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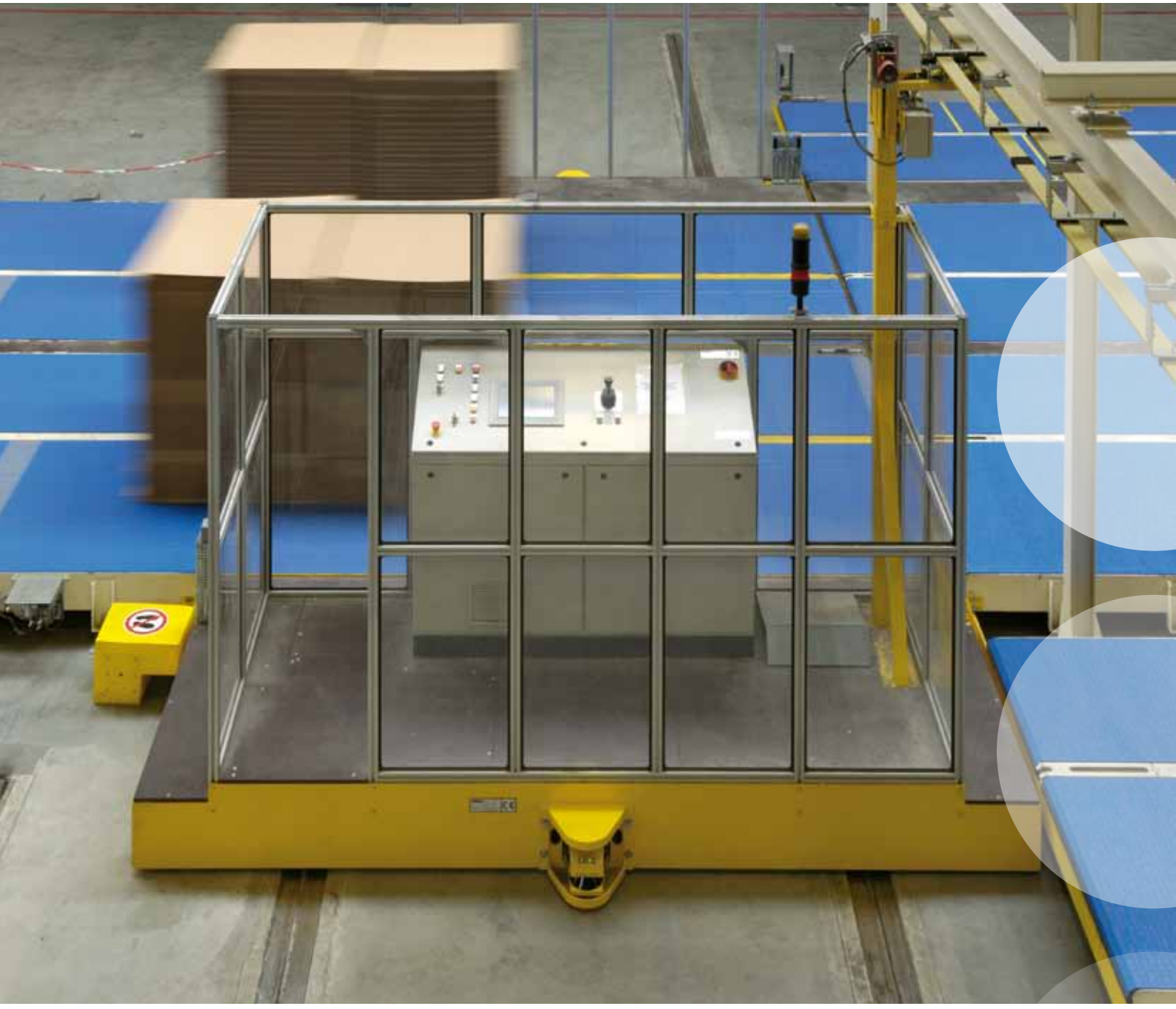

BGI 854

Principle design rules for the use of transfer cars (in the corrugated board industry)

Translated by MINDA Industrieanlagen GmbH

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Contents

Informations of the germans legal accident insurance
(BG informations)

This BG Information contains advice and recommendations which should make the practical application of rules and regulations easier with a precise subject area or facts.

The BG Information is in first instance directed to the employer and shall support him with the realization of his duties/responsibilities from governmental health and safety regulations and accident prevention regulations and rules as well as demonstrating ways to avoid work accidents, occupational diseases and work related health dangers.

In complying with the recommendations from the BG Information, in particular the examples by which possible solutions are given, the employer can assume that he achieves the necessary targets for the accident prevention regulations and DGUV-rules. Other solutions are possible, if safety and health protection are guaranteed in the same way. The formalising of the governmental health and safety regulations, from which strict technical rules have been ascertained, should be observed as a matter of primary importance.

The technical solutions contained in this BG Information do not exclude other, at least equally safe solutions, which have also been reflected in the technical rules of other member countries of the EU or other treaty agreement countries of the European economic area.

