International Standard

ISO 19085-7

Second edition
2024-08

Woodworking machines — Safety —

Part 7: Surface planing, thickness planing and combined surface/thickness planing machines

Machines à bois — Sécurité —

Partie 7: Machines à dégauchir, à raboter et machines combinées à dégauchir/raboter

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Foreword

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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 document 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).

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

For an explanation of 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 39, *Machine tools*, Subcommittee SC 4 *Woodworking machines,* in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 142, *Woodworking machines - Safety,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 19085-7:2019), which has been technically revised. The main changes are as follows:

— the Scope now specifies that machines are intended for continuous production use;

— displaceable machines are not referenced anymore;

— the list of significant hazards has been moved to a new Annex A;

— the structure has been simplified and modified, in particular for 5.6;

— subclause 6.2 has been updated;

— a new full noise test code has been added in Annex F.

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

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The ISO 19085 series provides technical safety requirements for the design and construction of woodworking machinery, as well as for the content of the relevant instruction handbook. It concerns designers, manufacturers, suppliers and importers of the machines specified in the Scope.

This document is a type-C standard as stated in ISO 12100:2010.

This document is of relevance, in particular, for the following stakeholder groups representing the market players with regard to machinery safety:

— machine manufacturers (small, medium and large enterprises);

— health and safety bodies (e.g. regulators, accident prevention organisations, market surveillance).

Others can be affected by the level of machinery safety achieved with the means of the document by the above-mentioned stakeholder groups:

— machine users/employers (small, medium and large enterprises);

— machine users/employees (e.g. trade unions, organizations for people with special needs);

— service providers, e.g. for maintenance (small, medium and large enterprises);

— consumers (in the case of machinery intended for use by consumers).

The above-mentioned stakeholder groups have been given the possibility to participate in the drafting process of this document.

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 (as defined in ISO 12100:2010), 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 the ISO 19085 series applicable to that type, together with the relevant requirements from ISO 19085-1:2021, to the extent specified in the Scope of the applicable part of the ISO 19085 series.

As far as possible, the safety requirements of parts of the ISO 19085 series refer to the relevant clauses of ISO 19085-1:2021. Each part includes replacements and additions to the common requirements given in ISO 19085-1:2021.

All parts of the ISO 19085 series have the same structure, so that reference to ISO 19085-1:2021 is made always and only from and to the same subclause number, last indent.

Clauses 1 to 3 are specific to each part and, therefore are distinct from ISO 19085-1:2021, Clauses 1 to 3.

For Clauses 4 to 7 and the annexes, each subclause in ISO 19085-1:2021, is cited as:

— confirmed as a whole;

— confirmed with additions;

— excluded in total; or

— replaced with specific text.

This is indicated by one of the following possible statements:

— “ISO 19085-1:2021, [subclause/Annex], applies.”;

— “ISO 19085-1:2021, [subclause/Annex], applies with the following additions.” or “ISO 19085-1:2021, [subclause/Annex], applies with the following additions, subdivided into further specific subclauses.”;

— “ISO 19085-1:2021, [subclause/Annex], does not apply.”;

— “ISO 19085-1:2021, [subclause/Annex], is replaced by the following text.” or “ISO 19085-1:2021, [subclause/Annex], is replaced by the following text, subdivided into further specific subclauses.”.

Other subclauses and annexes specific to this document are indicated by the introductory sentence: “Subclause/Annex specific to this document.”.

Woodworking machines — Safety —

Part 7: Surface planing, thickness planing and combined surface/ thickness planing machines

1 Scope

This document specifies the safety requirements and measures for

— surface planing machines, also called jointers,

— thickness planing machines, also called planers or single surface planers, and

— combined surface/thickness planing machines

with fixed cutter block position, with an integrated feed in thickness planing mode, with or without demountable power feed device in planing mode, with manual loading and/or unloading of the workpiece, and capable of continuous production use, altogether referred to as "machines".

The machines are designed to cut solid wood and material with similar physical characteristics to wood (see ISO 19085-1:2021, 3.2).

This document deals with all significant hazards, hazardous situations and events as listed in Annex A relevant to the machines when operated, adjusted and maintained as intended and under the conditions foreseen by the manufacturer. Reasonably foreseeable misuse has been considered too. Transport, assembly, dismantling, disabling and scrapping phases have also been taken into account.

This document is also applicable to surface planing machines and combined surface/thickness planing machines fitted with an optional mortising device, whose hazards have been dealt with.

This document does not apply to:

a) machines with more than one cutter block;

b) machines with a mortising unit driven by a separate motor;

c) machines where the cutter block is adjustable for depth of cut setting in thickness planing mode;

d) machines where the conversion from planing to thickness planing mode or vice versa is achieved by mounting or demounting parts/units;

e) machines where surface planing and thickness planing can be performed at the same time;

f) machines intended for use in potentially explosive atmosphere;

g) machines manufactured prior to the publication of this document.

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 148-1:2016, *Metallic materials — Charpy pendulum impact test — Part 1: Test method*

ISO 6892-1:2019, *Metallic materials — Tensile testing — Part 1: Method of test at room temperature*

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

ISO 19085-1:2021, *Woodworking machines — Safety — Part 1: Common requirements*

EN 847-1:2017, *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 19085-1:2021 and the following apply.

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

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

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

3.1
cutter block
cylindrical shaped complex tool equipped with blades or inserts

Note 1 to entry: See EN 847-1:2017 for a definition of complex tools.

3.2
surface planing machine
jointer
machine designed for cutting off layers of the lower surface of a workpiece by a *cutter block* (3.1) rotating around a horizontal axis, mounted at right angles to the feed direction between two tables designed to position and support the workpiece that is fed into the machine against the direction of the cut

Note 1 to entry: The main parts of a surface planing machine and their terminology are shown in Figure 1.

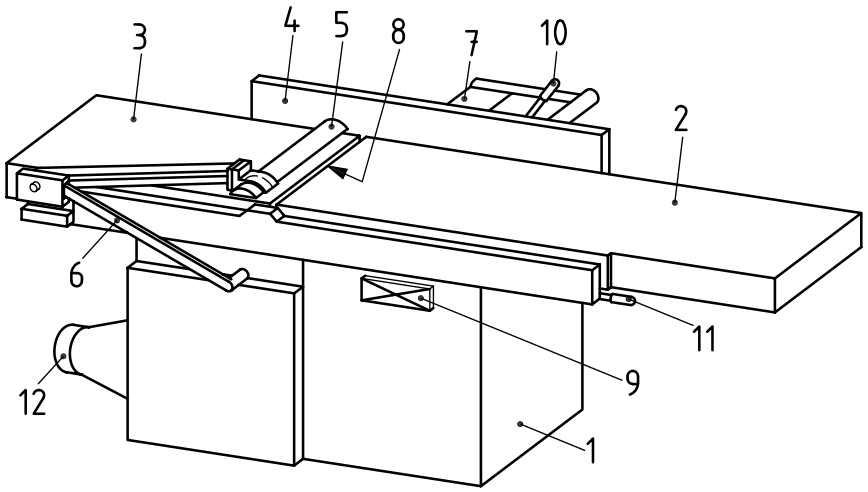
Note 2 to entry: Typical working operations at a surface planing machine are shown in Figure 4.

Note 3 to entry: Surface planing machines can also be fitted with an optional *mortising device* (3.7).

3.3
thickness planing machine
single surface planer
machine designed for cutting off layers of the upper surface of a workpiece by a *cutter block* (3.1) rotating around a horizontal axis, mounted at right angles to the feed direction above the table designed to position and support the workpiece that is fed into the machine against the direction of the cut

Note 1 to entry: The main parts of a thickness planing machine and their terminology are shown in Figure 2.

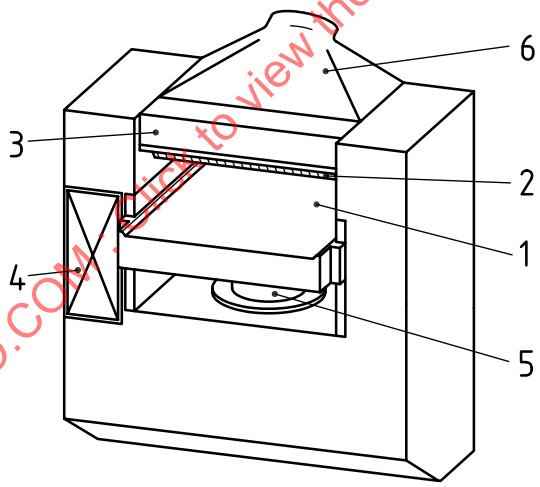
Note 2 to entry: The internal structure of a thickness planing machine is shown in Figure 5.



Key

1	main frame	7	guard behind the fence
2	infeed table	8	cutter block
3	outfeed table	9	controls
4	tiltable fence	10	fence tilting adjustment
5	bridge-type guard	11	lever for table height adjustment
6	lever for bridge-type guard adjustment	12	dust extraction outlet

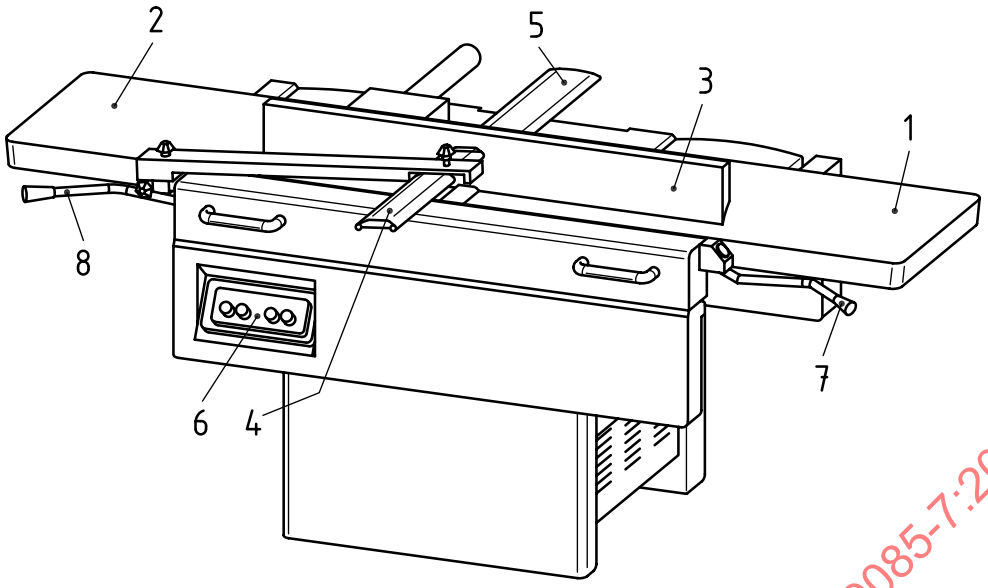
Figure 1 — Example of a surface planing machine



