this opening. Any other opening in the guard shall be in accordance with the safety distance requirements of ISO 13857.

c) In the area where the saw blade guard can come in contact with the rip fence in the lower position, the maximum width of the saw blade guard shall not exceed 50 mm.

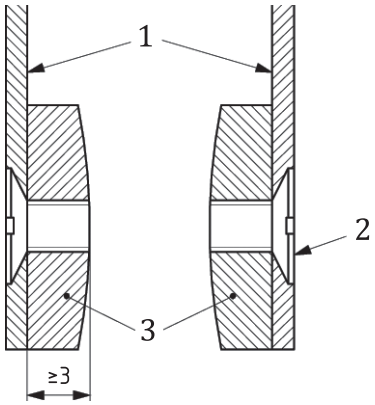
d) It shall rest on the table when the machine is not in use (see Figures 1 and 6). The pivots in the mounting arrangement for the saw blade guard shall be designed in such a way that it is not possible to lock the saw blade guard in an elevated position.

e) The lower inner edges of the sides of the saw blade guard shall be lined with a rib, made of plastic, light alloy, wood or wood based materials. This rib shall be a minimum 3 mm in width, and shall be designed so as to prevent the saw blade teeth from cutting into the saw blade guard should the saw blade guard be displaced from the line of cut (see Figure 3). If the rib is replaceable, the fixing arrangement shall be such that it does not damage the saw blade, e.g. with brass screws.

f) It shall be capable of upward movement during work-piece feeding. The vertical force required to open the saw blade guard, applied to measuring point A in Figure G.1, key 1, shall not exceed 8 N.

g) During work-piece feeding, the bottom of the saw blade guard shall rest on the work-piece (see Figure 6).

Dimensions in millimetres

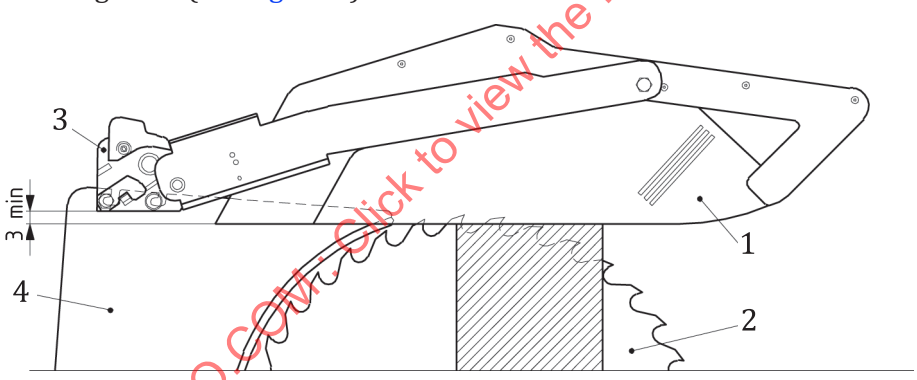


Key

1 side walls
2 fixing screws
3 ribbings

Figure 3 — Example of replaceable ribs at the underside of saw blade guard side walls

h) To avoid jamming of the work-piece during feeding, a riving knife mounted saw blade guard shall have an end stop for its top position that prevents it from being raised higher than its assembly device on the riving knife (see Figure 4).



Key

1 saw blade guard in its highest position
2 saw blade
3 assembly device with end stop
4 riving knife

Figure 4 — Riving knife mounted saw blade guard in its highest position

i) A saw blade guard mounted separately from the riving knife shall be adjustable in height from the table level up to a maximum height of 5 mm above the largest saw blade for which the machine is designed.

j) The mounting arrangement of the saw blade guard shall not be capable of being moved out of position without the aid of a tool.

k) The in-feed end of the saw blade guard shall have a “lead-in”. If the saw unit is fitted with the maximum saw blade and raised to the maximum height, the lead-in shall allow the saw blade guard to be raised by a work-piece with a thickness of at least 60 % of the maximum cutting height for

which the machine is designed. This can be achieved by a slope with an angle α of not more than 45° (see Figure 5).

l) It shall pass the saw blade guard rigidity test in Annex G.

Verification: By checking the relevant drawings, measurement, inspection of the machine, relevant functional testing of the machine and performing of the saw blade guard rigidity test in accordance with Annex G.

