



SLOVENSKI STANDARD

SIST EN 12041:2001

01-september-2001

Stroji za predelavo hrane – Stroji za vzdolžno oblikovanje testa – Varnostne in higienske zahteve

Food processing machinery - Moulders - Safety and hygiene requirements

Nahrungsmittelmaschinen - Langwirkmaschinen - Sicherheits- und Hygieneanforderungen

Machines pour les produits alimentaires - Façonneuses - Prescriptions relatives a la sécurité et a l'hygiene

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ICS:

67.260

Tovarne in oprema za
živilsko industrijo

Plants and equipment for the
food industry

SIST EN 12041:2001

en

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 12041

September 2000

ICS 67.260

English version

Food processing machinery - Moulders - Safety and hygiene requirements

Machines pour les produits alimentaires - Façonneuses -
Prescriptions relatives à la sécurité et à l'hygiène

Nahrungsmittelmaschinen - Langwirkmaschinen -
Sicherheits- und Hygieneanforderungen

This European Standard was approved by CEN on 2 July 2000.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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

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Foreword

This European Standard has been prepared by the Technical Committee CEN/TC 153 "Food processing machinery" the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2001, and conflicting national standards shall be withdrawn at the latest by March 2001.

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

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

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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0 Introduction

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

1 Scope

This standard applies to the design and manufacture of dough moulders of the types described in 3.1, 3.2 and 3.3 and illustrated in figures 3a, 3b and 3c. These moulders are used in the food industry and shops (bread-making, pastry-making, sweet industries, bakeries, confectioners, delicatessens, catering facilities, etc.) for flattening, rolling and elongating pieces of dough.

Other designs of moulder and type 1 moulders designed for other than hand crafted products using soft dough, e. g. French baguettes, are not covered by this standard.

The standard covers the technical safety and hygiene requirements for the design, manufacture, installation, adjustment, operation, cleaning and maintenance of these machines, as defined in 3.12 of EN 292-1 : 1991 and in the manufacturer's instruction handbook.

The significant hazards covered by this standard are mechanical (drawing-in, trapping, entanglement, crushing, loss of stability), electrical, ergonomic and also those resulting from inhalation of flour dust and lack of hygiene.

Noise is not considered to be a significant hazard by moulders. This does not mean that the manufacturer of the machine is absolved from reducing noise and making a noise declaration. Therefore a noise test code is proposed in Annex B.

The following machines are excluded :

- experimental and testing machines under development by the manufacturer ;
- domestics appliances ;
- bagel machines.

This standard applies only to machines manufactured after the date of approval by CEN.

