

Food processing machinery — Cooking kettles equipped with powered stirrer and/or mixer — Safety and hygiene requirements

ICS 67.260

National foreword

This British Standard is the UK implementation of EN 13886:2005+A1:2010. It supersedes BS EN 13886:2005, which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to CEN text carry the number of the CEN amendment. For example, text altered by CEN amendment A1 is indicated by A1 A1.

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A list of organizations represented on this subcommittee can be obtained on request to its secretary.

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Food processing machinery - Cooking kettles equipped with
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Machines pour les produits alimentaires - Marmites avec
agitateur et/ou mixer motorisé - Prescriptions relatives à la
sécurité et à l'hygiène

Nahrungsmittelmaschinen - Kochkessel mit motorisierten
Misch- und/oder Mixwerkzeugen - Sicherheits- und
Hygieneanforderungen

This European Standard was approved by CEN on 3 February 2005 and includes Amendment 1 approved by CEN on 7 February 2010.

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Foreword

This document (EN 13886:2005+A1:2010) has been prepared by CEN /TC 153 "Machinery intended for use with foodstuffs and feed", 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of an identical text or by endorsement, at the latest by September 2010, and conflicting national standards shall be withdrawn at the latest by September 2010.

This document includes Amendment 1, approved by CEN on 2010-02-07.

This document supersedes EN 13886:2005.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1.

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A1 This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document. A1

It is one of a series of standards on the design and construction of machines used in the catering, as:

- vegetable cutting machines;
- catering attachments for machines having an auxiliary drive hub;
- food processors and blenders;
- hand-held blenders and whisks;
- beam mixers;
- salad dryers;
- vegetable peelers;
- cooking kettles equipped with powered stirrer and/or mixer.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

The use of cooking kettles equipped with powered stirrer and/or mixer involves various mechanical and other risks.

A1 Their extensive use in numerous countries justifies the need of a standard covering both safety and the hazards to food hygiene. **A1**

This document is a type C standard as stated in EN ISO 12100-1.

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

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

1 Scope

1.1 This document specifies the safety and hygiene requirements for the design and manufacture of cooking kettles equipped with powered stirrer and/or mixer taking account of installation, operation, cleaning, removal of jammed food, feeding, maintenance and changing the tools.

The cooking kettles equipped with powered stirrer and/or mixer are used from catering to small scale-food industry to cook, cool and mix all cold or hot food. They permit addition of ingredients during processing without stopping the machine.

NOTE The kettle bowl can be fixed or equipped with a manually or power operated tilting mechanism.

In the text that follows, the term "cooking kettles" is used to refer to the equipment covered by this document.

This document covers cooking kettles equipped with powered stirrer and/or mixer having technical performances in accordance with the following:

- thermal energy supply can be electricity, gas (see EN 125 and EN 161), steam or heat-conducting fluid;
- capacity of the kettle: from 30 l to 600 l (nominal volume);
- maximum power rating 80 kW;
- speed of the powered stirrer: 10 rpm to 200 rpm;
- maximum speed of the mixer: 3 000 rpm.

The machines covered by this document are not intended to be cleaned with a high pressure water jet.

A1 This European Standard deals with all significant hazards, hazardous situations and events relevant to cooking kettles, when they are used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer (see Clause 4). **A1**

1.2 This document does not apply to:

- domestic machines (i.e. capacity of kettles less than 30 l);
- planetary mixers which are covered by EN 454;
- food processors which are covered by EN 12852;
- cooking kettles without powered stirrer and/or mixer having a manual tilting kettle.

1.3 This document does not deal with hazard due to the pressure on machines with a double jacket.

NOTE Depending on the pressure and the volume of the double jacket, the cooking kettle may fall under the scope of the Pressure Equipment Directive (97/23/EC), for the EU market.

1.4 Noise is not considered to be a significant hazard for these machines. This does not mean that the manufacturer of these machines is absolved from reducing noise and making a noise declaration. Therefore a noise test code is included in Annex A.

1.5 Vibrations are not considered to be a significant hazard for these machines and no test method is given.

1.6 Possible hazards relevant to gas supply and heating are not dealt with in this document.

NOTE The equipment may fall under the Gas Appliances Directive (90/396/CEE), for the EU market.

1.7 This document is not applicable to the machines which are manufactured before the date of publication of this document by CEN.

2 Normative references

The following referenced documents are indispensable for the application 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.

