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Incorporating corrigendum June 2014

BSI Standards Publication

Food processing machinery — Automatic dough dividers — Safety and hygiene requirements

National foreword

This British Standard is the UK implementation of EN 12042:2014. It supersedes BS EN 12042:2005+A1:2010, which is withdrawn.

The UK participation in its preparation was entrusted by Technical Committee MCE/3, Safeguarding of machinery, to Subcommittee MCE/3/5, Food industry machines.

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

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Compliance with a British Standard cannot confer immunity from legal obligations.

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Date	Text affected
30 June 2014	Implementation of CEN correction notice 30 April 2014: key to Figure 8 updated

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 12042

April 2014

ICS 67.260

English Version

Food processing machinery - Automatic dough dividers - Safety and hygiene requirements

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

Nahrungsmittelmaschinen - Teigteilmaschinen - Sicherheits- und Hygieneanforderungen

This European Standard was approved by CEN on 27 December 2013.

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

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Foreword

This document (EN 12042:2014) has been prepared by Technical Committee 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of an identical text or by endorsement, at the latest by October 2014, and conflicting national standards shall be withdrawn at the latest by October 2014.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 12042:2005+A1:2010.

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 2006/42/EC.

For relationship with EU Directive 2006/42/EC, see informative Annex ZA, which is an integral part of this document.

Significant changes

The significant changes with respect to the previous edition EN 12042:2005+A1:2010 are listed below:

— Normative references updated;

— Clause 4: new presentation in a table;

— 5.2.2, zone 1:

  — the requirements are the same when the loading of the machine is manual or automatic;

  — addition of new requirements for pressure sensitive edge (see 5.2.2.2.2), AOPD (see 5.2.2.2.3), cleaning of the hopper (se 5.2.2.2.6) and feeding assistance device inside the hopper (see 5.2.2.2.7);

  — new stopping time ≤ 0,35 s;

  — new performance level *d*.

— 5.2.3, zone 2: Table 1 (Dimensions of the guard or tunnel) replaced by a reference to EN ISO 13857;

— Instruction handbook updated (environmental information).

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

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

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 European Standard applies to the design and manufacture of standalone automatic dough dividers, having a feed hopper, an outlet and a dividing system (see 3.2).

These automatic dough dividers are used separately or in a line in the food industry and shops (pastry-making, bakeries, confectionery, etc.) for dividing dough or pastry into adjustable portions to produce the required weight of dough piece during a dividing process. These machines can be fed by hand or mechanically.

This European Standard deals with all significant hazards, hazardous situations and events relevant to the transport, installation, adjustment, operation, cleaning, maintenance, dismantling, disassembling and scrapping of automatic dough dividers, when they are used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer (see Clause 4).

These machines are not intended to be cleaned with pressurized water.

1.2 This European Standard is not applicable to the following:

— experimental and testing machines, under development by the manufacturer;

— weighing devices;

— pressure dough dividers, without a feed hopper, using knives for the dividing process;

— lines with separate cutting or forming elements outside the housing;

— lifting and tilting machines[1)] or other separate feeding machines;

— additional hazards generated when the machine is used in a line or mechanically fed.

1.3 A noise test code is included in Annex A to assist manufacturers to measure noise levels for the purpose of the noise emission declaration.

1.4 This European Standard is not applicable to machines which are manufactured before its publication as EN.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 619:2002+A1:2010, *Continuous handling equipment and systems - Safety and EMC requirements for equipment for mechanical handling of unit loads*

EN 894-4:2010, *Safety of machinery - Ergonomics requirements for the design of displays and control actuators - Part 4: Location and arrangement of displays and control actuators*

EN 953:1997+A1:2009, *Safety of machinery - Guards - General requirements for the design and construction of fixed and movable guards*

1) see EN 13288

EN 1037:1995+A1:2008, *Safety of machinery - Prevention of unexpected start-up*

EN 1088:1995+A2:2008, *Safety of machinery - Interlocking devices associated with guards - Principles for design and selection*

EN 1672-2:2005+A1:2009, *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 60204-1:2005)*

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

EN 61310-1, *Safety of machinery - Indication, marking and actuation - Part 1: Requirements for visual, auditory and tactile signals (IEC 61310-1)*

EN ISO 3743-1:2010, *Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Engineering methods for small movable sources in reverberant fields - Part 1: Comparison method for a hard-walled test room (ISO 3743-1:2010)*

EN ISO 3744:2010, *Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Engineering methods for an essentially free field over a reflecting plane (ISO 3744:2010)*

EN ISO 4413, *Hydraulic fluid power - General rules and safety requirements for systems and their components (ISO 4413)*

EN ISO 4414, *Pneumatic fluid power - General rules and safety requirements for systems and their components (ISO 4414)*

EN ISO 4871:2009, *Acoustics - Declaration and verification of noise emission values of machinery and equipment (ISO 4871)*

EN ISO 11201:2010, *Acoustics - Noise emitted by machinery and equipment - Determination of emission sound pressure levels at a work station and at other specified positions in an essentially free field over a reflecting plane with negligible environmental corrections (ISO 11201:2010)*

EN ISO 12100:2010, *Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)*

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

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 13855:2010, *Safety of machinery - Positioning of safeguards with respect to the approach speeds of parts of the human body (ISO 13855:2010)*

EN ISO 13856-1, *Safety of machinery - Pressure-sensitive protective devices - Part 1: General principles for design and testing of pressure-sensitive mats and pressure-sensitive floors (ISO 13856-1)*

EN ISO 13856-2, *Safety of machinery - Pressure-sensitive protective devices - Part 2: General principles for design and testing of pressure-sensitive edges and pressure-sensitive bars (ISO 13856-2)*

EN ISO 14122-2, *Safety of machinery - Permanent means of access to machinery - Part 2: Working platforms and walkways (ISO 14122-2)*

3 Terms, definition and description

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100:2010 and the following apply.

3.1.1
stopping time (time for hazard elimination)
period between the point at which the interlocking device initiates the stop command and the point at which the risk from hazardous machine functions has passed

[SOURCE: EN 1088:1995+A2:2008, 3.8]

3.2 Description

The dividers in the scope consist of the elements listed below (including optional equipment) (see Figure 1):

1) loading hopper;

2) feeding assistance device inside the hopper (optional, see one example at Figure 2);

3) dividing device which can be of one of the following types:

   — rotating drum with chamber and piston;

   — piston with or without cutting slide;

   — rotating blades or cutting devices (e.g. knives, star rollers);

   — and the operating mechanisms;

4) flour duster at the delivery of pieces of dough (optional);

5) one or more conveyor belts designed to discharge pieces of dough;

6) one or more drive units to operate the dividing device and the discharge devices;

7) miscellaneous devices, e.g. to set the volume of the portions;

8) control panel;

9) oiling device (optional, not included in Figure 1);

10) moulding/rounding device (optional, not included in Figure 1).

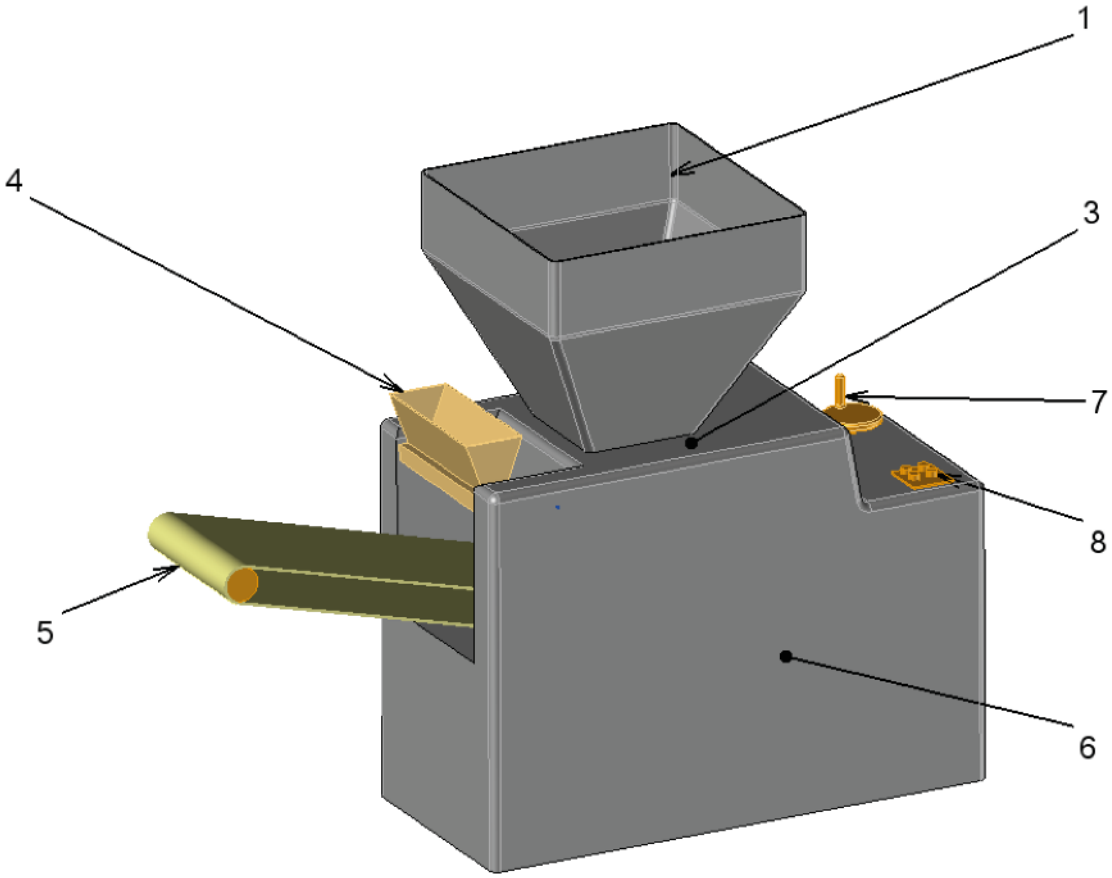
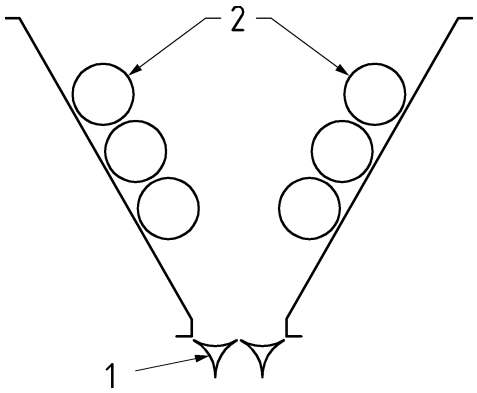


Figure 1 — Main parts of an automatic dough divider



Key

1 star rollers

2 feeding assistance device (rollers)

Figure 2 — Example of a hopper equipped with a feeding assistance device and star rollers

4 List of significant hazards

This clause contains all the significant hazards, hazardous situations and events identified by risk assessment as significant for this type of machinery and which require action to eliminate or reduce the risk (see Table 1).

