PRODUCT INFORMATION

MB1

MECHANICAL BOLT FOR RELIABLE DOOR PROTECTION AND HIGH MACHINE AVAILABILITY

Mechanical bolt for safety switches

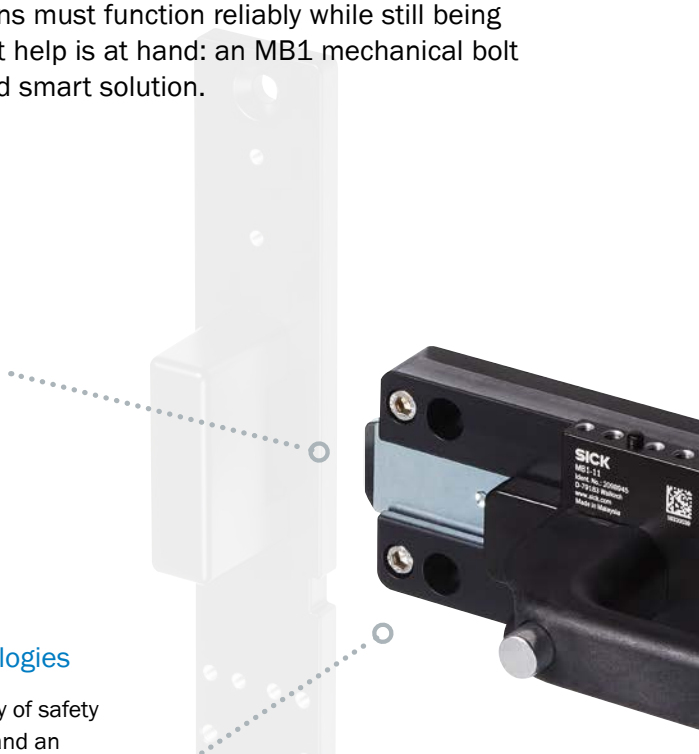
SICK
Sensor Intelligence.

COST-OPTIMIZED RELIABILITY

When it comes to the issue of operator safety, applications where persons are able to enter a hazardous area with their entire body can pose a significant challenge in many industries. The usually large doors, for example of machinery rooms, require rugged locks to guarantee continuous operation even with vibrations or door misalignment. These door locking solutions must function reliably while still being easy to install and operate. That's a lot of requirements, but help is at hand: an MB1 mechanical bolt from SICK combined with a safety switch offers an ideal and smart solution.

Efficient – thanks to its sophisticated design and durability

The rugged design of the MB1 and precise guidance of the actuator ensure long-lasting protection from damage to the attached safety switch, even in the case of door misalignment. This enables the MB1 to reduce downtimes, lower costs, and significantly improve the productivity of the plant.



Safe – by combining different technologies

The MB1 can be combined with a wide variety of safety switches. The interplay of a mechanical bolt and an electro-mechanical safety switch, with or without a locking feature, prevents breakage of the actuator and increases the performance level (up to PL d). By using different sensor technologies in combination (non-contact, electromechanical), it is even possible to achieve the highest performance level (PL e).

The MB1 comes with a door handle, thereby saving costs for additional parts

The standardized mounting holes, and suitable adapters for the various safety switches from SICK guarantee fast and easy installation of all bolt variants

The simple variant of the bolt uses an eyelet as the tongue padlock receptacle

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Innovative – with ANSI-compliant locking mechanism

The MB1 is characterized by its ingenious, ANSI-compliant locking mechanism. The user-friendly system is based on a hinged catch into which a padlock can be inserted in an easily accessible manner. The prevents the door from being closed and a person being inadvertently locked in the hazardous area in the event of an unexpected startup of the machine.

Time-saving and versatile – thanks to simple and flexible mounting options

The 8 available variants of the MB1 offer a range of mounting options to meet a wide variety of requirements. The MB1 is suitable for every door opening direction. It also tolerates a horizontal separation of up to 30 mm between the frame plate and door bolt unit with no loss of function. The standardized, pre-drilled mounting holes save time when installing a wide variety of safety switches.

To select the right variant for your needs, see page 4

The variants with an catch release button ensure the bolt cannot slip out of place when the operator closes the door, thereby preventing damage

The variants with an ANSI-compliant locking mechanism provide a user-friendly means of locking the bolt to protect against persons being inadvertently locked in the hazardous area

Variants with an escape release feature a lever attached directly to the bolt. This lever allows the door to be opened from the inside at any time.