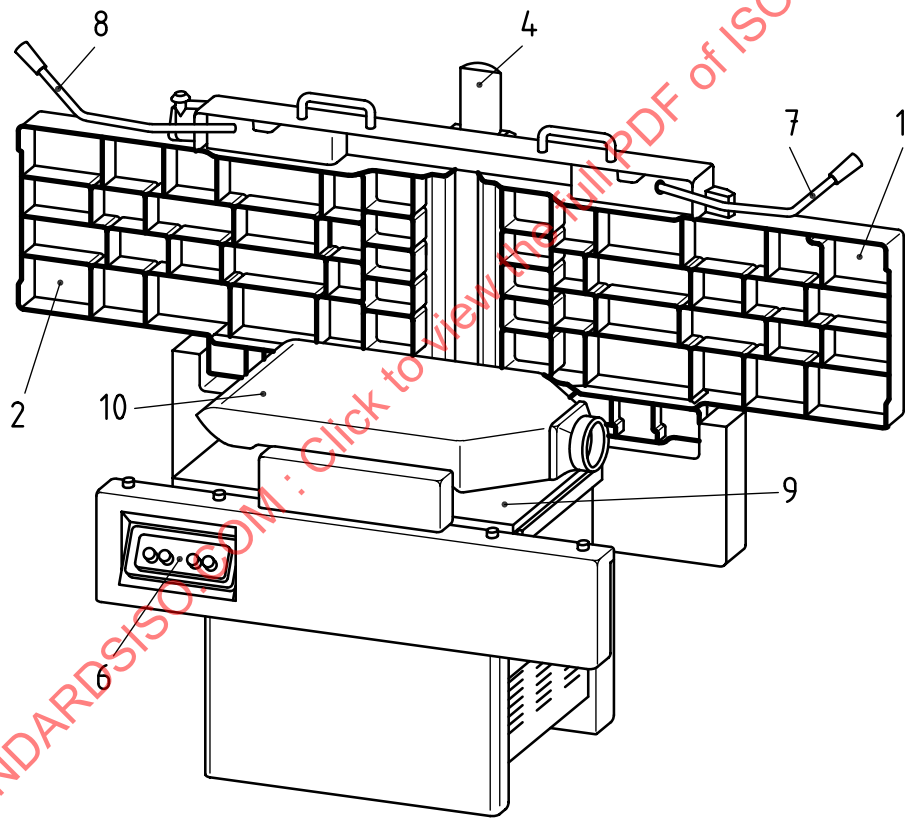
Key

1	thickness planing table	4	controls
2	anti-kickback fingers	5	table lifting system
3	upper guard	6	extraction hood

Figure 2 — Example of a thickness planing machine



a) Set up for surface planing



b) Set up for thickness planing

Key

1	infeed table	6	controls
2	outfeed table	7	infeed table height adjustment
3	tiltable fence	8	bridge-type guard adjustment
4	bridge-type guard	9	thickness planing table
5	guard behind the fence	10	guard for thickness planing mode

Figure 3 — Example of a combined surface/thickness planing machine

a) Planing **b) Edging**

Figure 4 — Typical surface planing operations

3.4
combined surface/thickness planing machine
combined jointer/single surface planer
combined machine that allows surface planing as well as thickness planing

Note 1 to entry: The main parts of a combined surface/thickness planing machine and their terminology are shown in Figure 3.

Note 2 to entry: The workpiece is fed into the machine against the direction of the cut.

Note 3 to entry: Combined surface/thickness planing machines can also be fitted with an optional *mortising device* (3.7).

Note 4 to entry: During surface planing, the workpiece is passed over the *cutter block* (3.1) located between two tables which are used to position and support the workpiece and the lower surface is planed. The infeed table of the surface planing unit is adjustable in height.

Note 5 to entry: For thickness planing, both surface *planing tables* (3.5) can be raised. The workpiece rests on the *thickness planing table* (3.6); the distance between it and the cutting circle diameter is adjustable. The upper surface of the workpiece is planed.

Note 6 to entry: The internal structure of a combined surface/thickness planing machine is shown in Figure 5.

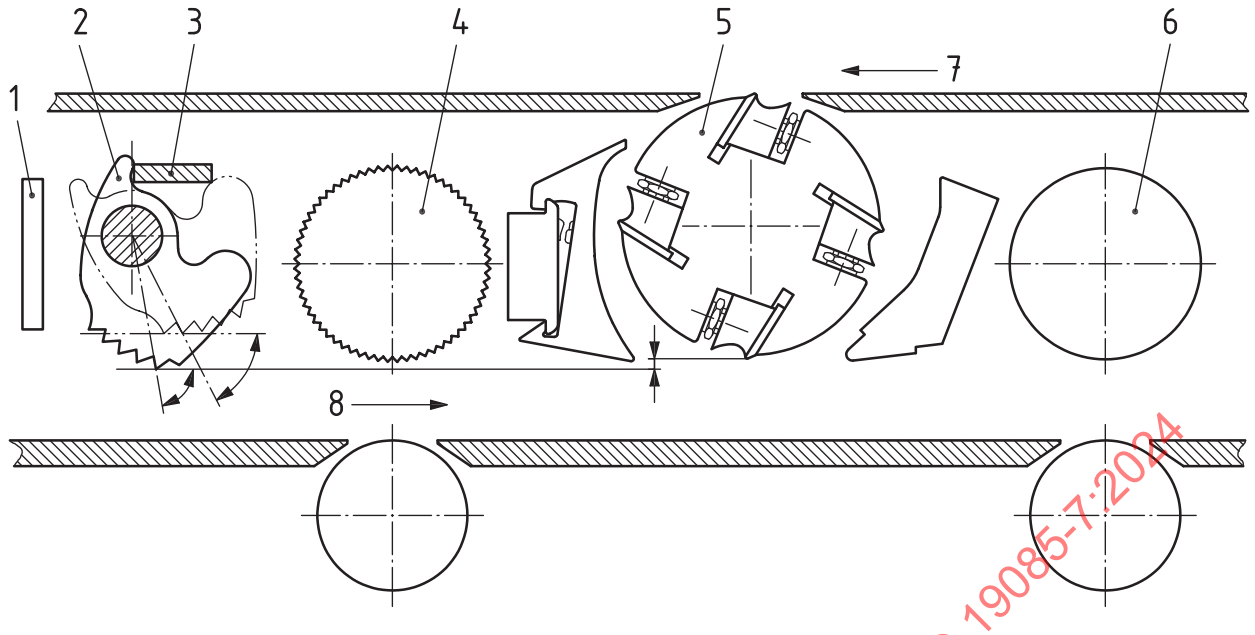
3.5
surface planing table
table in front and behind the *cutter block* (3.1) used to support the workpiece during planing of the lower surface

3.6
thickness planing table
table used to support the workpiece during thickness planing at the machine which can comprise an assembly of rollers, belts or other fixed or moving mechanical elements

3.7
mortising device
fixed or detachable element of a machine which is designed for slot boring (mortising) or boring by means of a single rotating tool and a moveable table

Note 1 to entry: The tool holding device, for example, chuck, is mounted on one end of the *cutter block* (3.1) (see Figure 6).

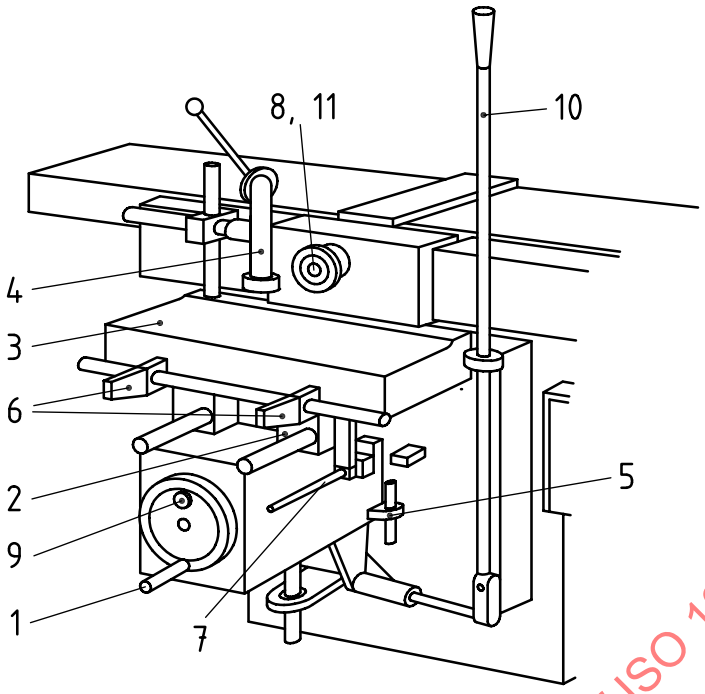
3.8
initiation control
control which after actuation enables providing power to specific machine actuators, for example, by a programmable logic control



Key

1	limiting device for the depth of cut	5	cutter block
2	anti-kickback fingers	6	outfeed roller
3	mechanical end stop for the rotation of the finger	7	feed direction during surface planing
4	infeed roller	8	feed direction during thickness planing

Figure 5 — Example of the internal structure of a thickness planing machine and of a combined surface/thickness planing machine



Key

1	vertical adjustment	7	horizontal depth stop
2	infeed slide	8	chuck
3	table	9	vertical adjustment lock
4	workpiece clamp	10	table movement control lever
5	height stop	11	chuck guard
6	horizontal length stops		

Figure 6 — Example of a mortising device

4 Safety requirements and measures for controls

4.1 Safety and reliability of control systems

ISO 19085-1:2021, 4.1 applies with the following additions.

Table B.1 summarizes the performance levels required (PL_r) in Clauses 4 and 5 for each safety function.

4.2 Control devices

ISO 19085-1:2021, 4.2 applies with the following additions.

