

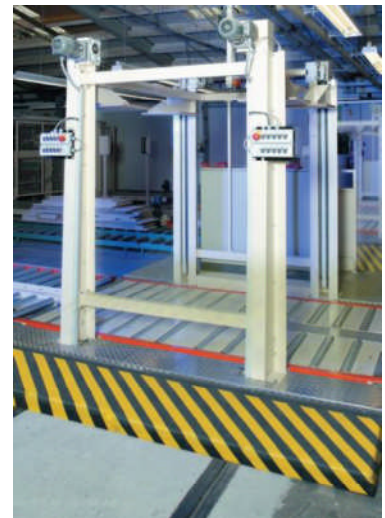


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Protection of shearing and crushing edges

The Machinery Directive states that dangerous machines may only be put into operation, if comprehensive safety measures have been taken to protect the personnel working with these machines.

One of these measures is for the protection of shearing and crushing edges at automatically driven devices bearing a substantial risk of injury.



Our catalogue HSC® Safety Edges describes the protection against risks at shearing and crushing edges through safety sensitive edges. The components shown in the safety edge catalogue have heights up to 150 mm. Further, they are generally equipped with one Haake contact chain only. In certain applications, the power-operated devices have, due to their inertia, long stopping times and thus also large stopping travels. Examples are big and heavy doors (hangar doors), automatic-guided vehicles (AGV), theatre stages etc.

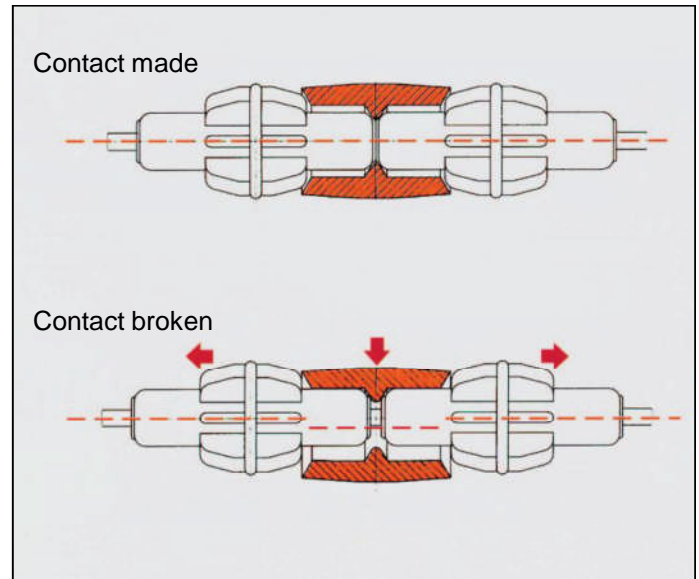
Here so-called bumpers are used. Their dimensions, as well as the positions and number of the contact chains, are specially selected and manufactured for each intended application. Bumpers are protection devices for large over-travels.

MODE OF OPERATION

Design and mode of operation of the Haake Contact Chain

As a general rule applies:

Machinery and devices presenting dangerous movements must be provided with an emergency stop device. This device is monitored by a suitable safety relay unit.



The bumper sensor is built up of mechanically opening N/C contacts connected in series, in the form of a contact chain.

Current conducting contacts rollers and insulating intermediate elements (wedge rollers) are alternately lined up on an expander cord. By pretension, the contact rollers are pressed together, and the current circuit is made.

Actuation of the contact chain leads to at least one pair of contact rollers to separate by action of the wedge-shaped intermediate elements, and the current circuit is broken.

Due to the positive break of the supply, transformation of the output signal is not required, since a circuit interruption signal is directly available. This signal is fed to the safety relay unit already needed for the E-stop button.

Note: Wiring of the contact chain is performed in an identical way as that of an E-stop button.

