

Original Instructions

Safety Contact Bumper

ASB-series



Read and understand this document

Please read and understand this document before using the products. Please consult your ABB/JOKAB SAFETY representative if you have any questions or comments.

WARRANTY

ABB/JOKAB SAFETY's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by ABB/JOKAB SAFETY.

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ABB/JOKAB SAFETY SHALL NOT BE RESPONSIBLE FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.

In no event shall responsibility of ABB/JOKAB SAFETY for any act exceed the individual price of the product on which liability asserted.

IN NO EVENT SHALL ABB/JOKAB SAFETY BE RESPONSIBLE FOR WARRANTY, REPAIR, OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS JOKAB SAFETY'S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED, AND MAINTAINED AND NOT SUBJECT TO ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

SUITABILITY FOR USE

ABB/JOKAB SAFETY shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer's application or use of the product. At the customer's request, ABB/JOKAB SAFETY will provide applicable third party certification documents identifying ratings and limitations of use that apply to the products. This information by itself is not sufficient for a complete determination of the suitability of the products in combination with the end product, machine, system, or other application or use.

The following are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible uses of the products, nor is it intended to imply that the uses listed may be suitable for the products:

Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this document.

Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, and installations subject to separate industry or government regulations.

Systems, machines, and equipment that could present a risk to life or property.

Please know and observe all prohibitions of use applicable to the products.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE JOKAB SAFETY PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

PERFORMANCE DATA

While every effort has been taken to ensure the accuracy of the information contained in this manual ABB/JOKAB SAFETY cannot accept responsibility for errors or omissions and reserves the right to make changes and improvements without notice. Performance data given in this document is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of ABB/JOKAB SAFETY'S test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the ABB/JOKAB SAFETY Warranty and Limitations of Liability.

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1 Introduction

Scope

The purpose of these instructions is to describe the safety contact bumpers and to provide the necessary information required for installation and use.

Audience

This document is intended for authorized installation personnel.


Prerequisites

It is assumed that the reader of this document has knowledge of the following:

- Basic knowledge of ABB/Jokab Safety products.
- Knowledge of machine safety.

Special notes

Pay attention to the following special notes in the document:

 **Warning!** Danger of severe personal injury!
An instruction or procedure which, if not carried out correctly, may result in injury to the technician or other personnel.

Caution! Danger of damage to the equipment!
An instruction or procedure which, if not carried out correctly, may damage the equipment.

NB: Notes are used to provide important or explanatory information.

2 Overview

General description

Safety bumpers are safety equipment on transport vehicles, FTS vehicles, high-reach forklifts, freely moving systems, and everywhere where the safety systems require larger form alterations. When running against an obstacle, the short response time of the bumper initiates an immediate controller stop, while the bumper's soft foam core provides a long braking and run out path. This provides optimum protection for individuals and materials.

The exterior surface is available as PU or NBR rubber. Standard colours for the PU exterior are either black or black with yellow stripes. The NBR rubber exterior is black on which yellow stripes can be applied.

The contact function of the ABB/Jokab Safety bumper consists of the safety contact strip SKS 18 being actuated by a special mechanical construction. This construction, which is protected by a large foam cushion, is inserted and glued to the carrier profile. The foam rubber is covered with a polyurethane skin. The safety bumper is also covered with cross-bound polyurethane, which can be provided in a range of colours. By utilising this construction the bumper gives a stop signal when impacted from all directions with soft sides.

Safety regulations

Warning!

Carefully read through this entire manual before using the device.

The devices shall be installed by a trained electrician following the Safety regulations, standards and the Machine directive.

Failure to comply with instructions, operation that is not in accordance with the use prescribed in these instructions, improper installation or handling of the device can affect the safety of people and the plant.