Preliminary remarks

Transfer cars in the corrugated cardboard industry are today a frequently used work tool, in order to solve the increasing transport tasks within the manufacture and processing of corrugated cardboard. They can reach speeds of 180 m/min however also stopping distances of up to 6 m are possible. Because of the weight and the achievable speeds of the transfer cars, which in the coming years will be increased due to the continuous trends of increased productivity, great dangers arise from transfer cars.

This BG Information has been compiled on the basis of the findings from the latest accident statistics and covers the safety requirements arising from the operation of transfer cars in the corrugated board industry. The following principle design rules summarise, clarify and specify the many different guidelines, laws, regulations and standards concerning safety at work for practice.

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1 Application area

These principle design rules are exclusively applicable in the corrugated board industry for the operation of transfer cars and conveyors.

A corrugated cardboard plant consists of the following main components:

- Feeding of material (paper reels).
- Corrugators for the production of corrugated board.
- Intermediate storage and internal material handling.
- Material converting (die-cutting, scoring, printing),
- Transportation/storage.

Due to the ever-increasing performance of modern production and converting machines the internal material transport in a corrugated board plant gains more and more importance.

The quantity of converted material in corrugated board plants increases continuously leading to ever-higher requirements to the capacity of the machines.

The feeding of corrugated board sheets to the converting machines and also the discharge have to be operated quickly and smoothly. The transfer car and the conveyors take these tasks.

The system for the transportation of corrugated board stacks of different sizes and heights essentially consists of two components:

- Transfer cars.
- conveyors serving and feeding / discharge equipment and storage areas

Transfer cars are subject to the range of applications according to the ▸ **EG-machine directive 2006/42/EG** that have to be followed by the manufacturer as of 29.12.2009.

To provide more precise indications to the health and safety requirements of this directive a European standard has been compiled: ▸ **DIN EN 619 "Continuous handling equipment and systems/Safety and EMC requirements for mechanical handling of unit loads"** This has been adopted into the national set of standards.

The principle design rules contain on the one hand specific safety requirements concerning construction and equipment of transfer cars taking into account the EC machine directive to be applied by the manufacturer and on the other hand the requirements for the safe operation of transfer cars in producing and processing corrugated board plants.

Further information

- ▸ EG machine directive 2006/42/EG
- ▸ DIN EN 619 "Continuous handling equipment and systems/ Safety and EMC requirements for mechanical handling of unit loads"

2 Definitions

For the purpose of this BG Information the following definitions apply:

1. **Transfer cars** are movable cars with installed manually or power-driven conveyors for the transportation of material units to be conveyed. These material units are taken over from a continuous conveyor, are moved laterally and are discharged to another continuous conveyor or another machine or vehicle. There are fully automatic transfer cars as well as transfer cars driven by operators.

2. **Conveyors** are continuous conveyors for the transportation of material units, such as corrugated board stacks or sheets. The carrying mediums can be rollers, plastic chains or belts. The feeding conveyor is used for the transportation of corrugated board stacks from the corrugator to the converting machines or from the converting machines into the storage area.

Transfer cars and conveyors are permanently used in the corrugated board industry.

3 Risks

In principle, there is a danger that people can be run over by a transfer car. In addition there is a crushing and shearing risk for persons standing between the conveyor and the transfer car. These risks arise in particular upon sudden entry into the danger zone at the side of the conveyor.

Using laser scanners does not always guarantee the detection of persons due to blurring within the outer scanning area. Risks may also occur due to incorrect adjustment and programming of the scanner.

The area between the conveyor and the transfer car is extremely dangerous.

After major modifications or extensions of existing plants a risk assessment has to be carried out in accordance with the ▸ **§ 3 Ordinance on Industrial Safety and Health.** Should this risk assignment result in new or additional risks this is a case of an essential modification as defined in ▸ **§ 4 Equipment and product safety act**. Consequently, the EC conformity procedure has to be carried out for the complete installation.

After modification of an existing plant this has to be considered as a new installation with regard to safety precautions if the following conditions have been met:

1. **The modifications lead to new risks that cannot be avoided by means of the already existing protection devices respectively by additional simple separating guards.**

2. **A risk analysis has shown that due to the modification of the plant irreversible personal injuries will occur with high probability.**

New or additional risks might for example be the result of a significant increase of the moving speed of the transfer car whereas just an exchange of the conveyors on the transfer car will not lead to a danger increase.

Further informations

- Interpretation paper of the BMA and the countries on the subject “Essential change of machines” Bek. of the BMA from the 7th of September, 2000 – Illc 3-39607-3 –
- Booklet “Conditions for the marketing from Machines in the European economic area” of the Berufsgenossenschaft ETEM, Branchenverwaltung Druck und Papierverarbeitung order-no. 413

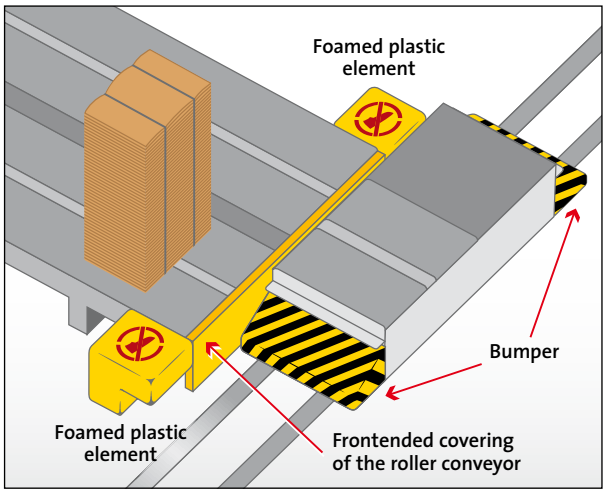
4 Design of the conveyors

4.1 General design principles

Depending on the safety measures on the transfer car the danger zone at the conveyor has to be safeguarded differently. The goal is to minimize the number of crushing points and to safeguard the remaining risks by constructional provisions.

