SAFETY BUMPERS

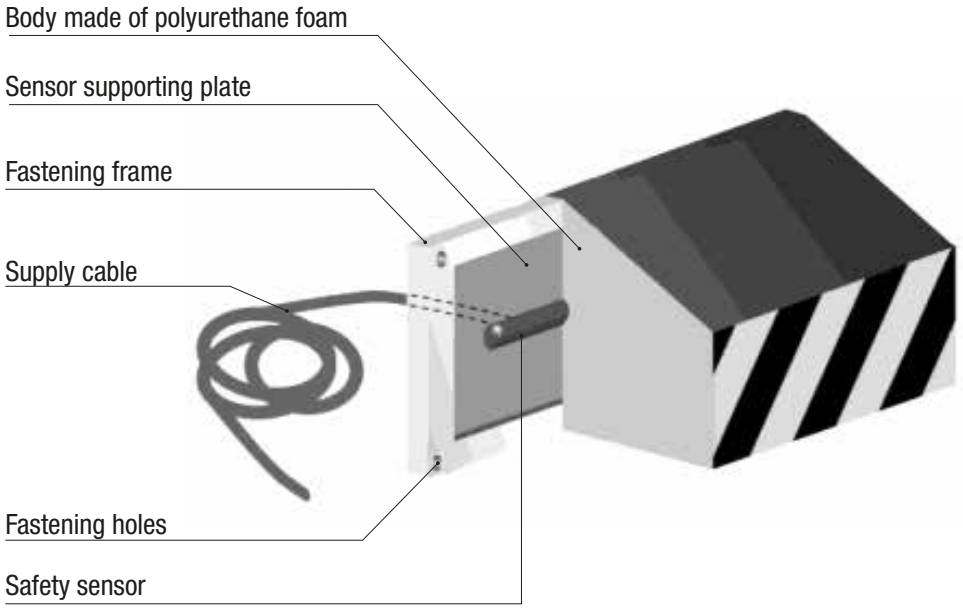
The pressure-sensitive safety bumper is used to protect personnel from collision against vehicles or moving parts of an industrial machine such as AGV, stacker cranes, wire-guided vehicles, automatic warehouses, etc…

When minimum compression is applied to the bumper, after a pre-run, the internal contact of the sensor closes and changes its state (from NO to NC). The “control unit” immediately emits a stop signal indicating that a change in the sensor state has occurred and removes the hazardous situation.

After the pre-run, the bumper still allows for a compression called “overrun”, which varies according to the bumper depth, and such to further soften the impact.

Bumpers are made of polyurethane foam glued to a fastening frame and covered with protective fabric. A pressure-sensitive sensor, called “sensor”, is housed inside the bumper.

Bumpers are available with standard maximum length of 3 m. For other lengths, they can be split into several parts (request to be indicated when ordering). *Other shapes and dimensions available upon request.*

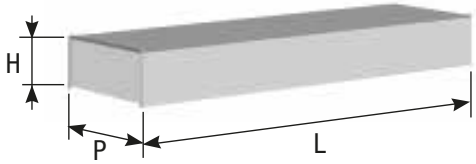


The bumper is equipped with a 4-pole outlet cable, 4x0.35mm2 FROR 300/500 – standard length 3 m.

