

## SAFETY MATS

The sensitive mat is a safety component, featuring an electro-pressure sensible element to detect the presence of people.

The presence of people over 35 kg closes a contact inside the sensor.

The state change of the internal sensor (NO to NC) is processed by the control unit "control device" that sends a machine stop signal and eliminates the danger situation.

### HOW TO DIMENSION A MAT

The minimum distance of the dangerous zone must be calculated using the general formula

$$S = (K \times T) + C$$

whereas:

**S**=minimum distance in mm, of the dangerous zone at the point, axis or plan of the detection zone.

**K**=Constant in mm/s, derived from data on speeds of body approach.

**T**= Global response time in sec.

**C**=Supplementary distance in mm, based on the intrusion into the dangerous zone before activating the protection device.

### CALCULATION OF MINIMUM DISTANCE FOR SENSITIVE DEVICES INSTALLED ON THE FLOOR

#### General method

The choice and use of sensitive devices installed on the floor, activated by foot, depend upon the standard "C" appropriate or an evaluation of risks according to EN 1050 if no C standard exists.

Examples of sensible devices installed on the floor include the sensitive mats, sensitive to pressure, and optoelectric protection devices. The minimum distances derived in this point for sensitive devices installed on the floor require that the approaching speed to the dangerous zone is the walking speed. Referring to the risk of bypassing the detection zone, see appendix B (standard Uni EN 999). The minimum distance is calculated according to the formula:

$$S = (1600\text{mm/s} \times T) + (1200\text{mm} - 0,4 H)$$

whereas:

**H**=Distance over the reference plan, ex. floor, in mm.

#### Floor installation

In most cases the sensitive device is assembled directly on the floor, i.e. H=0. Therefore, the minimum distance for sensitive devices installed on the floor is calculated according to the formula:

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

#### Example

Approaching direction to detection zone.

This minimum distance is calculated according to the formula:

$$S = (K \times T) + C$$

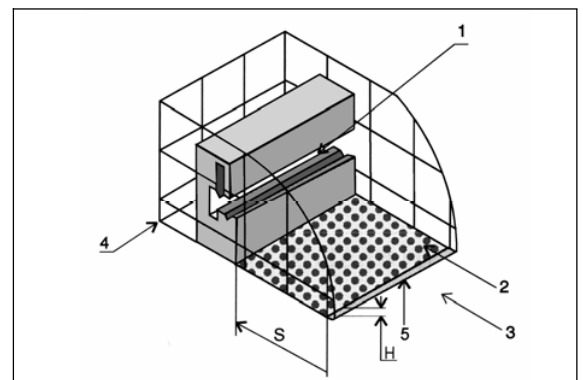
whereas:

**K**=1600mm/s

**C**=1200mm - 0,4 H, but not less than 850mm, whereas H is the height of the detection zone over the reference plan (ex. floor) in mm.

That is:

$$S = (1600\text{mm/s} \times T) + (1200\text{mm} - 0,4 H)$$



H = Height of measuring zone over reference table.

S = Minimum distance.

1 = Dangerous zone.

2 = Detection zone.

3 = Approach direction

4 = Stationary cover

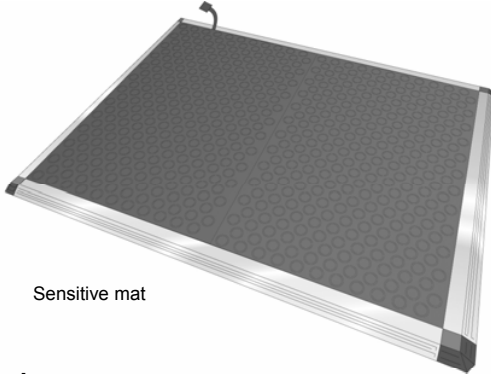
5 = Start of measuring zone

## TYPES OF MATS

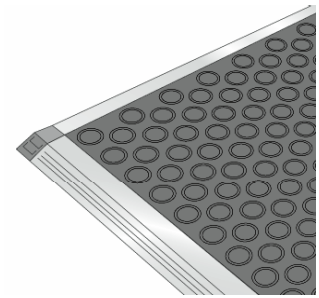
### Coating

The mat can be supplied with 2 coatings:

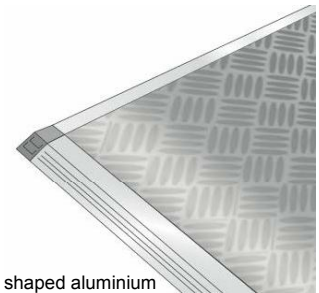
- Black embossed PVC (other colours upon request)
- PVC coated with almond shaped aluminium (ex. machines processing incandescent materials)



Sensitive mat



Embossed PVC



Mandle shaped aluminium

### Versions

The mat is available in 2 versions:

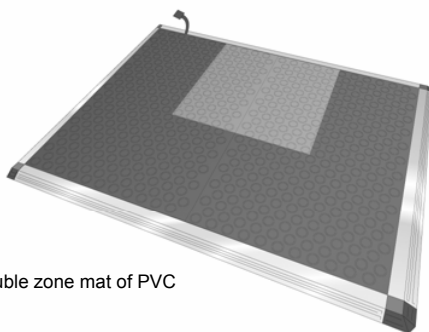
#### 1-“STANDARD MAT”

Dimensions upon request, profiles fastened to the mat, with the possibility of PVC or aluminium coating.

**Upon request, the aluminium profiles can be supplied loose, tailor-made.**

The PVC coated mat can be implemented with 2 sensitive zones, controlled by 2 separate circuits (ex. opening of a door with the presence of a person, or in front of a bank teller). In this case, if the 2 zones are taken simultaneously, the signals stop the system.

Maximum dimensions of single mat: 3000x1500 mm. You can shape larger surfaces using more mats.



Double zone mat of PVC

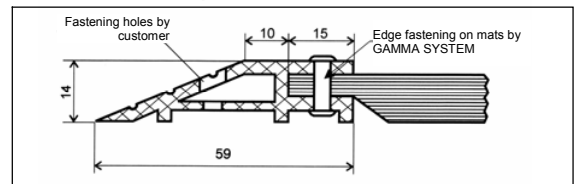
The following profiles are available, to be specified in the order:

For mats with PVC coating:

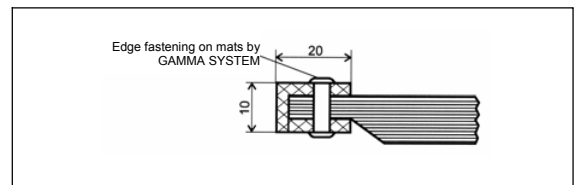
- Type “A” slope profile
- Type “B” 90° profile

For mats with aluminium coating:

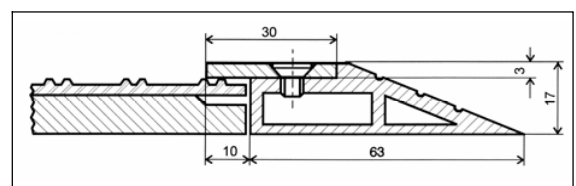
- Type “GSPSA” slope profile
- Type “GSP90A” 90° profile
- Type “GSPCA” profile with cable channel



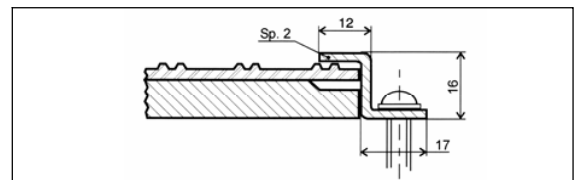
Slope profile type A



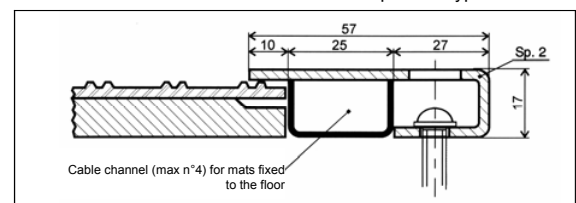
90° profile type B



Slope profile type “GSPSA”