Table 1 — List of significant hazards

Hazards, hazardous situations and hazardous events	Location or cause	Clause/subclause in this European Standard
Mechanical hazards (see Figure 3)		5.2
— shearing, crushing and cutting	Zone 1 - dividing zone or feeding assistance device zone (if any) access via the hopper	
— entanglement and crushing	Zone 2 - access to dividing mechanisms and other moving parts via discharge opening/discharge belt	
— drawing-in	Zone 3 - discharge belt, in-running nip between belt and roller	
— crushing, impact, shearing and drawing-in	Zone 4 - drive mechanisms and other moving internal components	
— entanglement	Zone 5 - flour duster	
Electrical hazards	Electric shock from direct or indirect contact with live components external influences on electrical equipment (e.g. cleaning with water)	5.3
Stopping of the machine	No access to the normal OFF of the machine	5.4
Unexpected start-up	Start-up of the machine	5.5
Hazards generated by noise	Hearing damage, accidents due to interference with speech communication and interference with the perception of acoustic signals	5.6 7.2
Hazards generated by materials and substances (inhalation of dust)	Flour dusters	5.7
Hazards generated by neglecting hygienic design principles	e.g. contamination by microbial growth or foreign materials	5.8
Hazards generated by neglecting ergonomic principles	During operation, cleaning and maintenance	5.9
Hazards generated by spilling oil	If divider oil is allowed to spill onto the floor around the divider.	5.10
Hazards generated by pneumatic and hydraulic equipment	Ejection of parts, explosion and injection of fluid	5.11

Figure 3 illustrates the danger zones associated with the mechanical hazards:

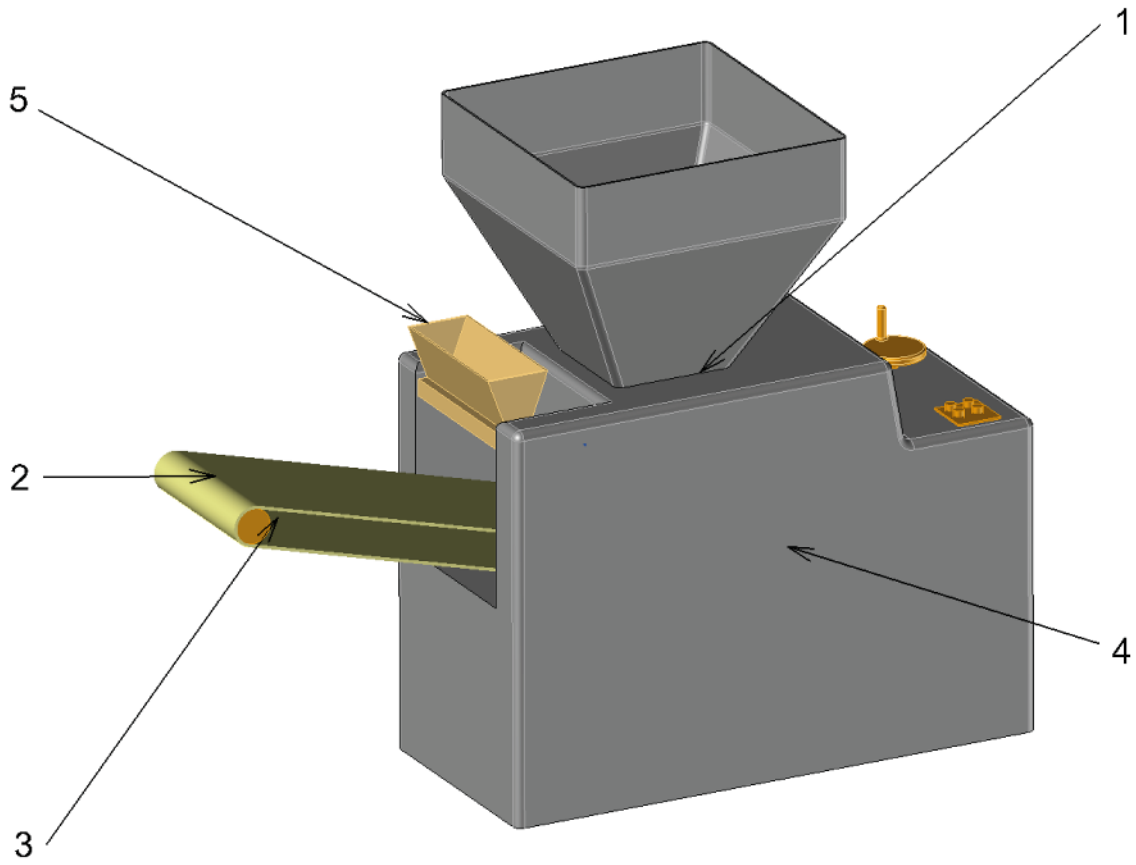
— Zone 1: dividing zone or feeding assistance device zone (if any) access via the hopper;

— Zone 2: access to dividing mechanisms and other moving parts via discharge opening/discharge belt;

— Zone 3: discharge belt, in-running nip between belt and roller;

— Zone 4: drive mechanisms and other moving internal components;

— Zone 5: flour duster.



Key

1 zone 1

2 zone 2

3 zone 3

4 zone 4

5 zone 5

Figure 3 — Danger zones associated with mechanical hazards

5 Safety and hygiene requirements and/or protective measures

5.1 General

Machinery shall comply with the safety requirements and/or protective measures of this clause.

In addition, the machine shall be designed according to the principles of EN ISO 12100:2010 for relevant but not significant hazards, which are not dealt with by this document.

Fixing systems of fixed guards or of parts of the machine acting as such shall remain attached to the guards or to the machinery when the guards are removed.

5.2 Mechanical hazards

5.2.1 General

Guards shall comply with EN 953:1997+A1:2009. Where reference is made to interlocking devices throughout Clause 5, they can be interlocked without guard locking and shall comply with EN 1088:1995+A2:2008, Clause 5 and Clause 6.

Where the interlocking mechanism has movable parts, e.g. position switches, these shall be protected from contamination by dough or dry ingredients, e.g. by mounting them within the machine body.

The safety related parts of the control systems shall present at least a performance level d defined in accordance with EN ISO 13849-1:2008.

5.2.2 Zone 1: Access to the dividing zone or feeding assistance device zone if any, via the hopper

5.2.2.1 General

The safeguarding objective is to prevent contact by the operator (or other person) reaching down the hopper and coming into contact and being injured in the danger zone which is the cutting/crushing zone of the dividing device.

When a working platform is provided by the manufacturer according to 5.9, it shall comply with EN ISO 14122-2 and the working platform, or the access to it, shall be interlocked to stop the machine if the vertical distance between the flooring of the platform and the edge of the hopper is less than or equal to 1100 mm. In that case, the interlocking may be realized, e.g. by:

— use of a pressure sensitive mat or floor according to EN ISO 13856-1, or

— use of an AOPD to prevent access to the working platform, or

— use of an interlocked guard.

5.2.2.2 Feeding — Safeguarding at the hopper

5.2.2.2.1 General

Access via the hopper opening to the danger zone shall be prevented while the machine is in operation.

The access to the danger zones in the feed intake hopper may be restricted or prevented by example with one of the following:

— a pressure sensitive edge (see 5.2.2.2.2 and Figure 4);

— an AOPD (see 5.2.2.2.3);

— a swan neck hopper (see 5.2.2.2.4 and Figure 5);

— an interlocked guard (see 5.2.2.2.5).

If none of the previous solution is used, the height of the protective structure and the position of danger zone shall comply with EN ISO 13857:2008, Table 2.

5.2.2.2.2 Pressure sensitive edge

If a pressure sensitive edge is used as a safeguarding measure to stop the hazardous movement, the following requirements apply:

— the pressure sensitive edge shall comply with EN ISO 13856-2, and

— it shall be attached to the upper rim of the hopper or to a provided supporting system, and

— the stopping time after activation of the pressure sensitive edge shall be less than or equal to 0,35 s (calculated by taking into account EN ISO 13855:2010), and

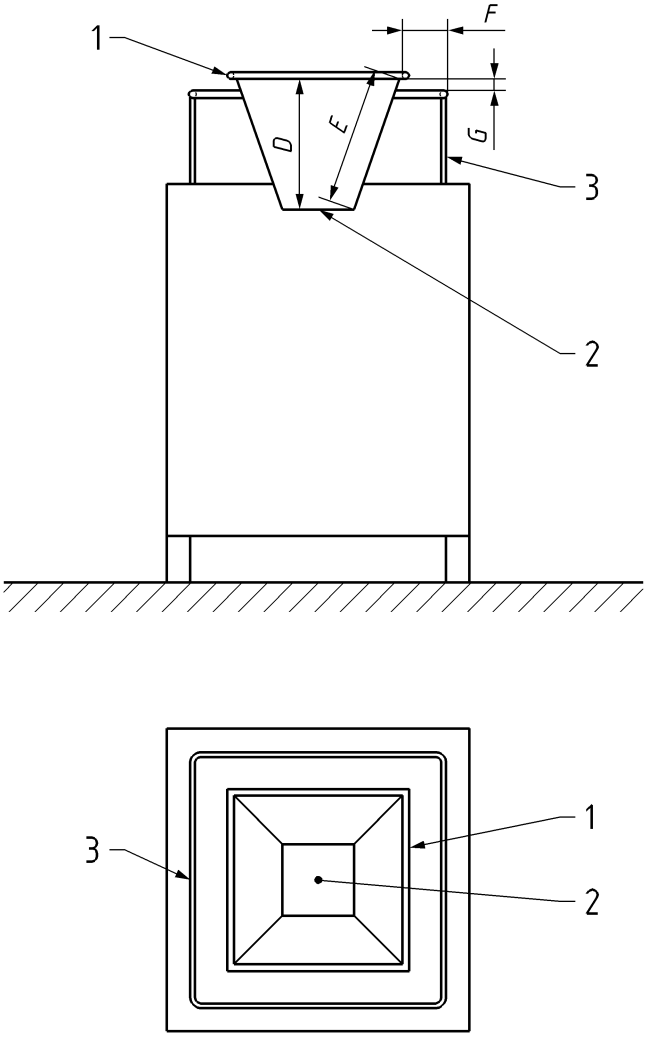
— the distance between the pressure sensitive edge and the edge of the hopper shall be less than or equal to 8 mm, and

— the vertical distance (*D*) between the upper edge of the hopper and the cutting/crushing zone shall be more than or equal to 550 mm, and

— a distance bar shall be provided when the vertical distance (*D*) is less than 850 mm. In that case:

  — the safety distance from the distance bar to the danger zone shall be more than or equal to $E+F \geq 850$ mm, and

  — the distance bar shall be placed at a maximum height (*G*) comprised between 0 mm and 50 mm from the edge of the hopper, and with a minimum horizontal distance (*F*) from the edge of the hopper of 200 mm.



