# Safety Switches with Metal Housing





# EUCHNER More than safety.





Headquarters in Leinfelden-Echterdingen

Logistics center in Leinfelden-Echterdingen



Production location in Unterböhringen

#### Internationally successful – the EUCHNER company

EUCHNER GmbH + Co. KG is a world-leading company in the area of industrial safety technology. EUCHNER has been developing and producing high-quality switching systems for mechanical and systems engineering for more than 60 years.

The medium-sized family-operated company based in Leinfelden, Germany, employs around 750 people around the world.

18 subsidiaries and other sales partners in Germany and abroad work for our international success on the market.

#### Quality and innovation – the EUCHNER products

A look into the past shows EUCHNER to be a company with a great inventive spirit. We take the technological and ecological challenges of the future as an incentive for extraordinary product developments.

EUCHNER safety switches monitor safety doors on machines and installations, help to minimize dangers and risks and thereby reliably protect people and processes. Today, our products range from electromechanical and electronic components to intelligent integrated safety solutions. Safety for people, machines and products is one of our dominant themes.

We define future safety technology with the highest quality standards and reliable technology. Extraordinary solutions ensure the great satisfaction of our customers. The product ranges are subdivided as follows:

- ► Transponder-coded Safety Switches
- ► Transponder-coded Safety Switches with guard locking
- ► Multifunctional Gate Box MGB
- Access management systems (Electronic-Key-System EKS)
- ► Electromechanical Safety Switches
- ► Magnetically coded Safety Switches
- ► Enabling Switches
- Safety Relays
- ► Emergency Stop Devices
- ► Hand-Held Pendant Stations and Handwheels
- Safety Switches with AS-Interface
- Joystick Switches
- Position Switches



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#### **About this catalog**

The Safety Switches with Metal Housing catalog gives you an overview of our safety switches with metal housing. For numerous applications these switches are the right choice due to their robustness and long service life. You will find the technical data after the product overview. There is a reference to the page with the related technical data on the pages listing the products.

At the front of the catalog you will find useful information on the topic of safety switches.

We have prepared an overview of the standards and a glossary on this topic in the appendix.

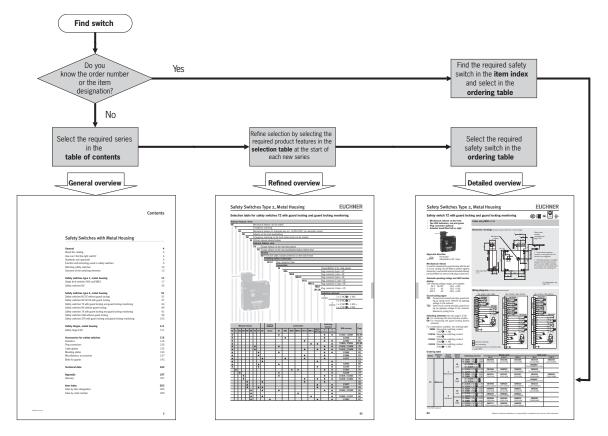
You will find the following series and accessories in this catalog:

	Safety switch in metal housing												
	Type 1			Safety hinge	Accessories								
Single lim	it switches	Safety Switch	Witho	out guard lo	cking	With guard locking	_	guard lockir locking mo	_	ESH			
N1A	NB01	NZ	NZ.VZ NX		SGA	NZ.VZ.VS	TZ	TX	STA				
	but)					-	© os number of a						
See page 17	See page 17	See page 25	See page 51	See page 89	See page 99	See page 57	See page 63	See page 91	See page 103	See page 111	See page 115		

#### How can I find the right switch?

There are two ways you can find the right switch:

- If you know the order number or the product designation, look for the switch directly in the item index (see page 203 or page 209).
- If you have specific requirements, refine the selection step-by-step with the aid of the table of contents and the selection tables.



#### Standards and approvals

#### **Standards**

Safety switches must meet the requirements for safety components as per the Machinery Directive. The Machinery Directive has been implemented in national law in the EU member states and, as a result, is binding for all manufacturers.

Detailed requirements for the switches are defined in EN 60947 Part 5-1 (Low-voltage switchgear and controlgear - Part 5-1: Control circuit devices and switching elements. Electromechanical control circuit devices).

If the requirements of this standard are met, conformity with the applicable laws and therefore with the Machinery Directive is assumed. EUCHNER safety switches comply with the relevant standards for safety switchgear and therefore help you to comply with safety requirements during the design of your machinery.

#### **Approvals**

To demonstrate conformity, the Machinery Directive also includes the possibility of type examination. Although all relevant standards are taken into account during development, we have all our safety switches subjected to additional type examinations by a notified body.

Many of the safety switches listed in this catalog have been tested by the German Social Accident Insurance association (DGUV), formerly the employers' liability insurance association (BG), and are given in the lists from the DGUV.

Furthermore, numerous switches are listed by Underwriters Laboratories (UL) or other organizations. These switches can be used in countries in which this listing is required. The approval symbols on the individual pages of the catalog indicate which body tested the switches.

With the aid of the approval symbols listed below you can quickly see which approvals are available for the related switches:



Switches with this symbol have the approval of the German Social Accident Insurance association (DGUV) – formerly the employers' liability insurance association (BG)



Switches with this symbol are approved by Underwriters Laboratories (UL, Canada and USA)



Switches with this symbol are approved by DNV GL, formerly Germanischer Lloyd



Switches with this symbol are approved by the Eurasian Economic Union (EEU)



Switches with this symbol have CCC certification for the Chinese market.

#### Function and technology used in safety switches

#### The task of safety switches

Safety switches have the task of preventing the operation of a machine in the case of a potential hazard. This task is defined in EN ISO 14119 (Safety of machinery. Interlocking devices associated with guards. Principles for design and selection). For this purpose the safety circuit must be opened by the safety switch. Safety switches are therefore key elements of an interlocking device.

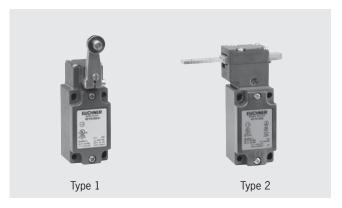
In this context an interlocking device is, for example, the interruption of machine operation if the safety door is open – the stop state of the machine is "interlocked" so to speak and unintentional starting is therefore prevented. In relation to movable guards this means that if safety doors or safety flaps are open, the machine or system cannot be operated if the machine or system can produce a hazard. For this reason the safety switch for a guard must be attached such that a malfunction is excluded. Safety switches must also not be tampered with or bypassed.

The most important feature of a safety switch is at least one NC contact which is operated positively. The switching contacts are separated positively when the guard is opened.

#### Safety switch types according to EN ISO 14119

Safety switches in this catalog are divided into two different functional types. Switches type 1 are actuated by an actuator (e.g. a dog or some type of end stop).

For safety switches type 2 a special, coded actuator is required. The actuator therefore has a specific form (similar to a key). Other types are defined in EN ISO 14119.



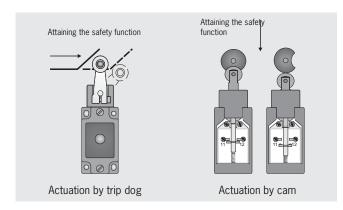
#### Safety switches type 1

Safety switches type 1 are safety switches on which the actuating element for the switch is coded. The actuating elements are available in various versions (e.g. in the form of a plunger or a lever arm). The switches N1A, NB01 and NZ listed in this catalog are safety switches type 1.

To actuate a switch type 1, trip dogs or cams are often used (see figure on the next page).

The switch must be attached such that the switch is actuated if the guard is opened. The positively driven contact in the switching element is opened and the machine is shut down. A built-in spring returns the switch to the free position when the guard is closed and the positively driven contact is closed. In this way the safety circuit is enabled again.

A safety trip dog with a defined slope should be used to approach the switch. Linear trip dogs are generally used for travel limiting or for shutting down in final positions. A cam with cut-out (negative dog) is particularly suitable for protecting safety doors. An alternative is the safety hinge ESH. On the safety hinge ESH the cam is already integrated into the switch in a very small space envelope. It is therefore possible to protect movable guards with very little mounting effort.



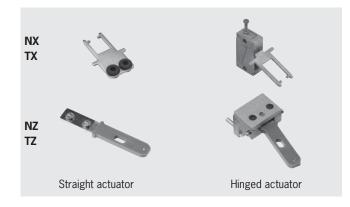
#### Safety switches type 2

On safety switches type 2, the actuating element for the switch is coded. The actuating elements are available in various versions to suit the guard that is to be monitored.

This catalog contains series NZ.VZ, NZ.VZ.VS, TZ, NX, TX and STA switches that are used in combination with separate coded actuating elements. The function of these switches is, apart from the type of actuation, identical to the switches type 1.

#### Actuating elements for switches type 2

The safety switches NZ.VZ, NZ.VZ.VS, TZ, NX and TX can only be actuated using a special actuating element with multiple coding. The coding is a type of lock and key principle. The safety switch can only be actuated using an actuating element of a specific shape. Unlike a conventional key, the actuating elements for a switch series are always the same shape.



The positively driven contact in the switching element is closed by inserting the actuating element in the switch head. The positively driven contact is reliably opened by the positive application of force when the actuating element is removed – even if the contacts are welded together. In the open state, the machinery or systems are then safely interlocked against starting.

The actuators for the series NZ.VZ and TZ comprise a laminated spring steel core encapsulated in an abrasion-resistant plastic. As the spring steel core comprises three layers, complete fracture on overloading is unlikely. Straight actuators and hinged actuators are available for a wide range of applications in which, e.g. hinged and sliding doors are used. Hinged actuators are spring-mounted actuators that adjust to the inner contours of the switch on insertion in the actuating head. They are suitable for small hinged doors with a radius from 165 mm. For sliding doors and hinged doors with an adequately large pivoting radius (> 1,000 mm) a straight actuator can be used.

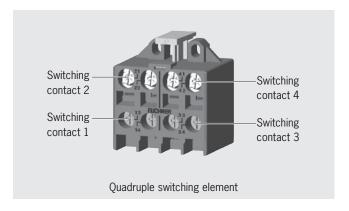
If increased play is required when the door is closed, an actuator with overtravel is available. With this actuator the door can move slightly in the actuating direction when closed. This is important, for example, if safety doors have a rubber end stop. Using an actuator with overtravel,

the continuous pressure from the compressed rubber can be reduced. In this way the load is reduced on the switch head and the door mechanism.

#### **Switching elements**

Different switching elements are available for the switches offered in the catalog:

- ► Single switching element
- ▶ Double switching element with two independent switching contacts
- ▶ Quadruple switching element with four independent switching contacts

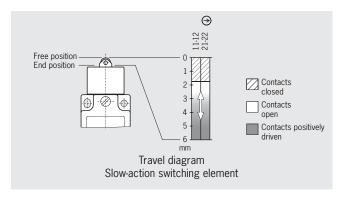


Only one switching element is fitted in each case in switches of the series N1A, NB, NZ, NX, TX and STA. Two switching elements are fitted to all series TZ safety switches. In this case one of the switching elements is used to monitor the door position (SK) and the other is used to monitor the position of the guard locking solenoid (ÜK). Switching elements are divided into two types as a function of their switching characteristics:

- ► Slow-action switching elements and
- ► Snap-action switching elements

#### Slow-action switching element

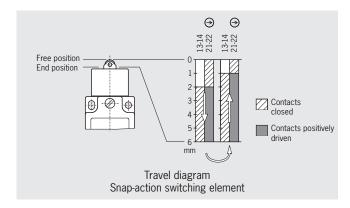
Slow-action switching elements are mostly used in safety switches. The opening of the switching element is directly dependent on the position of the actuator. The further the actuator is moved, the further the switching element is opened.



The actuator travel is therefore directly proportional to the travel covered by the switching contact in the switching element. From the travel diagrams it can be seen at which point the switching element changes from the closed state to the open state.

#### **Snap-action switching element**

On snap-action switching elements, the change from the completely closed state to the completely open state is made at a defined point. As a result the operating point is at a defined position, unlike on slow-action contact elements. Snap-action switching elements typically have a switching hysteresis.



#### Positively driven contacts



Positively driven contacts are used in the switching elements. These are special switching contacts that are designed to ensure the switching contacts are always reliably separated. Even if contacts are welded together, the connection is opened by the actuating force.

It is a common feature of all safety switching elements that at least one switching contact is designed as a positively driven contact. Often two positively driven contacts are employed to increase safety using the principle of duplicated design (redundancy). This dual-channel design ensures that on the failure of one channel or on a fault in the control circuit (e.g. in the machine wiring), the interlocking can still be provided with the aid of the second channel.

Switches must also meet the requirements of EN 60947-5-1 Annex K.

### Guard locking monitoring



The monitoring by the control system must be marked with the symbol shown on the illustration. This switching contact is a positively driven contact. The contacts ware opened when guard locking is released.

#### **Explanation of symbols and notation**

Symbols and specific notation related to the switches or the switching contact are used time and again in the catalog.

The following example is intended to explain these aspects:

#### Notation

1 NC ⊕ + 1 NO

#### **Explanation**

Normally closed contacts are represented by NC, normally open contacts by NO. The number defines how many contacts are available. The symbol ⊖ behind the NC defines that the NC contact is a positively driven contact. This switch therefore has one normally closed contact and one normally open contact; the normally closed contact is a positively driven contact.

#### Safety contacts

If contacts fulfill safety tasks, positively driven contacts must be used. These contacts are referred to as safety contacts.

#### **Monitoring contacts**

#### Door monitoring contact and interlocking solenoid monitoring contact

In addition to the safety contacts, monitoring contacts are also required, for example, to indicate the position of the guard locking solenoid to the control system, or to indicate whether the guard is open. If these contacts do not have any safety function, either NC or NO contacts can be used.

#### Door unlock request contact

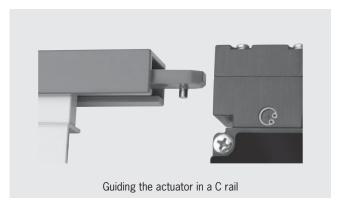
A special feature of the STA series is the door unlock request contact. When the actuator is in the locked state, positively driven contact 21-22 is opened by pulling the guard and a signal sent to the higher level PLC. Depending on the control concept, the guard can be unlocked automatically – when machine components that were still running have stopped.

#### Protection against tampering

A safety switch can only ensure that operation is free of hazards if it is not bypassed. To prevent tampering type 2, the actuator must be positively mounted on the guard. All actuating elements are supplied with safety screws that can be fastened using commonly available tools, but that can only be undone with extreme difficulty. It should be ensured that the screws cannot be undone with simple tools.

Increased protection against bypassing safety switches can be achieved by using a covered installation. In this way it can be made more difficult to insert replacement actuators, or this action can be prevented. Suitable for this purpose, for instance, are rear wall mounting or guiding the actuator in a C rail.

Switches type 1 can be installed covered so that the uncoded actuating element cannot be reached.



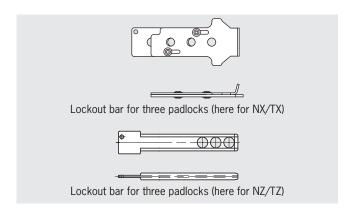
#### **Protective plate**

On the switches NZ.VZ, increased protection against bypassing can be achieved by using a protective plate over the switch head. The switch head's rearward opening is then rendered almost inaccessible.



#### Lockout bar

To prevent the unintentional closing of a guard, lockout bars are available for switches type 2. The lockout bar is inserted in the safety switch instead of the actuator when the guard is open. The lockout bar can then be secured with commercially available padlocks (up to five locks) to protect against removal.



This feature guarantees protection for anyone (e.g. maintenance or service personnel, or cleaning staff) who needs to enter potentially hazardous areas. The switches cannot signal a safe (closed) state with a lockout bar fitted. As a result unintentional starting of the machine is not possible.

#### **Guard locking**

Safety switches type 2 are available both with and without guard locking. Guard locking is a feature that prevents the unintentional opening of a door as long as there is a hazard. The door is locked by preventing the removal of the actuator from the safety switch.

The series N1A, NB, NZ, NX, TX and STA listed in this catalog are safety switches type 2 with guard locking.



#### **Personnel protection**

Guard locking is required if a hazard cannot be removed immediately by shutting down a machine (e.g. due to machine movements with overtravel). In this case fail-safe control of the guard locking solenoid is required. This requirement can, for instance, be achieved by a safe standstill monitor or a safe delay. The safety switch must also provide a facility for monitoring the position of the solenoid.

The series TZ, TX and STA feature the guard locking monitoring required for this function and can therefore be used for protection of personnel.

#### **Process protection**

Often a guard is only to be locked to prevent interruption to the process due to unintentional opening of the guard. In this case the position of the guard locking solenoid does not need to be integrated in the safety circuit. In this situation the series NZ.VZ.VS, TZ, TX and STA safety switches are suitable.

#### **Housing material**

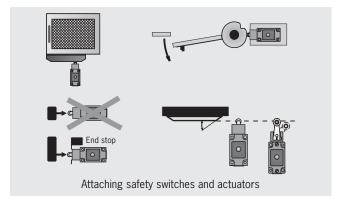
The series N1A, NB, NZ and TZ safety switches have a die-cast alloy housing with an anodized surface. Due to the durable housing material and the high degree of protection (up to IP 67), these switches can be used even under the harshest conditions. The degree of protection only applies to the space for the electrical wiring and not to the actuating head.

# Attaching safety switches type 1, type 2 and the actuators

Certain requirements must be met with respect to attaching the safety switches, e.g. EN ISO 14119 Safety of machinery - Interlocking devices associated with guards - Principles for design and selection.

Any installation position can be used, but safety switches must be attached such that their position cannot be changed in operation. However, it must be possible to replace the switches at any time, if necessary, without renewed adjustment.

These requirements are achieved by using reliable fixings that can only be undone using tools. To prevent a change to the position, there must also be no movement in the joint (e.g. by using dowel pins).



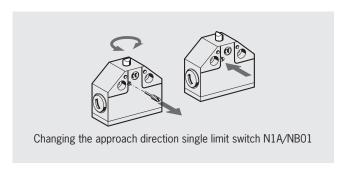
The same applies to the actuators for switches type 2 and trip dogs for switches type 1. A joint without movement is also required here. Above all else, loosening must be prevented. In addition, it must be ensured that cams and trip dogs can only be mounted in the correct position.

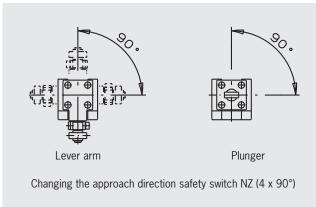
To prevent tampering, safety screws can also be used for the attachment of safety switches and trip dogs.

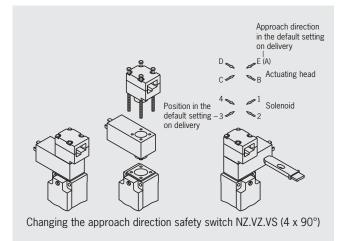
Mounting plates are available to ease the attachment of switches type 2 and also actuators. Bolts attached to the safety door are extremely helpful. All requirements, e.g. the mechanical end stop for the door and the exact guidance of the actuator, are optimally met by using bolts.

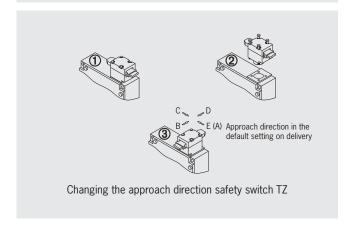
#### Changing the approach direction

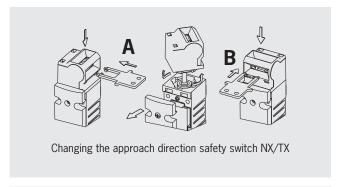
Often the actuator approach direction does not match the standard alignment of the actuating head as delivered. For this reason, the actuating heads on the safety switches NZ, TZ, NX, TX and STA can be very straightforwardly adjusted to the required direction.

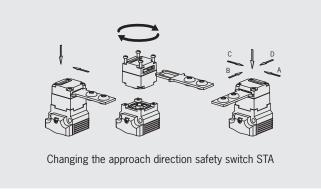








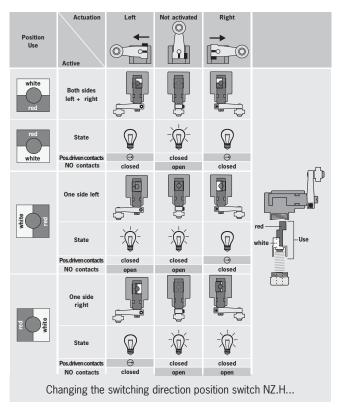




After undoing the four fixing screws, the actuating head can be rotated in  $90^{\circ}$  steps. If for reasons of protection against tampering, renewed removal of the actuating head is to be prevented, the actuating head can be fastened to the basic housing using safety screws. You will find appropriate fixing material in the accessories section of this catalog.

#### Changing the switching direction

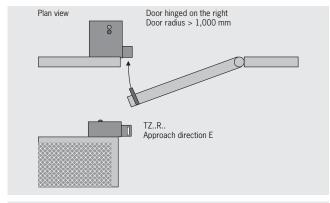
In addition, the actuating direction can be adjusted such that the actuator only switches in one direction.

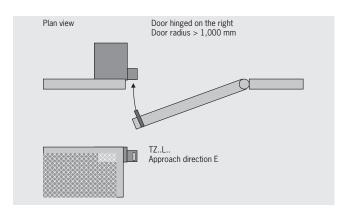


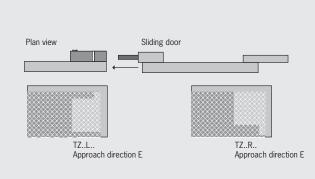
#### Attaching the safety switch TZ with actuating head fitted on left or right

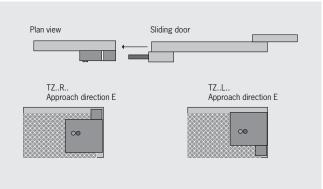
The safety switch TZ can be mounted in a large number of different installation positions. Often the switch is mounted horizontally on the roof of a machine or with a suspended actuator head. The method of attachment depends on whether the switch is to be attached in a protected installation position, for instance to make tampering more difficult, or whether the switch is to be mounted so that it is easily accessible as the escape release must be within reach from inside the system.

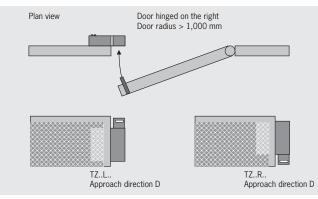
The drawings show that the attachment of the actuator head is very heavily dependent on how the switch is mounted. It is not possible to list all methods of attachment here, as the actuator head can be rotated in 90° steps. As a result there are a very large number of different methods of attachment. There is a suitable way of mounting the switch for every application.

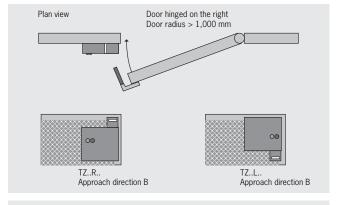


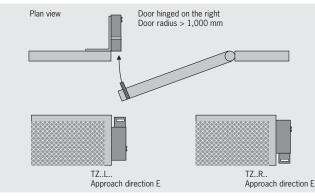


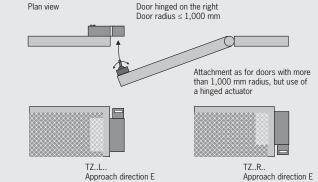












#### **Electrical connection**

On switches with cable entry there is a large space envelope for making the electrical connection.

Modern wiring concepts increasingly utilize plug-in connections. A switch with plug connectors can be easily replaced during servicing work. This configuration results in short downtimes.

The safety switches NZ and TZ are available with various plug connectors. The corresponding mating connectors are also available as accessories with permanently connected cables of different lengths.

#### Switch layout for design TZ

#### ▶ Locking arm

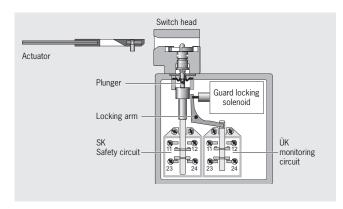
The locking arm ensures that the switch is guard locked by the solenoid. It acts directly on the switching element ÜK; the positively driven contacts can only be closed in the locked state (see \*Failsafe locking mechanism).

#### SK

The position of the SK switching element is dependent on the position of the actuator or the guard. This situation means that the positively driven contacts on the SK switching element are only closed if the actuator is in the switch head.

#### ▶ÜK

The position of the ÜK switching element is dependent on the position of the actuator or the guard and the position of the solenoid or the guard locking. I.e., both guard locking and positively driven contact on the ÜK switching element can only be closed if the actuator is in the switch head and the guard locking solenoid is controlled correspondingly.



#### **LED indicator TZ**

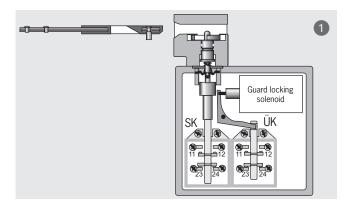
As standard the TZ series is equipped with a red and a green LED. Depending on the switch design, the assignment is pre-wired or can be chosen as required (see also page 179).

#### Principle of operation of TZ

The sectional drawings show the safety switch TZ in its three switch states:

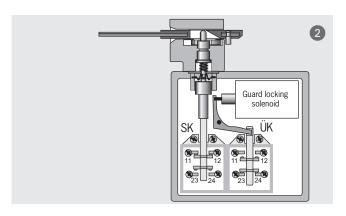
Door open and not locked

In the initial state (actuator removed/guard open) all positively driven contacts (SK and ÜK) are open. The related NO contacts 23-24 are closed and signal the state *open and unlocked*. Unintentional closing of the contacts on switching element ÜK is impossible due to the switch mechanism (see \*Failsafe locking mechanism).



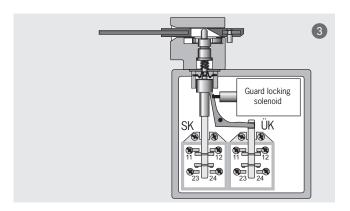
#### 2 Door closed and not locked

The plunger is released by inserting the actuator into the switch head. The contacts 11-12 on switching element SK are closed, the contacts 23-24 are opened. The contacts 11-12 on the switching element ÜK remain open as before, the door monitoring contacts 23-24 for switching element ÜK remain closed.



#### 3 Door closed and locked

After the actuator has been inserted, it is possible to activate the switch's guard locking. If the guard locking solenoid is activated, the locking arm locks the plunger and actuates the switching element ÜK. The contacts 11-12 are closed on this switching element. The contacts 11-12 on the switching element SK continue to remain closed. In this position the positively driven contacts 11-12 on the two switching elements SK and ÜK are safely locked, both door monitoring contacts 23-24 are opened. The actuator and the guard are locked. This means that the machine connected to the safety circuit can be started.



#### **LED indicator TX**

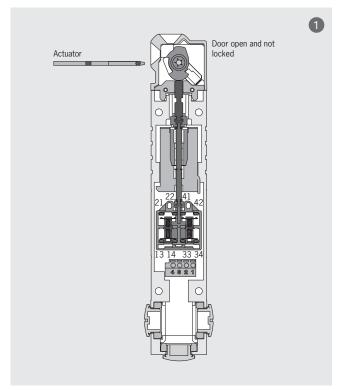
As standard the TX series is equipped with a red and a green LED. Depending on the switch design, the assignment is pre-wired or can be chosen as required.

#### Principle of operation of TX/STA

The sectional drawings show the safety switch TX in its three switch states. The same principle of operation applies to the STA.

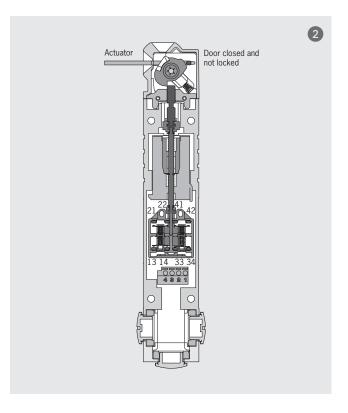
#### Door open and not locked

In the initial state (actuator removed/guard open) all positively driven contacts (here: 21-22 and 41-42) are open. The NO contact 13-14 is closed and signals the condition *Door open*. The NO contact 33-34 is also closed and signals the condition *Not locked*. Unintentional closing of the contacts 21-22 and 41-42 is impossible due to the switch mechanism (see \* Failsafe locking mechanism).



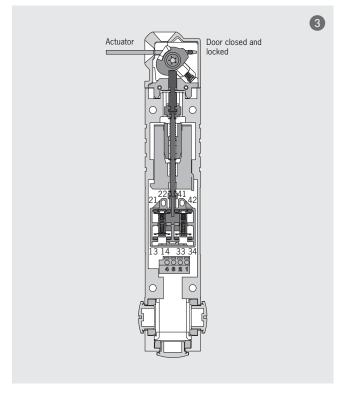
#### Door closed and not locked

The plunger is released by inserting the actuator into the switch head. The NO contact 13-14 is now open and signals the condition *Door closed*. The NO contact 33-34 remains closed and signals the condition *Not locked* as before. The positively driven contacts 21-22 and 41-42 remain open as before.



#### 3 Door closed and locked

After the actuator has been inserted, it is possible to activate the switch's guard locking. When the guard locking solenoid is activated, NO contact 33-34 is opened and signals the condition *Locked*. The NO contact 13-14 signals the condition *Door closed* as before. The positively driven contacts 21-22 and 41-42 were closed when the guard locking solenoid was activated. The actuator and the guard are locked. This means that the machine connected to the safety circuit can be started.



#### Failsafe locking mechanism

The design feature of a guard locking which ensures that the locking mechanism (solenoid plunger) cannot go into the locking position if the guard is open is also referred to in DGUV Information 203-079 as failsafe locking mechanism.

The failsafe locking mechanism on an interlocking device with guard locking mechanically prevents the safety switch changing to the locked position with the guard open and therefore signaling a safe state.

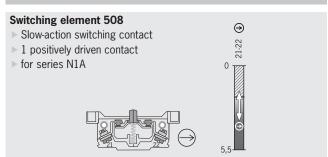
#### **Switching elements**

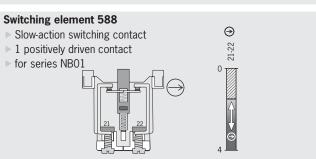
The switching elements used in our safety switches have a dedicated numbering system. A selection of switching elements is available depending on the switch type. In the following overview you can see which switching element is covered by the related number.

Some switching elements are marked with an H (e.g. 528H). The switching elements have an H-shaped contact bridge. They have a lower contact resistance and can therefore also safely switch small currents from 1 mA.

Please note: safety switching elements are not available as replacement switching elements.

# Switching elements with 1 switching contact



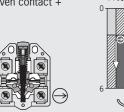


#### Switching elements with 2 switching contacts



#### Switching element 511

- ► Snap-action switching element
- ▶ 1 positively driven contact +
- 1 NO contact
- ▶ for series NZ



∂

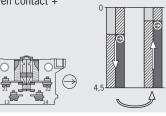
∂

∂

 $\Theta$ 

#### Switching element 514

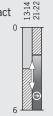
- Snap-action switching element
- ▶ 1 positively driven contact +
- 1 NO contact
- for series N1A



#### Switching element 528H

- ► Slow-action switching element
- ▶ 1 positively driven contact + 1 NO contact
- ▶ for series NZ / TZ





⊕

#### Switching element 538H

- Slow-action switching element
- ▶ 2 positively driven contacts
- ▶ for series NZ / TZ





#### Contact closed

open

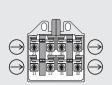
positively driven

#### Switching elements with 4 switching contacts



#### Switching element 2121H

- Slow-action switching element
- ▶ 4 positively driven contacts

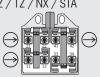




#### Switching element 2131H

- ► Slow-action switching element
- ➤ 3 positively driven contacts + 1 NO contact (door monitoring contact on STA)

▶ for series NZ / TZ / NX / STA



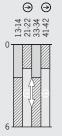


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#### Switching element 3131H

- ▶ Slow-action switching element
- 2 positively driven contacts + 2 NO contacts
- For series NZ / TZ / NX



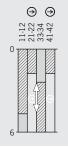


#### Switching element 4121H

- Slow-action switching element
- 2 positively driven contacts + 1 NO contact + 1 NC contact (door monitoring contact)

▶ for series STA

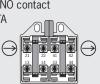




# Switching element 4131H (without door monitoring contact)

- ► Slow-action switching element
- 2 positively driven contacts + 1 NO contact + 1 NO contact

▶ for series STA

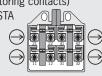


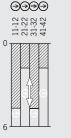


#### Switching element 4141H

- ► Slow-action switching element
- 2 positively driven contacts +2 positively driven contacts(door monitoring contacts)

▶ for series STA





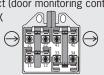
⊕ ⊕

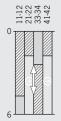
#### Switching element ETX B

- ► Slow-action switching element
- 2 positively driven contacts + 1 NO contact +

1 NC contact (door monitoring contact)

▶ for series TX

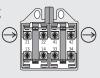


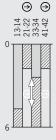


#### Switching element ETX C

- ▶ Slow-action switching element
- ≥ 2 positively driven contacts + 1 NO contact + 1 NO contact (door monitoring contact)

▶ for series TX

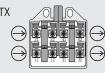


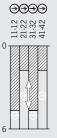


#### Switching element ETX D

- ➤ Slow-action switching element
- ≥ 2 positively driven contacts + 2 positively driven contacts (door monitoring contacts)

▶ for series TX



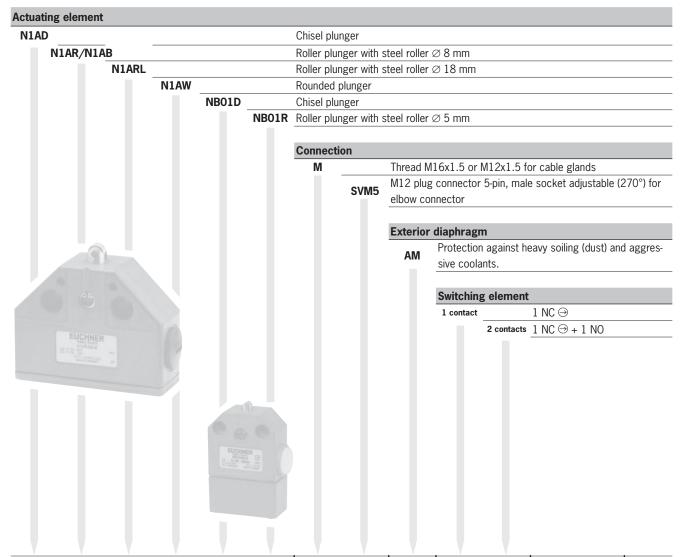


#### Contact

- closed
- positively driven



#### Selection table for single limit switches N1A and NB01



		Actuating	g element			Conn	ection	Dia- Switching element				
N1AD	N1AR N1AB	N1ARL	N1AW	NB01D	NB01R	М	SVM5	phragm AM	1 contact	2 contacts	With version	Page
•						•			•	•	C2222	18
•						•		•	•	•		19
•							•			•		19
	•					•			•	•	C2222	20
	•					•		•		•		21
	•						•			•		21
		•				•			•	•		22
			•			•	•		•	•	C2222	23
				•		•			•			24
					•	•			•			24

#### Single limit switch N1AD with chisel plunger





- Housing according to DIN 43693
- LED optional
- Plug connector optional
- **Exterior diaphragm optional**
- Low temperature down to -40 °C optional



#### Approach direction



Horizontal Adjustable in 90° steps

#### Exterior diaphragm (optional)

Protection against heavy soiling (dust) and aggressive coolants.

