

Specification for

Continuous mechanical handling equipment — Safety requirements —

**Part 18: Conveyors and elevators with
chain-elements — Examples for
guarding of nip points**

UDC 621.867:614.8 + 621.867.1 + 621.867.3

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Electricity Supply Industry in England and Wales	

This British Standard, having been prepared under the direction of the Mechanical Engineering Standards Committee, was published under the authority of the Executive Board on 31 January 1979

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Foreword

This British Standard has been prepared under the direction of the Mechanical Engineering Standards Committee.

This standard is technically equivalent to Technical Report 5046 published by the International Organization for Standardization; ISO/TR 5046 was drawn up by Technical Committee ISO/TC 101, Continuous mechanical handling equipment, and approved by the majority of its members.

This Part, which forms one of a series, implements the safety code and should be read in conjunction with BS 5667-1.

The aim of this standard is to give examples for the guarding of nip points between the chains and the sprocket wheels on track drives for conveyors and elevators using chains as transporting elements.

The standard incorporates sketches which show in principle how safety can be achieved, without excluding other methods which give the same factor of safety.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 24, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This British Standard gives examples of different safety devices at nip points for conveyors and elevators with chain-elements. It supplements the various international standards dealing with safety of continuous mechanical handling equipment.

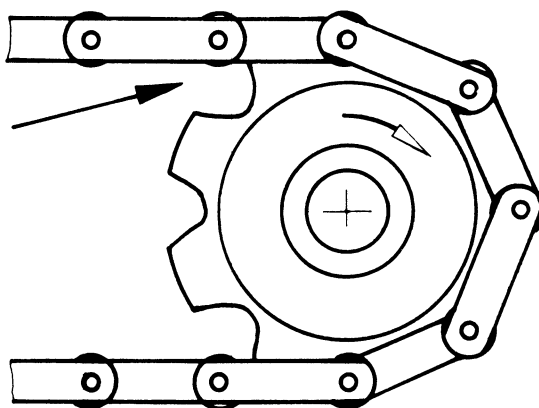
2 References

The titles of the standards publications referred to in this standard are listed on the inside back cover.

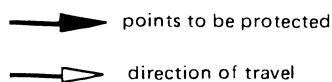
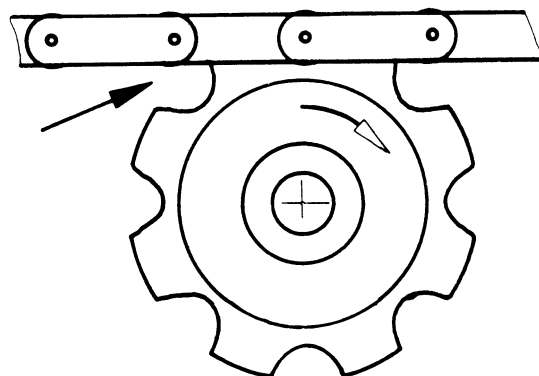
3 Nip points on chain conveyors

There is a risk of accidents occurring where chains run on to sprocket wheels or guide wheels.

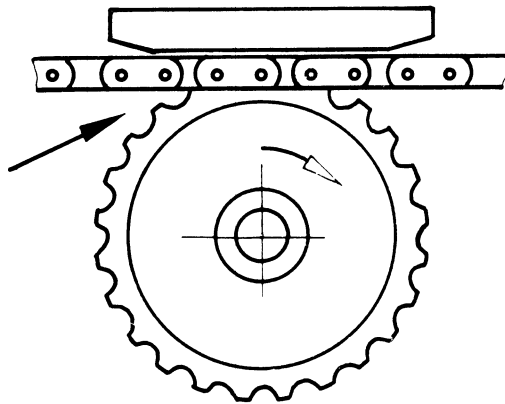
3.1 When the chains run round sprockets.



