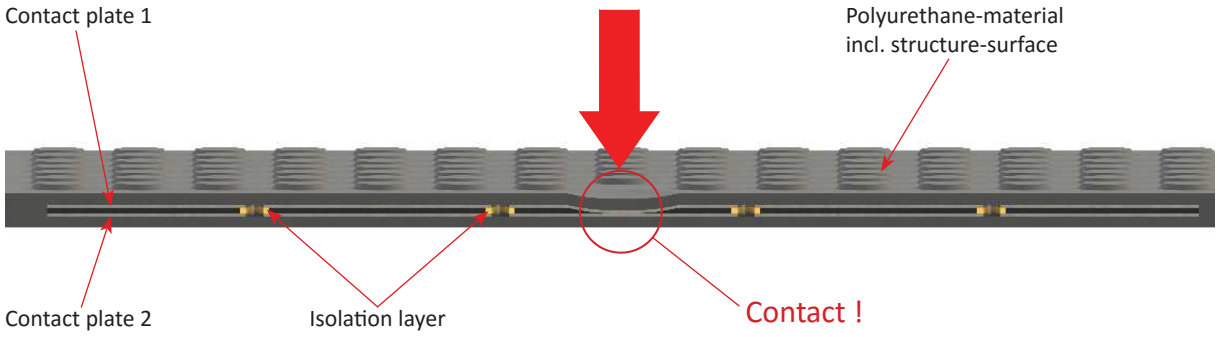


The principle of the safety-contact-mat

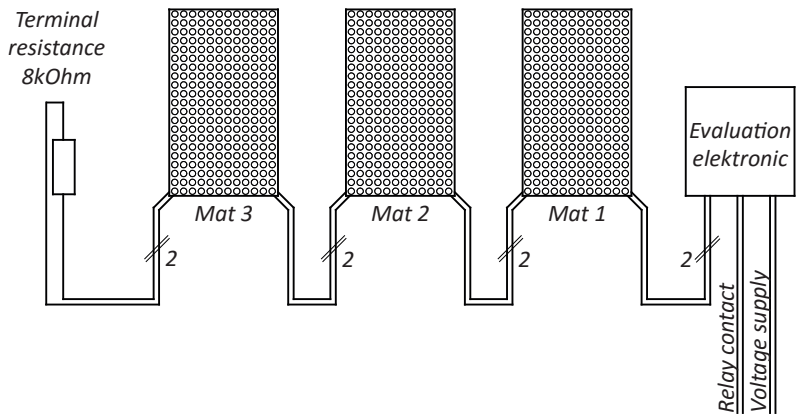


The structure

The basic construction of the ASO Safety Contact Mat consist of two conductive plates which are separated by a proprietary isolating layer. These plates are completely potted in a polyurethane material so that they are impervious to oil, water and dirt. The top consists of a slip resistant checkered pattern. This surface provides excellent resistance against oil and grease. Two cable exits are provided. These cables consist of one M8 male plug and one M8 female plug in standard construction (Optional Cable Exits are available upon request). Mounting to the floor can be realized with optional aluminum ramp rails RS 14 or BS 14.

Signal processing

The SENTIR mat safety contact mat is fitted with 2 two-core connecting cables and offers the possibility of connecting several mats in series up to a maximum total area of 10 m². One end of the cable is connected to the safety evaluation control electronics and the terminal resistance is connected to the other end (prepared at the factory). The Safety Evaluation control electronics provides monitoring for the entire circuit including the cabling route and the mats, by monitoring the terminal resistance. The two surfaces of the mat make contact when stepped on and the resistance is bridged. This immediately causes a signal within the electronics that is then given as a potential free output for the contact-mat by the relay. The entire switching circuit is monitored at the same time for damage to cable or manipulation.



Please pay attention to:

- Up to 10 contact mats wired in series may be connected to one evaluation control unit.
  The maximum total area can not exceed 10 m²!
- The total cable length can not exceed 25m.
- The 8.2 KΩ terminal resistance must be connected to the last mat in series when several mats are connected !
- Please inquire separately for mats with recesses or special shapes.