4.2 Use of safety bumpers and contact bars

If contact bars or bumpers are used as safety devices during the movement of the transfer car the conveyors have to be equipped with front covers wherever it is possible along the track of the transfer car in order to minimize the number of possible crushing points. These front covers have to be installed from the upper edge of the conveyor up to the floor.



PICTURE 1: Covering of conveyor front edge

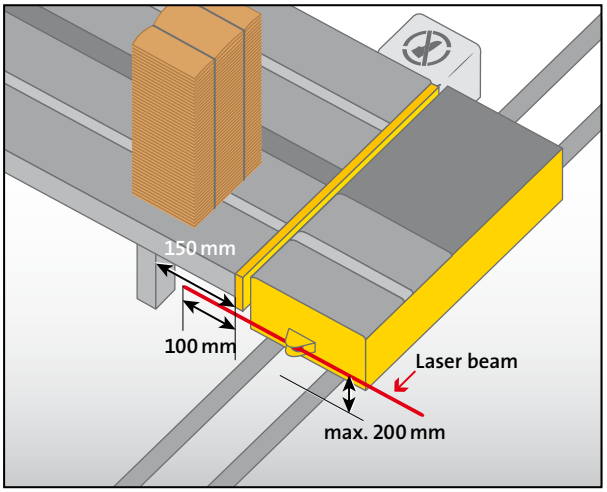
If laser scanners are used as safety devices during the movement of the transfer car the front covers at the conveyors may not reach to the floor.

4.3 Exceptional features in the design of conveyors using laser scanners

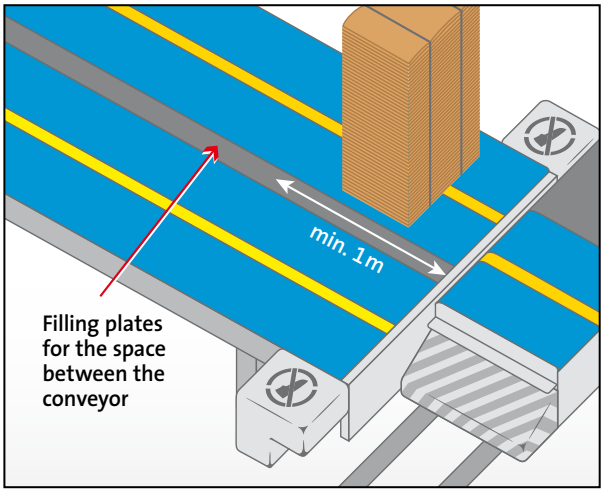
If laser scanners are used as safety devices during the movement of the transfer car the conveyors have to be equipped continuously with front covers. However this is only possible for the upper part of the conveyor. The lower part has to be kept free from covering to enable a scanning underneath of the conveyor. The height of the uncovered part depends on the height of the laser scanner protective field.

In order to guarantee a safe detection also of lying persons the laser scanner has to be installed in that way that a test object for checking the detection capability of the laser scanners will reliably be detected. The test object is a cylindrical tube at a diameter of 200 mm **(▸ acc. to DIN EN 1525).** The adjustment of the protective field height is done by the manufacturer.

It is recommended to install the feet of the conveyors (as shown on picture 2) at a distance of at least 150 mm from the conveyor edge to enable a trouble-free scanning of the area underneath the conveyor.



PICTURE 2: **Covering of front edge and scanning underneath of conveyor**



PICTURE 3: **Lining of the spaces between the conveyors**

Only in this way it is possible to guarantee a scanning range of at least 100 mm from the front edge of the conveyor. The measurement of 100 mm is calculated on the basis of the technical parameters for the safe detection of the edge blur plus a safety margin.

4.4 Lining of the spaces between the conveyors

There is a possibility of access for persons between the individual conveyors who can then easily enter the moving range of the transfer car. In order to defuse the dangerous crushing point between transfer car and conveyor it makes sense to line the spaces between the conveyors by filling plates (as shown in picture 3).

These plates should be installed at the same height level of the conveyors and should be set out at a length of at least 1 m like a platform in order to avoid additional tripping points. It An all-over lining (exceeding 1 m length) of the spaces is recommended. In areas where a lining is impossible, e. g. due to the fact that the distance between the conveyors is too large, the measures mentioned in chapter 4.6 have to be taken.

4.5 Area between material to be conveyed and superstructure on the transfer car

According to ▸ **DIN EN 349 "Safety of machinery/Minimum gaps to avoid crushing of parts of the human body"** the distance between the material to be conveyed and the superstructure on the transfer car has be at least 500 mm (picture 4).