THE OPTIMAL VARIANT FOR EVERY APPLICATION

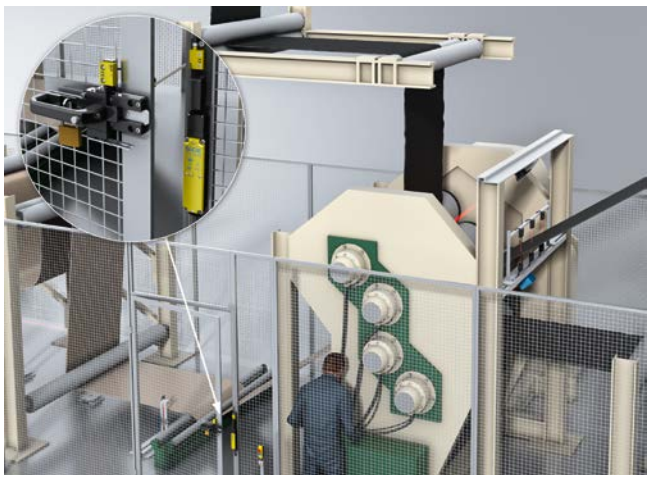
The following diagram will quickly help you decide whether an escape release is the right solution for your requirements. It will also suggest the optimal safety switch to implement a smart complete solution.

Risk assessment for the application
➜ www.sick.com/risk-assessment

Lock feature required?

- Yes
  - ANSI-compliant locking mechanism and/or catch release button required?
    - Yes
    - No[1]
- No
  - ANSI-compliant locking mechanism and/or catch release button required?
    - Yes
    - No[1]

You will find suitable safety switches and safe control solutions in the
➜ Product overview: Safety switches
➜ Product overview: Safe control solutions



For difficult to monitor calendaring machines, an ANSI-compliant locking mechanism can prevent operators from being inadvertently locked in the hazardous area

Protection of access doors to a shape molding machine

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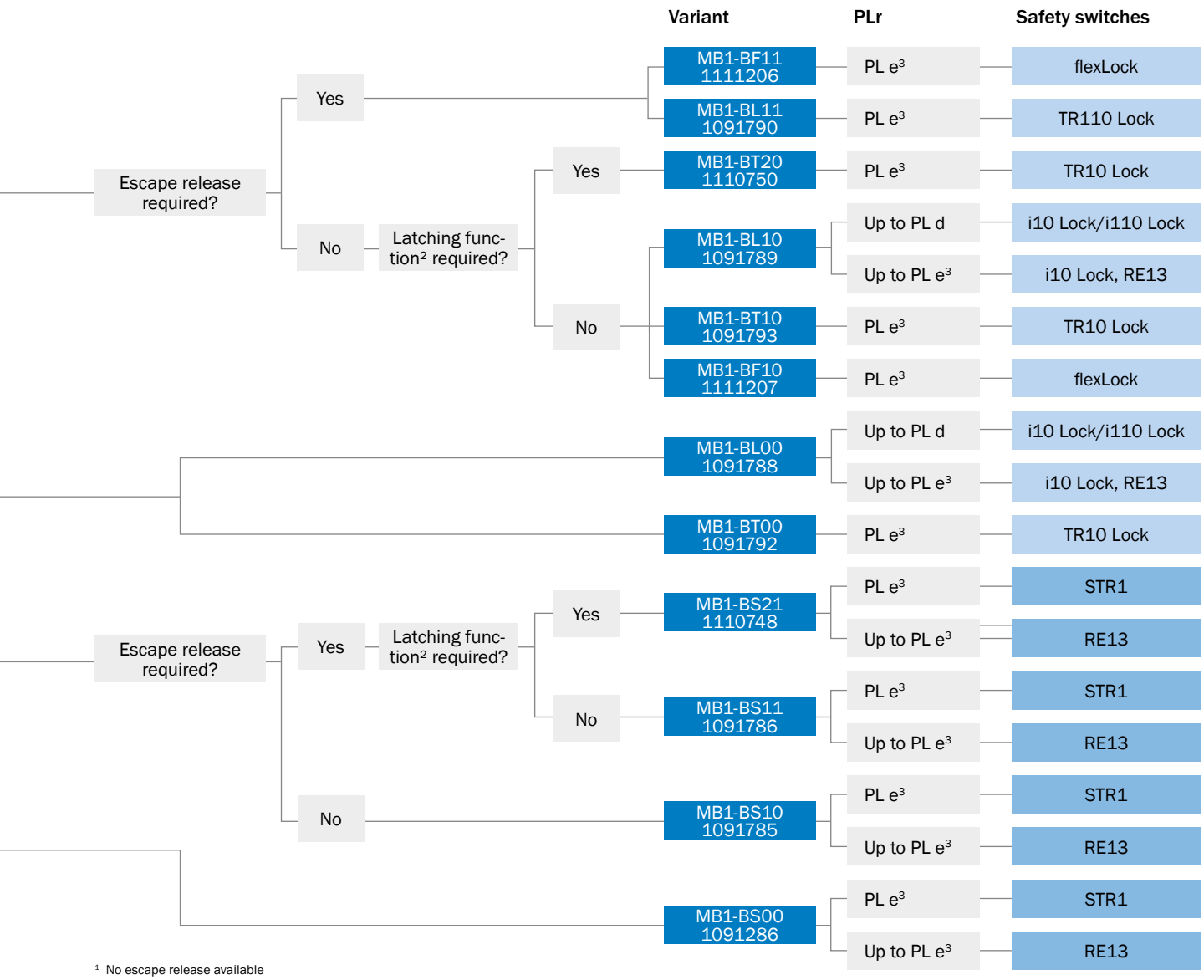
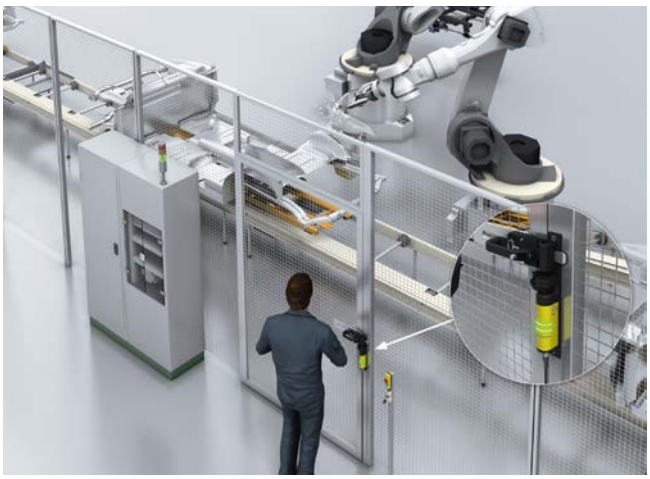