3.2 When the chain is supported by a sprocket.



3.3 When a shoe above the chain precludes any possibility of the chain lifting.

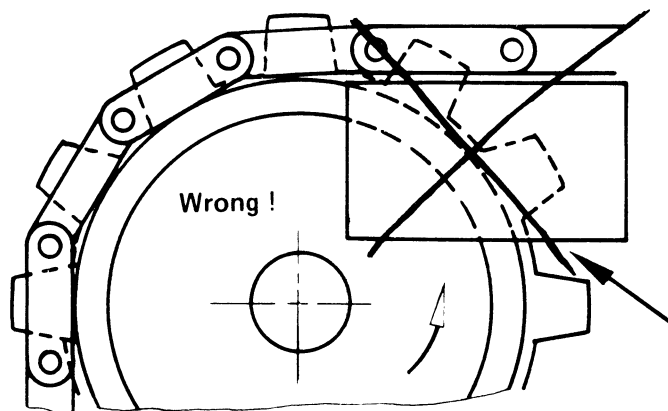


4 Basic types of protecting devices

4.1 General requirements

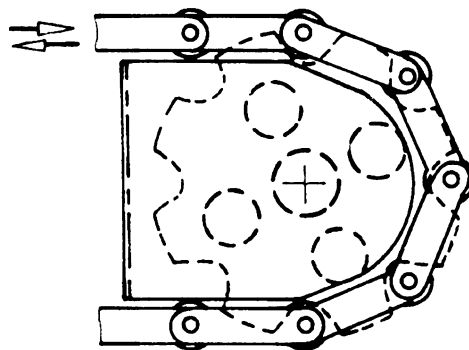
4.1.1 Guards should be shaped in such a way that they do not impede the functioning of the equipment. They should cover the dangerous areas completely but should not be larger than necessary, so that the state of maintenance and wear may be seen.

4.1.2 For chain wheels, a plate or a filling block just covering the nip is unsatisfactory, as a shear trap between each tooth and the guard is introduced.

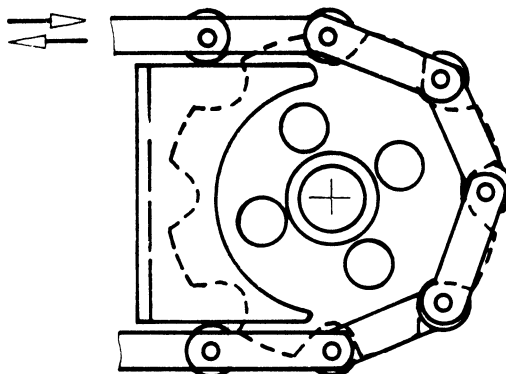


4.1.3 Guards on sprockets with spokes or openings on the disks should be shaped in such a way that no shear points are introduced.

a) by fully covering the wheels;



b) by limiting the guards up to the root radius of the full part of the sprocket where no shear points can arise from the sprocket openings.

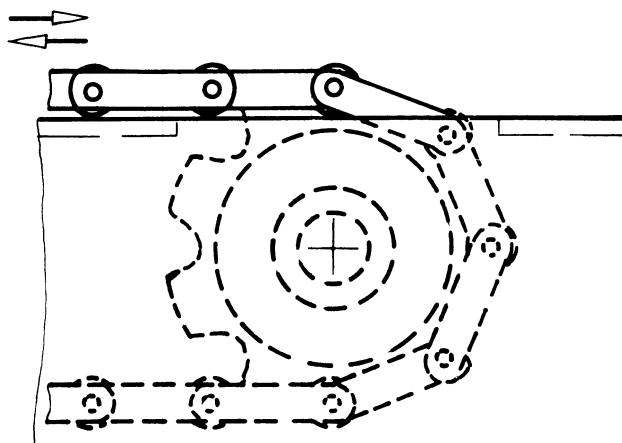


4.2 Examples of protecting devices

Guarding of nip points may be achieved by means of the following devices:

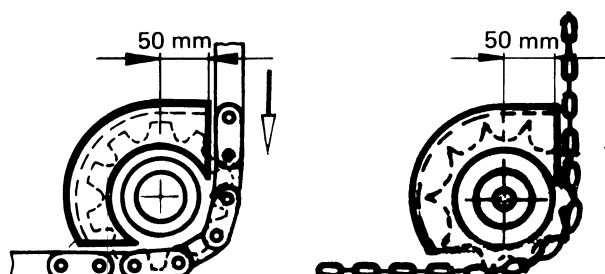
4.2.1 Structural protection

Enclosure of the sprocket wheels with the nip points by the machine casing, or under the floor.