#### Low temperature

Version C2222 with silicone membrane and low temperature grease.

#### **LED function display** (optional)

A function display is available for the following voltage ranges:

AC 230 V ±15% red

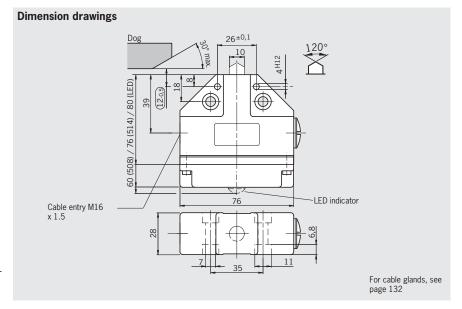
#### Switching elements (see also page 13)

**514** Snap-action switching contact

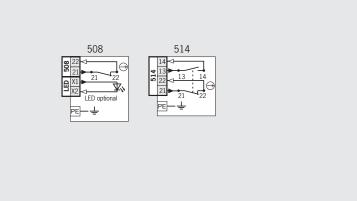
1 NC → + 1 NO

**508** Slow-action switching contact 1 NC ⊝

#### Cable entry M16 x 1.5



#### Wiring diagrams



Carios	Actuator	Connection	Switching	Version	Function	230 V red LED			
Series	Actuator	Connection	element	version	Without LED	230 V red LED			
			508		<b>083886</b> N1AD508-M	-			
N1A	<b>D</b> Chisel plunger	Cable entry M16 x 1.5	1 NC ⊝	C2222 Low tempera- ture	<b>103237</b> N1AD508-MC2222	-			
			<b>514</b> 1 NC → + 1 NO		<b>083849</b> <sup>1)</sup> N1AD514-M	-			

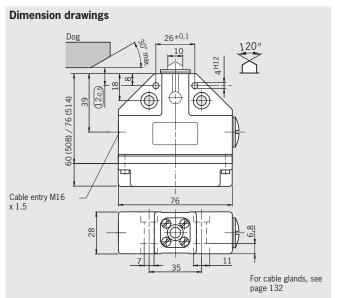




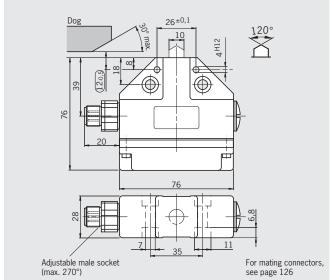




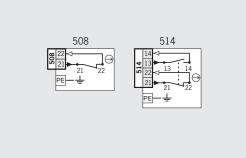


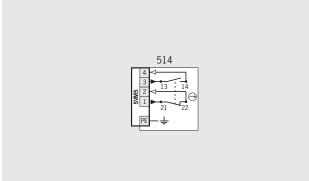


#### Plug connector SVM5 M12 plug, 5-pin



#### Wiring diagrams





Series	Actuator	Connection	Switching element	Version	Function display Without LED
		Cable entry	<b>508</b> 1 NC ⊝	Exterior diaphragm	<b>090546</b> N1AD508AM-M
N1A	<b>D</b> Chisel	M16 x 1.5	<b>514</b> 1 NC → + 1 NO	Exterior diaphragm	<b>091261</b> N1AD514AM-M
	plunger	Plug connector <b>SVM5</b> (M12 plug)	<b>514</b> 1 NC → + 1 NO		<b>087603</b> <sup>1)</sup> N1AD514SVM5-M

# **EUCHNER**

#### Single limit switch N1AR/N1AB with roller plunger



- ► Housing according to DIN 43693
- ▶ Steel roller Ø 8 mm
- LED optional
- Plug connector optional
- Exterior diaphragm optional
- ► Ball bearing optional
- Low temperature down to -40 °C optional



#### Approach direction



Horizontal Adjustable in 90° steps

#### Exterior diaphragm (optional)

Protection against heavy soiling (dust) and aggressive coolants.

#### Low temperature

Version C2222 with silicone membrane and low temperature grease.

#### **Ball bearing**

For high approach speeds and long travel distances.

#### LED function display (optional)

A function display is available for the following voltage ranges:

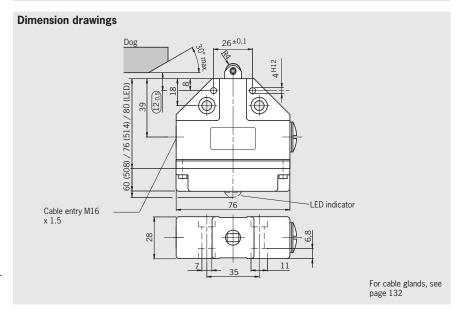
► AC/DC 12-60 V

red

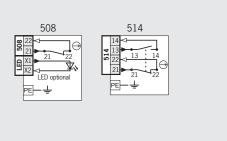
#### Switching elements (see also page 13)

- 514 Snap-action switching contact 1 NC ⊕ + 1 NO
- **508** Slow-action switching contact 1 NC ⊕

#### Cable entry M16 x 1.5



#### Wiring diagrams



Series	Actuator	Connection	Switching	Version	Function	ı display
Series	Actuator	Connection	element	version	Without LED	12-60 V red LED
	_		508	Slide bearing	<b>083887</b> N1AR508-M	<b>087219</b> N1AR508LE060-M
	R Roller plunger Ø 8 mm	Cable entry <b>M16 x 1.5</b>	1 NC ⊝	C2222 Low tempera- ture	<b>103221</b> N1AR508-MC2222	-
N1A	Ø 8 IIIIII		<b>514</b> 1 NC → + 1 NO	Slide bearing	<b>078487</b> <sup>1)</sup> N1AR514-M	-
	<b>B</b> Roller	Cable entry	<b>508</b> 1 NC ⊝	Ball bearing	<b>087245</b> N1AB508-M	-
	plunger Ø 8 mm	M16 x 1.5	<b>514</b> 1 NC → + 1 NO	Ball bearing	<b>087247</b> <sup>1)</sup> N1AB514-M	-



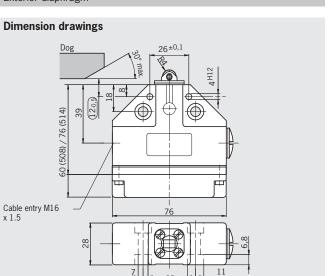


For cable glands, see page 132

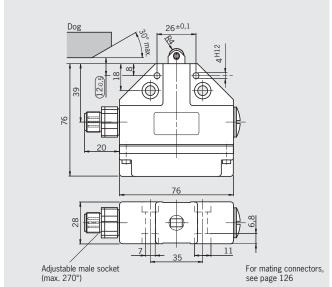




Cable entry M16 x 1.5 Exterior diaphragm

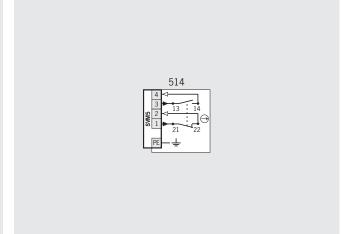


#### Plug connector SVM5 M12 plug, 5-pin



#### Wiring diagrams





Serie	s Actuator	Connection	Switching element	Version	Function display Without LED
	<b>R</b> Roller	Cable entry <b>M16 x 1.5</b>	<b>514</b> 1 NC → + 1 NO	Exterior diaphragm	<b>087158</b> N1AR514AM-M
N1/	plunger Ø 8 mm	Plug connector <b>SVM5</b> (M12 plug)	<b>514</b> 1 NC ⊕ + 1 NO		<b>087604</b> N1AR514SVM5-M



#### Single limit switch N1ARL with extended roller plunger







- ▶ Housing according to DIN 43693▶ Steel roller Ø 18 mm



#### Approach direction

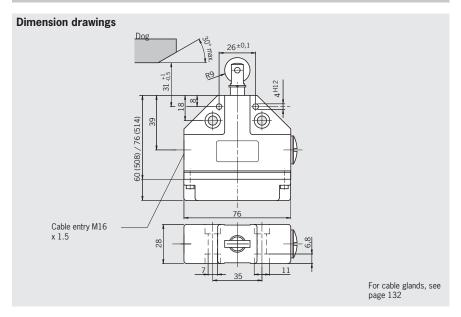


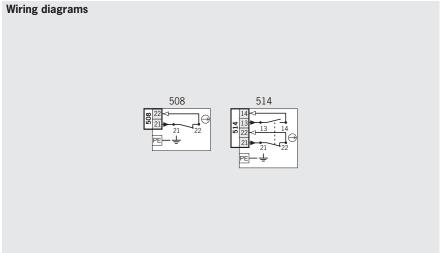
Horizontal Adjustable in 90° steps

Switching elements (see also page 13)
► 514 Snap-action switching contact 1 NC → + 1 NO

**508** Slow-action switching contact  $1 \; \mathsf{NC} \; \ominus \!\!\!\! =$ 

#### Cable entry M16 x 1.5





Sorios	Actuator	Connection	Switching	Function display
Series	Actuator	Connection	element	Without LED
N1A	<b>RL</b> Roller	Cable entry	<b>508</b> 1 NC ⊝	<b>087147</b> N1ARL508-M
MIA	plunger ∅ 18 mm	M16 x 1.5	<b>514</b> 1 NC → + 1 NO	<b>087204</b> N1ARL514-M

#### Single limit switch N1AW with rounded plunger









- ► Housing according to DIN 43693
- LED optional
- Plug connector optional
- Low temperature down to -40 °C optional



#### Approach direction



Horizontal and vertical

#### Low temperature

Version C2222 with silicone membrane and low temperature grease.

#### LED function display (optional)

A function display is available for the following voltage ranges:

red

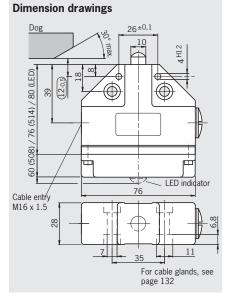
► AC/DC 12-60 V

#### Switching elements (see also page 13)

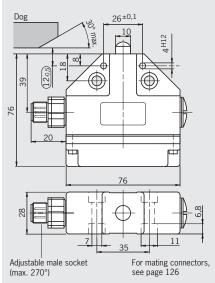
**514** Snap-action switching contact  $1 \text{ NC} \ominus + 1 \text{ NO}$ 

508 Slow-action switching contact 1 NC ⊝

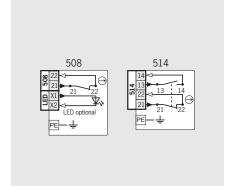
#### Cable entry M16 x 1.5

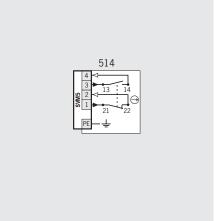


#### Plug connector SVM5 M12 plug, 5-pin



#### Wiring diagrams





	.8							
Carias	Actuator	Connection	Switching	Version	Function	12-60 V red LED 087220 N1AW508LE060-M -		
Series	Actuator	Connection	element	version	Without LED	12-60 V red LED		
N1A			508		<b>087205</b> N1AW508-M			
	W	Cable entry M16 x 1.5	1 NC ⊝	C2222 Low tempera- ture	<b>103222</b> N1AW508-MC2222	-		
	Rounded plunger		<b>514</b> 1 NC → + 1 NO		<b>083850</b> N1AW514-M	-		
		Plug connector <b>SVM5</b> (M12 plug)	<b>514</b> 1 NC ⊖ + 1 NO		<b>090743</b> <sup>1)</sup> N1AW514SVM5-M	-		



#### Single limit switch NB01

► With chisel plunger

Approach direction

With roller plunger, steel roller Ø 5 mm

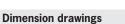


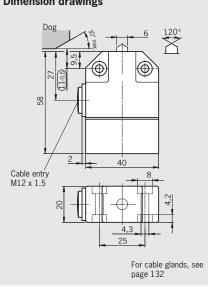




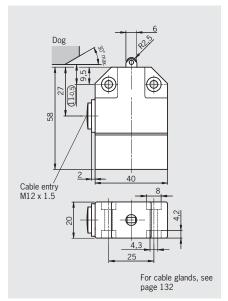
Cable entry M12 x 1.5

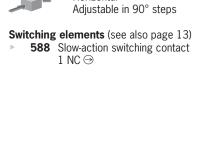
Chisel plunger



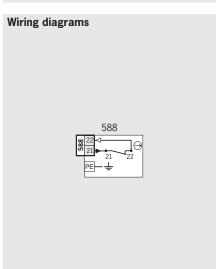


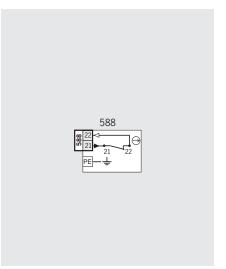
Cable entry M12 x 1.5 Roller plunger





Horizontal





Series	Actuator	Connection	Switching element	Function display Without LED
	<b>D</b> Chisel plunger	Cable entry M12 x 1.5	<b>588</b> 1 NC ⊖	<b>088584</b> NB01D588-M
NB01	R Roller plunger Ø 5 mm	Cable entry M12 x 1.5	<b>588</b> 1 NC ⊖	<b>088583</b> NB01R588-M

# Safety Switches Type 1, Metal Housing

# Selection table for safety switches NZ

Actuating element				
WO	Rounded plunger			
RK	Roller plunger with s	teel roller Ø 8 mm		
RS	Roller plunger with s	teel roller Ø 12 mm		
RG	Roller plunger with p	olastic roller Ø 12 mm		
RL	Extended roller plung	ger with steel roller $arnothing$ $18$	3 mm	
HS	Lever arm with steel	roller $\varnothing$ 18 mm; 19 mm	for ball bear	aring (C1833)
НВ	Lever arm with plast roller on inside of lev	ic roller ∅ 18 mm; 30 m ver (C1779)	ım (version C	C569);
PS	Adjustable lever arm	with steel roller Ø 18 m	ım	
	PB Adjustable lever arm	with plastic roller Ø 18	mm	
			,	
	Connection			
	M			Thread M20x1.5 for cable glands
1674	SVM5			M12 plug connector 5-pin, male socket adjust
	SVIVIS			(270°) for elbow connector
	MDC-5	5		M12 plug connector 5-pin, without PE
EUCHNER		SEM5		M12 plug connector 5-pin, without PE
Street States		SM8		M12 plug connector 8-pin
<u> </u>		SR6		Plug connector 6-pin + PE
The state of the s		MR8	<b>.</b>	Plug connector 7-pin + PE
0.00	Carl		MR9	Plug connector 8-pin + PE
6	196		SR11	Plug connector 11-pin + PE
				Switching element
				2 1 NC → + 1 NO
	EUCHNER Bandy Bertin METHELASIAN			contacts or 2 NC ⊖
	⊕			2 NC ⊕ + 2 NO,
	APPL ACTION AND ADDRESS OF THE PARTY OF THE			4 contacts 3 NC → + 1 NO
	9.95			or 4 NC ⊖

	Actuating element							Connection										ching nent	With version	Page	
wo	RK	RS	RG	RL	HS	НВ	PS	РВ	М	SVM5	MDC-5	SEM5	SM8	SR6	MR8	MR9	SR11	2 contacts	4 contacts	With Volsion	luge
•									•	•								•	•	C2273	26
•														•			•	•	•	C1630/C1631	27
	•								•	•								•	•	C1912	28
	•													•			•	•	•		29
		•							•									•		C1588	46
		•							•	•								•	•	C2273	30
		•											•	•		•	•	•	•	C1630/C1631/C2300	31
		•															•		•		32
			•						•	•								•	•		33
			•										•	•			•	•	•	C1631/C2300	34
				•					•	•								•	•		35
				•							•			•			•	•	•	C1831	36
					•				•	•								•	•		37
					•								•	•			•	•	•	C1630/C2300	38
					•										•	•			•		39
					•				•										•	C1779	48
					•				•									•		C1833	49
						•			•									•		C569	47
						•			•	•								•	•	C2273	40
						•								•		•	•	•	•	C1630/C1631	41
							•		•									•	•		42
							•					•		•			•	•	•	C2376/C2334	43
								•	•									•	•		44
								•				•							•	C2376/C2334	45

#### Safety switch NZ.WO with rounded plunger

- Version B according to EN 50041 (hardened)
- **LED** optional
- Plug connector optional



#### Approach direction

Horizontal and vertical

#### LED function display (optional)

A function display is available for the following voltage ranges:

► AC/DC 12-60 V red or yellow

#### Switching elements (see also page 13/14)

- **511** Snap-action switching contact 1 NC ⊕ + 1 NO
- **528H** Slow-action switching contact  $1 \text{ NC} \ominus + 1 \text{ NO}$
- **538H** Slow-action switching contact  $2 NC \ominus$
- ▶2121H Slow-action switching contact 4 NC ⊝
- ▶2131H Slow-action switching contact 3 NC ⊕ + 1 NO
- ▶3131H Slow-action switching contact 2 NC → + 2 NO



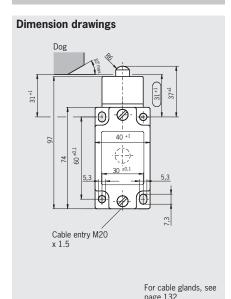




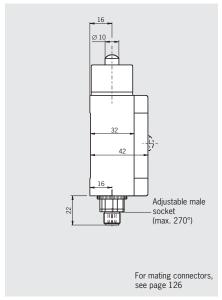


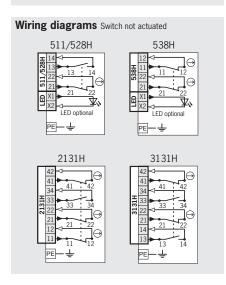


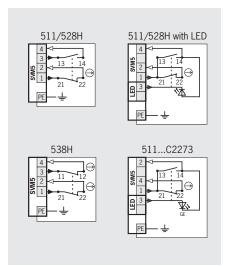
#### Cable entry M20 x 1.5



#### Plug connector SVM5 M12 plug, 5-pin







		Con-	Switching		Function display			
Series	Actuator	nection	element	Version	Without LED	12-60 V red LED	12-60 V yellow LED	
			<b>511</b> ¹) 1 NC → + 1 NO		<b>088611</b> <sup>1)</sup> NZ1WO-511-M	<b>089057</b> <sup>1)</sup> NZ1W0-511L060-M	<b>089058</b> <sup>1)</sup> NZ1WO-511L060GE-M	
			<b>528H</b> 1 NC → + 1 NO		<b>089624</b> NZ1W0-528-M	<b>089078</b> NZ1W0-528L060-M	-	
		1 Cable entry M20 x 1.5	<b>538H</b> 2 NC ⊖		<b>090878</b> NZ1W0-538-M	<b>089076</b> NZ1W0-538L060-M	-	
			<b>2131H</b> 3 NC → + 1 NO		<b>089629</b> NZ1WO-2131-M	-	-	
NZ	wo rounded plunger		<b>3131H</b> 2 NC → + 2 NO		<b>089626</b> NZ1WO-3131-M	-	-	
	plango		<b>511</b> 1 NC → + 1 NO		<b>089014</b> NZ2WO-511SVM5	-	<b>098652</b> NZ2WO-511SVM5L060GE	
		Plug con- nector <b>SVM5</b> (M12 plug)	<b>511</b> 1 NC → + 1 NO	C2273 Alternative wiring	-	-	<b>105851</b> NZ2WO-511SVM5L060GEC2273	
			<b>528H</b> 1 NC → + 1 NO		<b>090923</b> NZ2WO-528SVM5	-	-	
			<b>538H</b> 2 NC ⊖		<b>090924</b> NZ2WO-538SVM5	-	-	

<sup>1)</sup> No DGUV approval for switching element 511



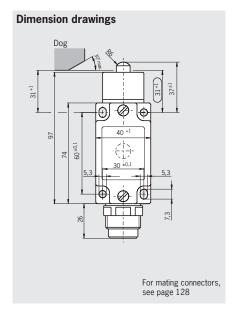




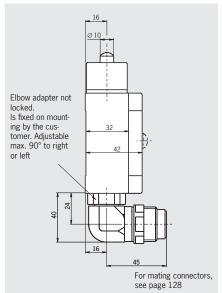




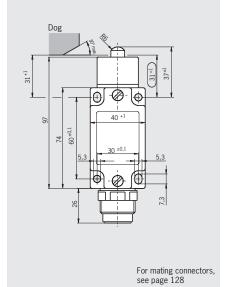
#### Plug connector SR6 6-pin + PE

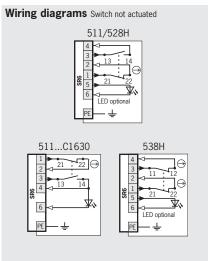


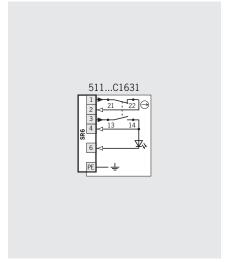
# Plug connector SR6 angled

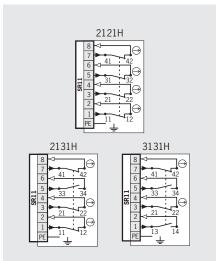


#### Plug connector SR11 11-pin + PE









0. 40	8						
Series	Actuator	Con-	Switching	Version		Function display	
Series	Actuator	nection	element	VCI SIOII	Without LED	12-60 V red LED	12-60 V yellow LED
			<b>511</b> ¹) 1 NC → + 1 NO		<b>090909</b> <sup>1)</sup> NZ2WO-511	<b>091280</b> <sup>1)</sup> NZ2W0-511L060	-
		<b>2</b> Plug con-	<b>511</b> ¹) 1 NC ⊕ + 1 NO	C1630 Alternative wiring	-	-	<b>059481</b> <sup>1)</sup> NZ2W0-511L060C1630
		nector SR6	<b>528H</b> 1 NC → + 1 NO		<b>090910</b> NZ2WO-528	<b>091279</b> NZ2W0-528L060	-
			<b>538H</b> 2 NC ⊖		<b>090911</b> NZ2W0-538	<b>087558</b> NZ2W0-538L060	-
NZ	wo rounded plunger	2 Plug con- nector SR6 Angled	<b>511</b> 1 NC → + 1 NO	C1631 Alternative wiring	-	-	<b>059482</b> NZ2WO-511L060C1631
		2 Plug connector SR11	2121H 4 NC ⊝		<b>090976</b> NZ2WO-2121	-	-
			<b>2131H</b> 3 NC → + 1 NO		<b>090912</b> NZ2WO-2131	-	-
			<b>3131H</b> 2 NC → + 2 NO		<b>090913</b> NZ2WO-3131	-	-

<sup>1)</sup> No DGUV approval for switching element 511

# **EUCHNER**

# Safety switch NZ.RK with roller plunger





- ▶ Steel roller Ø 8 mm
- ► LED optional
- ▶ Plug connector optional
- Ball bearing optional



#### Approach direction



Horizontal Adjustable in 90° steps

#### LED function display (optional)

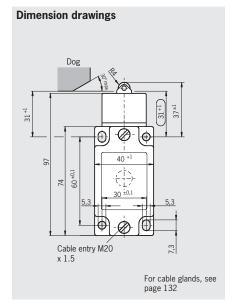
A function display is available for the following voltage ranges:

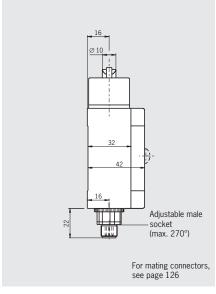
► AC/DC 12-60 V red or yellow ► AC 230 V ±15% red

#### **Switching elements** (see also page 13/14)

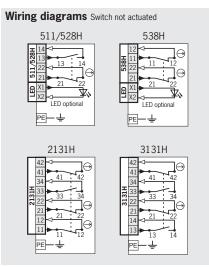
- 511 Snap-action switching contact 1 NC ⊕ + 1 NO
- **528H** Slow-action switching contact  $1 \text{ NC} \oplus + 1 \text{ NO}$
- **538H** Slow-action switching contact 2 NC ⊕
- ▶2131H Slow-action switching contact  $3 \text{ NC} \oplus + 1 \text{ NO}$
- Slow-action switching contact 2 NC ⊕ + 2 NO

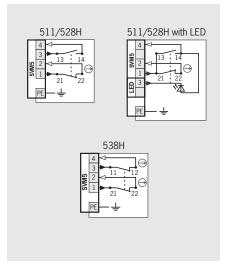
#### Cable entry M20 x 1.5





Plug connector SVM5 M12 plug, 5-pin





	Con- Switching Function display									
Series	Actuator	nection	element	Version	Without LED	12-60 V red LED	230 V red LED	12-60 V yellow LED		
			<b>511</b> ¹) 1 NC → + 1 NO		<b>088608</b> <sup>1)</sup> NZ1RK-511-M	<b>090354</b> <sup>1)</sup> NZ1RK-511L060-M	<b>090355</b> <sup>1)</sup> NZ1RK-511L220-M	-		
			<b>528H</b> 1 NC → + 1 NO		<b>090905</b> NZ1RK-528-M	<b>090358</b> NZ1RK-528L060-M	-	-		
	<b>RK</b> Roller plunger	1 Cable entry M20 x 1.5	<b>528H</b> 1 NC → + 1 NO	C1912 With bearing	<b>090572</b> NZ1RK-528-MC1912	-	-	<b>086408</b> NZ1RK-528L060GE-MC1912		
			<b>538H</b> 2 NC ⊖		<b>090906</b> NZ1RK-538-M	-	-	-		
NZ			<b>2131H</b> 3 NC → + 1 NO		<b>090907</b> NZ1RK-2131-M	-	-	-		
			<b>3131H</b> 2 NC → + 2 NO		<b>090908</b> NZ1RK-3131-M	-	-	-		
		Plug con- nector <b>SVM5</b> (M12 plug)	<b>511</b> 1 NC → + 1 NO		<b>089007</b> NZ2RK-511SVM5	-	-	<b>128141</b> NZ2RK-511SVM5L060GE		
			<b>528H</b> 1 NC → + 1 NO		<b>090930</b> NZ2RK-528SVM5	-	-	-		
			<b>538H</b> 2 NC ⊝		<b>089018</b> NZ2RK-538SVM5	-	-	-		

<sup>1)</sup> No DGUV approval for switching element 511



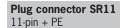


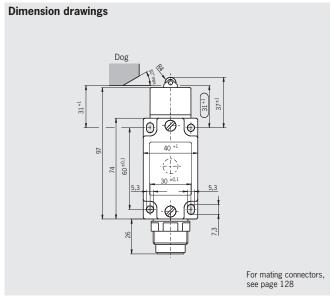


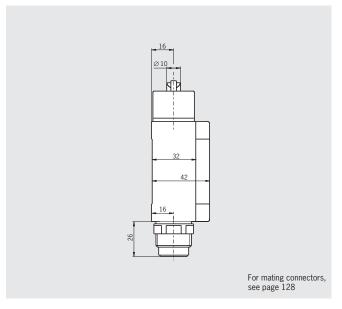


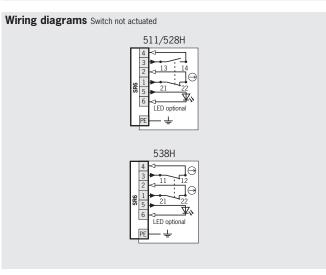


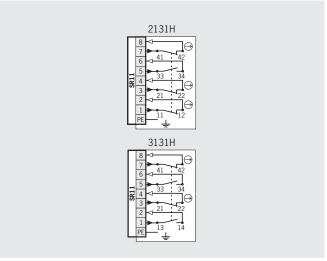
Plug connector SR6 6-pin + PE











#### Ordering table

0	A - 1 1	Con-	Switching	Function display				
Series	Actuator	nection	element	Without LED	12-60 V red LED			
	<b>RK</b> Roller plunger	2 Plug con- nector SR6	<b>511</b> ¹) 1 NC → + 1 NO	<b>090016</b> <sup>1)</sup> NZ2RK-511	<b>099273</b> <sup>1)</sup> NZ2RK-511L060			
			<b>528H</b> 1 NC → + 1 NO	<b>090919</b> NZ2RK-528	-			
NZ			<b>538H</b> 2 NC ⊖	<b>090920</b> NZ2RK-538	-			
		2 Plug con- nector SR11	<b>2131H</b> 3 NC → + 1 NO	<b>090921</b> NZ2RK-2131	-			
			<b>3131H</b> 2 NC → + 2 NO	<b>090922</b> NZ2RK-3131	-			

1) No DGUV approval for switching element 511

#### Safety switch NZ.RS with roller plunger

- Version C acc. to EN 50041 NZ.RS (steel roller Ø 12 mm)
- LED optional
- Plug connector optional



#### **Approach direction**



Horizontal Adjustable in 90° steps

#### LED function display (optional)

A function display is available for the following voltage ranges:

Þ	DC	24 V	±10%	yellow
Þ	AC/DC	12-60 V		red or yellow
Þ	AC	110 V	±15%	red
Þ	AC	230 V	±15%	red

#### **Switching elements** (see also page 13/14)

- **511** Snap-action switching contact 1 NC → + 1 NO
- **528H** Slow-action switching contact 1 NC ⊕ + 1 NO
- **538H** Slow-action switching contact 2 NC ⊝
- ▶2121H Slow-action switching contact 4 NC →
- ▶2131H Slow-action switching contact 3 NC ⊕ + 1 NO
- ► 3131H Slow-action switching contact 2 NC ⊕ + 2 NO





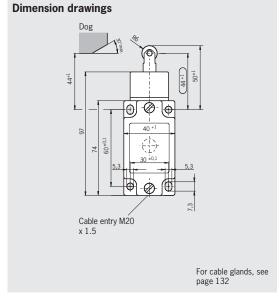


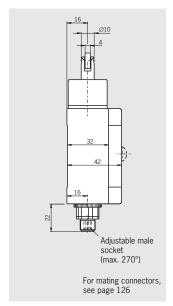


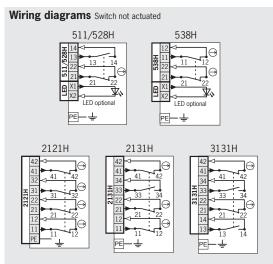


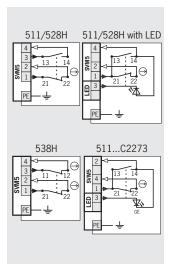


#### Plug connector SVM5 Cable entry M20 x 1.5 M12 plug, 5-pin









Caulas	A - 44	Con-	Switching	Varaian		Function display	
Series	Actuator	nection	element	Version	Without LED	12-60 V red LED	12-60 V yellow LED
			<b>511</b> ¹) 1 NC → + 1 NO		<b>079960</b> <sup>1)</sup> NZ1RS-511-M	<b>089053</b> <sup>1)</sup> NZ1RS-511L060-M	<b>086528</b> <sup>1)</sup> NZ1RS-511L060GE-M
			<b>528H</b> 1 NC → + 1 NO		<b>089627</b> NZ1RS-528-M	<b>086413</b> NZ1RS-528L060-M	-
		1	<b>538H</b> 2 NC ⊖		<b>090936</b> NZ1RS-538-M	<b>090555</b> NZ1RS-538L060-M	<b>090424</b> NZ1RS-538L060GE-M
	RS Roller plunger	Cable entry M20 x 1.5	<b>2121H</b> 4 NC ⊖		<b>087595</b> NZ1RS-2121-M	-	-
NZ			<b>2131H</b> 3 NC → + 1 NO		<b>089633</b> NZ1RS-2131-M	-	-
NZ			<b>3131H</b> 2 NC → + 2 NO		<b>089631</b> NZ1RS-3131-M	-	-
			<b>511</b> 1 NC → + 1 NO		<b>090027</b> NZ2RS-511SVM5	-	<b>098651</b> NZ2RS-511SVM5L060GE
		Plug con- nector <b>SVM5</b> (M12 plug)	<b>511</b> 1 NC → + 1 NO	C2273 Alternative wiring	-	-	<b>105856</b> NZ2RS-511SVM5L060GEC2273
			<b>528H</b> 1 NC → + 1 NO		<b>090963</b> NZ2RS-528SVM5	-	-
			<b>538H</b> 2 NC ⊖		<b>090964</b> NZ2RS-538SVM5	-	-