Exceptionally, the main power switch may be located at a height of at least 500 mm above the floor level, and the plug fixed to the machine where supply disconnection is by a plug/socket combination which may be located at a height of at least 300 mm above the floor level.

On surface planing machines, the control devices for start, normal stop, emergency stop and powered table adjustment, if fitted, shall be in area A or B shown in Figure 7.

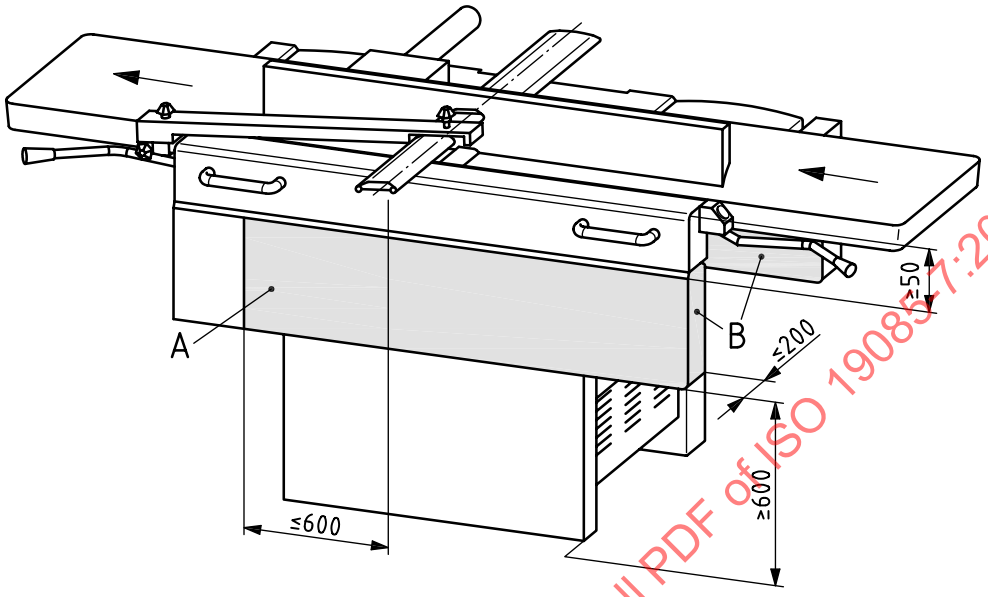
On thickness planing machines, the control devices for start, normal stop, emergency stop and powered table adjustment, if fitted, shall be located at the infeed side in area E or F shown in Figure 8.

On combined surface/thickness planing machines, the control devices for start, normal stop, emergency stop and powered table adjustment, if fitted, shall be either (see Figure 7 and Figure 9):

— in area A or B and in area C or D, or

— in the overlapping area of A and C.

Dimensions in millimetres

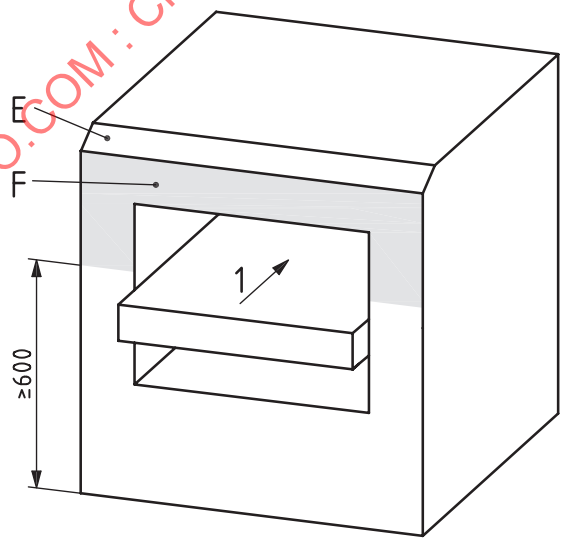


Key

A, B possible locations of control devices for start, normal stop, emergency stop and powered table adjustment

Figure 7 — Position of control devices on surface planing and combined surface/thickness planing machines

Dimensions in millimetres



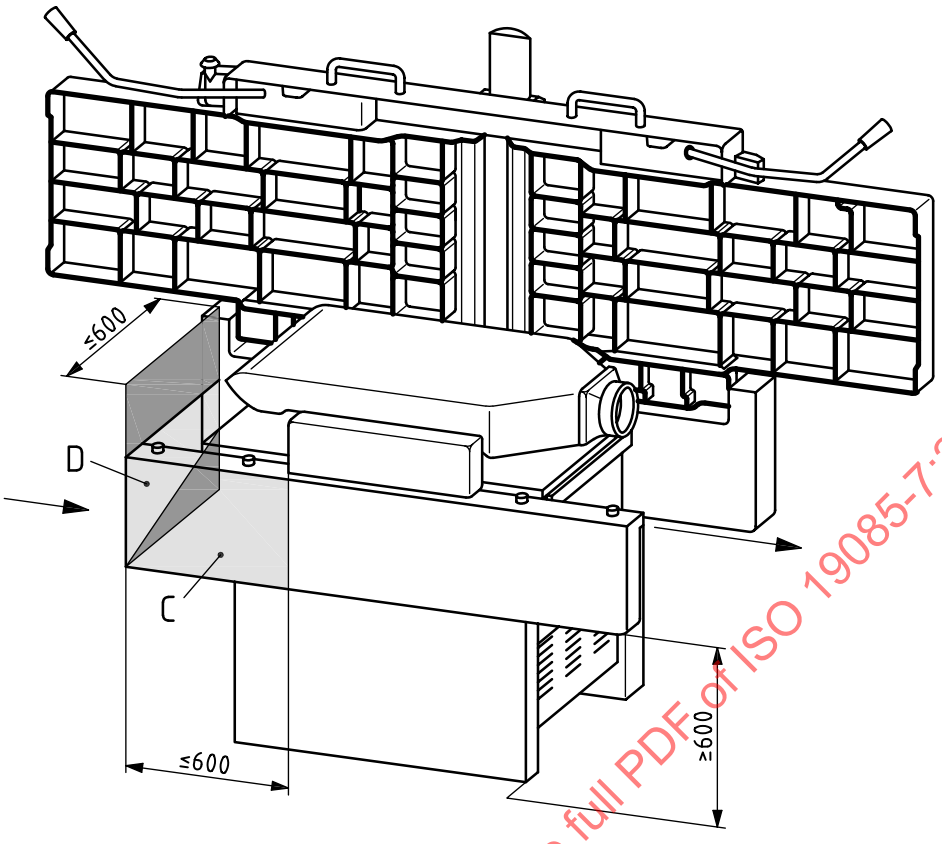
Key

E, F possible locations of control devices for starting, normal stop, emergency stop and powered table adjustment

1 feed direction

Figure 8 — Position of control devices on thickness planing machines

Dimensions in millimetres



Key

C, D possible locations of control devices for start, normal stop, emergency stop and powered table adjustment

Figure 9 — Position of control devices on combined surface/thickness planing machines

As an exception, the control devices for start, normal stop, emergency stop and powered table adjustment, if fitted, may be located on a separate control panel. This control panel shall fulfil the following requirements:

— it shall be fitted to the machine;

— from either loading position, the control devices shall not be further away than 650 mm, measured in horizontal direction.

In addition, an emergency stop device shall be provided at the out-feed side for thickness planing machines and combined surface/thickness planing machines with either one of the following features:

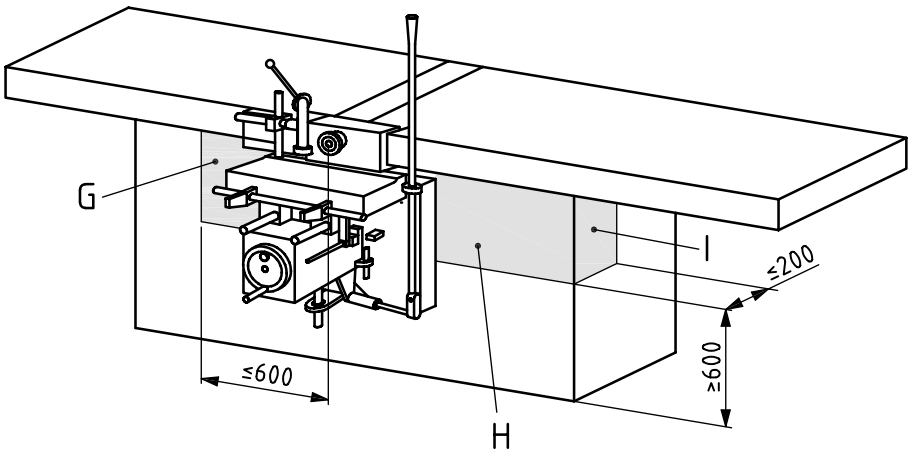
— a separate drive for the feed, besides the cutter block drive,

— a working width that is greater than 500 mm, or

— a pre-set electronic control to adjust the height of the thickness planing table.

For surface planing machines and combined surface/thickness planing machines fitted with a mortising device at the rear side of the machine, an emergency stop device shall be provided at the mortising side in the area G, H or I shown in Figure 10, or on a fixed or moveable control panel above the areas G and H, fitted to the machine, where its front face is at a maximum of 650 mm from the vertical projection of the edge of the mortising device close to operator position. The front face of the panel shall not protrude beyond the mortising device at the side of the operator position. As an alternative to the emergency stop device on machines where the emergency stop is not required, a normal stop device, located in the same areas described above, may be provided. The normal stop control device shall protrude and have no shroud.

Dimensions in millimetres



Key

G, H, I possible locations of control devices for start, normal stop, emergency stop and powered table adjustment

Figure 10 — Position of control devices on surface planing machines and combined surface/ thickness planing machines with mortising device

4.3 Start

4.3.1 Direct start

ISO 19085-1:2021, 4.3.1, applies.

4.3.2 Start via control power-on

ISO 19085-1:2021, 4.3.2, does not apply.

4.4 Safe stops

4.4.1 General

ISO 19085-1:2021, 4.4.1 applies with the following additions.

Any stop of the cutter block drive shall cause an immediate stop of the feed drive regardless of whether it is integrated or demountable.

4.4.2 Normal stop

ISO 19085-1:2021, 4.4.2 applies.

4.4.3 Operational stop

ISO 19085-1:2021, 4.4.3 does not apply.

4.4.4 Emergency stop

ISO 19085-1:2021, 4.4.4 applies with the following additions.

