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**Woodworking machines — Safety —**

**Part 5:  
Dimension saws**

*Machines à bois — Sécurité —*

*Partie 5: Scies au format*

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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](http://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](http://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](http://www.iso.org/iso/foreword.html).

The committee responsible for this document is ISO/TC 39, *Machine tools*, Subcommittee SC 4 *Woodworking machines*.

This document is intended to be used in conjunction with ISO 19085-1, 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.

## 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 part of ISO 19085.

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 part can either

- confirm as a whole,
- confirm with additions,
- exclude in total, or
- replace with specific text,

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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 and EN 847-2:2013.

# Woodworking machines — Safety —

## Part 5: Dimension saws

### 1 Scope

This document gives the safety requirements and measures for stationary and displaceable dimension saws, hereinafter referred to as “machines”, designed to cut wood and material with similar physical characteristics to wood.

NOTE 1 For the definitions of stationary and displaceable machines, see ISO 19085-1:2017, 3.4 and 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.

It is also applicable to machines fitted with one or more of the following devices/additional working units, whose hazards have been dealt with:

- device for the main saw blade and scoring saw blade to be raised and lowered;
- device to tilt the main saw blade and scoring saw blade for angled cutting;
- device for scoring;
- device for grooving with milling tool with a width not exceeding 20 mm;
- demountable power feed unit;
- post-formed edge pre-cutting unit;
- power-operated sliding table;
- workpiece clamping.

NOTE 3 Dimension saws are used for ripping, cross cutting, dimensioning and grooving.

It 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 4413:2010, *Hydraulic fluid power — General rules and safety requirements for systems and their components*

ISO 4414:2010, *Pneumatic fluid power — General rules and safety requirements for systems and their components*

## ISO 19085-5:2017(E)

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

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

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

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

IEC 60204-1:2005, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements*

EN 847-1:2013, *Tools for woodworking — Safety requirements — Part 1: Milling tools, circular saw blades*

### 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 <http://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

#### 3.1 dimension saw

hand-fed machine fitted with a single main circular saw blade, which is fixed in position during the cutting operation, and a sliding table adjacent to the saw blade

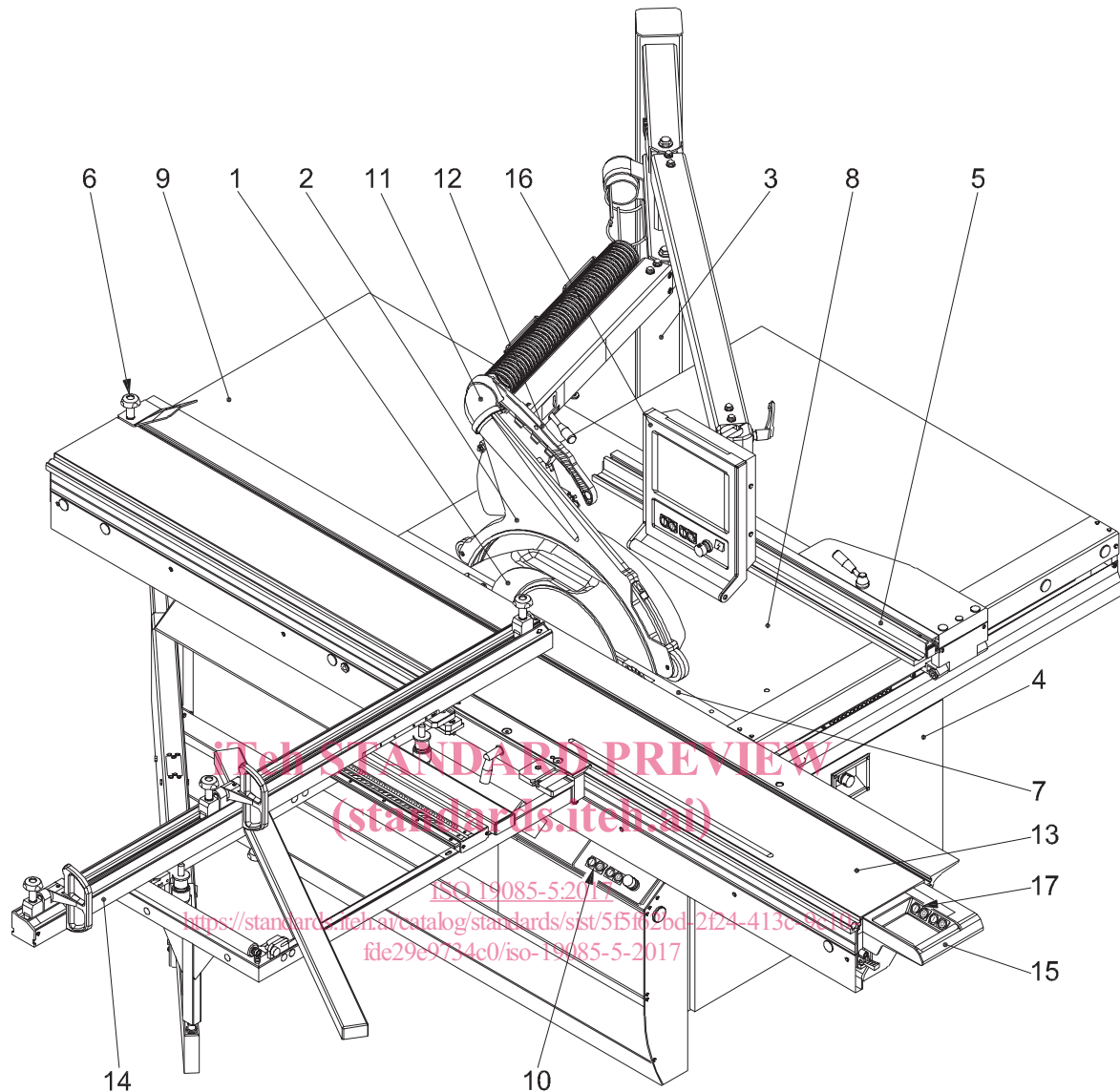
Note 1 to entry: An example and the terminology are given in [Figure 1](#).

