

**GK-4
CATALOG & USER'S GUIDE**



**SAFETY PRESSURE MATS
for Personnel Protection**

SCHMERSAL

Series SMS 3 Safety Pressure Mats

Description & Operation

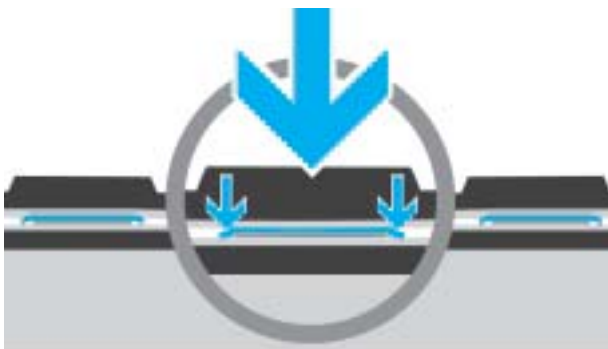
The maintenance-free series SMS 3 safety mat system is designed to safeguard personnel when entering a hazardous area around dangerous machinery. A person's presence is detected upon their stepping/walking on the mat. The interconnected safety controller (such as the AZR 31 R2, AZR 31 T2, or AZR 11 RT2) continuously monitors the integrity of the safety mat system, sending a "stop" signal to the machinery in the event of a system fault or pressure mat actuation.

When properly installed with the active edge profiles, a 100% mat actuation area is achieved... thus complying with the stringent requirements of EN 954-1 safety category 3.

Construction & Principle of Operation

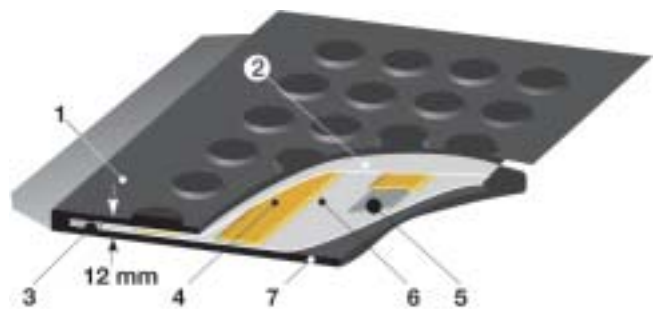
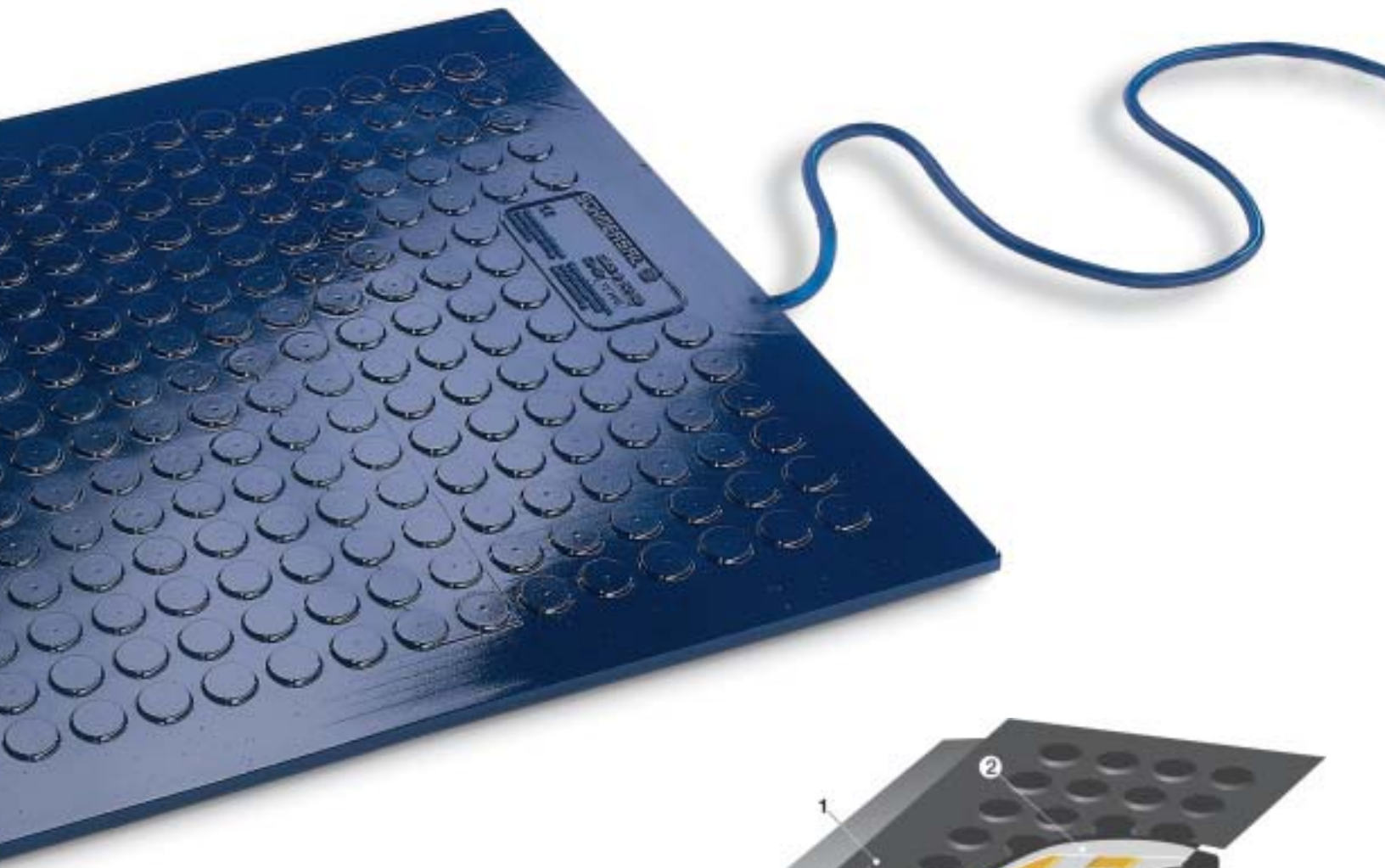
The series SMS 3 safety mat consists of two electrodes (steel plates) separated by an internal layer of compressible elastomeric insulating strips. The insulating strips are capped by a conductive u-shaped strip whose edges overhang the compressible insulator.

Upon the application of pressure (e.g. walking/stepping on the mat), the insulating strips compress allowing the conductive strip to close the normally-open circuit between the steel electrodes. This closure signal is detected by the system's safety controller whose safety output(s) sends a "stop" signal to the machinery being approached.