With

$D \geq 550$ mm

$E+F \geq 850$ mm

$F \geq 200$ mm

$G \leq 50$ mm

Key

1 pressure sensitive edge or AOPD
2 danger zone
3 distance bar
D vertical distance between the upper edge of the hopper and the cutting/crushing zone
E minimum distance from the edge of the hopper to the danger zone
F minimum horizontal distance
G maximum height between the edge of the hopper and the distance bar

Figure 4 — Example of a hopper equipped with a pressure sensitive edge or AOPD

5.2.2.2.3 AOPD

If an AOPD, as defined in EN ISO 12100:2010, 3.28.6, is used the following requirements apply:

— the stopping time after activation of the AOPD shall be less than 0,35 s (calculated by taking into account EN ISO 13855:2010), and

— the vertical distance (*D*) (see Figure 4) between the upper edge of the hopper and the cutting/crushing zone shall be more than or equal to 550 mm, and

— if a light curtain or a multi-beam AOPD is used:

  — the distance between the AOPD and the edge of the hopper shall be less than 20 mm, and

  — the sensor detection capability of the AOPD shall be less than or equal to 14 mm.

— if a one beam light barrier is used around the upper edge of the hopper:

  — the distance between the one-beam light barrier and the edge of the hopper shall be less than or equal to 8 mm, and

  — the height of the protective structure and the position of danger zone shall comply with EN ISO 13857:2008, Table 2, and

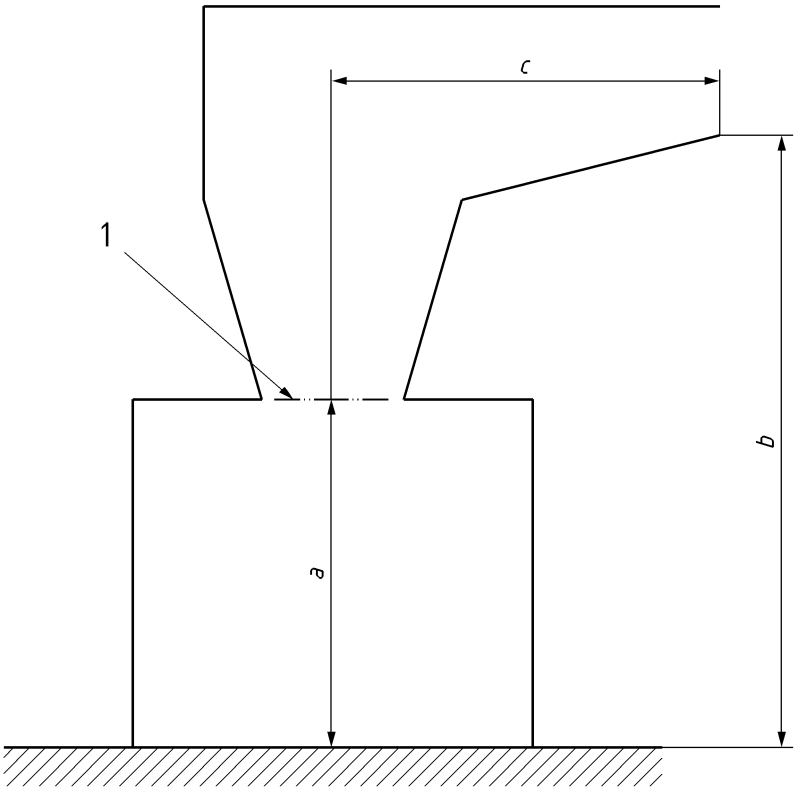
  — a distance bar shall be provided when the vertical distance (*D*) is less than 850 mm. In that case:

    — the safety distance from the distance bar or from the edge of the hopper to the danger zone shall be more than or equal to $E+F \geq 850$ mm, and

    — the distance bar shall be placed at a maximum height (*G*) comprised between 0 mm and 50 mm from the edge of the hopper, and with a minimal horizontal distance (*F*) from the edge of the hopper of 200 mm.

5.2.2.2.4 Swan neck hopper

If a swan neck hopper (see Figure 5) is used the distance between the edge of the hopper and the danger zone shall comply with EN ISO 13857:2008, Table 2.



NOTE Dimensions of *a*, *b* and *c* are given in EN ISO 13857:2008, Table 2.

Key

1 danger zone

a height of danger zone

b height of protective structure

c horizontal distance to danger zone

Figure 5 — Example of a divider equipped with a swan neck hopper

5.2.2.2.5 Interlocked guard

If an interlocked guard is used at the top of the hopper the following requirements apply:

— if the stopping time is less than or equal to 0,35 s, the distance between the edge of the hopper and the hazard zone shall be more than or equal to 550 mm, or

— if the stopping time is more than 0,35 s, the distance between the edge of the hopper and the hazard zone shall be more than or equal to 850 mm, and the guard shall be interlocked with guard locking.

The interlocking device shall be activated before the opening gap between the fixed and the movable parts exceeds 25 mm;

If the guard is a grid, EN ISO 13857:2008, Table 4, shall apply.

5.2.2.2.6 Cleaning of the hopper

If for cleaning reasons (e.g. scraping off the dough), it is necessary to access inside the hopper, one of the following solutions shall apply to stop the machine:

— interlocked guard at the top of the hopper (see 5.2.2.2.5);

— interlocked tilting hopper if the stopping time is less than or equal to 0,35 s or interlocked tilting hopper with guard locking if the stopping time is more than 0,35 s. The interlocking device shall be activated before the opening gap between the fixed and the movable parts exceeds 25 mm;

— interlocked opening in the hopper if the stopping time is less than or equal to 0,35 s or interlocked opening in the hopper with guard locking if the stopping time is more than 0,35 s;

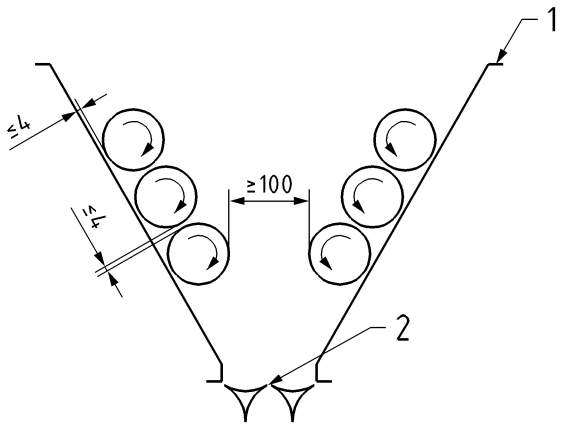
— interlocked access (e.g. AOPD, interlocked guard, etc.) to the working area from where it is possible to clean the hopper.

5.2.2.2.7 Feeding assistance device inside the hopper

If a feeding assistance device is provided, the minimum horizontal distance between the rollers shall be more than or equal to 100 mm (see Figure 6).

When driven rollers are used, access to potential in-running nips shall be prevented. The distance between the rollers themselves and between the rollers and the fixed parts of the hopper shall be less than or equal to 4 mm.

Dimensions in millimetres



Key

1 hopper

2 danger zone

Figure 6 — Feeding assistance device — Safety distances

5.2.3 Zone 2: Access to the dividing mechanism and other moving parts via the discharge opening

In principle, there is no significant hazard at the discharge side of a drum and piston type dividing mechanism.

When a cutting/shearing zone is close to the discharge opening, access to the hazard zone shall be prevented by:

— either a fixed guard with opening according to the EN ISO 13857:2008, Table 4; or

— movable interlocking guard in accordance with EN ISO 13857:2008, Table 4; or

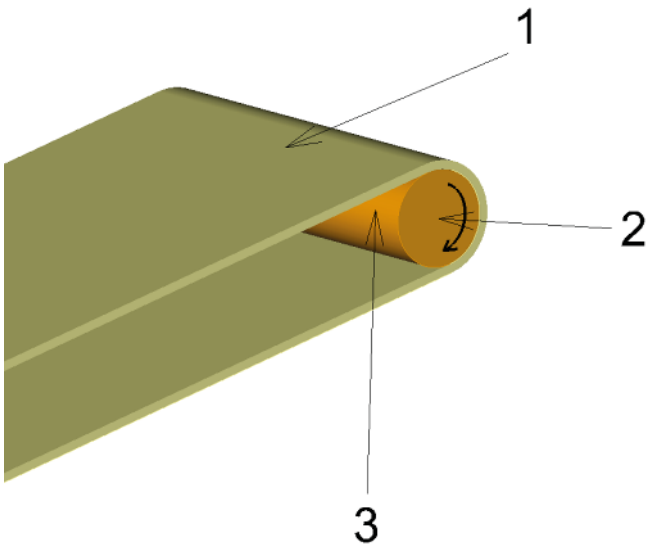
— distance guard in accordance with EN ISO 13857:2008, Table 2.

If the guard has openings, the distance between bars or mesh shall comply with EN ISO 13857:2008, Table 4.

5.2.4 Zone 3: Discharge belt

If there is hazard with in-running nips (see Figure 7) they shall be safeguarded in accordance with EN 619:2002+A1:2010, 5.1.3.2.

Fixed side guards (e.g. sheet metals) shall be mounted at the sides of the conveyor where access is possible, covering the whole length of the conveyor. The distance between the belt and the fixed side guards of the machine shall be less than or equal to 4 mm. If this is not possible the fixed guards or movable interlocked guards in accordance with EN 953:1997+A1:2009 shall prevent access to the danger zone.



Key

1 discharge belt

2 roller

3 in-running nip

Figure 7 — In-running nip on a discharge belt

5.2.5 Zone 4: Drive mechanisms and other moving internal components

Access to the drive mechanism and other moving internal components including the dividing mechanisms, and the moulding/rounding device if relevant, from other sides than the discharge opening of the machine shall be prevented. This may be achieved by use of fixed guards complying with EN 953:1997+A1:2009 and where guards have to be removed daily or more regularly for cleaning or maintenance by movable interlocking guards.

If the stopping time of the drive mechanism or other moving internal components is more than 1 s, the movable guard shall be interlocked with guard locking.

5.2.6 Zone 5: Flour duster

If there are mechanical risks, the flour containers shall be fitted with a fixed or interlocked guard with dimensions according to EN ISO 13857:2008, Table 4, acting on the flour feed system. If the stopping time of the flour duster is more than 1 s, the movable guard shall be interlocked with guard locking.

If there are no mechanical hazards (e.g. if the feed consists of a spindle with rubber spokes or notches, or if the flour is sprinkled by a vibrating device) due to the flour feed system and if a guard is necessary to prevent dust emission (see 5.7), this guard shall automatically be closed (e.g. by gravity, etc.). In this case, an interlocked guard is not necessary.

5.2.7 Loss of stability

5.2.7.1 Machines shall be designed to be stable and shall comply with 5.2.7.2 and 5.2.7.3 as applicable. For machines designed to be fixed to the floor, the instruction handbook shall indicate the values of torques at the fixing points.

5.2.7.2 Free standing machines without castors shall be stable when tilted 10° from the horizontal plane, in the most unfavourable direction.

5.2.7.3 Free standing machines with castors shall have a locking device for example a brake on at least two castors (or sets of castors) and shall comply with the provisions of 5.2.7.2.