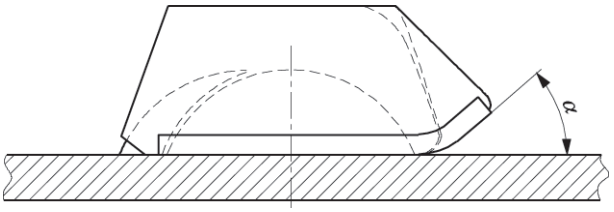
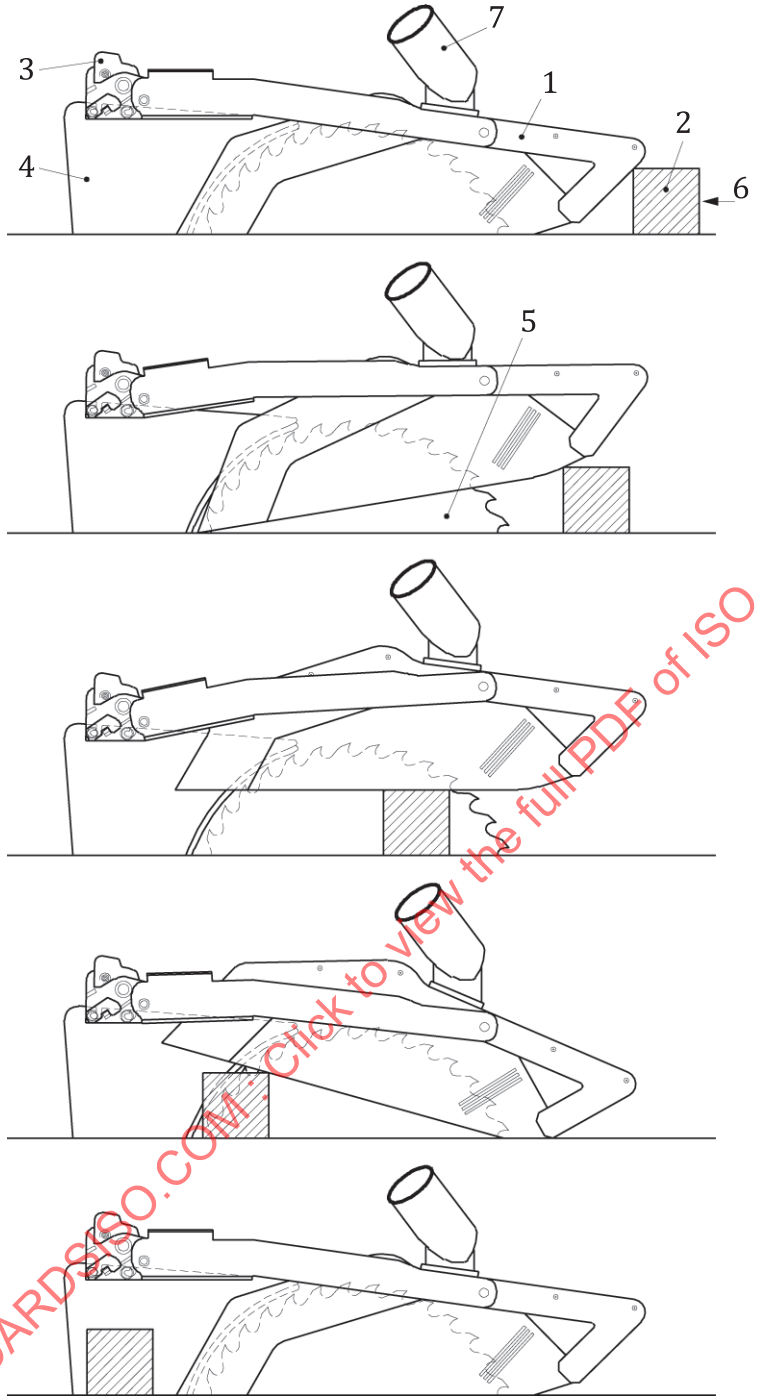


Figure 5 — Design of the "lead-in"



Key

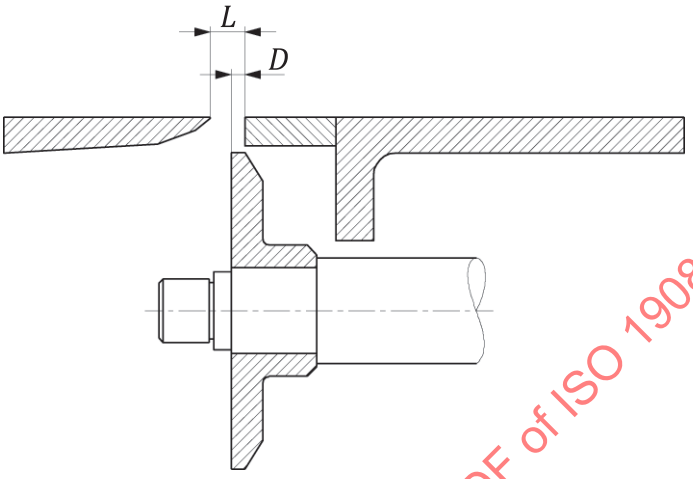
1 top guard support
2 work-piece
3 top guard fixing on riving knife
4 riving knife
5 saw blade
6 direction of feed

Figure 6 — Example of an automatically adjustable saw blade guard

6.6.2.2 Slot for the saw blade in the table

The total width of the slot, *L*, (see Figure 7) shall not exceed 12 mm. The table bevel edges shall not exceed 4 mm (where *L* is measured the table bevel-edges are not taken into account). On the fixed saw flange side of the table, the distance, *D*, between the fixed saw flange and the edge of the table slot shall not exceed 3 mm.

