Original instructions

Safety Contact Edges
GE-Series, GP-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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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 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 edges 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

Contact edges are used as protection against crushing injuries for example, moving machine parts or automatic doors.

This manual describes Contact edges with cast-in contact strips (GE) and Contact edges with contact strips SKS 18 (GP).

The contact edges GE consist of a rubber profile with a cast-in contact strip. They are made up simply using connection plugs that are glued to the ends together with a terminal cap. The rubber profile is fitted on an aluminium profile. The rubber profile is available in EPDM design.

The contact edges GP consist of a rubber profile with a safety contact strip, SKS 18, inside. The contact edge is fitted on an aluminium profile. The rubber profile is available in EPDM or NBR.

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

Contact Edge GE – General

Inside the contact edge there is a cast-in contact strip that consist of two conductive alternating surfaces on the inside and a highly-effective insulation shell. There are two conductive wires in the contact surfaces that allow for low ohm measurements even when the contact edge has an extended length. The cast-in contact strip is protected against damage by the surrounding chamber. The cast end plugs ensure a permanent contact from the conductive surfaces in the contact strip. A special flexible adhesive is used to make the connector ring watertight. Because of the contact points, the safety contact edge has approximate 20 mm of inactive length at each end. Assembly of the contact edge GE can be made by the customer or chosen to be manufactured by the ABB Jokab Safety factory.

Assembly Instructions for the GE-series

1. Cutting the safety-contact-edge
   The contact edge is to be cut to correct length (cut measure). It is to be noted that the planes of section are right-angled and smooth. The measure should be 25 mm shorter than the final dimension of the finished contact edge (height of end caps). \( A = \text{Cut measure, } B = \text{Final measure} \)
2. **Preparing the wiring plug and end caps**

Puncture the appropriate cable entry of the end cap, by which the cable is implemented, with a screw-driver (Ø 3-5mm). Pull the cable through this cable entry. The arrangement of the individual components depends on the respective gate construction and on structural conditions, which must be considered with.

For manufacturing a contact edge with sealing rims, the end caps must be cut out in the marked places for the withdrawal of the sealing rims.

![Diagram of wiring plug and end cap setup]

3. **Contacting**

Press the wiring plug with the drawn up end cap and the termination plug onto the appropriate side of the contact edge in each case up to the half into the switching chamber. The respective putting in direction of the plugs is to be considered. Make sure that the needle is pricked appropriate into the copper braids of the switching chamber.

![Diagram of contacting process]
4. **Testing**

Measure the plugger together with the contact edge with a commercial resistance measuring instrument. The resistance between blue-blue (out form each end) or brown-brown wire is to be as low as possible, not exceeding 10 ohms. With no load on the safety edge, resistance between blue-brown wires (both combinations) is to be as high as possible, not below 10,000 ohms. With loaded edge, the resistance should be between 10–50 ohms.

The resistance will vary with pressure applied and distance from ends. Close to the ends, it may be possible to achieve “contact” at a high force but this should not be considered as safe operation. Normally there will be a "dead zone" approximately 20–30 mm from each end.

If the resistance values should not be correct, the wiring plugs must be removed and pressed in again.

5. **Gluing the wall plugs**

The ambient temperature during glueing should be between 10° and 30°C and the relative humidity between 40 and 70%. Coat the surfaces of the wiring plugs and the switching chamber which will be stuck together with the CA-Primer. Provide the wiring plug all around with glue „Contact VA 250 black“. Immediately after that, press the plug strongly into the switching chamber (if available by using the auxiliary tool). The steps are to be repeated for the termination plug or connection plug in the other end.

6) Primer
7) Glue
8) Auxiliary tool
6. **Gluing the end caps**
   Coat the surfaces of the contact edge and the end cap which will be stuck together with the CA-Primer. For an accelerated adhesion the surfaces of the end cap can be coated additionally with an activator. Provide the front surface and the circulating outline surface of the contact edge with glue „Contact VA 250 black“. Turn the end cap over the contact edge and immediately press the cap evenly (Keep pressed, until the glue works). The steps are to be repeated for the second cap.

   ![Diagram of gluing end caps](image)

   - 9) Primer
   - 10) Activator
   - 11) Glue

7. **Measuring the contact edge**
   Measure the finished manufactured contact edge as described under point 4.

8. **Water drain**
   For a long life span of a vertical installed contact edge it is important to provide a water drain. For this the marked lower water outlet is to be cut out. When horizontal assembling both openings should be cut out. Use a knife to cut out the holes but wait until the glue has hardened enough (2–3 h).
Assembly instructions for GE-series

1. To facilitate installation of the safety contact edge, the aluminium C-profile may only be attached to even surfaces. If the safety contact edge is mounted in a bend, the radius must not be less than the specified minimum.