5.3 Electrical hazards

5.3.1 General

Electrical equipment, for example switches, that may be exposed to water, e.g. during cleaning, shall be protected to an appropriate IP rating according to EN 60529 and EN 60204-1:2006.

The electrical equipment shall comply with EN 60204-1:2006, with the precisions given in the following subclauses.

5.3.2 Safety requirements related to electromagnetic phenomena

The machines shall have sufficient immunity to electromagnetic disturbances to enable them to operate safely as intended and not fail to danger when exposed to the levels and types of disturbances for the intended use of the machine (see EN 61000-6-1).

The manufacturer of the machines shall design, install and wire the equipment and sub-assemblies taking into account the recommendations of the suppliers of these sub-assemblies.

5.3.3 Protection against electric shock

The electrical equipment shall comply with EN 60204-1:2006, Clause 6.

5.3.4 Power circuits

Devices for detection and interruption of over-current have to be applied to each live conductor in compliance with EN 60204-1:2006, 7.2.3. In case of single phase machines, no such device is required for the earthed neutral conductor.

5.3.5 Protection against earth faults in control circuits

For machinery supplied from a single-phase conductor and an earthed neutral conductor the single pole interruption shall be in the phase conductor (see EN 60204-1:2006, 9.4.3.1).

5.3.6 Motor enclosures

Where a motor has a degree of protection lower than IP23 (see EN 60529) it shall be mounted inside an enclosure (see EN 60204-1:2006, 14.2) that guarantees a minimum degree of protection of IP23 (see EN 60529).

5.4 Emergency stop

No emergency stop is required for automatic dividers but particular attention shall be given to the accessibility of the normal OFF switch from the operator position.

5.5 Unexpected start-up

Unexpected start-up shall be prevented using the measures described in EN 1037:1995+A1:2008 and a separate means of isolation shall be provided with for each type of energy.

5.6 Noise reduction

Automatic dividers shall be so designed and constructed that risks from airborne noise emission are reduced to the lowest level by particularly applying measures at source to control noise, see for example EN ISO 11688-1. The success of the applied noise reduction measures is assessed on the basis of the actual noise emission values (see Annex A) in relation to other machines of the same family.

5.7 Protection against flour dust emission

Means shall be provided to prevent flour from spilling onto the floor, for example a collecting device for flour below the rear end of the outlet conveyor.

If a flour duster is used to sprinkle special types of dough, the following shall be provided:

— a guard according to 5.2.6;

— automatically stop of the flour duster when the machine stops;

— maximum height of 50 mm of the underside of the flour duster above the height of the largest dough pieces as specified in the instruction handbook.

5.8 Hygiene requirements

Automatic dividers shall be designed and manufactured in accordance with EN 1672-2:2005+A1:2009 and Annex B.

The 3 zones mentioned in EN 1672-2:2005+A1:2009 are defined as follows and shown in Figure 8:

— food area:

  — inside surfaces of the hopper;

  — all dividing components;

  — portion discharge belt;

  — inside surface of flour duster, including the inside surface of the movable cover.

— splash area:

  — outside surface of the hopper;

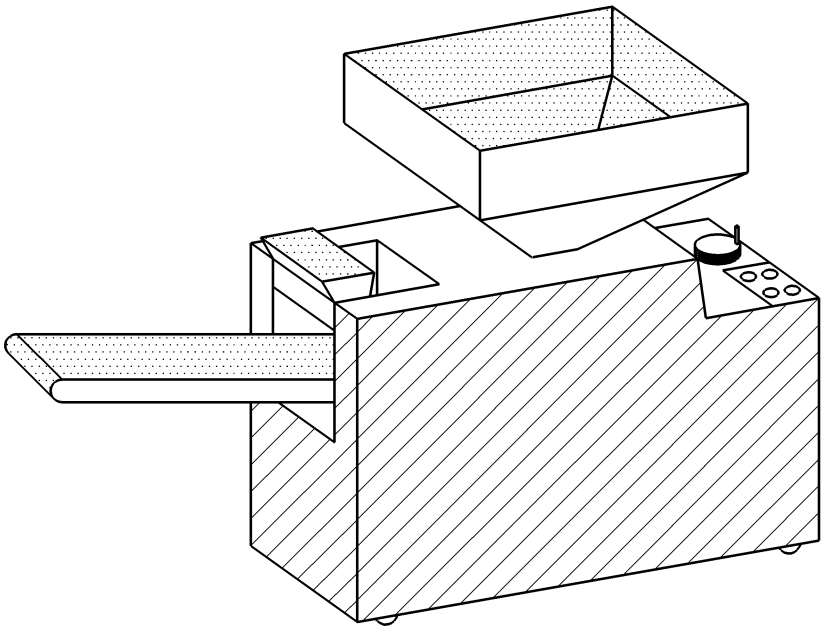
  — upper panel or cover over the dividing mechanism;

  — outside surface of the flour duster, including the outside surface of the cover;

  — fixed horizontal surface below the hopper.

— non-food area:

  — the remaining area of the machine.



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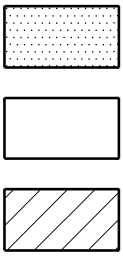


Figure 8 — Hygiene areas

5.9 Ergonomic principles

For hand-fed machines the manufacturer shall pay particular attention to the ergonomic aspects of the loading of the dough and define procedures for facilitating the loading.

Awkward body postures (e.g. hand feeding at a height more than 1,6 m, cleaning a hopper deeper than 850 mm) during maintenance and cleaning as well as filling and emptying the dividers or other operations, shall be avoided (e.g. platform, tilting hopper, etc.).

For hand-fed machines where the upper rim of the feeding hopper is at a height of 1,6 m or more a working platform according to 5.2.2.1 shall be provided.

Control devices shall be placed within proper reach distance for the operator as stated in EN 894-4:2010, Annex A.

5.10 Protection against spilling oil

The divider oil reservoir shall be constructed and positioned so that it can be filled easily, minimizing the risk of spilling oil. The manufacturer shall provide means to collect divider oil, so that it does not spill on the floor e.g. catch trays.

5.11 Pneumatic and hydraulic equipment

All pneumatic components and piping shall conform to the requirements of EN ISO 4414.

All hydraulic components and piping shall conform to the requirements of EN ISO 4413.

6 Verification of safety and hygiene requirements and/or protective measures

This clause contains the methods of testing for the presence and adequacy of the safety requirements stated in Clause 5.

Verification of the requirements can be made by means of inspection, calculation, measurement or testing. These shall be applied to a machine in a fully commissioned condition but partial dismantling may be necessary for the purpose of some checks. Such partial dismantling shall not invalidate the result of verification.

Methods of verification are given in Table 2.

Table 2 – Verification

Relevant clause	Safety and hygiene requirements and/or measures	Method of verification
5.2.1	General	By visual inspection By analysis or calculation (see EN ISO 13849-2)
5.2.2	Zone 1 Access to the dividing zone or feeding assistance device via the hopper	By functional test By measurement of the safety distances By calculation
5.2.2.2.2	Pressure sensitive edge	By functional test By measurement of the safety distances
5.2.2.2.3	AOPD	By functional test By measurement of the safety distances
5.2.2.2.4	Swan neck hopper	By measurement of the safety distances
5.2.2.2.5	Interlocked guard	By functional test By measurement of the stopping time
5.2.2.2.6	Cleaning of the hopper	By visual inspection By measurement of the stopping time
5.2.2.2.7	Feeding assistance device inside the hopper	By visual inspection and measurement
5.2.3	Zone 2 Access to the dividing mechanisms and other moving parts via the discharge opening	By visual inspection and measurement
5.2.4	Zone 3 discharge belt	By visual inspection and measurement
5.2.5	Zone 4 drive mechanisms and other moving internal components	By functional test

Relevant clause	Safety and hygiene requirements and/or measures	Method of verification
5.2.6	Zone 5 Flour duster	By inspection By measurement of the safety distances
5.2.7	Loss of stability	For free standing machines, when the machine is tilted 10°, it shall remain stable
5.3	Electrical hazards	Verification shall be in accordance with Clause 18 of EN 60204–1:2006
5.4	Emergency stop	By inspection
5.5	Unexpected start-up	By visual inspection
5.6	Noise reduction and noise declaration	By measurement according to Annex A
5.7	Protection against flour dust emission	By inspection and measurement
5.8	Hygiene requirements	In accordance with Clause 6 of EN 1672–2:2005+A1:2009 and Annex B
5.9	Ergonomic principles	By measurement (forces, height of the hopper, height for the hand loading), by inspection of the visibility of the indications, operational control devices, etc.
5.10	Protection against spilling oil	By inspection
5.11	Pneumatic and hydraulic equipment	By inspection and testing.

7 Information for use

7.1 Signals and warning

The following warning signs shall be placed on the automatic dividers attached to the hopper, warning the shearing hazard at the dividing device at the base of the hopper, with appropriate dimensions according to EN 61310-1.

Warning signs (see an example at Figure 9) shall be attached close to the bottom of the hopper and close to the guard on the hopper to warn of the danger points inside the machine.

Figure 9 — Example of warning sign

7.2 Instruction handbook

The manufacturer shall provide an instruction handbook in accordance with EN ISO 12100:2010, 6.4.5.

In particular, the instruction handbook shall provide:

— instructions for handling, transportation, storage, installation, starting up and operation;

— provisions for cleaning and rinsing: the cleaning products to be used, the recommended implements, the procedures and frequency, any necessary warning (for example, the cleaning shall be done once the machine is stopped, using water and soap with plastic scraper. Metallic implements are not recommended).

  Moreover, if cleaning with water jet is authorized, the manufacturer shall indicate the maximum pressure admitted;

— capacity of the hopper;

— process capacity per hour;

— maximum weight of dough pieces;

— information warning the users about the risk of lifting heavy loads and skeleton muscle trouble, and advise to use lifting machines;

— information warning the users about the risk of dust;

— ingredients with known health risks should be listed e.g. flour and the need to consult suppliers hazard data sheet should be highlighted. The possible need to wear respiratory protective equipment during manual loading shall be indicated;

— values of torques at fixing points if the machine is fixed;

— data about electrical equipment and electrical wiring diagram;

— value of the overcurrent protective device in the case of machines covered by 5.3.4;

— the instruction handbook (and any sales literature describing the performances of the machine) shall contain the following information on airborne noise emissions, determined and declared in accordance with Annex A of this European Standard:

  — the A-weighted emission sound pressure level at workstations, where this exceeds 70 dB(A); where this level does not exceed 70 dB(A), this fact shall be indicated,

  — the peak C-weighted instantaneous sound pressure value at workstations, where this exceeds 63 Pa (130 dB in relation to 20 µPa),

  — the A-weighted sound power level emitted by the machinery, where the A-weighted emission sound pressure level at workstations exceeds 80 dB(A).

    Whenever sound emission values are indicated the uncertainties "*K*" surrounding these values shall be specified. The operating conditions of the machinery during measurement and the measuring methods used shall be described.