Dimensions in millimetres



Key

L total width of the table slot

D distance between fixed saw flange and table edge

Figure 7 — Width of table slot and distance between the fixed saw flange and the edge of the table slot

In cases where the saw blade is changed from above the table, the table insert shall have a minimum width on the non-fixed flange side in accordance with the dimension "*c*" in Annex H.

Verification: By checking the relevant drawings, measurement and inspection of the machine .

6.6.2.3 Access to the saw blade below the machine table

The access to the saw blade below the table shall be prevented by fixed guards.

An opening at the lower end of the guard shall be as wide as possible to allow easy leakage of chips and dust but shall in any case meet the requirements for safety distances in accordance with ISO 13857:2008, Table 4.

Verification: By checking the relevant drawings and/or circuit diagrams, inspection of the machine and relevant functional testing of the machine.

6.6.3 Guarding of drives

This subclause of ISO 19085-1:2017 does not apply.

6.6.4 Guarding of shearing and/or crushing zones

This subclause of ISO 19085-1:2017 does not apply.

6.7 Impact hazard

This subclause of ISO 19085-1:2017 does not apply.

6.8 Clamping devices

This subclause of ISO 19085-1:2017 does not apply.

6.9 Measures against ejection

6.9.1 General

This subclause of ISO 19085-1:2017 applies with the following additions.

Anti-splinter and clamping devices are not relevant.

6.9.2 Guards material and characteristics

6.9.2.1 Choice of class of guards

This subclause of ISO 19085-1:2017 applies with the following additions.

Guards used to prevent ejection shall be class of B.

6.9.2.2 Guards of class A

This subclause of ISO 19085-1:2017 does not apply.

6.9.2.3 Guards of class B

This subclause of ISO 19085-1:2017 applies.

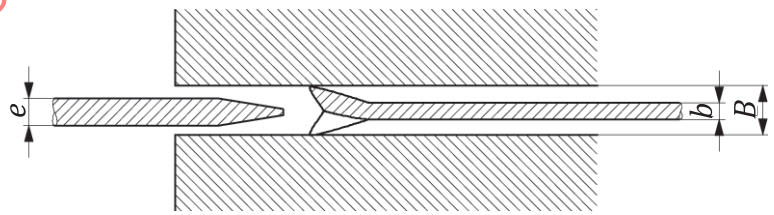
6.9.3 Anti-kickback devices

Subclause specific to this document.

To reduce the risk of kickback, the machine shall be supplied with a riving knife mounting arrangement and one or more riving knives to accommodate the range of saw blades which are intended for use with the machine.

The riving knives and the mounting arrangement shall be in accordance with the following requirements.

a) The riving knives shall be manufactured from steel with an ultimate tensile strength of 580 N mm^{-2} or of a comparable material, have flat sides (within 0,2 mm per 100 mm) and shall have a thickness less than the width of cut (kerf) and at least 0,2 mm greater than the saw blade plate (see Figure 8).



Key

e riving knife thickness

b saw blade plate thickness

B kerf (width of saw blade cut)

Figure 8 — Riving knife thickness in relation to saw blade dimensions

b) Their leading edge shall be chamfered to provide a “lead-in” and they shall be of constant thickness (within ±0,1 mm) throughout their working length.

c) They shall be capable of vertical adjustment. For machines with saw blade guard mounted separately from the riving knife, their tips shall reach a level between 0 mm and 2 mm below the highest point on the periphery of the saw blade when set in accordance with the requirements of 6.9.3 d) [see Figure 9 and 8.3.2 b)]. The tip of riving knives designed to carry saw blade guards may reach a level higher than the highest point on the periphery of the saw blade (see Figure 4).