Note 2 to entry: The main saw blade is mounted on a spindle below the table.

Note 3 to entry: It is possible to operate the machine from two possible workplaces (see [Figure 3](#)).

Note 4 to entry: The machine may have any of the devices/additional working units listed in the scope.



**Key**

- |   |                           |    |  |
|---|---------------------------|----|--|
| 1 | ripping knife             | 10 | controls   |
| 2 | saw blade(s) guard        | 11 | saw blade guard support (may include pipe for chips and dust extraction) |
| 3 | saw blade guard support   | 12 | push stick   |
| 4 | fixed guard beneath table | 13 | sliding table  |
| 5 | rip fence                 | 14 | cross-cut fence mounted to the cross-cut sliding table                   |
| 6 | clamping shoe             | 15 | sliding table handle   |
| 7 | table insert              | 16 | moveable control panel   |
| 8 | machine table             | 17 | additional controls at the rear side of the sliding table                |
| 9 | extension table           |    |  |

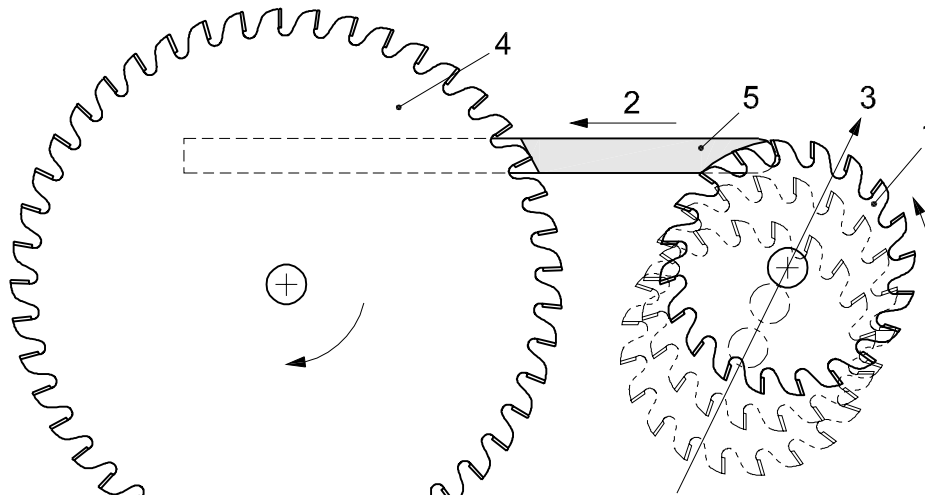
**Figure 1 — Example of a dimension saw****3.2****grooving**

making of a cut in the surface of the workpiece not deep enough to pass through using the saw blade or a milling tool