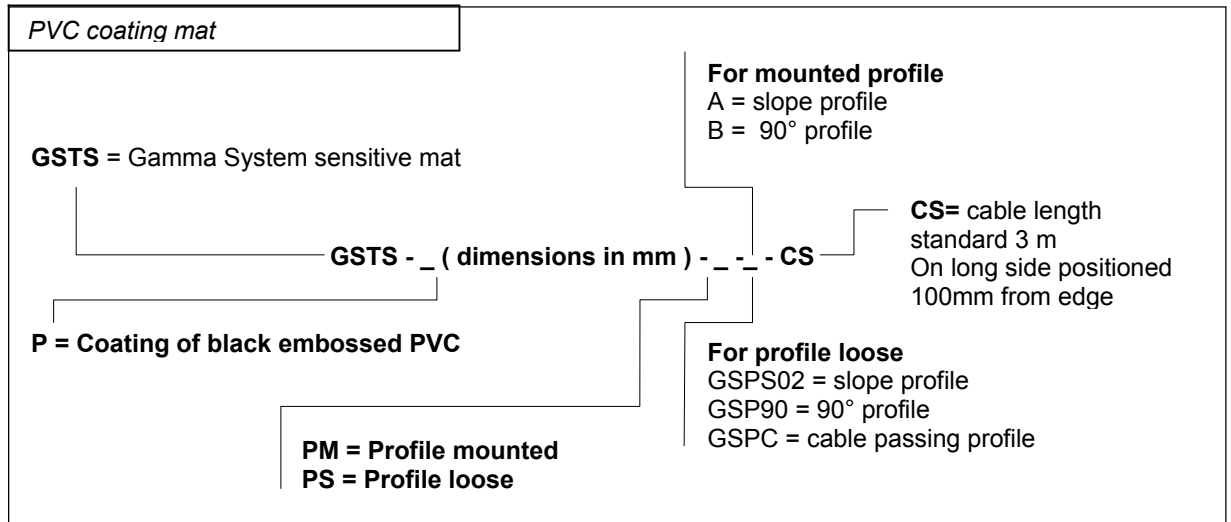
90° profile ° type “GSP90A”



Upon request, the profiles can be supplied loose, tailor-cut. The mat features a 4 poles outlet cable 4\*0,35mm<sup>2</sup> FROR 300/500 standard length m 3.

**How to order the standard sensitive mat**

The dimension always include the profiles. Always attach a drawing of the mat, indicating the dimensions, profiles and cable outlet position, if different from the standard one.