As an exception, if the second actuator is a motor for tables adjustment operated by hold-to-run control which fulfills PL = c, the machine may have no emergency stop control.

NOTE An emergency stop would not lower the risk in this case.

4.5 Braking function of tools

ISO 19085-1:2021, 4.5 applies.

4.6 Mode selection

ISO 19085-1:2021, 4.6 does not apply.

4.7 Tool speed changing

4.7.1 Speed changing by shifting the belts on the pulleys

ISO 19085-1:2021, 4.7.1 does not apply.

4.7.2 Speed changing by incremental speed change motor

ISO 19085-1:2021, 4.7.2 does not apply.

4.7.3 Infinitely variable speed by frequency inverter

ISO 19085-1:2021, 4.7.3 does not apply.

4.8 Failure of any power supply

ISO 19085-1:2021, 4.8 applies.

4.9 Manual reset control

ISO 19085-1:2021, 4.9 does not apply.

4.10 Standstill detection and monitoring

ISO 19085-1:2021, 4.10 does not apply.

4.11 Machine moving parts speed monitoring

ISO 19085-1:2021, 4.11 applies.

4.12 Time delay

ISO 19085-1:2021, 4.12 applies.

4.13 Teleservice

ISO 19085-1:2021, 4.13 applies.

4.14 Power-operated adjustment of surface planing infeed table and thickness planing table

Subclause specific to this document.

Power-operated movements for adjusting the tables of surface planing and/or thickness planing machines shall only be possible after actuation of either an initiation control device or a hold-to-run control device.

The safety related parts of the control system (SRP/CS) for initiation control shall achieve PL_r = c.

An unexpected start of power-operated movements under a pre-set electronic control shall be prevented after the pre-set position has been reached.

The SRP/CS for the prevention of an unexpected start shall achieve PL_r = c. This can be achieved, for example, by a time delay device which, after actuation of the initiation control for power-operated movements under pre-set electronic control, shall cut power to the actuators with a time delay set to the maximum possible adjustment time.

Verification is done by checking the relevant drawings, circuit diagrams, inspection of the machine and relevant functional testing of the machine.

5 Safety requirements and measures for protection against mechanical hazards

5.1 Stability

ISO 19085-1:2021, 5.1, applies with the following additions.

The machines provided with an integrated device for moving shall pass the stability test required in Annex C.

In combined surface/thickness planing machines, surface planing tables set-up for thickness planing shall be held in the raised position without the need for an action by the operator, for example, by springs or automatic mechanical locking devices or the opened position shall be at least 15° beyond the plumb line.

5.2 Risk of break-up during operation

ISO 19085-1:2021, 5.2, applies.

5.3 Tool and tool fixing design

5.3.1 General

ISO 19085-1:2021, 5.3.1 is replaced by the following text.

The cutter block shall be a round form tool and shall fulfil the requirements of EN 847-1:2017. The cutter block in surface planing and combined surface/thickness planing machines shall, in addition, fulfil the requirements for tools for hand-fed machines in accordance with EN 847-1:2017, 5.2.1.

For machines equipped with a cutter block where the knives are not automatically positioned, a gauge for the correct positioning of the knives shall be provided.

On machines fitted with a mortising device, loosening the chuck during start up, running, run-down or braking shall be prevented, for example, by a positive-locking connection.

Verification is done by checking the relevant drawings and inspection of the machine.

5.3.2 Spindle locking

ISO 19085-1:2021, 5.3.2 does not apply.

5.3.3 Circular saw blade fixing device

ISO 19085-1:2021, 5.3.3 does not apply.

5.3.4 Flange dimension for circular saw blades

ISO 19085-1:2021, 5.3.4 does not apply.

5.4 Braking

5.4.1 Braking of tools

ISO 19085-1:2021, 5.4.1 applies with the following addition.

The braking function shall be tested in accordance with Annex D.

5.4.2 Maximum run-down time

ISO 19085-1:2021, 5.4.2 applies.

5.4.3 Brake release

ISO 19085-1:2021, 5.4.3 applies.

5.5 Safeguards

5.5.1 Fixed guards

ISO 19085-1:2021, 5.5.1 applies.

5.5.2 Interlocking moveable guards

5.5.2.1 General

ISO 19085-1:2021, 5.5.2.1 applies with the following additions.

Additional measures according to ISO 14119:2013, 7.2 are not required.

NOTE The motivation to defeat the interlocking devices in a reasonably foreseeable manner does not exist.

5.5.2.2 Moveable guards with interlocking

ISO 19085-1:2021, 5.5.2.2 applies.

5.5.2.3 Moveable guards with interlocking and guard locking

ISO 19085-1:2021, 5.5.2.3 applies.

5.5.3 Hold-to-run control

ISO 19085-1:2021, 5.5.3 applies.

5.5.4 Two-hand control

ISO 19085-1:2021, 5.5.4 applies.

5.5.5 Electro-sensitive protective equipment (ESPE)

ISO 19085-1:2021, 5.5.5 does not apply.

5.5.6 Pressure sensitive protective equipment (PSPE)

ISO 19085-1:2021, 5.5.6 does not apply.

5.5.7 Enabling control

ISO 19085-1:2021, 5.5.7 does not apply.

5.6 Prevention of access to hazardous moving parts

ISO 19085-1:2021, 5.6 is replaced by the following text, subdivided into further specific subclauses.

5.6.1 Cutter block guarding during surface planing

5.6.1.1 Guarding above the surface planing tables

5.6.1.1.1 Guarding at the front side of the fence

Access to the cutter block shall be prevented by a bridge-type guard being manually or automatically adjustable (see Figure 11) and being fixed to the machine, for example, to the machine frame on the outfeed table side.

The bridge-type guard, consisting of a holder fixed to the machine and a bridge, shall fulfil the following requirements:

a) it shall not be removeable from the machine without the aid of a tool;

b) it shall be adjustable without the aid of a tool;

c) it shall allow a gap of not more than 6 mm between the fence and the guard and it shall cover the total length of the cutter block in front of the fence, regardless of the position of the fence;

d) the bridge shall be convex or flat in shape, have no sharp infeed edge, and be so designed that contact of a part of the hand with the workpiece is possible during planing (e.g. see Figure 11); its upper surface shall be smooth and without projecting parts;

e) the bridge shall be manufactured from an easily machinable material (see ISO 19085-1:2021, 3.3) and it shall not touch the cutter block when it rests on the surface planing table;

f) its design shall allow for blade/insert changing without dismounting the bridge or its holder;

g) it shall pass the test of Annex G;

h) it shall be possible to lock horizontal adjustment of the bridge in any position without the aid of a tool and the bridge shall remain in its locked position when a horizontal force of 80 N is applied towards the fence;

i) it shall be adjustable in height from 0 mm to 75 mm maximum above the outfeed table and this adjustment shall be stepless and it shall return automatically to its pre-set position (e.g. by spring loading);

j) the bridge over the whole range of adjustment shall cover the area between two vertical planes tangent to the table lips when they are set to the maximum width apart, taking account also the possible deflection (see Figure 11);

k) the bridge in the lowest position shall cover the area between the table lips plus at least 5 mm at the infeed and outfeed side;

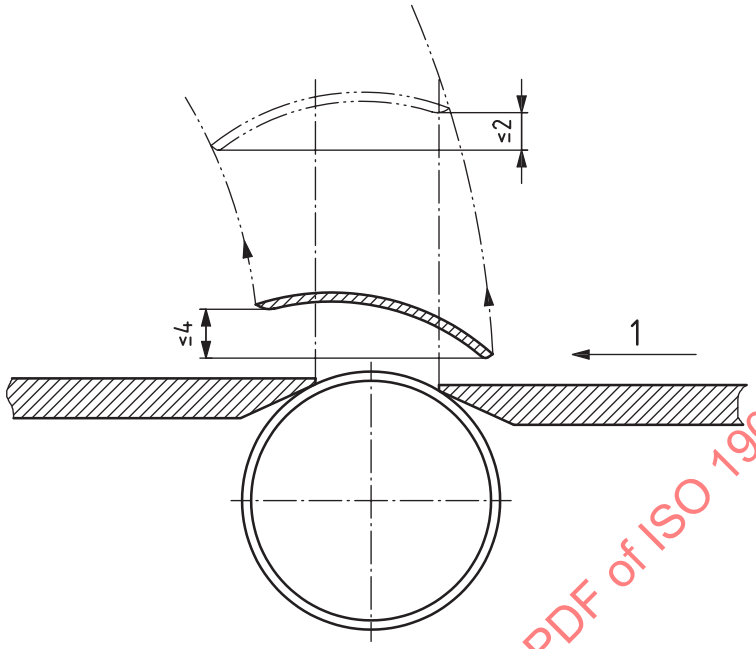
l) the gap between the bridge and the workpiece shall be less than 2 mm at infeed side and less than 4 mm at outfeed side over the whole range of adjustment (see Figure 11);

m) the lever for guard adjustment shall be accessible from the operator position and within 1 m from the cutter block axis;

n) the lower surface of the bridge shall be so designed that there is no obstruction to the passage of the workpiece through the machine;

o) it shall not protrude from the machine table by more than 550 mm; in order to fulfil this requirement, a two-pieces bridge-type guard may be provided: the two parts shall remain linked and shall not be able to be dismounted without the aid of a tool;

Dimensions in millimetres



Key

1 feed direction

Figure 11 — Example of a bridge-type guard

p) maximum width of the bridge shall be:

1) 100 mm for a cutter block length up to and including 350 mm, and

2) 120 mm for a cutter block length exceeding 350 mm;

q) the automatic adjustable bridge-type guards shall be equipped at the infeed side with a leading-in device; during operation in the self-adjusted position, a horizontal force (for edging) or a vertical force (for planing) between 15 N and 40 N shall be applied to the workpiece;

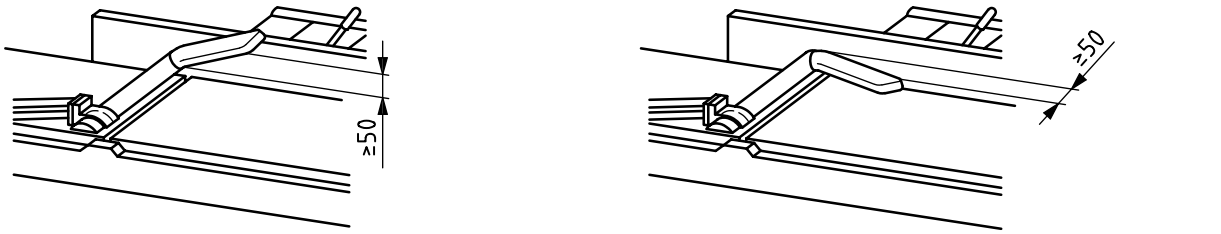
r) when the automatic adjustment capability is limited to a value lower than that of the cutter block length, a manual adjustment capability shall be provided;

s) leading-in devices in automatically adjustable bridge-type guard shall:

1) be fixed to the bridge-type guard, and

2) allow a self-adjustment of minimum 50 mm (see Figure 12).