**3.3**  
**post-formed edge pre-cutting**  
**soft-formed edge pre-cutting**

cut made by a separate saw blade in the front profiled edge of the workpiece deep enough to prevent surface damage when the main saw blade makes its cut

Note 1 to entry: See [Figure 2](#).



**Key**

- 1 post-formed/soft-formed edge pre-cutting saw blade
- 2 feed direction of the sliding table
- 3 movement of post-formed/soft-formed edge pre-cutting saw blade
- 4 main saw blade
- 5 workpiece

**Figure 2 — Post-formed/soft-formed edge pre-cutting**

**3.4**  
**post-formed edge pre-cutting saw blade**  
**soft-formed edge pre-cutting saw blade**

saw blade used for *post-formed edge pre-cutting* ([3.3](#)) which may be the scoring saw blade or a separate saw blade specific for this purpose

**3.5**  
**initiation control**

control which after actuation enables providing power to specific machine actuators, e.g. by a programmable logic control

**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 actions to eliminate or reduce the risk. This document deals with these significant hazards by defining safety requirements and 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 19085-5:2017  |
|-------------------------------------|--|---|---|
| <b>1</b>                            | <b>Mechanical hazards</b> related to   |   |   |
|                                     | — Machine parts or workpieces due to   |   |   |
|                                     | a) shape   | 6.2.2.1, 6.2.2.2, 6.3                     | <a href="#">6.3, 6.9, 6.10, 6.6, 6.8, 7.5, 7.12</a>                                     |
|                                     | b) relative location   |   | <a href="#">5.2, 5.6, 5.7, 5.12, 6.10, 6.6, 6.8</a>                                     |
|                                     | d) mass and velocity (kinetic energy of elements in controlled or uncontrolled motion)                                   |   | <a href="#">5.3, 5.4.2, 5.6, 5.12, 6.4, 6.7, 7.5</a>                                    |
|                                     | e) mechanical strength   |   | <a href="#">6.2, 6.3, 6.4, 6.6, 6.11, Annex F, Annex H, Annex D</a>                     |
|                                     | — Accumulation of energy inside the machinery due to   |   |   |
| f) liquids and gases under pressure | 6.2.10, 6.3.5.4  | <a href="#">6.3, 6.8</a>                  |   |
| 1.1                                 | Crushing hazard  |   | <a href="#">5.3, 5.4.2, 5.4.4, 5.6, 5.12, 6.4, 6.9, 6.10, 6.6, 6.8, 6.11, 7.13, 8.3</a> |
| 1.2                                 | Shearing hazard  |   | <a href="#">5.3, 5.4.2, 5.4.4, 5.6, 5.12, 6.4, 6.9, 6.10, 6.6, 6.8, 6.11, 7.13, 8.3</a> |
| 1.3                                 | Cutting or severing hazard   |   | <a href="#">5.3, 5.4.2, 5.4.4, 5.6, 5.12, 6.4, 6.9, 6.10, 6.6, 6.11, 7.13, 8.3</a>      |
| 1.4                                 | Entanglement hazard  |   | <a href="#">5.3, 5.4.2, 5.4.4, 5.6, 5.12, 6.4, 6.10, 6.6, 7.13, 8.3</a>                 |
| 1.5                                 | Drawing-in or trapping hazard  |   | <a href="#">5.3, 5.4.2, 5.4.4, 5.6, 5.12, 6.4, 6.10, 6.6, 7.13, 8.3</a>                 |
| 1.6                                 | Impact hazard  |   | <a href="#">5.3, 5.4.2, 5.4.4, 5.6, 5.12, 6.4, 6.10, 6.6, 7.13, 8.3</a>                 |
| 1.8                                 | Friction or abrasion hazard  |   | <a href="#">5.3, 5.4.2, 5.4.4, 6.4, 6.6, 7.13, 8.3</a>                                  |
| 1.9                                 | High pressure fluid injection or ejection hazard   | <a href="#">6.8, 7.7, 7.9</a>             |   |
| <b>2</b>                            | <b>Electrical hazards</b> due to   |   |   |
| 2.1                                 | Contact of persons with live parts (direct contact)  | 6.2.9, 6.3.5.4                            | <a href="#">7.4, 7.13</a>   |
| 2.2                                 | Contact of persons with parts which have become live under faulty conditions (indirect contact)                          | 6.2.9                                     | <a href="#">7.4, 7.13</a>   |
| 2.3                                 | Electrostatic phenomena  | 6.2.9                                     | <a href="#">7.14</a>  |
| <b>4</b>                            | <b>Hazards generated by noise</b> , resulting in:  |   |   |
| 4.1                                 | Hearing loss (deafness), other physiological disorders (loss of balance, loss of awareness)                              | 6.2.2.2, 6.3                              | <a href="#">7.2, 8.3</a>  |
| 4.2                                 | Interference with speech communication, acoustic signals   |   | <a href="#">7.2, 8.3</a>  |
| <b>6</b>                            | <b>Hazards generated by radiation</b>  |   |   |
| 6.5                                 | Lasers   | 6.3.4.5                                   | <a href="#">7.10</a>  |
| <b>7</b>                            | <b>Hazards generated by materials and substances</b> (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                              | <a href="#">7.3, 8.3</a>  |
| 7.2                                 | Fire hazard  | 6.2.4                                     | <a href="#">7.1</a>   |
| <b>8</b>                            | <b>Hazards generated by neglecting ergonomic principles in machinery design</b>  |   |   |
| 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 | <a href="#">5.2, 7.5</a>  |
| 8.2                                 | Hand-arm or foot-leg anatomy   | 6.2.8.3                                   | <a href="#">7.5</a>   |