**Example:**

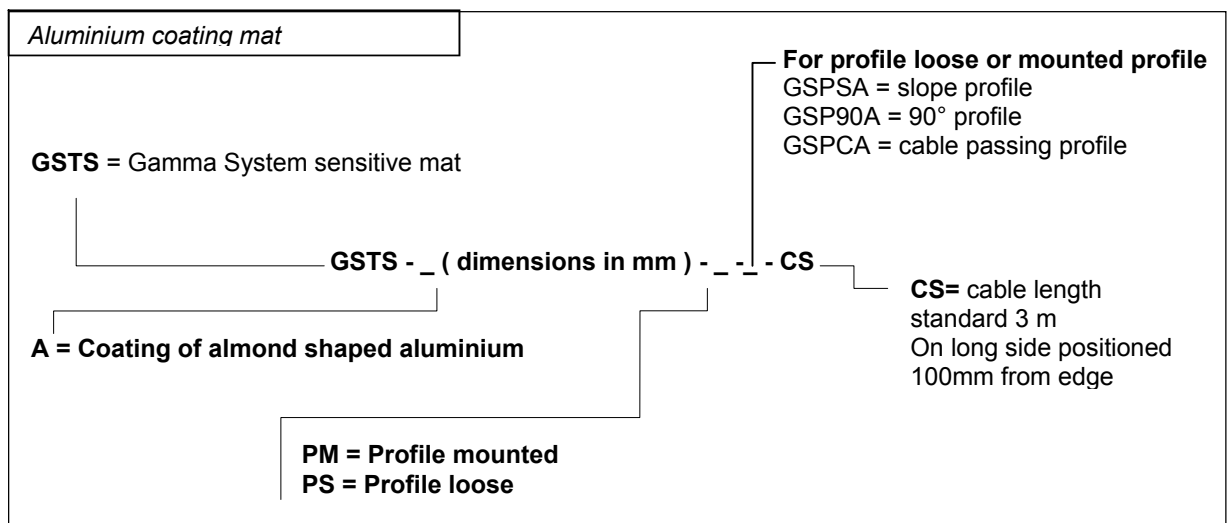
**GSTS-P 1000x500-PM-A-CS**

(mat coated with PVC 1000x500 slope profile on 4 sides with standard cable outlet).

**Example:**

**GSTS-P 1000x500-PS-GSPS02-CS**

(mat coated with PVC 1000x500 profile loose, slope on 4 sides, with standard cable outlet).



**Example:**

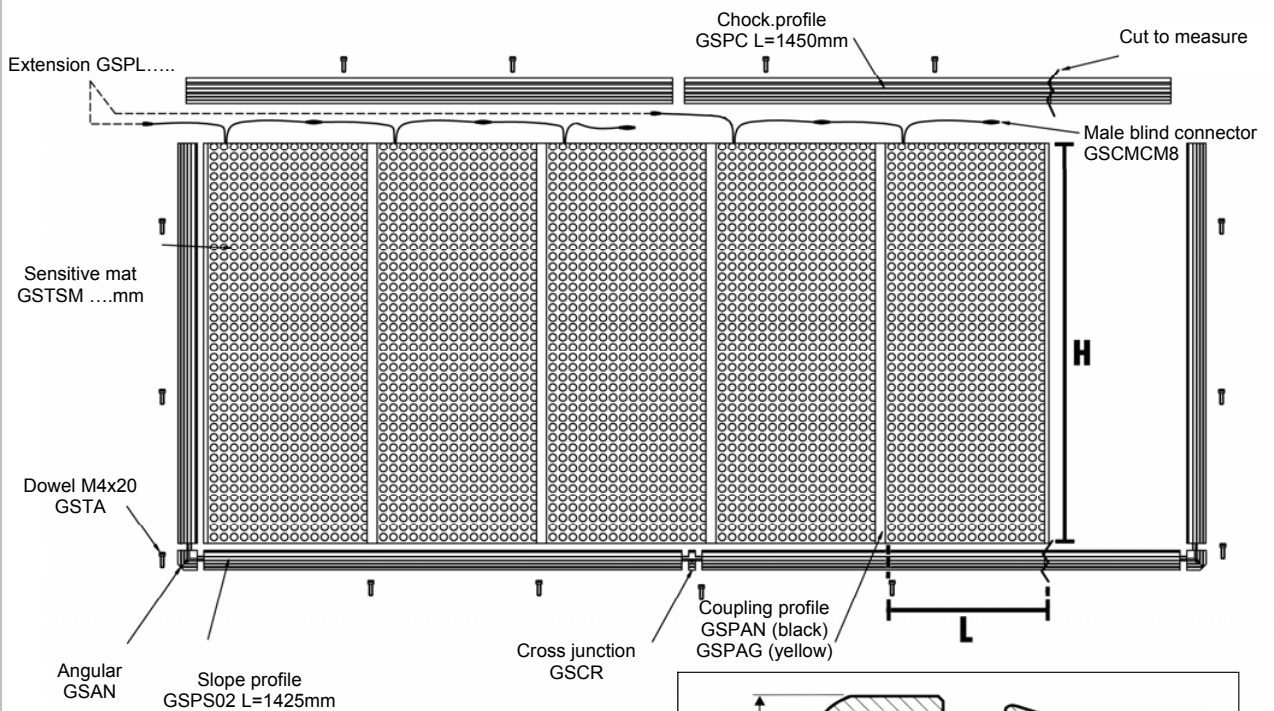
**GSTS-A-1000X500-PM-GSPSA-CS**

(mat coated with ALUMINUM 1000x500 slope profile on 4 sides, with standard cable outlet).