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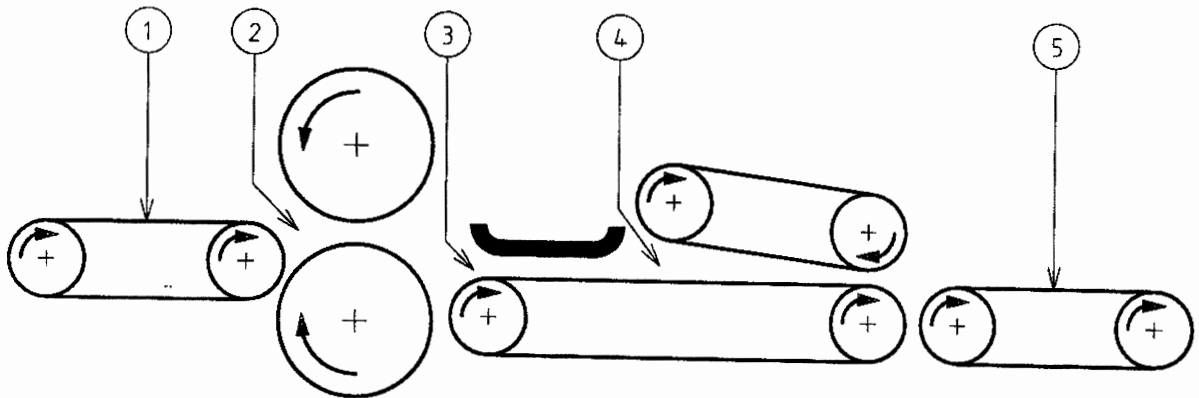
2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 292-1	1991	Safety of machinery - Basic concepts - General principles for design - Part 1 : Basic terminology, methodology
EN 292-2 + A1	1991 1995	Safety of machinery - Basic concepts - General principles for design - Part 2 : Technical principles and specifications
EN 294	1992	Safety of machinery - Safety distances to prevent danger zones being reached by the upper limbs
EN 614-1	1995	Safety of machinery - Ergonomic design principles - Part 1 : Terminology and general principles
EN 954-1	1996	Safety of machinery - Safety related parts of control systems - Part 1 : General principles for design
EN 1050	1996	Safety of machinery - Principles for risk assessment
EN 1088	1995	Safety of machinery - Interlocking devices associated with guards - Principles for design and selection
EN 1672-2	1997	Food processing machinery - Common requirements - Part 2 : Hygiene requirements
EN 60204-1	1997	Safety of machinery - Electrical equipment of machines - Part 1 : General requirements
EN 60529	1991	Degrees of protection provided by enclosures
EN 60651	1994	Sound level meters
EN 11201	1995	Acoustics - Noise emitted by machinery and equipment - Measurement of emission sound pressure levels at the work station and at other specified positions - Engineering method in an essentially free field over a reflecting plane <small>SIST EN 12041:2001</small>
EN ISO 4871	1997	Acoustics - Declaration and verification of noise emission values of machinery and equipment <small>https://standards.iteh.ai/catalog/standards/sist/5284cd6e-463b-4db8-bbd4-3c91253c97/sist-en-12041-2001</small>
EN ISO 11688-1	1997	Acoustics - Recommended practice for the design of low-noise machinery and equipment - Part 1 : Planning
EN ISO 12001	1996	Acoustics - Noise emitted by machinery and equipment - Rules for the drafting and presentation of a noise test code

3 Description

Machines may be manually or automatically fed (for example by discharge conveyor from the prover). Dough pieces are flattened between two cylinders, rolled between two surfaces (either two moving belts or one belt and a fixed plate), and elongated in the same way. Discharge may be manual or by conveyor.



- ① Feeding
- ② Flattening
- ③ Rolling
- ④ Elongation
- ⑤ Discharge

Figure 1 : General principle

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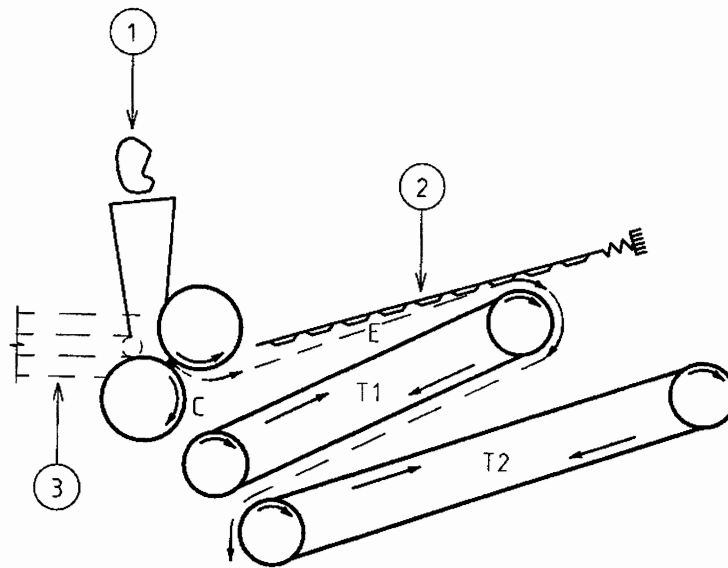
3.1 Type 1 moulder

On machines used to produce soft dough products e.g. French baguette, product quality depends on careful handling of the dough and in particular on manual introduction of the dough without any excessive drop. The maximum dropping distance without causing harm is 20 cm.

In the case of manual feeding, the dough is elongated by hand and dropped into the rollers.