The total dimension of at least 500 mm is calculated from both partial distances

a: front edge of conveyor up to corrugated board stack

and

b: front edge of conveyor up to superstructure on the transfer car respectively corrugated board stack on the transfer car.

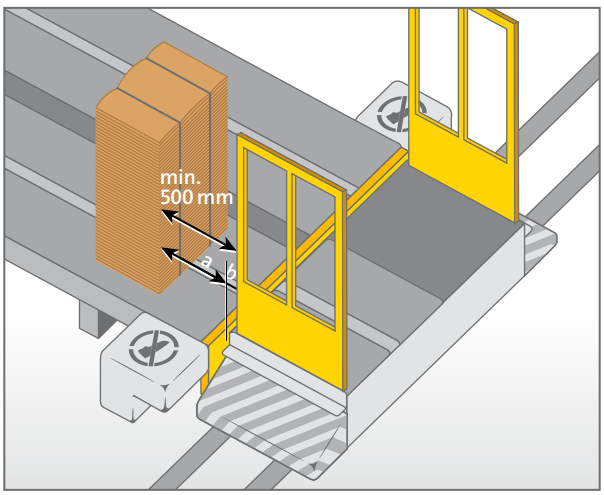
The following holds: $a + b \geq 500$ mm

Ideally all spaces between the conveyors are lined with filling plates. Thus, tripping areas can be defused.

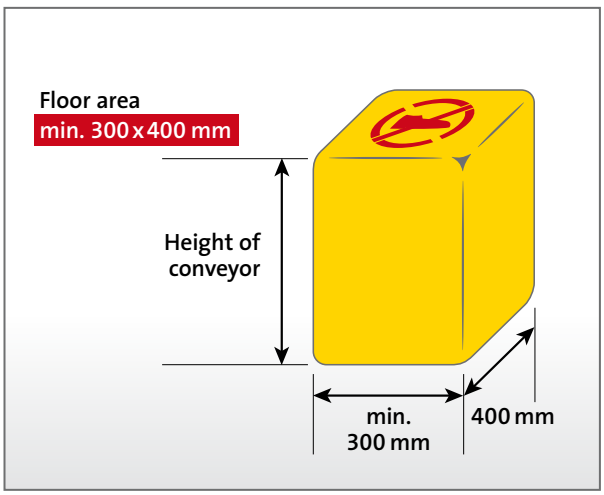
In any case this minimum distance has to be adhered to. Thus it is necessary to move back the corrugated board stack from the front edge of the conveyor and, if necessary, to intend the superstructures on the transfer car.

4.6 Safety technology at the shearing point between transfer car and conveyor

Safety measures are required at the shearing point between transfer car and conveyor to avoid serious injuries. If technical measures as partly described in chapter 7 are not possible for example resilient and soft foam cubes in the signal colour yellow with an edge length of at least 400 x 300 mm can be installed. The height of the foam cube should reach the conveyor level.



PICTURE 4: Safety distance between transfer car and corrugated board



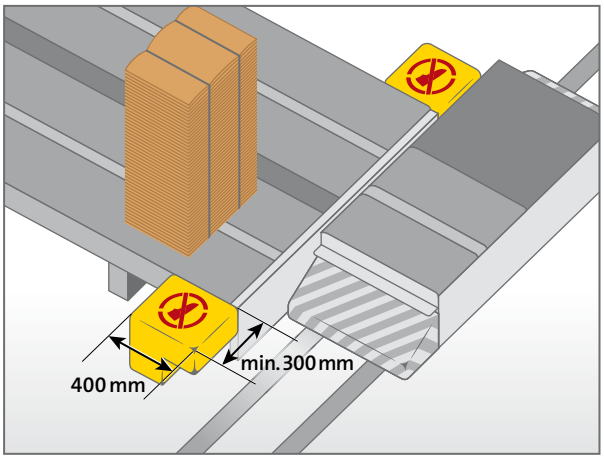
PICTURE 5: Dimensions of a foam cubes stack

The foam cube belongs to the "indicating safety technology". It signals a hazard zone and is designed to prevent the access into this area.

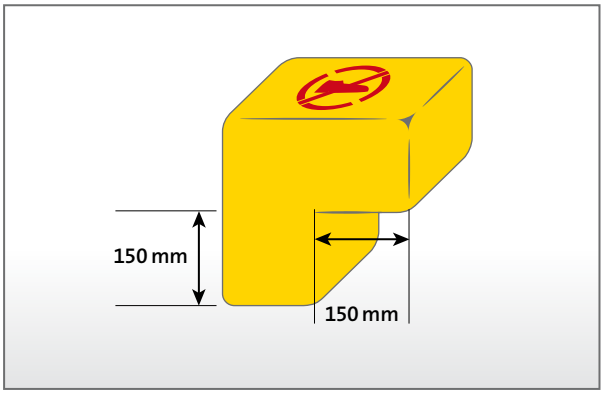
Care must be taken that the front edge of the foam cube flushes with the front edge of the conveyor. Using laser scanners it is recommended to notch the lower part of the foam cubes by 150 mm to enable a scanning underneath this area.