[1] No escape release available
[2] Bolt engages in the closed position and is held in this position by the latching force
[3] Applies to door monitoring

Locking solution for PCB conveyor



Protection of access doors in robot-assisted applications

MECHANICAL BOLT FOR RUGGED DOOR PROTECTION AND HIGH MACHINE AVAILABILITY

Product description

The MB1 mechanical bolt is the ideal addition to non-contact safety switches and safety locking devices from SICK. Precise guiding of the actuator increases the tolerance to door offset and ensures correct functioning of an installed safety switch at all times. In addition, a mechanical bolt effectively prevents actuator breakage. The fault exclusion realized in this way enables a high performance level for the overall structure. Additional options such as a mechanical lock with padlock receptacle lock or an emergency release reliably protect maintenance staff from accidental entrapment.

At a glance

- Rugged design
- Variants with ANSI-compliant locking mechanism
- Standardized frame plates suitable for many safety switches from SICK
- Horizontal installation tolerance of 27 mm
- Compensation of vertical door offset up to ± 7 mm
- Variants with catch release button and emergency release

Your benefits

- Reliable and cost-optimized solution for door locking
- Increased productivity thanks to the rugged design and protection of the sensor
- High performance level due to fault exclusion, prevents actuator breakage
- Flexible mounting: Bolt can be used for right- or left-hinged doors
- Protection of employees from accidental entrapment thanks to locking function with padlock
- Protection from unwanted actuation for variants with catch release button

More information

➜ **www.sick.com/MB1**

For more information, simply enter the link or scan the QR code to get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

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Detailed technical data

More information can be found in the operating instructions. Download ➜ www.sick.com/MB1

Features

	MB1-BSxx	MB1-BLxx	MB1-BTxx	MB1-BFxx
installation tolerance (horizontal)	3 mm ... 30 mm			
Type				
Catch release button/ ANSI-compliant locking mechanism	– / ✔ (depending on type)			✔
Escape release	– / ✔ (depending on type)		–	– / ✔ (depending on type)
Frame plate with latching function	– / ✔ (depending on type)	–	– / ✔ (depending on type)	–
Suitable for	RE1, STR1 non-contact safety switches	i10 Lock, i110 Lock, TR110 Lock safety locking devices also possible: RE1, STR1 non-contact safety switches	TR10 Lock safety locking device	flexLock safety locking device

Mechanical data

Weight	1.357 kg - 1,701 kg, model-dependent
Material	
handle	VISTAL®
bolt unit	Steel, zinc coated
sliding carriage, base plate, frame plate	aluminum (coated) Polyketone

Ordering information

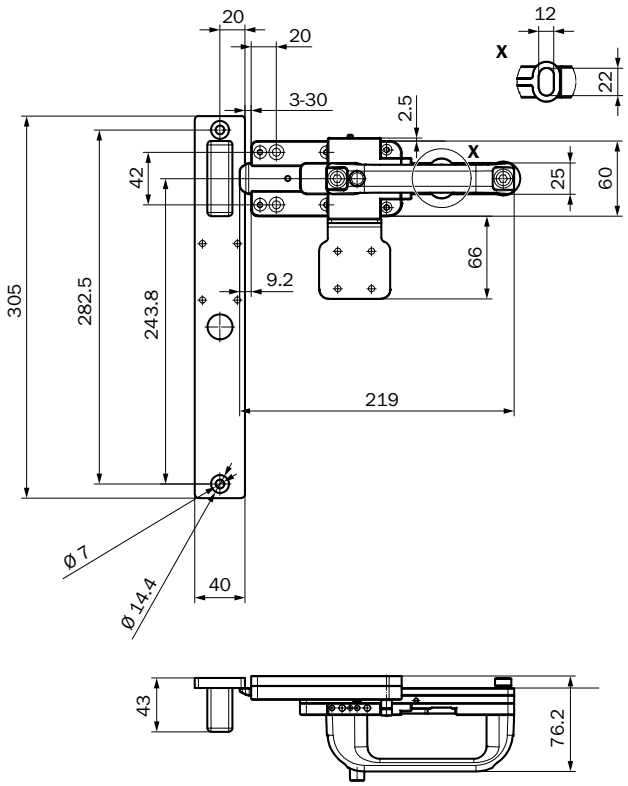
MB1 scope of delivery:

- bolt unit
- frame plate
- adapters for actuator mounting
- safety screws for installing provided adapters
- Mounting instructions
- Escape release (only for variants MB1-BS11, MB1-BS21, MB1-BL11 and MB1-BF11)

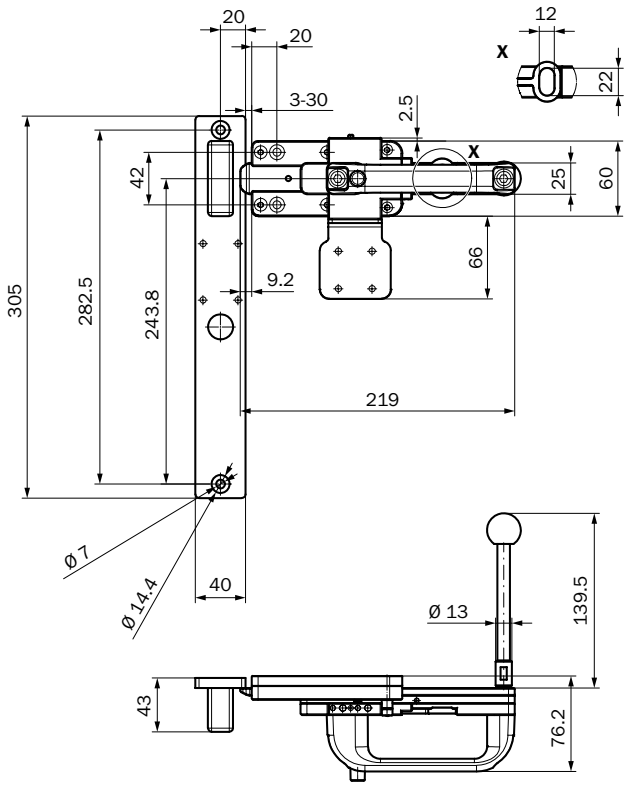
Description	Catch release button/ANSI-compliant locking mechanism	Escape release	Frame plate with latching function	Type	Part no.
complete set consisting of door bolting unit with frame plate for flexLock and adapters for actuators	✔	–	–	MB1-BF10	1111207
		✔	–	MB1-BF11	1111206
complete set consisting of door bolting unit with short frame plate and adapters for actuators	–	–	–	MB1-BS00	1091286
	✔	–	–	MB1-BS10	1091785
		✔	–	MB1-BS11	1091786
			✔	MB1-BS21	1110748
complete set consisting of door bolting unit with long frame plate and adapters for actuators	–	–	–	MB1-BL00	1091788
	✔	–	–	MB1-BL10	1091789
		✔	–	MB1-BL11	1091790
complete set consisting of door bolting unit with frame plate for TR10 Lock and adapters for actuators	–	–	–	MB1-BT00	1091792
	✔	–	–	MB1-BT10	1091793
			✔	MB1-BT20	1110750

Dimensional drawings (dimensions in mm)