## 2- "MODULAR MAT"

PVC coating only, standard dimensions and loose profiles.

Solution of transport, handling and installation problems.

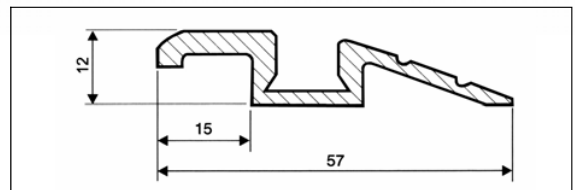


### Standard dimensions:

Dimensions: sensible part of mats, profile excluded.

Standard length (H): 1000, 1400, 1600 mm

Standard width (L): 500, 750, 1000 mm

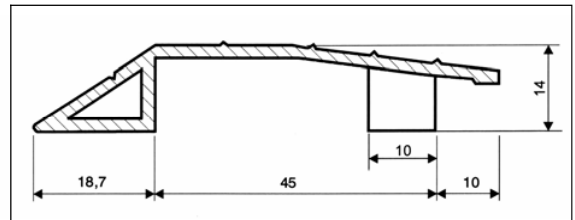


Slope profile cod. GSPS 02

The profiles required to fasten the mat are supplied loose and must be ordered separately.

Four profiles are available:

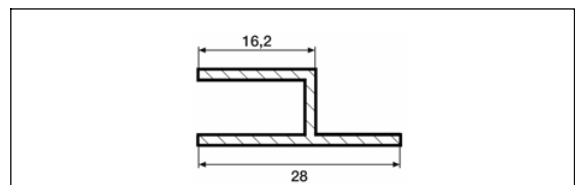
- cod. GSPS02 slope profile L= mm 1425
- cod. GSPC cable passing profile L= mm 1450
- cod. GSP90 90° profile L= mm 1600
- cod. GSPAN (black) or GSPAG (yellow)  
PVC coupling profile of 2 mats L= mm 1600



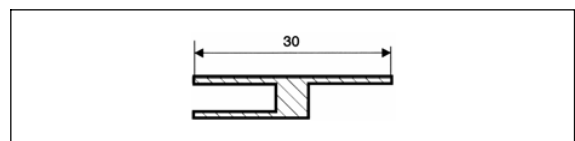
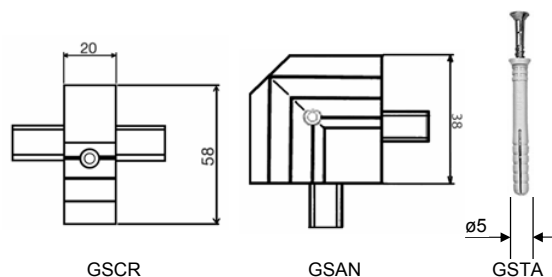
Cable passing profile cod. GSPC

The supply must include:

- cod. GSCR cross junction (pack of 5 pcs)
- cod. GSAN angular (pack of 3 pcs)
- cod. GSTA anchorage dowels (pack of 10 pcs)



90° profile cod. GSP90



Coupling profile  
cod. GSPAN (PVC black)  
cod. GSPAG (PVC yellow)

