

SCHMERSAL Tech Briefs: SMS Safety Pressure Mats



Overview

Safety pressure mats are used to safeguard personnel around machinery with hazardous movement, such as wood processing machines, scissor lifts or punch presses. They provide a slip free surface that is highly resistant to chemicals such as acids, caustic solutions, oil, and gasoline.

The safety pressure mat consists of two current-carrying thin steel plates separated by insulating strips. Applying pressure to the mat surface creates an electrical cross-wire short between the steel plates. The connected safety controller evaluates this signal and stops the hazardous movement.

Schmersal offers two safety pressure mat series:

SMS4



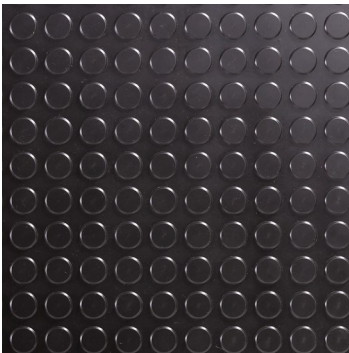
The SMS 4 series is connected to the floor by means of an aluminum profile and special corner sections. As a result of the beveled form of the profile, tripping hazards are avoided. The aluminum profile additionally serves as edge protection, when fork-lift trucks or other floor conveyors drive over the safety mats. The aluminum trim extends each edge by 62mm beyond the active area of the mat.

SMS5

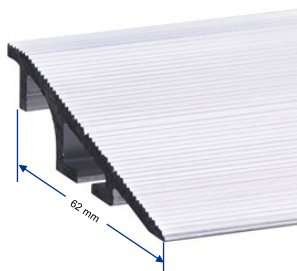
The SMS 5 series features a ramp profile directly molded to the active surface of the safety mat. The ramp profile helps avoid tripping hazards and eliminates the need for the aluminum trim. Each edge of the mat is extended by 35mm beyond the active area.

Both series of mats are available in 6 standard sizes, but can be customized to individual application requirements - color, dimensions, special shapes, or tread patterns. They meet the requirements of PL_d, Safety Category 3 to ISO 13849 when used with a Schmersal SRB 301HC Safety Controller.

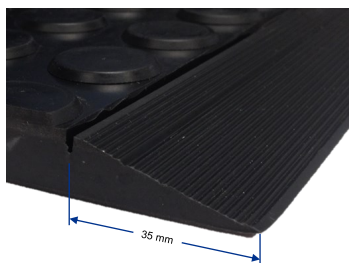
Features



Standard non-slip tread pattern



Aluminum ramp edge for the SMS4



Integrated ramp edge of the SMS5

Safety Distance

The proper arrangement of the safety mat with regard to the adjacent hazardous area mainly depends on the after travel time of the machine and the approaching speed of the operator. The standard ISO 13855 (Safety of Machinery, Approaching Speed of Body Members) provides a formula to calculate the safety distance:

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

T1 = the maximum response time of the safety device between the triggering of the perceptible element (the safety mat) and the time, at which the safety guard (safety-monitoring module) has switched the output signal to the "OFF" state.

T2 = the response time of the machine, i.e. the time required to shut down the machine or to eliminate the risk, after the transmission of the output signal of the safety guard

Applications

- Power-driven machines
- Power presses for the metal and plastics industry
- Folding or brake presses
- Filter presses
- Punching machines
- Robot cells
- Printing machines
- Injection molding
- Materials handling and storage technology
- Palletizers
- Packaging equipment

Available Literature



SMS4/5 Brochure, 8 pages

Ordering Details

SMS①-②

- ① Mat type:
4 square edged
5 integrated ramp edge
- ② Active area (mm)
- | | |
|-----------|--------------|
| 250-500 | 250x500 mm |
| 500-500 | 500x500 mm |
| 500-1000 | 500x1000 mm |
| 750-1000 | 750x1000 mm |
| 1000-1000 | 1000x1000 mm |
| 1000-1500 | 1000x1500 mm |

Accessories

Mounting Rail Kits for SMS4

(Includes 4 rails and 4 corners)

- SMS4-RS250-500
- SMS4-RS500-500
- SMS4-RS500-1000
- SMS4-RS750-1000
- SMS4-RS1000-1000
- SMS4-RS1000-1500

Components for custom trim

- | | |
|---------------|-----------------|
| SMS 4-RS 3000 | Ramp rail (3 m) |
| SMS 4-BS-3000 | Rounded rail |
| SMS 4-EV | Ramp Corner |

Compatible Safety Controllers

- SRB-301-HC/R-24V**
- SRB-301-HC/R-48-230VAC
- SRB-301-HC/T-24V**
- SRB-301-HC/T-48-230VAC

Bold part numbers are regularly stocked

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