Typical Applications

- Robotic work cells
- Laser welding/cutting equipment
- Packaging machinery
- Woodworking machinery
- Textile machinery
- Palletizing/stacking/shrink wrapping systems
- Paper converting machinery
- Material handling equipment
- Tube-bending equipment
- Assembly machinery
- Stamping equipment
- Printing machinery



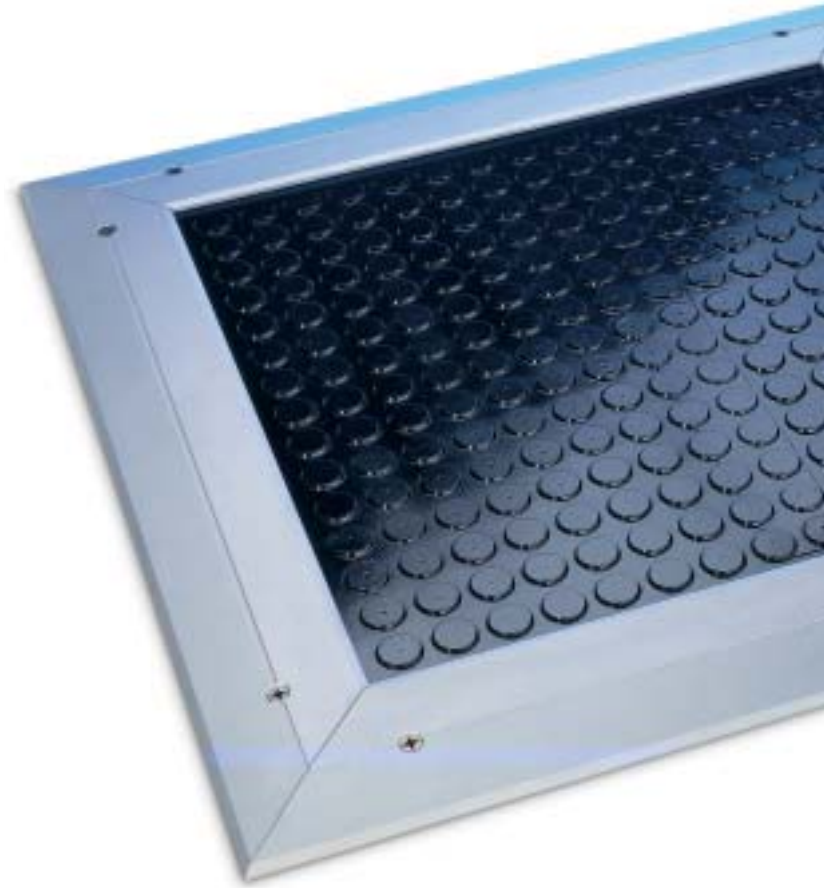
Mat Anatomy

- 1 Non-slip safety mat surface
- 2 Upper electrode (24-gauge steel plate, hardened for optimum performance & durability)
- 3 Edge spacer
- 4 Conductive (u-shaped) contact strips
- 5 Compressible, elastomeric insulating strips
- 6 Lower electrode (24-gauge steel plate, hardened for optimum performance & durability)
- 7 Safety mat bottom surface

Features & Benefits

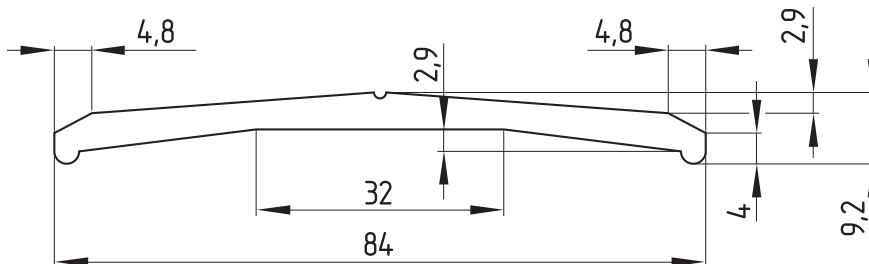
- 100% active mat area... active edge trim and insulating strip-contact design ensure actuation over entire mat surface
- High chemical resistance... mat material is tolerant to most acids, alcohols, aldehydes, caustics, solvents and oils found in an industrial environment
- Non-slip surface profile... unique surface geometry designed to enhance traction and minimize slippage
- Meets safety category 3 requirements of EN 954-1... suitable for most industrial applications
- Modular design... permits protection over a diversity of hazardous area shapes/sizes
- Easy-to-install... simple 4-wire connection (without need of a terminal resistor or additional base plate)
- Integral 6m cable... satisfies wiring requirements for a wide variety of applications
- Rugged IP67 design... with mechanical life expectancy of more than 5 million actuations
- Fully CE-compliant... third-party certified to EN1760-1
- Extended warranty... mats are warranted for 3 years from date of shipment

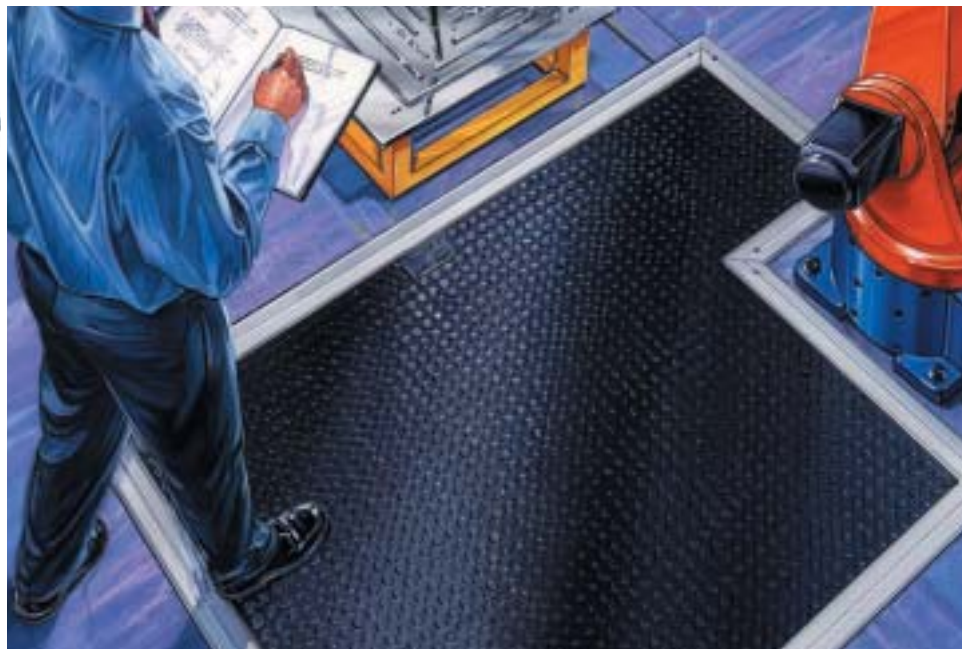
Active Edge (SMS P-100)



Schmersal's SMS P-100 active edge is an integral part of the SMS Series safety category 3 safety mat system. This unique, patented design ensures mat actuation when stepping on the edge profile... thus guaranteeing a 100% active mat area in single and multiple-mat installations.

