



Safety shoe



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Area of application

The safety shoe is designed to provide collision protection for passenger, baggage, catering and maintenance platforms by controlling the level of the platform. When pressure is applied to the shoe's surface, the interior switches are activated.

The product's extra-rugged design makes it ideal for use in challenging environments, with the surface ensuring excellent water resistance. The safety shoe functions correctly even in wet conditions, up to a maximum water level of 10 mm when the shoe is in its intended position of use.

The principle

The safety shoe contains switches with normally closed (NC) or normally open (NO) force-guided contacts. Appropriate wiring can be used to create a single-fault-safe system according to ISO 13849-1, up to category 3 PL d. The contacts of the NC switches are opened when the safety shoe is actuated (due to pressure being applied to the surface).

The contacts of the NO switches are closed when the safety shoe is actuated (due to pressure being applied to the surface).



Wiring



Other versions (including those with a monitoring resistor) are possible on request.

Subject to technical modifications.



Examples

The areas of application encompass all locations where mobile platforms could hit objects. Key examples are areas related to flight operations (passenger boarding stairs, boarding bridges, etc.).

Function

The lifting platform is moved into alignment with the body of the aeroplane and the safety shoe is positioned between the platform and the aircraft. The height of the aeroplane drops during loading, leading to a potential collision with the lifting platform. The safety shoe helps detect this problem. Pressure is exerted on the safety shoe when it becomes trapped, thereby actuating it. This sends a signal to the lifting platform control system, instructing it to lower the platform until the pressure is removed from the safety shoe.



Connection



There is a CA3LD-type circular connector integrated into the handle. An optional connector protection set is available to create the perfect connection.

Version V1	Version V2
2204557 (optional)	2204558 (optional)
B13301-Set-V1 connector protection	B13301-Set-V2 connector protection
set, with CA3LD circular connector	set, without CA3LD circular connector
coupling, with strain relief sleeve,	coupling, without strain relief sleeve,
for cables with an outer diameter of	for cables with an outer diameter of
6 to 12 mm	6 to 12 mm

Subject to technical modifications.



Maintenance and cleaning

The sensors are virtually maintenance-free.

Regular inspection

Depending on the operational demands, the sensors must be inspected at regular intervals (at least monthly)

- for proper functioning and
- damage.

Cleaning

If the sensors become dirty, they can be cleaned with a mild cleaning product.

Technical data

	Safety shoe	
Testing basis	In accordance with ISO 13856-3	
Switching characteristics at v _{test} = 10 mm/s		
Actuation force	+23°C	
Test piece (cylinder) Ø 80 mm	< 300 N	
Effective actuation angle	±45°	
Actuation distance (max.)	5 mm	
Safety classifications		
ISO 13856: reset function	Without	
ISO 13849-1:2023	Up to category 3 PL d possible	
MTTF _D (sensor)	380 a	
B _{10D} (sensor)	2× 10 ⁶	
n _{op} (assumption)	52,560 per year	
Mechanical operating conditions		
Sensor size ($W \times H \times D$)	$300 \times 69 \times 104 \text{ mm}$	
With handle	450 × 99 × 104 mm	
Colours	Black, yellow	
Weight	1.1 kg	
IEC 60529: degree of protection	IP67 (with screwed-on connector plug)	
Operating temperature	-20 to +45°C	
Storage temperature	–20 to +45°C	
Electrical operating conditions		
EN 60947-5-1: utilisation category	AC-15: 230 V / 1.5 A DC-13: 60 V / 0.5 A	
Switching voltage (max.)	AC 230 V DC 60 V	
Switching current (max.)	1.5 A 0.5 A	
Continuous current (max.)	8A 8A	