As damages of these foam cubes by fork-lift trucks are to be expected care must be taken that these foam cubes are protected correspondingly and that damaged foam elements will be exchanged immediately. The application by means of Velcro tapes on the floor or laterally at the conveyor has been proven as a practical solution in order to replace the foam cube quickly after unintentional removal.

The application of the foam cubes does not serve to safeguard the shearing point between transfer car and conveyor but rather to point out to the hazard zone and thus to prevent the employees to stand in this critical area.



PICTURE 6: **Arrangement of the foam cubes**



PICTURE 7: **Foam cube with notch**

Further information

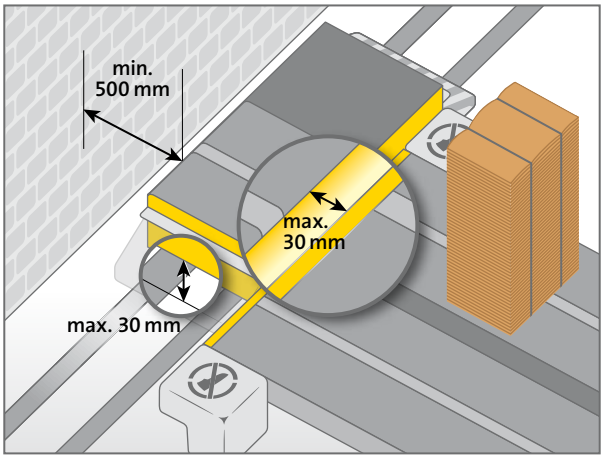
- DIN EN 1525 "Safety of industrial trucks/Driverless trucks and their systems"
- DIN EN 349 "Safety of machinery/Minimum gaps to avoid crushing of parts of the human body"

5 Design of the transfer car

5.1 Covering of the transfer car

Particular risks of accidents arise if persons step into the area between transfer car and conveyor or reach with their foot underneath the transfer car. In order to avoid an entanglement hazard between foot and transfer car the transfer car has to be covered laterally in that way that the distance to the floor does not exceed 30 mm. If this is not possible a distance of at least 120 mm has to be kept according to ▸ **DIN EN 349.** In that case the distance of the rollers from the lateral outer edge of the transfer car has to be 150 mm.

The maximum distance between transfer car and lateral front covers of the conveyors may be 30 mm. A space as small as possible should be aimed for in order to avoid a crushing of body parts in this area.
According to ▸ **§ 17 par. 2 Workplaces Ordinance** a distance of at least 500 mm between transfer car and building part has to be kept.



PICTURE 8: **Spacing dimensions at the transfer car**

5.2 Safeguarding of the movement of the transfer car

The design of transfer cars allows the following alternative technical safety measures to safeguard the movement of the transfer car:

1. **contact bars,**
2. **bumpers,**
3. **laser scanners.**

The safety-relevant components of the electric respectively electronic control incl. the evaluation unit at the transfer car have to be designed fail-safe according to ▸ **DIN EN ISO 13849-1 "Safety of machinery/Safety-related parts of control systems – Part 1: General principles for design".**

5.3 Contact bars

Contact bars are used on transfer cars with short stopping distances of a few centimetres. If the stopping distance is less than 50 mm additional safety measures are not necessary. In principle, the deflexion distance of the contact bar has to be larger than the stopping distance of the transfer car.

5.4 Bumper

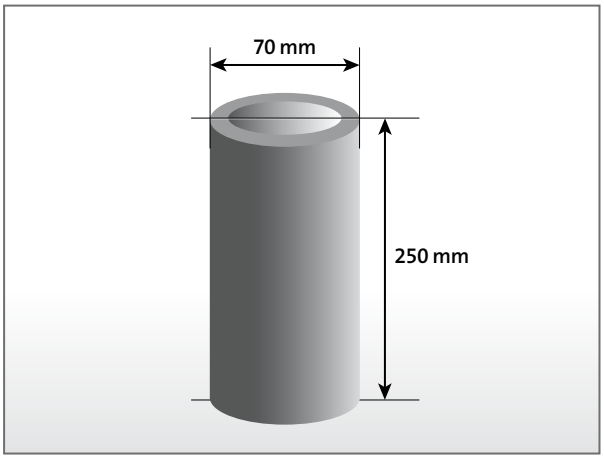
If bumpers are used the deflexion distance of the bumper has also to be larger than the stopping distance of the transfer car.
The actuation forces may not exceed 250 N. The final applied force that is reached when the bumper is compressed after the transfer car moving at maximum speed and load was stopped by the bumper may not exceed 400 N **(▸ see DIN EN 1525).**

5.5 Laser scanner

For the use of laser scanners the following should be noted:

1. The installation of the scanners and the evaluation electronic have to fulfil the requirements of
   ▸ **category 3 acc. to EN ISO 13849-1:2006.**

2. The scanner has to be adjusted in that way that a person standing or lying in the warning and protective field are detected safely. For checking the adjustment for an upright standing person a cylindrical matt black test body is used, the central axis of which runs through the boundary of the protective field (see picture 9).



