

# U.S. Edition

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## Safety Contact Bumper

### Übergabedokumentation / Documentation / Documentation de datation / Documentazione di consegna / Documentatie

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Anlagenbeschreibung / Description / Description du système / Descrizione impianto / Beschrijving van de installatie

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Anlagenart / Type of plant / Sorte du système / Tipo d'impianto / Type installatie

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Hersteller / Manufacturer / Fabricant / Produttore / Fabrikant

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Seriennummer / Serial number / Numéro de série / Numero di serie / Seriennummer

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Datum der Inbetriebnahme / Commissioning date / Date de mise en marche / Data della messa in funzione /  
Datum van de ingebruikname

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Aufstellort / Site of installation / Lieu de montage / Luogo d'installazione / Opstellingsplaats

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Verwendete Steuerung / Control unit / Commande utilisée / Centralina di comando adottata / Gebruikte besturing

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Zusatzkomponenten / Additional components / Composants supplémentaires / Componenti ausiliari / Bijkomende componenten

#### **Funktionsprüfung / Functional test / Contrôle de fonction / Controllo funzionale / Functiecontrole**

Sicherheitssensoren reagieren auf Betätigung / Safety sensor response to actuation /

Le senseur de sécurité réagit à l'actionnement / Il sensore di sicurezza reagisce all'azionamento /

Veiligheidssensor reageert op activering

ok

Sicherheitssensoren reagieren auf Zuleitungsunterbrechung / Safety sensor response to supply line inter-

ruption / Le senseur de sécurité réagit à l'interruption de l'alimentation / Il sensore di sicurezza reagisce

all'interruzione di collegamento / Veiligheidssensor reageert op onderbreking van de toevoerleiding

ok

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Name der ausführenden Firma / Owner / Nom de la société exécutrice / Nome della ditta esecutrice /

Naam van de uitvoerende firma

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Name des Installateurs / Installer / Nom de l'installateur / Nome dell'installatore / Naam van de installateur

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Datum / Date / Date / Data / Datum

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Unterschrift / Signature / Signature / Firma / Handtekening

## 1 General information

The ASO SENTIR bumper is certified according to “Safety of machinery — Pressure sensitive protective devices —Part 3: General principles for design and testing of pressure-sensitive bumpers, plates, wires and similar devices”.

For the determination of the performance level on a safety bumper, the overall system of the machine has to be determined according to a previous risk assessment. The mounting position can be chosen variably. But make sure the safety bumper is not damaged. After mounting a functioning test should be made.