STANDARD SHAPES

GSBPS 01 | Rectangular bumper

Standard section
H = 100 mm P = 200 mm

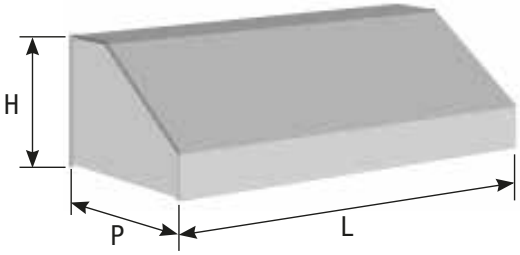


GSBPS 02 | Tapered bumper

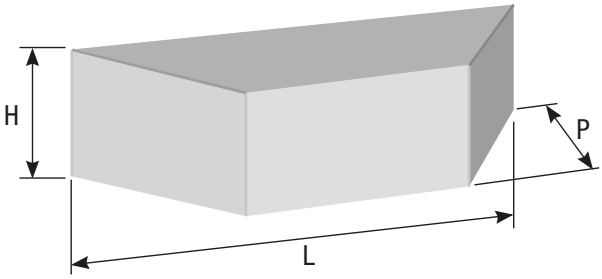
Standard section
H = 200 mm P = 300 mm

GSBPS 03 | Tapered bumper

Standard section
H = 250 mm P = 500 mm



GSBPS 04 | Trapezoidal bumper



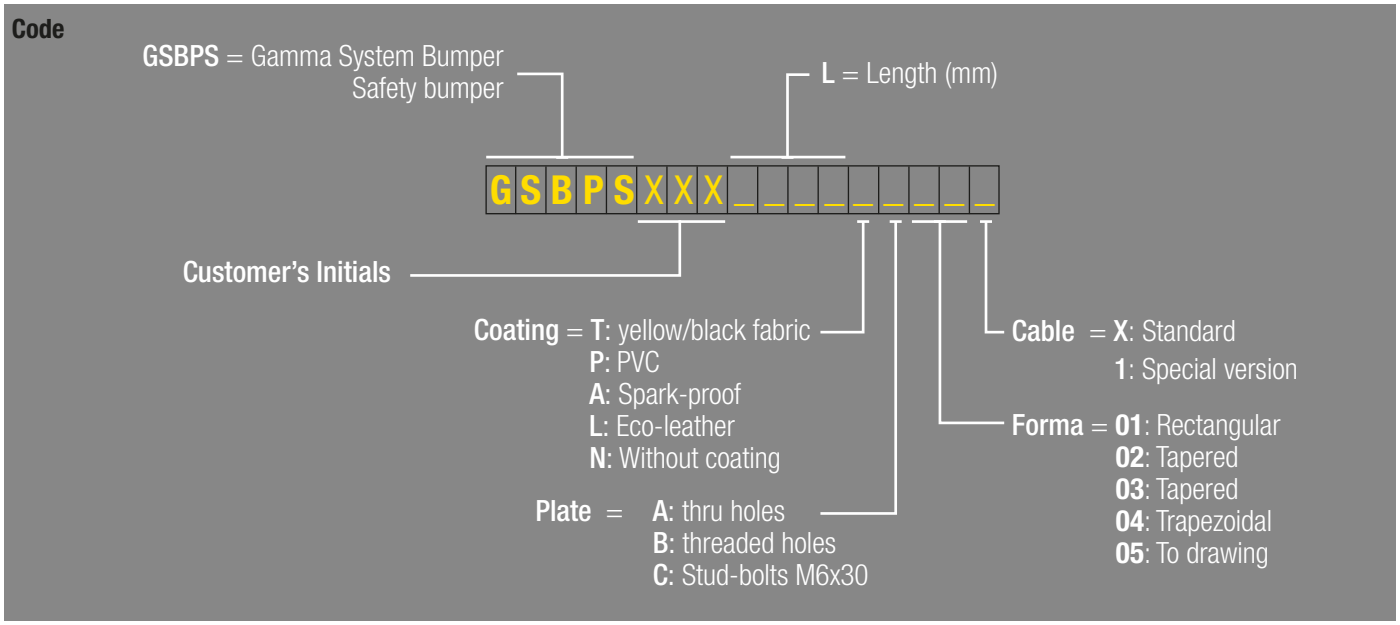
DIMENSIONING OF THE SAFETY BUMPER

To find out the correct depth of the bumper, see the following data:

- **Pre-run** (up to switching point);
  SB = 20% of bumper depth;
- **Overrun** (max. deformation);
  SV = 50% of bumper depth;
- **Non-deformable part: 30% of bumper depth.**

The choice of bumper depth shall be made taking into consideration the stop space and the required **SV** overrun.

HOW TO ORDER THE SAFETY BUMPER



INFORMATION REQUIRED FOR COMPLETING THE BUMPER

When ordering, please always consider the following:

- Supply a **drawing** of the bumper and specify **length, height and depth** in mm.
- Specify the **type** of **coating** material;
- Specify the **type of plate** for fastening to the machine;
- Specify the **cable length** if other than the standard one.

COATING

Four types are available:
T - Black fabric with yellow stripes (standard coating)
P - PVC
A - Spark-proof (fireproof coating or coating resistant to aggressive products)
L - Eco-leather.

The standard version of the bumper is supplied with black fabric cover and front part with slanted yellow-black stripes. Other colours or cover types indicated above available upon request.

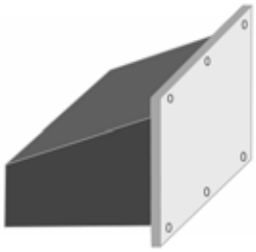
CABLE

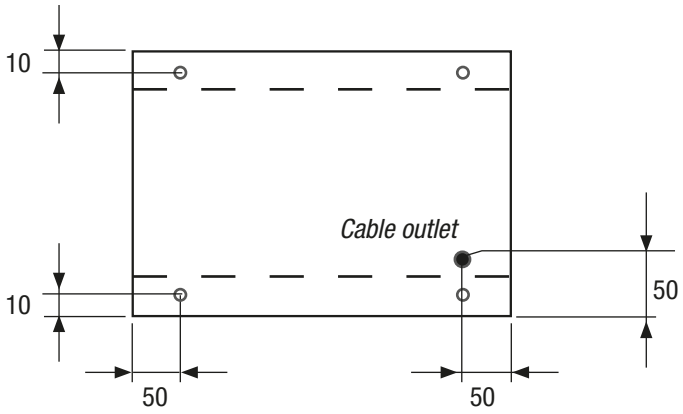
S: *CS - Standard cable*, **4x0.35 mm²** length 3 m - FROR 300/500
_ _: For lengths other than the standard one, please indicate the cable length e.g.10 m = **C10**.