2. The aluminium C-profile must be fitted with countersunk screws or rivets. A diameter of 4 mm is sufficient. The holes of 4.5 mm must be evenly distributed over the entire length of the C-profile with distances between them not exceeding 300 mm. They have to be countersunk according to the screw size.

3. Pan- or round-head screws should not be used. Otherwise the connecting wire in the aluminum C-profile could be damaged.
4. In order to lead the connecting wire through the C-profile, an 8 mm hole has to be drilled in the appropriate place. Carefully remove the burr from both sides.

5. The connecting wire and the 30 cm cable end with the integrated terminal resistor can be placed in the aluminium C-profile.

6. In order to make fitting the safety contact edge easier, the aluminium C-profile and the safety contact edge should be sprayed with soapy water. Once the soap suds have evaporated the contact edge is firmly fitted in the C-profile.

NB! To prevent a subsequent slipping of the safety contact edge talcum powder, oils or similarly durable lubricants may not be used!
7. Safety contact edges with a c-base have to be clipped with one side into the C-profile. Then press in the complete C-base. Pulling or pushing the safety contact edge into the aluminium C-profile can cause damage to the contact edge and should be avoided at all costs.

8. Safety contact edges with a T-base have to be pushed into the aluminium C-profile.

NB! Any other methods of fastenings are only permitted on prior agreement with the manufacturer!
Contact Edge GP – General

The safety contact strip, SKS 18, the actual contactor, is located inside the safety contact edge. The safety contact strip consist of a homogeneous highly insulating outer EPDM material and has two internal conducting contact surfaces. The conducting elastomer contains two copper wires that provide low-resistance detection even in lengths exceeding 100 meters (NB! The contact edge GP series is only possible to make in max 6 meter length). Because of the contact points, the safety contact edge has approximate 30 mm of inactive length at each end. To provide protection against damage and to enable its proper use, the safety contact strip is inserted into the switching chamber of the rubber contactor profile. The rubber profiles (EDPM or NBR) are then permanently sealed with a special elastic adhesive and end caps to make them watertight. The safety contact edge is then pressed into the aluminium profile. Assembly of the contact edge GP is always made by the ABB Jokab Safety factory.

Safety contact edge, construction

Safety contact strip SKS 18
1. To facilitate installation of the safety contact edge, the aluminium C-profile may only be attached to even surfaces. If the safety contact edge is mounted in a bend, the radius must not be less than the specified minimum.

2. The aluminium C-profile must be fitted with countersunk screws or rivets. A diameter of 4 mm is sufficient. The holes of 4.5 mm must be evenly distributed over the entire length of the C-profile with distances between them not exceeding 300 mm. They have to be countersunk according to the screw size.

3. Pan- or round-head screws should not be used. Otherwise the connecting wire in the aluminum C-profile could be damaged.
4. In order to lead the connecting wire through the C-profile, an 8 mm hole has to be drilled in the appropriate place. Carefully remove the burr from both sides.

![Drilling hole in C-profile]

5. The connecting wire and the 30 cm cable end with the integrated terminal resistor can be placed in the aluminium C-profile.

![Cable and resistor in C-profile]

6. In order to make fitting the safety contact edge easier, the aluminium C-profile and the safety contact edge should be sprayed with soapy water. Once the soap suds have evaporated the contact edge is firmly fitted in the C-profile.

   NB! To prevent a subsequent slipping of the safety contact edge talcum powder, oils or similarly durable lubricants may not be used!

   ![Spraying soapy water]

   NB! Pulling or pushing the safety contact edge into the aluminium profile can cause damage to the contact edge and should be avoided at all costs. Any other proposed methods of adaptation should only be attempted after consultation with ABB Jokab Safety. Other methods of adaptation, unless approved by ABB Jokab Safety, may invalidate the warranty and may lead to incorrect device operation.
4 Connections

Contact edges 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 breaks 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 before use. 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
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

GE Contact edge

Ordering Contact Edge GE

When ordering a Contact Edge GE it’s necessary to order every part specifically. Type of contact edge (in meter), aluminium profile (in meter), connection plugs (one for each end) and end caps (one for each end). If manufactured by ABB Jokab Safety another article need to be added. Always specify length of safety edge. Accessories for GE is ordered separately.