English

Ramp rail

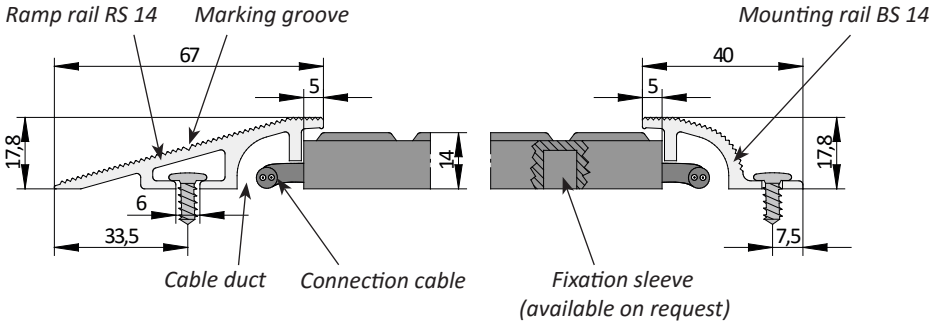
The ramp rail RS 14 provides secure mounting capability for the safety contact mat. The angled design reduces tripping and slipping when mounted to the mat. The integrated channel can be used for clean and safe installation of the connecting cable.

Mounting rail BS 14

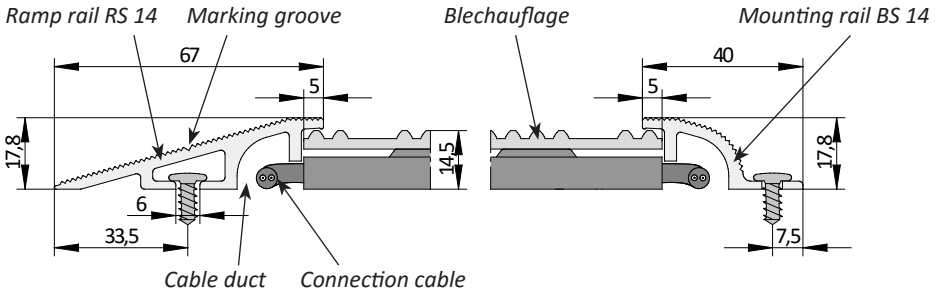
The mounting rail BS 14 can be used to attach the safety contact mat in less accessible areas (for example at machines, shut-off positions, walls, etc.).

Also the integrated channel can be used for clean and safe installation of the connecting cable.

SENTIR mat 14



SENTIR mat 14 ARB (SENTIR mat 14 TBV)



Fixation sleeve

This enables the safety contact mat to be fixed to the floor without additional space being needed.

Covers

Special covers or colors on request.

NP	- Euro dot surface with one compound mat
SA	- Sandy surface with one compound mat
ARB	- One compound mat with aluminium plate
TBV	- One compound mat with stainless steel plate

English

Type code information

SENTIR mat - 14 - 1T0 - NP

Designation
ASO - Safety Contact Mat

Height in mm

Number of switching zones within one mat

Type of mat
- **U** - One compound mat
- **T** - One compound mat with molded ramprail
- **F** - One compound mat for metal plate

Cable version
- **0** - 1 x connection cable 2-wire (KMS)
- **4.0** - 1 x M8 male plug and 1 x M8 female plug
- **4.2** - like 4.0 with M8 connect. cable 2,5m
- **4.3** - like 4.0 with 5m cable M8 female plug and M8 resistor male plug
- **4.4** - like 4.0 with 5m cable M8 male plug and 5m cable M8 female plug
- **5.0** - 1x integrated resistor and 1x M8 male plug and 5m cable with M8 female plug

Cover quality
- **NP** - Euro dot surface with one compound mat
- **SA** - Sandy surface with one compound mat
- **ARB** - Aluminum plate
- **TBV** - Stainless steel plate