It is important to recognize that the active edge profile/trim plates are an integral component of the SMS 3 safety mat system. Consequently they must not be replaced by other components.





CE

Custom Shapes & Sizes

Schmersal's CE-compliant safety mats can be custom made in a wide range of shapes and sizes to suit your application requirements. We would be pleased to prepare a proposal and quotation for a cost-effective solution that satisfies your unique needs. Please call should you have a specific application challenge. *(Please see Page 6 for ordering information.)*

Specification	Technical Data
Conformance to Standards	EN 1760-1
Degree of Ingress Protection	IP 67 per IEC 60529
Response Time	≤ 30 ms (Single mat only)
Mechanical Life Expectancy	> 5 million operations
Maximum Load	2000 N/cm ² (2,900 lbs/sq. in)
Active Area	100% Active Area (with SMS P-100 "Active Edge")
Surface Material	Mat: Vinyl Active Edge: Aluminum
Mat Thickness	12 mm (0.5 in)
Mat Weight	18 kg/m ² (3.7 lbs/sq. ft)
Standard Cable Length <i>(Other lengths available. Please consult factory.)</i>	6 meters (19.7 ft)
Ambient Operating Temperature Range	+5°C to +50°C (+41°F to +122°F)
Storage Temperature	-20°C to +50°C (-4°F to +122°F)
Warranty Period	3 Years (from date of shipment)
Agency Approvals	CE-Compliant
Chemical Resistance <i>(Please consult factory for other chemical compatibility)</i>	Water: Excellent Mineral Acids: Good – Excellent Organic Acids: Good – Excellent Alcohols: Good Aldehydes: Good – Excellent Caustics: Good – Excellent Petroleum Solvents: Fair – Good Oils: Good

Optional Features

“Tru-Grit” Surface Finish...

Provides added traction in wet/oily applications

SCHMERSAL’s “Tru-Grit” surface finish provides added traction in applications where mats are subject to liquids, oils and/or greases. These mats feature a non-skid, non-wearing granular material tightly bonded to the vinyl surface and capable of withstanding heavy pedestrian and vehicular traffic.



Standard Safety Mat & Trim Kit Ordering Information

Standard Sizes <i>(Other sizes and non-rectangular shapes available. Please consult factory.)</i>	Model	Length x Width (Mat only, without trim kit)*	“Active Edge” Trim Kit (Must be ordered separately)*
	SMS 3 25-25	250 mm x 250 mm	SMS P 100-25-25
	SMS 3 25-50	250 mm x 500 mm	SMS P 100-25-50
	SMS 3 25-100	250 mm x 1000 mm	SMS P 100-25-100
	SMS 3 50-50	500 mm x 500 mm	SMS P 100-50-50
	SMS 3 50-100	500 mm x 1000 mm	SMS P 100-50-100
	SMS 3 50-150	500 mm x 1500 mm	SMS P 100-50-150
	SMS 3 75-75	750 mm x 750 mm	SMS P 100-75-75
	SMS 3 75-100	750 mm x 1000 mm	SMS P 100-75-100
	SMS 3 75-150	750 mm x 1500 mm	SMS P 100-75-150
	SMS 3 100-100	1000 mm x 1000 mm	SMS P 100-100-100
	SMS 3 100-150	1000 mm x 1500 mm	SMS P 100-100-150
	SMS 3 120-120	1200 mm x 1200 mm	SMS P 100-120-120
	SMS 3 120-150	1200 mm x 1500 mm	SMS P 100-120-150

****“Active Edge” trim kits are supplied mitered, drilled and countersunk. Each is supplied with stainless-steel mounting hardware. The user/installer is responsible for cutting a notch at their desired wire exit point at time of installation. Active Edge trim adds 50 mm to installed dimension on each side. For example, a 250 mm x 250 mm mat with Active Edge trim all around would have installed dimensions of 350 mm x 350 mm.**

Note: Safety mats and trim kits must be ordered with a compatible safety controller.
(Please see Page 7 for available safety controller models.)

Please advise factory if other than standard 6m cable is desired.

Compatible Safety Controllers (Safety Relay Modules)

The SMS 3 safety mat system includes a choice of three compatible safety controllers... one of which is required for each installation.



These choices are summarized in the chart below with complete technical specifications shown on Page 8.

Model Number	Type Reset (See Note 1)	Number of Safety Outputs	Available Signaling Output	Safety Controller Input Voltage
AZR31T2-24VAC	Automatic	3	1 N.C. (Voltage-free)	24VAC
AZR31T2-24VDC	Automatic	3	1 N.C. (Voltage-free)	24VDC
AZR31T2-110VAC	Automatic	3	1 N.C. (Voltage-free)	110VAC
AZR31R2-24VAC	Manual	3	1 N.C. (Voltage-free)	24VAC
AZR31R2-24VDC	Manual	3	1 N.C. (Voltage-free)	24VDC
AZR31R2-110VAC	Manual	3	1 N.C. (Voltage-free)	110VAC
AZR11RT2-24VDC	Automatic (user selectable)	1	1 N.O. (PNP-output)	24VDC

Note 1: Manual reset units require the presence of a discrete “trailing edge” signal (24V to 0V) to activate (reset) the safety outputs. A reset button must be provided.

Automatic reset units do not require a reset signal. These units automatically re-activate (reset) the safety outputs when pressure is removed from the mat and no other safety circuit faults exist. A discrete reset button may be used for increased safety.

Each of these DIN-rail mountable safety controllers are designed to monitor the integrity of the SMS 3 safety mat circuit. In the event of mat actuation or the occurrence of a fault in the circuit, the safety output(s) will be activated to stop the hazardous machinery. Detectable faults include:

- Open circuit in interconnection wiring
- Short in the interconnection wiring
- Fault in one or more of the controller’s safety relays
- Welded contact in the controlled positive-guided motor contactor or control relay

In addition, each unit features LED system status indicators to aid in installation and trouble shooting.