Dimensions in millimetres

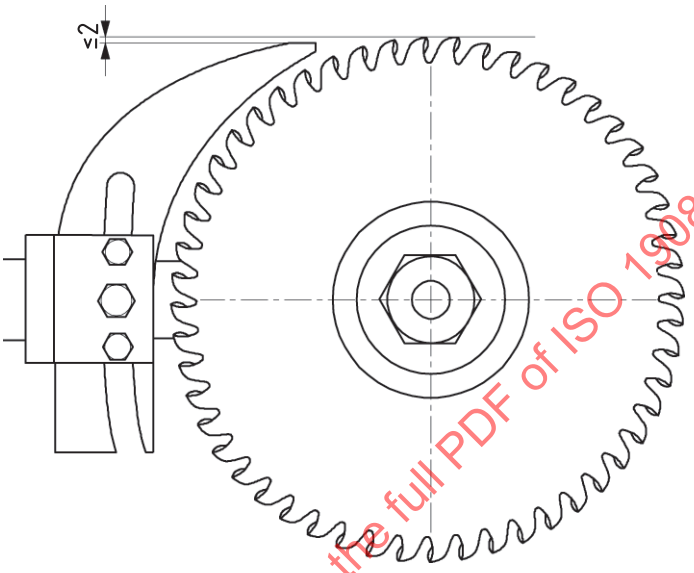


Figure 9 — Riving knife height adjustment

d) They shall be designed to be mounted and adjusted so that the gap between them and the saw blade shall be at least 3 mm and shall not exceed 8 mm, measured radially through the centre of the saw spindle in the area above the table (see Figure 10).

Dimensions in millimetres

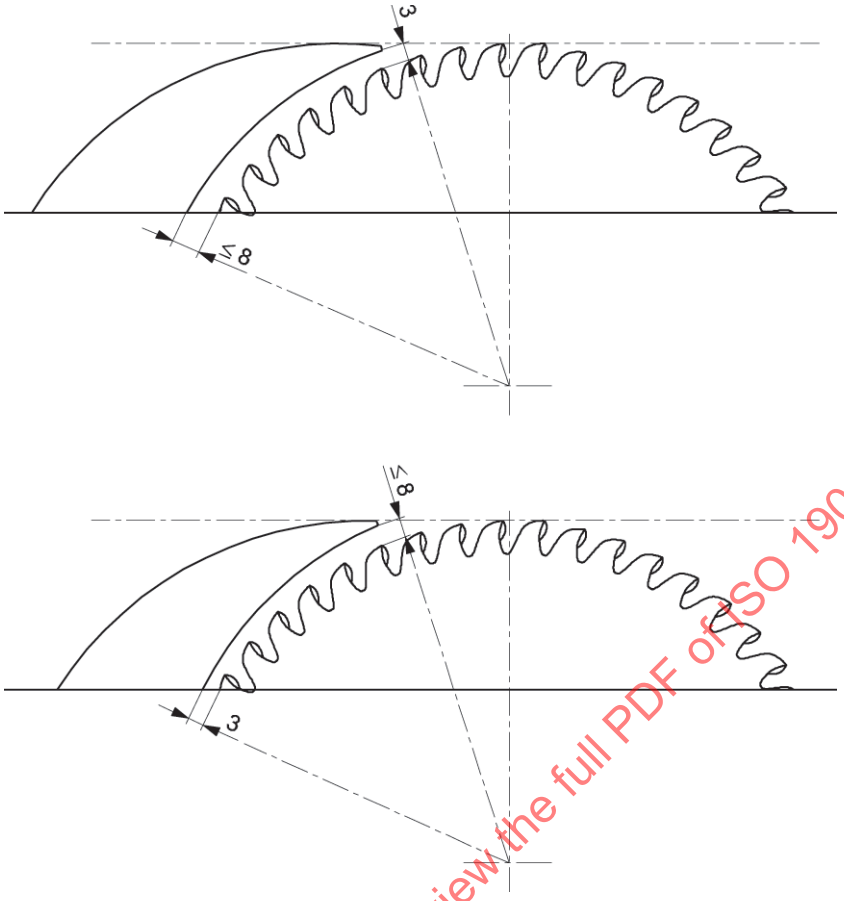
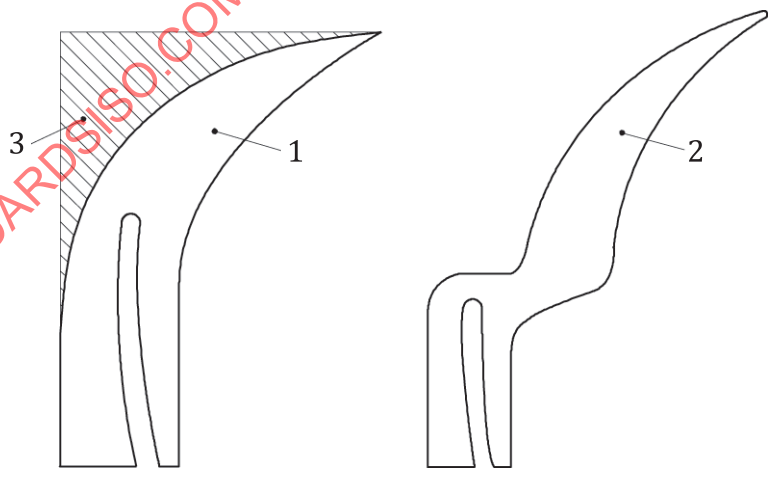


Figure 10 — Positioning limits for riving knife design

e) Their front and rear contours shall be continuous curves or straight lines, without any flexure which would weaken them (e.g. see Figure 11).