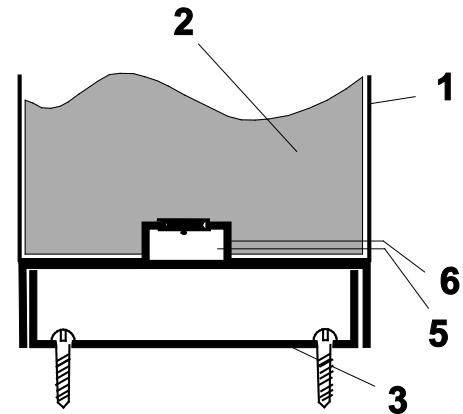
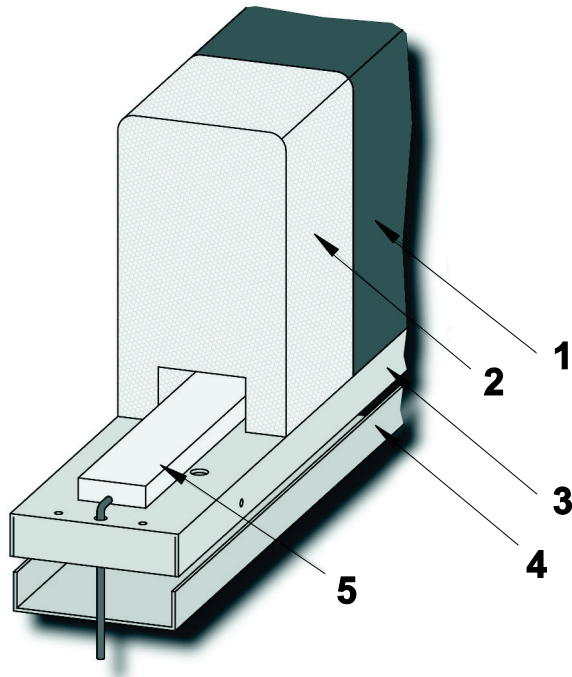
For installation and prescribed use of the product, the special notes in the instructions must be carefully observed and the technical standards relevant to the application must be considered.

In case of failure to comply with the instructions or standards, especially when tampering with and/or modifying the product, any liability is excluded.

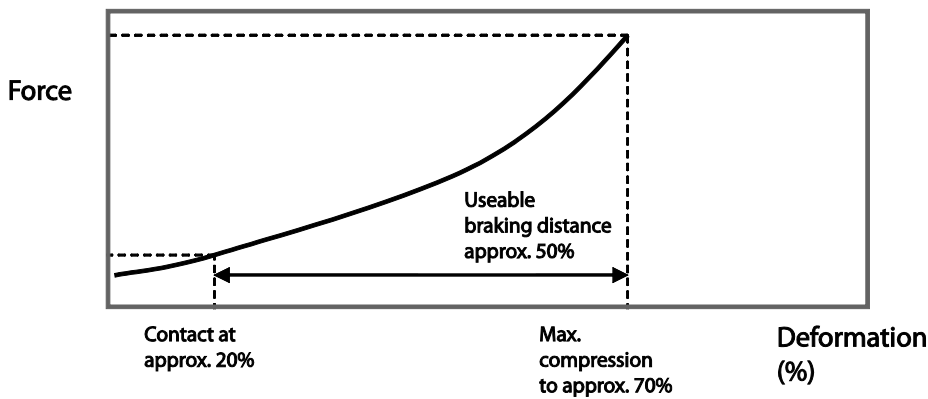
3 Installation and maintenance

Safety contact bumper – General

The safety contact bumper consists of a foam core glued to an aluminium carrier profile and covered with vulcanized polyurethane or NBR rubber. The cover provides excellent protection against damage and moisture. A safety contact strip is located in the interior of the safety contact bumper and is activated under even very low pressure loads, the selection of a suitable bumper ensures even inertial systems will stop safely. The evaluation electronics also continuously monitors the bumper for wire breaks and defects.



- 1. Polyurethane exterior
- 2. Foam core
- 3. Carrier profile
- 4. Mounting profile
- 5. Sensing element
- 6. Aluminium profile



Dimensioning of bumper height

Use the following key in order to determine the appropriate height for the bumper:

Response path: $S_B = 20\%$ bumper height

Runout path: $S_V = 50\%$ bumper height

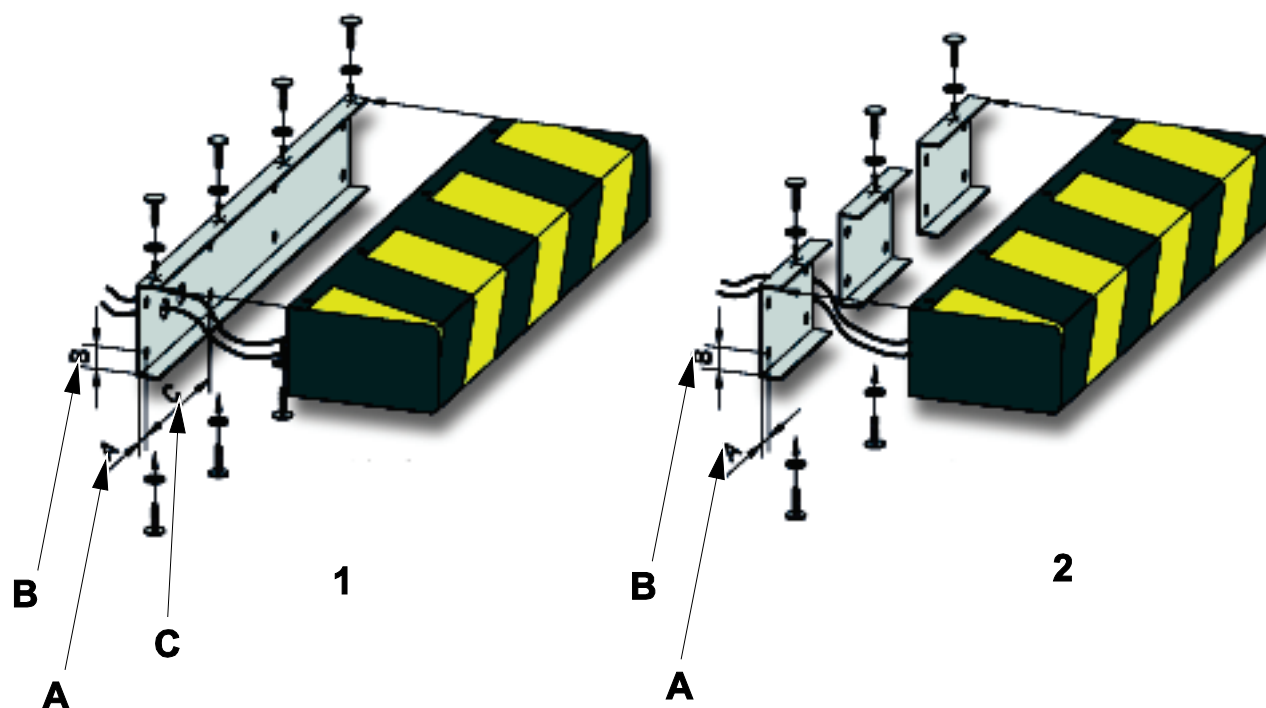
No longer compressible bumper: 30 % bumper height

The runout path, S_V (corresponding to the system's brake path) can then be used to determine the appropriate bumper height

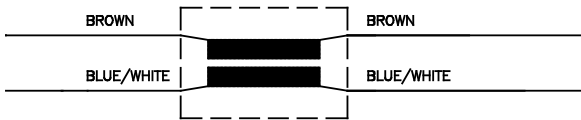
Assembly Instructions

To provide safety for systems, bumpers can be connected to an evaluation device both individually as well as in series. Up to five bumpers may be connected in series, whereby the total cable length must not exceed 25 m. The length of one bumper may be up to 3 m.

1. For the attachment of the bumper, the mounting plate must be fastened with screws M6.
2. With the standard bumper the mounting plate is in one piece (1). Therefore, depending upon size of the bumper, several different drillings must take place.
3. With NBR-bumper (2) the mounting plate consists of several single parts, which must be fastened in each case with 4 screws.
4. Note that distances A and B are situated between 20 and 40 mm. With standard bumpers the remaining drillings with even distance C (not larger than 200 mm) are to be distributed over the entire length of the mounting plate
5. In appropriate place a cable entry ($\varnothing 14$ mm) for the lead is to be drilled into the mounting plate. If the bumper is chained with a second bumper a further cable entry is to be manufactured. In order to prevent a damage of the lead each drilling must be deburred carefully and provided with a cable protection.
6. Pull the lead through the cable protection and shift to the bumper onto the mounting plate. By using drilling screws the bumper is screwed onto the mounting plate. In order not to damage the exterior of the bumper the washers must be used.