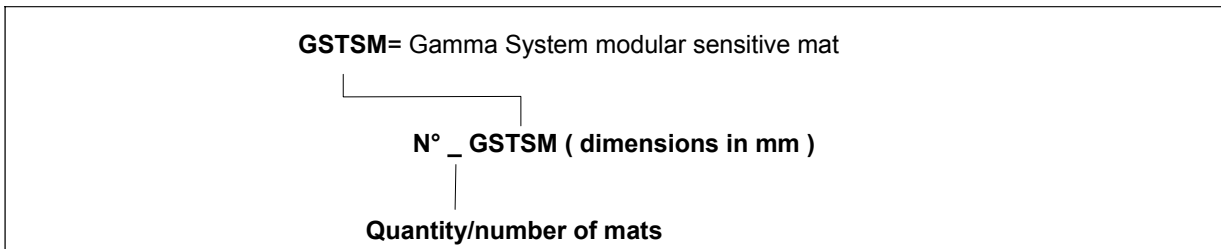
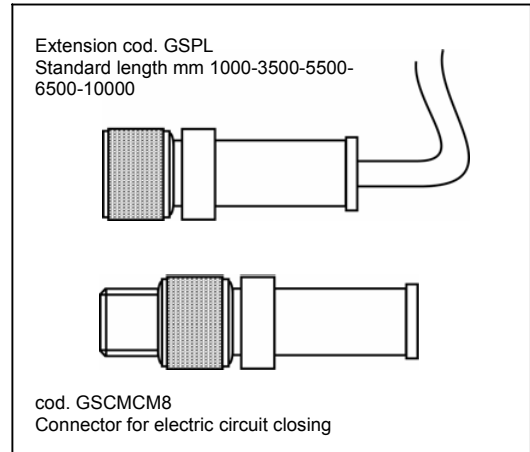
The mat is supplied with 2 outlet cables L=600mm 4 poles 4\*0,25mm<sup>2</sup> CEI IP65 one with die-cast connector M8 MALE and the other with connector M8 FEMALE for series connection of the mats.

**Electrical connection between mat and device**

For the electrical connection, order an extension with connector M8 FEMALE (cod. GSPL) and an electric circuit closing connector (cod. GSCMCM8).

**How to order a modular sensible mat**

Example of a mat 2 zones, dimensions of the zone to be covered 2500 x 1000 mm (fig. page 5).



**Example:**

**n. 5 GSTSM 500X1000 mm**

**Edges with relative quantity**

- cod. GSPS02 slope profile L= mm 1425
- cod. GSPC chock profile L= mm 1450
- cod. GSP90 90° profile L= mm 1600
- cod. GSPAN (black) or GSPAG (yellow) coupling PVC profile of 2 mats L= mm 1600 (Es. n.04 GSPS02 + n.02 GSPC +n.02 GSPAN + n.01 GSPAG)

**Accessories for profiles**

- cod. GSCR cross junction (pack of 5 pcs)
- cod. GSAN angular (pack of 3 pcs)
- cod. GSTA anchorage dowels (pack of 10 pcs) (Es. n.01 pack. GSCR + n. 01 pack. GSAN + n. 02 pack. GSTA)

**Accessories for electrical connections**

- cod. GSCMCM8 male blind connector for circuit closing.
- cod. GSPL (mm 1000 - 3500 - 5500 - 6500 - 10000) extension of mat connection to safety device (Ex. n. 02 GSCMCM8 + n. 02 GSPL3500)

**Technical features:**

Description	Mat with PVC coating	Mat with aluminum coating
Max.thickness	14 mm	17 mm
Weight/m <sup>2</sup>	15 c.a Kg	17 c.a Kg
Operation pressure	< 300 N Ø mm 80 / < 600 N Ø mm 200	
Max load allowed	2000 N / 80 Ø mm	
Response times	< 200 ms with devices Gamma System	
Mech.duration of internal contact	5.000.000 operations	
Max.operating voltage	24 Vcc/ca	
Max.operating current	60 mA / 24 V	
Outlet contact	NA	
Operating temperature	+5°C + 60°C	
Protection	IP65	
Chemical resistance	Oil, hydrocarb., diesel	Oil, hydrocarb., diesel, solvents, anti-spark
Reference standard	Tests according to UNI 1760/2	
Safety category	Cat. 2 combined with control units type GP02/E and GP02/E-S2 Cat. 3 combined with control units type GP03 and GP03/S2	