 EN 614-1:2006, *Safety of machinery — Ergonomic design principles — Part 1: Terminology and general principles*

EN 953, *Safety of machinery — General requirements for the design and construction of fixed and movable guards*

EN 1037, *Safety of machinery — Prevention of unexpected start-up*

EN 1088:1995, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection*

EN 1672-2:2005, *Food processing machinery — Basic concepts — Part 2: Hygiene requirements*

EN 60204-1:2006, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204:2005, modified)*

EN 60529:1991, *Degrees of protection provided by enclosures (IP code) (IEC 60529:1989)*

EN ISO 3744:1995, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Engineering method in an essentially free field over a reflecting plane (ISO 3744:1994)*

EN ISO 4287:1998, *Geometrical Product Specifications (GPS) — Surface texture: Profile method — Terms, definitions and surface texture parameters (ISO 4287:1997)*

EN ISO 4871:1996, *Acoustics — Declaration and verification of noise emission values of machinery and equipment (ISO 4871:1996)*

EN ISO 11201:1995, *Acoustics — Noise emitted by machinery and equipment — Measurement of emission sound pressure levels at the work station and at other specified positions — Engineering method in an essentially free field over a reflecting plane (ISO 11201:1995)*

EN ISO 12100-1:2003, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology (ISO 12100-1:2003)*

EN ISO 12100-2:2003, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles and specifications (ISO 12100-2:2003)*

EN ISO 13732-1:2008, *Ergonomics of the thermal environment — Methods for the assessment of human responses to contact with surfaces — Part 1: Hot surfaces (ISO 13732-1:2006)*

EN ISO 13849-1:2008, *Safety of machinery — Safety related parts of control systems — Part 1: General principles for design (ISO 13849-1:2006)*

EN ISO 13857:2008, *Safety of machinery — Safety distances to prevent danger zones being reached by the upper and lower limbs (ISO 13857:2008)* 

3 Terms, definitions, symbols and description

3.1 Terms, definitions and symbols

For the purposes of this document, the terms and definitions given in EN ISO 12100-1:2003 and the following apply.

3.1.1

nominal volume

V_n

manufacturer's declared intended working volume (in litres)

3.1.2

total volume

V_t

total volume (in litres) that the bowl can physically contain

3.1.3

stirrer

tool which operates with slow rotating speed (from 10 rpm to 200 rpm) for blending

3.1.4

mixer

tool which operates with high rotating speed (up to 3 000 rpm) for cutting

NOTE In the text "powered stirrer" means "powered stirrer and/or mixer" unless otherwise stated.

3.2 Description

There are two main different types of cooking kettles with powered stirrer and/or mixer. The basic differences are in the location of the drive mechanism of the tool relative to the bowl (see Figure 1).

For those machines, two types are defined:

Type 1: Kettles with the top powered stirrer driven by a motor in an enclosure above the kettle through the lid.

The top powered stirrer can be used in either of two kettles mounted together by turning the drive enclosure between the two kettles and locking it into the centre position of one of the bowls or can be either fixed for use in one kettle, or it can be movable among several kettles e.g. using a rail in the ceiling (see Figures 1.1 a), 1.1 b) and 1.1 c));

Type 2: Kettles with the bottom powered stirrer driven by a shaft through the bowl either in the bottom of the kettle bowl (see Figures 1.2 a), 1.2 b) and 1.2 c)).