Dimensions in millimetres



a) Self-adjustment in vertical direction **b) Self-adjustment in horizontal direction**

Figure 12 — Example of a leading-in device

Other requirements relevant for ergonomic aspects of the bridge-type guard are given in 6.5.

Verification is done by checking the relevant drawings, measurement, inspection of the machine and relevant functional testing of the machine. The relevant tests in Clauses G.1, G.2 and G.3 shall be performed.

5.6.1.1.2 Guarding at the rear of the fence

Access to the cutter block at the rear of the fence shall be prevented by a guard attached to the fence or to the support of the fence, for example, by a hinge to allow tilting of the fence.

The guard shall fulfil the following requirements:

a) it shall not be removeable from the machine without the aid of a tool;

b) it shall move with the fence;

c) it shall cover the full length and diameter of the cutter block;

d) it shall not come into contact with the blades;

e) gaps at the rear between the fence and the fixed guard, for example created by the tilting of the fence, shall not exceed 10 mm.

Verification is done by checking the relevant drawings, measurement, inspection of the machine and relevant functional testing of the machine.

5.6.1.2 Guarding below the surface planing tables

Access to the cutter block below the surface planing tables shall be prevented by fixed guards.

In addition, for combined surface/thickness planing machines, the following requirements shall be fulfilled:

a) access to the cutter block below the surface planing tables shall be prevented by one or more moveable guards interlocked with cutter block and feed;

b) the tables to be raised for the conversion from surface planing to thickness planing shall be interlocked with cutter block and feed; when opening the tables for such conversion, the interlock shall be activated before any opening becomes wider than 50 mm in vertical direction.

The SRP/CS for the interlocking of the cutter block and the feed with the table position shall achieve PL_r = c.

Verification is done by checking the relevant drawings, circuit diagrams, inspection of the machine and relevant functional testing of the machine.

5.6.2 Guarding the cutter block and the feed mechanism during thickness planing

For thickness planing machines, access to the cutter block and the feed mechanism from any direction other than through the openings for infeed and outfeed shall be prevented by fixed guards and moveable guards with interlocking and guard locking providing access for the change of blades or inserts. If the access time is longer than the overall system stopping performance, no guard locking is required.

For combined surface/thickness planing machines, access to the cutter block and the feed mechanism from any direction other than through the openings for infeed and outfeed shall be prevented by a moveable guard interlocked with cutter block and feed, which can be opened for conversion from thickness planing to surface planing. When opening, the interlock with cutter block and feed shall be activated before any opening becomes wider than 50 mm in vertical direction.

Verification is done by checking the relevant drawings, circuits diagrams, inspection of the machine and relevant functional testing of the machine.

5.6.3 Guarding during mortising

During the use of the mortising device, guarding of the cutter block shall be possible by the guarding system in accordance with 5.6.1.

Access to the mortising chuck shall be prevented by a fixed guard except for the opening on the front side necessary for fixing the drilling tool. Where necessary, an opening shall be provided for the chuck key. Alternatively, a guard covering the mortising chuck and rotating with it is permitted, designed in such a way that it does not cause any entanglement hazards.

Verification is done by checking the relevant drawings, inspection of the machine and relevant functional testing of the machine.

5.6.4 Guarding of drives

Access to hazardous movements of drives, for example for the tools or feed mechanism, shall be prevented by fixed guards, and, where access is required more than once a week, also by interlocking movable guards.

For combined surface/thickness planing machines, when raising the surface planing tables for conversion from surface planing to thickness planing, or when opening the cutter block/feed guard for conversion from thickness planing to surface planing, the interlocking shall be activated before any opening becomes wider than 50 mm.

Verification is done by checking the relevant drawings, circuit diagrams, inspection of the machine and relevant functional testing of the machine.

5.7 Impact hazard

ISO 19085-1:2021, 5.7 applies.

5.8 Clamping devices

ISO 19085-1:2021, 5.8 applies with the following additions.

For a mortising device, workpiece clamping shall be provided. The clamping system shall be capable of exerting a minimum clamping force of 500 N.

5.9 Measures against ejection

5.9.1 General

ISO 19085-1:2021, 5.9.1 applies with the following additions.

Anti-kickback devices are relevant for thickness planing and combined surface/thickness planing machines.

5.9.2 Guards' material and characteristics

5.9.2.1 Choice of class of guards

ISO 19085-1:2021, 5.9.2.1 applies with the following additions.

Guards used to prevent ejection shall be of class B.

5.9.2.2 Guards of class A

ISO 19085-1:2021, 5.9.2.2 does not apply.

5.9.2.3 Guards of class B

ISO 19085-1:2021, 5.9.2.3 applies with the following additions.

The guards shall pass the test required in Annex E.

5.9.3 Anti-kickback devices

Subclause specific to this document.

Thickness planing and combined surface/thickness planing machines shall be fitted with an anti-kickback device consisting of separately moveable fingers over the full working width of the machine.

The anti-kickback device shall be designed, manufactured and set in accordance with the following requirements.

a) It shall be located before the infeed roller and be situated inside the table when seen from above.

b) The surface hardness of the fingers shall be at least 100 HB.

   The fingers shall be made of material that exhibits either of the following:

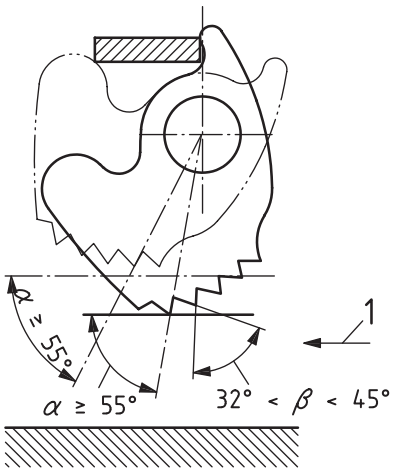
   1) an impact strength of a minimum of 15 J cm^{-2}: For the determination of the impact strength, the impact energy shall be measured on samples with V-notch in accordance with ISO 148-1:2016 and shall be divided by the sample surface beneath the V-notch. Sub-sized samples shall meet the requirements given in ISO 148-1:2016, Table 2; or

   2) a tensile strength R_m of a minimum of 350 N mm^{-2} and an elongation at break A of a minimum of 15 %: Tensile strength and elongation at break shall be determined in accordance with ISO 6892-1:2019.

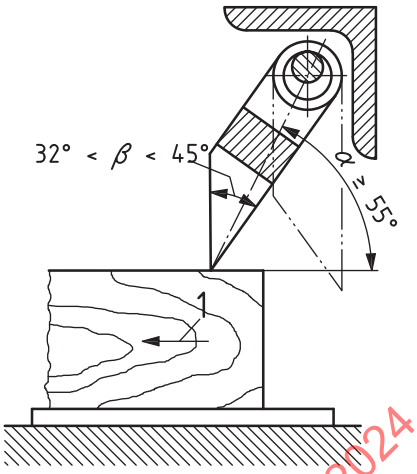
c) The fingers thickness shall be between 8 mm and 15 mm for machines with a working width equal to or more than 260 mm and between 3 mm and 8 mm for machines with a working width less than 260 mm.

d) The tip radius of the fingers shall not exceed 0,3 mm.

e) The angle α shall conform to the values given in Figure 13 for any cutting depth for which the machine is designed, the angle β shall be more than 32° and less than 45°.



a) Multi-tip finger



b) Single-tip finger

Key

1 feed direction

Figure 13 — Anti-kickback fingers

f) The space in between fingers shall not be wider than half the width of the fingers.

g) The total lateral movement of the fingers that can move freely shall not exceed 1 % of the machine's working width.

h) The fingers shall return to their rest position due to their own weight. Mechanical end stops shall be provided preventing their rotation around the shaft except for an angular sector corresponding to the minimum and maximum thickness planing capacity.

i) In the rest position of the fingers, the tips shall be at least 2 mm below the horizontal tangent to the cutting circle outside diameter (see Figure 5).

j) Locking devices which render the anti-kickback device ineffective are not permitted.

k) It shall pass the kickback test of Annex I.

Verification is done by checking the relevant drawings, measurement, inspection of the machine and relevant functional testing of the machine. The test in Annex I shall be performed.

NOTE For the materials characteristics, a confirmation from the components' manufacturers can be useful.

5.10 Workpiece supports and guides

ISO 19085-1:2021, 5.10 applies with the following additions, subdivided into further specific subclauses.

5.10.1 Conversion movements in combined surface/thickness planing machines

For combined surface/thickness planing machines, the following requirements shall be fulfilled.

a) Moveable tables shall be lockable in position (for thickness planing and surface planing) unless the movement mechanism is self-locking.

b) The conversion from surface planing to thickness planing (and the reverse) shall be possible without dismantling and without the aid of a tool (e.g. a spanner).

c) When the set-up movements of the surface planing tables for conversion from surface planing to thickness planing and vice-versa are powered, the rotational speed shall be limited to 20° s^{-1}. The

movements shall be controlled by a hold-to-run control device on the machine frame combined with a second hold-to-run control device on the moveable tables.

Verification is done by checking the relevant drawings, circuit diagrams, inspection of the machine and relevant functional testing of the machine.

5.10.2 Surface planing tables

The design of surface planing and combined surface/thickness planing machines shall be such that rebating at the cutter block end is not possible.