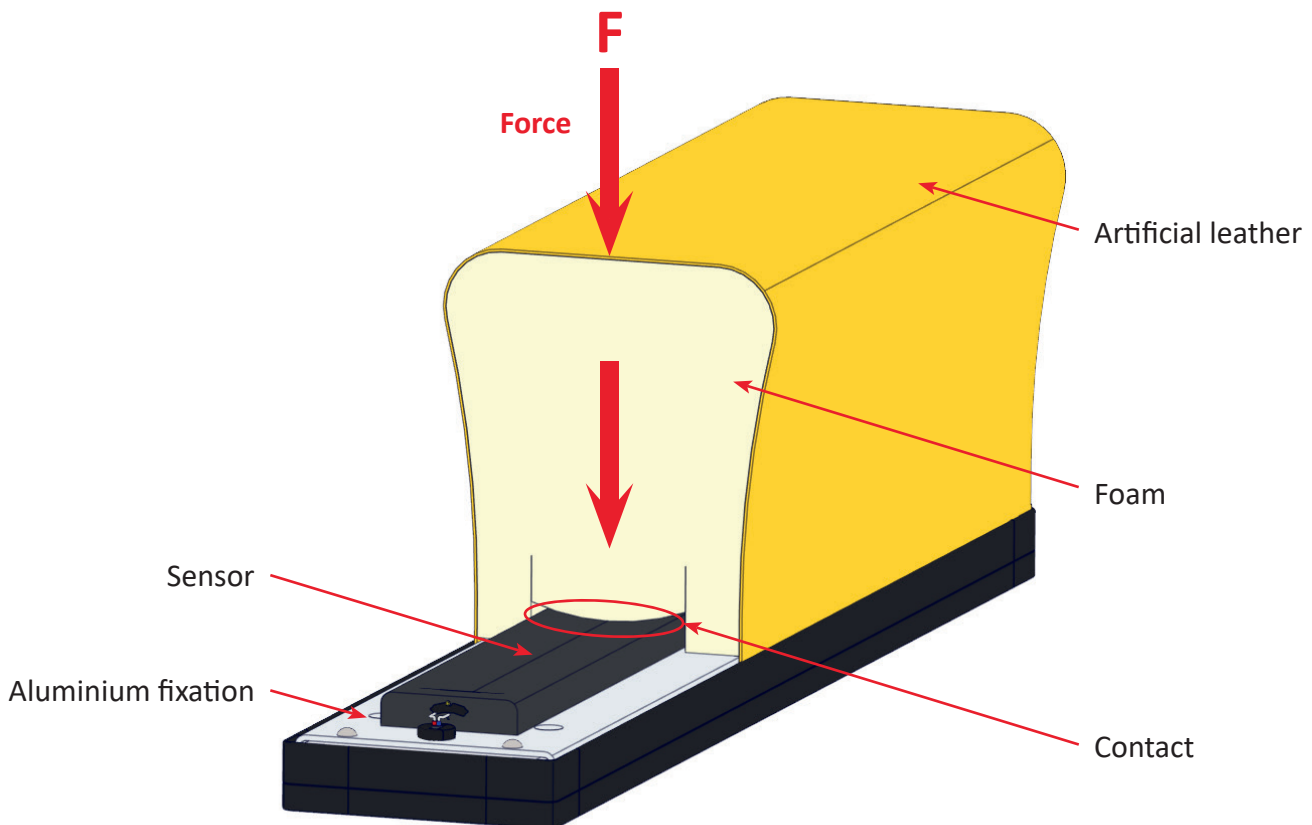
## 2 The construction

The basic construction of the safety contact bumper consists out of a foam core and a one piece extruded signal generator sensor, with two contact elements located opposite each other, which are assembled on an aluminium profile.

The coating of the SENTIR bumper consists of imitation leather.

When the SENTIR bumper is compressed and the sensor is actuated, the evaluation device sends an immediate command to the control unit.

Cable break is monitored permanently by an additional evaluation electronic (ELMON safety relay, e.g.).



# Safety Contact Bumper

## 3 Variations

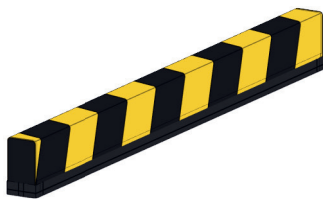
**SENTIR bumper-** safety contact bumpers- are tactile safety devices at industrial trucks, hangar doors, automated guided vehicles, high-bay warehouses and machines. They are used in any given situation, where safety installations require a long overtravel. The SENTIR bumper can be made to customers' specifications in various shapes, colors and sizes.

### 3.1 Standard delivery

**Length:** min. 150mm  
max. 3000mm

**Connections:** The cable exit with each 0,12m Length (1x M8 connector male & 1xM8 connector female) condition at the ends of the bumpers. The standard delivery package contains an extension cable (in accordance with model code)