Special covers or colors on request

Technical specifications for Safety contact mats

	SENTIR mat 14 U / ASK 14 T	SENTIR mat 14 ARB
Max. dimension	2350 mm x 1350 mm	2350 mm x 1350 mm
Standard dimensions available from stock	only SENTIR mat 14 U / T 1000 mm x 750 mm 1000 mm x 1000 mm 1000 mm x 1500 mm	
Construction height	14 mm with covering	14 mm with covering
Surface	Euro dot	checkered
Weight	U 24,9 Kg/m² ; T 26 Kg/m²	approx. 31,5 kg/m²
Inactive border	16/42 mm	40/30 mm
Switching pressure	Round body ∅ 80 mm = approx. 150 N	Round body ∅ 80 mm = approx. 150 N
Static load	max. 2000 N over ∅ 80 mm *	max. 2000 N over ∅ 80 mm *
Response time	< 25 ms *	< 25 ms *
Switching cycles	min. 1 Millionen *	min. 1 Millionen *
Electrical capacity	24 V 100 mA	24 V 100 mA
Material	PUR black, 68 +/- 5 Shore A	PUR black, 68 +/- 5 Shore A
Protection class	IP 65	IP 65
Temperature range	-10° to +55° C	-20 C to +55° C
Chem. resistance: ***Oil*** ***Fuel*** ***Solvent*** ***Acid diluted*** ***Base diluted***	 good resistant sufficient resistant resistant	**Aluminum** good good good good good
Maintenance	The mat is maintenance free. Functional testing on an annual basis is recommended.	
Connection cable	Standard: Pluggable, 2 x 0,34 PU-cover black with M8 male/female plug, 120mm	

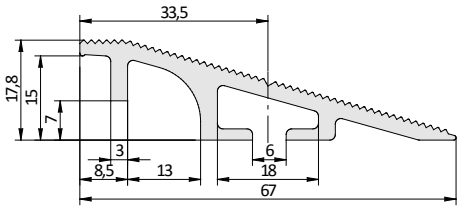
**** tested according to EN 13856-1***

English

Technical specifications for equipment

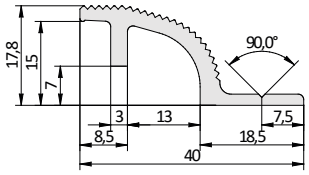
Technical specifications ramp rail RS 14

Application:	SENTIR mat 14 ARB / SENTIR mat 14 TBV
Artilel-No.:	603001
Material:	Aluminum AlMgSi 0,5
Standard length of delivery:	3 m / 6m
Weight:	approx. 788 g/lm



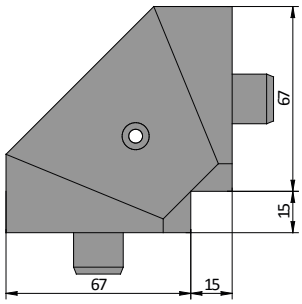
Technical specifications mounting rail BS 14

Application:	SENTIR mat 14 ARB / SENTIR mat 14 TBV
Artilel-No.:	603003
Material:	Aluminum AlMgSi 0,5
Standard length of delivery:	3 m / 6m
Weight:	approx. 411 g/lm



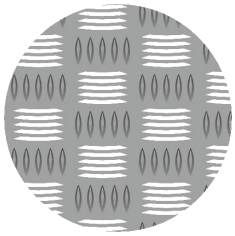
Technical specifications corner connector EVA

Application:	SENTIR mat 14 ARB / SENTIR mat 14 TBV
Artilel-No.:	603020
Material:	PA 6 30% DV, black
Weight:	approx. 29 g/Stck.



Technical specifications checkered plate cover

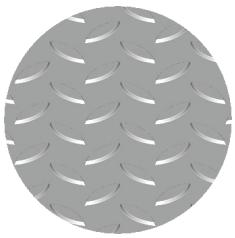
Application:	SENTIR mat 14 ARB
Artilel-No.:	1600028
Material:	Aluminum 2,5 mm max. 2500 x 1400 mm
Weight:	approx. 7,6 kg/m²



Aluminum checkered plate

Technical specifications bulb plate cover

Application:	SENTIR mat 14 TBV
Artilel-No.:	1600016
Material:	Stainless steel 2,5 mm max. 2500 x 1250 mm
Weight:	approx. 11,6 kg/m²