PICTURE 9: **Test body**

3. The warning field and the protective field have to be adjusted in that way that persons in the edge zones on the right and on the left alongside the conveyors will be safely detected. Therefore it is necessary to optimally adapt the geometry of the protective field to the existing conveyor dimensions and to allow a scanning underneath of the conveyors by at least 100 mm.

4. Upon infringement of the warning field optical or acoustic warning signals are necessary.

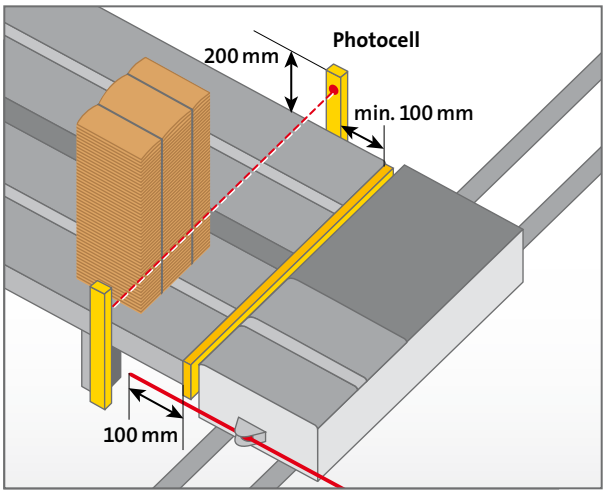
5. Upon infringement of the protective field the transfer car has to be slowed down and brought to standstill as quick as possible. The car has to stop before solid parts of the transfer car hit the person or the obstacle

6. A restart of the transfer car may only be carried out after determination and elimination of the cause for the stop of the transfer car. A manual acknowledgement is required.

If laser scanners are used special directives apply concerning the covering of the conveyors.

5.5.1 Scanning underneath of the conveyor

The safeguarding of the movement of the transfer car is made by means of a laser scanner that has to scan underneath of the conveyor at a distance of at least 100 mm from the from edge of the conveyor.

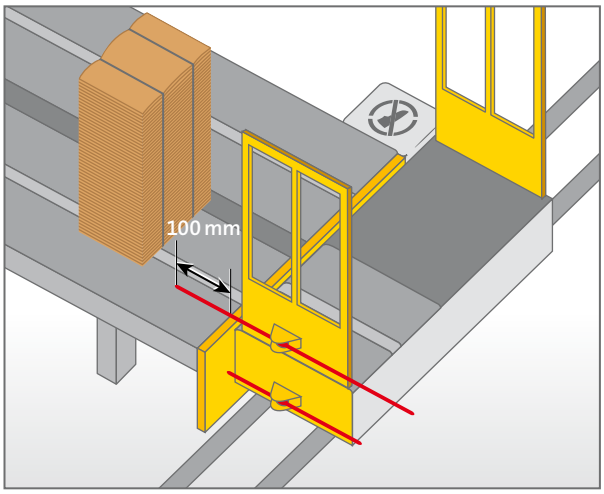


PICTURE 10: **Additional security by lateral photocells**

Additional safety is provided by photocells if they are installed at a height of 200 mm above the conveyor and at a distance of 100 mm from the front edge of the conveyor. The integration of these photocells to the bus system does not need to comply with increased requirements for control systems acc. to EN ISO 13849: 2006.

5.5.2 Scanning above the conveyor

If a safeguarding of the movement of the transfer car is secured by a laser scanner, however, a scanning underneath of the conveyor is not possible because the conveyors are completely covered, this area has to be safeguarded by a second laser scanner. This scanner has to scan the area above the conveyor by at least 100 mm.



PICTURE 11: **Completely covered conveyor – additional scanner is necessary**

Further information

- EN 349 “Safety of machinery/Minimum gaps to avoid crushing of parts of the human body”
- § 17 sec. 2 Workplaces ordinance
- EN ISO 13849-1 “Safety of machinery/Safety-related parts of control systems – Part 1: General principles for design”
- DIN EN 1525 DIN EN 1525 “Safety of industrial trucks/ Driverless trucks and their systems”

6 Design of fixed crossing areas

The interface between persons and the moving area of the transfer car is an area of high accident risks. Therefore, it is necessary to reduce the movement of persons in this area to an extend, that is absolutely necessary for the operation. Wherever it is possible persons have to be separated from the moving area of the transfer car.

Depending on the operational environment a risk assessment with risk analysis is always required. Special attention has to be paid to the shearing point between the end of the conveyor and the transfer car.

The shearing point between the end of the conveyor and the transfer car is a dangerous area that needs particular safeguarding.

Furthermore, the necessity of the access to the moving area of the transfer car, the incidence of the access to the danger zone and the measures to guarantee a safe access to the danger zone have to be regarded. Thus, it is possible to consider the particular local situation of the company and to perfectly adapt the necessary design measures.

The following sections contain possible safety measures:

Marking of crossings

Fixed crossings can be marked visually on the floor acc. to ▸ **ASR A1.3 3 “Health and Safety signs at work”.** If necessary mirrors can be installed to increase the visibility into the danger zone.