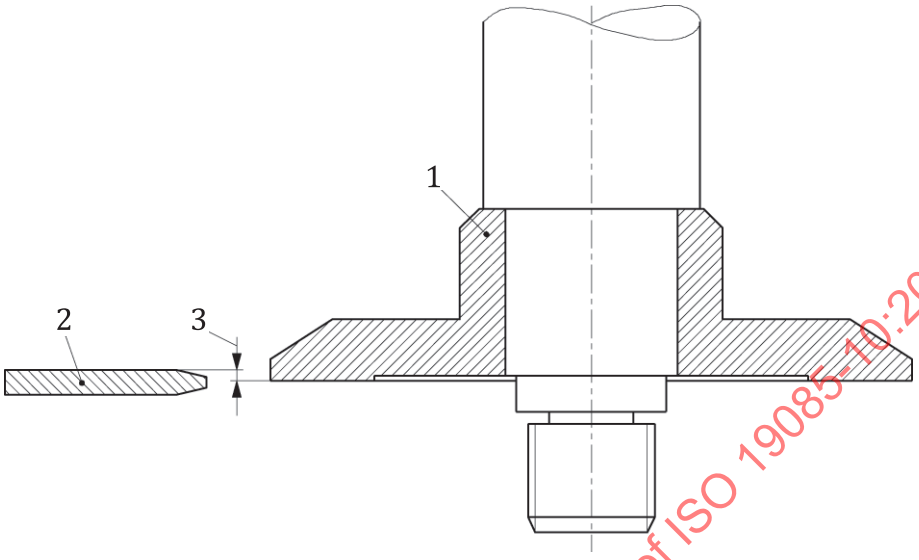


Key

1 example of acceptable riving knife shape
2 example of unacceptable riving knife shape
3 shaded area: shape of riving knife for machines with a riving knife mounted saw blade guard

Figure 11 — Example of shape of riving knife

f) The mounting arrangement for the riving knives shall provide a positive offset of their position relative to the rear saw flange of not more than 0,5 mm (see key 3 in Figure 12). This offset shall be maintained with the rise and fall of the saw blade.



Key

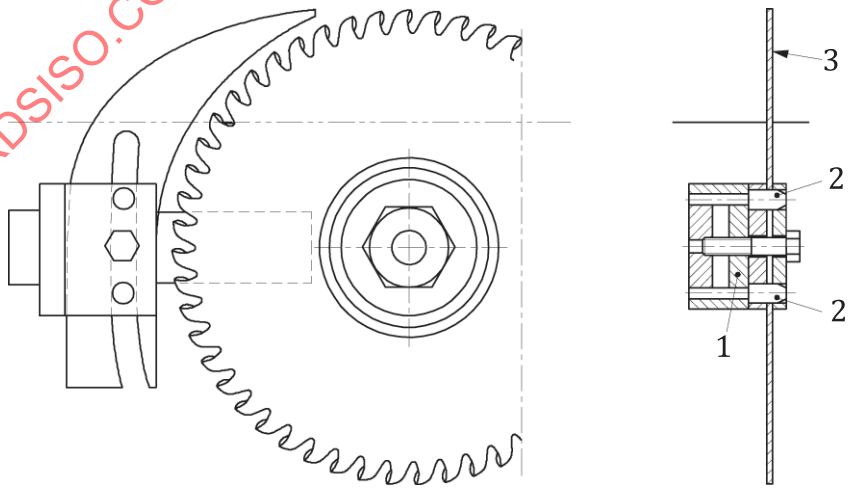
1 rear saw blade flange
2 riving knife
3 0,5 mm max

Figure 12 — Positioning of riving knife in relation to fixed saw flange

g) Riving knives and their mounting shall be longitudinally rigid (see I.1).

h) Riving knives and their mounting shall be laterally rigid (see I.2).

i) Riving knives shall be held in position by guiding elements, e.g. guiding pins (see Figure 13). The riving knife fixing slot shall be not more than 0,5 mm wider than the guiding elements.



Key

1 riving knife mounting arrangement
2 guiding pins
3 riving knife

Figure 13 — Example of riving knife mounting arrangement with guiding pins

j) Where it is necessary to change the riving knives to accommodate different diameters of saw blade, the fixing slots of the riving knives shall be open ended.