<sup>1)</sup> No DGUV approval for switching element 511

M12 plug, 8-pin







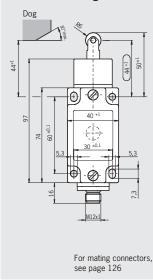
Plug connector SR6

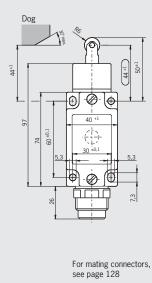
6-pin + PE

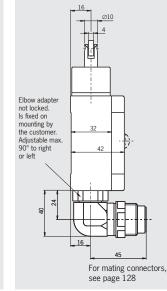


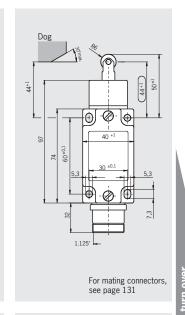
Plug connector MR9 8-pin + PE

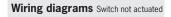


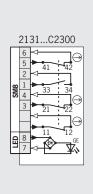


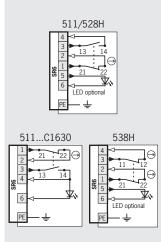


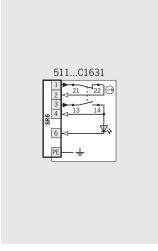


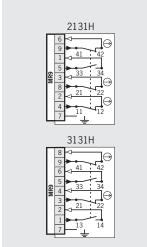












#### Ordering table

	_	Con-	Switching			Function of	display	
Series	Actuator	nection	element	Version	Without LED	24 V LED yellow	12-60 V red LED	12-60 V yellow LED
		Plug con- nector SM8 (M12 plug)	<b>2131H</b> 3 NC → + 1 NO	<b>C2300</b> Alternative wiring	-	<b>106478</b> NZ2RS-2131L024GEC2300	-	-
		2 Plug con- nector SR6	<b>511</b> ¹) 1 NC → + 1 NO		<b>090024</b> <sup>1)</sup> NZ2RS-511	-	<b>090147</b> <sup>1)</sup> NZ2RS-511L060	<b>089622</b> <sup>1)</sup> NZ2RS-511L060GE
			<b>511</b> ¹) 1 NC → + 1 NO	C1630 Alternative wiring	-	-	-	<b>082400</b> <sup>1)</sup> NZ2RS-511L060C1630
NZ	RS		<b>528H</b> 1 NC → + 1 NO		<b>090950</b> NZ2RS-528	-	<b>088197</b> NZ2RS-528L060	-
INZ	Roller plunger		<b>538H</b> 2 NC →		<b>090951</b> NZ2RS-538	-	<b>090952</b> NZ2RS-538L060	-
		2 Plug con- nector SR6 Angled	511 1 NC → + 1 NO	<b>C1631</b> Alternative wiring	-	-	-	<b>079350</b> NZ2RS-511L060C1631
		19C Plug con-	<b>2131H</b> 3 NC → + 1 NO		<b>077362</b> <sup>2)</sup> NZ1RS-2131-9C-GMMF	-	-	-
		nector MR9	<b>3131H</b> 2 NC → + 2 NO		<b>087074</b> NZ2RS-3131-9C-GMMF	-	-	-

1) DGUV approval not for switching element 511 2) UL approval only for safety switch 077362





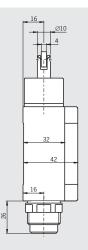






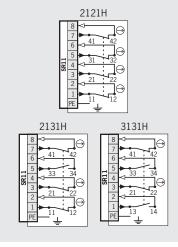
# Plug connector SR11 11-pin + PE

#### **Dimension drawings**



For mating connectors, see page 128

# Wiring diagrams Switch not actuated



Series	Actuator	Con-	Switching	Version	Function display
Series	Actuator	nection	element	VELZIOII	Without LED
	RS Plug Roller plunger ned	2	<b>2121H</b> 4 NC ⊖		<b>090974</b> NZ2RS-2121
NZ		Plug con- nector SR11	<b>2131H</b> 3 NC → + 1 NO		<b>090149</b> NZ2RS-2131
			<b>3131H</b> 2 NC → + 2 NO		<b>090954</b> NZ2RS-3131

# **EUCHNER**

# Safety switch NZ.RG with roller plunger



- Version C acc. to EN 50041 NZ.RS (plastic roller Ø 12 mm)
- ► LED optional
- ► Plug connector optional



#### Approach direction



Horizontal Adjustable in 90° steps

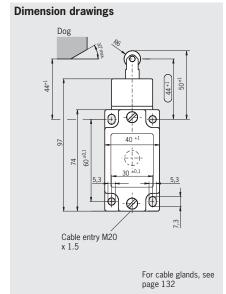
#### LED function display (optional)

A function display is available for the following voltage ranges:

#### Switching elements (see also page 13/14)

- 511 Snap-action switching contact 1 NC ⊕ + 1 NO
- **528H** Slow-action switching contact 1 NC → + 1 NO
- **538H** Slow-action switching contact 2 NC ⊕
- **2131H** Slow-action switching contact 3 NC  $\oplus$  + 1 NO
- Slow-action switching contact 2 NC ⊕ + 2 NO

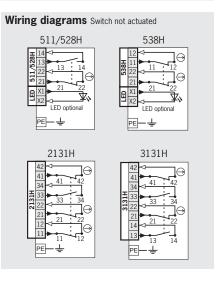
#### Cable entry M20 x 1.5

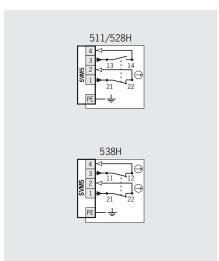


# Adjustable male socket (max. 270°)

Plug connector SVM5

M12 plug, 5-pin





#### Ordering table

0	A - 4 4	Con-	Switching	Function	display
Series	Actuator	nection	element	Without LED	12-60 V red LED
			<b>511</b> ¹) 1 NC → + 1 NO	<b>088605</b> <sup>1)</sup> NZ1RG-511-M	<b>089052</b> <sup>1)</sup> NZ1RG-511L060-M
			<b>528H</b> 1 NC → + 1 NO	<b>090932</b> NZ1RG-528-M	<b>090008</b> NZ1RG-528L060-M
	<b>RG</b> Roller plunger	Cable entry M20 x 1.5	<b>538H</b> 2 NC ⊖	<b>090933</b> NZ1RG-538-M	<b>090009</b> NZ1RG-538L060-M
817			<b>2131H</b> 3 NC → + 1 NO	<b>090934</b> NZ1RG-2131-M	-
NZ			<b>3131H</b> 2 NC → + 2 NO	<b>090935</b> NZ1RG-3131-M	-
		2	<b>511</b> ¹) 1 NC ⊕ + 1 NO	<b>090026</b> <sup>1)</sup> NZ2RG-511SVM5	-
		Plug con- nector SVM5	<b>528H</b> 1 NC → + 1 NO	<b>090961</b> NZ2RG-528SVM5	
		(M12 plug)	<b>538H</b> 2 NC ⊖	<b>090962</b> NZ2RG-538SVM5	-

1) No DGUV approval for switching element 511

For mating connectors, see page 126

# Safety Switches Type 1, Metal Housing























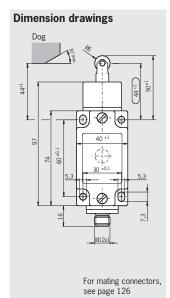


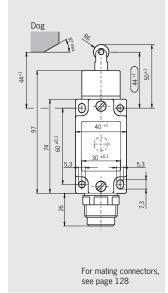
Plug connector SM8 M12 plug, 8-pin

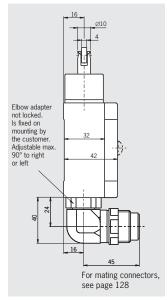


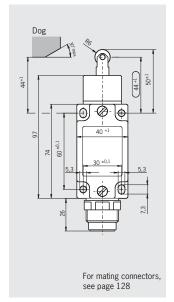


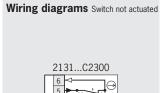
Plug connector SR11 11-pin + PE

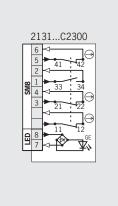


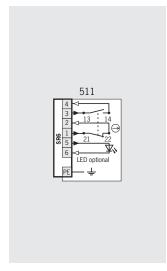


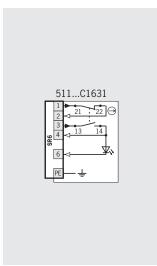


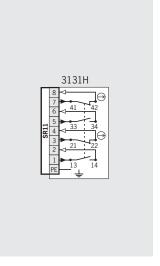












0.40	8							
Series	Actuator	Con-	Switching	Version	Function display			
Series	Actuator	nection	element	version	Without LED	24 V LED yellow	12-60 V red LED	12-60 V yellow LED
	<b>RG</b> Roller plunger	Plug con- nector SM8 (M12 plug)	2131H 3 NC → + 1 NO	C2300 Alternative wiring	-	<b>109016</b> NZ2RG-2131L024GEC2300	-	-
NZ		2 Plug con- nector SR6	<b>511</b> 1 NC ⊖ + 1 NO		<b>090032</b> NZ2RG-511	-	<b>091284</b> NZ2RG-511L060	-
INZ		Plug con- nector SR6 Angled	<b>511</b> 1 NC ⊖ + 1 NO	C1631 Alternative wiring	-	-	-	<b>091348</b> NZ2RG-511L060C1631
		2 Plug con- nector SR11	<b>3131H</b> 2 NC → + 2 NO		<b>090948</b> NZ2RG-3131	-	-	-

<sup>1)</sup> No DGUV approval for switching element 511

#### Safety switch NZ.RL with extended roller plunger

- ▶ Steel roller Ø 18 mm
- With grooved ball bearing  $\varnothing$  16 mm optional
- **LED** optional
- ► Plug connector optional



#### Approach direction



Horizontal Adjustable in 90° steps

#### LED function display (optional)

A function display is available for the following voltage ranges:

► AC/DC 12-60 V

#### **Switching elements** (see also page 13/14)

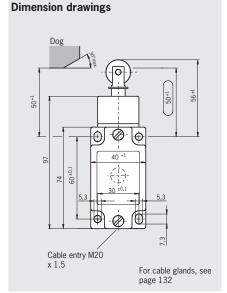
- **511** Snap-action switching contact 1 NC → + 1 NO
- **528H** Slow-action switching contact 1 NC ⊕ + 1 NO
- **538H** Slow-action switching contact  $2 NC \ominus$
- ▶2121H Slow-action switching contact 4 NC →
- ▶2131H Slow-action switching contact 3 NC  $\ominus$  + 1 NO
- ▶3131H Slow-action switching contact 2 NC → + 2 NO

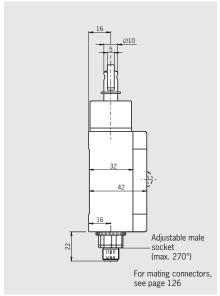
Cable entry M20 x 1.5

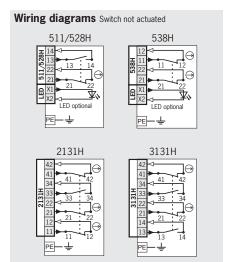
1) CUL US

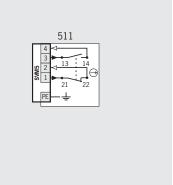


#### Plug connector SVM5 M12 plug, 5-pin









#### Ordering table

0	A - 44	Con-	Switching	Function display			
Series	Actuator	nection	element	Without LED	12-60 V red LED		
			<b>511</b> ¹) 1 NC → + 1 NO	<b>088614</b> <sup>1)</sup> NZ1RL-511-M	<b>088996</b> 1) NZ1RL-511L060-M		
			<b>528H</b> 1 NC → + 1 NO	<b>090937</b> NZ1RL-528-M	<b>090938</b> NZ1RL-528L060-M		
		Cable entry M20 x 1.5	<b>538H</b> 2 NC ⊝	<b>090939</b> NZ1RL-538-M	<b>090940</b> NZ1RL-538L060-M		
NZ	<b>RL</b> Roller plunger		<b>2131H</b> 3 NC → + 1 NO	<b>090941</b> NZ1RL-2131-M	-		
			<b>3131H</b> 2 NC → + 2 NO	<b>090942</b> NZ1RL-3131-M	-		
		Plug con- nector <b>SVM5</b> (M12 plug)	<b>511</b> ¹) 1 NC → + 1 NO	<b>090028</b> <sup>1)</sup> NZ2RL-511SVM5	-		

1) No DGUV approval for switching element 511

# Safety Switches Type 1, Metal Housing





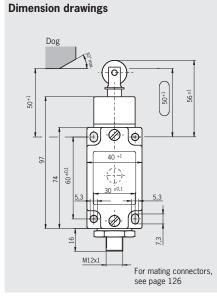


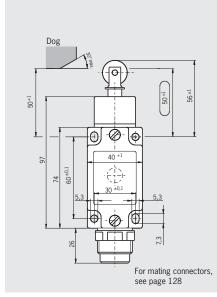


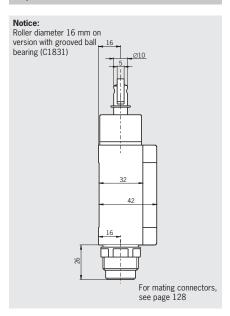
Plug connector MDC-5 M12 plug, 5-pin

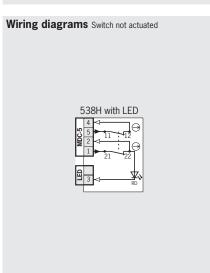


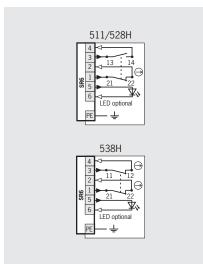


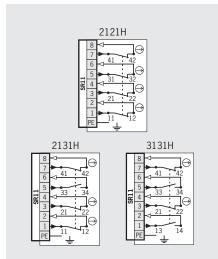












Orderiii	ig table					
Series	Actuator	Con-	Switching	Version	Function	ı display
Jerres	Actuator	nection	element	VCI SIOII	Without LED	12-60 V red LED
	<b>RL</b> Roller plunger	Plug con- nector MDC-5 (M12 plug)	<b>538H</b> 2 NC ⊖	Without PE	-	<b>105989</b> NZ2RL-538L0605MDC
		2 Plug con- nector SR6	<b>511</b> ¹) 1 NC ⊕ + 1 NO		<b>090025</b> <sup>1)</sup> NZ2RL-511	-
			<b>528H</b> 1 NC → + 1 NO		-	<b>091282</b> NZ2RL-528L060
NZ			<b>538H</b> 2 NC →		-	<b>091278</b> NZ2RL-538L060
			<b>2121H</b> 4 NC ⊖		<b>090975</b> NZ2RL-2121	-
		<b>2</b> Plug con-	<b>2121H</b> 4 NC ⊝	C1831 Grooved ball bearing	<b>095806</b> <sup>2)</sup> NZ2RL-2121C1831	-
		nector SR11	<b>2131H</b> 3 NC → + 1 NO		<b>090958</b> NZ2RL-2131	-
			<b>3131H</b> 2 NC → + 2 NO		<b>090959</b> NZ2RL-3131	-

<sup>1)</sup> DGUV approval not for switching element 511 2) No DGUV approval

#### Safety switch NZ.HS with roller lever arm

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- Version A acc. to EN 50041 (steel roller Ø 18)
- **LED** optional
- Plug connector optional



#### Approach direction



Switch head and lever arm can be adjusted in 90° steps.

#### **Switching direction**

Right, left or both sides (see page 9).

#### LED function display (optional)

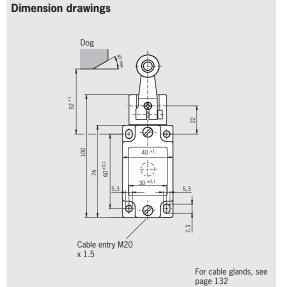
A function display is available for the following voltage ranges:

±10% yellow DC 24 V ► AC/DC 12-60 V red or yellow

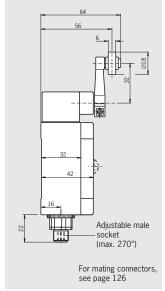
#### Switching elements (see also page 13/14)

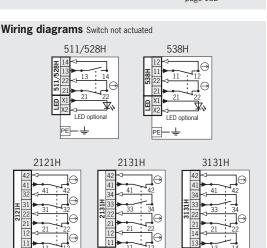
- **511** Snap-action switching contact 1 NC → + 1 NO
- **528H** Slow-action switching contact 1 NC ⊕ + 1 NO
- **538H** Slow-action switching contact 2 NC →
- ▶2121H Slow-action switching contact  $4 \text{ NC} \ominus$
- ▶2131H Slow-action switching contact 3 NC → + 1 NO
- ▶ 3131H Slow-action switching contact 2 NC → + 2 NO

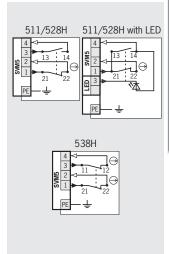
#### Cable entry M20 x 1.5











#### Ordering table

Caulas	Astroton	Con-	Switching	Varaian		Function display	
Series	Actuator	nection	element	Version	Without LED	12-60 V red LED	12-60 V yellow LED
			<b>511</b> ¹) 1 NC → + 1 NO		<b>079953</b> <sup>1)</sup> NZ1HS-511-M	<b>090035</b> <sup>1)</sup> NZ1HS-511L060-M	<b>090038</b> <sup>1)</sup> NZ1HS-511L060GE-M
			<b>528H</b> 1 NC → + 1 NO		<b>090970</b> NZ1HS-528-M	<b>090971</b> NZ1HS-528L060-M	<b>090049</b> NZ1HS-528L060GE-M
	HS Lever arm	1	<b>538H</b> 2 NC ⊖		<b>090972</b> NZ1HS-538-M	<b>090760</b> NZ1HS-538L060-M	-
		M20 x 1.5	<b>2121H</b> 4 NC ⊝		<b>090254</b> NZ1HS-2121-M	-	-
NZ			<b>2131H</b> 3 NC → + 1 NO		<b>090973</b> NZ1HS-2131-M	-	-
			<b>3131H</b> 2 NC → + 2 NO		<b>090747</b> NZ1HS-3131-M	-	-
		2	<b>511</b> ¹) 1 NC → + 1 NO		<b>090867</b> <sup>1)</sup> NZ2HS-511SVM5	-	<b>098648</b> <sup>1)</sup> NZ2HS-511SVM5L060GE
		Plug con- nector SVM5	<b>528H</b> 1 NC → + 1 NO		<b>090868</b> NZ2HS-528SVM5	-	-
		(M12 plug)	<b>538H</b> 2 NC →		<b>090869</b> NZ2HS-538SVM5	-	-

1) No DGUV approval for switching element 511

# Safety Switches Type 1, Metal Housing















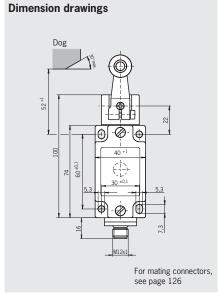


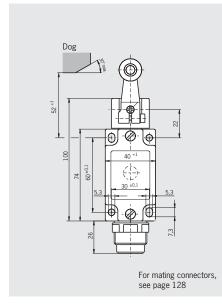


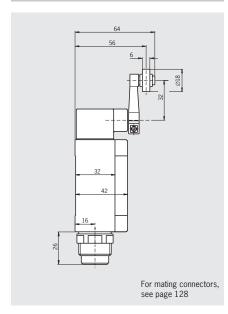
Plug connector SM8 M12 plug, 8-pin

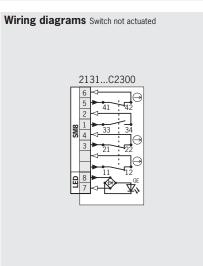
#### Plug connector SR6 6-pin + PE

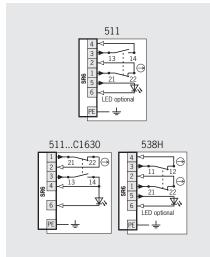


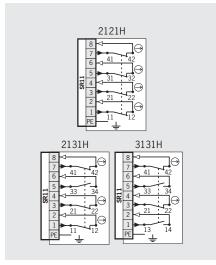












Ordering table								
Carrian	A advisada ii	Con-	Switching	Version		Function	display	
Series	Actuator	nection	element	version	Without LED	24 V LED yellow	12-60 V red LED	12-60 V yellow LED
	<b>HS</b> Lever arm	Plug con- nector SM8 (M12 plug)	2131H 3 NC → + 1 NO	<b>C2300</b> Alternative wiring	-	<b>122405</b> NZ2HS-2131L024GEC23000	-	-
		2 Plug con- nector SR6	<b>511</b> ¹) 1 NC → + 1 NO		<b>089093</b> <sup>1)</sup> NZ2HS-511	-	<b>089094</b> <sup>1)</sup> NZ2HS-511L060	<b>090697</b> <sup>1)</sup> NZ2HS-511L060GE
			<b>511</b> ¹) 1 NC → + 1 NO	C1631 Alternative wiring	-	-	-	<b>078473</b> 1) NZ2HS-511L060C1630
NZ			<b>528H</b> 1 NC → + 1 NO		<b>090852</b> NZ2HS-528	-	<b>088196</b> NZ2HS-528L060	-
			<b>538H</b> 2 NC →		<b>090853</b> NZ2HS-538	-	<b>090854</b> NZ2HS-538L060	-
		2 Plug con- nector SR11	<b>2121H</b> 4 NC ⊝		<b>091264</b> NZ2HS-2121	-	-	-
			<b>2131H</b> 3 NC → + 1 NO		<b>090146</b> NZ2HS-2131	-	-	-
			<b>3131H</b> 2 NC → + 2 NO		<b>090856</b> NZ2HS-3131	-	-	-

<sup>1)</sup> No DGUV approval for switching element 511



For mating connectors, see page 131



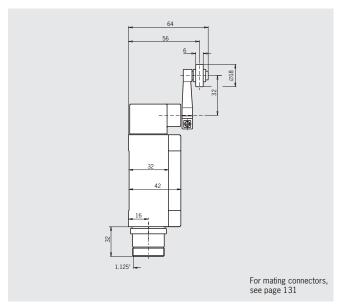


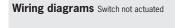


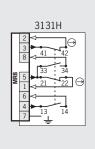
Plug connector MR8 7-pin + PE

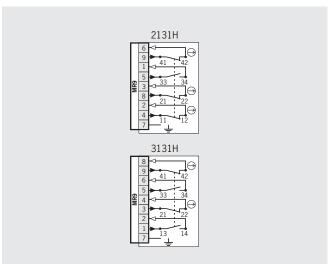
# **Dimension drawings**

#### Plug connector MR9 8-pin + PE









#### Ordering table

		Con- nection	Switching element	Function display
Series Act	Actuator			Without LED
	HS Lever arm	18C Plug con- nector MR8	<b>3131H</b> 2 NC → + 2 NO	<b>086574</b> NZ1HS-3131-8C-Ford / PT60577-101K01
NZ		19C Plug con- nector MR9	<b>2131H</b> 3 NC → + 1 NO	<b>077391</b> <sup>2)</sup> NZ1HS-2131-9C-GMMF
			<b>3131H</b> 2 NC → + 2 NO	<b>073508</b> NZ1HS-3131-9C-GMMF

2) UL approval only for safety switch 077391

## **EUCHNER**

# Safety switch NZ.HB with roller lever arm

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Plug connector SVM5 M12 plug, 5-pin





- Version A acc. to EN 50041 (plastic roller Ø 18)
- ► LED optional
- ► Plug connector optional



#### Approach direction



Switch head and lever arm can be adjusted in 90° steps.

#### switching direction

Right, left or both sides (see page 9).

#### LED function display (optional)

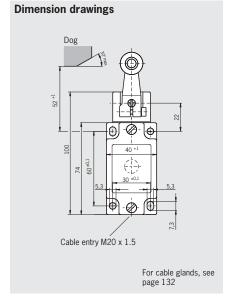
A function display is available for the following voltage ranges:

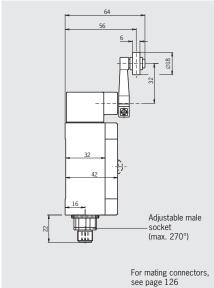
► AC/DC 12-60 V red or yellow

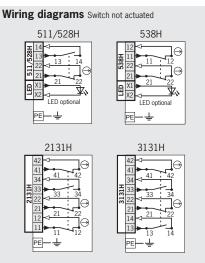
#### **Switching elements** (see also page 13/14)

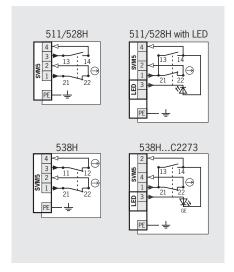
- 511 Snap-action switching contact 1 NC ⊕ + 1 NO
- **528H** Slow-action switching contact  $1 \text{ NC} \oplus + 1 \text{ NO}$
- ► 538H Slow-action switching contact 2 NC ⊕
   ► 2131H Slow-action switching contact
- 3 NC ⊕ + 1 NO Slow-action switching contact 2 NC ⊕ + 2 NO

#### Cable entry M20 x 1.5









#### Ordering table

		Con-	Switching			Function display	
Series	Actuator	nection	element	Version	Without LED	12-60 V red LED	12-60 V yellow LED
	<b>HB</b> Lever arm		<b>511</b> ¹) 1 NC → + 1 NO		<b>079952</b> <sup>1)</sup> NZ1HB-511-M	<b>090039</b> <sup>1)</sup> NZ1HB-511L060-M	<b>086525</b> 1) NZ1HB-511L060GE-M
			<b>528H</b> 1 NC → + 1 NO		<b>088199</b> NZ1HB-528-M	<b>090965</b> NZ1HB-528L060-M	<b>086527</b> NZ1HB-528L060GE-M
		1 Cable entry M20 x 1.5	<b>538H</b> 2 NC ⊖		<b>090966</b> NZ1HB-538-M	<b>090967</b> NZ1HB-538L060-M	-
		M20 X 1.3	<b>2131H</b> 3 NC → + 1 NO		<b>090968</b> NZ1HB-2131-M	-	-
NZ			<b>3131H</b> 2 NC → + 2 NO		<b>090969</b> NZ1HB-3131-M	-	-
		2 Plug con-	<b>511</b> ¹) 1 NC → + 1 NO		<b>090861</b> <sup>1)</sup> NZ2HB-511SVM5	-	<b>098649</b> ¹) NZ2HB-511SVM5L060GE
			<b>511</b> ¹) 1 NC → + 1 NO	C2273 Alternative wiring	-	-	<b>105839</b> <sup>1)</sup> NZ2HB-511SVM5L060GEC2273
		nector SVM5 (M12 plug)	<b>528H</b> 1 NC → + 1 NO		<b>090864</b> NZ2HB-528SVM5	-	-
			<b>538H</b> 2 NC ⊖		<b>090862</b> NZ2HB-538SVM5	-	-

1) No DGUV approval for switching element 511

# Safety Switches Type 1, Metal Housing











11-pin + PE

Plug connector SR11

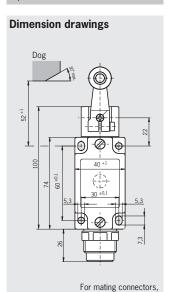




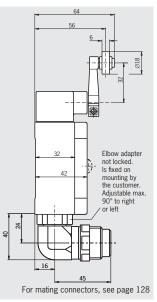
8-pin + PE

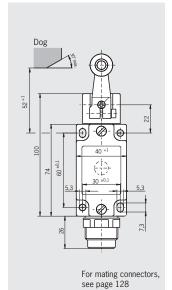


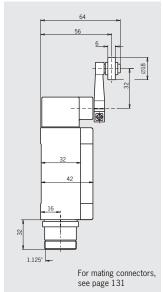
Plug connector SR6 6-pin + PE

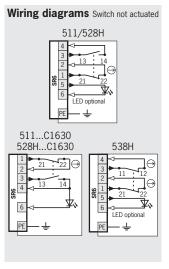




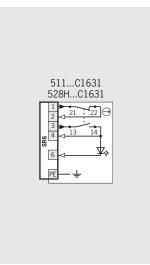


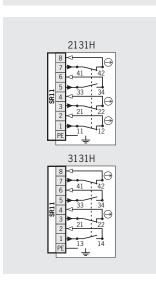


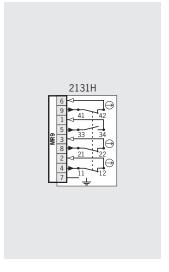




see page 128







#### Ordering table

Caulaa	Astustau	Con-	Switching	Vereien		Function display	
Series	Actuator	nection	element	Version	Without LED	12-60 V red LED	12-60 V yellow LED
			<b>511</b> ¹) 1 NC → + 1 NO		<b>089091</b> <sup>1)</sup> NZ2HB-511	<b>089092</b> <sup>1)</sup> NZ2HB-511L060	<b>090719</b> <sup>1)</sup> NZ2HB-511L060GE
		2	<b>511</b> ¹) 1 NC → + 1 NO	C1630 Alternative wiring	-	-	<b>054121</b> <sup>1)</sup> NZ2HB-511L060C1630
		Plug con- nector	<b>528H</b> 1 NC → + 1 NO		<b>090845</b> NZ2HB-528	<b>090846</b> <sup>1)</sup> NZ2HB-528L060	-
		SR6	<b>528H</b> 1 NC → + 1 NO	C1630 Alternative wiring	-	-	<b>091346</b> NZ2HB-528L060C1630
			<b>538H</b> 2 NC ⊖		<b>090847</b> NZ2HB-538	<b>090848</b> NZ2HB-538L060	-
NZ	<b>HB</b> Lever arm	2 Plug con- nector SR6 Angled	<b>511</b> ¹) 1 NC → + 1 NO	C1631 Alternative wiring	-	-	<b>054122</b> <sup>1)</sup> NZ2HB-511L060C1631
			<b>528H</b> 1 NC → + 1 NO	C1631 Alternative wiring	-	-	<b>091347</b> NZ2HB-528L060C1631
		2 Plug con- nector SR11	2131H 3 NC → + 1 NO		<b>090136</b> NZ2HB-2131	-	-
			<b>3131H</b> 2 NC → + 2 NO		<b>090137</b> NZ2HB-3131	-	-
		19C Plug con- nector MR9	<b>2131H</b> 3 NC → + 1 NO		<b>077390</b> NZ1HB-2131-9C-GMMF	-	-

1) No DGUV approval for switching element 511



#### Safety switch NZ.PS with adjustable lever arm



- ► Steel roller Ø 18
- ▶ LED optional
- ► Plug connector optional



#### **Approach direction**



Horizontal

Switch head and lever arm can be adjusted in 90° steps.

#### switching direction

Right, left or both sides (see page 9).

#### Lever arm adjustment

Lever arm length can be adjusted from 28 mm to 78 mm in steps of 12.5 mm.

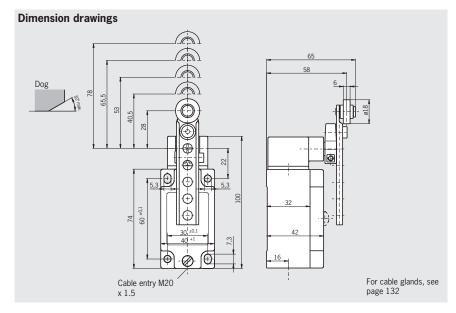
#### LED function display (optional)

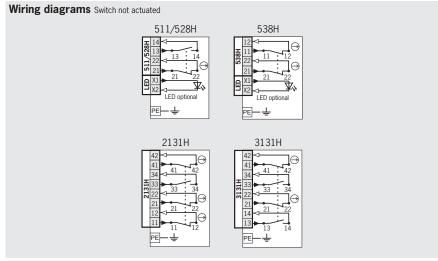
A function display is available for the following voltage ranges:

#### Switching elements (see also page 13/14)

- ► **511** Snap-action switching contact 1 NC ⊕ + 1 NO
- **528H** Slow-action switching contact  $1 \text{ NC} \oplus + 1 \text{ NO}$
- ► **538H** Slow-action switching contact 2 NC ⊖
- ▶2121H Slow-action switching contact 4 NC ⊖
- ▶2131HSlow-action switching contact  $3 \text{ NC} \oplus + 1 \text{ NO}$
- ▶ **3131H** Slow-action switching contact 2 NC ⊕ + 2 NO

#### Cable entry M20 x 1.5





or worling wasto								
Cautaa	Actuator	Con- nection	Switching	Function	display			
Series	Actuator		element	Without LED	12-60 V red LED			
		1 Cable entry M20 x 1.5	<b>511</b> ¹) 1 NC → + 1 NO	<b>088613</b> <sup>1)</sup> NZ1PS-511-M	<b>104102</b> <sup>1)</sup> NZ1PS-511L060-M			
			<b>528H</b> 1 NC → + 1 NO	<b>090874</b> NZ1PS-528-M	<b>090430</b> NZ1PS-528L060-M			
NZ	PS Adjustable lever arm		<b>538H</b> 2 NC ⊖	<b>090875</b> NZ1PS-538-M	<b>104364</b> NZ1PS-538L060-M			
	ievei aiiii		<b>2131H</b> 3 NC → + 1 NO	<b>090876</b> NZ1PS-2131-M	-			
			<b>3131H</b> 2 NC → + 2 NO	<b>090877</b> NZ1PS-3131-M	-			

<sup>1)</sup> No DGUV approval for switching element 511







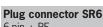




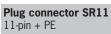


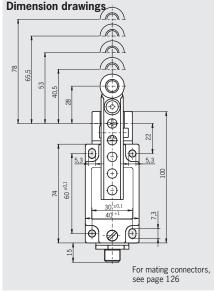
Plug connector SEM5

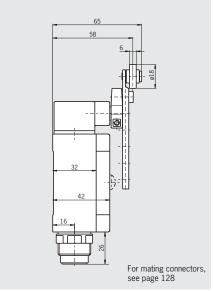


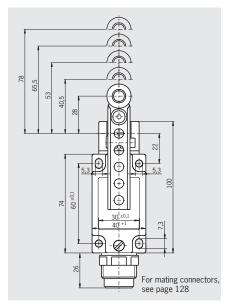


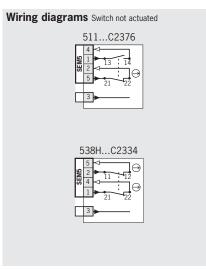


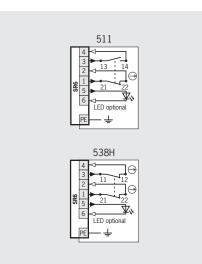


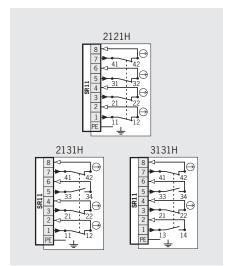












#### Ordering table

Series	A advisada ii	Con-	Switching	Version	Function	display
series	Actuator	nection	element		Without LED	12-60 V red LED
		2 Plug con-	<b>511</b> 1 NC → + 1 NO	C2376 Alternative wiring	<b>128059</b> <sup>1)</sup> NZ2PS-511SEM5C2376	
		nector SEM5 (M12 plug)	<b>538H</b> 2 NC ⊖	C2334 Alternative wiring	<b>136864</b> NZ2PS-538SEM5C2334	
	PS Adjustable lever arm	2 Plug con- nector SR6	<b>511</b> ¹) 1 NC ⊕ + 1 NO		<b>093112</b> ¹) NZ2PS-511	<b>090152</b> 1) NZ2PS-511L060
NZ			<b>538H</b> 2 NC ⊖		-	<b>091632</b> NZ2PS-538L060
		2 Plug con- nector SR11	2121H 4 NC ⊝		<b>091268</b> NZ2PS-2121	-
			<b>2131H</b> 3 NC → + 1 NO		<b>090151</b> NZ2PS-2131	-
			<b>3131H</b> 2 NC → + 2 NO		<b>090150</b> NZ2PS-3131	-

1) No DGUV approval for switching element 511



#### Safety switch NZ.PB with adjustable lever arm









▶ Plastic roller Ø 18



#### Approach direction



Switch head and lever arm can be adjusted in  $90^{\circ}$  steps.