Series SMS 3 Safety Controller Technical Specifications

Specification	Technical Data
Conformance to Standards	EN 60204-1, IEC60204-1, EN954-1, EN292-1, EN292-2, DIN VDE 0110-1, VDE 0113 Part 1
Housing Material	Polycarbonate
Mounting Arrangement	DIN-rail mounting according to DIN EN 50022
Housing Dimensions	AZR31: 73.2mm x 45mm x 121mm AZR11: 82mm x 22.5mm x 98.8mm
Degree of Ingress Protection	Terminals: IP20 Housing: IP40 (per IEC 60529)
Operating Voltage	24VAC \pm 15% (AZR31) 24VDC \pm 15% (AZR31 & AZR11) 110VAC \pm 15% (AZR31) 230VAC \pm 15% (AZR31... available on request)
Power Consumption	AZR31: <3W AZR11: <0.5W
Inputs	Channel A, B: Voltage-free contacts
Output Signals	AZR31: 3 enabling (safety) outputs (Two N.O. relay contacts in series) 1 signaling contact (Two N.C. relay contacts in parallel) AZR11: 1 enabling (safety) output (Two N.O. relay contacts in series) 1 signalling contact (PNP output, 15mA)
Switching Voltage/ Switching Power	AZR31: Max. 440 VAC, 1500 VA Max. 30VDC, 60W AZR11: Max. 250 VAC, 1000VA
Response Time	\leq 15 ms
Signalling	AZR: 31: Green LEDs for control voltage, Channel A, channel B, Output AZR 11: Green LEDs for control voltage, Output
Ambient Operating Temperature Range	0°C to +50°C (+32°F to +122°F)
Storage Temperature Range	-25°C to +70°C (-13°F to +158°F)
Weight	AZR 31: Approx. 465 gm (1 lb) AZR 11: Approx. 150 gm (0.35 lb)
Agency Approvals	UL, CSA, CE-Compliant

Appendix: Series SMS 3 Safety Mat System Installation & Maintenance Instructions

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Consideration of Applicable Standards & Other System Components

The contents of these installation and maintenance instructions are subject to technical modifications as a result of the continuous development of Schmersal products and services. Schmersal is not responsible for any typographical errors.

In addition to the instructions given in this mounting and wiring instructions, it is important to consider the appropriate national and international standards and regulations.

Liability exclusion in case of inappropriate use

Schmersal is not liable for damages caused by the improper use of the equipment.

The accurate knowledge of the contents of this mounting and wiring instruction is fundamental for appropriate use. In particular, the contained remarks and safety remarks must be considered.

In the event the product is used in combination with other components such as controls, PLC's or sensors, the mounting and wiring instructions for those components must also be considered.

1. Safety Mat SMS 3

1.1. General

Series SMS 3 Safety mats are used for the safeguarding of hazardous areas around dangerous machines. A safety mat is a pressure sensitive safety device in accordance with European standard EN 1760-1. The safety mat system fulfills the requirements of a safety category 3 Safety Device (EN 954-1).

Various safety controllers (monitoring modules) are available. These include the AZR 31 R2 with manual reset, AZR 31 T2 with automatic reset... with three enabling paths each, and AZR 11 RT2 with selectable manual or automatic reset and one enabling path. The safety monitoring module is an essential element of the safety mat system.

IMPORTANT INSTALLATION NOTE:
The EC type-examination is invalid if alternatives to the above listed Schmersal safety controller modules are used.

Actuating the safety mat opens the safety enabling path(s) and initiates an immediate machine stop signal. In order to assure proper safeguarding by the safety mat system, the control system of the safeguarded machine must allow an immediate stop of the dangerous motion at any time.

The tactile mat can also be used for object detection, especially for detection of vehicles.

The safety mat should not be used for the protection of children in hazardous areas.

1.2 Typical applications

There are many types of applications. Common applications include:

- Robotic work cells
- Laser welding/cutting equipment
- Packaging machinery
- Woodworking machinery
- Textile machinery
- Palletizing/stacking/shrink wrapping systems
- Paper converting machinery
- Material handling equipment
- Tube-bending equipment
- Assembly machinery
- Stamping equipment

1.3. Safety mat system: tactile mat, active edge, and safety controller module

The complete safety mat system consists of tactile mat(s) with active edges and one Series AZR safety controller module.

SMS 3 Tactile mat with active edges
Safety module AZR 31 R2 or
Safety module AZR 31 T2 or
Safety module AZR 11 RT2

IMPORTANT INSTALLATION NOTE:
The tactile mat cannot be used without a safety module and in all installations must be connected to one of the above shown safety controller modules. The active edge profiles are considered components of the safety mat and may not be replaced by other products.

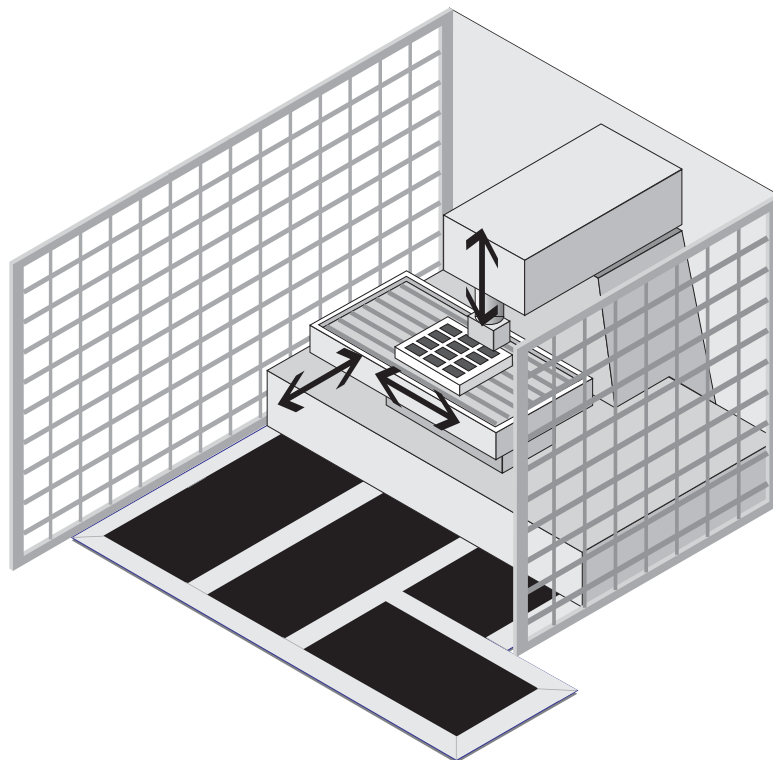


Fig. 1: Example of using safety mats at a stamping machine

2. General Safety Instructions

2.1. Proper Use

The Series SMS 3 safety mat system is a pressure sensitive safety device used for the safeguarding of hazardous areas around machines. The tactile mat should be placed on a flat smooth surface around the machine. When designing machine safeguarding, approach speed, safety distance and the possibility of stepping behind or bypassing of the safety device must be considered.