Verification: By checking the relevant drawings, measurement, inspection of the machine, relevant functional testing of the machine and performing the riving knife rigidity test according to Annex I.

6.10 Work-piece support and guides

This subclause of ISO 19085-1:2017 is replaced by the following text, subdivided into further specific subclauses.

6.10.1 Rip fence

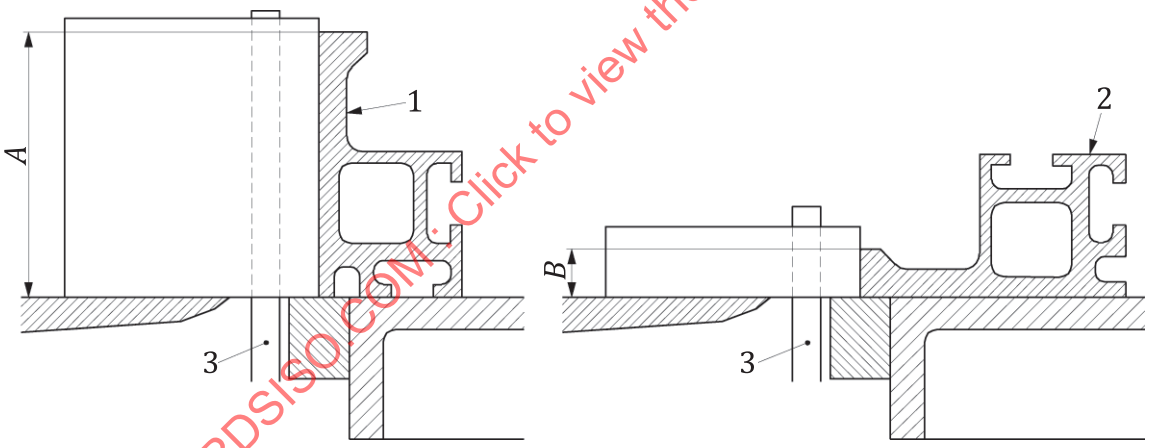
The machine shall be equipped with a rip fence to allow the cutting of different work-piece widths.

The rip fence shall fulfil the following requirements.

a) It shall be made of plastic, light alloy or wood if there is a possibility of contact with the saw blade.

b) It shall be adjustable so that its out-feed end can be moved forward to a point in line with the front edge of the riving knife, and rearwards to a point at table level which is in line with the first cutting tooth of the largest saw blade for which the machine is designed and adjusted to the maximum cutting height.

c) It shall be manufactured from a single component, having two guiding surfaces, a lower one with height *B* for shallow cutting and a higher one with height *A* for deep cutting (see Figure 14); height *B* shall be between 5 mm and 15 mm and height *A* shall be min. 90 mm.



Key

1 rip fence in high position for deep cutting
2 rip fence in low position for shallow cutting
3 saw blade
A height of the higher guiding surface
B height of the lower guiding surface

Figure 14 — Minimum dimensions of the high and low guiding parts of the fence

d) After adjustment, its work-piece guiding surface shall remain in a vertical plane and be parallel to the cutting line of the saw blade.

e) In its low position, it shall be possible to lower the saw blade guard to the height of the work-piece guiding part of the fence.

f) Adjustment, switching between high and low guiding surface and fixing of the rip fence position shall be possible without the aid of a tool.

Verification: By checking the relevant drawings, measurement, inspection of the machine and relevant functional testing of the machine.

6.10.2 Cross-cut fence

The machine shall be equipped with a cross-cut fence (see Figures 1 and 2). The fixing arrangement shall ensure that the fence cannot lift up or swing out of position during use. If the cross-cut fence extends beneath the saw guard then the height of that section shall not exceed 15 mm.

If the work-piece guiding part of the cross-cut fence is adjustable in length and if there is a possibility of contact between the cross-cutting fence and the saw blade, this part of the fence shall be made of plastic, light alloy or wood based material.

Adjustment and fixing of the cross-cutting fence position shall be possible without the aid of a tool.

Verification: By checking the relevant drawings, measurement, inspection of the machine and relevant functional testing of the machine.

6.10.3 Machine table

The dimensions of the machine table shall be in accordance with the requirements of Table H.1.

Verification: By checking the relevant drawings, measurement and inspection of the machine.

6.10.4 Extension table

Machines where the distance between the centre line of the saw spindle and the far end of the table is less than dimension X in Figure H.1 shall be provided with an extension table in order to fulfil this requirement. The extension table shall be capable of being folded away and shall remain attached to the machine.

Verification: By checking the relevant drawings, measurement and inspection of the machine.

