

**MAYSER®**

Innovative by tradition.



# Industry, Logistics & Ground Support Equipment

Mayser protects people and objects



## Safety in production and logistics

Today's production and storage processes are increasingly automated to boost efficiency. This demands reliable protection in danger zones, e.g. next to wood processing machines, machine tools, CNC machines, portal washing systems, transfer routes and passenger bridges in ground handling. Mayser specialises in safety for pinching and shearing edges as well as the detection of people in order to prevent injuries.

Our protective devices can be combined with each other and enable a holistic approach to solutions. These solutions reliably ensure safety in the entire work environment, from the immediate machine surroundings right up to transfer routes.

Our tactile protective devices at a glance:

- Safety edges, miniature safety edges and sensor profiles
- Safety mats
- Safety bumpers
- Safety shoe

Mayser offers custom solutions for many industries. Our own development departments, a large manufacturing depth and competent consulting provided by our experts guarantee the process safety demanded by large and small companies alike. All Mayser safety components comply with the standards DIN EN ISO 13849, DIN EN ISO 13856 and the safety requirements of Machinery Directive 2006/42/EC.



## Table of contents

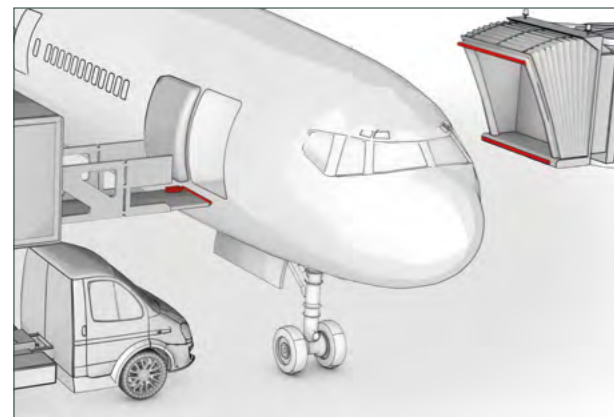
<b>1</b>	<b>Areas of application</b>	<b>4</b>
	Machine safety	4
	Logistics	4
	Ground handling	4
	Automated guided vehicle systems	5
	Tool safety	5
<b>2</b>	<b>Our solutions</b>	<b>6</b>
	Safety mats	6
	Safety edges, miniature safety edges & sensor profiles	6
	Safety shoe	7
	Safety bumpers	7
<b>3</b>	<b>Safety mats</b>	<b>8</b>
	Technical data	8
	Your benefits	9
<b>4</b>	<b>Safety edges · Miniature safety edges · Sensor profiles</b>	<b>10</b>
	Your benefits	10
	Technical data	11
<b>5</b>	<b>Safety shoe</b>	<b>12</b>
	Your benefits	12
	Technical data	13
<b>6</b>	<b>Safety bumpers</b>	<b>14</b>
	Technical data	15
	Your benefits	15



# 1 Areas of application

Our safety systems are used everywhere where moving objects and/or automated processes can endanger the safety of people and objects. Classic application areas for tactile safety components from Mayser are in industry and also in ground support equipment (GSE).

In industry, the system offers entry detection in any shape for hazard zones around machines and transfer routes. It also provides obstacle detection in the form of linear closing edge safety and collision protection for driverless, automated guided vehicle systems (AGV).