**Colors:** Black / Yellow / Black-Yellow striped ( available for each material)  
Furthermore on request.



Type: 60-100  
1,5 kg/m



Type: 100-200  
2 kg/m

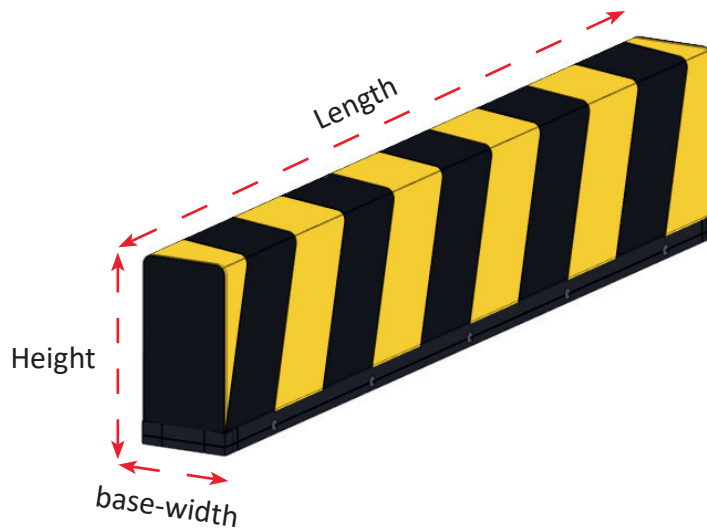


Type: 150-300  
4 kg/m



Type: 200-400  
4,5 kg/m

## 4 Model code



1.	2.	3.	4.	5.	6.
SENTIR bumper	60	-	100	L	4.X      L = x.x

<p>1. Description</p> <p>ASO-Safety contact bumper</p> <p>2. Base-width</p> <p>e.g. 60 mm</p> <p>3. Height</p> <p>e.g. 100 mm</p> <p>4. Materials</p> <p>L : Artificial leather</p> <p>5. Cable versions</p> <p>4.0 : M8 connector male and 1 x M8 connector female</p> <p>4.2 : (like 4.0) with M8 connection cable 2,5m</p> <p>4.3 : (like 4.0) with 5m cable, M8 connector female and M8 resistor plug</p> <p>4.4 : (like 4.0) with 5m cable, M8 connector male and 5m cable, M8 connector female</p>	<p>6. Length</p> <p>e.g. L = 2,5 m</p>
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# Safety Contact Bumper

## 5 Technical data

<b>Actuating forces:</b>	< 150 N by test specimen $\varnothing 80$ mm (according to DIN EN ISO 13856-3) < 400 N by test specimen 45x400 mm (according to DIN EN ISO 13856-3)
<b>Inactive edge region:</b>	0 mm
<b>Angle of activation:</b>	$\pm 45^\circ$
<b>Dwitching cycles:</b>	> 10 000
<b>Electric capacity:</b>	24 v 10 mA
<b>Protection class:</b>	IP 54 (higher protection class on request)
<b>Temperature range:</b>	$\pm 0$ bis $+55^\circ\text{C}$
<b>Connection cable:</b>	Pluggable, 2 x 0,34 mm <sup>2</sup> ( PUR black) mit M8 connector, 0,12m
<b>Maintenance:</b>	The Bumper is maintenance-free. Annual service is recommended.
<b>Certification:</b>	EN ISO 13856-3 EN ISO 13849-1 EN 12978 UL 508

### 5.1 Dimensioning of bumper height

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

**Actuating distance:**  $s_B = 15\%$  bumper height

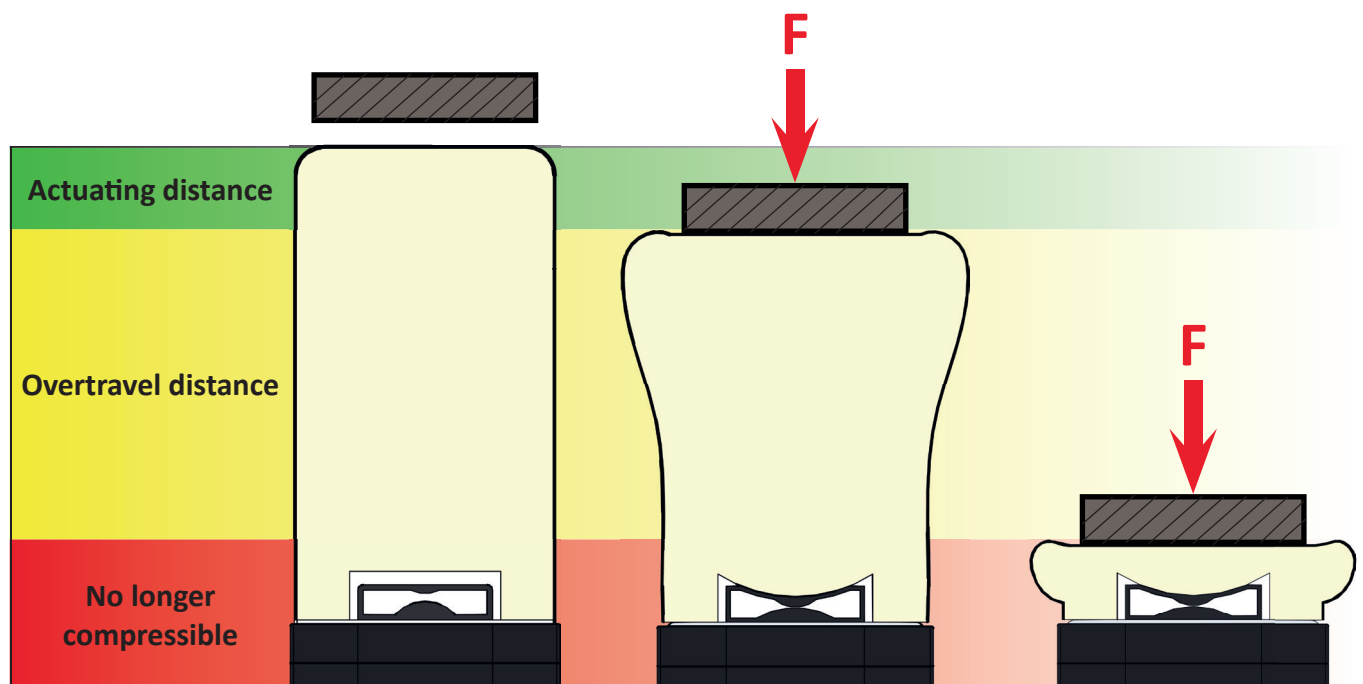
**Overtravel distance:**  $s_V = 60\%$  bumper height