Safeguarding of the conveyor fronts by foam cubes

The front edges of the conveyors can be secured by the installation of foam cubes – as described in par. 4.3. These foam cubes have to be protected against displacement.

Speed reduction of the transfer car

In order to allow a safe crossing of the moving track of the transfer car the moving speed can be reduced on time while approaching to the defined crossing areas enabling persons to leave the danger area. The approach of the transfer car can also be indicated by visual or acoustic signals.

Installation of warning lights

The approach of the transfer car can be indicated by an acoustic or visual warning signal (flashing light). This has to be actuated on time, which means before the transfer reaches the crossing, enabling persons or vehicles to leave the danger area.

Visual or acoustic signals indicate the approach of a transfer car

Installation of traffic lights

The approach of a transfer car can be indicated by a traffic light. This traffic light has to be switched in that way to allow persons and vehicles leaving the danger area in time upon approach of the transfer car.

Installation of barriers or doors

Crossing areas can be safeguarded by automatic or manually operated barriers or doors.

Installation of photocells (light barriers)

At fixed crossing areas the access can be safeguarded by photocells affecting the moving drive of the transfer car. Upon triggering of the photocell the transfer car will be stopped by the emergency stop function. In this case it is permissible to operate the photocells only upon approach of the transfer car.

Installation of bridges

An especially safe possibility to separate pedestrians from the transfer car is the installation of a bridge construction.

Further information

- ASR A1.3 “Health and safety signs at work”

7 Particular safety requirements for long stopping distances of the transfer car

Moving areas of transfer cars with long stopping distances have to be safeguarded, e. g. by safety fences at a height of at least 2 m.

Transfer cars with stopping distances of more than 2.5 m require particular safety measures. Due to the high speeds of the transfer car there is a risk for the employees located in the danger area that cannot be sufficiently assessed. Therefore an additional safeguarding of the danger area is necessary.

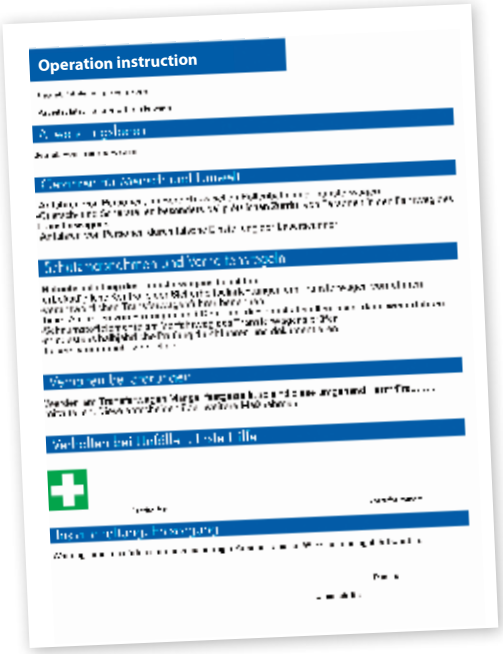
This has to be carried out in the form of an extensive danger zone safeguarding. The access to the danger area of the transfer car must be prevented over the entire track from all sides. According to ▸ **DIN EN ISO 13857 "Safety of machinery/Safety distances to prevent hazard zones being reached by upper and lower limbs"** this can be done by separating safety devices, e. g. fences at a height of at least 2 m in combination with photocells (light barriers) installed at the access openings (doors) affecting the moving drive of the transfer car.

It is also possible to carry out a sectional safeguarding of the danger zones by installation of switchable light sensor systems. These are connected to the moving drive of the transfer car and upon activation of the light sensor system this leads to an immediate standstill. The stopping distance results from the covered distance starting from the detection of the obstacle up to the standstill of the transfer car taking into account the time for the electronic evaluation.

Further information

- DIN EN ISO 13857 "Safety of machinery/Safety distances to prevent hazard zones being reached by upper and lower limbs"

8 Instructions and operating manuals



The operation instruction has to be established on the basis of the manufacturer's operating manuals. It has to be prominently posted in the factory.

The employees have to be instructed and trained in proper handling of transfer cars based on the manufacturer's operating manuals.

On the basis of these operating manuals an operation instruction has to be established giving information on the handling of the transfer car, especially on the personnel protection system. Special attention has to be drawn to the behaviour in case of disturbances or defects of the safety equipment.
Additionally is has to be pointed out to the proper use of the admissible internal paths and crossings.

Instructions must be given prior to start up of the transfer car and have to be repeated at least once a year.

Their contents and execution have to be documented.

Further information

- § 12 Health and Safety Act
- § 9 Ordinance on industrial safety and health
- § 4 Accident-prevention regulation (UVV) "Principles of prevention" (DGUV regulation A1)

Appendix 1

Implementation of inspections of transfer cars

1. **Assignment of a responsible transfer car operator**

   Before starting the operation of a transfer car the user/owner has to assign a responsible operator. This is especially necessary for automatic systems in order to ensure that the inspections are properly carried out.

2. **Visual inspection and function check**

   Personnel starting up the transfer cars, must satisfy themselves of the safe condition of the transfer car on each work day prior to starting work, and especially subject the safety devices, such as contact bars, bumpers and laser scanners, to a visual inspection and function check. Prior to putting the transfer cars into operation any faults possibly occurring have to be eliminated.