<table>
<thead>
<tr>
<th>Article number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2TLA076005R0200</td>
<td>Contact edge GE 25-25 EPDM, per metre</td>
</tr>
<tr>
<td>2TLA076005R0400</td>
<td>Contact edge GE 25-45 EPDM, per metre</td>
</tr>
</tbody>
</table>

Accessories/Cables

<table>
<thead>
<tr>
<th>Article number</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>2TLA076002R0200</td>
<td>Al 25-14 aluminium profile</td>
</tr>
<tr>
<td>2TLA076005R4400</td>
<td>Connection plug with 2,5 m cable</td>
</tr>
<tr>
<td>2TLA076005R4500</td>
<td>Connection plug with 5 m cable</td>
</tr>
<tr>
<td>2TLA076005R4600</td>
<td>Connection plug with 10 m cable</td>
</tr>
<tr>
<td>2TLA076005R4700</td>
<td>Connection plug with resistor 8.2 Ω</td>
</tr>
<tr>
<td>2TLA076005R6100</td>
<td>End cap for GE25-45</td>
</tr>
<tr>
<td>2TLA076005R6200</td>
<td>End cap for GE25-25</td>
</tr>
<tr>
<td>2TLA076005R7600</td>
<td>Glueing set small 5 gr/5ml</td>
</tr>
<tr>
<td>2TLA076005R7700</td>
<td>Glueing set large 20 gr/10ml</td>
</tr>
<tr>
<td>2TLA076005R8500</td>
<td>Scissor</td>
</tr>
<tr>
<td>2TLA076005R8600</td>
<td>Plug insert tool</td>
</tr>
<tr>
<td>2TLA076008R0000</td>
<td>Production cost if GE contact edge assembled by ABB Jokab Safety</td>
</tr>
</tbody>
</table>

GE 25-25 (GE 225 TK) | GE 25-40 (GE 245 TK)

NB! Measurements are in mm.
GP Contact edge

Ordering Contact Edge GP

When ordering a Contact Edge GP it’s made out of two parts. One article with production cost and cables and one article with type of contact edge in meter. Always specify length of safety edge.

<table>
<thead>
<tr>
<th>Article number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2TLA076025R2500</td>
<td>Contact edge GP25-25 EPDM, ordered by length</td>
</tr>
<tr>
<td>2TLA076125R2500</td>
<td>Contact edge GP25-25 NBR, ordered by length</td>
</tr>
<tr>
<td>2TLA076025R4000</td>
<td>Contact edge GP25-40, EPDM, ordered by length</td>
</tr>
<tr>
<td>2TLA076125R4000</td>
<td>Contact edge GP25-40, NBR, Ordered by length</td>
</tr>
</tbody>
</table>

Accessories/Cables

<table>
<thead>
<tr>
<th>Article number</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>2TLA076009R0100</td>
<td>Production cost, 2+2 m cable</td>
</tr>
<tr>
<td>2TLA076009R0200</td>
<td>Production cost, 2+5 m cable</td>
</tr>
<tr>
<td>2TLA076009R0300</td>
<td>Production cost, 2+7 m cable</td>
</tr>
<tr>
<td>2TLA076009R0400</td>
<td>Production cost 2+10 m cable</td>
</tr>
<tr>
<td>2TLA076009R0500</td>
<td>Production cost, 5+5 m cable</td>
</tr>
<tr>
<td>2TLA076009R0600</td>
<td>Production cost 5+7 m cable</td>
</tr>
<tr>
<td>2TLA076009R0700</td>
<td>Production cost 5+10 m cable</td>
</tr>
<tr>
<td>2TLA076009R0800</td>
<td>Production cost, 7+7 m cable</td>
</tr>
<tr>
<td>2TLA076009R0900</td>
<td>Production cost 7+10 m cable</td>
</tr>
<tr>
<td>2TLA076009R1000</td>
<td>Production cost,10+10 m cable</td>
</tr>
<tr>
<td>2TLA076009R1100</td>
<td>Production cost x+x m cable. Cable not included. Add 2TLA076002R1800</td>
</tr>
<tr>
<td>2TLA076002R1800</td>
<td>Cable LIYY 2 x 0.34, meter</td>
</tr>
</tbody>
</table>

![Contact edge GP 25-25](image1)

![Contact edge GP 25-40](image2)

NB! Measurements are in mm.
# 6 Technical data

## Manufacturer

| Address | ABB JOKAB SAFETY
| Varlabergsvägen 11
| S-434 91 Kungsbacka
| Sweden |