— the instructions shall advise the user of the hazard of oil spilt to the floor and the importance of cleaning up oil spills immediately they occur. The instructions shall indicate the most appropriate way of filling the oil reservoir and collecting oil to minimize the risk of spilled oil.

— information for the user on the significant environmental characteristics and energy performance of the product;

— information for the user on how to install, use and maintain the product in order to minimize its impact on the environment and to ensure optimal life expectancy, as well as on how to return the product at end-of-life.

Information for maintenance:

The maintenance manual shall include:

— lubrication drawing, frequency of operation and a list of products to be used;

— recommended technique and frequency of cleaning the machine;

— frequency of maintenance operation and list of checking points when platforms are provided;

— instructions to isolate the machine in a safe condition in the event of repair or maintenance (isolation from energy supply of all nature, locking of the disconnecting device, neutralizing residual energy, testing), the operations of the cylinders cleaning shall be made only when the electric supply is off;

— list and identification of spare parts;

— the specifications of the spare parts to be used, when these affect the health and safety of operators;

— the limits that shall be respected and the measures to be taken for ensuring stability during use, transportation, assembly, dismantling when out of service, disabling and scrapping, testing or foreseeable breakdowns;

— the operating method to be followed in the event of accident or breakdown; if a blockage is likely to occur, the operating method to be followed so as to enable the equipment to be safely unblocked;

— if need be: the description of the adjustment and maintenance operations to be carried out by the user and the preventive maintenance measures to be observed;

— if need be: instructions designed to enable adjustment and maintenance to be carried out safely, including the protective measures to be taken during these operations;

— in the case of machinery capable of being plugged into an electricity supply: information warning the user that he shall be able to check that the plug remains visible from any of the points to which he has access.

7.3 Marking

The minimum marking shall include:

— the business name and full address of the manufacturer and, where applicable, his authorized representative;

— mandatory marking[2)];

— designation of series or type;

— serial number if any;

[2)] For machines and their related products intended to be put on the market in the EEA, CE marking as defined in the applicable European directive(s), e.g. Machinery.

— rating information (mandatory for electrical products: voltage, frequency, power, ...);

— designation of the machinery;

— the year of construction, that is the year in which the manufacturing process is completed.

Annex A
(normative)

Noise test code for automatic dividers – Grade 2 of accuracy

A.1 Installation and mounting conditions

The machine under test shall be placed on a reflecting plane.

The test environment suitable for the measurement of the emission sound pressure level and the sound power level (if measured according to EN ISO 3744:2010) shall be a flat outdoor area (for example a car park) or an indoor space that provides an essentially free field over a reflecting plane. The test environment shall be in accordance with the requirements given in EN ISO 3744:2010, 4.3, or, if the sound power level is measured according to EN ISO 3743-1:2010 (see A.5), the test environment laid down in this standard applies.

A.2 Operating conditions

During the determination of noise emission values (sound power or emission sound pressure level), the operating conditions of the machine shall be as follows:

— machine shall be empty;

— it shall operate at its maximum speed.

A.3 Measurements

The measurement time for sound pressure level measurements for both the determination of the emission sound pressure level (see A.4) and the sound power level (see A.5), shall be 30 s.

A.4 Emission sound pressure level determination

The determination of the emission sound pressure level (A-weighted) shall be done in accordance with EN ISO 11201:2010, grade 2.

The measurement shall be done at the normal workstation with the operator absent and with the microphone positioned at:

— 1,55 m ± 0,075 m height above the floor;

— 1 m in front of the machine (in the axis of the machine in front of the control board).

NOTE Emission sound pressure levels using other frequency weightings or in octave or one third octave frequency bands may additionally also be measured, as required for the purposes of the measurements.

A.5 Sound power level determination

The determination of the A-weighted sound power level shall be done using one of the following basic noise emission standards:

— EN ISO 3743-1:2010 if the measurements are done in a test room with a volume greater than 40 m^3, with surfaces that are hard and sound-reflective. For rooms of volume less than and equal to 100 m^3 only machines whose largest dimension is less than or equal to 1 m may be tested. For rooms of volume greater than 100 m^3 only machines of largest dimension less or equal to 2 m may be tested;

— EN ISO 3744:2010 if the measurements are done in an essentially free field near one or more reflecting planes. The measurement surface shall be parallelepiped.

A.6 Measurement uncertainties

The total measurement uncertainty of the noise emission values determined according to this standard is depending on the standard deviation σ_{R0} given by the applied noise emission measurement method and the uncertainty associated with the instability of the operating and mounting conditions σ_{omc}. The resulting total uncertainty is then calculated from:

$$\sigma_{tot} = \sqrt{\sigma_{R0}^2 + \sigma_{omc}^2}$$

NOTE 1 σ_{tot} is identical to the formerly used σ_R.

The upper bound value of σ_{R0} is about 1,5 dB for grade 2 measurement methods respectively 3 dB for grade 3 methods, assuming noise sources which emit sound without significant tones. These values apply for the determination of the emission sound pressure level or the sound power level.

NOTE 2 For machines with a rather constant noise emission a value of 0,5 dB for σ_{omc} can apply. In other cases, e.g. a large influence of the material flow into and out of the machine or material flow that varies in an unpredictable manner, it is possible that a value of 2 dB may be more appropriate. Methods to determine σ_{omc} are described in the basic measurement standards.

The expanded measurement uncertainty U, in decibels, shall be calculated from

$U = k\ \sigma_{tot}$, with k the coverage factor.

NOTE 3 The expanded measurement uncertainty depends on the degree of confidence that is desired. For the purpose of comparing the result with a limit value, it is appropriate to apply the coverage factor for a one-sided normal distribution. In that case, the coverage factor k = 1,6 corresponds to a 95 % confidence level. Further information is given in EN ISO 4871:2009. Please note that the expanded measurement uncertainty U is denoted as K in EN ISO 4871:2009.

NOTE 4 The expanded measurement uncertainty as described in this European Standard does not include the standard deviation of production which is used in EN ISO 4871:2009 for the purpose of making a noise declaration for batches of machines.

A.7 Information to be recorded

The information to be recorded covers all of the technical requirements of this noise test code. Any deviations from the noise test code and/or from the basic noise emission standards used are to be recorded together with the technical justification for such deviations.

A.8 Information to be reported

The information to be included in the test report is that which the manufacturer requires to prepare a noise declaration or the user requires to verify the declared values.

As a minimum, the following information shall be included:

a) identification of the manufacturing company, of the machine type, model, serial number and year of manufacture;

b) reference to the basic noise emission standard(s) used;

c) description of the mounting and operating conditions used;

d) microphone position for the determination of the emission sound pressure level at the workstation; and

e) noise emission values obtained.

It shall be confirmed that all requirements of the noise test code and/or the basic noise emission standards used have been fulfilled, or, if this is not the case, any unfulfilled requirements shall be identified; the deviations from the requirements shall be stated and technical justification for the deviations shall be given.

A.9 Declaration and verification of noise emission values

The declaration of the noise emission value shall be made as a dual number noise emission declaration according to EN ISO 4871:2009.

It shall declare the noise emission values L (L_{pA} and L_{WA}) and the respective uncertainty K (K_{pA} and K_{WA}) according to 7.2.

The uncertainties K_{pA} and K_{WA} are expected to have a value of 2,5 dB.

The noise declaration shall state that the noise emission values have been obtained according to this test code and to the applied basic standards. If this statement is not true, the noise declaration shall indicate clearly what the deviations are from this noise test code and/or from the basic standards

If undertaken, verification shall be done according to EN ISO 4871:2009 by using the same mounting, installation and operating conditions as those used for the initial determination of the noise emission value.

Annex B
(normative)

Principles of design to ensure the cleanability of automatic dividers

B.1 Terms and definitions

For the purpose of this annex, terms and definitions of EN 1672-2:2005+A1:2009 and the following apply:

B.1.1
easily cleanable
designed and constructed to permit the elimination of soil by a simple cleaning method (e.g. manual cleaning)

B.2 Materials of construction

B.2.1 Type of materials

Materials of construction for food area shall comply with EN 1672-2:2005+A1:2009, 5.2.

Some materials (e.g. plastics) shall be the subject to overall or specific migration tests.

NOTE European Directives give the list of materials in contact with food and foods intended for human consumption (see also CEN/TR 15623). Materials not mentioned in the European Directives are accepted as long as food compatibility is proven.

B.2.2 Surface conditions

The surface finish of materials used on surfaces shall permit easy cleaning under satisfactory conditions. The roughness values R_z (see EN ISO 4287) shall comply with the values given in Tables B.1 and B.2.

Table B.1 — Surface condition for food area

Values in micrometres

Technique of construction	Roughness (R_z)
Drawn – rolled – spun	≤ 34
Moulded – cast	≤ 40
Machined	≤ 34
Injected - metals - plastics	≤ 34 ≤ 34
Textiles - woven - non woven	According to manufacturer cleaning specifications
Netting-nets-perforated metal	According to manufacturer cleaning specifications
Coating - paint (test reservation) - plastics (test reservation) - glass - metal (test reservation)	≤ 22 ≤ 22 ≤ 22 ≤ 22

Table B.2 — Surface condition for splash area

Values in micrometres

Technique of construction	Roughness (R_z)
Drawn – rolled – spun	≤ 40
Moulded – cast	≤ 54
Machined	≤ 54
Injected - metal - plastics	≤ 54 ≤ 54
Netting-nets-perforated metal	According to manufacturer cleaning specifications
Coating - paint - plastics - glass metal	≤ 40 ≤ 40 ≤ 40 ≤ 40

B.3 Design

B.3.1 Connections of internal surfaces

B.3.1.1 General

Connections shall have the same roughness as the connected surfaces. These shall be designed to avoid any dead space, see EN 1672-2:2005+A1:2009.

B.3.1.2 Connections of internal surfaces for food area

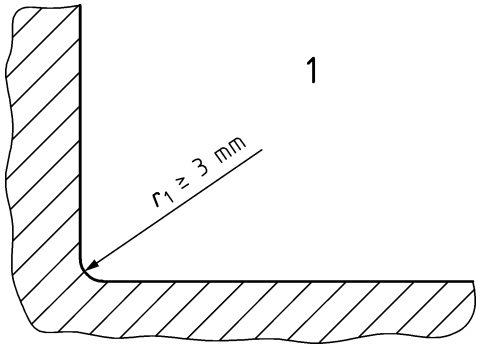
Two surfaces shall be connected according to:

— rounded edge having a radius greater than a curve of minimum radius (r_1) of 3 mm obtained by:

  — machining (cutting into material mass);

  — bending the sheet metal (bending and forming);

  — design (in moulds, shells of foundry, injection and blasting ...), (see Figure B.1).

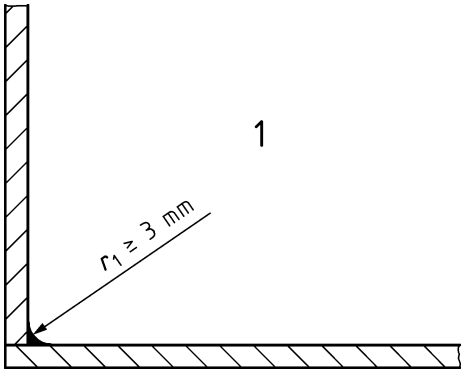


Key

1 food area

Figure B.1 — Internal surfaces for food area (rounded)

— or by welded assembly with grinding and polishing (see Figure B.2).