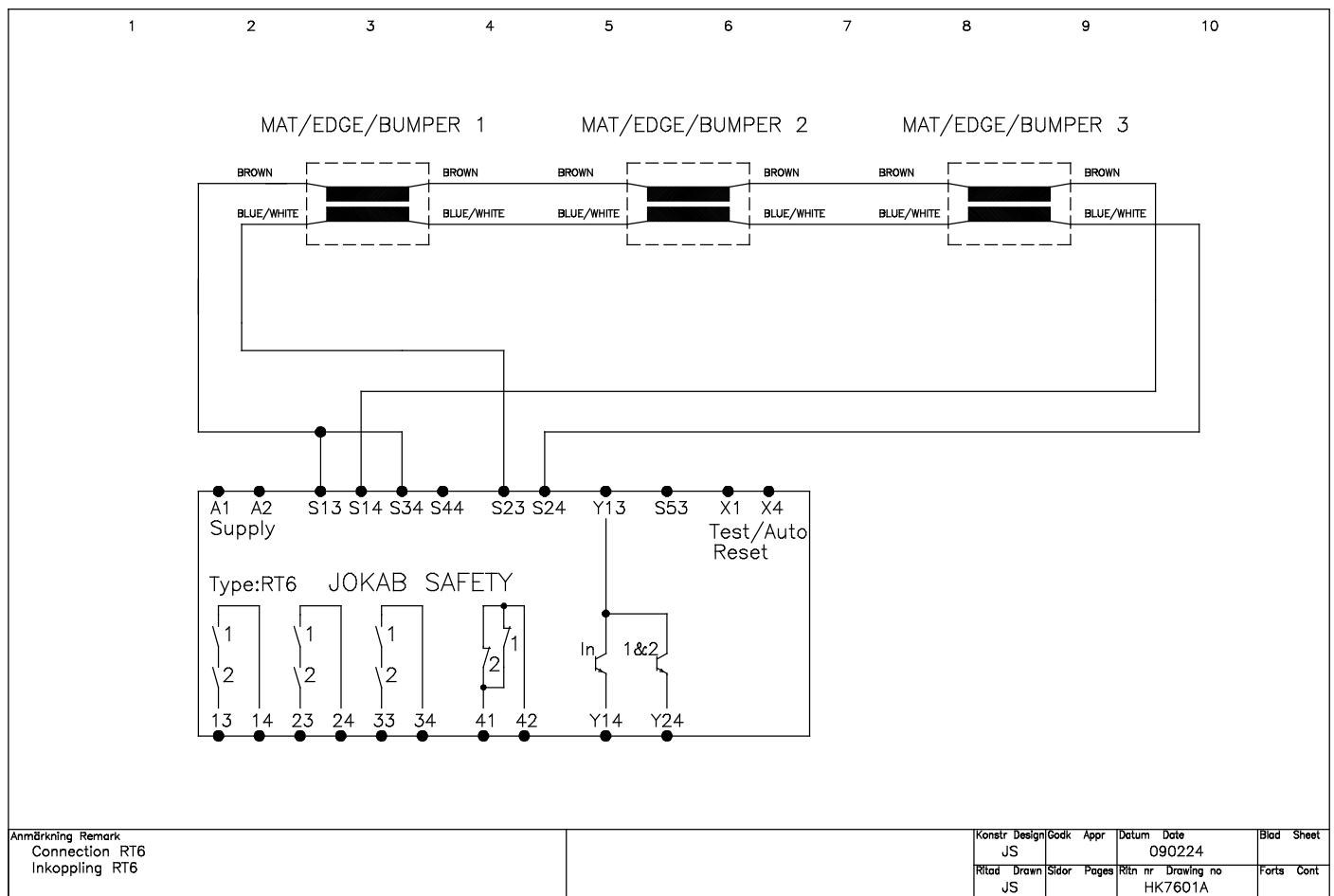
4 Electrical connections



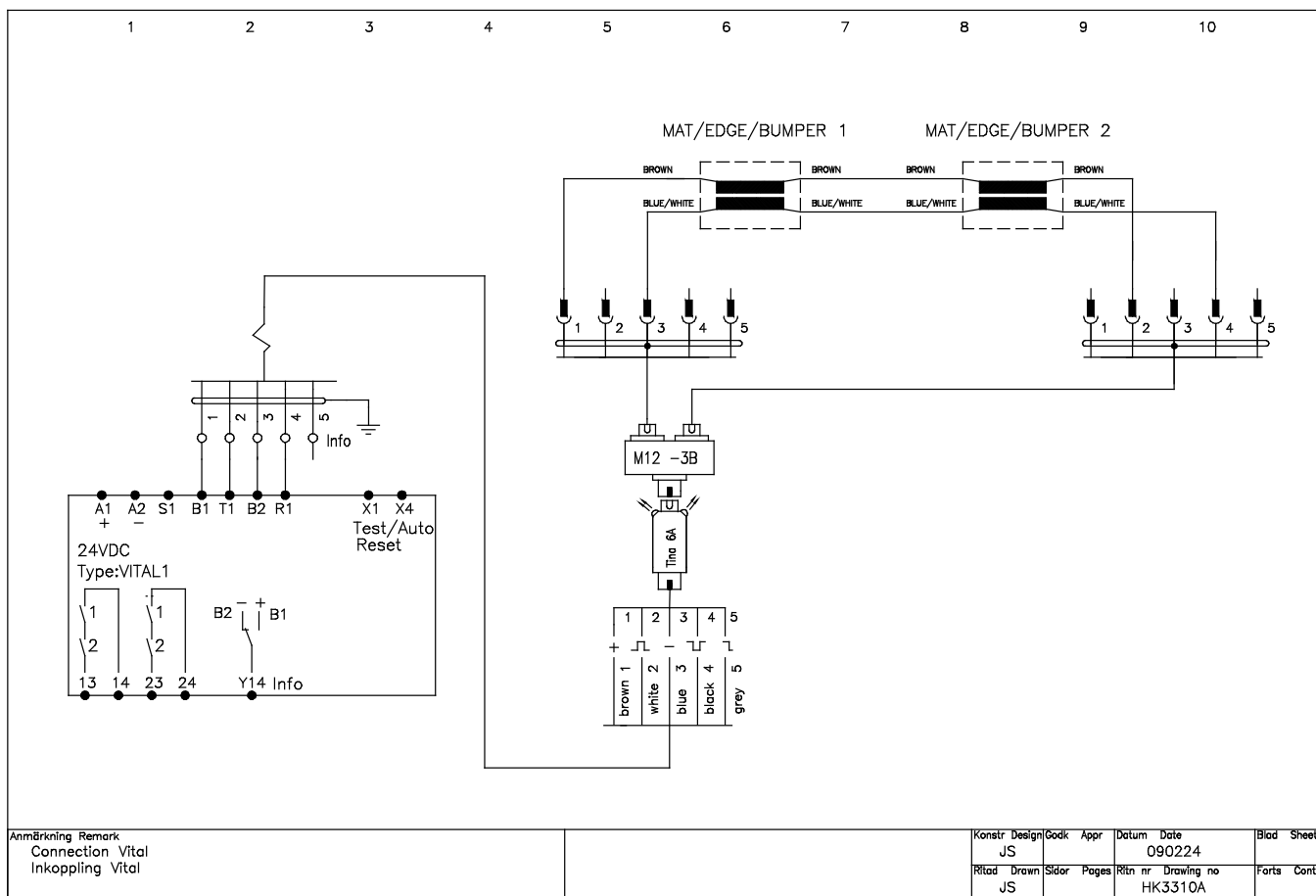
Safety contact bumpers must be connected to a suitable safety evaluation unit (e.g. ABB Jokab Safety safety relays RT6, RT7A/B, RT9, Vital with Tina 6A or Pluto safety-PLC). The safety evaluation unit monitors the functionality of the contact protection and detects any disconnections or short-circuits in the lines. Several crush protection units can be connected in series while still retaining the same level of safety. When pressure is applied, the active surface of the contact area in the contact protection is closed and the safety output on the monitoring unit trips. A stop signal will be sent to the machine's safety circuits preventing any dangerous movements.

NB! If alternative units are used rather than the recommended ABB Jokab Safety relays, it is essential that the user checks their suitability. Failure to do so may result in incorrect operation and/or damage to the equipment and invalidate warranty.