## Safety contact strip SKS 18 for contact edge GP

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outer material</td>
<td>EPDM, electrical insulation &gt;30 Mohm</td>
</tr>
<tr>
<td>Inner material</td>
<td>EPDM, electrical elastomer with reinforce copper wire</td>
</tr>
<tr>
<td>Conductivity</td>
<td>60Ω / 100 metres</td>
</tr>
<tr>
<td>Contact resistance</td>
<td>Approx. 50Ω</td>
</tr>
<tr>
<td>Max. Electrical load</td>
<td>24 v/100 mA</td>
</tr>
<tr>
<td>Max. applied pressure</td>
<td>6,5 N/cm²</td>
</tr>
<tr>
<td>Dimensions</td>
<td>18 x 6 mm</td>
</tr>
</tbody>
</table>

## Contact Edge GE and GP

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical load max¹</td>
<td>500 N</td>
</tr>
<tr>
<td>Actuation angle (DIN)¹</td>
<td>2 x 20°</td>
</tr>
<tr>
<td>Mechanical life¹</td>
<td>10⁵</td>
</tr>
<tr>
<td>Max. temperature range</td>
<td>-20° to +55° C</td>
</tr>
<tr>
<td>Protection classification</td>
<td>IP 65</td>
</tr>
<tr>
<td>Max. electrical load</td>
<td>24 V 100 mA</td>
</tr>
<tr>
<td>Resistance</td>
<td>0,6 Ohm/m</td>
</tr>
<tr>
<td>Conductors</td>
<td>GP: 2 x 0,38 mm²</td>
</tr>
<tr>
<td></td>
<td>GE: 2 x 0,34 mm²</td>
</tr>
</tbody>
</table>

## Conductors insulation material

<table>
<thead>
<tr>
<th>Conductors</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>GP: PVC</td>
<td></td>
</tr>
<tr>
<td>GE: PUR matt black</td>
<td></td>
</tr>
</tbody>
</table>

¹According to DIN 31006-2 (GS - BE -17) ²Not including DIN 31006-2 (GS - BE -17)

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

## Rubber profiles

<table>
<thead>
<tr>
<th>Type</th>
<th>GP 25-25</th>
<th>GP 25-40</th>
<th>GE 25-25</th>
<th>GE 25-45</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixing profile</td>
<td>AL 25-14</td>
<td>AL 25-14</td>
<td>AL 25-14</td>
<td>AL 25-14</td>
</tr>
<tr>
<td>Material</td>
<td>EPDM/NBR</td>
<td>EPDM/NBR</td>
<td>EPDM</td>
<td>EPDM</td>
</tr>
<tr>
<td>Length max (m)</td>
<td>6(10)</td>
<td>6(10)</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Weight (g/m)</td>
<td>370</td>
<td>480</td>
<td>510</td>
<td>770</td>
</tr>
<tr>
<td>Weight incl. C-profile (g/m)</td>
<td>690</td>
<td>800</td>
<td>820</td>
<td>1080</td>
</tr>
<tr>
<td>Activation force (N)</td>
<td>34/37</td>
<td>39/52</td>
<td>64,1</td>
<td>69,1</td>
</tr>
<tr>
<td>Actuation distance (mm)</td>
<td>8,0/7,5</td>
<td>9,4/9,7</td>
<td>4,7</td>
<td>6,73</td>
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<tr>
<td>Braking distance (mm)</td>
<td>7,2/5,9</td>
<td>10,2/9,5</td>
<td>6,48</td>
<td>20,73</td>
</tr>
<tr>
<td>Switching Angle (°)</td>
<td>2x45°</td>
<td>2x30°</td>
<td>2x30°</td>
<td>2x45°</td>
</tr>
</tbody>
</table>

1) 10 meters lengths of GP edges on request
2) Measured with (Ø 80 mm test specimen), 10 mm/s
3) Measuring speed 10 mm/s
4) Not including DIN 31006-2 (GS – BE – 17)
### Physical and chemical material properties

<table>
<thead>
<tr>
<th>Properties</th>
<th>EPDM</th>
<th>NBR</th>
</tr>
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<tbody>
<tr>
<td>Tensile strength</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Tensile elongation</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Durability</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Tear resistance</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Cold flexibility</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Heat resistance</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Oxidation resistance</td>
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<td>3</td>
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<tr>
<td>UV-resistance</td>
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<tr>
<td>Weather/ozone resistance</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Flame resistance</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Gas permeability</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

### Resistance:

<table>
<thead>
<tr>
<th>Substance</th>
<th>EPDM</th>
<th>NBR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water (distilled)</td>
<td>1-2</td>
<td>1</td>
</tr>
<tr>
<td>Acids (diluted)</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Bases (diluted)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Non-oxidised acids</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Oxidised acids</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>ASTM oil No. 3</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Vegetable oil</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Ester solvent</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Ketone solvent</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Aliphatic hydrocarb.</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Aromatic hydrocarb.</td>
<td>6</td>
<td>2-3</td>
</tr>
<tr>
<td>Halogenic hydrocarb.</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Alcohols</td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>

1= no effect  
2= slight effect  
3= moderate effect  
4= appreciable effect  
5= strong effect  
6= extreme effect  

for lasting contact  
non-lasting contact  
moderate contact  
limited contact  
short-term contact  
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 hydrocarbon  
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.
GE – Bending angles and radii

The aluminum C-profile has to be prepared at the factory if it has to be bent.