6.11 Safety appliances

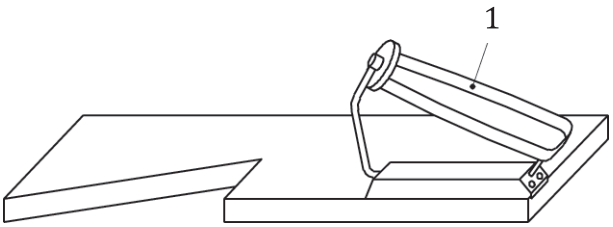
Subclause specific to this document.

The machine shall be equipped with an integral wedge cutting device (e.g. as shown in Figure 2). This device shall be so designed that any part which may be in contact with the saw blade shall be made of plastic, light alloy or wood. This device may be combined with the cross-cut fence.

Adjustment and fixing of the integral wedge cutting device position shall be possible without the aid of a tool.

In addition, a push block handle (see Figure 15) and a push stick (see Figure 16) shall be provided. Provision shall be made for storing the push stick and push block handle on the machine.

The push stick shall be made of plastic, wood, and plywood.



Key

1 push block handle

Figure 15 — Example of a push block prepared for alternate method of wedge cutting

The minimum length for push sticks provided for use shall be 400 mm and the mouth of the push stick shall be manufactured in accordance with the dimensions given in Figure 16. An example of a push stick profile is shown in Figure 16.

Verification: By checking the relevant drawings, inspection of the machine and relevant functional testing of the machine.

Dimensions in millimetres

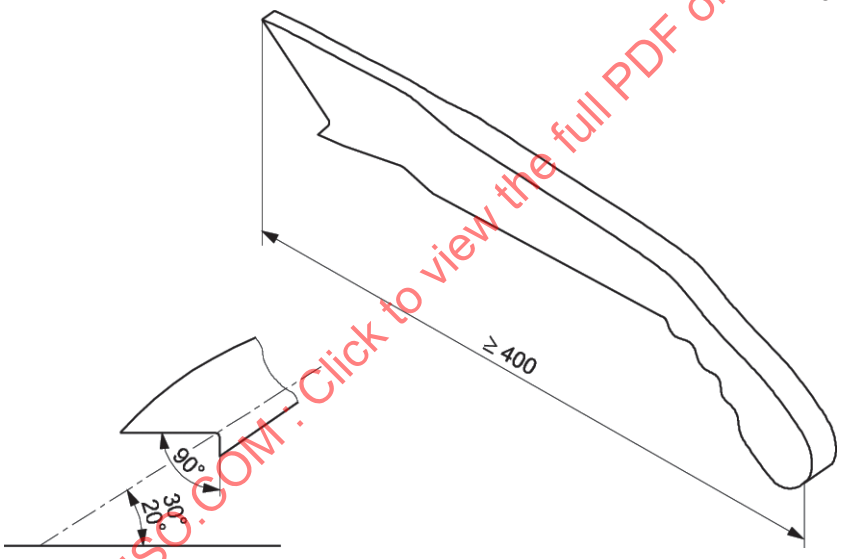


Figure 16 — Example of a push stick

7 Safety requirements and measures for protection against other hazards

7.1 Fire

This subclause of ISO 19085-1:2017 applies with the following additions.

Also see 6.2 for avoiding sparks as result of contact between the saw blade and the machine table slot lining.

Verification: By checking the relevant drawings, inspection of the machine and relevant functional testing of the machine.

7.2 Noise

7.2.1 Noise reduction at the design stage

This subclause of ISO 19085-1:2017 applies.

7.2.2 Noise emission measurement

This subclause of ISO 19085-1:2017 applies with the following additions.

The operating conditions for noise measurement shall comply with ISO 7960:1995, Annex A.

7.3 Emission of chips and dust

This subclause of ISO 19085-1:2017 applies with the following additions.

The part of the saw blade below the table shall be enclosed by an exhaust hood, which shall have a provision to fix an optional extraction outlet.

The saw blade guard may be provided with an optional extraction outlet (see Figure 1).

7.4 Electricity

7.4.1 General

This subclause of ISO 19085-1:2017 applies.

7.4.2 Displaceable machines

This subclause of ISO 19085-1:2017 applies.

7.5 Ergonomics and handling

This subclause of ISO 19085-1:2017 applies with the following additions.

The height of the machine table above floor level shall be ≥850 mm.

The holders for the safety appliances required in 6.11 shall be positioned so that the operator can reach the safety appliances from the normal working position. For a possible position of the push sticks on machines with saw blade guard mounted separately from the riving knife, see Figure 1.

The machine shall be equipped with integral devices for lifting (e.g. lifting eyes) positioned relative to the machine's centre of gravity.