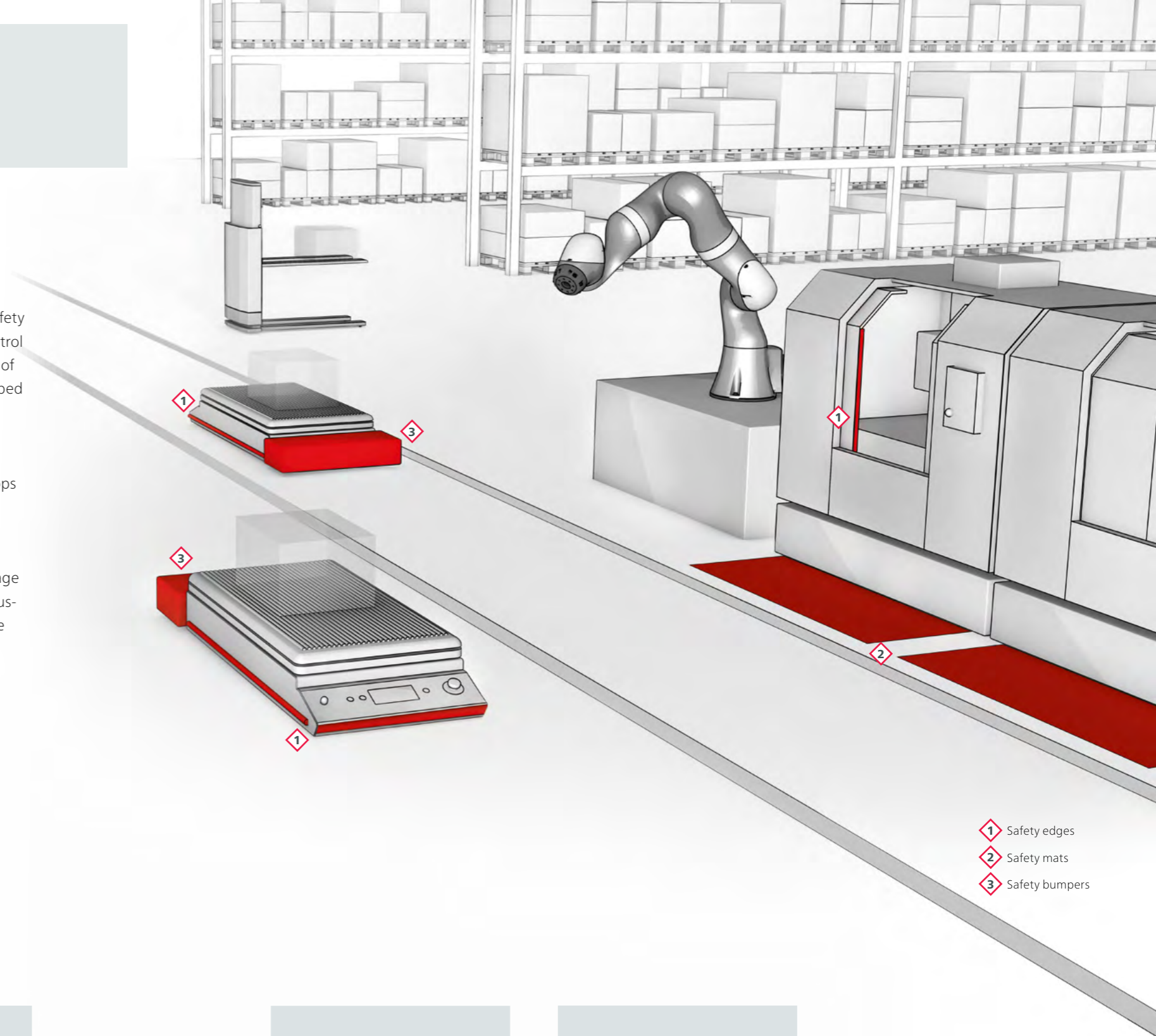


Slight pressure on the safety mats, safety edges or safety bumpers causes a signal to be transmitted to the control unit. This de-energises the voltage-free relay contact of the OSSD outputs. The dangerous movement is stopped and a safe condition achieved.

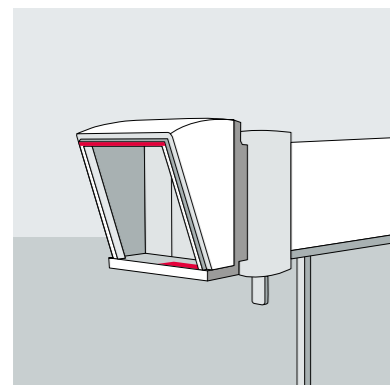
Included in our range are solutions for:

- Hazardous movement areas in production shops
- Movable elements in mechanical engineering
- Collision protection for AGVs

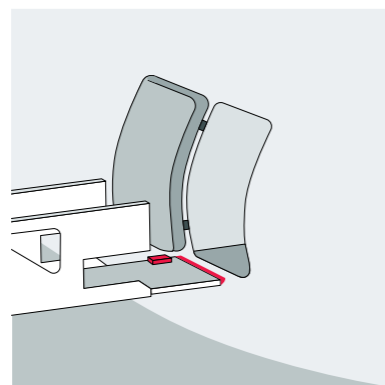
Our mission is to prevent injuries to people and damage to objects. That is why our products comply with industry-specific standards such as the Machinery Directive 2006/42/EC and IATA AHM 913 Section 6.4.