Table 1 (continued)

| No.  | Hazards, hazardous situations and hazardous events   | ISO 12100:2010                           | Relevant section of ISO 19085-5:2017   |
|------|--|--|--|
| 8.4  | Local lighting   | 6.2.8.6                                  | <a href="#">8.3</a>  |
| 8.5  | Mental overload and underload, stress  | 6.2.8.5                                  | <a href="#">8.3</a>  |
| 8.6  | Human error, human behaviour   | 6.2.8, 6.2.11.8, 6.2.11.10, 6.3.5.2, 6.4 | <a href="#">8.3</a>  |
| 8.7  | Design, location or identification of manual controls  | 6.2.8 f), 6.2.11.8                       | <a href="#">5.2</a>  |
| 8.8  | Design or location of visual display units   | 6.2.8, 6.4.2                             | <a href="#">5.2</a>  |
| 9    | <b>Combination of hazards</b>  | 6.3.2.1                                  | <a href="#">5.3</a> , <a href="#">5.4.4</a> , <a href="#">5.6</a> , <a href="#">5.7</a> , <a href="#">5.10</a> , <a href="#">6.9</a> , <a href="#">7.14</a> , <a href="#">7.12</a> |
| 10   | <b>Unexpected start up, unexpected overrun/overspeed (or any similar malfunction) from:</b>                  |  |  |
| 10.1 | Failure/disorder of the control system   | 6.2.11, 6.3.5.4                          | <a href="#">5.1</a> , <a href="#">7.13</a>   |
| 10.2 | Restoration of energy supply after an interruption   | 6.2.11.4                                 | <a href="#">5.10</a> , <a href="#">7.7</a> , <a href="#">7.9</a>   |
| 10.3 | External influences on electrical equipment  | 6.2.11.11                                | <a href="#">5.1</a> , <a href="#">7.10</a>   |
| 10.5 | Errors in the software   | 6.2.11.7                                 | <a href="#">5.1</a>  |
| 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 | <a href="#">5.6</a> , <a href="#">8.3</a>  |
| 11   | <b>Impossibility of stopping the machine in the best possible conditions</b>                                 | 6.2.11.1, 6.2.11.3, 6.3.5.2              | <a href="#">5.4.2</a> , <a href="#">5.4.4</a> , <a href="#">7.13</a>   |
| 12   | <b>Variations in the rotational speed of tools</b>   | 6.2.2.2, 6.2.3                           | <a href="#">5.7</a>  |
| 13   | <b>Failure of the power supply</b>   | 6.2.11.1, 6.2.11.4                       | <a href="#">5.9</a>  |
| 14   | <b>Failure of the control circuit</b>  | 6.2.11, 6.3.5.4                          | <a href="#">5.1</a>  |
| 15   | <b>Errors of fitting</b>   | 6.2.7, 6.4.5                             | <a href="#">7.12</a>   |
| 16   | <b>Break-up during operation</b>   | 6.2.3                                    | <a href="#">6.2</a>  |
| 17   | <b>Falling or ejected objects or fluids</b>  | 6.2.3, 6.2.10                            | <a href="#">6.9</a>  |
| 18   | <b>Loss of stability/overturning of machinery</b>  | 6.3.2.6                                  | <a href="#">6.1</a>  |