The operator must not be able to reach the nearest danger point before the machine has stopped. This is accomplished by the proper calculation of the safety distance and installation of the tactile mat(s). When choosing the safety device, the appropriate regulations have to be considered. Safety categories in accordance with EN 954-1 for pressure sensitive mats (safety mats) on machines are stated in type C standards.

We recommend the operator be given a general introduction to the features and function of the safety mat and the protected zone. Correct installation, inspecting, testing and periodic inspection are required for proper use of the device.

IMPORTANT INSTALLATION NOTE:
When designing a machine or installing a safety mat system, the safety requirements of the machinery directive (98/37/EC) and their appendices and amendments, as well as the relevant safety standards, must be respected.

2.2. Safety Distance Calculations

The correct positioning of the tactile mats with regard to the nearest danger point is mainly dependent on the stopping performance of the machine and the assumed approach speed of the operator. The standard EN 999 (Safety of Machinery, Hand/Arm-Speed) provides a formula for calculating the appropriate safety distance.

Safety distance formula:

$$S = K \times (T1 + T2) + (1200 - 0.4 H)$$

S is the minimum distance in millimeters, from the danger zone to the detection point, line, plane or zone

K is a parameter in millimeters per second, derived from data on approach speeds of the body or parts of the body

H distance above the floor (i.e. platform) in mm (for safety mats this term is usually 0 mm)

T1 is the maximum time between the actuation of the sensing function (tactile mat) and the switching off of the safety enabling outputs (e.g. the output signal switching device OSSD of the safety module) (response time see "Technical specifications", Section 9)

T2 is the response time of the machine, i.e. the time required to stop the machine or remove the risks after receiving the signal from the AZR safety controller

The safety distance can generally be calculated as follows:

$$S = 1600 \text{ mm/s} \times (T1 + T2) + 1200 \text{ mm}$$

Safety Distance Calculation Example:

Calculate the safety distance for a machine for which the stop time is 117.5 ms, the response time of the tactile mat and safety module is 70 ms; the tactile mats are at floor level.

$$S = 1600 \text{ mm/s} \times (0,07 \text{ s} + 0,1175 \text{ s}) + 1200 \text{ mm}$$

$$S = 1600 \text{ mm/s} \times (0,1875 \text{ s}) + 1200 \text{ mm}$$

$$S = 300 \text{ mm} + 1200 \text{ mm}$$

$$S = 1500 \text{ mm}$$

3. Items Provided (when ordering an SMS 3 Safety Mat)

The following items are provided when ordering your safety mat.

- Tactile mat incl. 6 m cable
- Mounting and wiring instructions

IMPORTANT INSTALLATION NOTE:
Active Edge trim kits and Series AZR safety controllers must be ordered separately.

4. Mat Design

- ① Non-slip surface
- ② Upper electrode (steel plate)
- ③ Edge spacer
- ④ Conductive contact strips
- ⑤ Compressible insulating strips
- ⑥ Lower electrode (steel plate)
- ⑦ Safety mat bottom surface

The tactile mat consists of electrodes (steel plates) which are separated from each other. These are held apart using insulation strips.

Electrode strips located between the two steel plates cause an electrical short circuit when the pressure sensitive mat (tactile mat) is actuated.

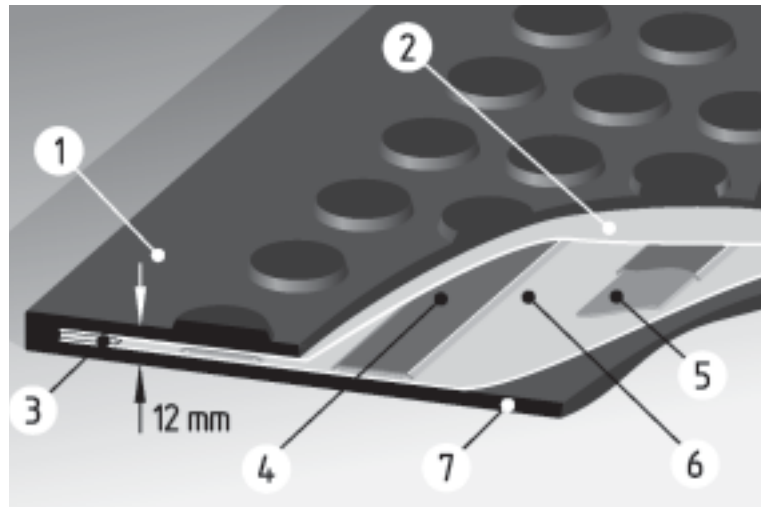


Fig. 2: Design of the tactile mat

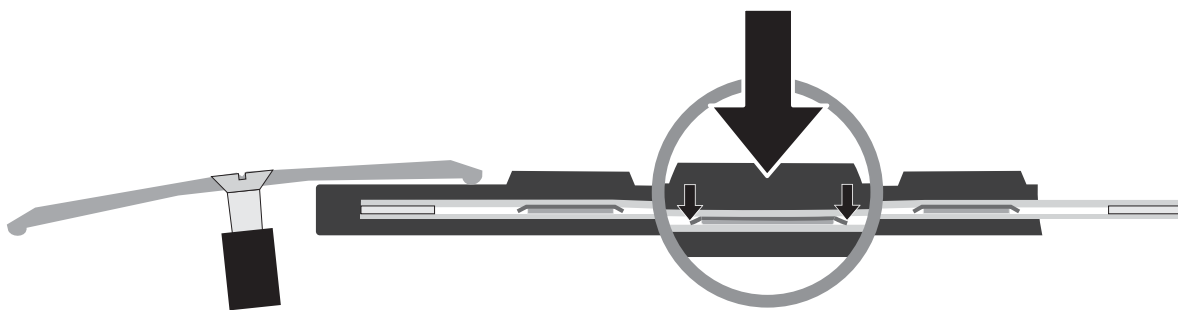


Fig. 3: Function of the tactile mat

5. Installation

5.1. Preparation

5.1.1. Mat Positioning Plan

Develop a plan for positioning the tactile mats in the dangerous area.

5.1.2. Preparation of Floor

For the installation of the tactile mat the floor should be smooth, dry and free of debris. The possible collection of fluids should be prevented.

5.2.1. Proper Handling of Tactile Mats

To carry a tactile mat grasp the long edges. Place cable on the mat when carrying. Large mats should be handled by two people. Store tactile mats flat. Do not bend! Do not damage mats by drilling, nailing or cutting.