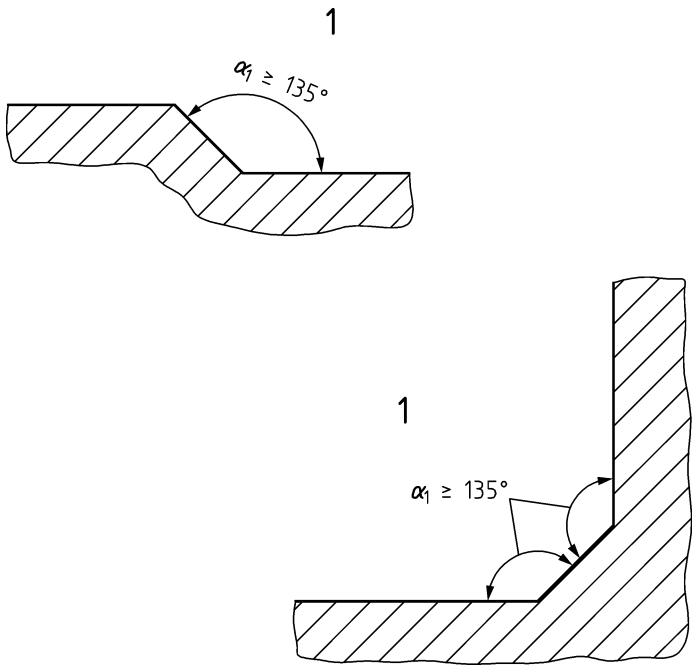


Key

1 food area

Figure B.2 — Internal surfaces for food area (welded)

For an internal angle (α_1) greater than or equal to 135° there are no special requirements for the radius (see Figure B.3)



Key

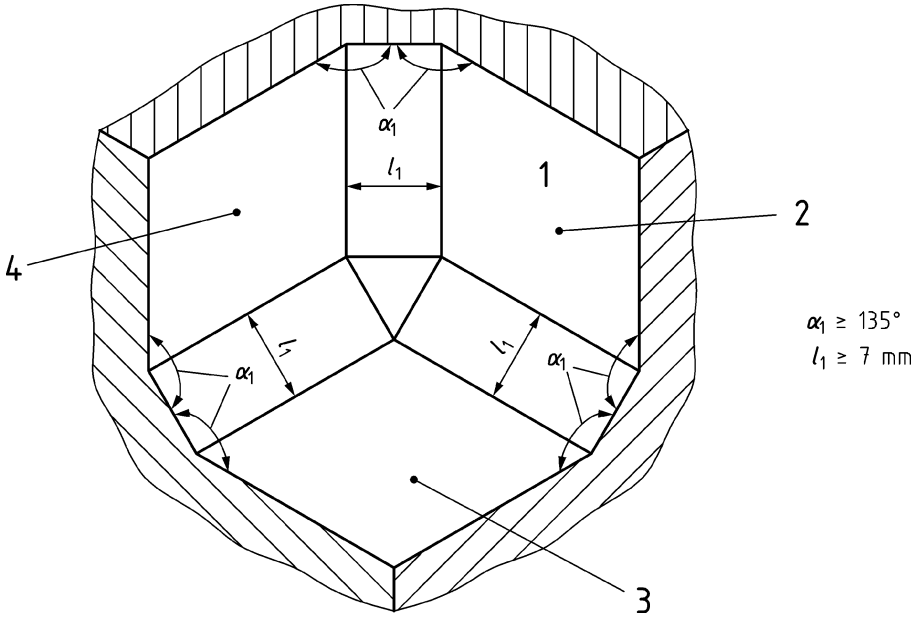
1 food area

Figure B.3 — Internal angle for food area greater than or equal to 135°

Three surfaces shall be connected (see Figure B.4):

— by using rounded edges, two rounded edges having a radius greater than or equal to 3 mm and the third having a radius greater than or equal to 7 mm;

— by angles of 135° so that the dimension (l_1) between two bends is then equal to or greater than 7 mm.



Key

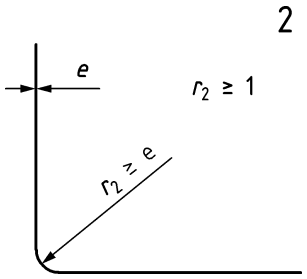
1 food area

2, 3 and 4 plans

Figure B.4 — Connections of three surfaces for food area

B.3.1.3 Connections of internal surfaces for splash area

If two surfaces are perpendicular, the radius (r_2) shall be greater than 1 mm (see Figure B.5).

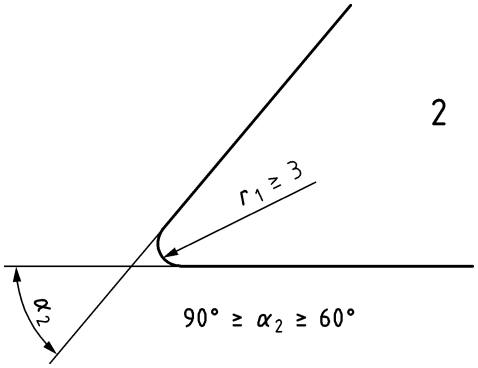


Key

2 splash area

Figure B.5 — Internal angle for splash area greater than or equal to 90°

If the internal angle (α_2) is between 60° and 90°, the radius (r_1) shall be greater than or equal to 3 mm (see Figure B.6):

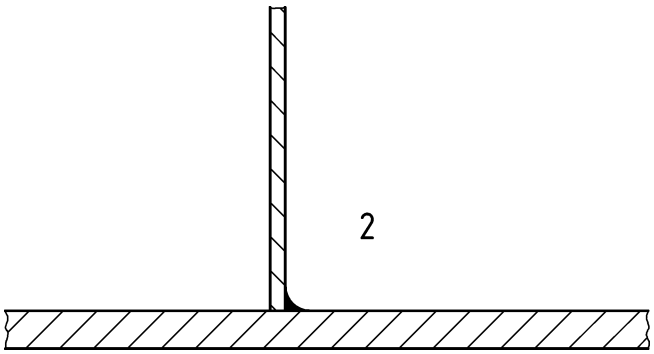


Key

2 splash area

Figure B.6 — Internal angle for splash area between 60° and 90°

When two perpendicular surfaces are welded together, the weld shall ensure tightness (see Figure B.7). A ground finish is acceptable.



Key

2 splash area

Figure B.7 — Internal surfaces for splash area (welded)

B.3.1.4 Connections of internal surfaces for non-food area

No particular requirement.

B.3.2 Surface assemblies and overlaps

B.3.2.1 General

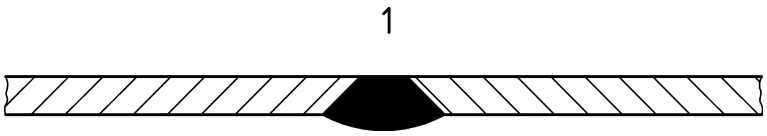
The sheet metal assembly methods shall take into account the expanding or contracting due to temperature variations.

B.3.2.2 Surface assemblies and overlaps for food area

B.3.2.2.1 Surface assembly

Assembled surfaces are considered joined either:

— by a continuous weld (see Figure B.8); or

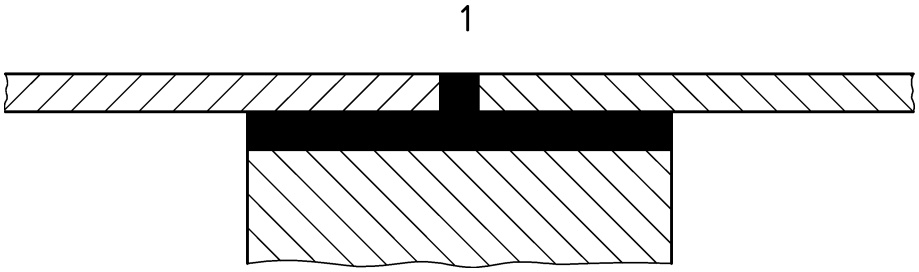


Key

1 food area

Figure B.8 — Surface assemblies for food area (welded)

— by a continuous sealed and flushed joint (see Figure B.9).



Key

1 food area

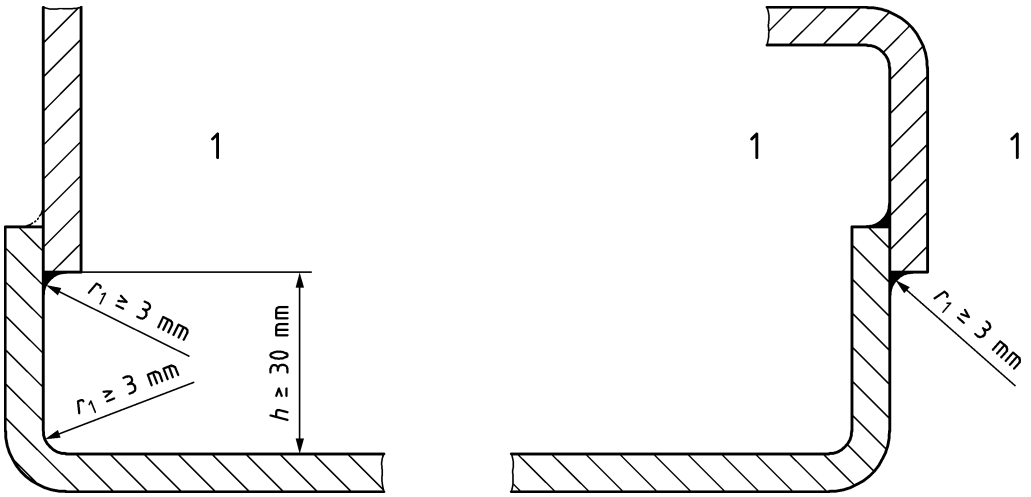
Figure B.9 — Surface assemblies for food area (sealed)

B.3.2.2.2 Surface overlapping

In the event of unavoidable technical constraints (e.g. long sheet metal parts of varying thicknesses), assemblies may be made by the overlapping of sheet, in which case the assembled surfaces are joined to each other:

— either by a continuous weld.

The upper surfaces shall overlap the lower surfaces in the direction of liquid flow. The end of the overlapping and the corner shall be separated with a distance (h) more than or equal to 30 mm (see Figure B.10):

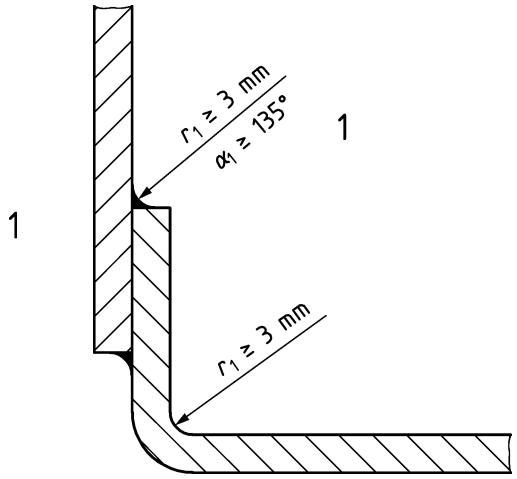


Key

1 food area

Figure B.10 — Surface overlapping for food area (welded)

If this is impossible to construct, connections shall be in compliance with the requirements concerning rounded areas in the food area (see B.3.1.2 and Figure B.11).