## 5 Safety requirements and measures for controls

### 5.1 Safety and reliability of control systems

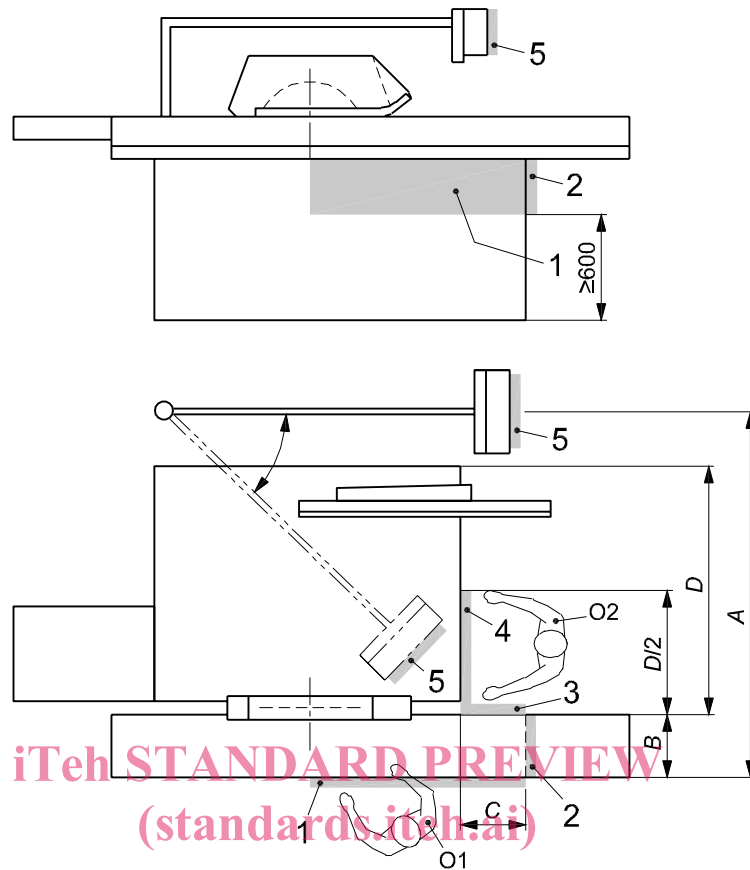
This subclause of ISO 19085-1:2017 applies.

### 5.2 Control devices

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

Electrical control devices shall be located on the machine frame in one or more of the shaded areas numbered 1 to 4 in [Figure 3](#) and/or on a movable control panel (position 5 in [Figure 3](#)), and in accordance with the requirements of [Table 2](#) for emergency stop control devices (when required according to [5.4.4](#)).

Dimensions in millimetres

**Key**

- <https://standards.itih.ai/catalog/standards/sist/5f5f62bd-2f24-413c-9c10-fde29e9734c0/iso-19085-5-2017>
- A** maximum distance between the edge of the sliding table and extreme position of moveable control panel
- B** width of the sliding table
- C** distance between the rear end of the sliding table support and front edge of the fixed table
- D** width of the fixed table
- O1, O2** alternative position of the operator
- 1 to 5** positions of the emergency stop (see [Table 2](#))

**Figure 3 — Position of control devices**

As an exception, the main power switch may be located at a height ( $H$ )  $\geq$  550 mm above the floor level.