3. **Inspection by competent qualified persons**

   3.1 **Safety relevant components at transfer cars**

   A competent person must check all safety relevant parts of the protection system on the transfer car prior to its first start up. Following this, this check has to be carried out at regular intervals. Regular inspections should be carried out at least every 6 months.

   Competent persons are those whose vocational education, professional experience and timely vocational activities qualify them to check the transfer cars and their periphery.

   Regarding the risk assessment please refer to ▸ **see § 3 Ordinance on industrial safety and health.**

   During the inspection especially the stopping distance has to be determined and recorded under worst boundary conditions at maximum speed and load of the transfer car. Furthermore, the scope of the inspection has to include a check of the reliability and the effectiveness of the brakes. It must be ensured that there is a solid connection between coating and steel core of coated wheels preventing a

slipping that would reduce the braking effect. Therefore, this solid connection between coating and steel core has to be checked. Bumpers and contact bars have to be checked concerning mechanical damages. A visual and a functional test have to be made. The results of the aforementioned criteria have to be documented in an inspection book.

3.2 Transfer car with laser scanners

The setting and adjustment of the warning and protective field of the laser scanners may only be done by a competent qualified person. It should be checked at least every six months.

In accordance with the manufacturer's manuals especially the stopping distance of the transfer car with maximum load and the position and effectiveness of the protective field have to be checked. For checking the adjustment a cylindrical matt black test body is used, as shown in picture 9 of this information. Upon detection of defects or faults the transfer car may only be put in operation after remedy of the faults and a repeated check. The result of the safety inspection has to be documented in an inspection book.

Appendix 2

Source of supply

Following please find the pertinent rules and regulations to be observed in particular.

1. EC-Directives

Source of supply: book trade or http://eur-lex.europa.eu/de/index.htm

2006/42/EG	EC-machine directive

2. Laws and regulations

Source of supply: book trade or www.juris.de

ArbSchG	Health and Safety Act
ArbStättV	Workplaces ordinance
BetrSichV	Ordinance on industrial safety and health
GPSG	Equipment and Product Safety Act

3. Regulations and directives/media “Principles of prevention”

DGUV regulation A1	Accident-prevention regulation (UVV) “Principles of prevention”
ASR A1.3	Technical rules for working places: “Security and Health protection marking”
225	Safe work in the corrugated board production
230.4	Safety assessment: corrugated board production

4. Standards

Source of supply: Beuth Verlag GmbH, Burggrafenstraße 6, 10787 Berlin, Germany
www.beuth.de

DIN EN 619	Continuous handling equipment and systems – safety and EMC requirements for equipment for mechanical handling of unit loads
DIN EN 1010-1	Safety of machinery/safety requirements for the design and construction of printing and paper converting machines, part 1: Common requirements
DIN EN ISO 13857	Safety of machinery/safety distances to prevent hazard zones being reached by upper and lower limbs
DIN EN 349	Safety of machinery/minimum gaps to avoid crushing of parts of the human body
DIN EN 418 (replaced by DIN EN ISO 13850)	Safety of machinery/emergency stop, principles of design
DIN EN ISO 13849-1	Safety of machinery/safety-related parts of control systems, part 1: general principles for design

DIN EN ISO 14121-1	Safety of machinery/risk assessment, part 1: principles
DIN EN 1525	Safety of industrial trucks/driverless trucks and their systems
DIN EN 60204-1	Safety of machinery/electrical equipment of machines, part 1: general requirements
DIN EN 60825-1	Safety of laser products, part 1: Equipment classification and requirements
DIN EN 61496-2	Safety of machinery/electro-sensitive protective equipment, part 2: Particular requirements for equipment using active opto-electronic protective devices
DIN IEC 61496-3	Electro-sensitive protective equipment, part 3: Particular requirements for active opto-electronic protective devices responsive to diffuse reflection

Space for your notes

Space for your notes

Berufsgenossenschaft Energie Textil Elektro Medienerzeugnisse – Representative of accident insurance

Every company is a member in for his branch of industry responsible professional association. At the head of the professional association stand representative meeting and board of directors, to itself to the same shares from representatives the employer and employee compose.

The duties of the professional associations are:

1. Prevention of working accidents, occupational illnesses and working-conditioned health dangers
2. Achievements to the rehabilitation of the accident casualties
3. Compensation by payments

The preservation of the life and the health of the people is the uppermost order for the professional associations. Therefore, the legislator to the representative of accident insurance has the prevention of accidents as the first and most important ones Job assigned. By the technical supervision service they supervise professional associations, the realisation of the accident prevention and consult the companies and the employees in all questions of the working security.

Beside the prevention of working accidents and working-conditioned Health dangers is the second important one Job the health restoration of her Accident casualties. The professional associations maintain for this purpose own casualty hospitals. Occupational assistant provide for the fact, that possibly all injured persons again in the professional life are integrated.

To the medical and professional rehabilitation step the payments. It should be prevented, that somebody because of a working accident or an occupational illness a financial damage must suffer. If you have a question to the working security, turn to your professional association.

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