**No longer compressible bumper:** 25 % bumper height

The overtravel distance  $s_V$  can then be used to determine the appropriate bumper height.

Average values by a test speed of 10 mm/s.

These data are reference values compiled by laboratory tests. Even if the component is used as intended, external factors and reaction times of all system components can have an influence on this type of value. Taking into account a risk analysis of the machine to be carried out, the application of this safety component thus allows a presumption of conformity, but does not release the machine manufacturer from the obligation to carry out an application-side test in order to demonstrate compliance with all applicable standards and directives.



1. No safety functions have been evaluated by UL  
2. These products were only investigated for risk of fire and electrical shock (in accordance with UL508)

## 5.2 Resistance

Effect solvent	Artificial leather coating			NBR coating*		
	Wipe	1 h	24 h	Wipe	1h	24 h
Water	1	1	1	1	1	1
Detergent	1	1	1	1	1	1
Caustic-soda 10%	1	1	1	3	4	4
Ammonia 10%	1	1	1	-	-	-
Acetic acid 10%	1	1	1	3	4	4
Sulphuric acid 10%	1	1	1	3	4	4
Ethyl alcohol	1	2	3	-	-	-
Ethyl acetate	4	5	6	-	-	-
Acetone	4	5	6	-	-	-
Gasoline	1	2	3	1	2	3
Diesel	1	1	1	1	2	3
Engine oil	1	1	2	1	2	2
Transmission oil	1	1	2	1	2	2

\*Please see technical information: Product information SENTIR bumper NBR

- |                                |                           |
|--------------------------------|---------------------------|
| 1 = no effects                 | Permanent contact allowed |
| 2 = few effects                | contact allowed           |
| 3 = medium effects             | contact allowed           |
| 4 = noticeable effects         | contact restricted        |
| 5 = strong effects             | very brief contact        |
| 6 = extreme effects            | avoid contact             |
| - = without specification/test |                           |



**The listed material properties are considered as guideline.  
Critical applications have to be tested directly at the actual application.**