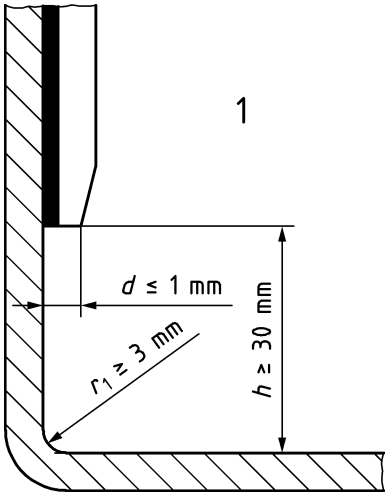
Key

1 food area

Figure B.11 — Surface overlapping for food area (welded, exceptional)

— or by continuous sealed and flush jointing.

When the overall thickness of the overlapping part and joint is more than 1 mm, the upper part shall be chamfered in order to reduce the thickness (*d*) to smaller than or equal to 1 mm (see Figure B.12).



Key

1 food area

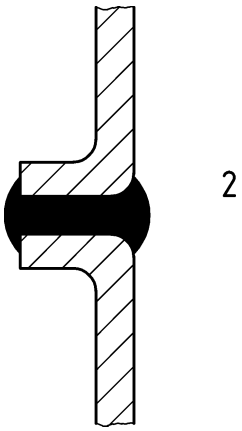
Figure B.12 — Surface overlapping for food area (sealed)

B.3.2.3 Surface assemblies and overlaps for splash area:

The surfaces may be:

— either grouted:

  — by means of a profile which cannot be pulled away and which is installed before assembly (see Figure B.13):

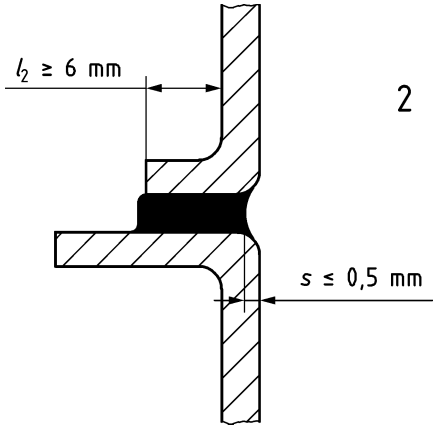


Key

2 splash area

Figure B.13 — Surface assemblies for splash area (by means of a profile)

— by flush bonding (the folds of the part used for bonding shall have a flange length (l_2) greater than 6 mm and the flash of the bond shall not have a shrinkage (s) more than 0,5 mm), (see Figure B.14).

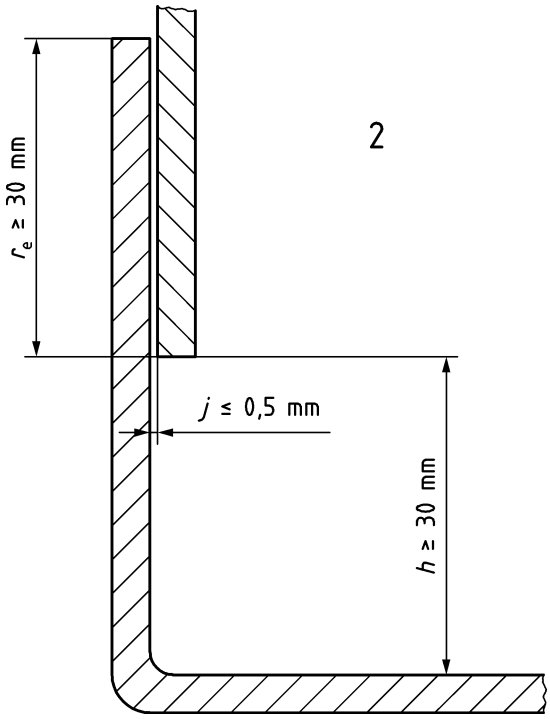


Key

2 splash area

Figure B.14 — Surface assemblies for splash area (by flush bonding)

— or assembled and fitted (maximum clearance (*j*) less than or equal to 0,5 mm) with the upper surfaces overlapping the lower surfaces in the direction of product flow. An overlapping distance (r_e) of at least 30 mm is essential to prevent liquid rising by a capillarity (see Figure B.15).



Key

2 splash area

Figure B.15 — Surface overlapping for splash area

B.3.2.4 Surface assemblies and overlaps for non-food area

No particular requirements.

B.3.3 Fasteners

B.3.3.1 Fasteners for food area

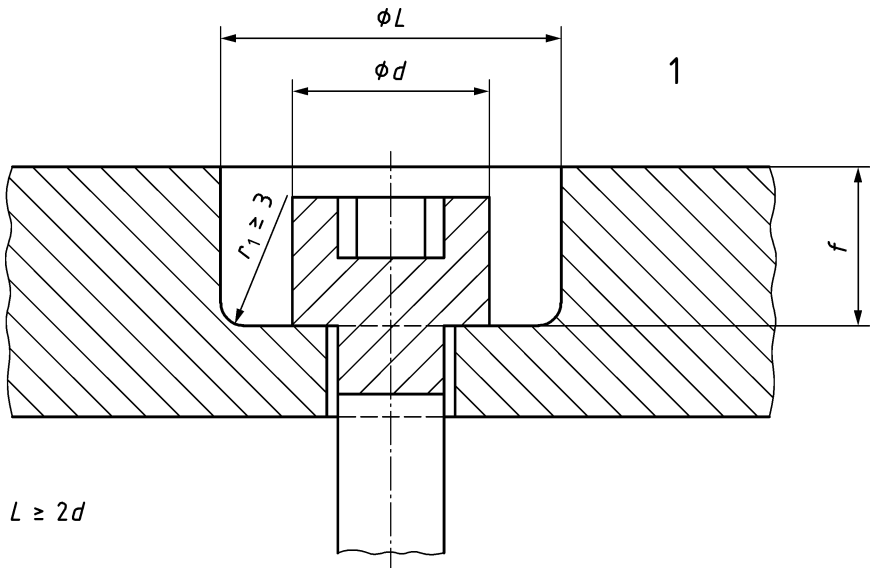
B.3.3.1.1 General

See EN 1672-2:2005+A1:2009, 5.3.1.3.

B.3.3.1.2 Spot-facing

If construction requires the use of hexagon socket head screws embedded in a spot-face:

— either construction shall comply with the Figure B.16 and the manufacturer in his instruction handbook can prescribe suitable cleaning facilities;



Key

1 food area

Figure B.16 — Spot-facing

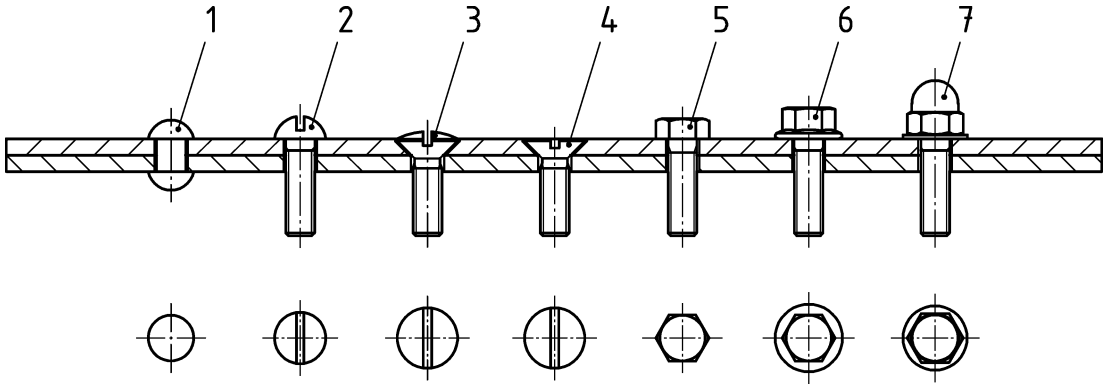
— or the manufacturer shall take the necessary steps to fill in the spot-face by sealed and lasting plugs corresponding to the requirements of the food area.

B.3.3.1.3 Pin drive systems

Pin drive systems shall only be authorized if they are solid and assembled as flush as possible. The manufacturer can establish an inspection procedure to ensure compliance with this requirement.

B.3.3.2 Fasteners for splash area

The fasteners easily to be cleaned shall be chosen amongst those on Figure B.17.



Key

1	round head	5	hexagon head
2	slotted round head	6	hexagon head with collar
3	slotted raised countersunk head	7	hexagon domed head
4	slotted countersunk head		

Figure B.17 — Fasteners for splash area

If construction requires the use of hexagon socket screws embedded in a spot-face hole, the design shall comply with:

— either a method complying with the principle of Figure B.16 for the food area whereby manufacturer can specify in his instruction handbook the cleaning facilities that are required (e.g. high pressure jet); or

— the manufacturer shall take all necessary measures to plug the spot-facing with sealed plugs.

B.3.3.3 Fasteners for non-food area

No particular requirement.

B.3.4 Feet, support and bases for cleaning the machines underneath

B.3.4.1 Machines on the floor

B.3.4.1.1 Fixed machines with or without a base

Fixed machines with or without a base shall either be based on the floor with an interposed continuous and sealed joint, the instruction handbook shall specify the jointing method (see Figure B.18), or shall have their feet (*H*) higher than or equal to 150 mm.

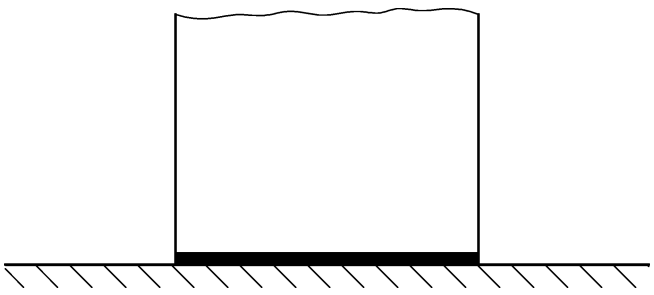


Figure B.18 — Machine standing on the floor

However, if the space (*L*) to be cleaned is not deeper than 150 mm, the height *H* may be reduced to 100 mm as long as the various access possibilities are taken into account (see Figure B.19).