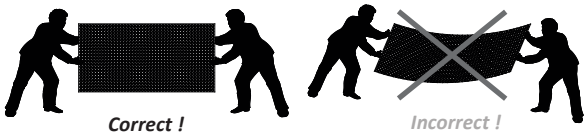
Stainless steel bulb plate

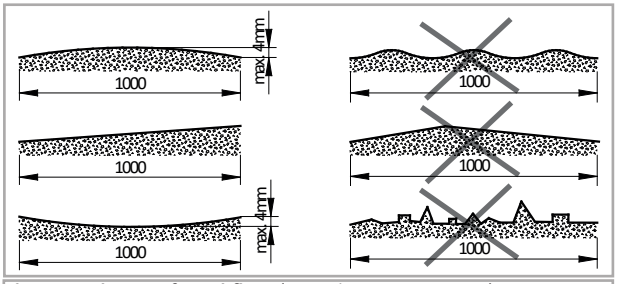
English

Assembly Information

The mounting surface must be absolutely even, clean and dry.
Mats may not be glued on the bottom.

Lay out and position the mat correctly with the base plate downwards. Mats may not be broken or bent. Safety-Contact-Mats may not be changed in any way. Cut outs or shortening is not possible.





Flatness tolerance for subfloor (according to DIN 18202)

Please note for measurement:

The ramp rail resp. the mounting rail are used for the fixation of the mat.

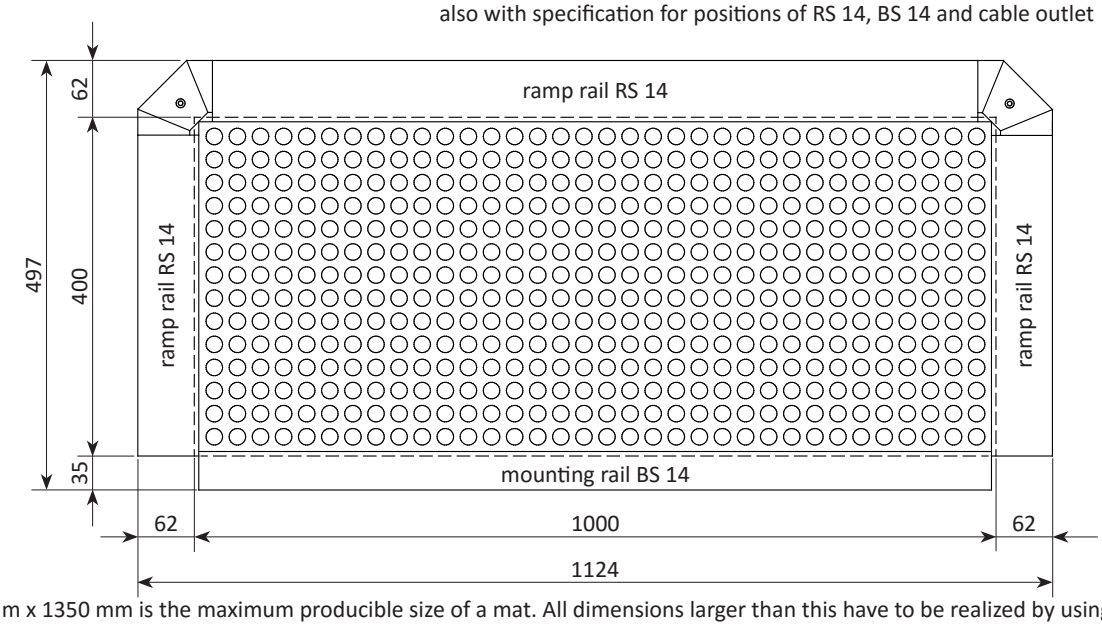
To calculate the necessary space needed for the mat, the additional size of the ramp rail(s) resp. mounting rail(s) has to be added to the dimension of the safeguarded area.