5.2.2. Placing the Tactile Mat(s)

Place the tactile mat(s) at their approximate final position leaving a space of approximately 15 mm between the tactile mats. Pay particular attention to the cable locations.

If multiple tactile mats are to be connected to safeguard larger areas, a separate junction box for the electrical connections must be used. Therefore route the cables to one side of the tactile mats.

Make sure that the cables are not stretched, kinked or pinched.

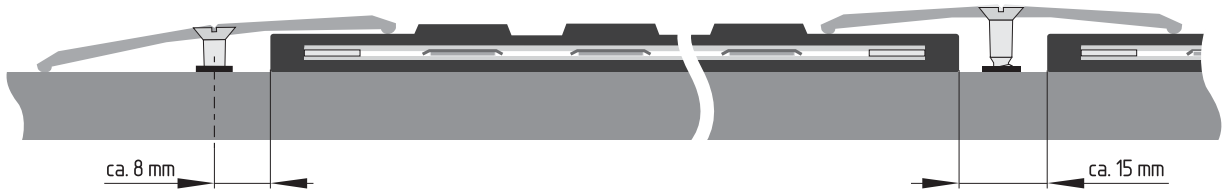


Fig. 4: Mounting example of the tactile mat

5. Installation

5.2.3. Fitting the Active Edge

Place the active edge profiles across the space between tactile mats and along the mat edges. Route the mat cables and mark the active edge profile where the cable will exit. Notch the active edge profile, if needed for the cable exits. Remove burrs and sharp edges to avoid damaging the cable(s).

Use the active edge profile as a template. Start the anchor holes on the floor by drilling (depth approximately 5 mm). Drill end holes first.

Remove the active edge profiles and drill the anchor holes to a depth of about 25 mm. Insert the screw anchors into holes.

Clean the floor area of the active edge profile and reposition the active edge profiles.

Moisten the screws with glue. Insert and tighten screws into anchors until the screw head is about 1 mm below the surface of the active edge profile. Be careful not to damage mat cables.

IMPORTANT INSTALLATION NOTE:
When installing mat edges with the active edge profiles, please be careful not to activate the tactile mats by tightening the screws too much.

Fastening the Optional Edge Covers

Position the active edge profiles so that the edge covers overlap a min. of 10 mm and a max. of 25 mm (see Fig. 7).

Place the edge cover over the positioned active edge profiles. Drill and fasten the edge cover as described above.

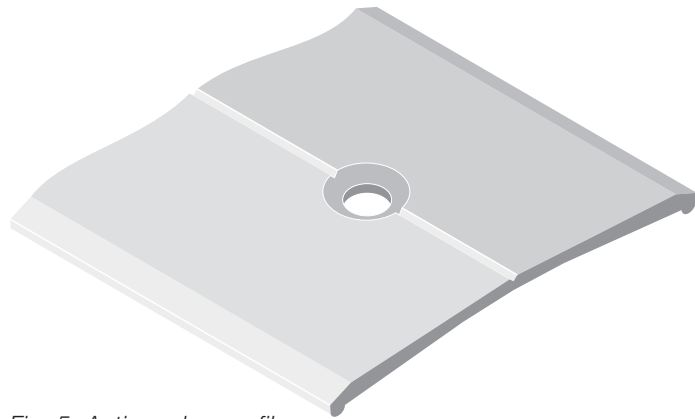


Fig. 5: Active edge profile

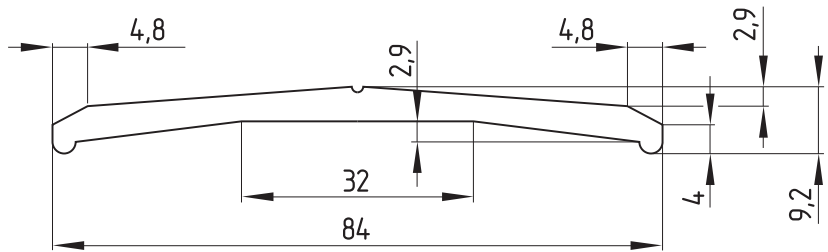


Fig. 6: Dimensions of active edge profile (in mm)

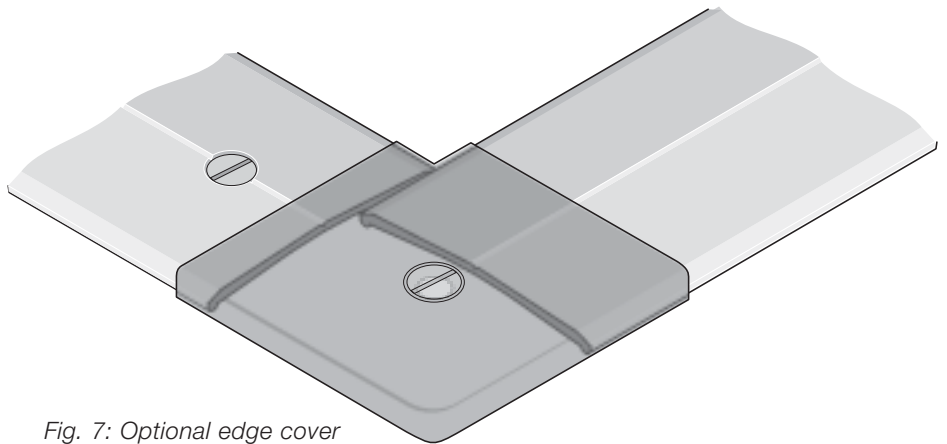


Fig. 7: Optional edge cover

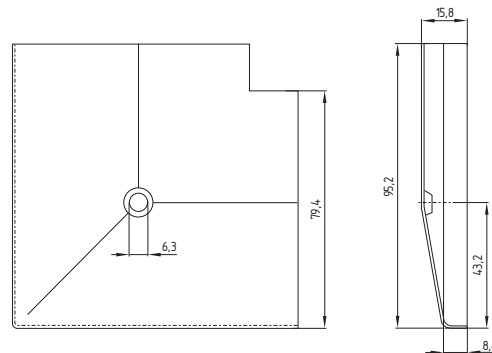


Fig. 8: Dimensions of the edge cover

6. Electrical Connection

6.1. Connection of Mats

The safety mat circuit is connected to the safety module. Each tactile mat has a 4 wire color-coded (2 black, 2 white) cable. Connect the wires of the tactile mat as follows.

Connection example AZR 31:

S13 = White (2)

S14 = White (4)

S23 = Black (1)

S24 = Black (3)

Connection example AZR 11:

S13 = White (2)

S14 = White (4)

S23 = Black (1)

0 V = Black (3)

6.2. Connecting Multiple Tactile Mats

If multiple tactile mats are to be connected to safeguard larger areas, a separate junction box for the electrical connections shall be used. This junction box should be elevated off the floor, within reach of each mat cable and have a minimum enclosure rating of IP 54. The tactile mats must be connected in series according to figures 9 and 10.