With this type of moulder, the dough introduced into the hopper is flattened by the rollers and becomes a thin sheet at C (see figure 2a). For tough dough or pastry, additional rollers can be placed in front of the two first rollers.

This thin sheet is rolled between the fixed and the mechanically driven belt T1 and progressively squeezed at E. After that, it is elongated between T1 and T2.



- ① Lump, manual feeding
- ② Fixed cloth
- ③ Feeding by belts

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Figure 2a: Type 1 moulder

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3.2 Type 2 moulder

These machines are used mainly to produce small rolled bread with soft and hard dough. The piece of dough is placed on the conveyor belt, at different angles from the axes of cylinders in order to obtain several shapes of bread (banana, mantovane, barilini, bocconcini, etc.).

This type of moulder (see figure 2b) consists of :

- a conveyor belt (T1) suitable to feed the piece of dough into the rollers (C) ;
- a train of rollers (C) of a variable number that flatten the piece of dough ;
- two belts (T2 and T3) between which the piece of dough is moulded and/or elongated.

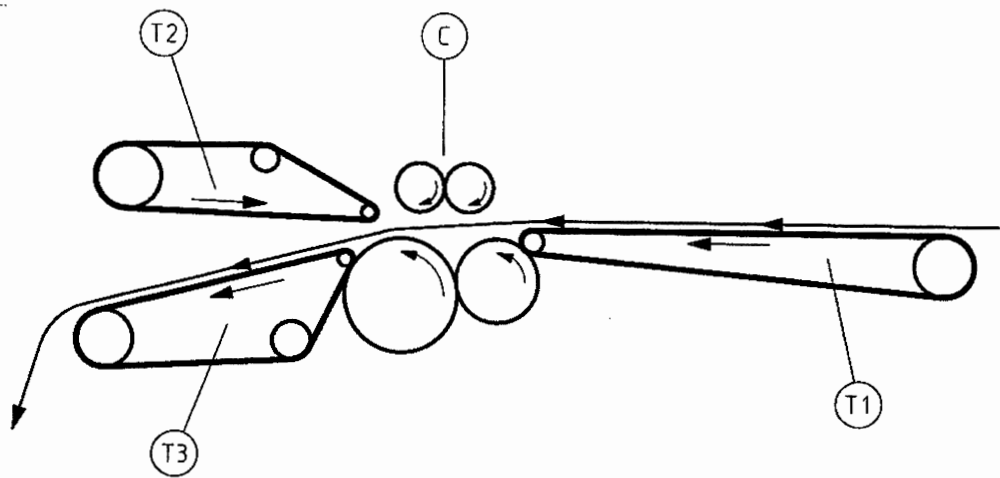


Figure 2b : Type 2 moulder

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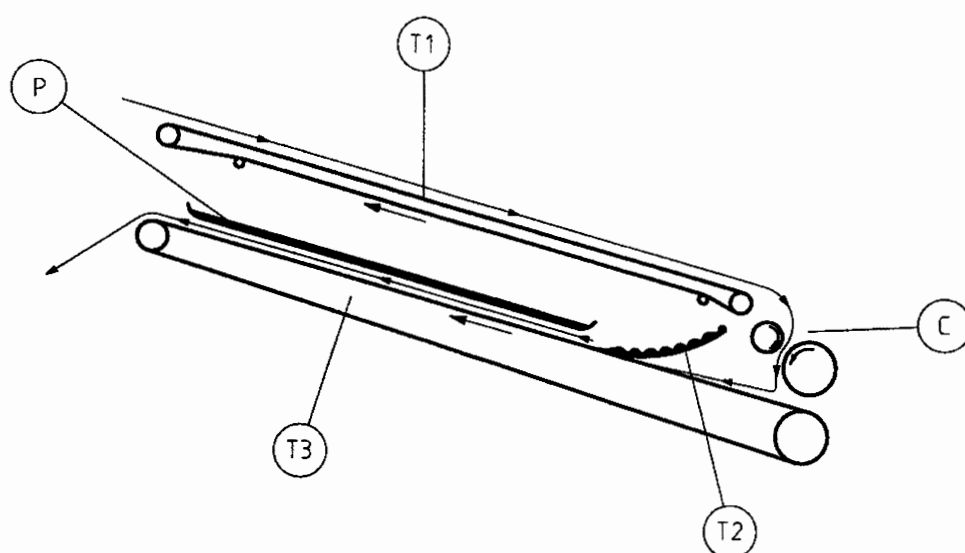
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3.3 Type 3 moulder

These machines are mainly suitable for producing large rolled bread (long loaves) using soft dough.