#### switching direction

Right, left or both sides (see page 9).

#### Lever arm adjustment

Lever arm length can be adjusted from 28 mm to 78 mm in steps of 12.5 mm.

#### **LED function display** (optional)

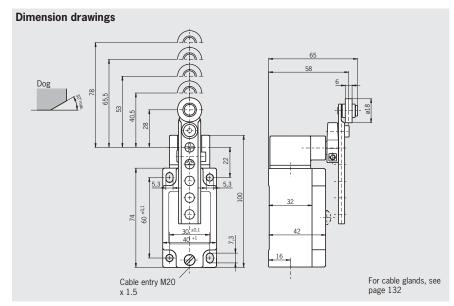
A function display is available for the following voltage ranges:

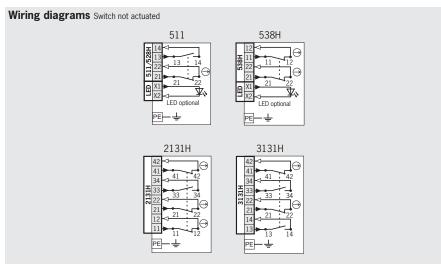
► AC/DC 12-60 V yellow

#### Switching elements (see also page 13/14)

- **511** Snap-action switching contact  $1 \text{ NC} \ominus + 1 \text{ NO}$
- **538H** Slow-action switching contact 2 NC ⊜
- ▶2131H Slow-action switching contact 3 NC ⊕ + 1 NO
- ► 3131H Slow-action switching contact 2 NC ⊕ + 2 NO

#### Cable entry M20 x 1.5





#### Ordering table

Series	Actuator	Con-	Switching	Function display	
Series	nection		element	Without LED	
		1 Cable entry M20 x 1.5	<b>511</b> ¹) 1 NC → + 1 NO	<b>088618</b> <sup>1)</sup> NZ1PB-511-M	
NZ			1	<b>538H</b> 2 NC ⊖	<b>090871</b> NZ1PB-538-M
INZ			<b>2131H</b> 3 NC → + 1 NO	<b>090872</b> NZ1PB-2131-M	
				<b>3131H</b> 2 NC → + 2 NO	<b>090873</b> NZ1PB-3131-M

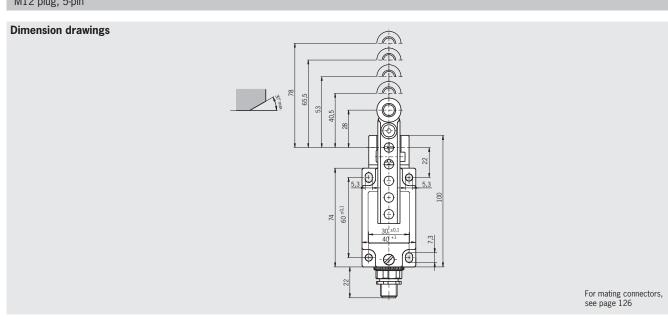
1) No DGUV approval for switching element 511



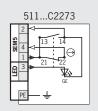




Plug connector SEM5 M12 plug, 5-pin



Wiring diagrams Switch not actuated



Series	Actuator	Con- nection	Switching element	Version	Function display 12-60 V yellow LED
NZ	<b>PB</b> Adjustable lever arm	Plug con- nector SEM5 (M12 plug)	<b>511</b> 1 NC ⊖ + 1 NO	C2273 Alternative wiring	<b>105853</b> NZ2PS-511SVM5L060GEC2273



## Safety switch NZ.RS.C1588 with roller plunger







Version C acc. to EN 50041 (steel roller Ø 12 mm) **Exterior bellows** 

(material CR rubber)



#### Approach direction



Switch head and lever arm can be adjusted in 90° steps.

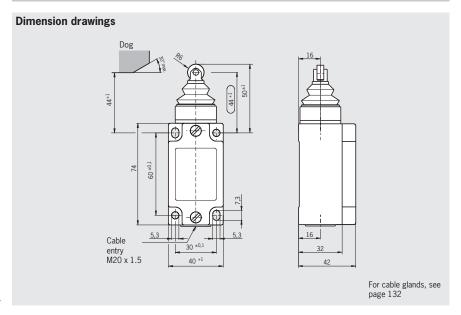
#### **Exterior bellows**

Protection against heavy soiling (dust) and aggressive coolants.

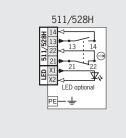
#### Switching elements (see also page 13)

- **511** Snap-action switching contact 1 NC → + 1 NO
- **528H** Slow-action switching contact 1 NC → + 1 NO

#### Cable entry M20 x 1.5



#### Wiring diagrams Switch not actuated



Series	Actuator	Con- nection	Switching element	Version	Function display Without LED
NZ	RS Roller plunger	1 Cable entry M20 x 1.5	<b>511</b> 1 NC → + 1 NO	C1588 Exterior bellows, red cover	<b>091352</b> NZ1RS-511-MC1588
INZ			<b>528H</b> 1 NC → + 1 NO	C1588 Exterior bellows, red cover	<b>091339</b> NZ1RS-528-MC1588

## **EUCHNER**

#### Safety switch NZ.HB.C569 with roller lever arm



- ► Large plastic roller Ø 30 mm
- ▶ LED optional



#### Approach direction



Switch head and lever arm can be adjusted in 90° steps.

#### switching direction

Right, left or both sides (see page 9).

#### LED function display (optional)

A function display is available for the following voltage ranges:

red

► AC/DC 12-60 V

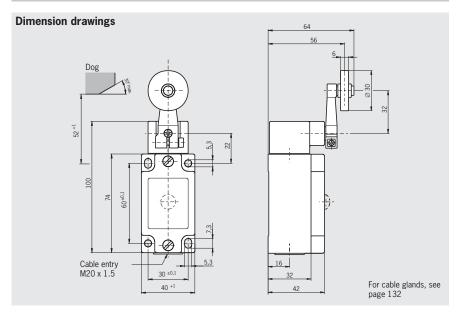
#### Switching elements (see also page 13)

**511** Snap-action switching contact 1 NC ⊕ + 1 NO

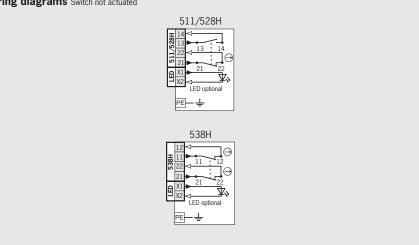
**528H** Slow-action switching contact 1 NC ⊕ + 1 NO

► **538H** Slow-action switching contact 2 NC ⊖

#### Cable entry M20 x 1.5



#### Wiring diagrams Switch not actuated



Series	Actuator	Con- nection	Switching	Version	Function display		
Series	Actuator		element	version	Without LED	12-60 V red LED	
	<b>HB</b> Lever arm	1 Cable entry M20 x 1.5	<b>511</b> 1 NC → + 1 NO	<b>C569</b> Large plastic roller Ø 30 mm	<b>079965</b> NZ1HB-511-MC569	<b>091091</b> NZ1HB-511L060-MC569	
NZ			<b>528H</b> 1 NC → + 1 NO	<b>C569</b> Large plastic roller Ø 30 mm	<b>079946</b> NZ1HB-528-MC569	<b>091330</b> NZ1HB-528L060-MC569	
			<b>538H</b> 2 NC ⊖	<b>C569</b> Large plastic roller Ø 30 mm	<b>079999</b> NZ1HB-538-MC569	-	



## Safety switch NZ.HS.C1779 with roller lever arm







- Steel roller  $\varnothing$  18 mm
- Roller mounted on inside of lever



#### Approach direction



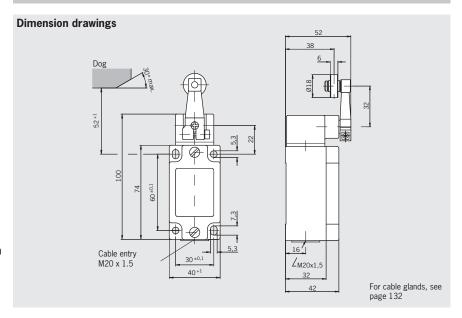
Switch head and lever arm can be adjusted in 90° steps.

#### switching direction

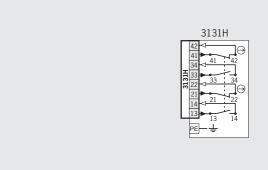
Right, left or both sides (see page 9).

Switching elements (see also page 14) ▶ 3131H Slow-action switching contact 2 NC ⊕ + 2 NO

#### Cable entry M20 x 1.5



#### Wiring diagrams Switch not actuated



Series	Actuator	Con- nection	Switching element	Version	Function display Without LED
NZ	<b>HS</b> Lever arm	1 Cable entry M20 x 1.5	<b>3131H</b> 2 NC → + 2 NO	C1779 Roller mounted on inside of lever	<b>079996</b> NZ1HS-3131-MC1779

#### Safety switch NZ.HS.C1833 with roller lever arm



- Steel roller Ø 19 mmWith grooved ball bearing
- ► LED on request



#### Approach direction



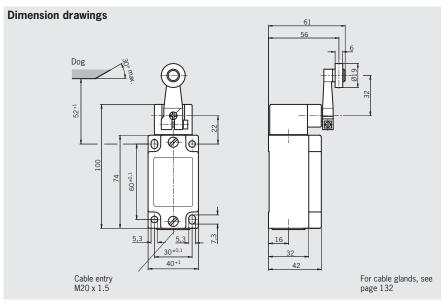
Switch head and lever arm can be adjusted in 90° steps.

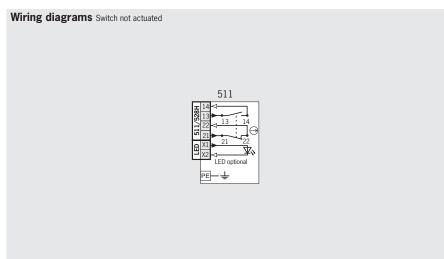
#### switching direction

Right, left or both sides (see page 9).

#### Switching elements (see also page 13) **511** Snap-action switching contact 1 NC ⊕ + 1 NO

Cable entry M20 x 1.5



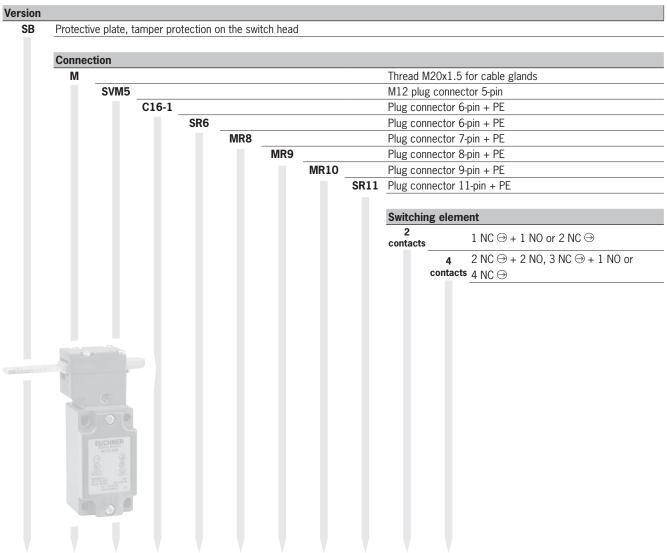


Series	Actuator	Con- nection	Switching element	Version	Function display Without LED	
NZ	<b>HS</b> Lever arm	1 Cable entry M20 x 1.5	<b>511</b> 1 NC → + 1 NO	C1833 With grooved ball bearing	<b>091312</b> NZ1HS-511-MC1833	





## Selection table for safety switches NZ.VZ



	y v								V	V		
				Conn	ection			Switching element				
SB	М	SVM5	C16-1	SR6	MR8	MR9	MR10	SR11	2 contacts	4 contacts	With version	Page
	•								•	•		52
		•		•					•			53
								•		•		53
					•	•	•			•		54
•	•								•	•	C1233	55
•			•	•					•		C1420/C1701/C1233	56
•											C1233	56



#### Safety switch NZ.VZ

- Housing according to EN 50041
- Various cable entries
- Plug connector optional
- **LED** optional



#### Approach direction



Horizontal Adjustable in 90° steps

#### LED function display (optional)

A function display is available for the following voltage ranges:

► AC/DC 12-60 V red

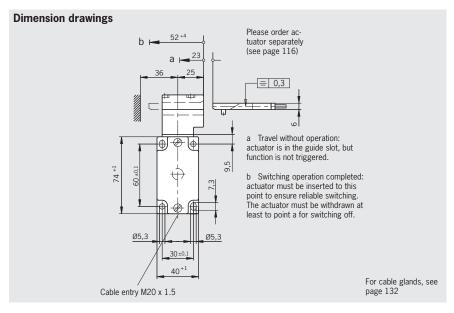
#### Switching elements (see also page 13/14)

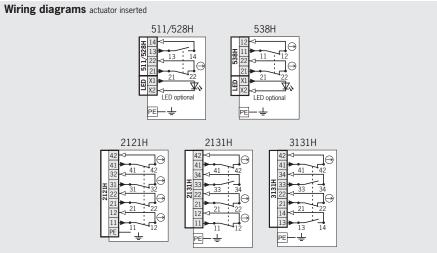
- **511** Snap-action switching contact 1 NC → + 1 NO
- **528H** Slow-action switching contact 1 NC → + 1 NO
- **538H** Slow-action switching contact 2 NC →
- ▶2121H Slow-action switching contact 4 NC ⊖
- ▶2131H Slow-action switching contact 3 NC ⊕ + 1 NO
- ▶3131H Slow-action switching contact 2 NC → + 2 NO





#### Cable entry M20 x 1.5





#### Ordering table

Carrian	A -44	Con-	Switching	Function	display
Series	Actuator	nection	element	Without LED	12-60 V red LED
			<b>511</b> ¹) 1 NC → + 1 NO	<b>089479</b> <sup>1)</sup> NZ1VZ-511E-M	-
		1 Cable entry M20 x 1.5	<b>528H</b> 1 NC → + 1 NO	<b>090671</b> NZ1VZ-528E-M	<b>090566</b> NZ1VZ-528EL060-M
NZ	VZ		<b>538H</b> 2 NC ⊝	<b>085676</b> NZ1VZ-538E-M	<b>082119</b> NZ1VZ-538EL060-M
NZ	Separate actuator		<b>2121H</b> 4 NC ⊝	<b>089486</b> NZ1VZ-2121E-M	-
			<b>2131H</b> 3 NC → + 1 NO	<b>082123</b> NZ1VZ-2131E-M	-
			<b>3131H</b> 2 NC → + 2 NO	<b>082122</b> NZ1VZ-3131E-M	-

1) No DGUV approval for switching element 511















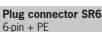


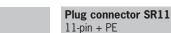


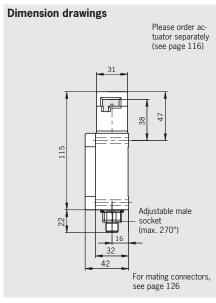


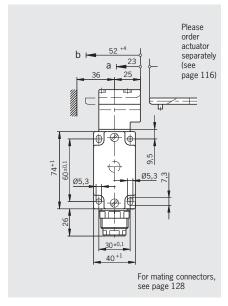
Plug connector SVM5

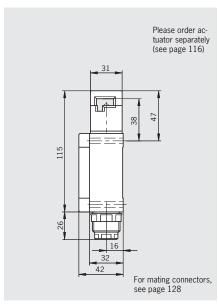
M12 plug, 5-pin

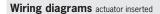




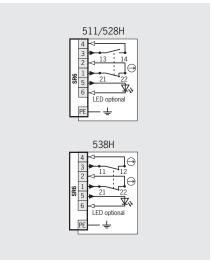


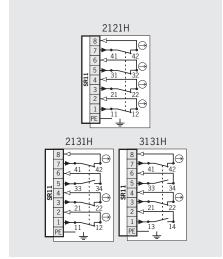












Carrian	Astroston	Con-	Switching	Function	n display
Series	Actuator	nection	element	Without LED	12-60 V red LED
		Plug con- nector SVM5	<b>538H</b> 2 NC ⊝	<b>084905</b> NZ2VZ-538ESVM5	-
		2 Plug con- nector SR6	<b>528H</b> 1 NC → + 1 NO	<b>084885</b> NZ2VZ-528E	<b>045801</b> NZ2VZ-528EL060
NZ	VZ Separate actuator		<b>538H</b> 2 NC →	<b>090143</b> NZ2VZ-538E	<b>052108</b> NZ2VZ-538EL060
		2 Plug con- nector SR11	<b>2121H</b> 4 NC ⊝	<b>088852</b> NZ2VZ-2121E	-
			<b>2131H</b> 3 NC → + 1 NO	<b>090144</b> NZ2VZ-2131E	-
			<b>3131H</b> 2 NC → + 2 NO	<b>090145</b> NZ2VZ-3131E	-







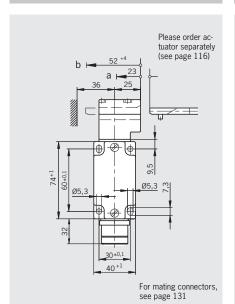




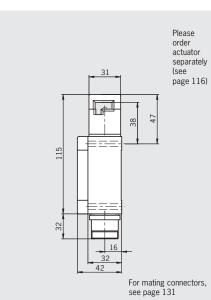


#### Plug connector MR8

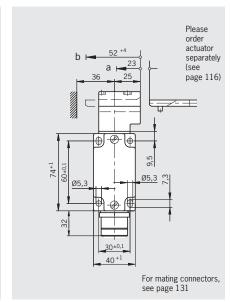
7-pin + PE

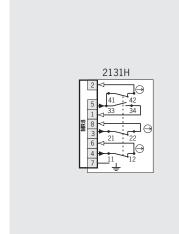


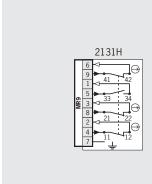
#### Plug connector MR9 8-pin + PE

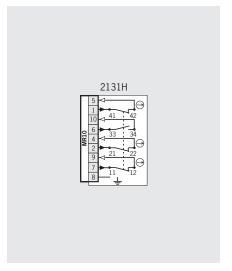


#### Plug connector MR10 9-pin + PE









	8			
Series	Actuator	Con- nection	Switching element	Function display Without LED
	VZ Separate actuator	1 Plug con- nector MR8	2131H 3 NC → + 1 NO	<b>092355</b> NZ2VZ-2131E-8C-GMMF
NZ		1 Plug con- nector MR9	2131H 3 NC → + 1 NO	<b>077363</b> NZ2VZ-2131E-9C-GMMF
		1 Plug con- nector MR10	<b>2131H</b> 3 NC → + 1 NO	<b>095896</b> NZ2VZ-2131E-10C-FW







#### Safety switch NZ.VZ

- ► Housing according to EN 50041
- ► Protective plate for switch head
- ► Plug connector optional
- ▶ LED optional



#### Approach direction



Horizontal Adjustable in 90° steps

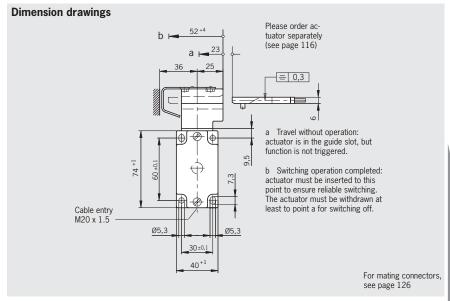
#### Protective plate for switch head

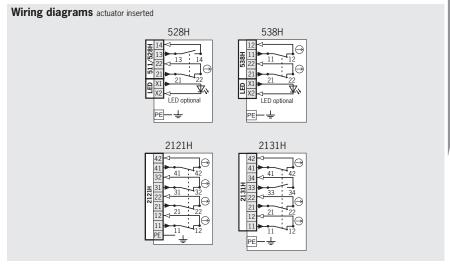
Makes it more difficult to tamper with the switch.

#### Switching elements (see also page 13/14)

- **528H** Slow-action switching contact  $1 \text{ NC} \oplus + 1 \text{ NO}$
- ► **538H** Slow-action switching contact 2 NC ⊖
- ►2121H Slow-action switching contact 4 NC ⊕
- ▶2131H Slow-action switching contact  $3 \text{ NC} \oplus + 1 \text{ NO}$

#### Cable entry M20 x 1.5





Series	Actuator	Con- nection	Switching element	Version	Function display Without LED						
	<b>VZ</b> Separate actuator	1 Cable entry M20 x 1.5	<b>528H</b> 1 NC → + 1 NO	With protective plate	<b>082137</b> NZ1VZ-528E-MC1233						
NZ				<b>538H</b> 2 NC ⊝	With protective plate	<b>093858</b> NZ1VZ-538E-MC1233					
INZ											With protective plate
			<b>2131H</b> 3 NC → + 1 NO	With protective plate	<b>093859</b> NZ1VZ-2131E-MC1233						

# Safety Switches Type 2, Metal Housing





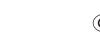








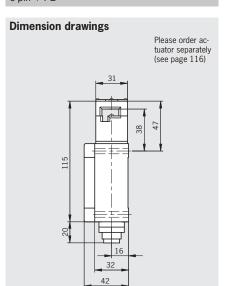




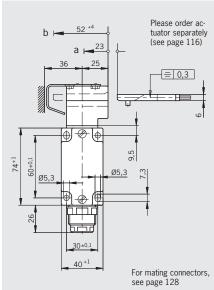




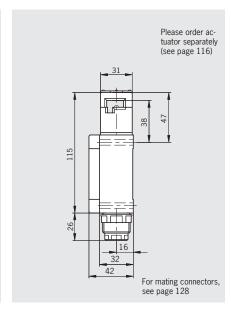
Plug connector C16-1 6-pin + PE

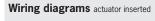


#### Plug connector SR6 6-pin + PE



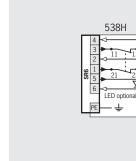
#### Plug connector SR11 11-pin + PE

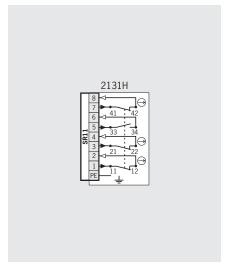






For mating connectors, see page 127

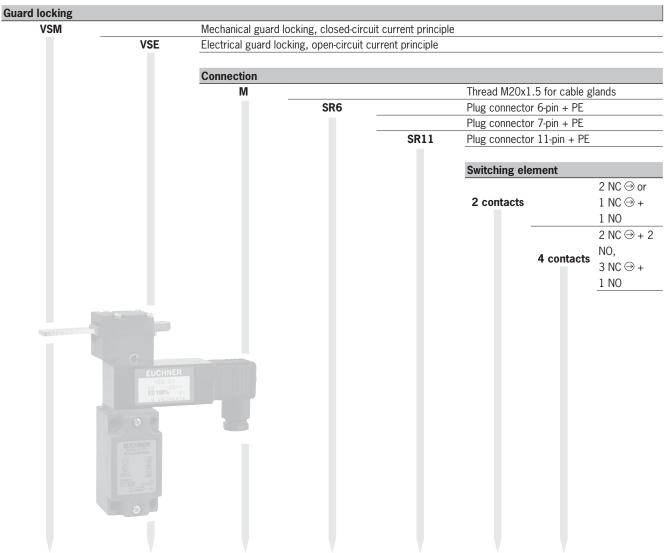




Series	ries Actuator Con- Switching nection element		Version	Function display Without LED	
	<b>VZ</b> Separate actuator	2 Plug connector C16-1	538H	C1701 With protective plate	<b>071200</b> NZ2VZ-538EC1701
			2 NC ⊝	<b>C1420</b> With protective plate Alternative wiring	<b>043296</b> NZ2VZ-538EC1420
NZ		2 Plug con- nector SR6	<b>538H</b> 2 NC ⊖	With protective plate	<b>077229</b> NZ2VZ-538EC1233
		2 Plug con- nector SR11	<b>2131H</b> 3 NC → + 1 NO	With protective plate	<b>093857</b> NZ2VZ-2131EC1233



## Selection table for safety switches NZ.VZ.VS with guard locking without guard locking monitoring



Guard	locking		Connection	Switching	Page		
VSM	VSE	М	SR6	SR11	2 contacts	4 contacts	1 age
•		•			•	•	58
•			•		•		59
•				•		•	59
	•	•			•	•	60
	•		•		•		61
	•			•		•	61



#### Safety switch NZ.VZ.VSM with guard locking without guard locking monitoring





- ► Housing according to EN 50041
- ► Plug connector optional
- ► LED optional



#### Approach direction



Horizontal Adjustable in 90° steps

## Solenoid operating voltage and optional LED function display

A function display is available for the following voltage ranges:

#### Solenoid LED

DC 24 V ±10% AC/DC 12-60 V red

► AC 110 V ±15%

► AC 230 V ±15%

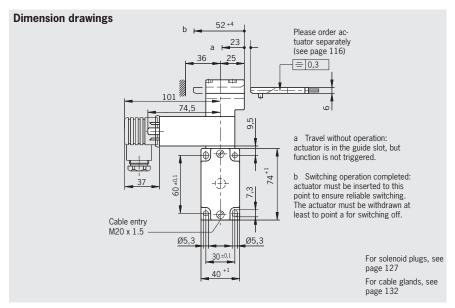
#### **Guard locking type**

**VSM** Closed-circuit current principle, guard locking by spring force. Release by applying voltage to the solenoid.

#### Switching elements (see also page 13/14)

- **511** Snap-action switching contact  $1 \text{ NC} \oplus + 1 \text{ NO}$
- 528H Slow-action switching contact 1 NC ⊕ + 1 NO
- 538H Slow-action switching contact 2 NC ⇒
- ▶2131HSlow-action switching contact 3 NC ⊕ + 1 NO
- ▶ **3131H**Slow-action switching contact 2 NC ⊕ + 2 NO

#### Cable entry M20 x 1.5



# 

#### Ordering table

Series	Actuator	Connection	Guard	Solenoid	Switching	Function	display
Series	Actuator	Connection	locking	voltage	element	Without LED	12-60 V red LED
					<b>511</b> 1 NC → + 1 NO	<b>090339</b> NZ1VZ-511E3VSM04-M	<b>090344</b> NZ1VZ-511E3VSM04L060-M
					<b>528H</b> 1 NC → + 1 NO	<b>082125</b> NZ1VZ-528E3VSM04-M	<b>082126</b> NZ1VZ-528E3VSM04L060-M
				<b>04</b> 24 V DC	<b>538H</b> 2 NC ⊖	<b>082131</b> NZ1VZ-538E3VSM04-M	<b>082132</b> NZ1VZ-538E3VSM04L060-M
					<b>2131H</b> 3 NC → + 1 NO	<b>088049</b> NZ1VZ-2131E3VSM04-M	-
		1 Cable entry M20 x 1.5	VSM Mech. guard locking closed-circuit current principle		<b>3131H</b> 2 NC → + 2 NO	<b>088050</b> NZ1VZ-3131E3VSM04-M	-
					<b>528H</b> 1 NC → + 1 NO	<b>082129</b> NZ1VZ-528E3VSM07-M	-
NZ	VZ Separate actuator				<b>538H</b> 2 NC →	<b>088046</b> NZ1VZ-538E3VSM07-M	-
	actuator				<b>2131H</b> 3 NC → + 1 NO	<b>088038</b> NZ1VZ-3131E3VSM07-M	-
					<b>3131H</b> 2 NC → + 2 NO	<b>088040</b> NZ1VZ-3131E3VSM07-M	-
					<b>528H</b> 1 NC → + 1 NO	<b>088045</b> NZ1VZ-528E3VSM09-M	-
				09 1)	<b>538H</b> 2 NC ⊖	<b>088044</b> NZ1VZ-538E3VSM09-M	-
				230 V AC	<b>2131H</b> 3 NC → + 1 NO	<b>088039</b> NZ1VZ-2131E3VSM09-M	-
					<b>3131H</b> 2 NC → + 2 NO	<b>088041</b> NZ1VZ-3131E3VSM09-M	-

1) Use only solenoid plug with integrated rectifier (see page 127)

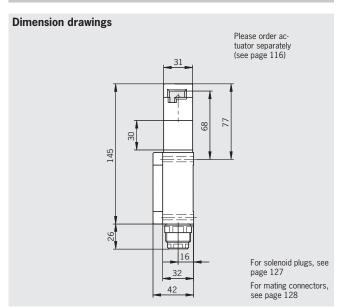




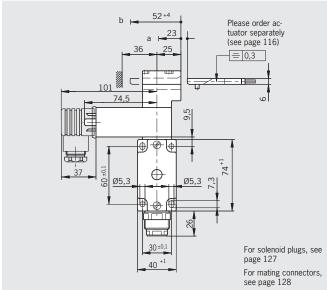




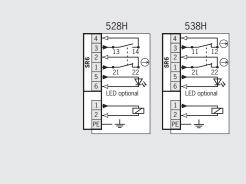
#### Plug connector SR6 6-pin + PE

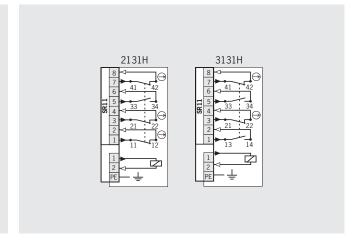


#### Plug connector SR11 11-pin + PE



#### Wiring diagrams





Series	Actuator	Connection	Guard	Solenoid voltage	Switching _ element	Function display		
Series	Actuator		locking			Without LED	12-60 V red LED	
	<b>VZ</b> Separate actuator	2 Plug connector SR6	VSM Mech. guard	Mech. guard	<b>528H</b> 1 NC → + 1 NO	<b>037299</b> NZ2VZ-528E3VSM04	<b>045856</b> NZ2VZ-528E3VSM04L060	
NZ				<b>04</b> 24 V DC	<b>538H</b> 2 NC ⊖	<b>050428</b> NZ2VZ-538E3VSM04	<b>059427</b> NZ2VZ-538E3VSM04L060	
NZ		2 Plug connector SR11	VSM Mech. guard locking 04	04	<b>2131H</b> 3 NC → + 1 NO	<b>074471</b> NZ2VZ-2131E3VSM04		
			closed-circuit current principle	24 V DC	<b>3131H</b> 2 NC → + 2 NO	<b>074472</b> NZ2VZ-3131E3VSM04		



#### Safety switch NZ.VZ.VSE with guard locking without guard locking monitoring



- ► Housing according to EN 50041
- ► Plug connector optional
- ▶ LED optional



#### Approach direction



Horizontal Adjustable in 90° steps

## Solenoid operating voltage and optional LED function display

A function display is available for the following voltage ranges:

#### Solenoid LED

▶ DC 24 V ±10% AC/DC 12-60 V red

► AC 110 V ±15%

► AC 230 V ±15%

#### **Guard locking type**

VSE Open-circuit current principle, guard locking by applying voltage to the solenoid. Release by spring force.