IMPORTANT INSTALLATION NOTE:
Please consult factory for the maximum number of mats that may be connected to a given safety controller.

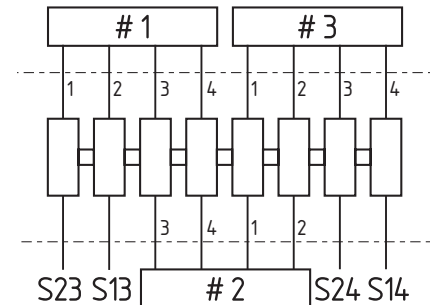


Fig. 9: Wiring example of the of the AZR 31 in connection with multiple tactile mats.

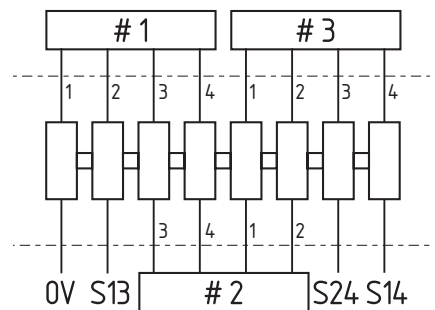


Fig. 10: Wiring example of the AZR 11 in connection with multiple tactile mats.

6.3. Troubleshooting

Green LEDs show operational conditions of the Series AZR safety modules.

LEDs AZR 31:

ON: Operating voltage

IN A: Channel A

IN B: Channel B

OUT: Authorized operation

LEDs AZR 11:

ON: Operating voltage

IN: Inputs

LED	ON	OFF
ON	Operating voltage O.K.	Operating voltage missing or defect in internal current supply
IN A	Input S13 – S14 closed	Input S13 – S14 opened or wire break
IN B	Input S23 – S24 closed	Input S23 – S24 opened or wire break
OUT	The two internal relays are connected through, when IN A and IN B are actuated and feedback input is closed (AZR 31 T2) or closed and re-opened (AZR 31 R2)	One of the two inputs IN A or IN B is not actuated, or feedback input is not closed (AZR 31 T2) or closed and not re-opened (AZR 31 R2)

IMPORTANT INSTALLATION NOTE: Switch off power supply before you connect the safety controller module. Never connect with power on.

For wiring examples and more information see mounting and wiring instructions of the safety controller modules AZR 31 R2, AZR 31 T2 or AZR 11 RT2.

7. Initial Inspection

Check function of the safety device carefully before putting the machine into operation.

The check should be performed by a person who is familiar with the details of the mounting and wiring instructions as well as with the functions of the machine and safety device.

IMPORTANT INSTALLATION NOTE:
The overall safety of the machine is dependent upon how the enabling path(s) of the AZR safety controller modules are connected to the safety circuit. The whole safety control circuit should be designed according to the requirements of the relevant safety categories in EN 954-1.

7.1. Testing

7.1.1. Function of the Safety Controller Modules

Switch on the power supply to the safety controller module. The green LEDs on the safety module indicate that the output relays are energized, which allows the machine to start (if fault see troubleshooting, chapter 6.3.).

7.1.2. Function of Tactile Mats, Active Edge Profiles (and Edge Covers)

Please test each active component of the safety device... mat, active edge profiles and (if used) edge covers... by stepping on them. This will deactivate the safety relays and cause the LEDs to turn off.

7.1.3. Safety Distance

Review the correct safety distance between the first edge of mat and the nearest danger point (see section 2.2.).

7.1.4. Environmental Conditions

Check that environmental conditions are suitable for the use of the tactile mat (e.g. no chemicals are present which will compromise the performance of the mat).

7.1.5. Active Edges

Make sure that the active edge profiles are fastened securely and do not provide a trip hazard.

7.1.6. Bypassing of Tactile Mats

Make sure that no one can bypass or step over the tactile mats. Make sure that no one can stand in the danger area without being detected.

7.1.7. Loss of power

After switching off the power supply to the safety module the machine must stop automatically. **An automatic machine restart must be prevented with a restart interlock in the machine control circuit.**

8. Periodic Inspections

In addition to the initial commissioning check before putting the machine into operation, we also recommend the following inspections:

- A simple daily functional test of the safety device
- A complete inspection every six months of all components of the safety device (wear, damage, manipulation) and mechanical components (overall stopping performance) by a safety trained person.

The tactile mat is maintenance free. When properly used it will provide effective safeguarding. If a replacement is required, it will be recognized during daily or six month inspection. For the name or identification number of the mat see mat surface.

IMPORTANT INSTALLATION NOTE: If any faults are noticed which affect safety, the machine must be put out of operation until the safety function is repaired.

9. SMS 3 Safety Pressure Mat Technical Specifications

Conformance to Standards:

EN 1760-1

Degree of Ingress Protection:

IP 67 per IEC 60529

Response Time:

≤ 30 ms (Single mat only)

Mechanical Life Expectancy:

> 5 million operations

Maximum Load:

2000 N/cm² (2,900 lbs/sq. in)

Active Area:

100% Active Area
(with SMS P-100 active edge)

Material:

Mat: Vinyl; Active Edge: Aluminum

Mat Thickness:

12 mm (0.5 in)

Mat Weight:

18 kg/m² (3.7 lbs/sq. ft)

Standard Cable Length:

6 meters (19.7 ft)
(Other lengths available. Please consult factory.)

Ambient Operating

Temperature Range:

+5°C to +50°C
(+41°F to +122°F)

Storage Temperature:

-20°C to +50°C
(-4°F to +122°F)

Warranty Period:

3 Years (from date of shipment)

Agency Approvals:

CE-Compliant

Chemical Resistance:

Water: Excellent
Mineral Acids: Good – Excellent
Organic Acids: Good – Excellent
Alcohols: Good
Aldehydes: Good – Excellent
Caustics: Good – Excellent
Petroleum Solvents: Fair – Good
Oils: Good

Standard Sizes:

Model	Length x Width (Mat only, without trim kit)*	“Active Edge” Trim Kit (Must be ordered separately)*
SMS 3 25-25	250 mm x 250 mm	SMS P 100-25-25
SMS 3 25-50	250 mm x 500 mm	SMS P 100-25-50
SMS 3 25-100	250 mm x 1000 mm	SMS P 100-25-100
SMS 3 50-50	500 mm x 500 mm	SMS P 100-50-50
SMS 3 50-100	500 mm x 1000 mm	SMS P 100-50-100
SMS 3 50-150	500 mm x 1500 mm	SMS P 100-50-150
SMS 3 75-75	750 mm x 750 mm	SMS P 100-75-75
SMS 3 75-100	750 mm x 1000 mm	SMS P 100-75-100
SMS 3 75-150	750 mm x 1500 mm	SMS P 100-75-150
SMS 3 100-100	1000 mm x 1000 mm	SMS P 100-100-100
SMS 3 100-150	1000 mm x 1500 mm	SMS P 100-100-150
SMS 3 120-120	1200 mm x 1200 mm	SMS P 100-120-120
SMS 3 120-150	1200 mm x 1500 mm	SMS P 100-120-150

****“Active Edge” trim kits are supplied mitered, drilled and countersunk. Each is supplied with stainless-steel mounting hardware. The user/installer is responsible for cutting a notch at their desired wire exit point at time of installation. Active Edge trim adds 50 mm to installed dimension on each side. For example, a 250 mm x 250 mm mat with Active Edge trim all around would have installed dimensions of 350 mm x 350 mm.**

(Other sizes and non-rectangular shapes available. Please consult factory.)

Note: SMS 3 safety mats and trim kits must be ordered with a compatible safety controller module (Please see Page 7).

10. Mat Cleaning & Maintenance

10.1. Recommended Cleaners

Most quality industrial cleaners and/or degreasers are acceptable. However, **cleaning solutions containing phosphates, chlorine, organic solvents, or mineral spirits should not be used.**

10.2. Pressure Washing/ Steam Cleaning

Mats may be pressure washed subject to the following guidelines:

- Any loose debris should be removed from the mat surface prior to beginning the pressure washing process.
- A flat, fan-spray nozzle with a pattern angle of at least 15 degrees should be used.
- Pressure spray nozzle should be kept a minimum distance of 12 inches from the mat surface at all times.
- Spray pressure should not exceed 1,500 psi.
- Spray temperature should not exceed 190°F (88°C).
- Spray pattern should be kept moving. Do not concentrate it in one location.
- Heavily soiled mats should be pre-soaked for 10–15 minutes in the cleaning solution, and brushed with a hand utility brush.
- Upon completion of pressure washing, mats should be rinsed with clean water.

10.3. Brush Cleaning

Mats may brush cleaned subject to the following guidelines:

- Any loose debris should be removed from the mat surface prior to beginning the brush cleaning process.
- Heavily soiled mats may require pre-soaking for 10–15 minutes in the cleaning solution.
- Use a good utility brush made of Nylon, Palmyra, Natural Bassine Tampico or similar material.
- Upon completion of brush cleaning, mats should be rinsed with clean water.

10.4. Recommended Practices During Cleaning

The following recommended practices should be respected during mat cleaning processes:

- Turn off all power to the mat system prior to beginning the cleaning process.
- Cover all equipment that may be susceptible to damage during the cleaning process.
- Install safety signs indicating wet floors.
- Install safety barriers as required.
- Wear safety goggles and other recommended safety apparel during cleaning.
- Be sure the mats and the surrounding area are completely dry before removing safety signs and/or barriers, and restoring electrical power.

11. Declaration of Conformity


EG-Konformitätserklärung EC Declaration of conformity Déclaration de conformité CE Dichiarazione di conformità CEE

Im Sinne der EG-Maschinenrichtlinie 89/392/EWG, Anhang II C erklären wir hiermit, daß das nachfolgend aufgeführte Sicherheitsbauteil den Anforderungen der o.g. Richtlinie entspricht.

According to the EC-Machinery directive 89/392/EEC, Annex II C we hereby declare that the following safety component conforms to the requirements of the above mentioned directive.

Dans l'esprit de la directive CE 89/392/EEC, Annexe II C nous déclarons par la présente que le composant de sécurité décrit ci-dessous est conforme aux exigences de la directive mentionnée.

Nel senso della direttiva macchina CE 89/392, Appendice II C dichiariamo con la presente che il componente di sicurezza riportato in seguito risponde alle esigenze della nominata direttiva.

Bezeichnung des Sicherheitsbauteils:	SMS 3 + AZR 31 R2 / AZR 31 T2 / AZR 11 RT2
Name of the safety component:	
Nom du composant de sécurité:	
Nome del componente di sicurezza:	
Beschreibung des Sicherheitsbauteils:	Schaltmatte mit Sicherheitsbaustein
Description of the safety component:	Tactile mat with safety module
Description du composant de sécurité:	Tapis tactile avec module de sécurité
Descrizione del componente di sicurezza:	Tappeti tattile con modulo di sicurezza
Einschlägige EG-Richtlinien:	98/37/EG 1989 (Maschinenrichtlinie)
Relevant EC-directives:	73/23/EWG 1973 (Niederspannungsrichtlinie)
Directives CE correspondants:	89/336/EWG 1989 (EMV-Richtlinie)
Corrispondenti direttive CEE:	
Angewandte Normen:	EN 1760-1, EN 954-1
Standards applied:	
Normes appliquées:	
Norme applicate:	
Gemeldete Stelle:	Maschinen Technik
Registration office:	SAQ Kontrol AB, Stockholm/Schweden
Office d'enregistrement:	Europäisch notifizierte Stelle Kenn-Nr.: 409
Ufficio registrazione:	European notified body Id.-No.:
	Organisme européen notifié no. d'indice:
	Organo europeo notificato no:
Baumusterprüfbescheinigung:	Prüfnummer: M539-98
Model test certificate:	Test no.:
Certificat d'examen de type:	No. d'examen:
Certificato di collaudo modello:	Collaudo no.:
Baujahr:	1998
Year of manufacture:	Année de fabrication:
Anno di costruzione:	
Anbringung der CE-Kennzeichnung: 1998	
Application of the CE-mark:	
Application de la marque CE:	
Applicazione del marchio CE:	
Ort und Datum der Ausstellung:	Wuppertal, den 1998-09-28
Place and date of issue:	
Lieu et date de l'établissement:	
Luogo e data di emissione:	
Rechtsverbindliche Unterschrift:	Legally binding signature:
Signature obligatoire:	Heinz Schmersal, Geschäftsführer
Firma del rappresentante legale:	Managing Director
Directeur gérant:	Direttore

SCHMERSAL

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SCHMERSAL

100 Grasslands Road, Suite 110
Elmsford, NY 10523

Telephone: (914) 347-4775

Fax: (914) 347-1567

email: info@schmersalusa.com

schmersalusa.com

IPEC Industrial Controls Ltd.
17-109 Fernstaff Court, Concord, Ont. L4K 3M1

Phone: 905-738-6688 Printed in USA
www.ipecautomation.com