The surface planing tables shall be in accordance with the following requirements:

a) adjustment of the machine outfeed table in the vertical direction shall be limited to 1,1 mm below the cutting circle diameter;

b) machines shall be provided with vertical infeed table adjustment;

c) both infeed and outfeed tables shall be flat and horizontal;

d) the infeed table surface shall remain plane-parallel to the outfeed table throughout the full range of adjustment; the range of adjustment shall be limited such that the depth of cut cannot exceed 8 mm;

e) tables shall be made of light alloy, cast iron or steel having a minimum ultimate tensile strength of 150 N mm^{-2};

f) table lips shall pass the resistance test in Annex H;

g) the distance between the table lips and the cutting circle diameter shall be (3 ± 2) mm, whatever height the tables are set at (see Figure 14);

Dimensions in millimetres

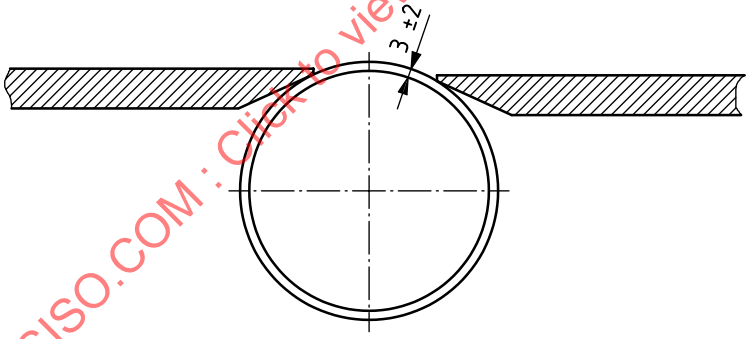


Figure 14 — Distance between table lips and cutting circle diameter

h) where the table or table lips are slotted (for the purpose of noise reduction), the slots shall not exceed 6 mm in width; the minimum tooth thickness shall be 1,5 mm at the tip (see Figure 15);

Dimensions in millimetres

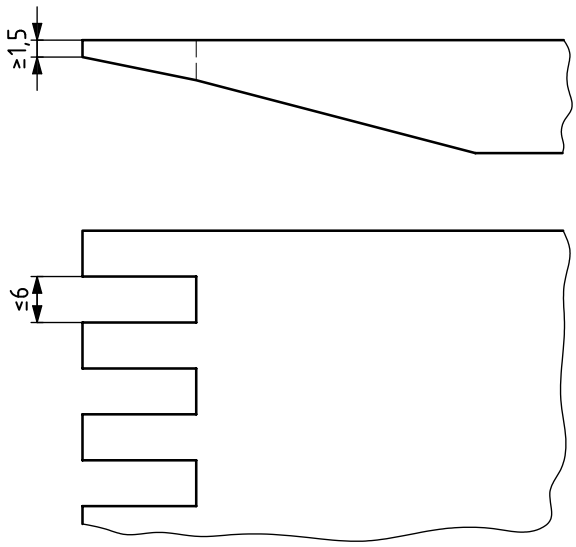


Figure 15 — Example of slots in table lips

i) where the table or table lips are perforated (for the purpose of noise reduction), the bores shall have a diameter of not more than 6 mm;

j) the minimum length of the infeed and outfeed tables, measured from the tool axis, shall be 1 200 mm, or twice the working width, where the working width is lower than 600 mm.

Verification is done by checking the relevant drawings, measurement, inspection of the machine, relevant functional testing of the machine and by performing the resistance tests in Annex H.

NOTE For the ultimate tensile strength, a confirmation from the material manufacturer can be useful.

5.10.3 Thickness planing table

The thickness planing table shall be flat.

A mechanical end stop shall be provided to prevent contact between the table and the anti-kickback device or the cutter block.

Verification is done by checking the relevant drawings, inspection of the machine, measurement and relevant functional testing of the machine.

5.10.4 Mortising table

The mortising device shall be provided with a workpiece support (table), which shall be adjustable in height, in depth and laterally.

The dimensions of the mortising table and its maximum movement shall ensure that the mortising tool axis always remains within the mortising table width.

The movements of the table during machining shall be controlled by levers.

The mortising table shall be capable of being held at any height.

Verification is done by checking the relevant drawings, inspection of the machine and relevant functional testing of the machine.

5.10.5 Workpiece guiding during surface planing

Surface planing and combined surface/thickness planing machines shall be equipped with a fence for use during surface planing which complies with the following requirements.

a) It shall be attached to the machine and shall, on machines with a working width above 160 mm, be laterally adjustable over the whole cutter block length without the aid of a tool.

b) Its guiding surface shall be perpendicular to the workpiece support of the tables. It may be tiltable by maximum 45° towards the rear side of the machine and shall then be lockable in any possible position.

c) The minimum fence height and length, related to the working width *W*, are given in Table 1.

Table 1 — Fence dimensions

Working width *W*	Minimum fence length on each side from the spindle axis	Minimum fence height
$W \leq 310$ mm	$1{,}15 \times W$	120 mm
$W > 310$ mm	550 mm	150 mm

d) In vertical position of the fence, the gap between the outfeed table and the lower edge of the fence shall not exceed 5 mm. In any other position of the fence, it shall not exceed 10 mm.

e) If an auxiliary fence is provided for planing of narrow workpieces, for example, hinged to the fence (see Figure 16), its height shall not be less than 20 mm and not greater than 25 mm, its width shall exceed 55 mm and its length shall be equal at least to the length of the fence. If it is hinged to the fence, provision shall be made that it cannot fall from its rest position inadvertently into the working position, for example, by fitting a locking device or by gravity. The auxiliary fence shall not be able to come into contact in any position with the cutter block.

If the machine is designed to be used with a demountable power feed device, its fixing shall not limit the fence adjustment over the whole fence adjustment range and shall be located at the rear side of the machines.

Verification is done by checking the relevant drawings, measurement, inspection of the machine and relevant functional testing of the machine.

5.10.6 Workpiece guiding during thickness planing

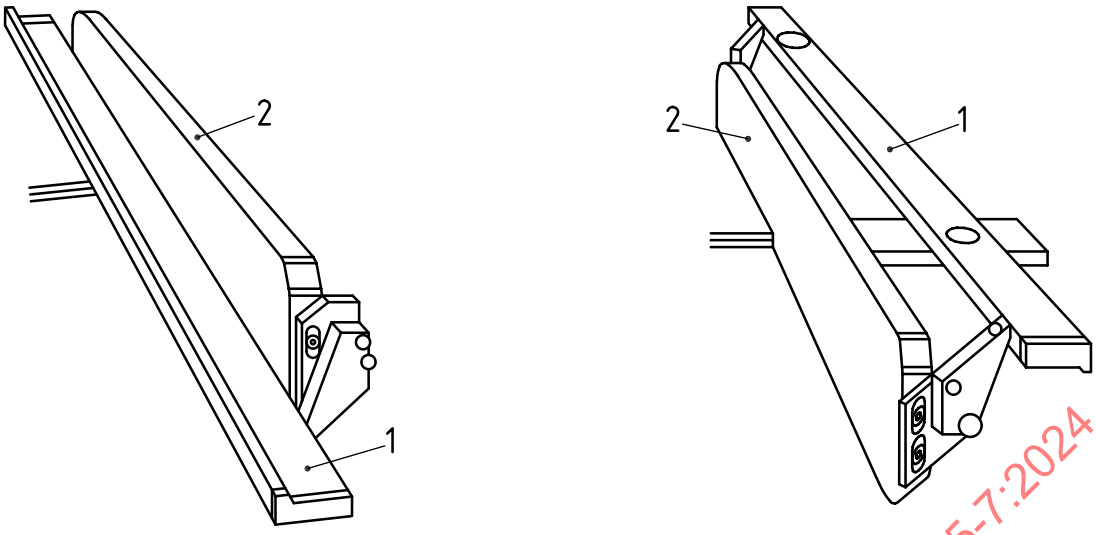
The table shall be provided on both sides with lateral guides to limit the dimension of the workpiece.

The width of the table between the lateral guides shall be less than or equal to the working width and its length shall at least extend from the cut limiting device to the outfeed roller.

The design of the table and the housing on the out-feed side of the machine shall avoid any shearing or crushing zones with the constraint-guided workpiece.

A device to limit the depth of cut shall be located at the infeed side of the machine in order to prevent the feeding of oversized (too thick) workpieces (see Figure 5 Key 1).

Verification is done by checking the relevant drawings, measurement, inspection of the machine and relevant functional testing of the machine.



a) Put away **b) In use**

Key

1 auxiliary fence 2 main fence

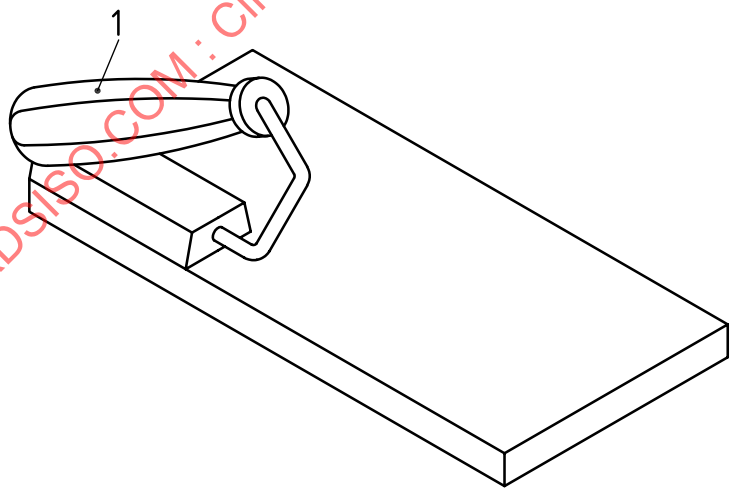
Figure 16 — Example of an auxiliary fence

5.11 Safety appliances

Subclause specific to this document.

For surface planing and combined surface/thickness planing machines, a push block handle (see Figure 17) shall be provided.

Provision shall be made for storing a push block handle on the machine.



Key

1 push block handle

Figure 17 — Example of a push block handle

Verification is done by checking the relevant drawings and inspection of the machine.

6 Safety requirements and measures for protection against other hazards

6.1 Fire

ISO 19085-1:2021, 6.1 applies with the following additions.

On surface planing and combined surface/thickness planing machines, requirements in 5.10.2 g) apply for avoiding sparks as result of contact between cutting blades and the table lips.

6.2 Noise

6.2.1 Noise reduction at the design stage

ISO 19085-1:2021, 6.2.1 applies.

6.2.2 Noise emission measurement and declaration

ISO 19085-1:2021, 6.2.2 applies with the following additions.