#### Switching elements (see also page 13/14)

**511** Snap-action switching contact  $1 \text{ NC} \oplus + 1 \text{ NO}$ 

**528H** Slow-action switching contact

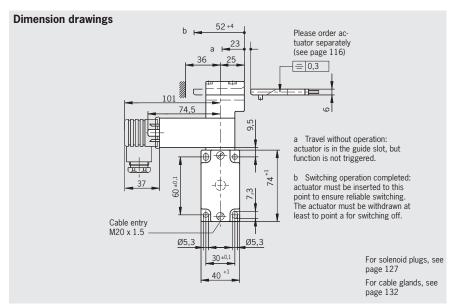
1 NC → + 1 NO **538H** Slow-action switching contact

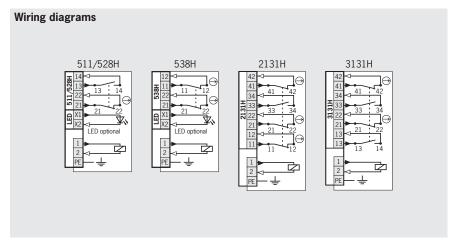
2 NC ⊕

▶2131H Slow-action switching contact  $3 \text{ NC} \oplus + 1 \text{ NO}$ 

► 3131H Slow-action switching contact 2 NC ⊕ + 2 NO

#### Cable entry M20 x 1.5





#### Ordering table

Series	Actuator	Connection	Guard	Solenoid	Switching	Function	ı display
Series	Actuator	Connection	locking	voltage	element	Without LED	12-60 V red LED
					<b>511</b> 1 NC → + 1 NO	<b>090343</b> NZ1VZ-511E3VSE04-M	-
					<b>528H</b> 1 NC → + 1 NO	<b>079300</b> NZ1VZ-528E3VSE04-M	<b>082130</b> NZ1VZ-528E3VSE04l060-M
				<b>04</b> 24 V DC	<b>538H</b> 2 NC ⊖	<b>089905</b> NZ1VZ-538E3VSE04-M	<b>082128</b> NZ1VZ-538E3VSE04L060-M
		1 Cable entry M20 x 1.5			<b>2131H</b> 3 NC → + 1 NO	<b>082134</b> NZ1VZ-2131E3VSE04-M	-
					<b>3131H</b> 2 NC → + 2 NO	<b>088051</b> NZ1VZ-3131E3VSE04-M	-
NZ	VZ			<b>07</b> <sup>1)</sup> 110 V AC	<b>528H</b> 1 NC → + 1 NO	<b>082133</b> NZ1VZ-528E3VSE07-M	<b>090337</b> NZ1VZ-528E3VSE07L060-M
142	Separate actuator				<b>538H</b> 2 NC ⊝	<b>088048</b> NZ1VZ-538E3VSE07-M	-
					<b>2131H</b> 3 NC → + 1 NO	<b>088036</b> NZ1VZ-2131E3VSE07-M	-
				<b>09</b> <sup>1)</sup> 230 V AC	<b>528H</b> 1 NC → + 1 NO	<b>088047</b> NZ1VZ-528E3VSE09-M	<b>090346</b> NZ1VZ-528E3VSE09L060-M
					<b>538H</b> 2 NC ⊖	<b>088035</b> NZ1VZ-538E3VSE09-M	-
					<b>2131H</b> 3 NC → + 1 NO	<b>088037</b> NZ1VZ-2131E3VSE09-M	-
					<b>3131H</b> 2 NC → + 2 NO	<b>088043</b> NZ1VZ-3131E3VSE09-M	-

1) Use only solenoid plug with integrated rectifier (see page 127)

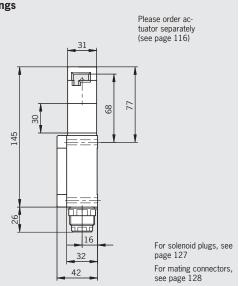




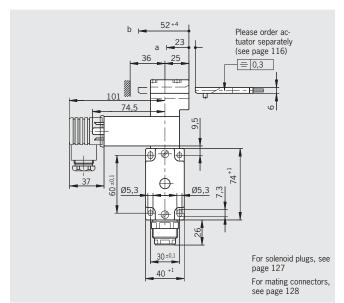


#### Plug connector SR6 6-pin + PE

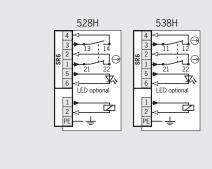
# Dimension drawings

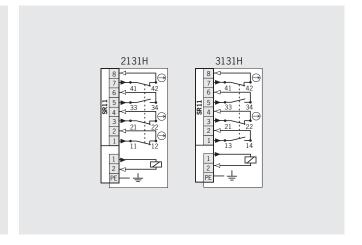


#### Plug connector SR11 11-pin + PE



#### Wiring diagrams

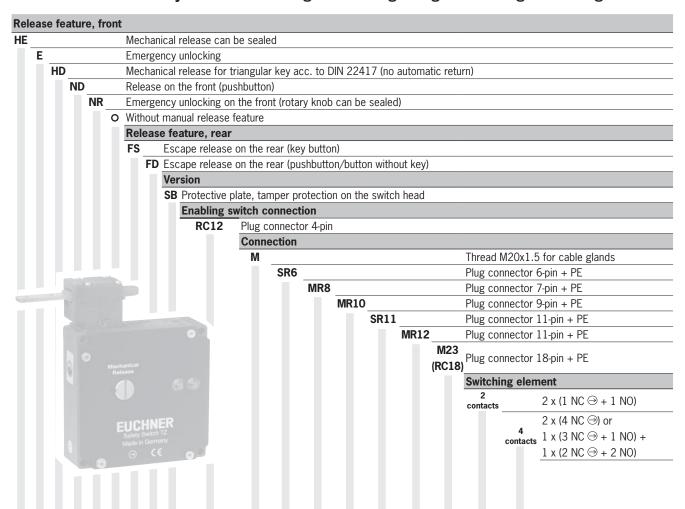




Series	Actuator	Connection	Guard	Solenoid	Switching	Function display		
Series	Actuator	Connection	locking	voltage	element	Without LED	12-60 V red LED	
	<b>VZ</b> Separate actuator	2 Plug connector SR6	VSE Elec. guard		<b>528H</b> 1 NC → + 1 NO	<b>044894</b> NZ2VZ-528E3VSE04	<b>046742</b> NZ2VZ-528E3VSE04L060	
NZ			open-circuit current		<b>538H</b> 2 NC ⊖	<b>047837</b> NZ2VZ-538E3VSE04	<b>057921</b> NZ2VZ-538E3VSE04L060	
NZ		2 Plug connector SR11	VSE Elec. guard locking,	24 V DC	<b>2131H</b> 3 NC → + 1 NO	<b>074473</b> NZ2VZ-2131E3VSE04		
			open-circuit current principle		<b>3131H</b> 2 NC → + 2 NO	<b>074474</b> NZ2VZ-3131E3VSE04		



#### Selection table for safety switches TZ with guard locking and guard locking monitoring



	Manual release					·		Enabling switches			С	onnecti	on				ching nent	With version	Page	
HE	E	HD	ND	NR	0	FS	FD	SB	RC12	M	SR6	MR8	MR10	SR11	MR12	M23 (RC18)	2 contacts	4 contacts	with version	rage
•										•							•	•	C1925 / C2087	64/69
•											•						•		C1638	65
•														•			•	•	C1933	66
•															•	•		•	C1924/ C1826	67/68
•						•				•							•	•	C1815 / C1828	78
•						•								•		•	•	•	C1815 / C1828	79
•							•			•							•	•	C1684	82
•							•							•			•		C1684	83
•								•			•			•			•		C1677	71
•								•								•		•		72
•							•			•								•	C2082	80
•							•									•		•	C2140	81
	•											•	•				•	•	C1903	70
		•								•								•	C2159	73
			•							•							•	•	C1816 / C1823	74
			•											•		•	•	•	C1816 / C1823	75
				•				•						•			•			76
				•												•		•	C1937	76
				•			•	•								•		•	C2123	84
					•			•		•							•	•	C1623 / C2100	85
					•								•					•		86
					•			•							•			•	C1902 / C1971	86
					•				•							•		•	C1803	87

## **EUCHNER**

#### Safety switch TZ with guard locking and guard locking monitoring









- Mechanical release on the front
- ► Two LED indicators, red and green
- Plug connector optional
- Actuator head fitted left or right



#### Approach direction



Horizontal Adjustable in 90° steps

#### Mechanical release

Is used for releasing the guard locking with the aid of a tool. Sealing can be fitted to protect against tampering. Lead seal kit and tool included (already pre-assembled on versions with plug connectors).

## Solenoid operating voltage and LED function display

The following voltage ranges are available:

24 V AC/DC -15%, +10% 110 V AC -15%, +10% 230 V AC -15%, +10%

#### **Guard locking types**

**TZ1** Closed-circuit current principle, guard locking by spring force. Release by applying voltage to the solenoid.

TZ2 Open-circuit current principle, guard locking by applying voltage to the solenoid. Release by spring force.

#### **Switching elements** (see also page 13/14)

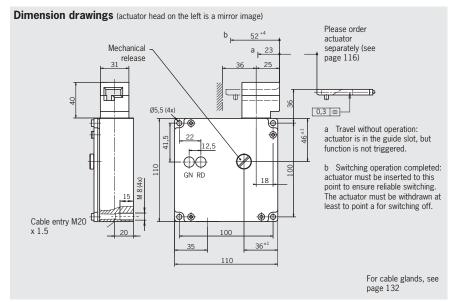
**SK** For monitoring the door/actuator position

**ÜK** For monitoring the guard locking (built-in solenoid)

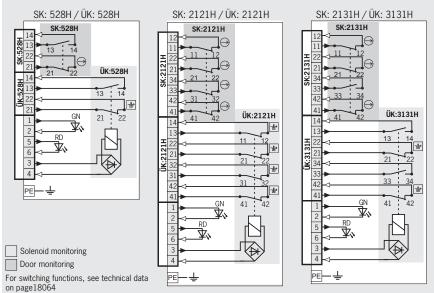
For combinations available, see ordering table:

- **528H** Slow-action switching contact 1 NC ⊕ + 1 NO
- ►2121H Slow-action switching contact 4 NC ⊖
- ▶ 2131H Slow-action switching contact 3 NC ⊕ + 1 NO
- Slow-action switching contact 2 NC ⊕ + 2 NO

#### Cable entry M20 x 1.5

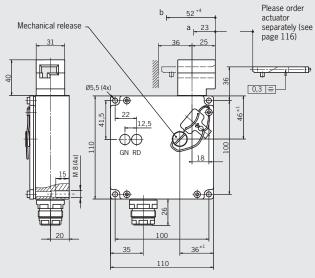


#### Wiring diagrams actuator inserted and locked



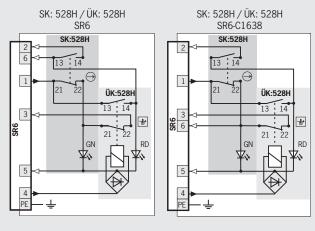
	Connec-	Guard	Switch	0 11 1		Black cover		Red cov	/er
Series	tion	locking	head	Switching element	24 V	110 V	230 V	24 V	110 V
			<b>LE</b> Left	SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC → + 1 NO	<b>082050</b> TZ1LE024M	<b>083160</b> TZ1LE110M	<b>083166</b> TZ1LE220M	<b>083164</b> TZ1LE024M-R	<b>083168</b> TZ1LE110M-R
				SK: <b>2121H</b> , 4 NC → ÜK: <b>2121H</b> , 4 NC ษ	-	-	-	<b>089464</b> <sup>1)</sup> TZ1LE024MVFG-RC1925	-
		1		SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC + 2 NO		<b>088023</b> TZ1LE110MVAB	<b>088029</b> TZ1LE220MVAB	<b>089434</b> TZ1LE024MVAB-R	-
	M20x1.5	Mechanical		SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC → + 1 NO	<b>082051</b> TZ1RE024M	<b>083161</b> TZ1RE110M	<b>083167</b> TZ1RE220M	<b>083165</b> TZ1RE024M-R	<b>089448</b> TZ1RE110M-R
TZ			<b>RE</b> Right	SK: <b>2121H</b> , 4 NC → ÜK: <b>2121H</b> , 4 NC ษ	-	-	-	<b>089465</b> <sup>1)</sup> TZ1RE024MVFG-RC1925	-
12	IWIZUXI.5			SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC + 2 NO		<b>088024</b> TZ1RE110MVAB	<b>088030</b> TZ1RE220MVAB	<b>083233</b> TZ1RE024MVAB-R	-
			LE	SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC + 1 NO	<b>090559</b> TZ2LE024M	<b>083162</b> TZ2LE110M	<b>088031</b> TZ2LE220M	<b>089445</b> TZ2LE024M-R	-
		2	Left	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC + 2 NO		<b>088025</b> TZ2LE110MVAB	<b>088027</b> TZ2LE220MVAB	-	-
		Electrical	RE	SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC + 1 NO	<b>090560</b> TZ2RE024M	<b>083163</b> TZ2RE110M	<b>088032</b> TZ2RE220M	<b>089446</b> TZ2RE024M-R	-
			Right	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC + 2 NO		<b>088026</b> TZ2RE110MVAB	<b>088028</b> TZ2RE220MVAB	-	-

Dimension drawings (actuator head on the left is a mirror image)



For mating connectors, see page 128

Wiring diagrams actuator inserted and locked



For switching functions, see technical data on page18065

#### Solenoid monitoring Door monitoring

#### Ordering table

Series	Connection	Guard	Switch	Switching element	Version		Black cover	
Series	Connection	locking	head	Switching element	VELZIOII	24 V	110 V	230 V
	SR6		Left RE	SK: <b>528H</b> , 1 NC <u>→</u> + 1 NO		<b>046502</b> TZ1LE024SR6	<b>046503</b> TZ1LE110SR6	<b>046504</b> TZ1LE220SR6
		1		ÜK: <b>528H</b> , 1 NC ษ + 1 NO	C1638 <sup>2)</sup> Wiring	<b>089476</b> <sup>2)</sup> TZ1LE024SR6-C1638	-	-
		Mechanical		SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC → + 1 NO		<b>046190</b> TZ1RE024SR6	<b>046191</b> TZ1RE110SR6	<b>051879</b> TZ1RE220SR6
TZ					C1638 <sup>2)</sup> Wiring	<b>070529</b> <sup>2)</sup> TZ1RE024SR6-C1638	-	-
12	Plug connector		<b>LE</b> Left	SK: <b>528H</b> , 1 NC → + 1 NO		<b>049159</b> TZ2LE024SR6	<b>052914</b> TZ2LE110SR6	<b>045450</b> TZ2LE220SR6
		2		ÜK: <b>528H</b> , 1 NC 🖶 + 1 NO	C1638 <sup>2)</sup> Wiring	<b>076294</b> <sup>2)</sup> TZ2LE024SR6-C1638	-	-
		Electrical		SK: <b>528H</b> , 1 NC → + 1 NO		<b>049102</b> TZ2RE024SR6	<b>049238</b> TZ2RE110SR6	<b>047937</b> TZ2RE220SR6
				ÜK: <b>528H</b> , 1 NC <b>1</b> + 1 NO	C1638 <sup>2)</sup> Wiring	<b>055819</b> <sup>2)</sup> TZ2RE024SR6-C1638	-	-

1) Only with solenoid operating voltage AC/DC 24 V 2) No DGUV approval



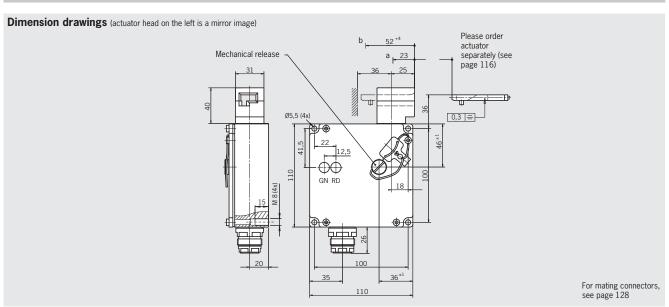


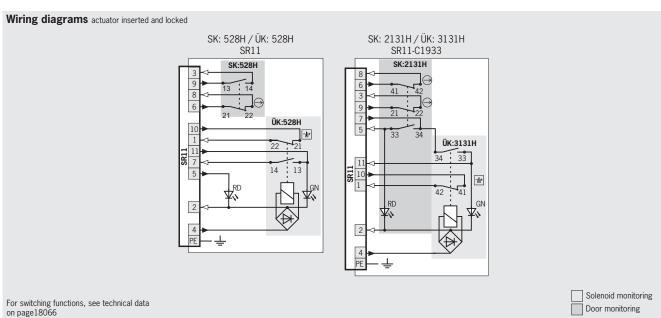




## Plug connector SR11

11-pin + PE





#### Ordering table

Series	Connection	Guard locking	Switch head	Switching element	Version	Black cover 24 V
	<b>SR11</b> Plug connector		LE	SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC → + 1 NO		<b>070828</b> TZ1LE024SR11
		1	Left	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC 🗹 + 2 NO	C1933 <sup>1)</sup> Alternative wiring	<b>083230</b> <sup>1)</sup> TZ1LE024SR11VAB-C1933
TZ		Mechanical	<b>RE</b> Right	SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC → + 1 NO		<b>070826</b> TZ1RE024SR11
12				SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC  + 2 NO	C1933 <sup>1)</sup> Alternative wiring	<b>083231</b> TZ1RE024SR11VAB-C1933
		2	<b>LE</b> Left	SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC → + 1 NO		<b>070958</b> TZ2LE024SR11
		Electrical	<b>RE</b> Right	SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC → + 1 NO		<b>070957</b> TZ2RE024SR11

1) No DGUV approval

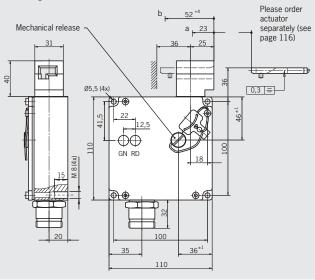




## Plug connector MR12

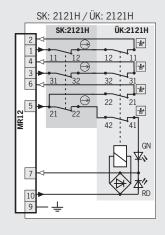
11-pin + PE

Dimension drawings (actuator head on the left is a mirror image)



For mating connectors, see page 131

#### Wiring diagrams actuator inserted and locked



For switching functions, see technical data on page18067

#### Solenoid monitoring Door monitoring

Series	Connection	Guard locking	Switch head	Switching element	Red cover 24 V
	MR12	1	LE Left	SK: <b>2121H</b> , 4 NC → ÜK: <b>2121H</b> , 4 NC <b>1</b>	<b>083190</b> TZ1LE024BHAVFG-RC1924
TZ	Plug connector	Mechanical	<b>RE</b> Right	SK: <b>2121H</b> , 4 NC → ÜK: <b>2121H</b> , 4 NC 🛨	<b>083191</b> TZ1RE024BHAVFG-RC1924





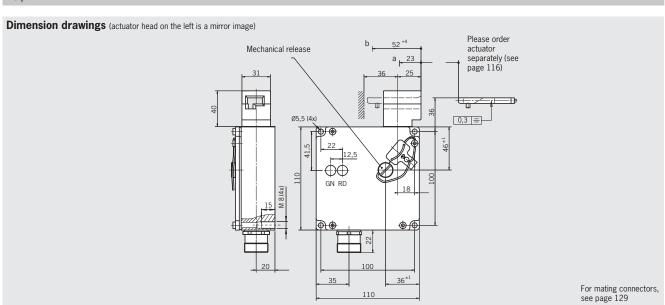


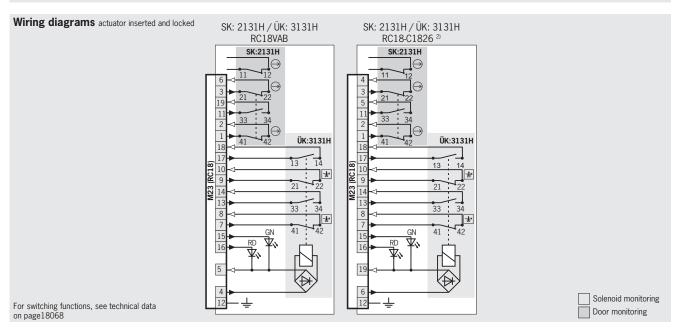




## Plug connector M23 (RC18)

18-pin + PE





Series	Connection	Guard locking	Switch head	Switching element	Version	Black cover 24 V
	M23 (RC18) Plug connector		LE	SK: <b>2131H</b> , 3 NC → + 1 NO		<b>084242</b> TZ1LE024RC18VAB
		1	Left	ÜK: <b>3131H</b> , 2 NC 🖭 + 2 NO	C1826 Wiring	<b>084246</b> <sup>2)</sup> TZ1LE024RC18VAB-C1826
		Mechanical	RE	SK: <b>2131H</b> , 3 NC → + 1 NO		<b>084243</b> TZ1RE024RC18VAB
TZ			Right	ÜK: <b>3131H</b> , 2 NC 🛨 + 2 NO	C1826 Wiring	<b>084247</b> <sup>2)</sup> TZ1RE024RC18VAB-C1826
		2	<b>LE</b> Left	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC  + 2 NO	C1826 Wiring	<b>085180</b> <sup>2)</sup> TZ2LE024RC18VAB-C1826
		Electrical	<b>RE</b> Right	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC 🖢 + 2 NO	C1826 Wiring	<b>085181</b> <sup>2)</sup> TZ2RE024RC18VAB-C1826

<sup>2)</sup> **Important**: use suitable mating connector with option C1825!

#### Safety switch TZ with guard locking and guard locking monitoring



- Mechanical release on the front
- ► Two cable entries M20x1.5
- ► Two LED indicators, red and green
- Plug connector on request
- Actuator head fitted left or right



#### Approach direction



Horizontal Adjustable in 90° steps

#### Mechanical release

Is used for releasing the guard locking with the aid of a tool. Sealing can be fitted to protect against tampering. Lead seal kit and tool included (already pre-assembled on versions with plug connectors).

## Solenoid operating voltage and LED function display

The following voltage ranges are available: 24 V AC/DC -15%, +10%

#### **Guard locking types**

**TZ1** Closed-circuit current principle, guard locking by spring force. Release by applying voltage to the solenoid.

Switching elements (see also page 13/14)
SK For monitoring the door/actuator position
ÜK For monitoring the guard locking (built-in

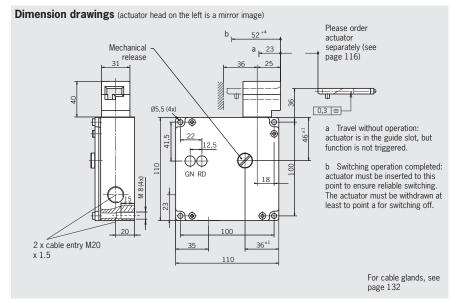
For combinations available, see ordering table:

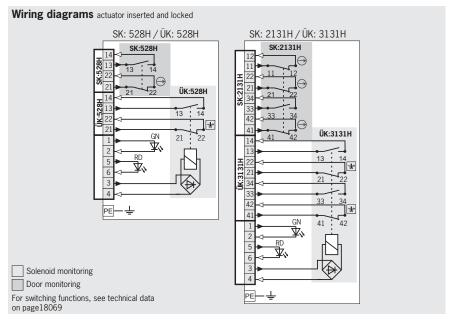
**528H** Slow-action switching contact  $1 \text{ NC} \oplus + 1 \text{ NO}$ 

**2131H** Slow-action switching contact 3 NC ⊕ + 1 NO

Slow-action switching contact 2 NC ⊕ + 2 NO

#### Cable entry 2 x M20 x 1.5





Series	Connection	Guard locking	Switch head	Switching element	Version	Black cover 24 V
	2 x		LE	SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC → + 1 NO	2 cable entries	<b>095245</b> TZ1LE024M-C2087
TZ		1	Left	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC  + 2 NO	2 cable entries	<b>113504</b> TZ1LE024MVAB-C2087
12	M20x1.5	Mechanical	<b>RE</b> Right	SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC → + 1 NO	2 cable entries	<b>095253</b> TZ1RE024M-C2087
				SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC  + 2 NO	2 cable entries	<b>098205</b> TZ1RE024MVAB-C2087

#### Safety switch TZ with guard locking and guard locking monitoring







- Emergency unlocking on the front
- Two LED indicators, red and green
- Plug connector
- Actuator head fitted left or right



#### Approach direction



Horizontal Adjustable in 90° steps

#### **Emergency unlocking**

Is used for the manual release of the guard locking without tools. The emergency unlocking mechanism must be returned to the locked state manually.

## Solenoid operating voltage and LED function

The following voltage ranges are available: 24 V AC/DC -15%, +10%

#### **Guard locking types**

- Closed-circuit current principle, guard locking by spring force. Release by applying voltage to the solenoid.
- Open-circuit current principle, guard locking by applying voltage to the solenoid. Release by spring force.

#### **Switching elements** (see also page 13/14)

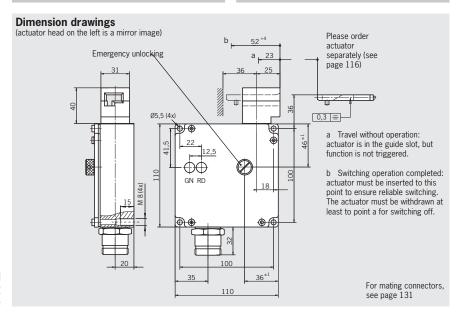
- **SK** For monitoring the door/actuator position
- ÜK For monitoring the guard locking (built-in solenoid)

For combinations available, see ordering table: **528H** Slow-action switching contact 1 NC ⊕ + 1 NO

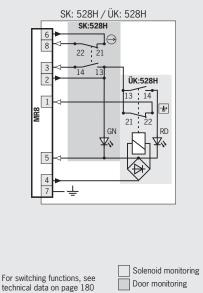
2121HSlow-action switching contact 4 NC →

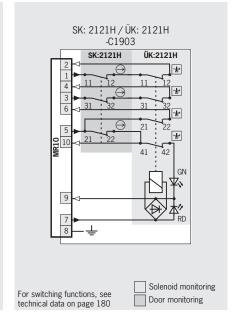
#### Plug connector MR8 7-pin + PE

Plug connector MR10 9-pin + PE



#### Wiring diagrams actuator inserted and locked





Series	Connection	Guard locking	Switch head	Switching element	Version	Black cover 24 V	Red cover 24 V
	MR8 Plug connector	1	<b>LE</b> Left	SK: <b>528H</b> , 1 NC $\rightarrow$ + 1 NO ÜK: <b>528H</b> , 1 NC $\stackrel{1}{\text{$^{1}$}}$ + 1 NO	Emergency unlocking cannot be sealed	<b>054964</b> TZ1LE024PG0R8C	-
		Mechanical	<b>RE</b> Right	SK: <b>528H</b> , 1 NC $\rightarrow$ + 1 NO ÜK: <b>528H</b> , 1 NC $\stackrel{1}{\text{1}}$ + 1 NO	Emergency unlocking cannot be sealed	<b>059920</b> TZ1RE024PGOR8C	-
TZ		1	<b>LE</b> Left	SK: <b>2121H</b> , 4 NC → ÜK: <b>2121H</b> , 4 NC 🖅	Emergency unlocking cannot be sealed	-	<b>082095</b> TZ1LE024BHA-C1903
12	MR10 Plug connector	Mechanical	<b>RE</b> Right	SK: <b>2121H</b> , 4 NC → ÜK: <b>2121H</b> , 4 NC 🖅	Emergency unlocking cannot be sealed	-	<b>082096</b> TZ1RE024BHA-C1903
		2	<b>LE</b> Left	SK: <b>2121H</b> , 4 NC → ÜK: <b>2121H</b> , 4 NC 🖅	Emergency unlocking cannot be sealed	-	<b>082083</b> TZ2LE024BHA-C1903
		Electrical	<b>RE</b> Right	SK: <b>2121H</b> , 4 NC → ÜK: <b>2121H</b> , 4 NC 🛨	Emergency unlocking cannot be sealed	-	<b>082084</b> TZ2RE024BHA-C1903

#### Safety switch TZ with guard locking and guard locking monitoring

- Mechanical release on the front
- Protective plate for switch head
- Two LED indicators, red and green
- Plug connector optional
- Actuator head fitted left or right



#### Approach direction



Horizontal Adjustable in 90° steps

#### Mechanical release

Is used for releasing the guard locking with the aid of a tool. Sealing can be fitted to protect against tampering. Lead seal kit and tool included (already pre-assembled on versions with plug connectors).

#### Protective plate for switch head

Makes it more difficult to tamper with the switch.

#### Solenoid operating voltage and LED function display

The following voltage range is available: 24 V AC/DC -15%, +10%

#### **Guard locking types**

- TZ1 Closed-circuit current principle, guard locking by spring force. Release by applying voltage to the solenoid.
- TZ2 Open-circuit current principle, guard locking by applying voltage to the solenoid. Release by spring force.

Switching elements (see also page 13/14)

SK For monitoring the door/actuator position

ÜK For monitoring the guard locking (built-in solenoid)

For combinations available, see ordering table:

- **528H** Slow-action switching contact
  - 1 NC → + 1 NO
- ▶2131HSlow-action switching contact
  - 3 NC → + 1 NO
- ▶ 3131HSlow-action switching contact 2 NC → + 2 NO

## **((()** EHE (⊕) ∪STEN

Plug connector SR6

6-pin + PE



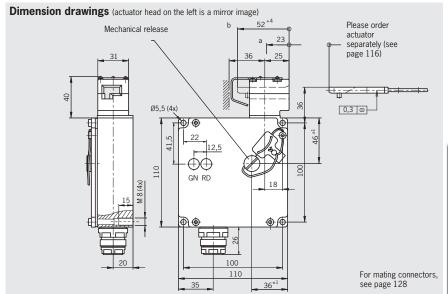


11-pin + PE

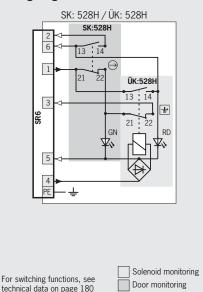


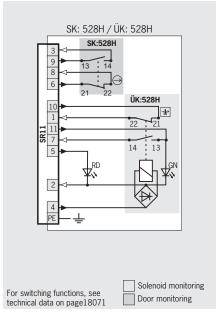


Plug connector SR11



Wiring diagrams actuator inserted and locked





Oraerin	ig table					
Series	Connection Guard locking		Switch Switching element		Version	Black cover 24 V
	<b>SR6</b> Plug connector	1 Mechanical	<b>LE</b> Left	SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC + 1 NO	With protective plate	<b>059694</b> TZ1LE024SR6-C1677
			<b>RE</b> Right	SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC → + 1 NO	With protective plate	<b>059692</b> TZ1RE024SR6-C1677
TZ		2	<b>LE</b> Left	SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC + 1 NO	With protective plate	<b>059852</b> TZ2LE024SR6-C1677
12		Electrical	<b>RE</b> Right	SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC → + 1 NO	With protective plate	<b>059699</b> TZ2RE024SR6-C1677
	SR11	1	<b>LE</b> Left	SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC + 1 NO	With protective plate	<b>093860</b> TZ1LE024SR11-093860
	Plug connector	Mechanical	<b>RE</b> Right	SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC → + 1 NO	With protective plate	<b>093861</b> TZ1RE024SR11-093861

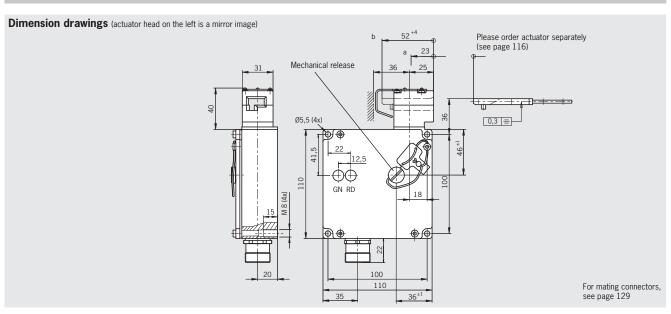


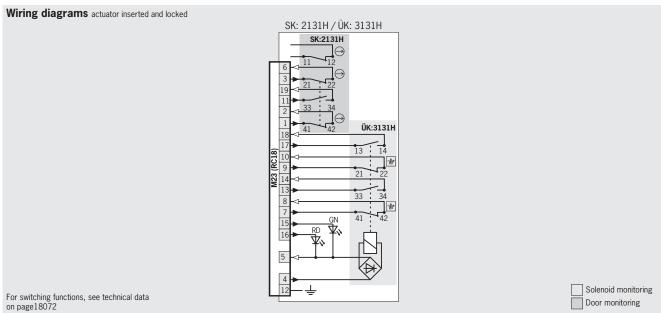






# Plug connector M23 (RC18) 18-pin + PE





Series	Connection	Guard locking	Switch head	Switching element	Version	Black cover 24 V
TZ	M23 (RC18) Plug connector	1		SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC	With protective plate	<b>093862</b> TZ1LE024RC18VAB-093862
		Mechanical	<b>RE</b> Right	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC → + 2 NO	With protective plate	<b>093863</b> TZ1RE024RC18VAB-093863







- Mechanical release on the front, release with a triangular key acc. to DIN 22417
- Two LED indicators, red and green
- Actuator head fitted left or right



#### Approach direction



Horizontal Adjustable in 90° steps

#### Mechanical release

This releases the guard locking after operation with a triangular key acc. to DIN 22417.

#### Solenoid operating voltage and LED function display

The following voltage range is available: 24 V AC/DC -15%, +10%

#### **Guard locking types**

Closed-circuit current principle, guard locking by spring force. Release by applying voltage to the solenoid.

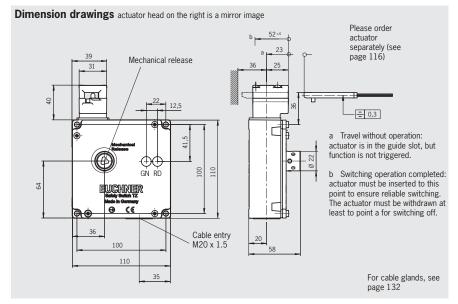
Switching elements (see also page 13/14) **SK** For monitoring the door/actuator position ÜK For monitoring the guard locking (built-in solenoid)

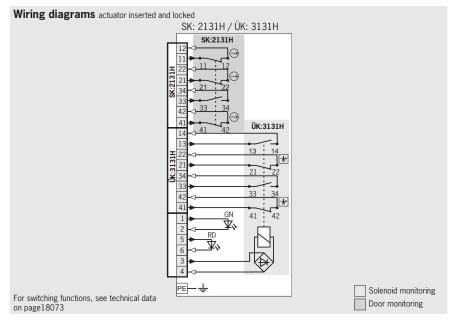
For combinations available, see ordering table:

▶2131H Slow-action switching contact 3 NC ⊕ + 1 NO

▶ 3131H Slow-action switching contact 2 NC → + 2 NO

#### Cable entry M20 x 1.5





Series	Connection	Guard locking	Switch head	Switching element	Version	Black cover 24 V
TZ		1	<b>LE</b> Left	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC ★ + 2 NO	Mechanical release with triangular key	<b>098718</b> TZ1LB024MVAB-C2159
12	M20x1.5	Mechanical	<b>RE</b> Right	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC + 2 NO	Mechanical release with triangular key	<b>098717</b> TZ1RB024MVAB-C2159







- - Release on the front with pushbutton
- Two LED indicators, red and green
- Plug connector optional
- Actuator head fitted left or right



#### Approach direction



Horizontal Adjustable in 90° steps

#### Release

Is used for the manual release of the guard locking without tools. It is possible to remove the disable and return the switch to its operating state by hand without tools.