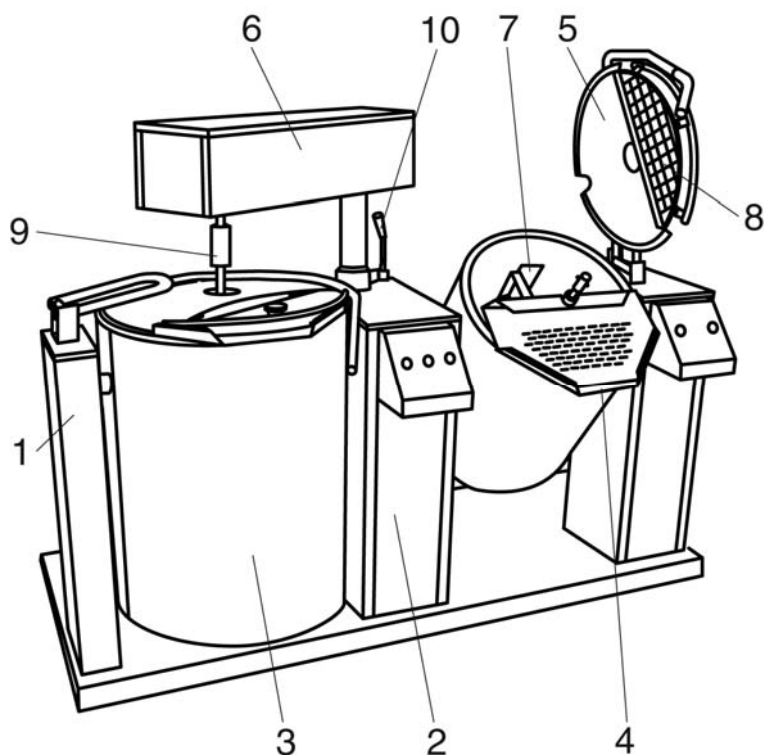


Figure 1.1 a) — Example 1 of two combined top powered kettles with a powered stirrer body which can be turned between the kettles

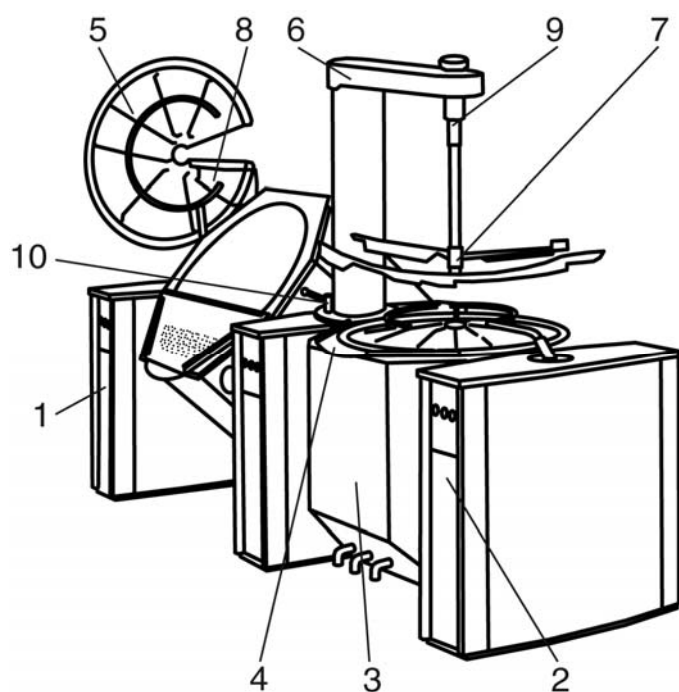


Figure 1.1 b) — Example 2 of two combined top powered kettles with a powered stirrer body which can be turned between the kettles