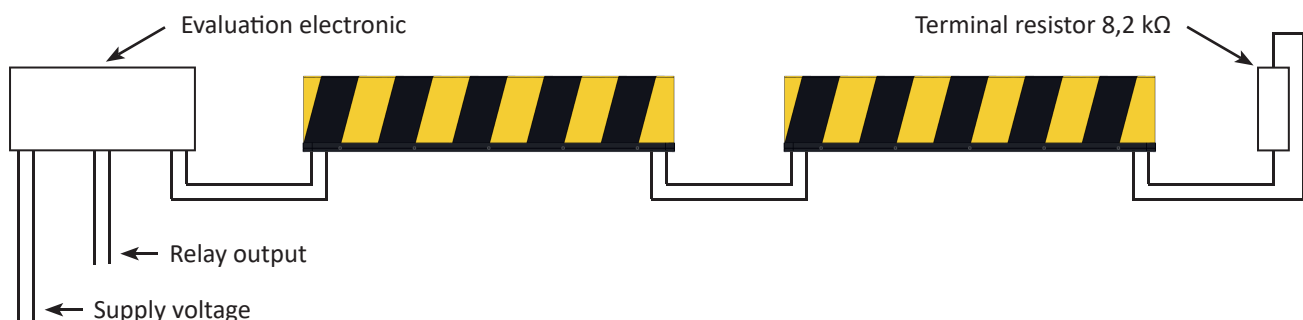
## 5.3 The signal processing

Please pay attention to:



To avoid the risk of crushing, Safety gloves must be worn!

The SENTIR bumper is equipped with two two-core cables which allow for series connection. The maximum number of connected bumpers is 5 and the total length of the system must not exceed 25 m. One line end connected to the evaluation electronic and the other end with a terminating resistor (factory-made). The electronic monitor the whole circuit, including sensor and terminating resistor. By extern force the contact areas bridge the resistor. The evaluation electronic detects the change of the resistance and via the potential-free relay contact give a signal to the machine control. Additional the hole system is monitoring on cable break or manipulation. Optionally the bumper can be use under cross-fault monitoring.



# Safety Contact Bumper

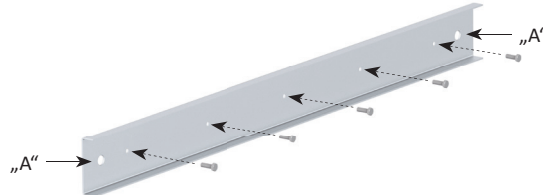
## 6 Mounting Instructions SENTIR bumper



To avoid the risk of crushing while maintaining, Safety gloves must be worn!



Installation and electrical work must be performed by authorized electricians.



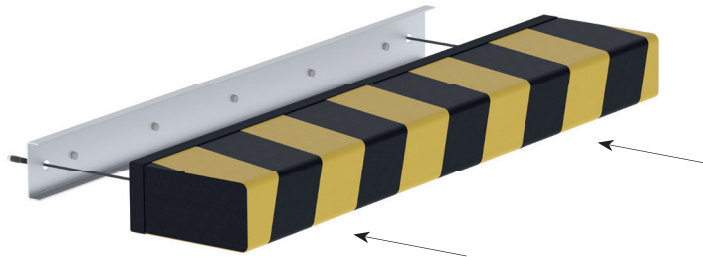
1. For the mounting of the bumper the mounting plate has to be fastened with M6 screws.



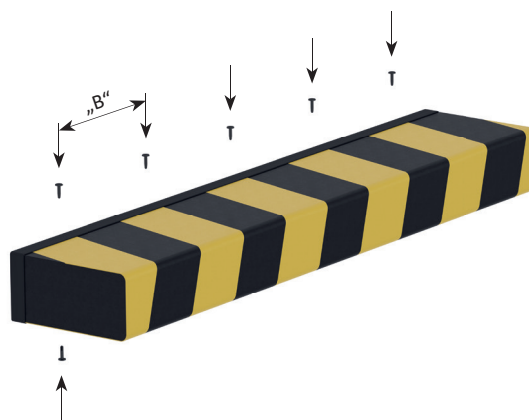
2. Drill a cable entry „A“ (Ø18 mm) for the connection cable into an appropriate place on the mounting plate. If the bumper is supposed to be connected to another bumper, a further cable entry has to be drilled.



In order to prevent damage of the connection cable, each cable entry has to be deburred **carefully** and provided with a protection sleeve!



3. Lead the connection cable(s) through the protection sleeve(s) and slide the bumper onto the mounting plate up to the stop.



4. When everything is properly adjusted, screw (maximum tightening torque 2 Nm) the screws supplied into the plastic rail (groove) at an even distance „B“ (not larger than 200 mm). Check, if all installation components are firmly joined.



## 7 Handling / Storage:



To avoid the risk of crushing, Safety gloves must be worn!

These are switch-sensitive bumpers with integrated sensors that must not be damaged by external handling.