No height requirement applies for plug fixed to the machine when supply disconnection is by a plug/socket combination

A stop control device for the saw blades shall be situated adjacent to each start control device for the saw blades.

Additional control devices for starting of the saw blades, along with a stop control device, may be provided at the rear side of the sliding table.

The initiation control device for scoring with post-formed edge pre-cutting (where fitted according to [5.6](#)) shall be positioned at the rear end of the integrated sliding table or in position 1. The selector defined in [5.6](#) shall be located in position 1 or 5.

**Table 2 — Choice of positions of emergency stop control devices when required (according to 5.4.4)**

| C<br>mm   | Without movable control panel                    | With movable control panel                         |   |
|---|--|--|---|
|   |  | A ≤ 1 300 mm                                       | A > 1 300 mm  |
| 0 ≤ C ≤ 300   | 2 <sup>a</sup><br>or<br>1 and 3<br>or<br>1 and 4 | 1 and 5<br>or<br>2 <sup>a</sup> and 5 <sup>a</sup> | 2 <sup>a</sup> and 5 <sup>a</sup><br>or<br>1 and 3 and 5<br>or<br>1 and 4 and 5 |
| C > 300   | 1 and 3<br>or<br>1 and 4                         | 1 and 5  | 1 and 3 and 5<br>or<br>1 and 4 and 5  |
| <sup>a</sup> Only for B up to 350 mm = sliding table width. |  |  |   |

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

**5.3 Start**

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

The scoring saw blade drive or the post-formed edge pre-cutting saw blade drive shall not be capable of being started before the main saw blade drive.

The SRP/CS for interlocking of the scoring and the post-formed edge pre-cutting saw blade drives with the main saw blade drive shall achieve  $PL_r = c$  (see also 5.6, 6.6).

**5.4 Safe stops**

ISO 19085-5:2017  
<https://standards.iteh.ai/catalog/standards/sist/5f5f62bd-2f24-413c-9c10-fde29e9734c0/iso-19085-5-2017>

**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 applies.

**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 is replaced by the following text.

Machines fitted with a post-formed edge pre-cutting saw unit shall be fitted with a mode selection switch. The mode selection switch shall select between “scoring with post-formed edge pre-cutting” and “scoring without post-formed edge pre-cutting”.

If the mode “scoring with post-formed edge pre-cutting” is selected, start of the post-formed edge pre-cutting cycle (consisting of the raise and immediate moving down of the post-formed edge pre-cutting saw blade) shall only be possible when an initiation control device is actuated for post-formed edge pre-cutting cycle initiation (see 5.2 for location).

The initiation control shall be such that each actuation of the appropriate device allows only a single post-formed edge pre-cutting cycle to be performed within maximum 30 s from actuation, controlled by a time delay device, and a warning signal (e.g. a yellow light) shall be given (see also 8.1).

The SRP/CS for the initiation control of the post-formed edge pre-cutting cycle and for mode selection shall achieve  $PL_r = c$ .

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

## 5.7 Spindle speed changing

### 5.7.1 Spindle speed changing by changing belts on the pulleys

This subclause of ISO 19085-1:2017 applies.

### 5.7.2 Spindle speed changing by incremental speed change motor

This subclause of ISO 19085-1:2017 applies.

### 5.7.3 Infinitely variable speed by frequency inverter

This subclause of ISO 19085-1:2017 applies.

## 5.8 Failure of any power supply

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

On machines with a device for post-formed edge pre-cutting, in the event of power supply failure, the enabling for the post-formed edge pre-cutting saw blade shall be reset/disabled.

The SRP/CS for holding the post-formed edge pre-cutting saw blade in the low position under the table 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.

## 5.9 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 part speed monitoring

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

The control for speed monitoring shall ensure that, as soon as the real speed exceeds the speed limit, the drive shall be stopped automatically in stop category 0 according to IEC 60204-1:2005, 9.2.2.

For software requirements, see ISO 13849-1:2015, 4.6.