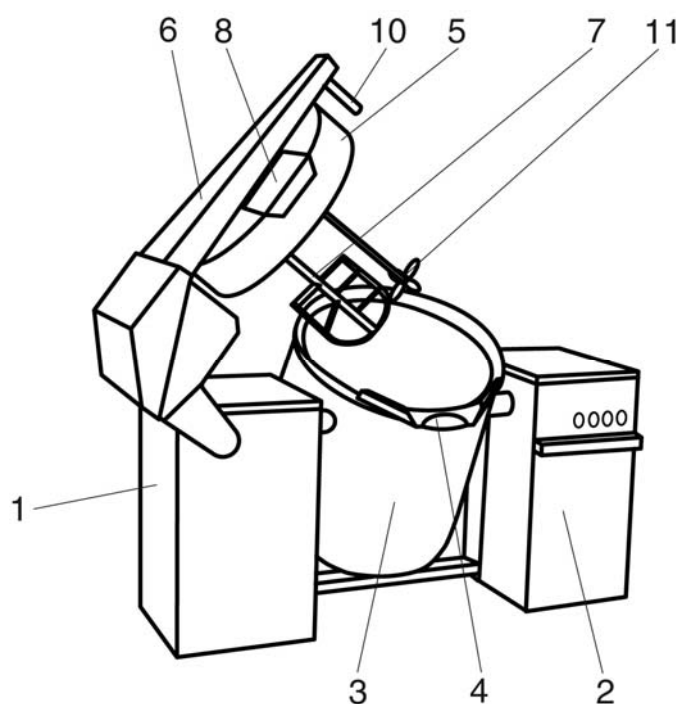


Figure 1.1 c) — Example of a single top powered kettle with a powered stirrer

Figure 1.1 — Type 1 – Examples of top powered kettles with a powered stirrer

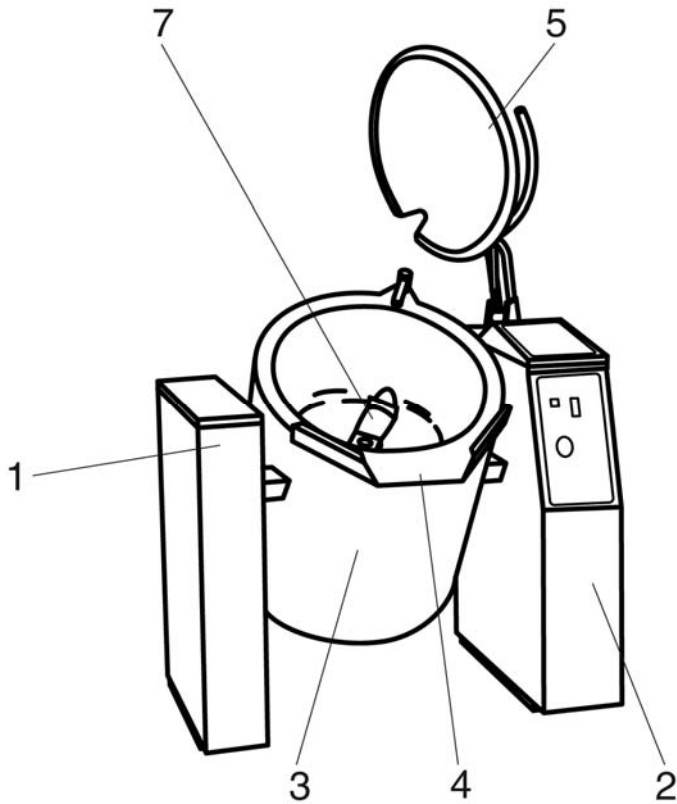


Figure 1.2 a) — Example 1 of a bottom powered kettle with a powered stirrer

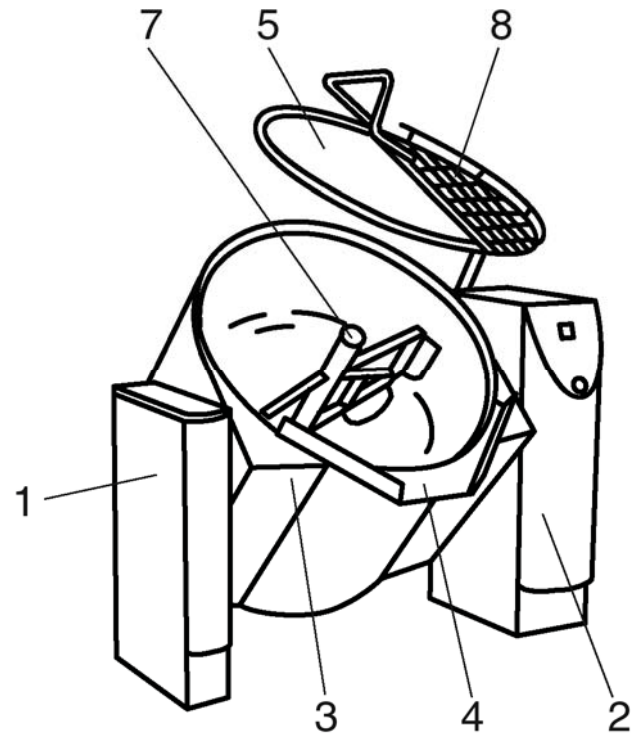


Figure 1.2 b) — Example 2 of a bottom powered kettle with a powered stirrer

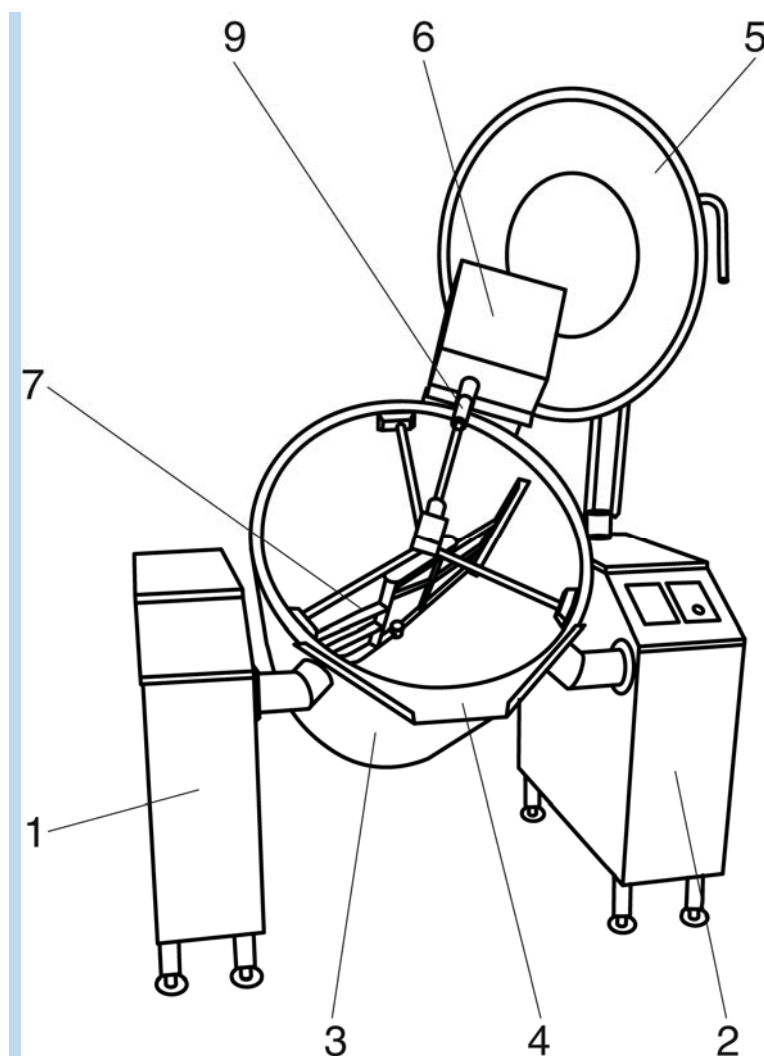


Figure 1.2 c) — Example of a powered kettle with a powered stirrer

Figure 1.2 — Type 2 – Examples of bottom or powered kettles with a powered stirrer

Key

1 Support pillar	5 Hinged lid	9 Powered stirrer tool locking device
2 Control pillar	6 Powered stirrer body	10 Powered stirrer body locking device
3 Kettle bowl	7 Powered stirrer tool	11 Mixer tool
4 Pouring lip	8 Filling opening	

Figure 1 — Examples of cooking kettles

4 List of significant hazards

4.1 General

[A1] This clause contains all the significant hazards, hazardous situations and events, as far as they are dealt with in this European Standard, identified by risk assessment as significant this type of machinery, and which require action to eliminate or reduce the risk. **[A1]**