#### Solenoid operating voltage and LED function display

The following voltage range is available: 24 V AC/DC -15%, +10%

#### **Guard locking types**

- TZ1 Closed-circuit current principle, guard locking by spring force. Release by applying voltage to the solenoid.
- Open-circuit current principle, guard locking by applying voltage to the solenoid. Release by spring force.

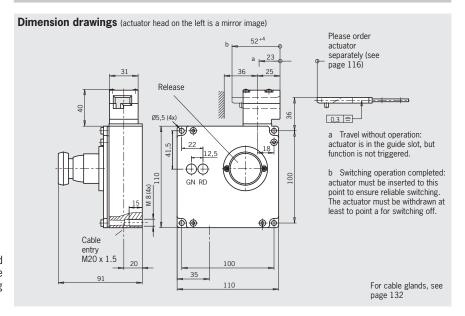
#### **Switching elements** (see also page 13/14)

- **SK** For monitoring the door/actuator position
- ÜK For monitoring the guard locking (built-in

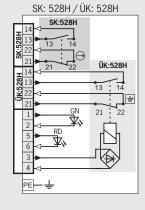
For combinations available, see ordering table:

- **528H** Slow-action switching contact 1 NC ⊕ + 1 NO
- ▶2131H Slow-action switching contact 3 NC ⊕ + 1 NO
- ▶3131HSlow-action switching contact 2 NC → + 2 NO

#### Cable entry M20 x 1.5

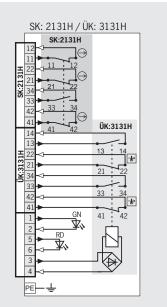


#### Wiring diagrams actuator inserted and locked



Solenoid monitoring Door monitoring

For switching functions, see technical data on page 18074



Orueriii	Judeling table								
Series	Connection	Connection Guard Switch locking head Switching element Version		Black cover 24 V					
		1 Mechanical	<b>LE</b> Left	SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC → + 1 NO	Release (blue pushbutton)	<b>089477</b> TZ1LE024M-C1816			
			<b>RE</b> Right	SK: <b>528H</b> , 1 NC $\bigoplus$ + 1 NO ÜK: <b>528H</b> , 1 NC $\boxdot$ + 1 NO	Release (blue pushbutton)	<b>096901</b> TZ1RE024M-C1816			
TZ	M20x1.5		<b>LE</b> Left	SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC → + 1 NO	Release (blue pushbutton)	<b>087992</b> TZ2LE024M-C1816			
12		2	<b>RE</b> Right	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC + 2 NO	Release (blue pushbutton)	<b>089455</b> TZ2LE024MVAB-C1823			
		Electrical	<b>LE</b> Left	SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC → + 1 NO	Release (blue pushbutton)	<b>087993</b> TZ2RE024M-C1816			
			<b>RE</b> Right	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC ★ + 2 NO	Release (blue pushbutton)	<b>089456</b> TZ2RE024MVAB-C1823			

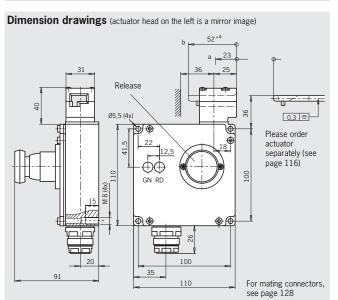




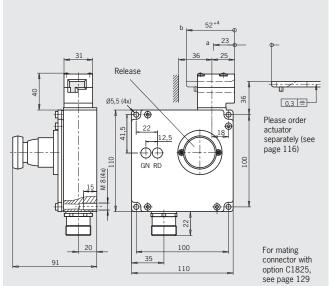




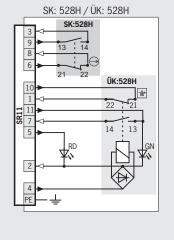
#### Plug connector SR11 11-pin + PE



## Plug connector M23 (RC18)

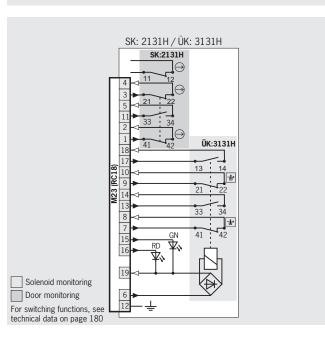


#### Wiring diagrams actuator inserted and locked



Solenoid monitoring Door monitoring

For switching functions, see technical data on page18075



#### Ordering table

Series	Connection	Guard locking	Switch head	Switching element	Version	Black cover
	SR11 Plug connector	1	<b>LE</b> Left	SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC ษ + 1 NO	Release (blue pushbutton)	<b>077044</b> TZ1LE024SR11-C1816
		Mechanical	<b>RE</b> Right	SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC → + 1 NO	Release (blue pushbutton)	<b>077042</b> TZ1RE024SR11-C1816
TZ	M23 (RC18) 1) Plug connector	1	<b>LE</b> Left	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC  + 2 NO	Release (blue pushbutton)	<b>088090</b> TZ1LE024RC18VAB-C1823
		Mechanical	<b>RE</b> Right	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC  + 2 NO	Release (blue pushbutton)	<b>088091</b> TZ1RE024RC18VAB-C1823

1) Important: use suitable mating connector with option C1825!

## Safety Switches Type 2, Metal Housing

#### Safety switch TZ with guard locking and guard locking monitoring









- Emergency unlocking on the front with rotary knob
- Protective plate for switch head optional
- Two LED indicators, red and green
- Plug connector
- Actuator head fitted left or right



#### Approach direction



Horizontal Adjustable in 90° steps

#### **Emergency unlocking**

Is used for the manual release of the guard locking without tools. The emergency unlocking mechanism must be returned to the locked state manually. Sealing can be fitted to protect against tampering. Lead seal kit and tool included (already pre-assembled on versions with plug connectors).

#### Protective plate for switch head

Makes it more difficult to tamper with the switch.

#### Solenoid operating voltage and LED function display

The following voltage range is available: 24 V AC/DC -15%, +10%

#### **Guard locking types**

- Closed-circuit current principle, guard locking by spring force. Release by applying voltage to the solenoid.
- Open-circuit current principle, guard locking by applying voltage to the solenoid. Release by spring force.

#### Switching elements (see also page 13/14)

**SK** For monitoring the door/actuator position

ÜK For monitoring the guard locking (built-in

For combinations available, see ordering table:

**528H** Slow-action switching contact

1 NC → + 1 NO

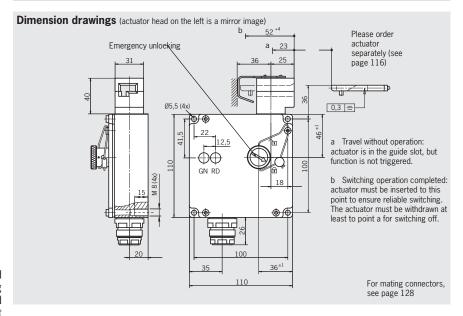
▶2131H Slow-action switching contact

3 NC → + 1 NO

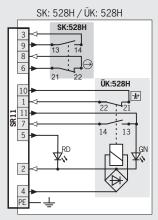
▶3131H Slow-action switching contact

2 NC ⊕ + 2 NO

#### Plug connector SR11 with protective plate 11-pin + PE



#### Wiring diagrams actuator inserted and locked



For switching functions, see technical data on page 18076

Solenoid monitoring Door monitoring

Oracin	The tring table									
Series	Connection	Guard	Switch	Custohing alament	Version	Black cover				
Series	Connection	locking	head	Switching element	version	24 V				
			LE	SK: <b>528H</b> , 1 NC → + 1 NO	Emergency unlocking (rotary knob),					
TZ	SR11	1	Left	ÜK: <b>528H</b> , 1 NC ษ + 1 NO	with protective plate	-				
12	Plug connector	Mechanical	RE	SK: <b>528H</b> , 1 NC → + 1 NO	Emergency unlocking (rotary knob),	094343				
			Right	ÜK: <b>528H</b> . 1 NC 🖶 + 1 NO	with protective plate	TZ1RE024SR11-094343				

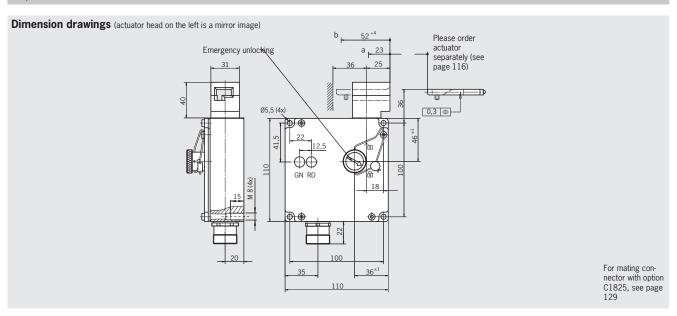


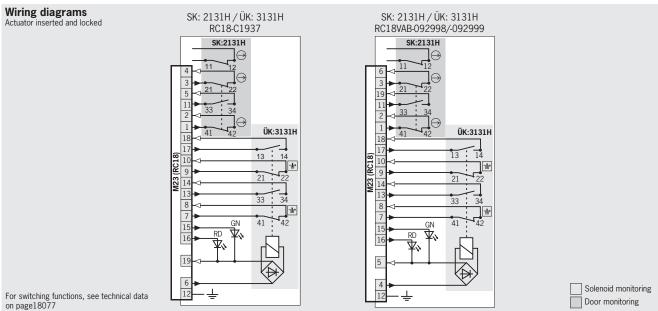




## Plug connector M23 (RC18)

8-pin + PE





O I do I III	Tuoring waste							
Series	es Connection Guard Switch Switching element Version		Version -	Black cover 24 V				
		1	<b>LE</b> Left	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC 🗹 + 2 NO	Emergency unlocking (rotary knob)	<b>074260</b> TZ1LE024RC18VAB-C1937		
	M23 (RC18) 1)	Mechanical	<b>RE</b> Right	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC  + 2 NO	Emergency unlocking (rotary knob)	<b>074261</b> TZ1RE024RC18VAB-C1937		
TZ	Plug connector	or <b>2</b>	<b>LE</b> Left	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC 🗹 + 2 NO	Emergency unlocking (rotary knob)	<b>100778</b> TZ2LE024RC18VAB-C1937		
		Electrical	<b>RE</b> Right	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC + 2 NO	Emergency unlocking (rotary knob)	<b>100777</b> TZ2RE024RC18VAB-C1937		
	M23 (RC18)	1	<b>LE</b> Left	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC 🗹 + 2 NO	Emergency unlocking (rotary knob), alternative wiring	<b>092998</b> TZ1LE024RC18VAB-092998		
	Plug connector	Mechanical	<b>RE</b> Right	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC 🗹 + 2 NO	Emergency unlocking (rotary knob), alternative wiring	<b>092999</b> TZ1RE024RC18VAB-092999		

<sup>1)</sup> Important: use suitable mating connector with option C1825!







- Mechanical release on the front
- Escape release on the rear with key button
- Two LED indicators, red and green
- Plug connector optional
- Actuator head fitted left or right



#### Approach direction



Horizontal Adjustable in 90° steps

#### Escape release

This is used for manual release of guard locking from within the danger zone without tools. The disable can only be removed and the switch returned to its operating state using a key included (2 keys included).

#### Solenoid operating voltage and LED function display

The following voltage range is available: 24 V AC/DC -15%, +10%

#### **Guard locking types**

- TZ1 Closed-circuit current principle, guard locking by spring force. Release by applying voltage to the solenoid.
- Open-circuit current principle, guard locking by applying voltage to the solenoid. Release by spring force.

#### **Switching elements** (see also page 13/14)

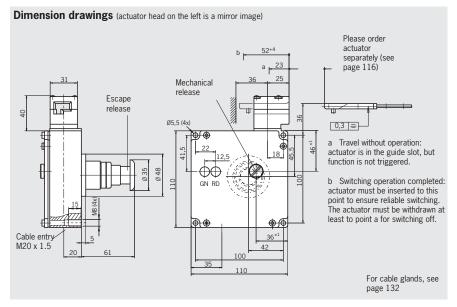
**SK** For monitoring the door/actuator position

ÜK For monitoring the guard locking (built-in

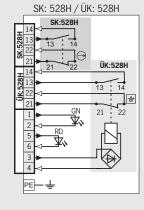
For combinations available, see ordering table:

- **528H** Slow-action switching contact 1 NC → + 1 NO
- ▶2131H Slow-action switching contact 3 NC ⊕ + 1 NO
- ▶3131H Slow-action switching contact 2 NC → + 2 NO

#### Cable entry M20 x 1.5

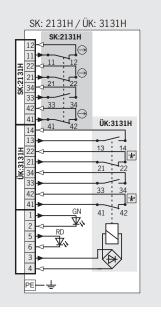


#### Wiring diagrams actuator inserted and locked



Solenoid monitoring Door monitoring

For switching functions, see technical data on page18078

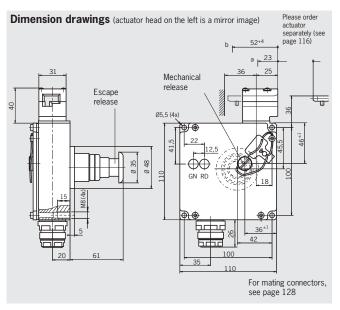


Series	Connection	Guard locking	Switch head	Switching element	Version	Black cover
		locking	LE	SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC → + 1 NO	Escape release (red key button)	24 V 087990 TZ1LE024M-C1815
		1	Left	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC 🗹 + 2 NO	Escape release (red key button)	<b>089468</b> TZ1LE024MVAB-C1828
	M20x1.5	Mechanical	RE	SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC → + 1 NO	Escape release (red key button)	<b>087991</b> TZ1RE024M-C1815
TZ			Right	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC 🛨 + 2 NO	Escape release (red key button)	<b>089469</b> TZ1RE024MVAB-C1828
12			LE	SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC № + 1 NO	Escape release (red key button)	<b>089460</b> TZ2LE024M-C1815
		2	Left	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC 🛨 + 2 NO	Escape release (red key button)	<b>087290</b> TZ2LE024MVAB-C1828
		Electrical	RE	SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC → + 1 NO	Escape release (red key button)	<b>089461</b> TZ2RE024M-C1815
			Right	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC 🛨 + 2 NO	Escape release (red key button)	<b>087291</b> TZ2RE024MVAB-C1828

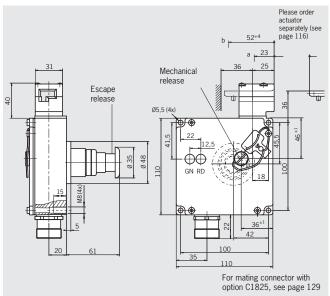




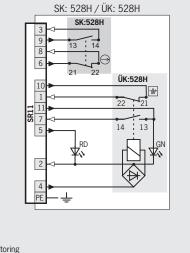




#### Plug connector M23 (RC18) 18-pin + PE



#### Wiring diagrams actuator inserted and locked



Solenoid monitoring

Door monitoring

For switching functions, see technical data on page 18079

on page 10075

	SK: 2131H / ÜK: 3131H  SK:2131H  SK:2131H  SK:2131H  GRID  GN  4  4  41  42  GRID  GN  41  42  GRID  G
Solenoid monitoring Door monitoring For switching functions, see technical data on page 170	15 RD V

#### Ordering table

Ji uci iii	rucing table							
Series	Series Connection Gu		Switch head	Switching element	Version	Black cover 24 V		
	SR11	2	<b>LE</b> Left	SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC → + 1 NO	Escape release (key button)	<b>079660</b> TZ2LE024SR11-C1815		
TZ M23	Plug connector	Electrical	<b>RE</b> Right	SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC → + 1 NO	Escape release (key button)	<b>079661</b> TZ2RE024SR11-C1815		
	M23 (RC18) 1) Plug connector	1	<b>LE</b> Left	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC  + 2 NO	Escape release (key button)	<b>090352</b> TZ1LE024RC18VAB-C1828		
		Mechanical	<b>RE</b> Right	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC  + 2 NO	Escape release (key button)	<b>090353</b> TZ1RE024RC18VAB-C1828		
			<b>LE</b> Left	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC  + 2 NO	Escape release (key button)	<b>093103</b> TZ2LE024RC18VAB-C1828		
		Electrical	<b>RE</b> Right	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> . 2 NC + 2 NO	Escape release (key button)	<b>093104</b> TZ2RE024RC18VAB-C1828		

1) Important: use suitable mating connector with option C1825!







- Mechanical release on the front
- Escape release on the rear with pushbutton
- Two LED indicators, red and green
- Plug connector optional
- Actuator head fitted left or right



#### Approach direction



Horizontal Adjustable in 90° steps

#### Mechanical release

Is used for releasing the guard locking with the aid of a tool. Sealing can be fitted to protect against tampering. Lead seal kit and tool included (already pre-assembled on versions with plug connectors).

#### Escape release

This is used for manual release of guard locking from within the danger zone without tools.

#### Solenoid operating voltage and LED function display

The following voltage ranges are available:

24 V AC/DC -15%, +10%

110 V -15%, +10%

#### **Guard locking types**

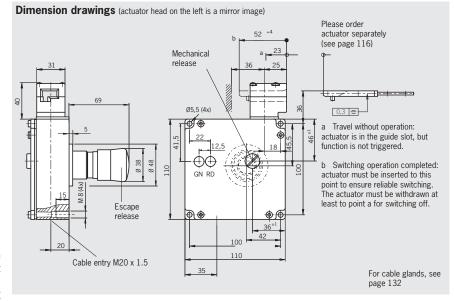
TZ1 Closed-circuit current principle, guard locking by spring force. Release by applying voltage to the solenoid.

**Switching elements** (see also page 13/14) **SK** For monitoring the door/actuator position ÜK For monitoring the guard locking (built-in solenoid)

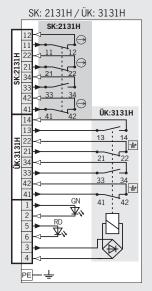
For combinations available, see ordering table: ▶2131H Slow-action switching contact

3 NC → + 1 NO ▶ 3131HSlow-action switching contact 2 NC ⊕ + 2 NO

#### Cable entry M20 x 1.5



#### Wiring diagrams actuator inserted and locked



For switching functions, see technical

Solenoid monitoring Door monitoring

Series	Connection	Guard	Switch Switching element		Version -	Black cover	
361163	Connection	locking	head	Switching element	Version	24 V	110 V
		1.5 1 Mechanical	LE	SK: <b>2131H</b> , 3 NC → + 1 NO	C2082	096487	095992
TZ	M20x1.5		Left	ÜK: <b>3131H</b> , 2 NC 🛨 + 2 NO	Escape release (pushbutton)	TZ1LE024MVAB-C2082	TZ1LE110MVAB-C2082
12	WIZUX1.5		RE	SK: <b>2131H</b> , 3 NC → + 1 NO	C2082	096488	095103
			Right	ÜK: <b>3131H</b> , 2 NC 🛨 + 2 NO	Escape release (pushbutton)	TZ1RE024MVAB-C2082	TZ1RE110MVAB-C2082

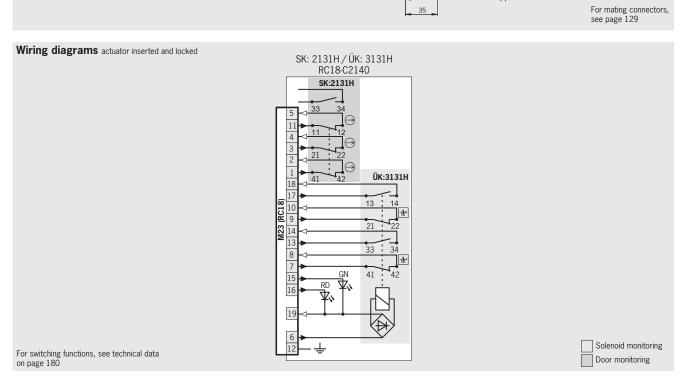


#### Plug connector M23 (RC18) 18-pin + PE

Dimension drawings (actuator head on the left is a mirror image)

Mechanical release order actuator separately (see page 116)

103 = 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |



Series	Connection	Guard locking	Switch head	Switching element	Version	Black cover 24 V
TZ	M23 (RC18)	1	<b>LE</b> Left	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC + 2 NO	C2140 Escape release (without key)	<b>098297</b> TZ1LE024RC18VAB-C2140
12	Plug connector	Mechanical	<b>RE</b> Right	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC + 2 NO	C2140 Escape release (without key)	<b>098298</b> TZ1RE024RC18VAB-C2140







- Mechanical release on the front
- Escape release on the rear with pushbutton
- Two LED indicators, red and green
- Plug connector optional
- Actuator head fitted left or right



#### Approach direction



Horizontal Adjustable in 90° steps

#### Mechanical release

Is used for releasing the guard locking with the aid of a tool. Sealing can be fitted to protect against tampering. Lead seal kit and tool included (already pre-assembled on versions with plug connectors).

#### Escape release

This is used for manual release of guard locking from within the danger zone without tools.

#### Solenoid operating voltage and LED function display

The following voltage ranges are available: 24 V AC/DC -15%, +10%

#### **Guard locking types**

TZ1 Closed-circuit current principle, guard locking by spring force. Release by applying voltage to the solenoid.

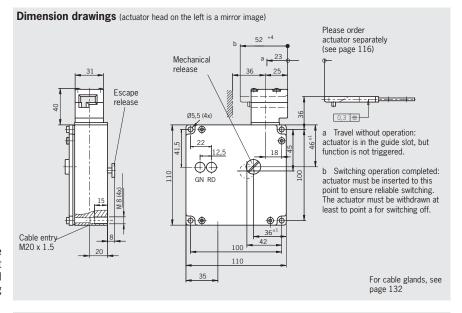
#### **Switching elements** (see also page 13/14)

**SK** For monitoring the door/actuator position ÜK For monitoring the guard locking (built-in

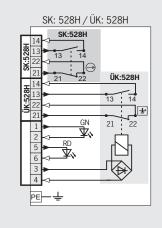
For combinations available, see ordering table:

- **528H** Slow-action switching contact 1 NC ⊕ + 1 NO
- ▶2131H Slow-action switching contact 3 NC ⊕ + 1 NO
- ▶3131HSlow-action switching contact 2 NC → + 2 NO

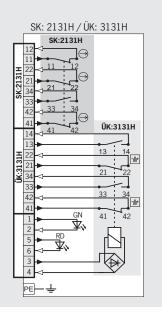
#### Cable entry M20 x 1.5



#### Wiring diagrams actuator inserted and locked



Solenoid monitoring Door monitoring For switching functions, see technical data on page18082



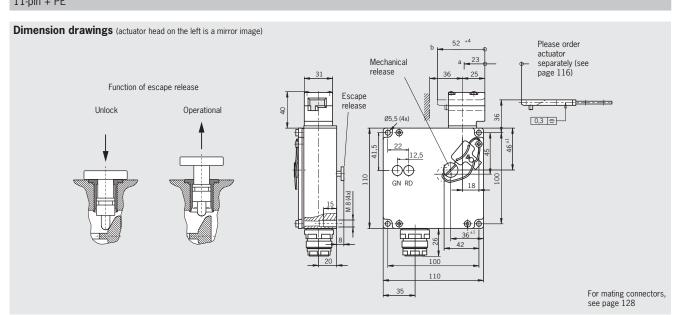
0.00	TWO ING CONTO								
Series	Connection	Guard locking	Switch head	Switching element	Version	Black cover 24 V			
				SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC № + 1 NO		<b>083170</b> TZ1LE024M-C1684			
TZ	Mag 1 5	20x1.5 1 Mechanical	<b>LE</b> Left	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC + 2 NO	C1684 Escape release (pushbutton)	<b>084820</b> TZ1LE024MVAB-C1684			
12	WZUXI.5		Mechanical Mechanical	Mechanical RE	DE.	SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC → + 1 NO		<b>083171</b> TZ1RE024M-C1684	
			Right	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC + + 2 NO	C1684 Escape release (pushbutton)	<b>088084</b> TZ1RE024MVAB-C1684			

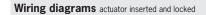


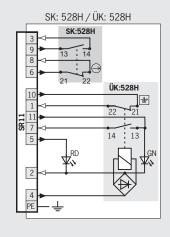




#### Plug connector SR11 11-pin + PE







For switching functions, see technical data on page18083

Solenoid monitoring Door monitoring

Series	Connection	Guard locking	Switch head	Switching element	Version	Black cover
TZ	SR11	1	<b>LE</b> Left	SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC → + 1 NO	C1684 Escape release (pushbutton)	<b>070886</b> TZ1LE024SR11-C1684
12	Plug connector	Mechanical	<b>RE</b> Right	SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC ± + 1 NO	C1684 Escape release (pushbutton)	<b>070884</b> TZ1RE024SR11-C1684







- Emergency unlocking on the front with rotary knob
- Escape release on the rear with pushbutton
- Protective plate for switch head
- Two LED indicators, red and green
- Actuator head fitted left or right



#### Approach direction



Horizontal Adjustable in 90° steps

#### **Emergency unlocking**

Is used for the manual release of the guard locking without tools. The emergency unlocking mechanism must be returned to the locked state manually. Sealing can be fitted to protect against tampering. Lead seal kit and tool included (already pre-assembled on versions with plug connectors).

#### Escape release

This is used for manual release of guard locking from within the danger zone without tools.

#### Protective plate for switch head

Makes it more difficult to tamper with the switch.

#### Solenoid operating voltage and LED function display

The following voltage range is available: 24 V AC/DC -15%, +10%

#### **Guard locking types**

TZ1 Closed-circuit current principle, guard locking by spring force. Release by applying voltage to the solenoid.

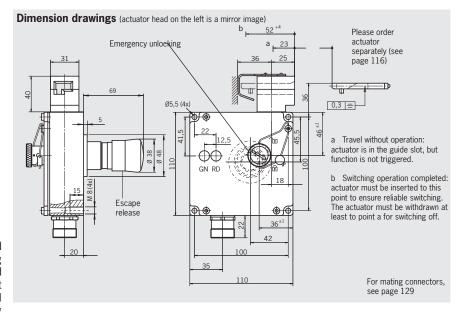
#### **Switching elements** (see also page 13/14)

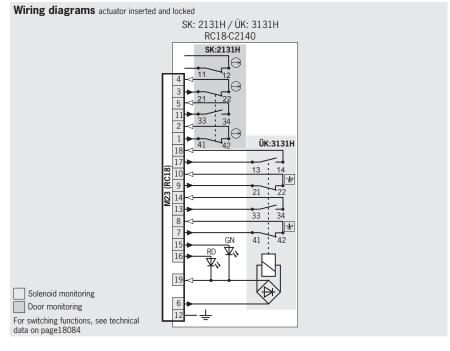
**SK** For monitoring the door/actuator position ÜK For monitoring the guard locking (built-in solenoid)

For combinations available, see ordering table:

- ▶2131H Slow-action switching contact 3 NC → + 1 NO
- ▶3131H Slow-action switching contact 2 NC ⊕ + 2 NO

#### Plug connector M23 (RC18) 18-pin + PE





Oraciii	ig table					
Series	Connection	Guard locking	Switch head	Switching element	Version	Black cover 24 V
		locking	ilcau		Emergency unlocking (ro-	Z4 V
TZ	M23 (RC18)	1	<b>LE</b> Left	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC + 2 NO	tary knob), escape release (pushbutton), with protective plate	<b>097347</b> TZ1LE024RC18VAB-C2123
12	Plug connector	Mechanical	<b>RE</b> Right	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC + 2 NO	Emergency unlocking (rotary knob), escape release (pushbutton), with protective plate	<b>097348</b> TZ1RE024RC18VAB-C2123

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- Without mechanical release
- Protective plate for switch head optional
- Two LED indicators, red and green
- Plug connector optional
- Actuator head fitted left or right



#### Approach direction



Horizontal Adjustable in 90° steps

#### Protective plate for switch head

Makes it more difficult to tamper with the switch.

#### Solenoid operating voltage and LED function display

The following voltage ranges are available: 24 V AC/DC -15%, +10%

#### **Guard locking types**

TZ1 Closed-circuit current principle, guard locking by spring force. Release by applying voltage to the solenoid.

Switching elements (see also page 13/14) **SK** For monitoring the door/actuator position **ÜK** For monitoring the guard locking (built-in

For combinations available, see ordering table:

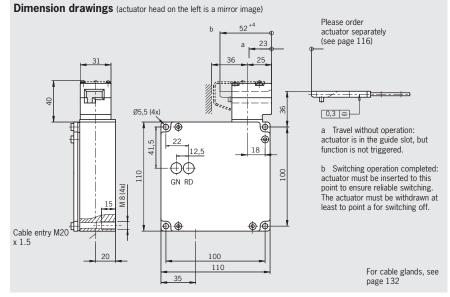
**528H** Slow-action switching contact  $1 \text{ NC} \ominus + 1 \text{ NO}$ 

▶2121H Slow-action switching contact 4 NC →

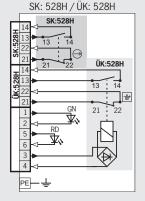
▶2131H Slow-action switching contact 3 NC → + 1 NO

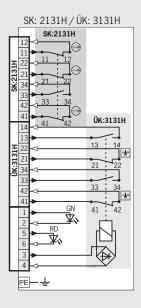
▶3131H Slow-action switching contact 2 NC ⊕ + 2 NO

#### Cable entry M20 x 1.5



#### Wiring diagrams actuator inserted and locked





Solenoid monitoring Door monitoring

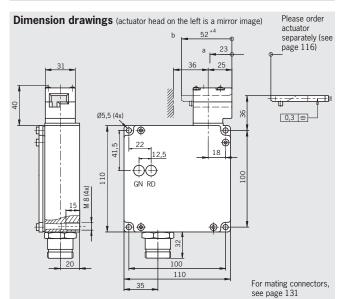
For switching functions, see technical data on page 18085

Jiuciiii	g table					
Series	Connection	Guard locking	Switch head	Switching element	Version	Black cover 24 V
				SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC ⊕ + 1 NO		<b>083246</b> TZ1LE024M-C1623
			LE Left	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC + 2 NO		<b>085170</b> TZ1LE024MVAB-C1623
TZ	M20x1.5	1		SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC + 2 NO		<b>096052</b> TZ1LE024MVAB-RC2100
12	WZUX1.5	Mechanical		SK: <b>528H</b> , 1 NC → + 1 NO ÜK: <b>528H</b> , 1 NC  + 1 NO		<b>083247</b> TZ1RE024M-C1623
			RE Right	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC → + 2 NO		<b>085171</b> TZ1RE024MVAB-C1623
				SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC + 2 NO		<b>096051</b> TZ1RE024MVAB-RC2100

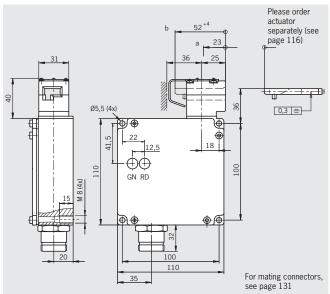


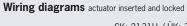


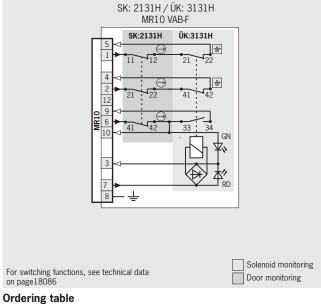


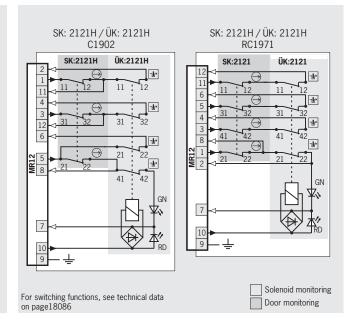












Series	Connection	Guard locking	Switch head	Switching element	Version	Red cover 24 V
	MR10	1	<b>LE</b> Left	SK: <b>2131H</b> , 3 NC ⊖ ÜK: <b>3131H</b> , 2 NC 🛂 + 1 NO	Without mechanical release	<b>095902</b> TZ1LE024MVAB-10C-FW
	Plug connector	Mechanical	<b>RE</b> Right	SK: <b>2131H</b> , 3 NC ⊖ ÜK: <b>3131H</b> , 2 NC 🛂 + 1 NO	Without mechanical release	<b>095903</b> TZ1RE024MVAB-10C-FW
		1 Mechanical	LE	SK: <b>2121H</b> , 4 NC ⊖	Without mechanical release, with protective plate	<b>079692</b> TZ1LE024BHA-C1902
TZ	MR12		Left 1	ÜK: <b>2121H</b> , 4 NC <b>1</b>	C1971 Alternative wiring, without mechanical release with protective plate	<b>085569</b> TZ1LE024BHAVFG-RC1971
	Plug connector			CK. 2121H 4 NC (2)	Without mechanical release, with protective plate	<b>079693</b> TZ1RE024BHA-C1902
				SK: <b>2121H</b> , 4 NC <b>→</b> ÜK: <b>2121H</b> , 4 NC <b>+</b>	C1971 Alternative wiring, without mechanical release with protective plate	<b>085570</b> TZ1RE024BHAVFG-RC1971







- Without mechanical release
- Two LED indicators, red and green
- Plug connector for switch connection
- Plug connector for enabling switch
- Actuator head fitted left or right



#### Approach direction



Horizontal Adjustable in 90° steps

#### Solenoid operating voltage and LED function display

The following voltage range is available: 24 V AC/DC -15%, +10%

#### **Guard locking types**

- TZ1 Closed-circuit current principle, guard locking by spring force. Release by applying voltage to the solenoid.
- Open-circuit current principle, guard locking by applying voltage to the solenoid. Release by spring force.