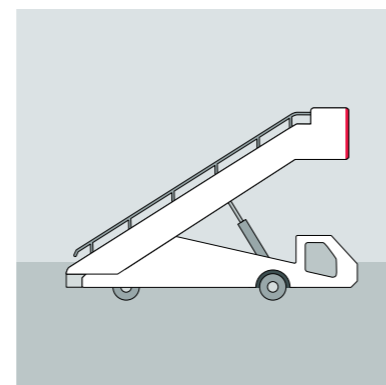
- 1 Safety edges
- 2 Safety mats
- 3 Safety bumpers



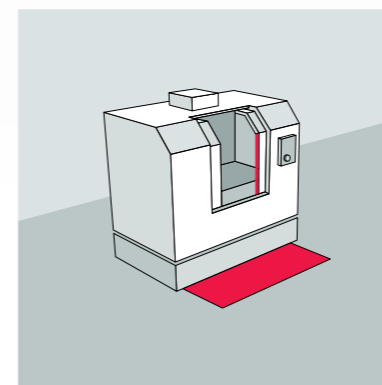
Autonomous passenger boarding bridges



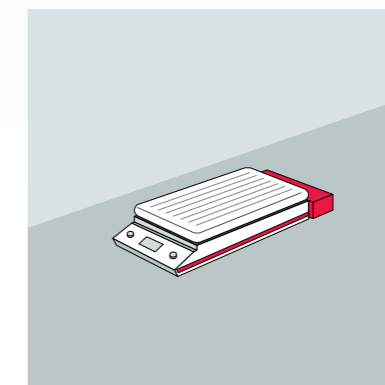
Level regulation on catering vehicles



Flight passenger stairs



Machine safety



Automated guided vehicle systems

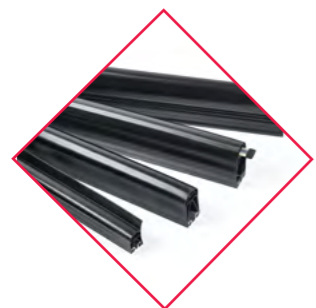


## 2 Our solutions



### Safety mats

Pressure-sensitive safety mats detect people in hazardous areas of movement (e.g. near robots and machines). This solution is available in all suitable ambient conditions.



### Safety edges, miniature safety edges & sensor profiles

Our safety edges protect people or objects from trapping between shearing and pinching edges.



### Safety shoe

The safety shoe regulates the level of passenger boarding bridges, catering vehicles and maintenance platforms. They prevent damage to aircraft doors.



### Safety bumpers

Mayser safety bumpers protect people and objects from automatically moving systems and machine parts with long overtravel distances, e.g. machining centres, AGVs and lifting platforms.



### 3 Safety mats

Safety mats detect presence in dangerous areas of movement, for instance on machines or in spaces used in collaboration in Cobot applications. The presence of a person or object in the protection zone slows down or stops the movement of the machine or robot.

#### Technical data

	SM		SM11	SM8
<b>General data</b>				
Height	15 mm	19 mm	11 mm	8 mm
Covering	GM 1	GM 5	2K coating Structured surface	Rubber studded covering with cast-on ramp edge
Colours	Black, yellow	Green	Black	Black
<b>Functional data</b>				
Chemical resistance	+++		++	+
IEC 60529: degree of protection	IP65		IP65	IP65
Shapes	Variable		Variable	Standard sizes, rectangular
Maximum size (individual mat)	1.5 m <sup>2</sup>		1.5 m <sup>2</sup>	1.5 m <sup>2</sup>
Ramp design	Mitre-cut according to drawing		Standard with corner connections without drawing	Cast-on profile
Safety mat system	Max. 10 per control unit		Max. 10 per control unit	Max. 10 per control unit
Applied standards	ISO 13856-1 ISO 13849-1		ISO 13856-1 ISO 13849-1	ISO 13856-1 ISO 13849-1
Method of operation	NO		NO	NO
Terminal resistance	•		•	•
4-wire connection	•		•	•
Anti-slip function	R9		R9	R9
Special version	•		•	



#### Your benefits

- ✓ Maintenance-free
- ✓ Robust design
- ✓ Resistant to environmental influences and common chemical influences
- ✓ Reliable functioning in dirty ambient conditions



## 4. Safety edges · Miniature safety edges · Sensor profiles

Safety edges are sensors that protect people from trapping between shearing and pinching edges. If the safety edge encounters an obstruction, it triggers a signal which can immediately stop the dangerous movement.