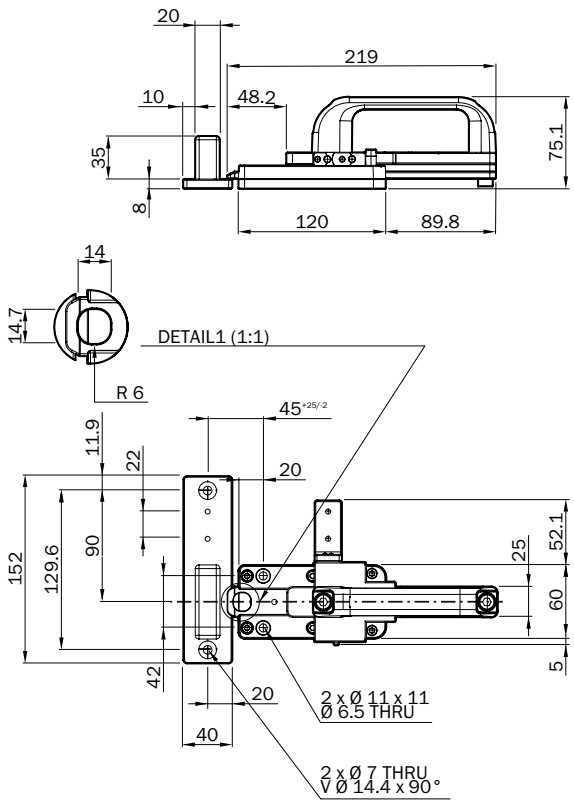
MB1-BF10



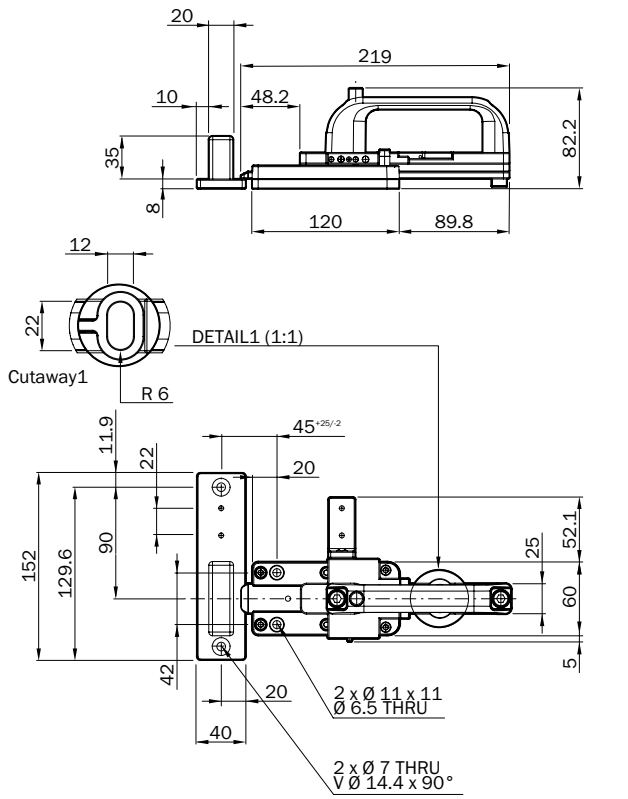
MB1-BF11



MB1-BS00



MB1-BS10



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