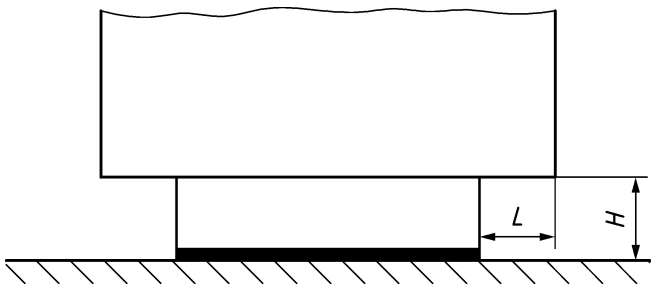


Figure B.19 — Machine with protrusion

If the foot surface is greater than 1 dm^2, the feet shall be considered to be a base (with interposed seal) (see Figure B.20).

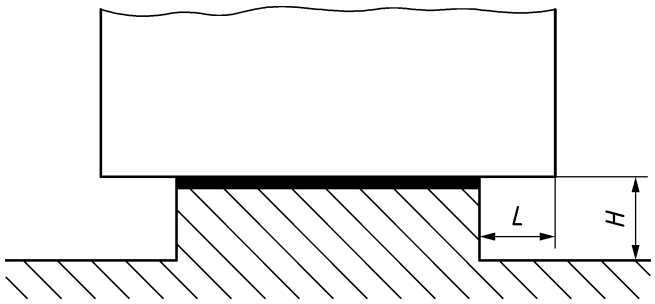
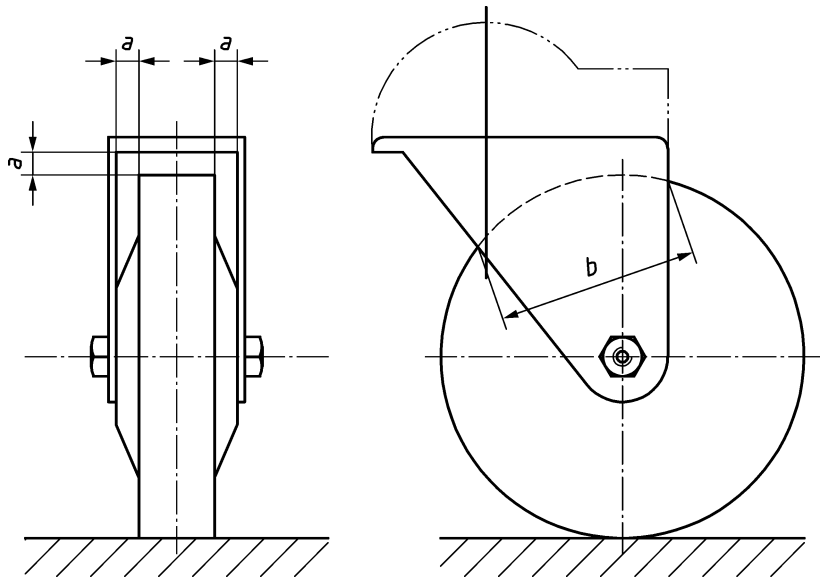


Figure B.20 — Machine with a base

B.3.4.1.2 Mobile machines

The castors shall be cleanable. An example is given in Figure B.21, where *b* is the greater width of the covering at the circumference of the wheel.



If $b \leq$ 25 mm, then $a \geq$ 3,5 mm

If $b >$ 25 mm, then $a \geq$ 6 mm

Figure B.21 — Castors

B.3.5 Ventilation openings

B.3.5.1 Ventilation openings for non-food area

Ventilation openings shall be located in the non-food area.

Their design shall prevent any infiltration or retention of fluid in the machine.

Whenever possible, for machines standing on the floor, a guard shall prohibit access to rodents in all technical areas of the machine and for this reason the smallest dimension of the opening shall be less than or equal to 5 mm.

B.3.5.2 Ventilation openings for splash area

In case of technical constraints, ventilation openings may be in the splash area. In such cases, they shall be designed to be cleanable.

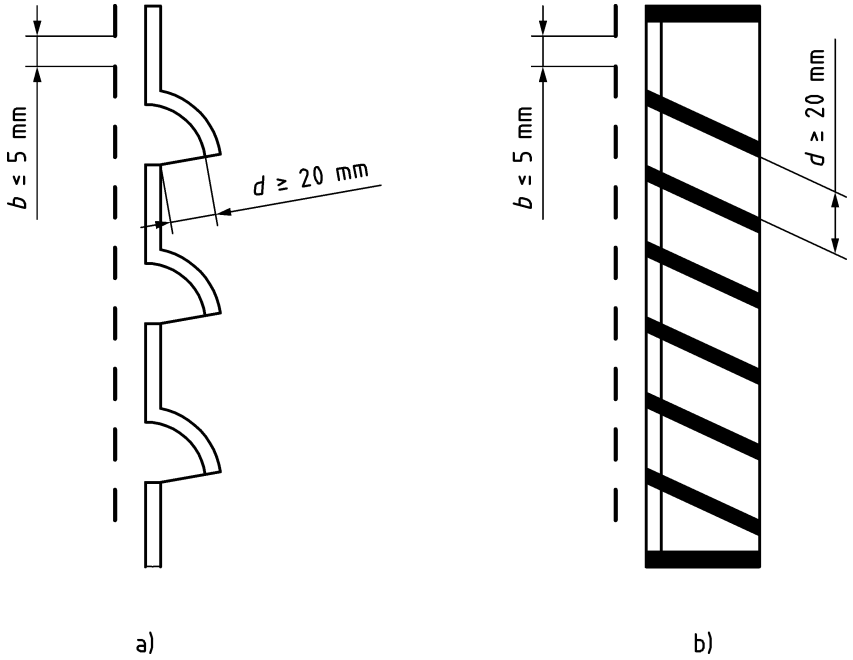


Figure B.22 — Ventilation openings for splash area

Whenever possible, for machines standing on the floor, a guard shall prevent access to rodents in any technical areas of the machine.

The smallest dimension of the opening (*b*) shall be less than or equal to 5 mm (see Figure B.22).

B.3.6 Hinges

Whenever possible, the manufacturer shall eliminate swivel points from the food area.

If their presence in the food area is technically necessary, then:

— they shall be easily removed;

— if they cannot be removed, all surfaces shall be accessible.

Assembly with a fixed part shall be made by a joint designed to prevent any infiltration. Access to all these areas is acceptable when the passage width (l_3) is greater than or equal to two times the depth (*p*). In no case this width (l_3) shall be less than 10 mm (see Figure B.23).

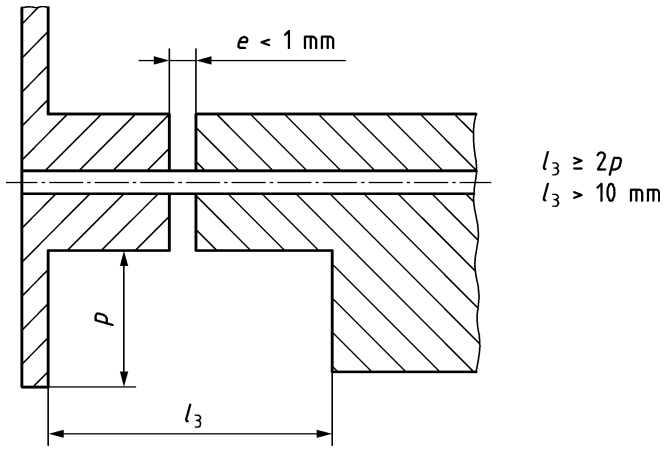


Figure B.23 — Hinges

B.3.7 Control panel

B.3.7.1 Control panel in the non-food area

Normally, the control panel should be in the non-food area and should also be cleanable whenever possible.

B.3.7.2 Control panel in the splash area

If it is not possible for technical reasons to place the control panel in the non-food area the various controls shall have easily cleanable surfaces.

The distance *L* between two elements shall be greater than or equal to:

— 20 mm (see Figure B.24);

— 12,5 mm if their height *h* is less than or equal to 8 mm (see Figure B.25).

If the above requirements cannot be complied with, controls shall be protected by a cap (see Figure B.26).

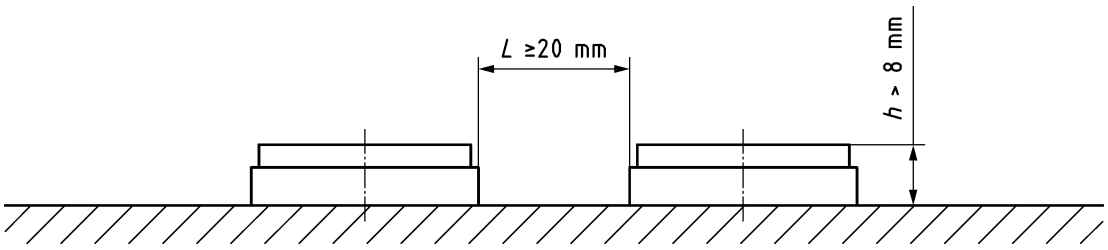


Figure B.24 — Control panel in the splash area with h > 8 mm

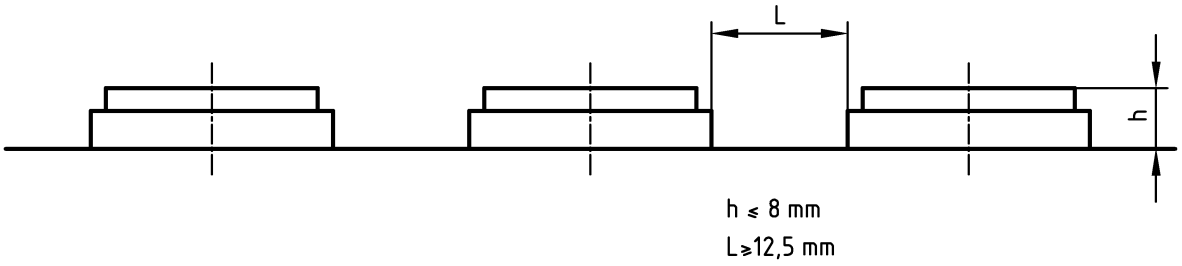


Figure B.25 — Control panel in the splash area with h ≤ 8mm

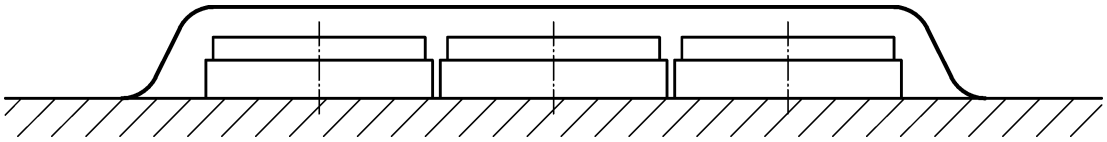


Figure B.26 — Control panel in the splash area with a covering

Annex ZA
(informative)

Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide a means of conforming to Essential Requirements of the New Approach Directive 2006/42/EC.

Once this standard is cited in the Official Journal of the European Union under that Directive and has been implemented as a national standard in at least one Member State, compliance with the normative clauses of this standard confers within the limits of the scope of this standard, a presumption of conformity with the relevant Essential Requirements of that Directive and associated EFTA regulations.

WARNING — Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard.

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