4.2 Mechanical hazards

4.2.1 Access to the danger zones

Mechanical hazards arise from the risk of contact with the moving tool, the tilting device and the power transmission.

The hazards may arise by:

- Zone 1: The powered stirrer: gap between the edge of the powered stirrer and the vessel and fitting parts;
Hazard of cutting, crushing, trapping and impact with hands, fingers and arm.
The mixer: direct access to the moving tool.
Hazard of cutting and crushing arms, hand and fingers.
- Zone 2: The power transmission to the tool: risk of getting drawn-in by the rotating transmission shaft;
Hazard of being drawn-in, crushing and entanglement of parts of the body.
- Zone 3: The tilting function: between the moving kettle bowl and fixed parts of the kettle;
Hazard of crushing parts of the body.
- Zone 4: The tilting function: free movement of the kettle due to failure of the tilting mechanism;
Hazard of impact with the body.
- Zone 5: The cover: falling down of the lid and/or accessories;
Hazard of crushing arms, hands and fingers.

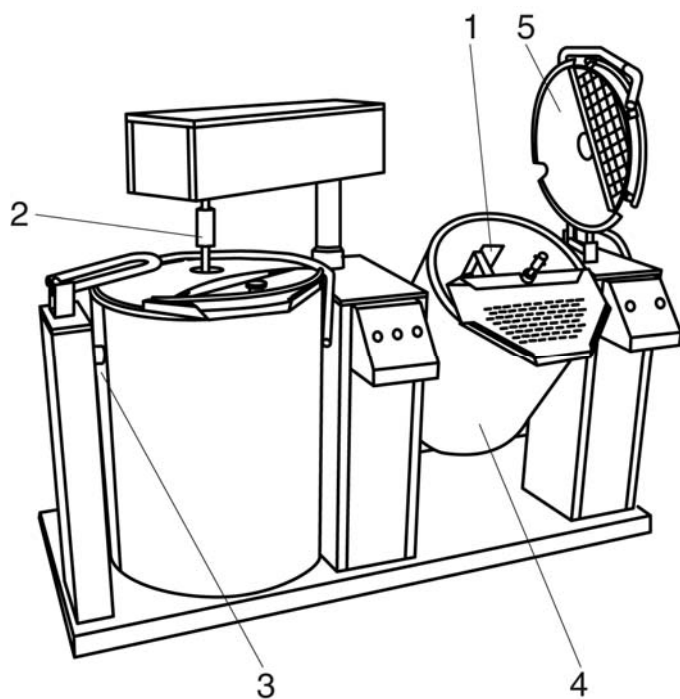


Figure 2.1 a)