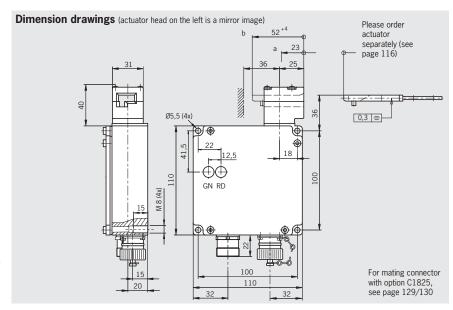
Switching elements (see also page 13/14) SK For monitoring the door/actuator position ÜK For monitoring the guard locking (built-in

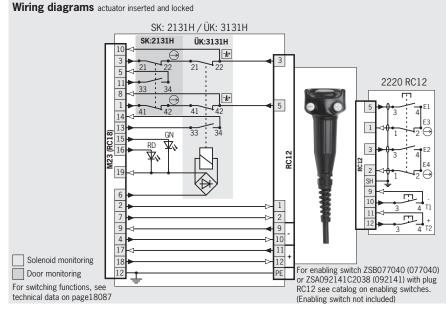
For combinations available, see ordering table:

▶ 2131H Slow-action switching contact 3 NC ⊕ + 1 NO

▶3131H Slow-action switching contact 2 NC → + 2 NO

#### Plug connector M23 (RC18) and RC12 (enabling switch) 18-pin + PE / 12-pin





#### Ordering table

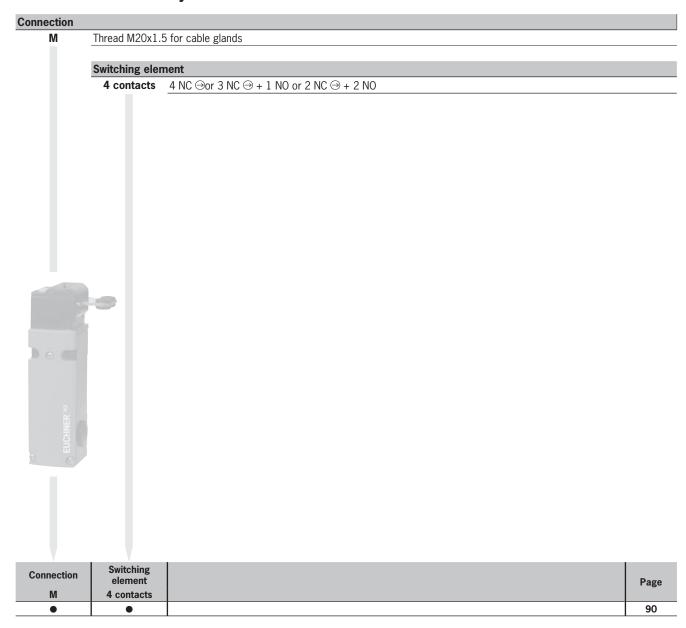
Series	Connection	Enabling switch- es Connection	Guard locking	Switch head	Switching element	Version	Black cover 24 V
			1	<b>LE</b> Left	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC  + 2 NO	Without mechanical release	<b>091062</b> TZ1LE024RC18VAB-C1803
TZ	M23 (RC18) 1)		Mechanical	<b>RE</b> Right	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC  + 2 NO	Without mechanical release	<b>091063</b> TZ1RE024RC18VAB-C1803
12	Plug connector		2	<b>LE</b> Left	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC  + 2 NO	Without mechanical release	<b>075955</b> TZ2LE024RC18VAB-C1803
			Electrical	<b>RE</b> Right	SK: <b>2131H</b> , 3 NC → + 1 NO ÜK: <b>3131H</b> , 2 NC  + 2 NO	Without mechanical release	<b>077149</b> TZ2RE024RC18VAB-C1803

1) Important: use suitable mating connector with option C1825!





## Selection table for safety switches NX



## **EUCHNER**

### Safety switch NX

- ► Cable entry M20 x 1.5
- ► LED indicator optional



#### Approach direction



Horizontally and vertically adjustable in 90° steps

#### LED function display (optional)

A function display (2 LEDs, red and green) is available for the following voltage ranges:

DC 24 V +10%, -15%

#### Switching elements (see also page 13/14)

- 2121 Slow-action switching contact 4 NC ⊕
- 2131 Slow-action switching contact 3 NC ⊕ + 1 NO
- 3131 Slow-action switching contact 2 NC ⊕ + 2 NO

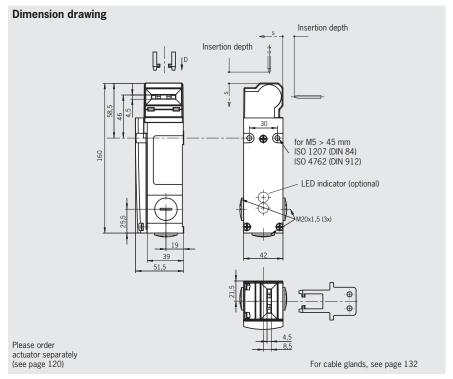
## **(W)**

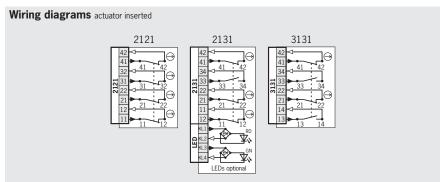






#### Cable entry M20 x 1.5

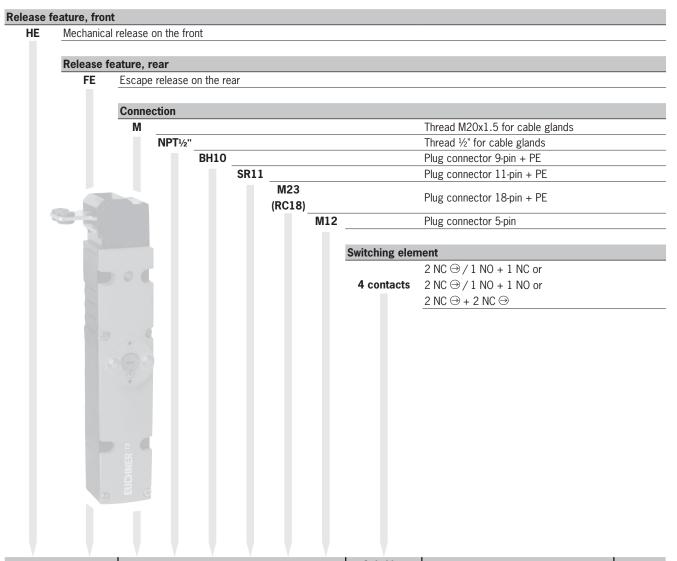




Series	Connection	Switching element	Version	Order no./item
		<b>2121</b> 4 NC ⊖		<b>092625</b> NX1-2121A-M
		2131		092624
BIN	1	3 NC → + 1 NO		NX1-2131A-M
NX	Cable entry 3 x M20 x 1.5	2131H	L024	091682
		3 NC → + 1 NO	LED indicator DC 24 V	NX1-2131AL024-M
		3131		092626
		2 NC → + 2 NO		NX1-3131A-M



### Selection table for safety switch TX with guard locking and guard locking monitoring



Manual	release			Conn	ection			Switching element	With version	Down.
HE	FE	М	NPT½"	BH10	SR11	M23 (RC18)	M12	4 contacts	with version	Page
•		•	•					•		92
•				•		•		•		93
•		•						•		94
•					•	•		•		95
•	•	•						•	C1991/C2161	96
•	•					•		•	C1991	97
•							•	•	C2129	98







- Mechanical release on the front
- With door monitoring contact
- Plug connector optional



#### Approach direction



Horizontally and vertically adjustable in 90° steps

#### Mechanical release

Is used for releasing the guard locking with the aid of a tool. The mechanical release must be sealed to prevent tampering (for example with sealing lacquer).

#### Solenoid operating voltage

► AC/DC 24 V +10%, -15%

#### **LED** function display

The switch has a function display (2 LEDs, red and green). The LED voltage is same as the solenoid operating voltage.

#### **Guard locking types**

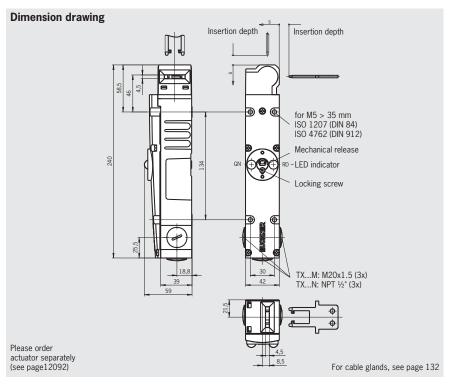
TX1 Closed-circuit current principle, guard locking by spring force. Release by applying voltage to the solenoid.

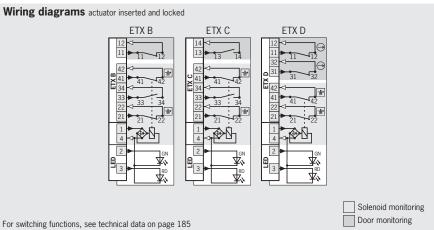
TX2 Open-circuit current principle, guard locking by applying voltage to the solenoid. Release by spring force.

#### Switching elements (see also page 14)

- ► ETX B Slow-action switching contact  $2 \text{ NC} \bigcirc / 1 \text{ NO} + 1 \text{ NC}$  (door monitoring contact)
- **ETX C** Slow-action switching contact 2 NC ⊕ / 1 NO + 1 NO (door monitoring contact)
- ▶ ETX D Slow-action switching contact 2 NC ⊕ + 2 NC ⊕ (door monitoring contacts)

#### Cable entry M20 x 1.5 / cable entry NPT 1/2"





Series	Connection	Guard locking	Switching element	Solenoid operating voltage AC/DC 24 V
			ETX B 2 NC 1 / 1 NO + 1 NC	<b>082921</b> TX1B-A024M
		<b>1</b> Mechanical	ETX C 2 NC  1 NO + 1 NO	<b>082922</b> TX1C-A024M
	M Cable entry		<b>ETX D</b> 2 NC	<b>095025</b> TX1D-A024MC2081
	Cable entry 3 x M20 x 1.5	<b>2</b> Electrical	ETX B 2 NC  1 NO + 1 NC	<b>082927</b> TX2B-A024M
TX			ETX C 2 NC  1 NO + 1 NO	<b>082928</b> TX2C-A024M
IX			<b>ETX D</b> 2 NC	<b>095026</b> TX2D-A024MC2081
		1	ETX B 2 NC 1 / 1 NO + 1 NC	<b>082944</b> TX1B-A024N
	N Cable antre	Mechanical	ETX C 2 NC 1 / 1 NO + 1 NO	<b>082945</b> TX1C-A024N
	Cable entry 3 x NPT ½"	<b>2</b> Electrical	ETX B 2 NC ⊕ / 1 NO + 1 NC	<b>082946</b> TX2B-A024N
			ETX C 2 NC  1 NO + 1 NO	<b>082947</b> TX2C-A024N





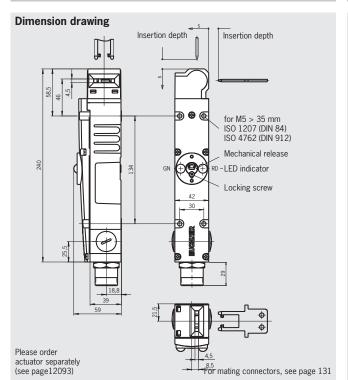




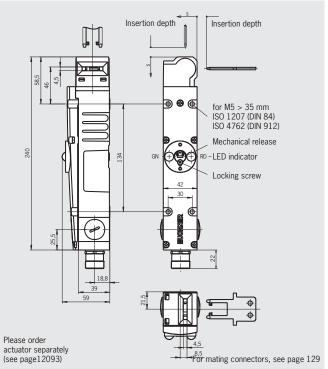


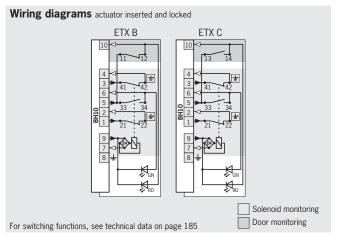


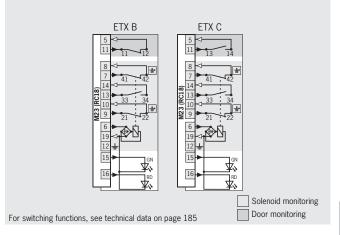
#### Plug connector BH10 9-pin + PE



#### Plug connector M23 (RC18) 18-pin + PE







Series	Connection	Guard locking	Switching element	Solenoid operating voltage AC/DC 24 V
	Plug connector	<b>1</b> Mechanical	ETX B 2 NC 1 / 1 NO + 1 NC	<b>085380</b> TX1B-A024BH10
	BH10	<b>2</b> Electrical	ETX B 2 NC 1 / 1 NO + 1 NC	<b>085381</b> TX2B-A024BH10
TX		1	ETX B 2 NC 1 / 1 NO + 1 NC	<b>082933</b> TX1B-A024RC18
1.4	Plug connector	Mechanical	ETX C 2 NC 1/2 / 1 NO + 1 NO	<b>082934</b> TX1C-A024RC18
	M23 (RC18)	2	ETX B 2 NC 1 / 1 NO + 1 NC	<b>082939</b> TX2B-A024RC18
		Electrical	ETX C 2 NC 1/2 / 1 NO + 1 NO	<b>082940</b> TX2C-A024RC18

## Safety Switches Type 2, Metal Housing



#### Safety switch TX with guard locking and guard locking monitoring







- Mechanical release on the front
- Release under load possible
- With door monitoring contact
- Plug connector optional



#### Approach direction



Horizontally and vertically adjustable in 90° steps

#### Mechanical release

Is used for releasing the guard locking with the aid of a tool. The mechanical release must be sealed to prevent tampering (for example with sealing lacquer).

#### Solenoid operating voltage

► AC/DC 24 V +10%, -15%

#### **LED** function display

The switch has a function display (2 LEDs, red and green). The LED voltage is same as the solenoid operating voltage.

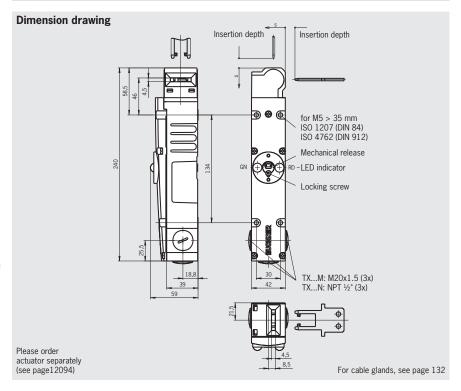
#### **Guard locking types**

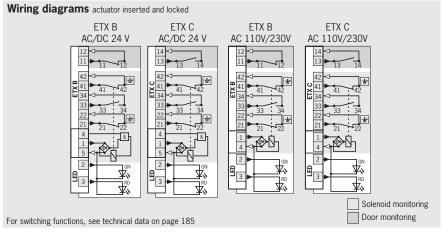
Closed-circuit current principle, guard locking by spring force. Release by applying voltage to the solenoid. Release under load possible.

#### Switching elements (see also page 14)

- **ETX B** Slow-action switching contact 2 NC ⊕ / 1 NO + 1 NC (door monitoring contact)
- **ETX C** Slow-action switching contact 2 NC ⊕ / 1 NO + 1 NO (door monitoring contact)

#### Cable entry M20 x 1.5 / cable entry NPT 1/2"





Series	Connection	Guard locking	Switching element	Solenoid operating voltage AC/DC 24 V
TX	M Cable antre	3	ETX B 2 NC 1 / 1 NO + 1 NC	<b>082952</b> TX3B-A024M
IX	Cable entry 3 x M20 x 1.5	Mechanical	ETX C 2 NC 1/2 / 1 NO + 1 NO	<b>082953</b> TX3C- <b>0</b> 024M



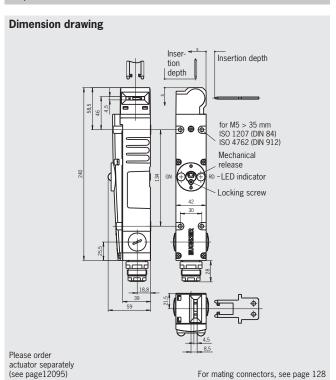




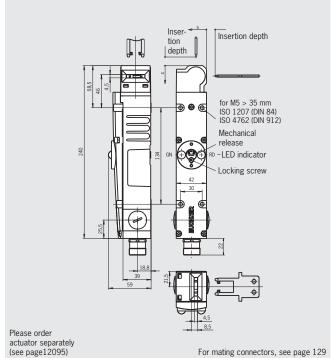


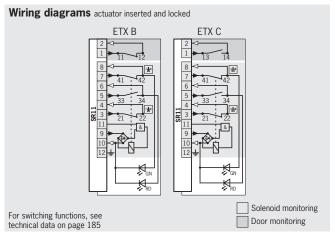




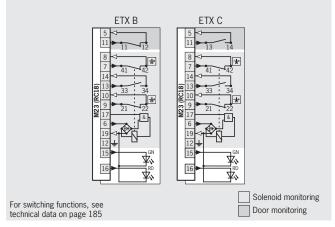


## Plug connector M23 (RC18)





For mating connectors, see page 128



Series	Connection	Guard locking	Switching element	Solenoid operating voltage AC/DC 24 V	
TV	Plug connector SR11	<b>3</b> Mechanical	ETX B 2 NC  1 / 1 NO + 1 NC ETX C 2 NC  1 / 1 NO + 1 NO	085396	
TX	Plug connector M23 (RC18)	3 Mechanical	ETX B 2 NC  1 / 1 NO + 1 NC ETX C 2 NC  1 / 1 NO + 1 NO	082965	

## Safety Switches Type 2, Metal Housing



#### Safety switch TX with guard locking and guard locking monitoring









- Escape release on the rear
- Release under load possible (only TX3 version)
- With door monitoring contact
- Plug connector optional



#### **Approach direction**



Horizontally and vertically adjustable in 90° steps

#### Escape release

This is used for manual release of guard locking from within the danger zone without tools. With identification of On/Off position.

#### Solenoid operating voltage

► AC/DC 24 V +10%, -15%

#### **LED** function display

The switch has a function display (2 LEDs, red and green). The LED voltage is same as the solenoid operating voltage.

#### **Guard locking types**

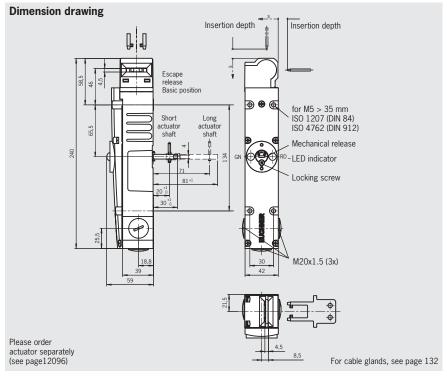
Closed-circuit current principle, guard locking by spring force. Release by applying voltage to the solenoid.

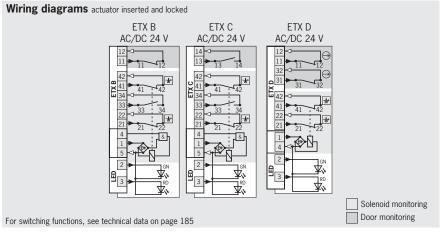
**TX3** Closed-circuit current principle, guard locking by spring force. Release by applying voltage to the solenoid. Release under load possible.

#### Switching elements (see also page 14)

- ETX B Slow-action switching contact 2 NC ⊕ / 1 NO + 1 NC (door monitoring contact)
- ► ETX C Slow-action switching contact 2 NC ⊕ / 1 NO + 1 NO (door monitoring contact)
- ▶ **ETX D** Slow-action switching contact 2 NC → + 2 NC → (door monitoring contacts)

#### Cable entry M20 x 1.5





Series	Connection	Guard locking	Switching element	Version	Solenoid operating voltage  AC/DC 24 V
		1	ETX C 2 NC 1/2 / 1 NO + 1 NO	C2161 Long actuator shaft	<b>099489</b> TX1C-A024MC2161
		Mechanical	<b>ETX D</b> 2 NC	C1991 Short actuator shaft	<b>096173</b> TX1D-A024MC1991
TX	M Cable entry 3 x M20 x 1.5		ETX B 2 NC 1 / 1 NO + 1 NC	C1991 Short actuator shaft	<b>085391</b> TX3B-A024MC1991
	3 X WIZU X 1.3	<b>3</b> Mechanical	ETX C	C1991 Short actuator shaft	<b>093118</b> TX3C-A024MC1991
			2 NC 1 / 1 NO + 1 NO	C2161 Long actuator shaft	<b>098946</b> TX3C-A024MC2161

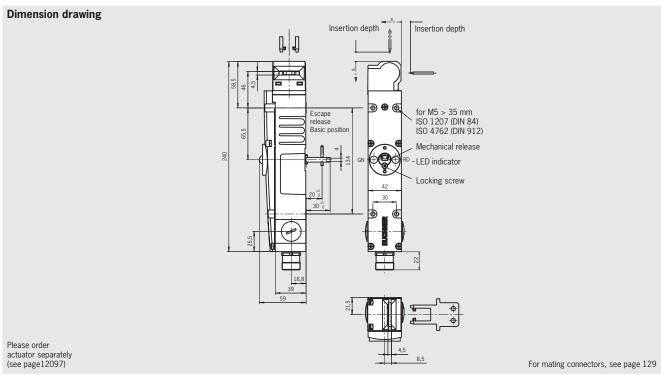


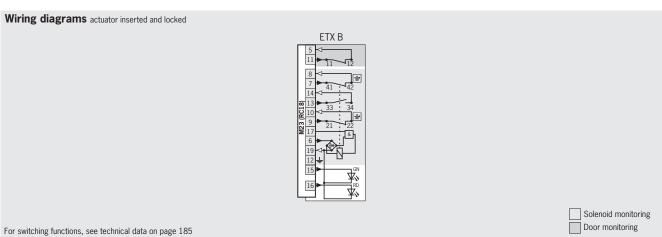












Series	Connection	Guard locking	Switching element	Version	Solenoid operating voltage  AC/DC 24 V
тх	Plug connector	<b>3</b>	ETX B	C1991	<b>093559</b>
	M23 (RC18)	Mechanical	2 NC 1 / 1 NO + 1 NC	Short actuator shaft	TX3B-A024RC18C1991









- Mechanical release on the front
- ► With door monitoring contact
- Separate plug connector for solenoid monitoring and door monitoring with solenoid operating voltage
- For direct connection to PROFIsafe inputs/outputs



#### Approach direction



Horizontally and vertically adjustable in 90° steps

#### Mechanical release

Is used for releasing the guard locking with the aid of a tool. The mechanical release must be sealed to prevent tampering (for example with sealing lacquer).

#### Solenoid operating voltage

► AC/DC 24 V +10%, -15%

#### **LED** function display

The switch has a function display (2 LEDs, red and green). The LED voltage is same as the solenoid operating voltage.

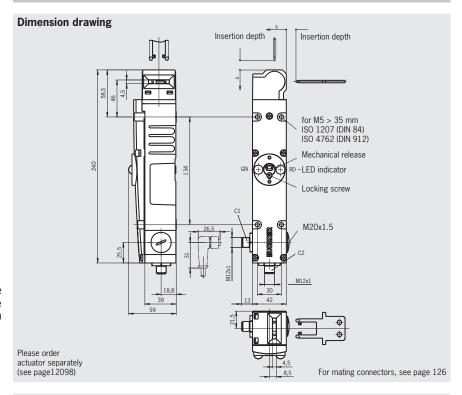
#### **Guard locking types**

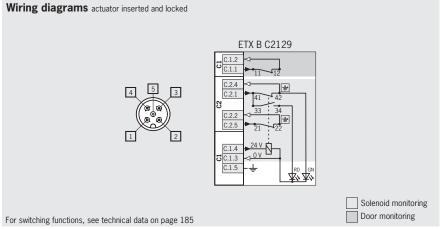
TX1 Closed-circuit current principle, guard locking by spring force. Release by applying voltage to the solenoid.

#### Switching elements (see also page 14)

► ETX B Slow-action switching contact 2 NC ⊕ / 1 NO + 1 NC (door monitoring contact)

#### Plug connector M12 2 plug connectors, 5-pin

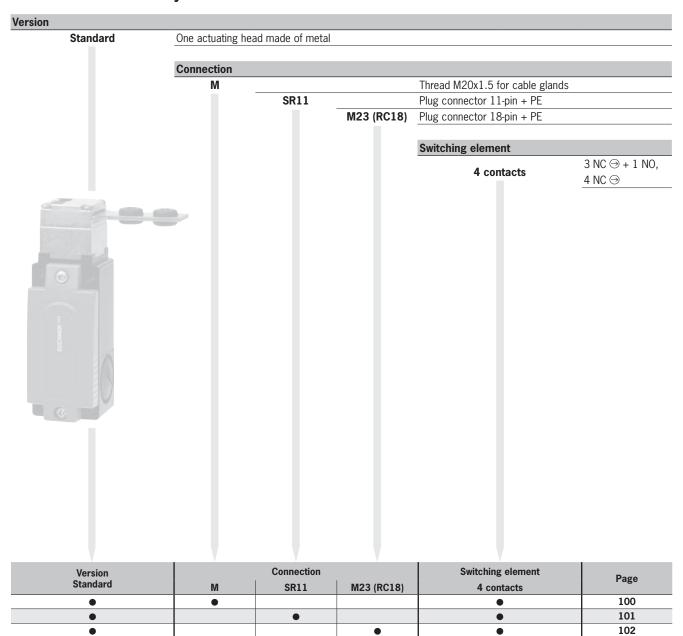




Series	Connection	Guard locking	Switching element	Version	Solenoid operating voltage  AC/DC 24 V
TX	Plug connector 2 x M12	<b>1</b> Mechanical	<b>ETX B</b> 2 NC № / 1 NO + 1 NC	C2129	<b>097623</b> TX1B-A024MC2129



## Selection table for safety switches SGA





### Safety switch SGA

- ► Cable entry M20 x 1.5
- ► Plug connector optional



#### Approach direction

Horizontally and vertically adjustable in 90° steps

Switching elements (see also page 13)

▶2121H Slow-action switching contact 4 NC ⊖

►2131H Slow-action switching contact 3 NC ⊕ + 1 NO

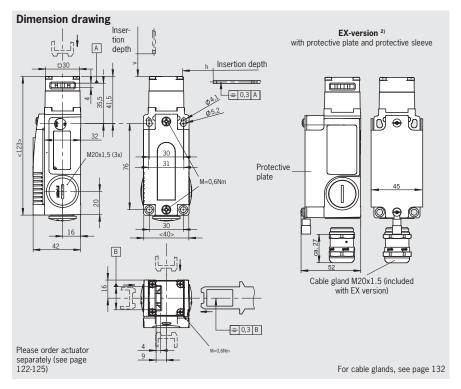
## (**)**

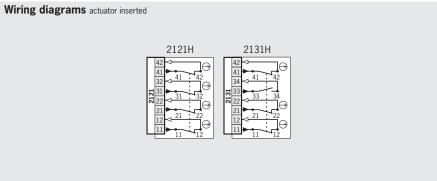






#### Cable entry M20 x 1.5





#### Ordering table

Series	Connection	Switching element	Version	Order no./item
	1	<b>2121H</b> 4 NC ⊖		<b>103725</b> SGA1A-2121A-M
SGA	Cable entry 3 x M20 x 1.5	2131H		<b>106307</b> SGA1A-2131A-M
		3 NC → + 1 NO	ATEX incl. cable gland	<b>123460</b> <sup>1)</sup> SGA1A-2131A-M-EX

1) 🖾 II 3 G Ex nR IIB T5 Gc / 🖾 II 3 D Ex tc IIIC T90° Dc X



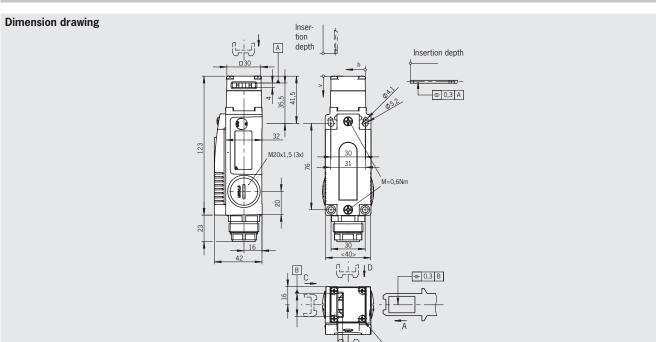
For plug connectors, see page 128

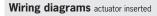




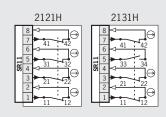


## Plug connector SR11 11-pin + PE





Please order actuator separately (see page 122-125)



Series	Connection	Switching element	Order no./item
SGA	2 Plug connector	<b>2121H</b> 4 NC ⊖	<b>116396</b> SGA2A-2121ASR11
SUA	Plug connector SR11	2131H 3 NC → + 1 NO	<b>106736</b> SGA2E-2131ASR11



### Safety switch SGA

- 2 illuminated pushbuttonsPlug connector M23 (RC18)



#### Approach direction



Horizontally and vertically adjustable in 90° steps

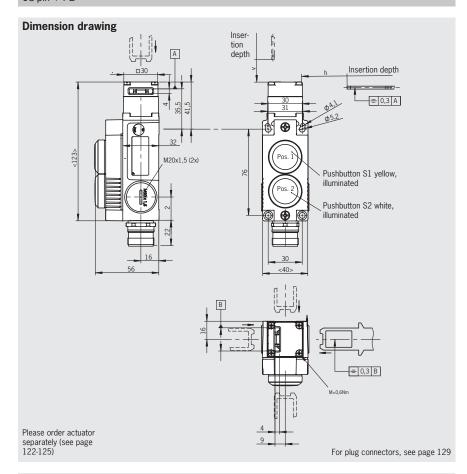
Switching elements (see also page 13) ▶ 2121H Slow-action switching contact 4 NC →

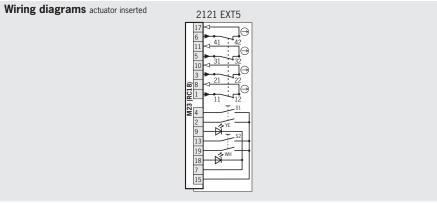






#### Plug connector M23 (RC18) 18-pin + PE

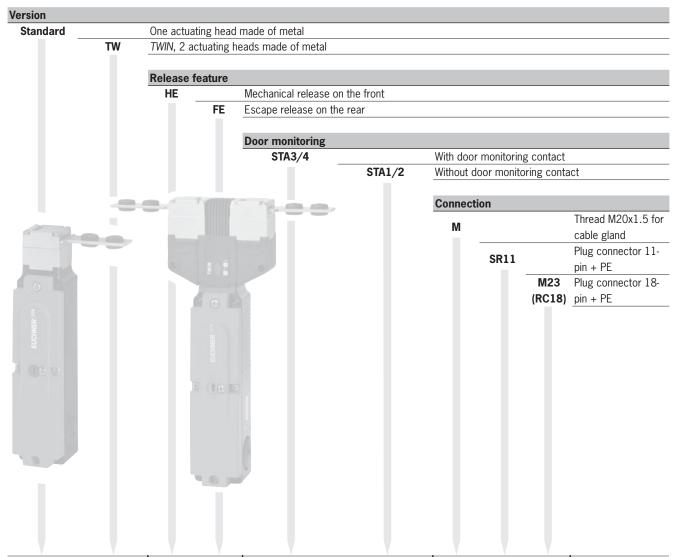




Series	Connection	Switching element	Version	Order no./item
SGA	2 Plug connector M23 (RC18)	<b>2121H</b> 4 NC ⊖	Pos. 1: yellow pushbutton Pos. 2: white pushbutton	<b>104012</b> SGA2A-2121ARC18-EXT5



### Selection table for safety switches STA with guard locking and guard locking monitoring



Version		Release feature		Door monitoring		Connection			_
Standard	TW	HE	FE	STA3/4	STA1/2	М	SR11	M23 (RC18)	Page
•		•		•		•			104/105
•		•		•			•	•	106
•		•			•	•			107
•		•			•		•		108
•		•	•	•		•			109
	•	•		•		•			110



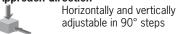




- Mechanical release on the front
- With door monitoring contact
- Plug connector optional



#### Approach direction



#### Mechanical release

Is used for releasing the guard locking with the aid of a tool. To protect against tampering, the mechanical release is sealed with sealing lacquer.

#### Solenoid operating voltage

► AC/DC 24 V +10%, -15% 230 V AC -15%, +10%

#### LED function display (optional)

A function display (2 LEDs, red and green) is available for the following voltage ranges:

24 V +10%, -15% ► AC/DC

#### **Guard locking types**

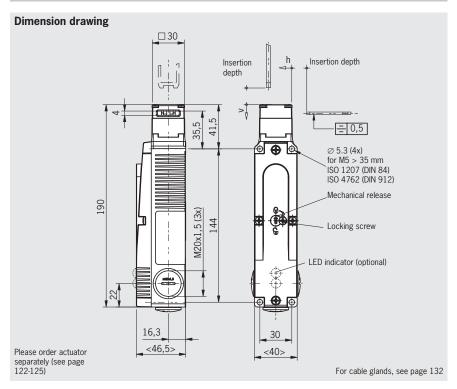
STA3 Closed-circuit current principle, guard locking by spring force. Release by applying voltage to the guard locking solenoid.

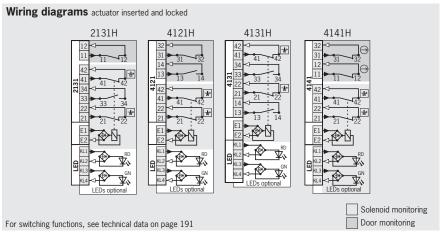
STA4 Open-circuit current principle, guard locking by applying voltage to the guard locking solenoid. Release by spring force.