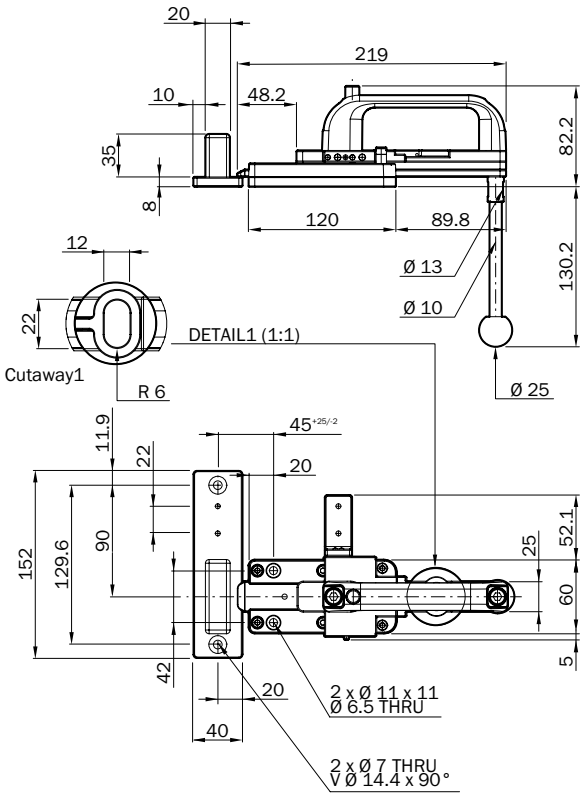
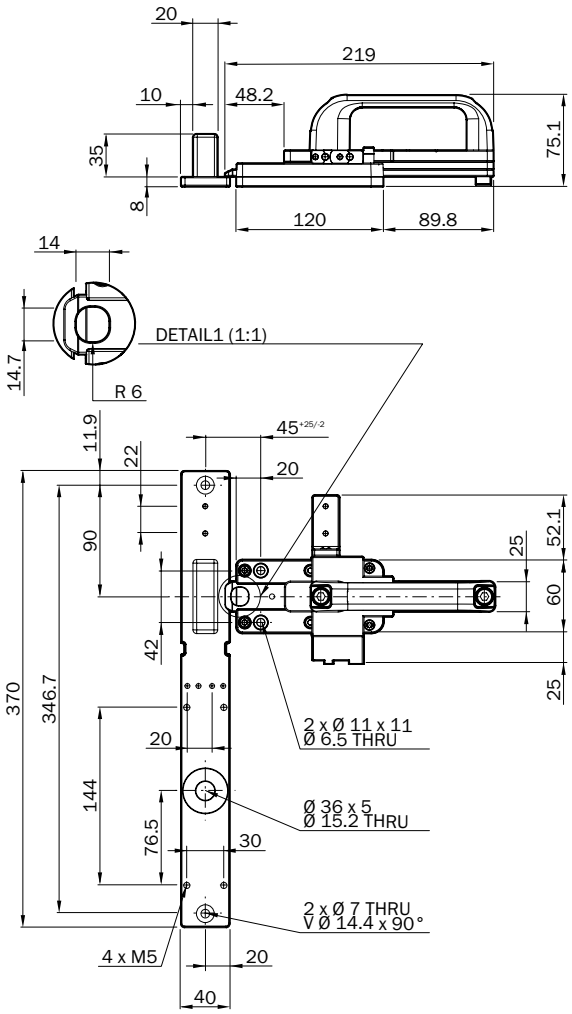
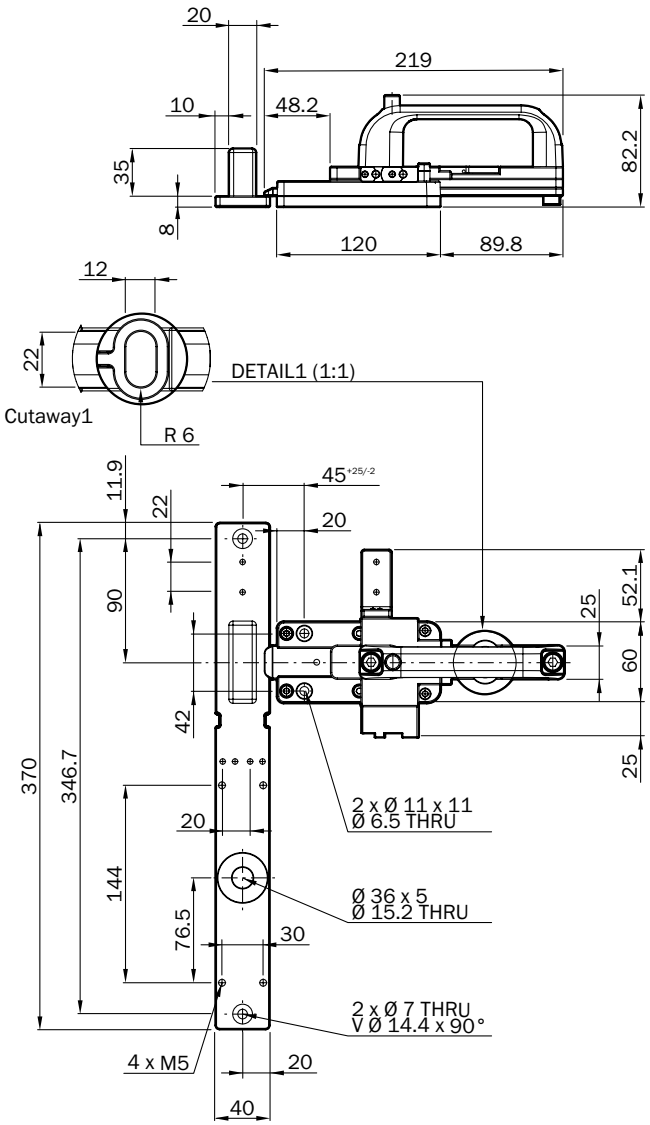
MB1-BS11, MB1-BS21