	Ramp rail	additional size	mounting rail	additional size
SENTIR mat 14	RS 14 Aluminum	62 mm	BS 14 Aluminum	35 mm
SENTIR mat 14 T	molded	35 mm	- / -	- / -
SENTIR mat 14 ARB	RS 14 Aluminum	62 mm	BS 14 Aluminum	35 mm
SENTIR mat 14 TBV	RS 14 Aluminum	62 mm	BS 14 Aluminum	35 mm

Available space for safeguarding: **1200 x 500 mm**
Required Safety contact mat: **SENTIR mat 14** with ramp rail **RS 14** and mounting rail **BS 14**

Example of calculation: 1200 mm - 62 mm - 62 mm = 1076 mm
500 mm - 62 mm - 35 mm = 403 mm

Ordering example: **SENTIR mat 14 1000 x 400 mm** with **RS 14** and **BS 14**
also with specification for positions of RS 14, BS 14 and cable outlet

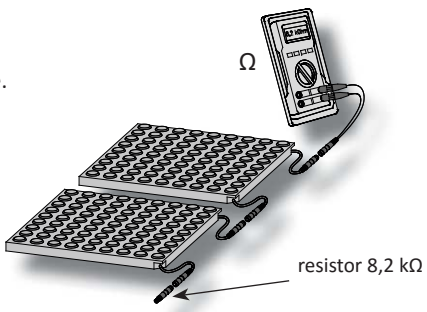


2350 mm x 1350 mm is the maximum producible size of a mat. All dimensions larger than this have to be realized by using several mats.

When installing several mats next to each other they are put together edge to edge. Then connect the mats electrically and check the resistance value.

With not activated mat the value must be 8,2 kΩ ± 500 Ω.

During cable laying inside the ramp- and/or in the mounting rail pay attention that the cable is not pinched.



English

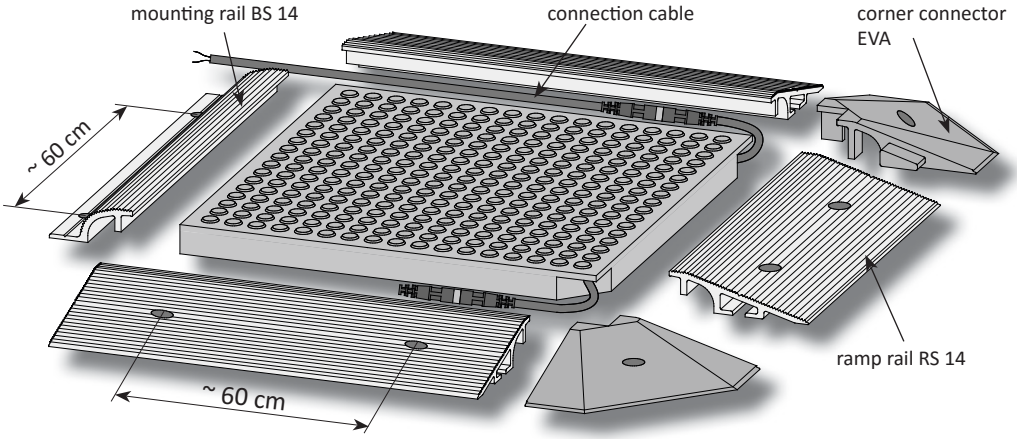
Assembly of SENTIR mat 14

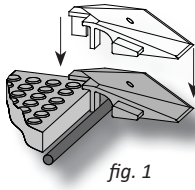
When using corner connectors the ramp rail must be shortened around 20mm for each corner connector.

The corner connector nearest the cable is to be mounted from above over the cable in such a way that the cable is guided safely in the cable duct *(fig. 1)*. Afterwards drill and fasten it to the bottom with 6 mm dowel and suitable screw.

Push the ramp rails laterally to the mat and then on the fixation-pin of the corner connector *(fig. 2)*. Mark the fastening points along the marking groove on the rail and pre-drill 10 mm for the intended plugs. Fasten the rails on the bottom with 6 mm dowels and suitable screws (approx. all 60 cm) and close the openings with the plugs *(fig. 3)*.