GE – Bending angles for different assembly arrangements

<table>
<thead>
<tr>
<th>Type</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>GP 25-25 (GE 225 TK)</td>
<td>45°</td>
<td>20°</td>
<td>30°</td>
</tr>
<tr>
<td>GP 25-40 (GE 245 TK)</td>
<td>45°</td>
<td>10°</td>
<td>20°</td>
</tr>
</tbody>
</table>

GE – Bending radii for different assembly arrangements

<table>
<thead>
<tr>
<th>Type</th>
<th>Figure 2</th>
<th>Figure 3</th>
<th>Figure 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>GP 25-25 (GE 225 TK)</td>
<td>300</td>
<td>400</td>
<td>200</td>
</tr>
<tr>
<td>GP 25-40 (GE 245 TK)</td>
<td>400</td>
<td>500</td>
<td>200</td>
</tr>
</tbody>
</table>

Figure 1
1. Side view
2. Top view
3. Alu C-profile

Figure 2

Figure 3

Figure 4
GP – Bending angels and radii
The aluminum C-profile has to be prepared at the factory if it has to be bent.

GP – Bending angles for different assembly arrangements*

<table>
<thead>
<tr>
<th>Type</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>GP 25-25</td>
<td>35°</td>
<td>20°</td>
<td>20°</td>
</tr>
<tr>
<td>GP 25-40</td>
<td>30°</td>
<td>15°</td>
<td>15°</td>
</tr>
</tbody>
</table>

GP-Bending radii for different assembly arrangements*

<table>
<thead>
<tr>
<th>Type</th>
<th>Figure 2</th>
<th>Figure 3</th>
<th>Figure 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>GP 25-25</td>
<td>300</td>
<td>400</td>
<td>200</td>
</tr>
<tr>
<td>GP 25-40</td>
<td>500</td>
<td>700</td>
<td>300</td>
</tr>
</tbody>
</table>

NB! * Bending angle and radii are not part of the tests complying with DIN 31006/2 and GS-BE 17
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
2004/108/EC

Authorised to compile the technical file
ABB AB
JOKAB Safety
Varlabergsvägen 11
SE-434 39 Kungsbacka
Sweden

Product
Safety rails
OE 15-25 TT (OE 125 TT),
GE75-25 (GE 225 Tk),
GE 25-45 TK (GE 245 TK),
GE 35-65 CK (GE 325 CK),
F45, F50, F510, F65, F75,
F115 (all versions)
With Safety Relays/Safety PLC
RT6, RT7A/B, RT9, Vital 1 and Tina 6, Pluto

Used harmonised standards

With RT6, RT7A/B, RT9

With Vital 1 and Tina 6
EN 61408-1+A1:2008

With Pluto
EN 61000-6-4:2008, EN 61000-4-1...

Other used standards
EN 01508:2010 (With RT6, RT7A/B, RT9, Vital 1 and Tina 6, Pluto)

Jesper Kristensson
PRU Manager
Kungsbacka 2012-05-25

www.abb.com
www.jokabsafety.com

Original
EC Declaration of conformity
(according to 2004/42/EC, Annex 3A)

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

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functions as listed below, is in conformity with the Directives
2008/42/EC
2006/95/EC
2004/108/EC

Authorised to compile the
technical file
ABB AB
JOKAB Safety
Varabergsvägen 11
SE-434 39 Kungsbacka
Sweden

Product
Safety rails
GP 25-25, 25-40, 25-65, 35-60,
35-80, 35-105
(all versions)

With Safety Relays/Safety PLC
RT6, RT7/AB, RT9, Vital 1 and Tina 6, Pluto

Used harmonised standards

With RT6, RT7/AB, RT9

With Vital 1 and Tina 6
EN 61498-1+A1:2008

With Pluto
EN 61000-6-4:2007, EN 61000-4-1…6

Other used standards
EN 61508:2010 (With RT6, RT7/AB, RT9, Vital 1 and Tina 6, Pluto)

Jesper Kristensson
PRU Manager
Kungsbacka 2012-05-25

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