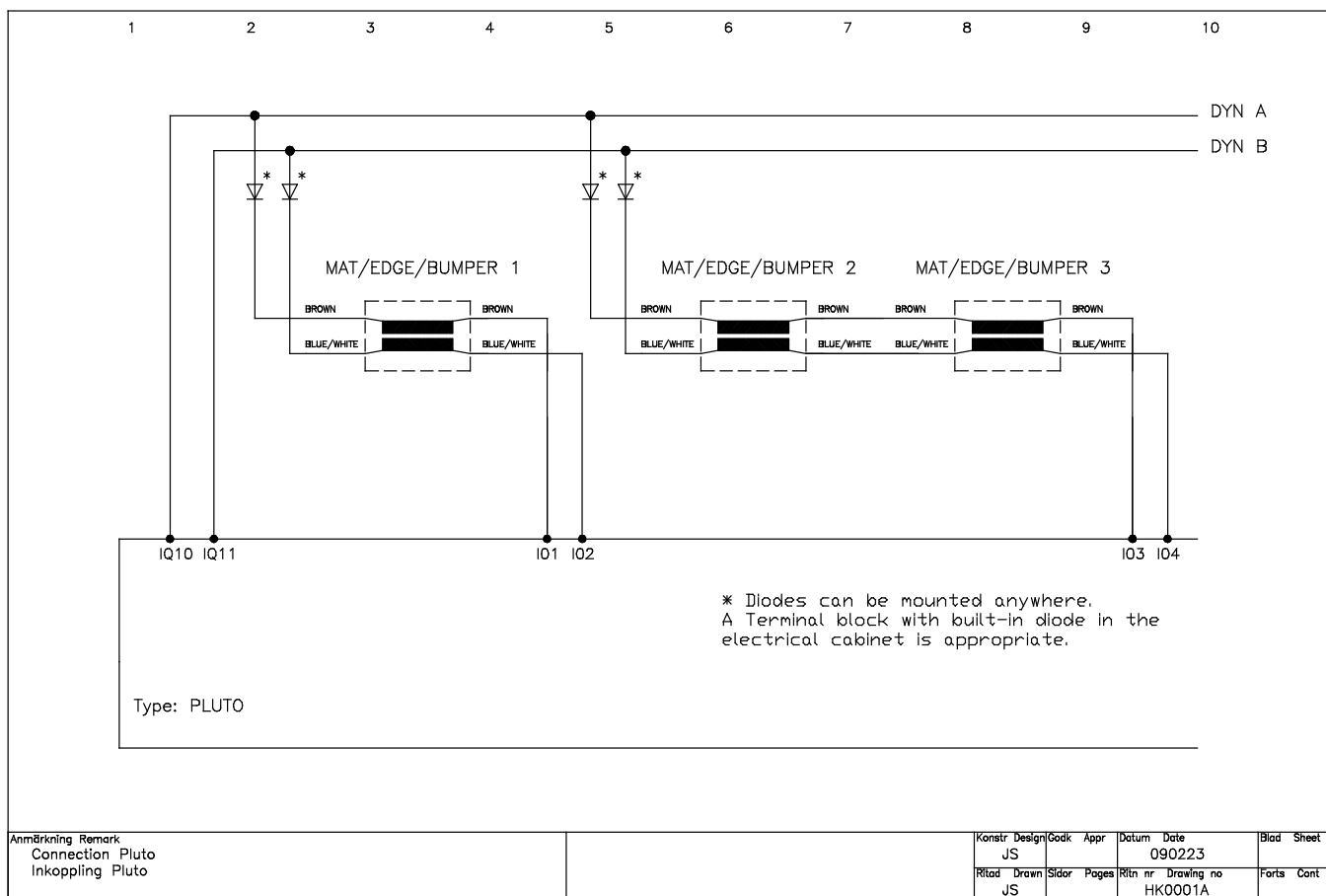
Connection contact protection for safety relay RT6




Connection contact protection for safety controller Vital 1




Connection contact protection for safety PLC Pluto




Installation precautions

 **Warning!** All the safety functions must be tested before starting up the system.

Maintenance

 **Warning!** The safety functions and the mechanics shall be tested regularly.

 **Warning!** In case of breakdown or damage to the product, contact the nearest ABB/Jokab Safety Service Office or reseller. Do not try to repair the product yourself since it may accidentally cause permanent damage to the product, impairing the safety of the device which in turn could lead to serious injury to personnel.

Caution! ABB/Jokab Safety will not accept responsibility for failure of the switch functions if the installation and maintenance requirements shown in this sheet are not implemented. These requirements form part of the product warranty.