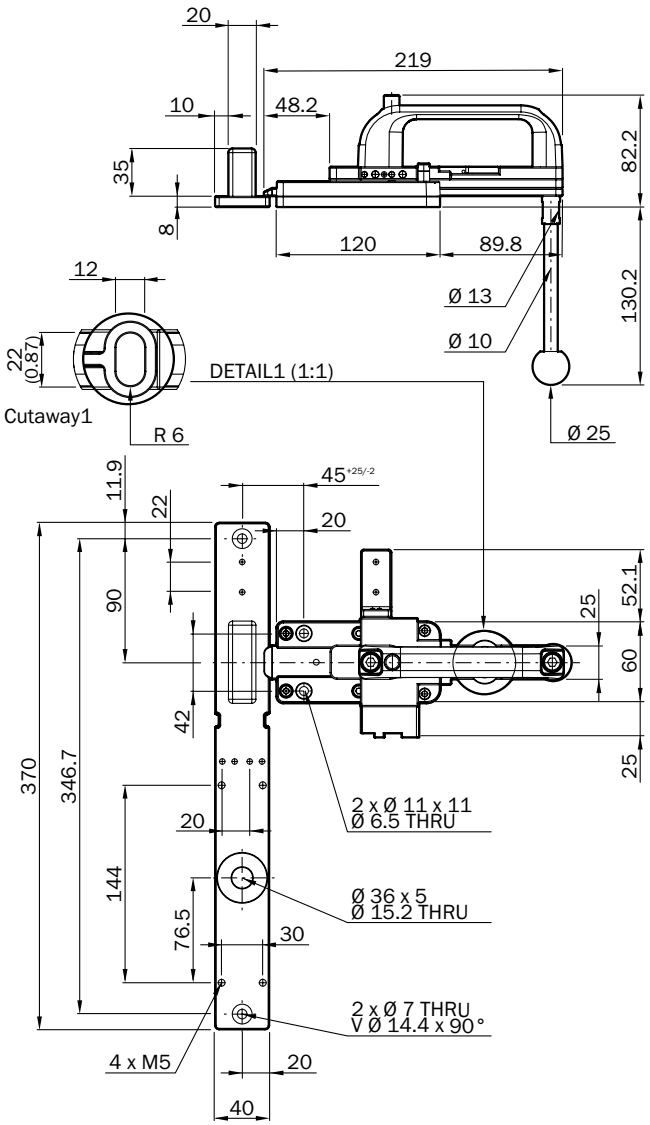
MB1-BL00



MB1-BL10



MB1-BL11



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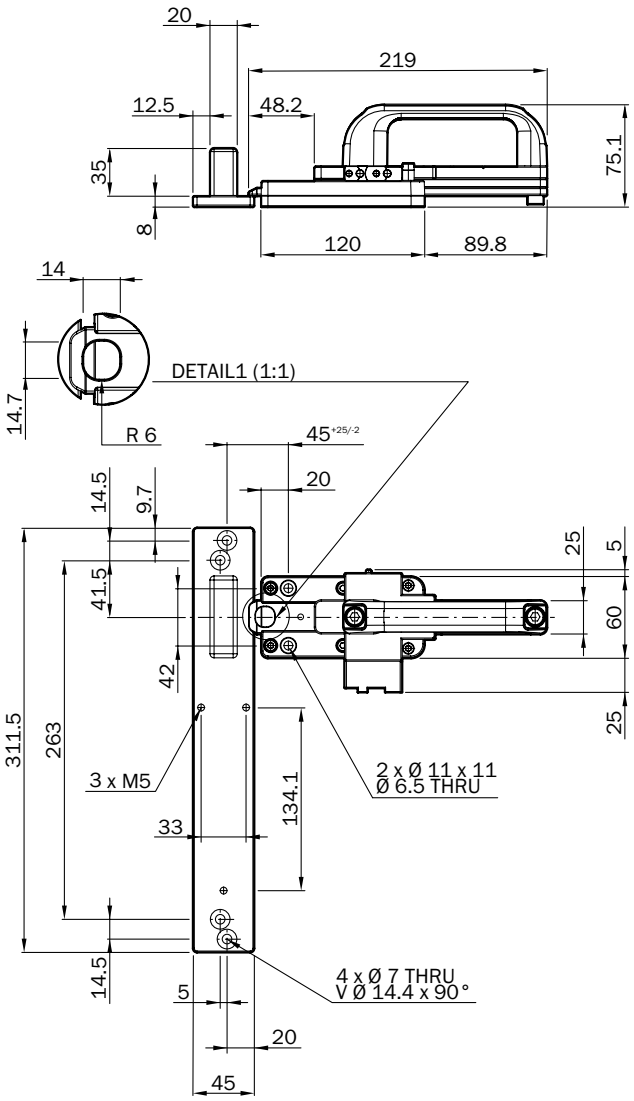
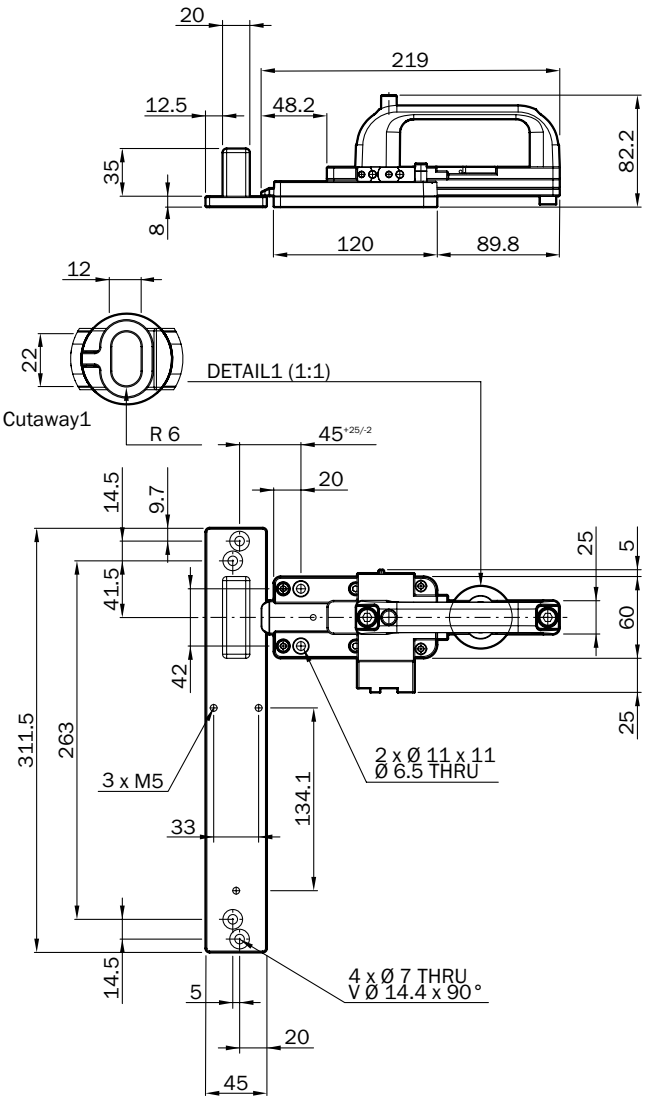
MB1-BT00