BUMPER FASTENING

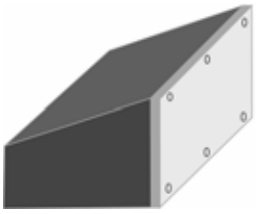
The bumper is mounted to the “machine” by means of a frame-plate which may come in three different configurations:

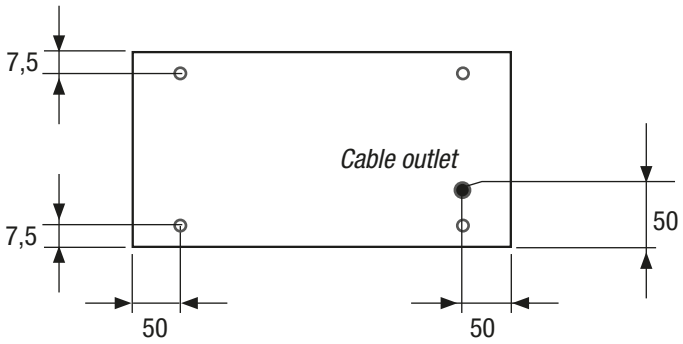
Type “A” Frame-plate which protrudes from the bumper and has Ø 8.5 mm holes for fastening to the machine via screws and bolts.



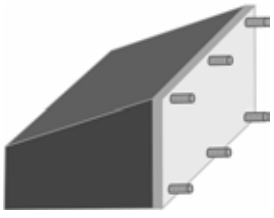


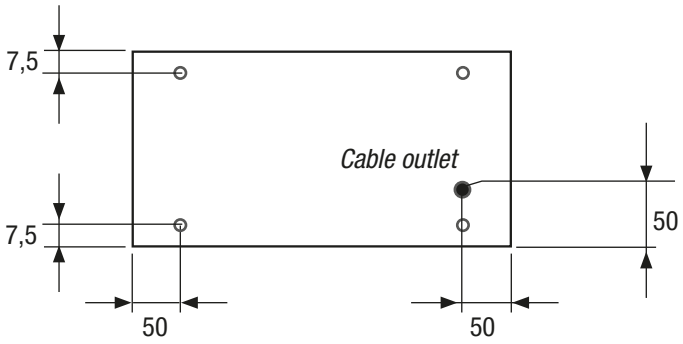
Type "B” Frame-plate flush with the bumper and with threaded holes (specify when ordering) for fastening to the inside of the machine via screws.
Version B not recommended for bumpers with PVC coating for outdoor applications.





Type “C” Frame-plate flush with the bumper and with M6 stud bolts, 30 mm long, for fastening to the inside of the machine via bolts.





N.B. For bumpers longer than 500 mm, other additional fastening holes will be drilled (centre distance from one hole and another ≤ 500 mm.

TECHNICAL FEATURES **BUMPER**

	GSBPS01	GSBPS02	GSBPS03
Max activation angle	±45°		
Pre-run (test piece Ø 80, at 100 mm/s)	< 20% of sensor depth		
Overrun (test piece Ø 80, at 100 mm/s)	50% of sensor depth		
Non-deformable part	30% of sensor depth		
Max activation force (test piece Ø 80, at 10 mm/s) [N]	32	56	24
Max activation force (test piece Ø 80, at 100 mm/s) [N]	48	56	32
Max admissible load [N]	500		
Max length of sensor* [mm]	3000		
Weight [kg/m]	5,5	8	11
Max operating voltage	24 Vdc		
Power cord**	4x0.35 mm^2 standard length 3 m 4x1 mm^2 length >20 m (max 100 m)		
Output contact	N.O.		
Operating temperature of sensor	-10°C to + 50°C		
Type of coating	Yellow/black fabric, PVC, spark-proof and eco-leather		
Degree of protection (according to EN 60529) of sensor	IP 54***		
B_{10D}	260000		
Part of human body which can be detected****	Hand, limb, body		
Reference standard	EN ISO 13856-3:2013 ; EN ISO 13849-1		
Safety Parameter - Sensor + control unit	**GSBPS0x + GP02/E**	**GSBPS0x + GP02R.T**	**GSBPS0x + GP04T**
Category	3		
PL	d		
PFH_D [1/h]	$8.58*10^{-8}$	$8.58*10^{-8}$	$9.29*10^{-8}$
No. of operations/year*****	12000		
Usage category	AC1 – 3 A DC13 – 1.5 A	AC15 (230) – 1.2 A	DC13 – 0.4 A
T10D [years] control unit	20	20	-
EC Declaration	21CMAC0014		
Other European Directives			
2012/19/UE	RAEE		
2011/65/UE	ROHS		
Regulation (CE) n. 1907/2006	REACH		

** Max length of sensor 3000 mm. For longer lengths, sensors can be divided into several parts and connected in series.*
*** For lengths over 20 m, use wires with section of 1 mm^2.*
**** With welded PVC coating; degree of protection IP65.*
***** Bumpers are not suitable to detect fingers.*
****** Considering the max number of operations. Once the time indicated on the data sheet above has elapsed, contact the Gamma System After-Sales Service.*

Recupero dopo la deformazione:
For a deformation equal to the running stroke equivalent to 250 N applied throughout the 24-hour period, the depth variation is less than 20% after 30s, less than 10% after 5 min and less than 5% after 30 min.