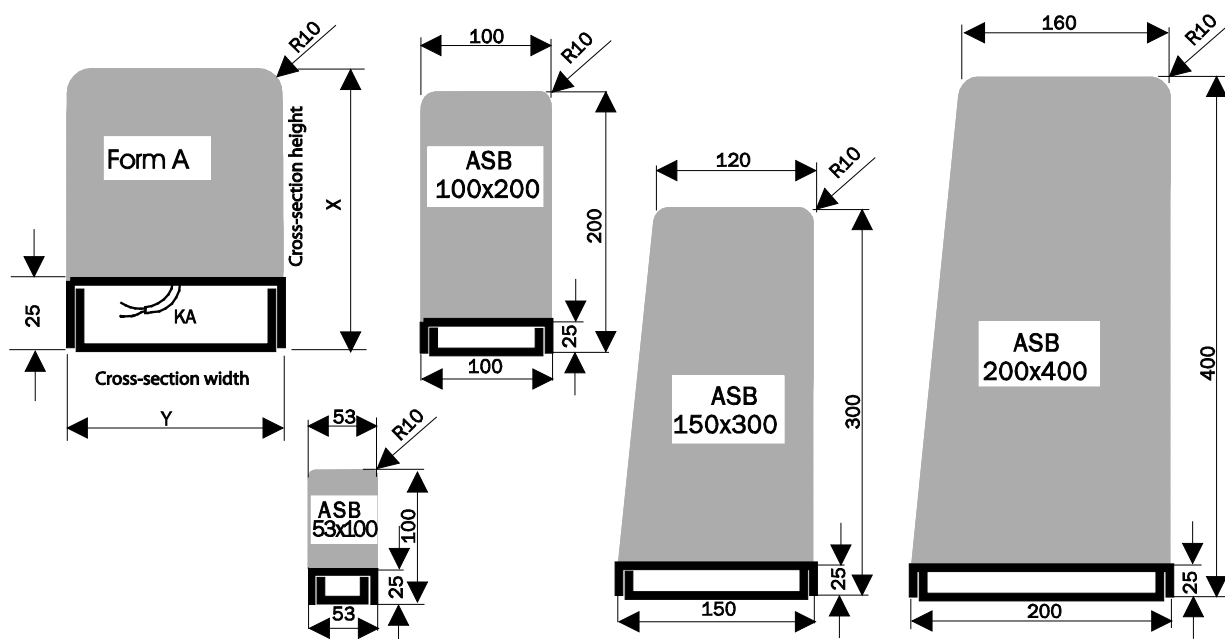
5 Model overview

Safety Contact Bumpers are available in four different standard dimensions. Other dimensions can be supplied on request. Note that in the case of customized orders, the ratio of 2:1 for X:Y must not be exceeded. The minimum cross-section is 53 x 100 mm.

When ordering a Safety Contact Bumper it's made out of two parts. One article with production cost(base price) and one article with type of bumper in meter. Always specify length of the Safety Contact Bumper.

Bumpers can be supplied in lengths of up to 3000 mm.

Article number	Description
2TLA076200R0100	53/100 black
2TLA076200R0200	100/200 black
2TLA076200R0300	150/300 black
2TLA076200R0400	200/400 black
2TLA076200R0500	53/100 black/yellow
2TLA076200R0600	100/200 black/yellow
2TLA076200R0700	150/300 black/yellow
2TLA076200R0800	200/400 black/yellow
2TLA076200R0900	60/100 NBR black (63/100)
2TLA076200R1000	100/200 NBR black
2TLA076200R1100	150/300 NBR black
2TLA076200R1200	200/400 NBR black
2TLA076200R1300	200/200 black
2TLA076200R1400	150/150 NBR black
2TLA076200R1500	100/200 NBR black/yellow
2TLA076200R1600	150/250 NBR black/yellow
2TLA076200R0000	Bumper base price



6 Technical data

Manufacturer

Address	ABB AB / JOKAB SAFETY Varlabergsvägen 11 S-434 91 Kungsbacka Sweden
Dimensions	In accordance with the illustrations or customized
Actuating distance	Approx..20% of height
Braking distance	At least 50 % of height
Actuating force (N)	150 N at 80 mm around the test specimen
Life	Greater than 10 ⁵
Protection class	IP 65
Ambient temperature	0° to +60°