Handles, levers and latches or mechanically adjustable units shall be reachable from the operator's position and not be located at the rear side of the machine

Verification: By checking the relevant drawings, measurement, inspection of the machine and relevant functional testing of the machine.

7.6 Lighting

This subclause of ISO 19085-1:2017 does not apply.

7.7 Pneumatics

This subclause of ISO 19085-1:2017 does not apply.

7.8 Hydraulics

This subclause of ISO 19085-1:2017 does not apply.

7.9 Electromagnetic compatibility

This subclause of ISO 19085-1:2017 applies.

7.10 Laser

This subclause of ISO 19085-1:2017 applies.

7.11 Static electricity

This subclause of ISO 19085-1:2017 applies.

7.12 Errors of fitting

This subclause of ISO 19085-1:2017 applies.

7.13 Isolation

This subclause of ISO 19085-1:2017 applies.

7.14 Maintenance

This subclause of ISO 19085-1:2017 applies.

8 Information for use

8.1 Warning devices

This subclause of ISO 19085-1:2017 applies.

8.2 Markings

8.2.1 General

This subclause of ISO 19085-1:2017 applies.

8.2.2 Additional markings

This subclause of ISO 19085-1:2017 is replaced by the following text.

The following additional information shall be marked in the same ways as in 8.2.1:

a) minimum and maximum diameters of the saw blades for which the machine is designed;

b) direction of rotation of the saw blade;

c) bore diameter of the saw blade;

d) riving knives shall be permanently marked with:

   1) their thickness;

   2) saw blade diameter for which they are intended;

3) the width of their riving knife mounting slot.

e) guaranteed sound power level [see 8.3.2 g)].

Verification: By checking the relevant drawings and inspection of the machine.

8.3 Instruction handbook

8.3.1 General

This subclause of ISO 19085-1:2017 applies with the following additions.

List item e) (extraction of chips and dust) is not applicable.

8.3.2 Additional information

This subclause of ISO 19085-1:2017 is replaced by the following text.

The following additional information shall also be provided in the instruction handbook:

a) instruction for safe operations shall also include a description on proper use of:

1) rip fence to avoid kickback:

i) during ripping, the front end of the rip fence is to be positioned close to an imaginary line at 45° from the front end of the saw blade;

ii) during sawing using cross cut fence, the front end of the rip fence is to be positioned before the front end of the saw blade;

2) cross-cut fence;

3) safety appliances provided according to 6.11;

4) wedge cutting device;

b) instructions that the riving knife shall be installed in such a way that the gap between the riving knife and the saw blade shall be at least 3 mm and shall not exceed 8 mm and for machines with the saw blade guard mounted separately from the riving knife, adjusted in such a way that it reaches a level between 0 mm and 2 mm below the highest point on the periphery of the saw blade;

c) instruction that push blocks or push sticks shall be used when cutting small work-pieces and in circumstances where it is necessary to push the work-piece against the fence;

d) instruction that when cross-cutting round stock, it is necessary to secure the work-piece against rotation by using a suitable jig or holder and to use a suitable saw blade;

e) instruction to use a special saw-blade when cutting insulation material;

f) information to take care that the machine is placed only on stable and even surfaces;

g) as an exception to ISO 19085-1:2017, 8.3.1 o), instead of the A-weighted sound power level in dual number-form, a declaration of the guaranteed sound power level determined in accordance with the methods given in ISO 19085-1:2017, 7.2.2 using the single number form of declaration in accordance with ISO 4871;

h) a warning not to defeat protective devices, in particular not to disable the self-closing mechanism of the saw guard (e.g. by using wedges).

Verification: By checking the instruction handbook and relevant drawings.

Annex A
(informative)

Performance level required

This annex replaces ISO 19085-1:2017, Annex A, and gives a quick-view summary of the performance level required (PL_r) for each safety function (see Table A.1). However, for full requirements and detailed explanations, refer to Clauses 5 and 6.

Table A.1 — Safety functions and their PL_r

Area	No.	Safety function/devices	PL_r	Subclause of ISO 19085-1:2017	Subclause of ISO 19085-10:2018
Start	1	Prevention of unexpected start/restart	c		5.3
Stops	2	Normal stop (breaking function excluded)	c	5.4.2	
Braking	3	Braking function	b/c	5.5	
	4	Interlocking of brake release	c	6.4.3	
Controls	5	Time delay	c	5.12	

Annex B
(normative)

Test for braking function

This annex of ISO 19085-1:2017 applies.

Annex C
(normative)

Stability test for displaceable machines

This annex of ISO 19085-1:2017 applies.

Annex D
(normative)

Impact test for guards

This annex of ISO 19085-1:2017 applies with the following additions.

The test shall be carried out with the projectile given in ISO 19085-1:2017, D.3.3.