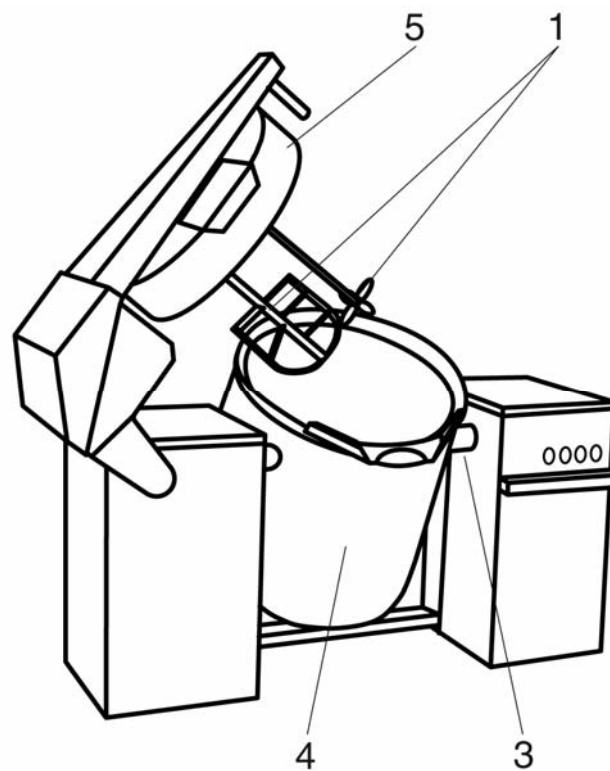


Figure 2.1 b)

Figure 2.1 — Danger zones for type 1

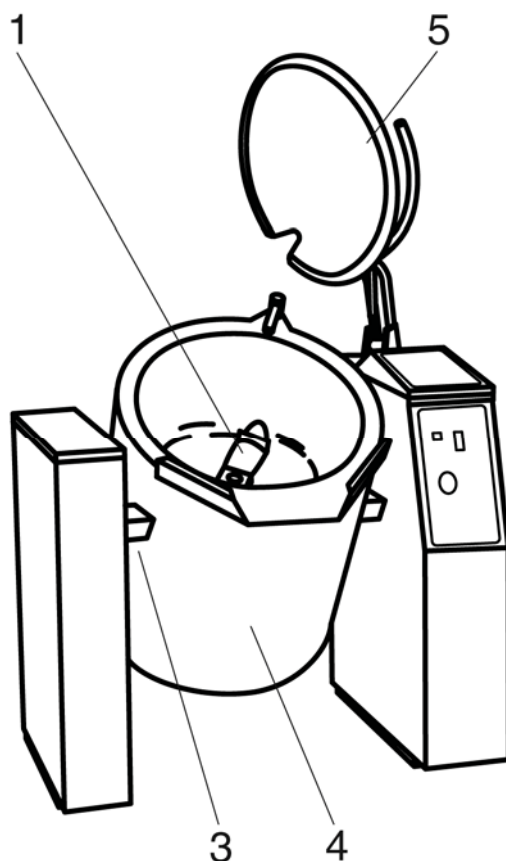


Figure 2.2 — Danger zones for type 2

Key

- | | |
|----------|----------|
| 1 Zone 1 | 4 Zone 4 |
| 2 Zone 2 | 5 Zone 5 |
| 3 Zone 3 | |

Figure 2 — Danger zones on a cooking kettle

4.2.2 Loss of stability

Hazards of crushing of and impact with for the body.

4.2.3 Incorrect assembly and fitting

Hazards of impact with the fingers, hands and body.

4.3 Electrical hazards

Hazard of electrical shock by direct or indirect contact with live parts and unexpected start up from restoration of energy supply after interruption.

4.4 Hazards generated by neglecting hygiene principles in machine design

Inability to clean food and splash areas effectively and thoroughly.

Contamination of the food by undesirable materials including residues of food, microbiological organisms as well as residues of cleaning and disinfecting fluids.