MB1-BT10, MB1-BT20



Accessories required for commissioning

- for installation of safety locking devices

Description	Quantity	Scope of delivery	Additional information
Adapters for mounting the actuators used	1 ... 2	✔	–
Safety screws for mounting the mounting adapters	1 ... 3	✔	–
M6 x 16 safety screws for installation of the door bolting unit	2	–	→ Nuts and screws
M6 screws, 90° countersunk head for mounting the frame plate	2	–	–
Safety locking device, compatible for the frame plate used	1	–	→ Safety locking devices
Screws (M5 x 38) for installation of the safety locking device (i10 Lock, i110 Lock, TR110 Lock) on the frame plate	4	–	–
Screws (M5 x 16) for installation of the TR10 Lock safety locking device on the frame plate	3	–	–
Screws (M5 x 25) for installation of the flexLock safety locking device on the frame plate	4	–	–
Actuator, suitable for selected safety locking device	1	–	→ Safety locking devices
Safety screws for mounting the actuator of the safety locking device	2	✔	–
Mounting instructions	1	✔	→ www.sick.com/MB1

- for installation of non-contact safety switches

Description	Quantity	Scope of delivery	Additional information
Adapters for mounting the actuators used	1 ... 2	✔	–
Safety screws for mounting the mounting adapters	1 ... 3	✔	–
M6 x 16 safety screws for installation of the door bolting unit	2	–	→ Nuts and screws
M6 screws, 90° countersunk head for mounting the frame plate	2	–	–
Non-contact safety switch, compatible for the frame plate used	1	–	→ Non-contact safety switches
Screws for installation of the non-contact safety switch on the frame plate (RE1: M4 x 14; STR1: M4 x 18)	2	–	–
Actuator, suitable for selected safety switch	1	–	→ Non-contact safety switches
Safety screws for installation of the actuator of the non-contact safety switch (RE1: M4 x 14; STR1: M4 x 18)	2	–	→ Nuts and screws
Mounting instructions	1	✔	→ www.sick.com/MB1

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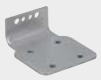
Accessories

Mounting systems

Mounting brackets and plates

Figure	Description	Type	Part no.
	Frame plate with flexLock	MB1-BPFL	1111208
	Long frame plate	MB1-BPLO	1097495
	Short frame plate	MB1-BPSH	1097494
	Frame plate for TR10 Lock	MB1-BPTR	1097496
	Adapter for mounting the i12SB actuator	MB1-BREM	1091795
	Adapter for mounting the i10 Lock/i110 Lock/TR110 Lock actuator	MB1-BRLK	1097769
	Adapter for mounting the RE1 / STR1 actuator	MB1-BRNC	1091794
	Adapter for mounting the TR10 Lock actuator	MB1-BRTR	1091796
	Adapter for mounting the rigid flexLock actuator	MB1-BRFL	1126394

Nuts and screws

Screws

Figure	Packing unit	Type	Part no.
 Illustration may differ	Set of 10	Safety screws M4 x 14	5333570
		Safety screws M4 x 18	5339775
		Safety screws M6 x 16	5339774

Additional accessories

Spare parts

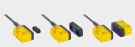
Figure	Description	Type	Part no.
	Door handle without hole for lock button	MB1-DH0	1091797
	Door handle with hole for catch release button	MB1-DH1	1091798
	Escape release e handle	MB1-ER	1091799

Compatible safety switches

Safety locking devices

Figure	Description	Additional information
	The TR10 Lock safety locking device unites the high manipulation protection of the RFID technology for monitoring the actuator, the high force and reliability of a mechanical lock and monitored semiconductor outputs (OSSDs).	→ www.sick.com/TR10_Lock
	The TR110 Lock safety locking device offers RFID technology for monitoring the actuator, the ruggedness and reliability of a mechanical lock and monitored semiconductor outputs (OSSDs). The TR110 Lock with escape release is also available as an option.	→ www.sick.com/TR110_Lock
	The i10 Lock electro-mechanical safety switch offers high locking force and keeps protective devices safely locked until a hazardous area can be entered.	→ www.sick.com/i10_Lock
	The i110 Lock electro-mechanical safety switch offers high locking force and keeps protective devices safely locked until a hazardous area can be entered.	→ www.sick.com/i110_Lock
	The innovative flexLock safety locking device combines a high level of flexibility with safe RFID technology and monitored semiconductor outputs (OSSDs).	→ www.sick.com/flexLock

Non-contact safety switches

Figure	Description	Additional information
	The STR1 RFID safety switch has monitored semiconductor outputs (OSSDs) and can be safely connected either individually or in series.	→ www.sick.com/STR1
	The RE1 magnetic safety switches are equipped with either complementary normally open/normally closed contacts or equivalent normally open contacts that are actuated directly using coded magnetic actuators.	→ www.sick.com/RE1

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SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for industrial applications. With more than 11,000 employees and over 50 subsidiaries and equity investments as well as numerous agencies worldwide, SICK is always close to its customers. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents, and preventing damage to the environment.

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