Annex F shall be applied for noise test and declaration of: surface planing machine, thickness planing machine and combined surface/thickness planing machine.

NOTE There is no need to separately measure the noise emission during mortising since, in idle mode, it is equal to the noise emission in planing mode and, during operation, it is most probably lower.

6.3 Emission of chips and dust

ISO 19085-1:2021, 6.3 applies with the following additions.

Provision shall be made for the extraction of chips and dust from the machine by providing a chip and dust extraction hood for the cutter block and mortising device (if provided) to allow the machine to be connected to an external chip and dust collection system.

A proper chips and dust extraction can be obtained with the recommended air flow rates specified in Table 2.

Table 2 — Relation between working width and recommended air flow rate

Working width W mm	Air flow rate $m^3\,h^{-1}$
$W \leq 260$	520
$260 < W \leq 520$	820
$520 < W \leq 600$	1 110
$W > 600$	1 450

Verification is done by checking the relevant drawings, measurement and inspection of the machine.

6.4 Electricity

ISO 19085-1:2021, 6.4 applies.

6.5 Ergonomics and handling

ISO 19085-1:2021, 6.5 applies with the following additions.

Where opening of the surface planing tables is done manually, grips or handles shall be provided. The maximum force to open or close shall be 300 N. Counterbalancing by spring/air cushion or by distribution of the weight shall be provided, if necessary, to respect the limit value.

The force at the lever to adjust the surface table height (see Figure 1 Key 11) shall not exceed 150 N.

The machine shall be fitted with a scale for indicating the workpiece thickness for thickness planing or the cut-off dimension for surface planing. The scale shall be designed and positioned so that the adjusted value is indicated directly and easily legible, e.g. by fitting a magnifying glass.

The height of the tables of the surface planing machine shall be between 750 mm and 950 mm above the floor level.

The force necessary to move the bridge-type guard in its support when unlocked for adjustment shall not exceed 5 N.

The force necessary to move the bridge up and down shall not exceed 35 N.

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 (no minimum height requirement to be fulfilled).

6.6 Lighting

ISO 19085-1:2021, 6.6 does not apply.

6.7 Pneumatics

ISO 19085-1:2021, 6.7 applies.

6.8 Hydraulics

ISO 19085-1:2021, 6.8 does not apply.

6.9 Electromagnetic compatibility

ISO 19085-1:2021, 6.9 applies.

6.10 Laser

ISO 19085-1:2021, 6.10 does not apply.

6.11 Static electricity

ISO 19085-1:2021, 6.11, applies.

6.12 Errors of fitting

ISO 19085-1:2021, 6.12 does not apply.

6.13 Isolation

ISO 19085-1:2021, 6.13 applies.

6.14 Maintenance

ISO 19085-1:2021, 6.14 applies.

6.15 Relevant but not significant hazards

ISO 19085-1:2021, 6.15 applies.

7 Information for use

7.1 Warning devices

ISO 19085-1:2021, 7.1 applies.

7.2 Marking

7.2.1 General

ISO 19085-1:2021, 7.2.1 applies.

7.2.2 Additional markings

ISO 19085-1:2021, 7.2.2 applies.

7.3 Instruction handbook

7.3.1 General

ISO 19085-1:2021, 7.3.1 applies.

7.3.2 Additional information

ISO 19085-1:2021, 7.3.2 is replaced by the following text.

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

a) reasonably foreseeable misuse includes working without the bridge-type guard in surface planing and combined surface/thickness planing machines;

b) warning regarding residual risk shall also include:

   1) contact with cutter block from infeed and outfeed openings during thickness planing and from above during planing;

   2) kickback;

c) instruction for:

   1) proper setting of thickness planing mode in combined surface/thickness planing machine;

   2) safe handling of workpiece during machining;

   3) proper use and blocking of the fence during surface planing;

   4) proper use of push-block and adapting the shape of push-block for surface planing and combined surface/thickness planing machines set in surface planing mode;

   5) use of appropriate jigs for special workpieces;

   6) use of auxiliary fence for machining of narrow workpieces and for its preparation in case it is not provided;

d) instructions about safety devices tests, method and frequency shall also include: anti-kickback fingers mounted in thickness planing and combined surface/thickness planing machines – by inspection at least once every working shift that they are in good working condition, for example, the contact face for impact damage and that the fingers return to their rest position by gravity;

e) information that before changing the cutter block, the machine shall be isolated;

f) for a mortising device:

   1) a warning not to use grinding tools;

   2) a warning that the mortising tool shall be clamped over the complete clamping length of the chuck;

   3) a warning that the workpiece shall be clamped during mortising;

   4) the instruction to cover completely the cutter block when mortising;

   5) a warning to remove the mortising tool when the mortising device is not in use;

   6) for mortising devices with only one rotation direction, indication of the direction of rotation;

   7) information that the airborne noise emission values can be assumed being the same as those of surface planing unit idle running;

g) for thickness planing machines and combined surface/thickness planing machines, a warning that the length of the workpiece to be machined shall not exceed the free space at the outfeed end of the machine minus 500 mm;

h) instruction that only a cutter block conforming to EN 847-1:2017 marked MAN shall be used in surface planing and combined surface/thickness planing machines;

i) instruction that only a cutter block conforming to EN 847-1:2017 marked MAN or MEC shall be used in thickness planing machines;

j) instruction to stop the machine while unattended.

Annex A
(informative)

List of significant hazards

ISO 19085-1:2021, Annex A is replaced by the following text.

Table A.1 lists all significant hazards, hazardous situations and events (see ISO 12100:2010), identified by risk assessment as significant for surface planing machines, thickness planing machines and combined surface/thickness planing machines, and which require action to eliminate or reduce the risk.

Table A.1 — List of significant hazards

No.	Hazards, hazardous situations and hazardous events	Subclause of ISO 12100:2010	Subclause of this document
1	Mechanical hazards related to	—	—
	— Machine parts or workpieces due to	—	—
	a) shape	—	5.3, 5.6, 5.9.2, 5.10, 5.11, 6.15
	b) relative location	6.2.2.1, 6.2.2.2, 6.3	4.2, 5.6, 6.5
	c) mass and stability (potential energy of elements which may move under effect of gravity)	—	5.1, 5.6, 5.10
	d) mass and velocity (kinetic energy of elements in controlled or uncontrolled motion)	—	4.13, 5.4, 5.6
	e) mechanical strength	—	5.2, 5.3, 5.4, 5.6, 5.9, 5.10
	— Accumulation of energy inside the machinery	—	—
	f) elastic elements (springs)	6.2.10, 6.3.5.4	5.6, 5.10, 6.5
	g) liquids and gases under pressure		6.7, 6.8
1.1	Crushing hazard	—	5.6.4
1.2	Shearing hazard	—	5.6.4
1.3	Cutting or severing hazard	—	5.3, 5.6, 7.3.2
1.4	Entanglement hazard	—	5.6, 7.3.2
1.5	Drawing-in or trapping hazard	—	5.6, 7.3.2
1.6	Impact hazard		5.10, 7.3.2
1.9	High pressure fluid injection or ejection hazard		6.8
2	Electrical hazards due to	—	—
2.1	Contact of persons with live parts (direct contact)	6.2.9, 6.3.5.4	6.4, 6.13
2.2	Contact of persons with parts which have become live under faulty conditions (indirect contact)	6.2.9	6.4, 6.13
4	Hazards generated by noise, resulting in	—	—
4.1	Hearing loss (deafness), other physiological disorders (loss of balance, loss of awareness)	6.2.2.2, 6.3	6.2, 7.1, 7.3
4.2	Interference with speech communication, acoustic signals		6.2, 7.3
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	6.3, 7.3
7.2	Fire hazard	6.2.4	6.1

Table A.1 *(continued)*

No.	Hazards, hazardous situations and hazardous events	Subclause of ISO 12100:2010	Subclause of this document
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	4.2, 6.5, 7.3
8.2	Hand-arm or foot-leg anatomy	6.2.8.3	4.2, 5.6, 6.5
8.4	Local lighting	6.2.8.6	7.3
8.5	Mental overload and underload, stress	6.2.8.5	7.3
8.6	Human error, human behaviour	6.2.8, 6.2.11.8, 6.2.11.10, 6.3.5.2, 6.4	7.3
8.7	Design, location or identification of manual controls	6.2.8 f), 6.2.11.8	4.2, 6.5
8.8	Design or location of visual display units	6.2.8, 6.4.2	4.2, 6.5
9	Combination of hazards	6.3.2.1	4.1, 5.6, 6.13, 6.14
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	4.1, 4.14
10.2	Restoration of energy supply after an interruption	6.2.11.4	4.8, 6.7
10.3	External influences on electrical equipment	6.2.11.11	4.1, 6.9
10.5	Errors in the software	6.2.11.7	4.1
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	6.5, 7.3
11	Impossibility of stopping the machine in the best possible conditions	6.2.11.1, 6.2.11.3, 6.3.5.2	4.4, 6.12
13	Failure of the power supply	6.2.11.1, 6.2.11.4	4.8
14	Failure of the control circuit	6.2.11, 6.3.5.4	4.1
15	Errors of fitting	6.2.7, 6.4.5	6.12, 7.2
16	Break-up during operation	6.2.3	5.2, 5.9
17	Falling or ejected objects or fluids	6.2.3, 6.2.10	5.9
18	Loss of stability/overturning of machinery	6.3.2.6	5.1, 7.3

Annex B
(informative)

Performance levels required

ISO 19085-1:2021, Annex B is replaced by the following text.

Table B.1 summarizes the performance level required for each safety function. Refer to Clauses 4 and 5 for full requirements.