Please note:

- Never reach into the bumper skin at any time!
- The bumper should not be pressed in or pressed!
- No lateral pressure should be exerted on the foam on the carrier plate!

Correct handling:

- Always carry the bumper with 2 persons!
- To lift the bumper, apply light pressure on the edge of the carrier plate with the ball of your hand only!
- To mount the bumpers, adjust only with the palm of your hand!
- Do not drag SENTIR bumpers by their lead wire
- Never store outdoors
- Do not subject the SENTIR bumpers to undesirable stress

## 8 Installation / Procedures:



To avoid the risk of crushing, Safety gloves must be worn!



Read all instructions first before installing/setting up the Product!

Do not drink any alcohol or take any drugs before or during the setup of the Product and follow the safety instructions carefully.

- Important: All installations, repairs and tests should be performed by a trained, responsible and authorized electrician.
- Unpack the SENTIR bumpers carefully and don't pull on the wires. Place the SENTIR bumpers in the planned positions with the connecting wires at the outer limits of the detection zone.
- The control unit should be installed as supplied. It must not be modified or subjected to procedures or connections other than those described with the instructions.

## ! MOUNTING INFORMATION

## 9 Preparations/set-up:



To avoid the risk of crushing, Safety gloves must be worn!

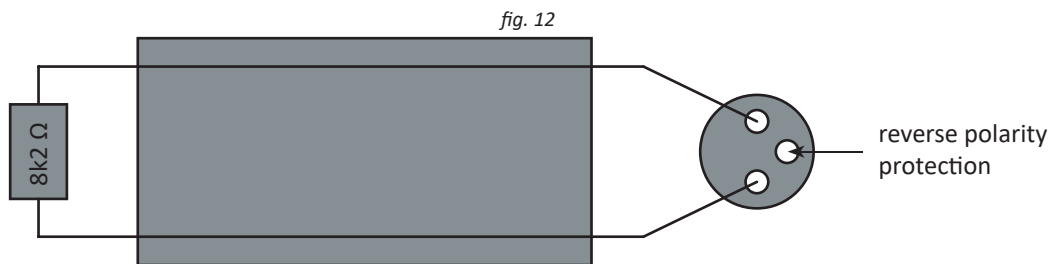
Installation and electrical work must be performed by authorized electricians.

- Position the bumper correctly. Bumpers may not be folded or bent. Safety-Contact-Bumpers may not be manipulated in any way. Cut outs or shortening is not possible.
- The mounting surface for the SENTIR bumpers has to be flat, smooth, rigid, clean and dry and show no observable distortion under the heaviest load anticipated. Undulations, protrusions, large gaps or other irregularities will increase the sensitivity of the SENTIR bumpers and may result in intermittent unintended switching off.
- Wiring must be in accordance with the National Electric Code and applicable local codes and ordinances.
- Commissioning should be undertaken by a trained electrical technician experienced in safety installations.
- Ensure that the personnel understand that no additional coverings, boards, plates or planks are to be in the SENTIR bumper during operation of the machine.

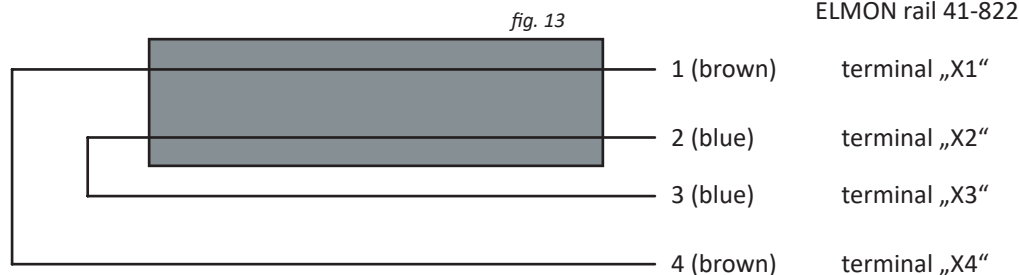
# Safety Contact Bumper

## 13 Electrical connection

1. ASO 8k2



2. 4-wire



Read all instructions first before installing/setting up the Product!  
Do not drink any alcohol or take any drugs before or during the setup of the Product and follow the safety instructions carefully.