Push the corner connectors laterally to the mat and then the fixation-pin into the rail *(fig. 4)*. Afterwards drill and fasten it to the bottom with 6 mm dowel and suitable screw.




fig. 1

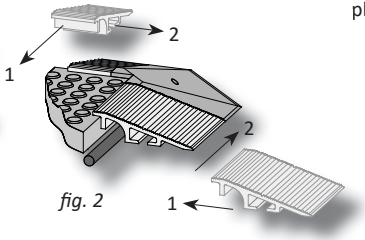
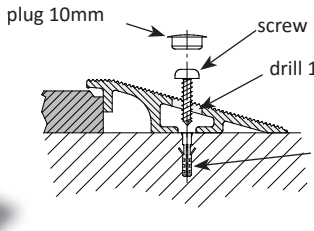
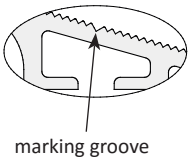


fig. 2





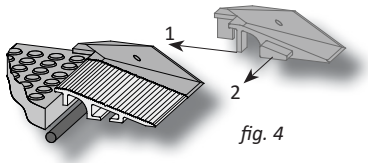
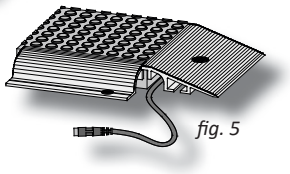
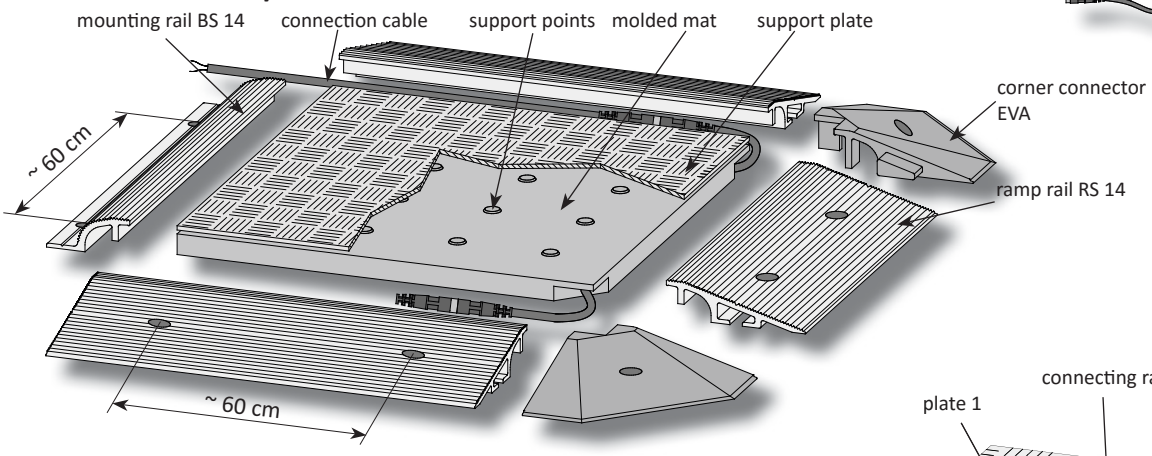


fig. 4

At the machine side the conclusion takes place via the adjustment with the mounting rail BS 14. Fasten the rail to the bottom with 6 mm dowels and suitable screws (approx. all 60 cm). If possible bring out the cable laterally and attach it to the controller *(fig. 5)*.


fig. 5

SENTIR mat 14 ARB / SENTIR mat 14 TBV



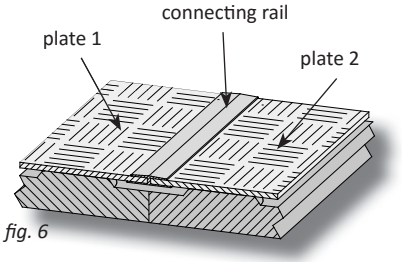


fig. 6

Mounting mats with metallic plates of aluminum (ARB) or stainless steel (TBV), make sure that the plates are only placed and fixed by the surrounding rails.

The plates must not be stuck!

Multiple metal plates must be connected by connecting rails *(fig. 6)*.