DESCRIPTION OF PRODUCT

Construction of the HSB[®]-Bumpers

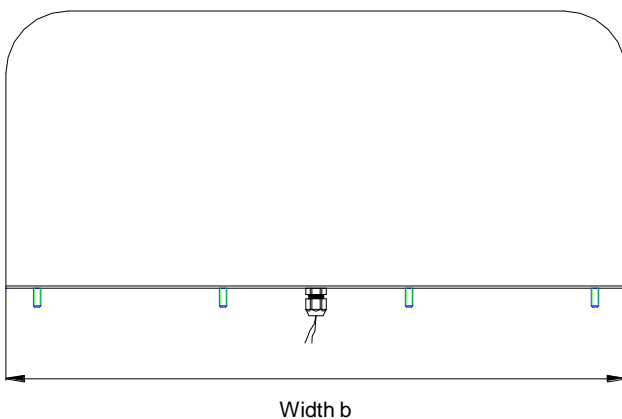
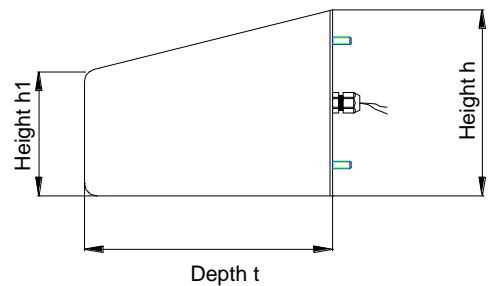
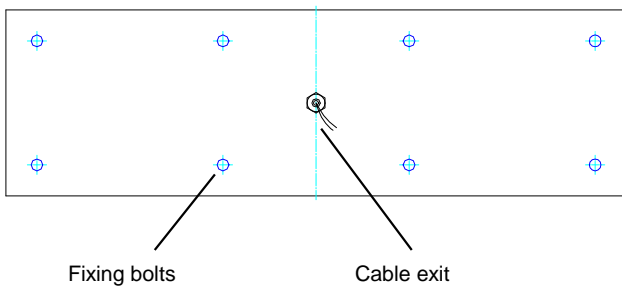
The bumper is built up of a soft polyurethane foam, in the interior of which contact chains are disposed immediately adjacent to the actuating faces. The number and the positions of the contact chains depend on the size and the intended application of the bumper. For railbound vehicles or rectilinear machine movements normally only the front side of the bumper serves as the actuating face. In other cases where vehicles or machines follow curved paths, contact chains will

also be mounted at the side faces. The completed foam body with included contact chains is glued to a carrier plate and fully coated with polyurethane material. Standard colours are black and red. Yellow safety stripes can as an option also be applied.

The thickness of the coating is determined by the forces and impacts to be expected. The carrier plate normally is of aluminium. For attachment of the bumper at the vehicle,

threaded bolts are provided, the size and number of which will be determined by the size of the bumper. Further, cable terminals for circuit connection are also located in the area of the carrier plate.

All dimensions for threaded bolts and cable terminals are usually freely selectable. Customized shapes or colours are possible, and the bumper will be fitted to the individual appearance of the vehicle.



ENQUIRY

(Please copy, fill in and fax us)

Company : _____

Name : _____

Address : _____

Phone : _____

Fax : _____

Quantity : _____ Requested delivery time : _____

Application : _____

1. Site conditions

For what kind of machine / vehicle is the bumper intended?

Are any media present in the environment? If yes, what type (e.g. acids, lyes, oils, etc.)?

The application is?

indoor

outdoor

What is the stopping travel?

_____ mm

2. Dimensions of the bumper

Which dimensions should the bumper have?

Width b = _____ mm

Depth t = _____ mm

Height h = _____ mm

Height h1 = _____ mm

Requested colour of the bumper?

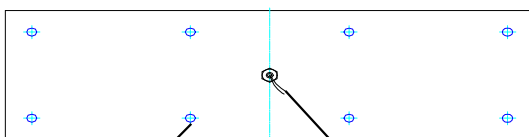
black

red

Safety painting required?

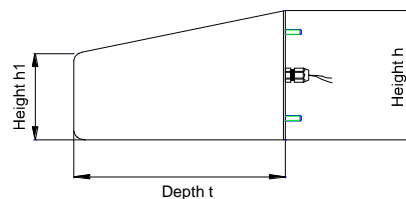
yes

no

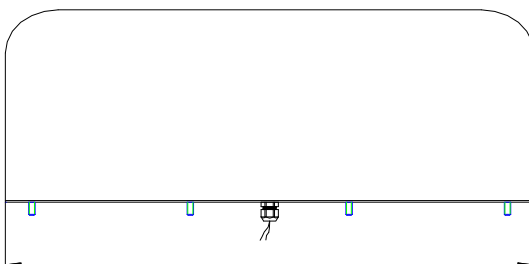


Fixing bolts

Cable exit



Depth t



Width b

To clarify any further details we will contact you immediately