Table B.1 — Safety functions and performance level required

Area		Safety function	PL_r	Subclause of ISO 19085-1:2021	Subclause of this document
Start	1	Prevention of unexpected start/restart	c	4.3.1	—
	2	Interlocking of start with safeguards	c	4.3.1	—
	3	Prevention of powered feed with tool rotation	c	4.3.1	—
Stop	4	Normal stop (braking function excluded)	c	4.4.2	—
	5	Emergency stop (braking function excluded)	c	4.4.4	—
Tool braking	6	Activation of the brakes	c	4.5	—
	7	Electric braking systems (excluding PDS(SR)	b	4.5	—
	8	SS1 of PDS(SR)	c	4.5	—
	9	Interlocking of brake release	c	5.4.3	—
Spindle speed control	10	Speed indication	b	4.7.1	—
	11	Incremental speed changing	c	4.7.2	—
	12	Infinitely variable speed monitoring	c	4.7.3	—
Controls	13	Speed monitoring of moving parts (except tools)	b	4.11	—
	14	Time delay	c	4.12	—
Powered adjustments of tables	15	Initiation control	c	—	4.14
	16	Prevention of unexpected start	c	—	4.14
Safeguards	17	Interlocking of moveable guards	c	5.5.2.2	—
	18	Guard locking of movable guards	c	5.5.2.3	—
	19	Hold-to-run	b/c	5.5.3	—
	20	Two-hands-control	c	5.5.4	—
	21	Interlocking of cutter block and feed with tables position during surface planing	c	—	5.6.1.2

Annex C
(normative)

Stability test

ISO 19085-1:2021, Annex C is replaced by the following text.

C.1 Stability test for surface planing machine and combined surface/thickness planing machine in surface planing mode

The surface planing machine and the combined surface/thickness planing machine set in the surface planing mode shall be placed on a chipboard fixed on the floor and the brakes for the wheels applied (where fitted) or the wheels retracted from the floor (if a device for retracting them is fitted). A horizontal force, F_1 = 500 N, shall be applied in the centre of the cutter block in the direction as shown in Figure C.1.

The mortising device, if fitted, shall be fixed in the central position.

Subsequently, a horizontal force, F_2 = 500 N, shall be applied at the middle of the front face of the infeed surface planing table and a vertical force, F_3 = 500 N, shall be applied at the middle of the infeed surface planing table within a maximum distance, d = 30 mm, of the edge in the direction as shown in Figure C.1.

In any case, the machine shall not move or tilt.

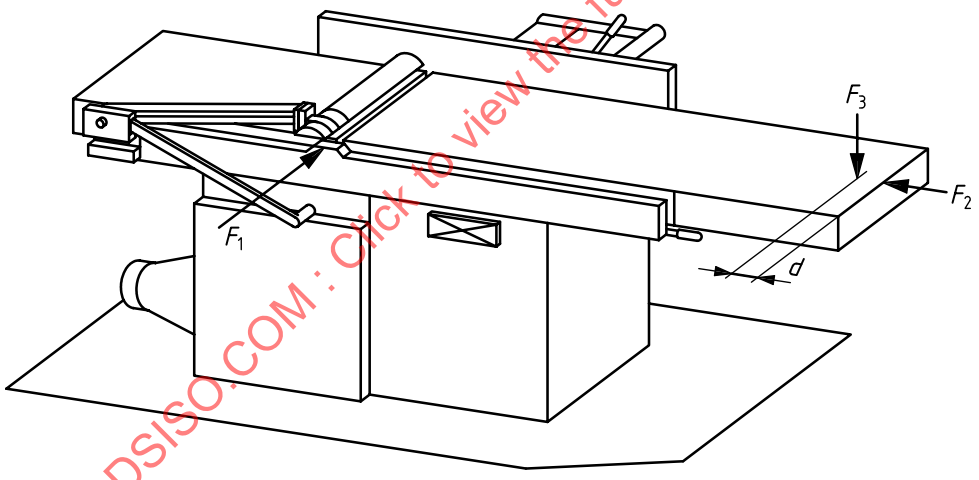


Figure C.1 — Stability test in surface planing setting

C.2 Stability test for combined surface/thickness planing machine in thickness planing mode

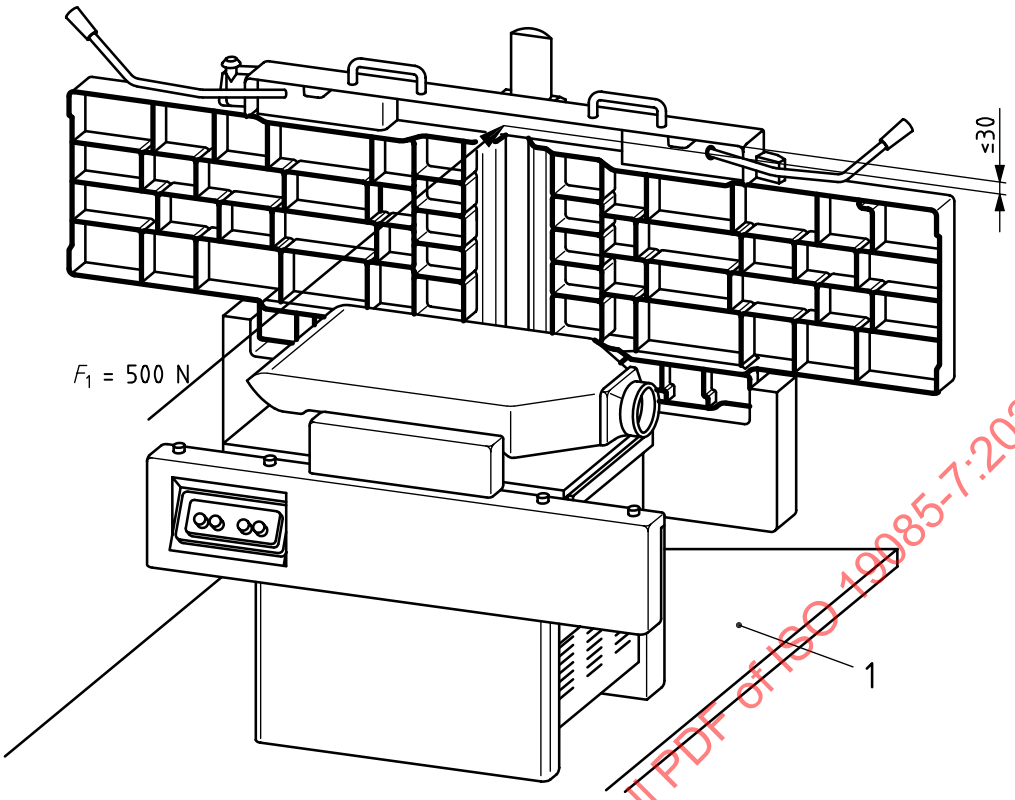
The combined surface/thickness planing machine set in its thickness planing mode shall be placed on a chipboard fixed on the floor and the brakes for the wheels applied (where fitted), or the wheels retracted from the floor (if a device for retracting them is fitted).

The mortising device, if fitted, shall be fixed in the central position.

A horizontal force, F_1 = 500 N, shall be applied in the middle and within 30 mm of the uppermost edge of the infeed surface planing table in the direction as shown in Figure C.2.

In any cases, the machine shall not move or tilt.

Dimensions in millimetres



Key

1 chipboard

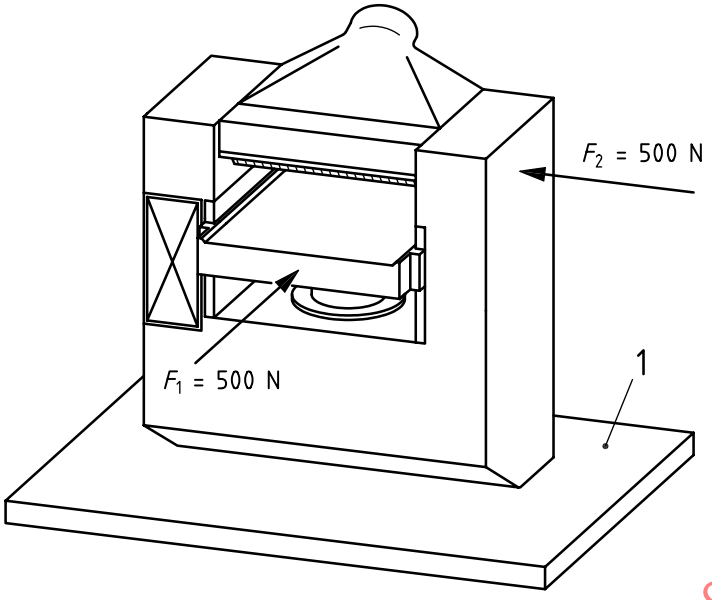
Figure C.2 — Stability test in thickness planing setting

C.3 Stability test for thickness planing machine

The thickness planing machine shall be set in its working position on a chipboard fixed on the floor and the brakes for the wheels applied (where fitted) or the wheels retracted from the floor (if a device for retracting them is fitted). A horizontal force, F_1 = 500 N, shall be applied in the middle of the front face of the thickness planing table set in its highest position in the direction as shown in Figure C.3.

Subsequently, a horizontal force, F_2 = 500 N, shall be applied at the middle of the lateral face of the fixed guard covering the cutter block and corresponding to the centre of it in the direction as shown in Figure C.3.

In both cases, the machine shall not move or tilt.



Key

1 chipboard

Figure C.3 — Stability test for thickness planing machines

Annex D
(normative)

Test for braking function

ISO 19085-1:2021, Annex D applies.

Annex E
(normative)

Impact test for guards

ISO 19085-1:2021, Annex E applies.

Annex F
(normative)

Noise test code

F.1 General

ISO 19085-1:2021, Clause F.1 applies.

F.2 Determination of the A-weighted emission sound pressure level at workstations

F.2.1 Basic standards and measurement procedure

ISO 19085-1:2021, F.2.1 applies.

F.2.2 Measurement time interval

ISO 19085-1:2021, F.2.2 is replaced by the following requirements.

The measurement time interval shall be 30 s, including three planing operations.

F.2.3 Position of microphones at workstations

ISO 19085-1:2021, F.2.3 is replaced by the following text.

The microphone for surface planing machines and combined surface/thickness planing machines in surface planing set-up shall be positioned as follows:

— 1,6 m above floor level,

— 0,2 m in front of the spindle axis, viewed in feed direction, and

— 0,05 m to the right of the left edge of the table, viewed in feed direction.

For the safety of the operator performing the test, it is recommended that the microphone is mounted, for example, on a free-standing tripod from the rear side of the infeed table.

The microphone for thickness planing machines and combined surface/thickness planing machines in thickness planing set-up shall be positioned as follows:

— for position A at the infeed side of the machine:
  — 1,6 m above floor level,
  — 1,0 m from the infeed opening,
  — in line with the middle of the table;

— for position B at the outfeed side of the machine:
  — 1,6 m above floor level,
  — 1,0 m from the outfeed opening,
  — in line with the middle of the table.