English

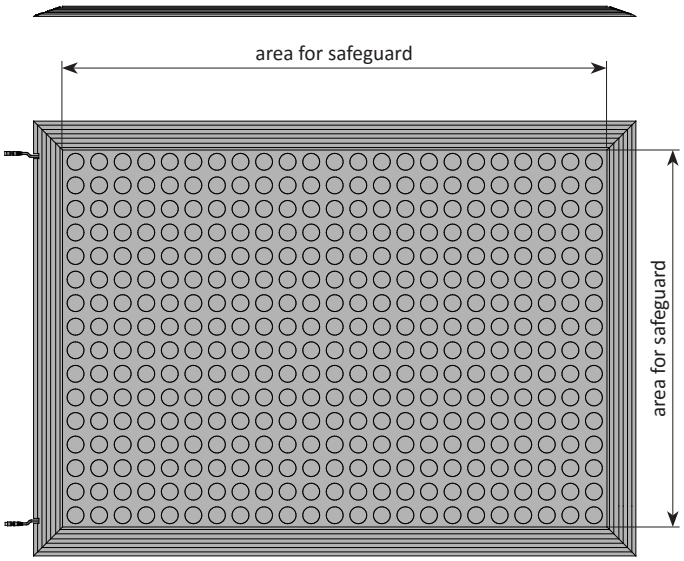
Assembly of mats with molded ramp rails SENTIR mat 14 T

Please note for dimensioning:

The area to be safeguarded is the dimensions of the mat without the ramp rails. Therefor 35mm have to be added for each ramp rail side. The result is the over-all dimension for the floor space.

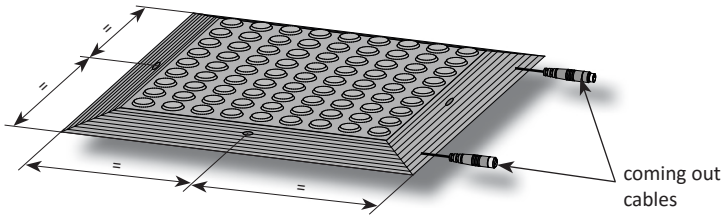
The ramp rail serves for fixation to the ground.

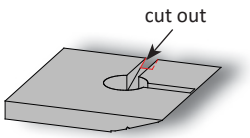
250 cm x 140 cm is the maximum producible size of a mat. All dimensions larger than this have to be realized by using several mats.



Installation

Cut out the cable output at appropriate side in that way that the coming out cables are not squeezed or sheared while placing the mat afterwards. Place and adjust the mat at appropriate place. To provide against slipping use suitable screws and dowels on each side of the mat.



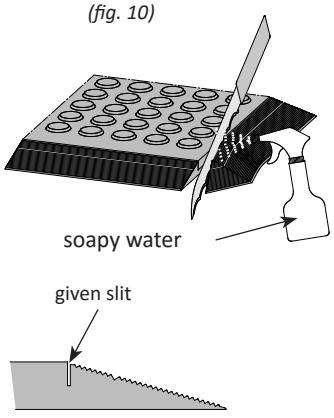


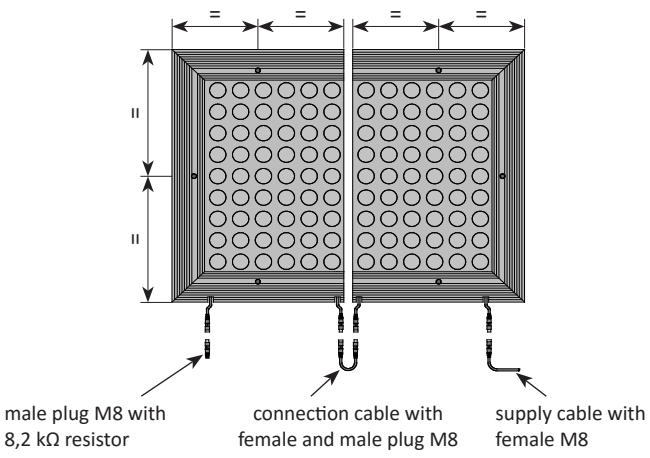
When installing several mats next to each other they are put together edge to edge. To do this cut off the ramp rail with a knife in the given slit (spray the knife and the cutting area with soapy water).

Adjust the mats and save each against getting out of place *(fig. 11)*.

After that connect the mats electrically and check the resitance value. With not activated mat the value must be 8,2 kΩ ± 500 Ω.

(fig. 10)





For traffic safety the cable outputs should allways be aligned to the machine side!

Unevenness and/or small inclusions of air which can appear on the back of the mat, do not affect the functionality of the SENTIR mat in a negative way. These kind of visional appereances are caused during the production process and can not be complained.