Chemical resistance

Oil, grease	Good
10% acid	Resistant
10% alkaline (caustic) solutions	Resistant
Connection cable	2 x 2 m; 2 x 0,34 mm ² PU covered

Safety contact strip SKS 18 for Safety Contact Bumper

Outer material	EPDM, electrical insulation >30 Mohm
Inner material	EPDM, electrical elastomer with reinforce copper wire
Conductivity	60 ohm/100 meters
Contact resistance	Approx.. 50 ohm
Max. electrical load	24 V/100 mA
Max applied pressure	6,5 N/cm ²
Dimensions	18 x 6 mm

The Jokab Safety branded product with articlenumber beginning with 2TLJ is fully compatible with the ABB branded product with articlenumber beginning with 2TLA.

Physical and chemical material properties:

Properties:	NBR
Tensile strength	2
Tensile elongation	2
Durability	2
Tear resistance	3
Cold flexibility	3
Heat resistance	2
Oxidation resistance	3
UV-resistance	3
Weather/ozone resistance	3
Flame resistance	6
Gas permeability	2
Resistance:	
Water (distilled)	1
Acids (diluted)	3
Bases (diluted)	2
Non-oxidised acids	3
Oxidised acids	5
ASTM oil No. 3	1
Vegetable oil	1
Ester solvent	5
Ketone solvent	5
Aliphatic hydrocarb.	1
Aromatic hydrocarb.	2-3
Halogenic hydrocarb.	5
Alcohols	5

1= no effect	for lasting contact
2= slight effect	non-lasting contact
3= moderate effect	moderate contact
4= appreciable effect	limited contact
5=strong effect	short-term contact
6= extreme effect	avoid contact

EPDM	Good resistance to ozone and weather, especially against chemicals
NBR	Good resistance to oil and petrol
ASTM	American Society for Testing Material
Kw	Aromatic ydrocarbon
Ester	Organic solvent
Ketone	Oxidized solvent
Aliphatic	i.e. petrol
Aromatic	i.e. benzol

NB! The information given is based on data obtained from the respective material suppliers. Although all efforts have been made, unforeseen factors can have a considerable effect on the generally applied indications during practical use therefore this information must be used as a general guide only. If there is any doubt as to the suitability of the materials used for any specific application/environment, we will, upon request, supply rubber samples for your own evaluation .

7 EC Declaration of conformity



EC Declaration of conformity

(according to 2006/42/EC, Annex 2A)

We ABB AB
JOKAB Safety
Varlabergsvägen 11
SE-434 39 Kungsbacka
Sweden

declare that the safety components of ABB AB make with type designations and safety functions as listed below, is in conformity with the Directives

2006/42/EC
2006/95/EC
2004/108/EC

Authorised to compile the technical file

ABB AB
JOKAB Safety
Varlabergsvägen 11
SE-434 39 Kungsbacka
Sweden

Product

Bumper
ASB 53-100, ASB 100-200
ASB 150-300, ASB 200-400

With Safety Relays/Safety PLC

RT6, RT7A/B, RT9,
Vital 1 and Tina 6, Pluto
Used harmonised standards

With RT6, RT7A/B, RT9

EN 1760-3:2004+A1:2009, EN ISO 12100:2010, EN ISO 13849-1:2008,
EN 62061:2005, EN 60204-1:2006+A1:2009, EN 60664-1:2007, EN 61000-6-2:2005,
EN 61000-6-3:2007, EN 60947-5-1:2003+A1:2009

With Vital 1 and Tina 6

EN 1760-3:2004+A1:2009, EN ISO 12100-1:2010, EN ISO 13849-1:2008,
EN 62061:2005, EN 60204-1:2006+A1:2009, EN 61000-6-2:2005, EN 61000-6-4:2007,
EN 61496-1+A1:2008

With Pluto

EN 1760-3:2004+A1:2009, EN ISO 13849-1:2006+AC:2009,
EN 62061:2005, EN 61496-1:2008+A1:2008, EN 574:1996+A1:2008,
EN 692:2005+A1:2009, EN 60204-1:2006+A1:2009, EN 50178:1997,
EN 61000-6-2:2005, EN 61000-6-4:2007, EN 61000-4-1...6

Other used standards

EN 61508:2010 (With RT6, RT7A/B, RT9, Vital 1 and Tina 6, Pluto)

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Kungsbacka 2012-05-25

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