## 10 Maintenance:



To avoid the risk of crushing while maintaining, Safety gloves must be worn!



Installation and electrical work must be performed by authorized electricians.

- Weekly check whether fluids have collected around the SENTIR bumpers, possibly indicating fluids underneath the SENTIR bumpers as well.
- The SENTIR bumpers should be regularly swept to prevent potential hazards. If it is necessary to wash or hose down the SENTIR bumpers to clean or remove grease etc., warm water and detergent may be used.
- Do not use solvents to clean SENTIR bumpers.

### Routine Inspection and tests:

- Recommended weekly.
- Stop the machine, clean the SENTIR bumpers and allow them to dry off. Inspect the surface of the SENTIR bumper for damage.
- Damage which exposes the foam must be dealt with immediately. Check that the surface are not cracked or broken. Damaged parts must be replaced immediately. Otherwise there is a risk of function failure, as well as a risk of injury.
- Test the SENTIR bumper operations.
- If the inspection tests are performed and reveal any problems, do not allow the use of the machine until they are rectified. Record the inspection and test in a written log.

### Thorough Examination and test:

Recommended twice yearly or after damage. To be done by a person trained or qualified in electrical and mechanical engineering.

- Isolate power source to the machine. Observe electrical safety precautions.
- Disconnect the SENTIR bumper from the control unit.
- Inspect the SENTIR bumper components thoroughly for mechanical damage.
- Test the SENTIR bumper operations.

- If the inspection tests are performed and reveal any problems, do not allow the use of the machine until they are rectified. Record the inspection and test in a written log.

The sequence of examination operations varies at different applications. The trained staff is responsible for the correct sequence of examination operating in terms of safety.

### TAMPERING WITH COMPONENT PARTS WILL INVALIDATE WARRANTY.

In the event of problems contact the supplier.

## 11 Precautions (General):

Warning: It is the customer's responsibility to determine whether an application is subject to safety distance requirements in order to comply with OSHA and/or other safety standards.

### Precautions- Do Not's:

- Do not put holes in active portion of SENTIR bumper. Holes or cuts in the SENTIR bumpers will decrease the life of the SENTIR bumper and could cause permanent failure
- Do not attempt to reduce your weight while on the SENTIR bumper (ie: don't lean on machine or railings)
- Do not paint the SENTIR bumper
- Do not pull on the lead wires
- Do not fold the SENTIR bumper. Always transport and store like shown on page 9, Handling / Storage
- Do not allow dirt and spills to build up- keep area clean and dry

NOTE: Combinations of chemicals can have unpredictable effects. Testing is recommended in such cases. Small pieces of the material are available if testing is required.

SENTIR bumpers should be kept free from large deposits of grease, soaps or gels.

### Wear and Damage:

- The SENTIR bumper's outer surface can be damaged by impacts from sharp or heavy objects. After every such event the SENTIR bumper should be inspected for deformation, cracks or puncturing and replaced if necessary.



- The SENTIR bumpers have been designed and tested to withstand 10.000 activations in any one spot. In use, this number of operations in a single location should not be exceeded. Occasional heavy loads are unlikely to damage the SENTIR bumpers but they should not be used on traffic through routes.
- SENTIR bumpers are not suitable for use in explosive atmospheres.

## 12 Disclaimer:

In no event will the manufacturer be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

If applied incorrectly, serious injury or death can occur.

The user must observe the safety instructions in this operating instructions manual, the country-specific installation standards as well as all prevailing safety regulations and accidents prevention rules.

The information contained in this operating instructions manual is provided without liability and is subject to technical modifications.

There are no residual risks, provided that the safety instructions as well as the instructions regarding mounting, commissioning, operation and maintenance are observed.

Exclusion of Liability: The manufacturer shall accept no liability for damages and malfunctions resulting from defective mounting or failure to comply with this operating instructions manual. The manufacturer shall accept no liability for damages resulting from the use of unauthorized spare parts or accessories.

Beyond that, the current version of ASO's General Terms and Conditions shall apply.

# SENTIR® *bumper*

## ENGLISH

17.DB.01.001 Instruction Manual Rev 01  
Subject to technical modifications.  
No liability can be assumed for errors or misprints.



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