### Your benefits

- ✓ Wide range of profile geometries and materials
- ✓ Maintenance-free
- ✓ Customised solutions possible
- ✓ Optimal solution for various installation heights
- ✓ High degree of protection (IP67 and/or IP68)
- ✓ Pre-cut or DIY possible



### Technical data

	Safety edge	Miniature safety edge / obstacle detection	Sensor profile
Method of operation	Normally closed and normally open principles	Normally open principle	Normally open principle
Overall height	20 – 137 mm	4 – 16 mm	20 – 70 mm
Actuation angle	Up to ±45°	Up to ±45°	Up to ±50°
DIY assembly		•	•
Applied standards	ISO 13849-1 ISO 13856-2	ISO 13849-1 ISO 13856-2	ISO 13849-1 ISO 13856-2 EN 12978
IEC 60529: degree of protection	IP67	IP67	IP67 and/or IP68
Operating temperature	Min. -20°C max. +55°C	Min. -25°C max. +80°C	Min. -25°C max. +55°C
Actuation distance	8 – 17 mm	≤ 1.0 mm	6 – 8 mm
Material	EPDM NBR CR	TPE	TPE
Customer-specific adjustment	Bend radii Angled geometries Sensitive ends		



## 5 Safety shoe

The safety shoe is designed for the primary or secondary protection of aircraft doors from mobile platforms in ground handling. When the aircraft moves downwards during loading, a force is applied to the safety shoe. This triggers a signal to the platform control system, which then lowers by approx. 10 cm, preventing damage to the aircraft doors. With its extra-rugged design, the safety shoe is ideal for use in challenging environments.

### Your benefits

- ✓ Robust design
- ✓ Maintenance-free
- ✓ ISO 13849-1 category 3 PL d possible
- ✓ Reliable functioning
- ✓ Vehicle-specific, flexible application



### Technical data

	Safety shoe	Safety shoe light
Applied standard	In accordance with ISO 13856-3	In accordance with ISO 13856-2
Actuation force		
Test piece (cylinder) Ø 80 mm	< 300 N	< 150 N
Test velocity	10 mm/s	100 mm/s
Effective actuation angle	90°	90°
Actuation distance	< 5 mm	15 mm
ISO 13856: reset function	Not featured	Not featured
ISO 13849-1: 2016	Up to category 3 PL d possible	Up to category 3 PL d possible
MTTF <sub>D</sub> (sensor)	381 a	381 a
B <sub>100</sub> (sensor)	2 x 10 <sup>6</sup>	2 x 10 <sup>6</sup>
Sensor size (W x H x D)	300 x 69 x 104 mm	435 x 100 x 100 mm
With handle	450 x 99 x 104 mm	470 x 130 x 100 mm
Weight	1.1 kg	2.1 kg
IEC 60529: degree of protection	IP67 (with screwed-on connector plug)	IP67
Operating temperature	-20 to +45°C	-15 to +55°C
Storage temperature	-20 to +45°C	-40 to +80°C



## 6 Safety bumpers

Safety bumpers protect people and objects from automatically moving systems and machine parts with long overtravel distances, e.g. in CNC machining centres, AGVs and lifting platforms.

That makes them an ideal addition to our range of collision protection systems.

Typical applications are ensuring safety in mechanical engineering, stage technology and on large, heavy gates such as hangar gates. Safety bumpers also provide collision protection for driverless, automated guided vehicle systems.



### Technical data

	<b>Standard version</b>	<b>Special version</b>
Operational principle	Normally open principle	Normally closed or normally open principles
Max. installation depth	400 mm	On request
Max. length	3,000 mm	On request
Areas to be secured	Pinching and shearing edges Collision protection	Pinching and shearing edges Collision protection
Applied standards	ISO 13856-3 ISO 13849-1	ISO 13856-3 ISO 13849-1
IEC 60529: degree of protection	IP54	IP54
Operating temperature	-20 °C to +55°C	-20 °C to +55°C
Surface finishes	PUR skin Polyester sleeve Synthetic leather	Welding protection sleeve Theatre fabric Extreme PES
Chemical resistance (depending on surface finish)	Diluted acids Lyes Cleaning products Lubricants Alcohol Disinfectants Oils	Diluted acids Lyes Cleaning products Lubricants Alcohol Disinfectants Oils
Customisation options	Design	Shape design

### Your benefits

- ✓ High-quality materials and manufacturing
- ✓ Customised solutions
- ✓ All RAL colours available
- ✓ Almost all geometries available
- ✓ Maintenance-free
- ✓ Our safety bumpers come in designs, shapes and surface finishes that suit a wide range of application fields irrespective of external influences such as weather conditions or chemicals
- ✓ Optionally available in a fire-resistant version



All technical data is correct at the time of printing. Subject to changes, errors excepted. This also applies to designs and features, as we continuously further develop our Mayser products. Images are non-binding and may include optional elements.



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