This type of moulder (see figure 2c) consists of :

- a) a conveyor belt (T1) suitable to feed the piece of dough into the rollers (C) ;
- b) a train of rollers (C) of a variable number (generally from 2 to 6) that flattens the piece of dough ;
- c) a fixed cloth (T2) called "heavy" that starts the moulding of the piece of dough ;
- d) a fixed plate (P) coupled to a movable belt (T3) between which the piece of dough is moulded and/or elongated completely.



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Figure 2c: Type 3 moulder

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4 List of hazards

This clause contains those hazards identified by risk assessment (see EN 1050) as specific and significant for moulders and which require action to reduce risks.

Figures 3a (moulder type 1), 3b (moulder type 2) and 3c (moulder type 3) show the danger zones.

4.1 Mechanical hazards

The significant mechanical hazards are :

- trapping hazard ;
- crushing hazard ;
- entanglement hazard ;
- loss of stability.

Zone 1 : gap between the rollers (hazards : fingers drawing-in and crushing) ;

Zone 2 : drive mechanisms (hazards : trapping, shearing and entanglement) ;

Zone 3 : input and output devices (hazardous inrunning nips) (hazards : crushing and entanglement)

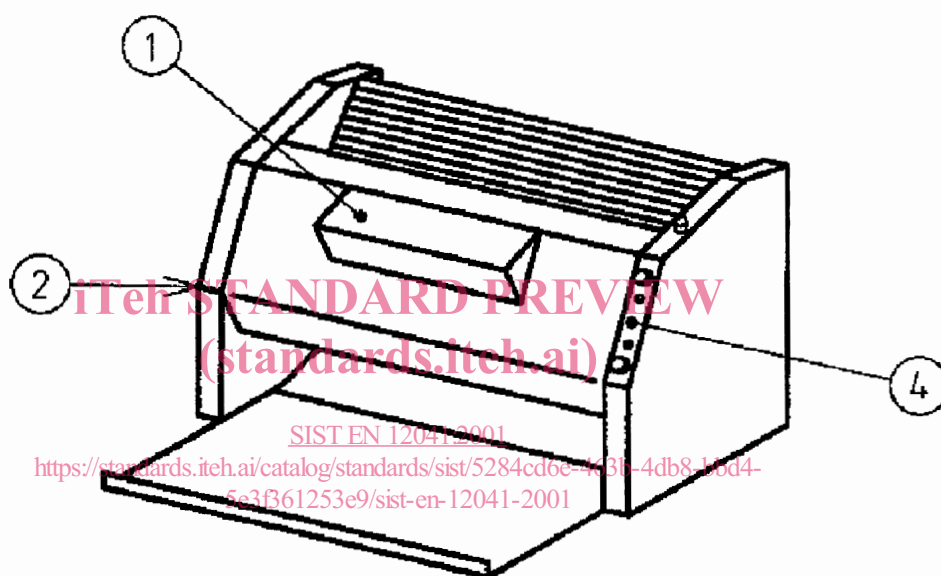


Figure 3a : Danger zones of moulders - Type 1 moulder

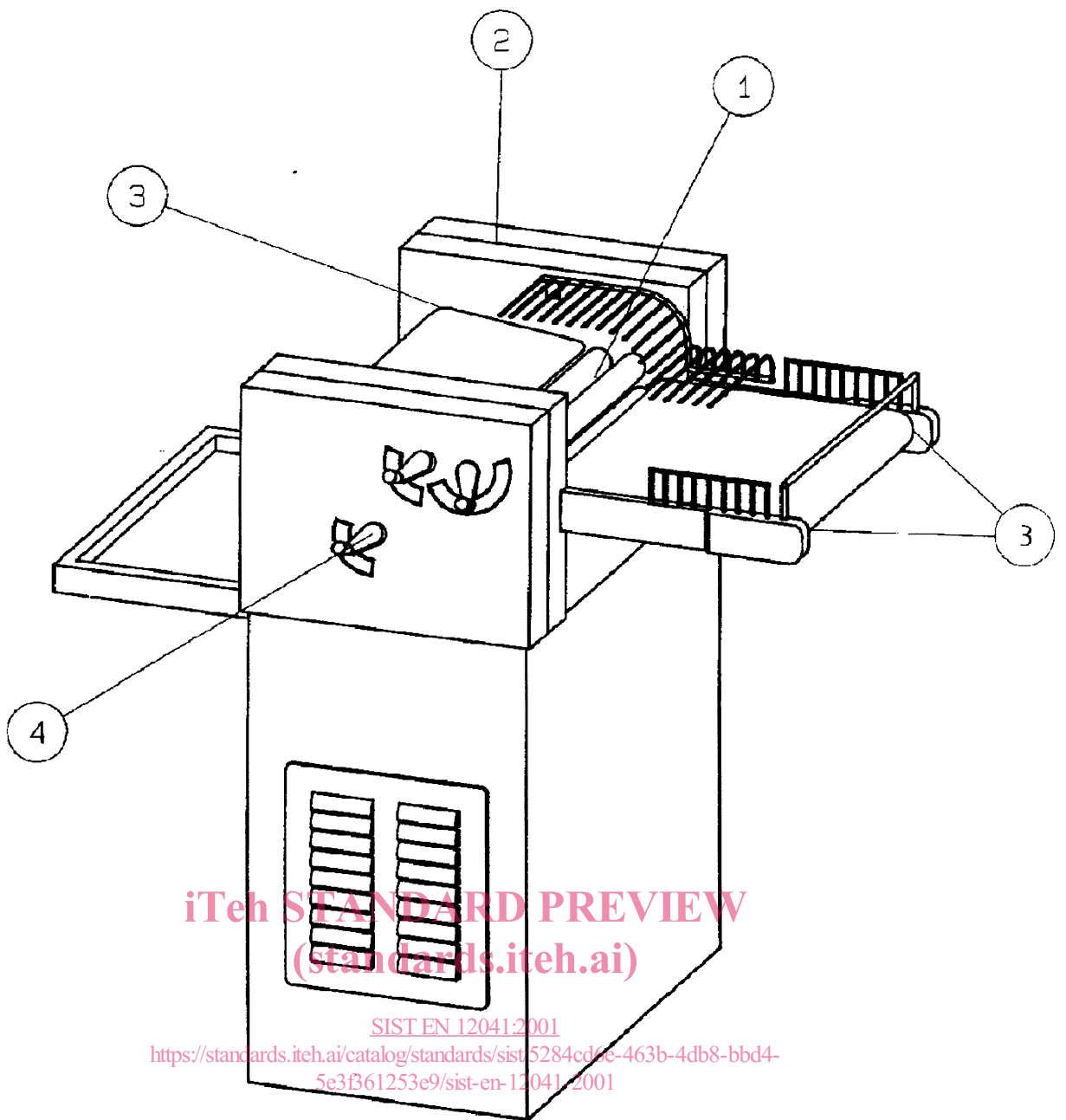


Figure 3b : Danger zones of moulders - Type 2 moulder

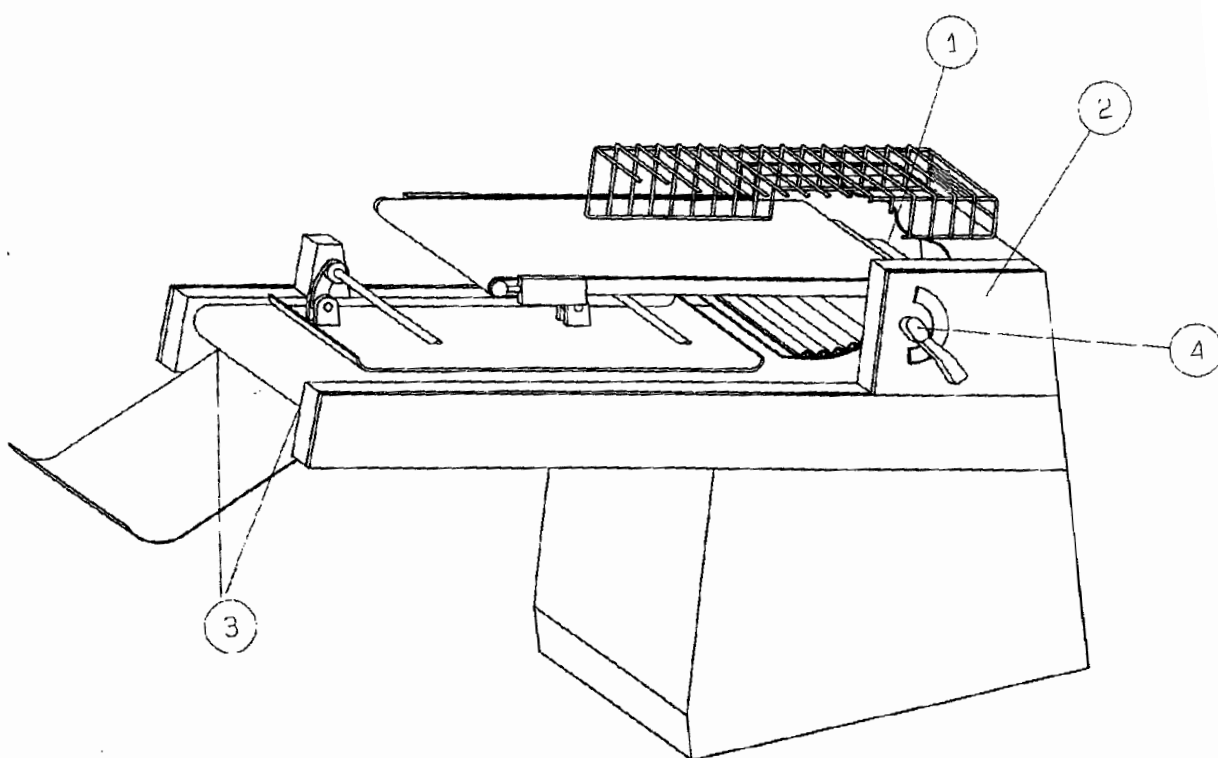


Figure 3c : Danger zones of moulders - Type 3 moulder

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4.2 Electrical hazards

Hazard of electric shock from direct or indirect contact with live components.

Hazards of external influences on electrical equipment (e.g. cleaning with water, dust).

4.3 Hazard generated by neglecting hygienic design principles

The neglect of hygienic principles can create unacceptable modification of foodstuff and therefore a risk to human health, i.e. through physical, chemical or microbial pollution.

4.4 Hazards generated by neglecting ergonomic principles

During operation, cleaning and maintenance, there may be a risk of injury or chronic damage to the body resulting from awkward body postures.

Loading the machine with pieces of dough over prolonged periods using repetitive hand and arm movement may cause musculo-skeletal disorders.

The zone 4 : "control mechanism to adjust the gap between the rolls and/or the gap between the belts" may be an ergonomic hazard zone.

5 Safety and hygiene requirements and/or measures

This clause states the requirements and/or measures to reduce the effect of the hazards detailed in clause 4.

5.1 Mechanical hazards

Where reference is made to interlocking devices throughout clause 5, they shall comply with clause 4.2.1 and clauses 5 and 6 of EN 1088 : 1995.

Where the interlocking mechanism has movable parts, e. g. position switches, these shall be protected from contamination with dough or dry ingredients, e. g. by mounting them within the machine body. Alternatively, magnetic switches may be used if total removal of any guard is required.

Safety related control systems shall be to category 1 of EN 954-1:1996.

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