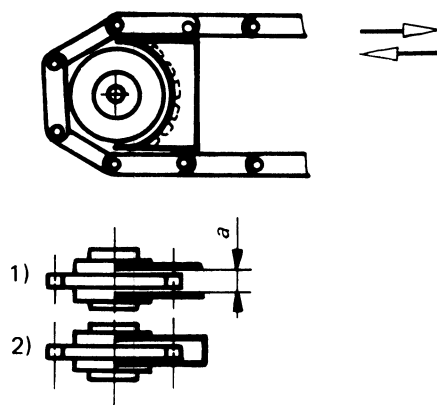


4.2.2 Guards

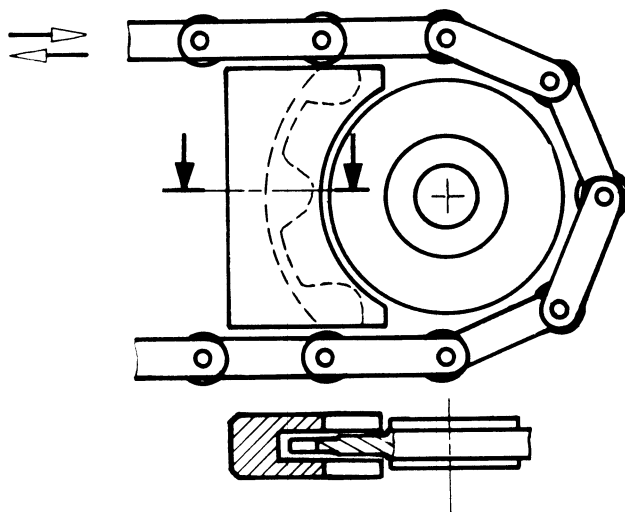
4.2.2.1 Guards extending between the chains up to the root radius of the sprocket wheel, with an extension of at least 50 mm perpendicular to the chain at the entry side.



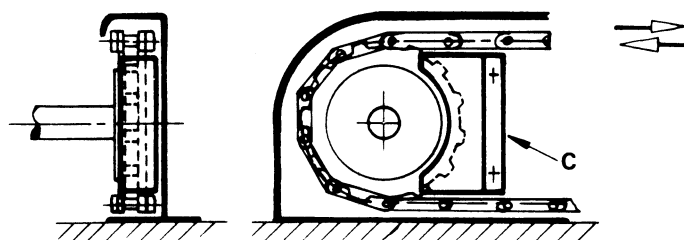
4.2.2.2 Guarding of both sides of the nip points by covers between the strands of chain. If the distance a between the covers is greater than 20 mm, the guard should be of a suitable length, or the opening between the sheets filled in 2) to prevent access to the nip points.



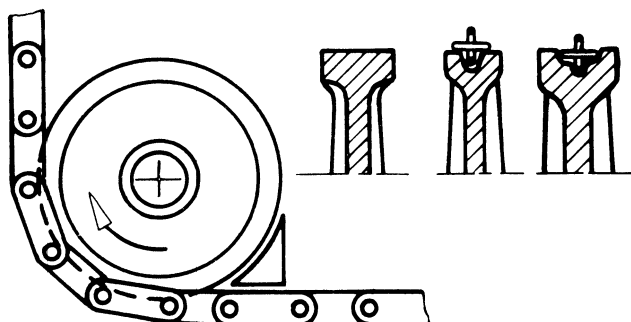
4.2.2.3 A filler block filling the space between the chains and shaped to cover the teeth to the root.



4.2.2.4 A guard outside and above the chain. In the working area an additional internal piece C prevents access to the nip points.



4.2.2.5 A filler block as illustrated may be used with smooth pulleys or grooved pulleys as shown.

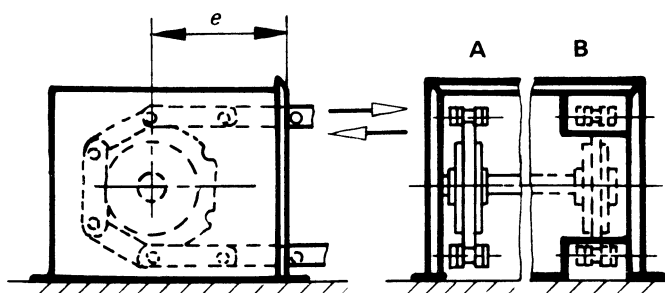


4.2.3 Enclosing guards

4.2.3.1 Enclosing guards of solid material or mesh for horizontal runs of conveyors.

If there are no guards between the chains as shown in A, the distance e should not be less than 850 mm. If there are guards between the chains as shown in B the covered length should be such as to prevent access to the nip points.

The height of the guard above the chain depends to a great extent on the construction of the conveyor. Relevant information is to be found in clause 5.



4.2.3.2 Guards for vertical runs of conveyors can be made of solid material or mesh. The guard should prevent access to the nip points. The nip points should not be accessible through loading openings.

If the distance c from the upper edge of the opening to the nip point is less than 850 mm, the nip point is to be made safe by internal guards.