#### **Switching elements**

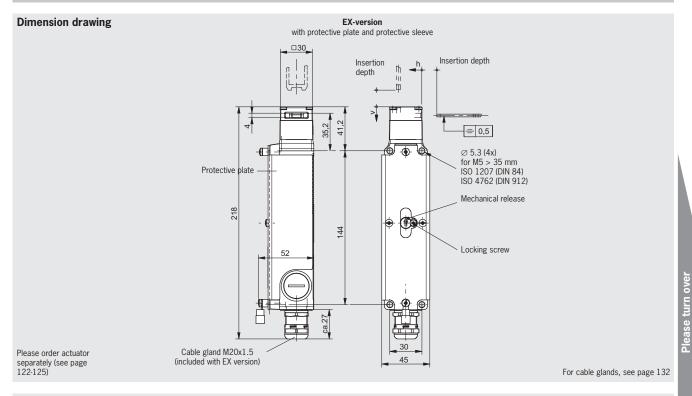
- ≥2131H Slow-action switching contact 2 NC → + 1 NO + 1 NC (door monitoring contact)
- ▶4121H Slow-action switching contact  $2 \text{ NC} \oplus + 1 \text{ NC} / 1 \text{ NO (door moni-}$ toring contact)
- ▶4131H Slow-action switching contact  $2 \text{ NC} \oplus + 1 \text{ NO} + 1 \text{ NO}$  (door monitoring contact)
- ▶4141H Slow-action switching contact 2 NC ⊕ + 2 NC ⊕ (door monitoring contact)

#### Cable entry M20 x 1.5

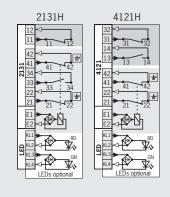




owi o o	Connection	Cuard lasking	Curitohing alamant	Varaion	Solenoid operating voltage		
Series Connection		Guard locking	Switching element	Version -	AC/DC 24 V	AC 230 V	
			<b>2131H</b> 2 NC + 1 NO + 1 NC		<b>096938</b> STA3A-2131A024M	<b>104171</b> <sup>1)</sup> STA3A-2131A230M	
			4121H		<b>096936</b> STA3A-4121A024M	-	
		3	2 NC + 1 NC / 1 NO	024L LED indicator AC/DC 24 V	<b>106535</b> STA3A-4121A024L024M	-	
		Mechanical	<b>4131H</b> 2 NC + 1 NO + 1 NO		<b>099480</b> STA3A-4131A024M	-	
	м		4141H 2 NC		<b>099274</b> STA3A-4141A024M	-	
STA	Cable entry 3 x			024L LED indicator AC/DC 24 V	<b>100898</b> STA3A-4141A024L024M	-	
	M20 x 1.5	<b>4</b> Electrical	2131H 2 NC  + 1 NO + 1 NC		<b>096939</b> STA4A-2131A024M	-	
				024L LED indicator AC/DC 24 V	<b>103926</b> STA4A-2131A024L024M	-	
			4121H 2 NC ± + 1 NC / 1 NO		<b>096937</b> STA4A-4121A024M	-	
			4131H 2 NC + 1 NO + 1 NO		<b>099481</b> STA4A-4131A024M	-	
			4141H 2 NC		<b>109172</b> STA4A-4141A024M	-	



Wiring diagrams actuator inserted and locked



For switching functions, see technical data on page 191

Solenoid monitoring Door monitoring

#### Ordering table

Series	Connection	Guard locking	Switching element	Version	Solenoid operating voltage  AC/DC 24 V
		3 Mechanical	2131H 2 NC + 1 NO + 1 NC	ATEX incl. cable gland	<b>115584</b> STA3A-2131A024MF-EX
STA	M Cable entry		<b>4121H</b> 2 NC ± + 1 NC / 1 NO	ATEX incl. cable gland	<b>115586</b> STA3A-4121A024MF-EX
SIA	3 x M20 x 1.5	x 1.5 4 Electrical	2131H 2 NC	ATEX incl. cable gland	<b>115585</b> STA4A-2131A024MF-EX
			<b>4121H</b> 2 NC <b>1</b> + 1 NC / 1 NO	ATEX incl. cable gland	<b>123076</b> STA4A-4121A024MF-EX

1) 🐼 II 3 G Ex nR IIB T4 Gc / 🐼 II 3 D Ex tc IIIC T110° Dc X

## Safety Switches Type 2, Metal Housing



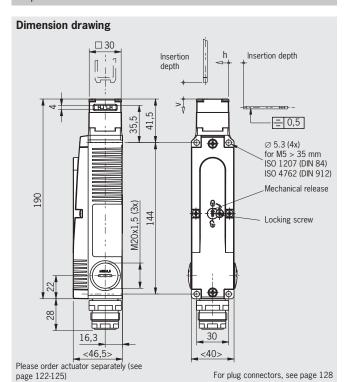




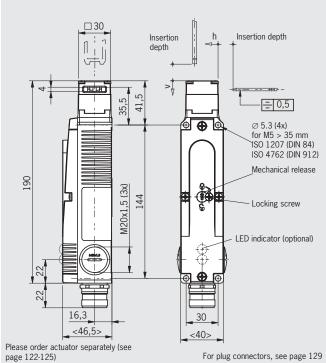




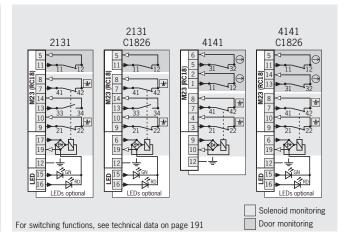
#### Plug connector SR11 11-pin + PE



#### Plug connector M23 (RC18) 18-pin + PE



# 



Ordering table							
Series	Connection	Guard locking	Switching element	Version	Solenoid operating voltage  AC/DC 24 V		
	SR11 Plug con- nector	<b>3</b> Mechanical	4121H 2 NC 1 + 1 NC / 1 NO		<b>105304</b> STA3A-4121A024SR11		
			2131H	024L LED indicator AC/DC 24 V	<b>099658</b> STA3A-2131A024L024RC18		
	M23 (RC18) Plug con- nector	3 Mechanical 4 Electrical	2 NC + 1 NO + 1 NC	O24L LED indicator AC/DC 24 V C1826 Special wiring	<b>106623</b> STA3A-2131A024L024RC18C1826		
STA			4141H 2 NC		<b>100029</b> STA3A-4141A024RC18		
				<b>024L</b> LED indicator AC/DC 24 V	<b>114416</b> STA3A-4141A024L024RC18C1826		
			2131H 2 NC + 1 NO + 1 NC	<b>024L</b> LED indicator AC/DC 24 V	<b>105303</b> STA4A-2131A024L024RC18		
				O24L LED indicator AC/DC 24 V C1826 Special wiring	<b>106622</b> STA4A-2131A024L024RC18C1826		







- ► Mechanical release on the front
- Without door monitoring contact
- Plug connector optional



#### Approach direction



Horizontally and vertically adjustable in 90° steps

#### Mechanical release

Is used for releasing the guard locking with the aid of a tool. To protect against tampering, the mechanical release is sealed with sealing lacquer.

#### Solenoid operating voltage

► AC/DC 24 V +10%, -15%

#### **Guard locking types**

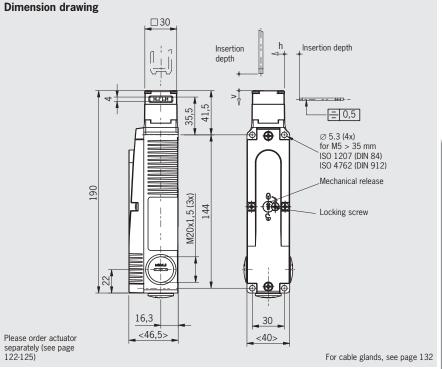
STA1 Closed-circuit current principle, guard locking by spring force. Release by applying voltage to the guard locking solenoid.

STA2 Open-circuit current principle, guard locking by applying voltage to the guard locking solenoid. Release by spring

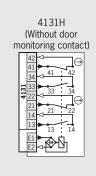
#### **Switching elements**

▶ 4131H Slow-action switching contact 2 NC → + 2 NO

#### Cable entry M20 x 1.5



#### Wiring diagrams actuator inserted and locked



For switching functions, see technical data on page 190

Series	Connection	Guard locking	Switching element	Solenoid operating voltage  AC/DC 24 V	
STA	M Cable entry	<b>1</b> Mechanical	<b>4131H</b> 2 NC → + 2 NO	<b>096439</b> STA1A-4131A024M	
SIA	3 x M20 x 1.5	<b>2</b> Electrical	<b>4131H</b> 2 NC → + 2 NO	<b>096935</b> STA2A4131A024M	







For plug connectors, see page 128

Solenoid monitoring

Door monitoring



### Plug connector SR11

11-pin + PE

### **Dimension drawing** □30 Insertion depth 41,5 35,5 0,5 Ø 5.3 (4x) for M5 > 35 mm ISO 1207 (DIN 84) ISO 4762 (DIN 912) **⊕ ⊕** Mechanical release 190 M20x1,5 (3x) 144 Locking screw 28 16,3 Please order actuator <46,5> <40> separately (see page 122-125)

Wiring diagrams actuator inserted and locked 4131H (Without door monitoring contact)

#### Ordering table

For switching functions, see technical data on page 190

_					
Carias	Series Connection Guard locking		Contabina alamant	Vanatan	Solenoid operating voltage
Series			Switching element Version		AC/DC 24 V
STA	SR11 Plug con- nector	<b>2</b> Electrical	<b>4131H</b> 2 NC		<b>109574</b> STA2A-4131A024SR11

#### **EUCHNER**

#### Safety switch STA with guard locking and guard locking monitoring







- Escape release from the rear
- With door monitoring contact



#### Approach direction



Horizontally and vertically adjustable in 90° steps

#### Escape release

This is used for manual release of guard locking from within the danger zone without tools. With identification of On/Off position.

#### Solenoid operating voltage

► AC/DC 24 V +10%, -15%

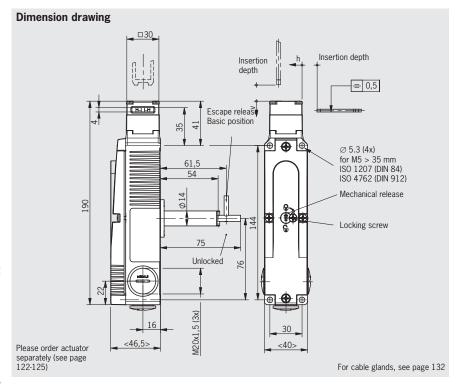
#### **Guard locking types**

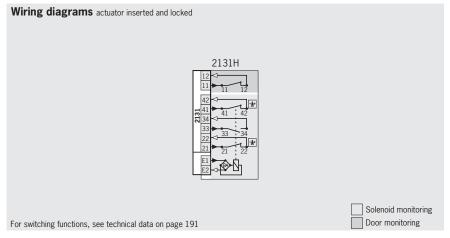
STA3 Closed-circuit current principle, guard locking by spring force. Release by applying voltage to the guard locking solenoid.

#### Switching elements

▶2131H Slow-action switching contact 2 NC ⊕ + 1 NO + 1 NC (door monitoring contact)

#### Cable entry M20 x 1.5





Series	Series Connection Guard locking		Switching element Version		Solenoid operating voltage  AC/DC 24 V		
STA	M Cable entry 3 x M20 x 1.5	<b>3</b> Mechanical	<b>2131H</b> 2 NC	C1993 Long actuator shaft	<b>103660</b> STA3A-2131A024MC1993		



#### Safety switch STA-TW with guard locking and guard locking monitoring



- Actuating heads made of metal
- Simultaneous monitoring of two safety doors
- Mechanical release on the front
- Mechanical key release optional
- ► With door monitoring contact



#### Approach direction



Horizontally and vertically adjustable in 90° steps

#### Mechanical release

Is used for releasing the guard locking with the aid of a tool. To protect against tampering, the mechanical release is sealed with sealing lacquer.

#### Mechanical key release

Additional lock on the switch head. Function as for mechanical release. The mechanical key release setting is indicated in the window. Two keys are included.

#### Solenoid operating voltage

► AC/DC 24 V +10%, -15%

#### **LED function display** (optional)

A function display (2 LEDs, red and green) is available for the following voltage ranges:

► AC/DC 24 V +10%, -15%

#### **Guard locking types**

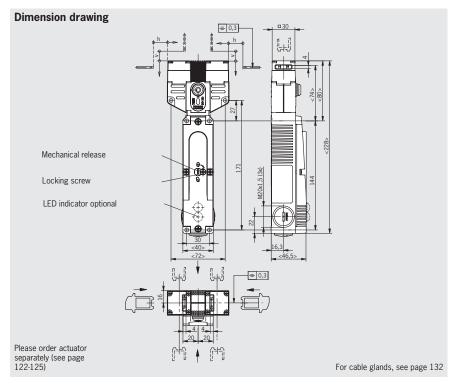
STP3 Closed-circuit current principle, guard locking by spring force. Release by applying voltage to the guard locking solenoid.

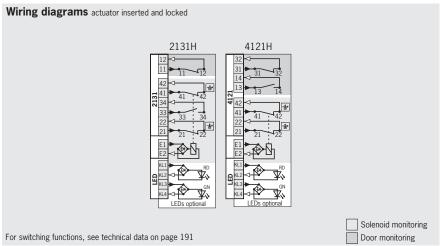
#### **Switching elements**

▶2131H Slow-action switching contact 2 NC ⊕ + 1 NO + 1 NC (door monitoring contact)

▶4121H Slow-action switching contact 2 NC → 1 NC / 1 NO (door monitoring contact)

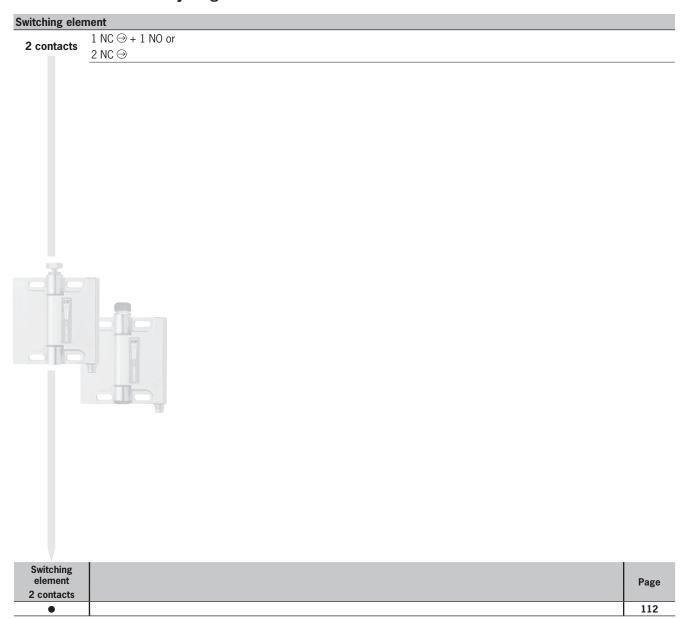
#### Cable entry M20 x 1.5





Series	Connection	Guard locking	Switching element	Version	Solenoid operating voltage AC/DC 24 V
			2131H		<b>105617</b> STA-TW-3A-2131AC024M
STA-TW	M Cable entry	3		With mechanical key re- lease (identical locking)	
	3 x M20 x 1.5	Mechanical	4121H		<b>106545</b> STA-TW-3A-4121ACO24M
			2 NC 🖶 + 1 NC / 1 NO	<b>024L</b> LED indicator AC/DC 24 V	<b>106379</b> STA-TW-3A-4121ACO24LO24M

#### Selection table for safety hinge ESH





#### Safety hinge ESH

- ► Safety hinge with integrated safety function
- Suitable for profile mounting



The safety hinges ESH are safety devices for monitoring movable guards, such as doors or covers on machinery or systems.

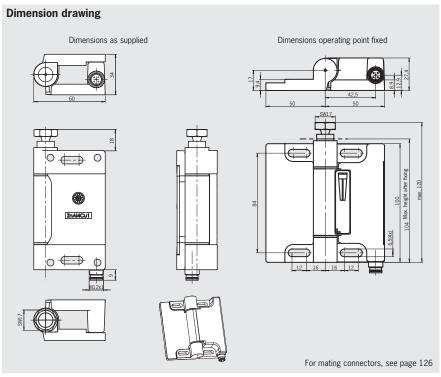
On the safety hinges ESH-ARO... the operating point can be adjusted as often as necessary.

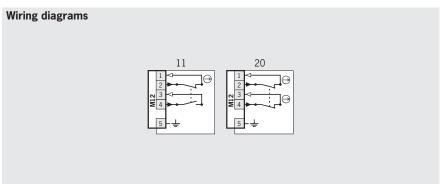
Important: During mounting the axes of the hinges used must be exactly aligned.

#### **Switching elements**

- **20** Snap-action switching contact 2 NC ⊕
- 11 Snap-action switching contact 1 NC ⊕ + 1 NO

#### Plug connector M12 4-pin + PE





Series	Switching element	Version	Order no./item
	<b>11</b> 1 NC ⊖ + 1 NO	Plug connector <b>M12</b>	<b>095895</b> ESH-PRO-11A-1205
Safety hinge ESH-PRO	<b>20</b> 2 NC ⊝	Plug connector <b>M12</b>	<b>095894</b> ESH-PRO-20A-1205
	-	Matching hinge (without safety function)	<b>096007</b> ESH-PRO



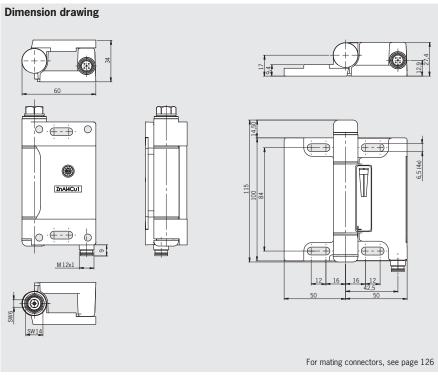


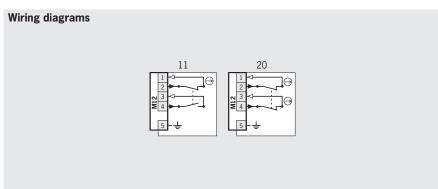


► Safety hinge ESH-ARO re-adjustable



#### Plug connector M12 4-pin + PE





Series	Switching element	Version	Order no./item
	<b>11</b> 1 NC ⊖ + 1 NO	Plug connector <b>M12</b>	<b>109409</b> ESHARO-11A-1205
Safety hinge ESH-ARO	<b>20</b> 2 NC ⊝	Plug connector <b>M12</b>	<b>106548</b> ESHARO-20A-1205
re-adjustable	-	Matching hinge (without safety function)	<b>096007</b> ESH-PRO
	-	Replacement protective cap	110443 INSTALLATION KIT CAP





#### **Selection table for accessories**

SS4							Dlug connector M12 5 pin
884							Plug connector, M12, 5-pin
994							Plug connector, M12, 8-pin
							Male plug, 3-pin + PE
Sole	enoid						Solenoid plug connector NZ.VZ.VS 2-pin +
	C16-1						Female connector, 6-pin + PE
		RC12					Blanking plug 12-pin
			SR6				Female connector, 6-pin + PE
							Male socket, 6-pin + PE
				SR11			Female connector, 11-pin + PE
							Male socket 11-pin + PE
					M23 (RC18)		Female connector, 18-pin + PE
						MR	Plug connector, 8-/9-/10-/12-pin
							Plug connector with cable
							Cable glands
							Mounting plates
							Bolts
			RC12		RC12	RC12	RC12

V V		V													
		1	1	1	Plug co	nnector	1	1	1	1	With		Mounting		_
Actuator	SVM5	SM8	SS4	Sole- noid	C16-1	RC12	SR6	SR11	MR23 (RC18)	MR	cable	Cable gland	plates	Bolts	Page
•															116
	•										•				126
		•									•				126
			•												127
				•											127
					•										127
						•									127
							•				•				128
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									•						129
									•		•				130
										•	•				131
												•			132
													•		133
·														•	143



#### Actuators for safety switches NZ.VZ, NZ.VZ.VS and TZ

- Two stainless safety screws per actuator
- Increased overtravel optional
- Packaging unit 25 pieces optional

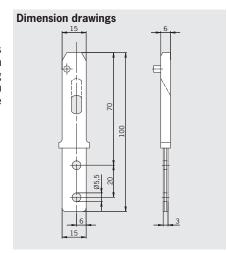
#### Straight actuator

The straight actuator is used on sliding doors or hinged doors with door radii greater than 1,000 mm. Safety screws prevent unscrewing of the actuator. The safety screws included can be inserted with a normal tool, but cannot be removed again.

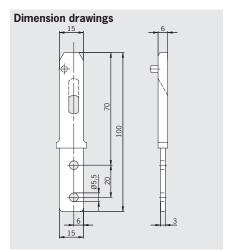
#### **Actuator with overtravel**

- ► 4 mm for doors with normal play
  ► 16 mm for doors with large play (optional)

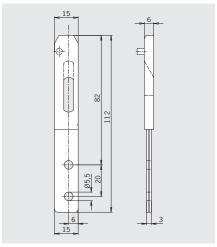
#### **Actuator Z-G straight** overtravel 4 mm

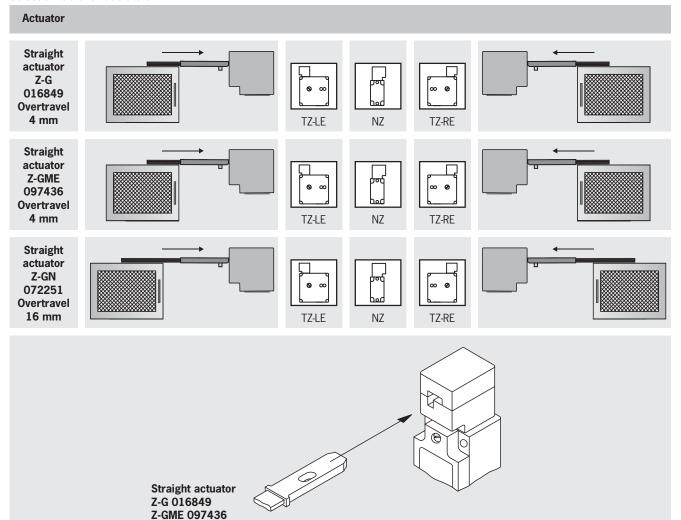


#### **Actuator Z-GME straight** Overtravel 4 mm, solid stainless steel



#### **Actuator Z-GN straight** overtravel 16 mm





#### Ordering table

Designation	Design	Min. door radius r [mm]	Packaging unit	Order no./item
	Z-G 4 mm overtravel	≥ 1,000	1 pcs.	<b>016849</b> ACTUATOR-Z-G
	incl. 2 safety screws M5 x 10	≥ 1,000	25 pcs.	<b>074411</b> ACTUATOR-Z-G/V25
<b>Actuator</b> Straight	Z-GME 4 mm overtravel, made of solid stainless steel incl. 2 safety screws M5x10	≥ 1,000	1 pcs.	<b>097436</b> ACTUATOR-Z-GME
	<b>Z-GN</b> 16 mm overtravel incl. 2 safety screws M5x10	≥ 1,000	1 pcs.	<b>072251</b> ACTUATOR-Z-GN

Z-GN 072251



#### Actuators for safety switches NZ.VZ, NZ.VZ.VS and TZ

Hinged actuator Z-R/Z-LL

Radius ≥ 200 mm, guard hinged on left/right

- Two stainless safety screws per actuator
- ► Smaller door radii optional
- ► Packaging unit 25 pieces optional

#### **Hinged actuator**

For door radii less than 1,000 mm a hinged actuator should be used. The spring action movement of the actuator prevents damage due to the actuator jamming in the actuator head. Depending on the movement of the guard, the actuator must be selected for left/right or top/bottom.

#### Option C2241

Hinged actuator made of stainless steel.

## 

#### Hinged actuator Z-R-C2194/Z-L-C2194 Radius $\geq 200$ mm, guard hinged on left/right

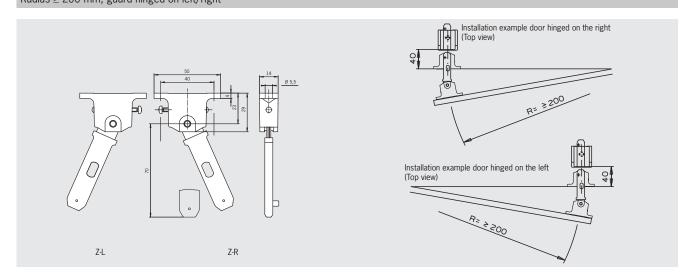
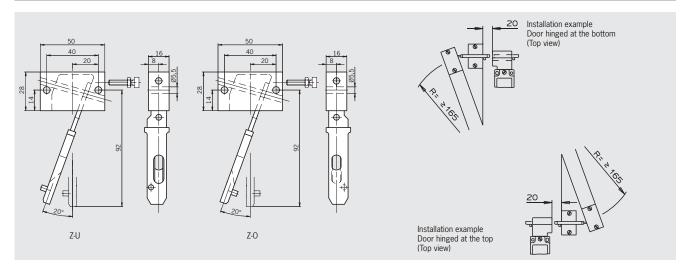


Illustration of actuator Z-L

#### Hinged actuator Z-U/Z-O/Z-U-C2241/Z-O-C2241

Radius  $\geq 165$  mm, guard hinged at bottom/top



#### **Selection table for actuators**

#### Actuator Hinged actuator Z-L 024298 Z-L-C2194 100407 TZ-LE Hinged actuator Z-R 024299 Z-R-C2194 100406 TZ-LE ΝZ TZ-RE Hinged actuator 048850 TZ-LE ΝZ TZ-RE Hinged actuator Z-0 057950 TZ-LE ΝZ TZ-RE **Hinged actuator Hinged actuator** Z-0 057950 Z-R 024299 Z-R-C2194 100406 (9) **Hinged actuator Hinged actuator** Z-L 024298 Z-U 048850 Z-L-C2194 100407

Designation	Design	Version	Min. door radius r [mm]	Packaging unit	Order no./item
	<b>Z-R</b> Guard hinged on the left		≥ 200	1 pcs.	<b>024299</b> HINGED ACTUATOR Z-R
	incl. 2 safety screws M5 x 16		≥ 200	25 pcs.	<b>074412</b> HINGED ACTUATOR-Z-R/V25
	<b>Z-L</b> Guard hinged on the right		≥ 200	1 pcs.	<b>024298</b> HINGED ACTUATOR Z-L
	incl. 2 safety screws M5 x 16			25 pcs.	<b>074413</b> HINGED ACTUATOR-Z-L/V25
	<b>Z-R-C2194</b> Guard hinged on the left incl. 2 safety screws M5x10	C2194 Smaller door radius	≥ 200	1 pcs.	100406 HINGED ACTUATOR-Z-R-C2194
Hinged actuator	<b>Z-L-C2194</b> Guard hinged on the right incl. 2 safety screws M5 x 10	C2194 Smaller door radius	≥ 200	1 pcs.	100407 HINGED ACTUATOR-Z-L-C2194
	7.11		≥ 165	1 pcs.	<b>048850</b> HINGED ACTUATOR Z-U
	<b>Z-U</b> Guard hinged at bottom		≥ 100	25 pcs.	<b>074414</b> HINGED ACTUATOR-Z-U/V25
	incl. 2 safety screws M5 x 25	C2241 Stainless steel	≥ 165	1 pcs.	<b>103845</b> HINGED ACTUATOR-Z-U-C2241
	7.0		> 1CF	1 pcs.	<b>057950</b> HINGED ACTUATOR Z-O
	<b>Z-O</b> Guard hinged at top		≥ 165	25 pcs.	074415 HINGED ACTUATOR-Z-O/V25
	incl. 2 safety screws M5 x 25	C2241 Stainless steel	≥ 165	1 pcs.	<b>104068</b> HINGED ACTUATOR-Z-O-C2241



#### Actuators for safety switches NX/TX

- ► Actuators made of stainless steel
- Two stainless safety screws per actuator
- With rubber bush

#### Straight actuator

The straight actuator is used on sliding doors or hinged doors with door radii greater than 300 mm. Safety screws prevent unscrewing of the actuator.

#### **Actuator with overtravel**

- ▶ 1 mm for doors with normal play
- 8 mm for doors with large play (optional)

#### Actuator with rubber bush

For flexible mounting of the actuator.

#### **Hinged actuator**

For door radii less than 300 mm a hinged actuator should be used. The spring action movement of the actuator prevents damage due to the actuator jamming in the actuator head. Depending on the movement of the guard, the actuator must be selected for left/right or top/bottom.

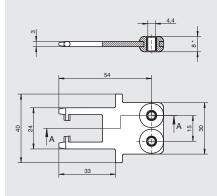
#### Screws made of stainless steel

The safety screws included can be inserted with a normal tool, but cannot be removed again.

#### Actuator X-GQ straight

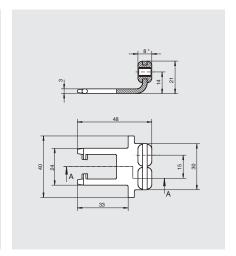
Rubber bush, overtravel 1 mm

#### Dimension drawings



#### Actuator X-WQ bent

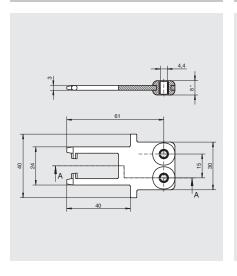
Rubber bush, overtravel 1 mm

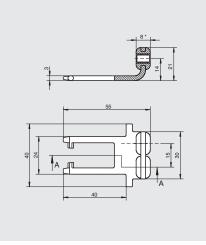


#### Actuator X-GNQ straight

Rubber bush, overtravel 8 mm

#### **Actuator X-WNQ bent** Rubber bush, overtravel 8 mm





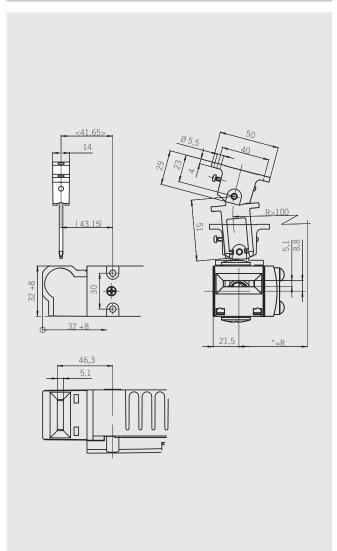
Designation	Design	Min. door radius r [mm]	Packaging unit	Order no./item
<b>Actuator</b> Straight rubber bush	X-GQ 1 mm overtravel incl. 2 safety screws M4 x 14	300	1 pcs.	<b>079739</b> ACTUATOR-X-GQ
<b>Actuator</b> Angled rubber bush	X-WQ 1 mm overtravel incl. 2 safety screws M4 x 14	300	1 pcs.	<b>079740</b> ACTUATOR-X-WQ
Actuator Straight rubber bush, overtravel	<b>X-GNQ</b> 8 mm overtravel incl. 2 safety screws M4 x 14	440	1 pcs.	<b>079741</b> ACTUATOR-X-GNQ
Actuator Angled rubber bush, overtravel	X-WNQ 8 mm overtravel incl. 2 safety screws M4 x 14	440	1 pcs.	<b>079742</b> ACTUATOR X-WNQ

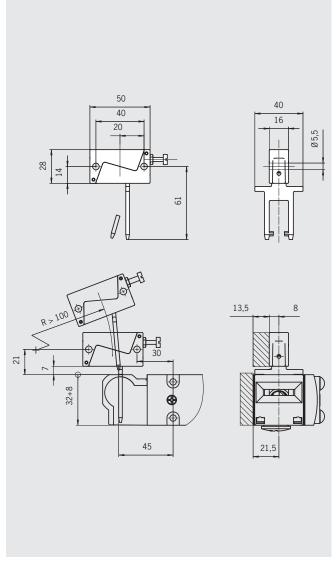
<sup>\*</sup> The dimension 8 relates to the fitted state

Hinged actuator X-LR-N Radius  $\geq 100$  mm, guard hinged on right/left

#### Hinged actuator X-OU-N

Radius ≥ 100 mm, guard hinged at bottom/top





Designation	Design	Min. door radius r [mm]	Packaging unit	Order no./item
Hinged actuator	X-LR-N Guard hinged on the right or left incl. 2 safety screws M5 x 10	≥ 100	1 pcs.	<b>098082</b> HINGED ACTUATOR-X-LR-N
imigeu actuator	X-OU-N Guard hinged at top or bottom incl. 2 safety screws M5 x 10	≥ 100	1 pcs.	<b>097906</b> HINGED ACTUATOR-X-OU-N



#### Actuators for safety switches SGA/STA

- Two stainless safety screws per actuator
- Actuator with rubber bush

Type S actuators must not be used in conjunction with insertion funnels.

L actuators must be used for insertion funnels.

#### Straight actuator

Suitable for a maximum tensile force of 3,000 N. The straight actuator is used on sliding doors or hinged doors with door radii greater than 300 mm. Safety screws prevent unscrewing of the actuator.

#### **Bent actuator**

Suitable for a maximum tensile force of 1500 N.

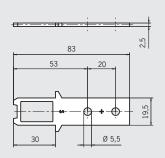
#### Screws made of stainless steel

The safety screws included can be inserted with a normal tool, but cannot be removed again.

#### Standard actuator S, straight

Without rubber bush, overtravel 5 mm

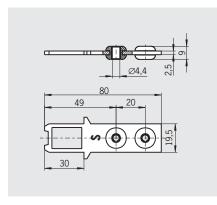
#### **Dimension drawings**



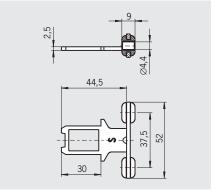
#### Standard actuator S, straight

With rubber bush, overtravel 5 mm

#### Standard actuator S, bent

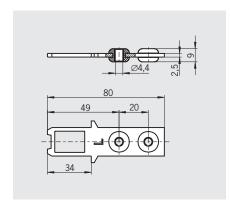


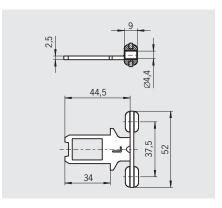
#### With rubber bush, overtravel 5 mm



#### Actuator L, straight, for insertion funnel With rubber bush, overtravel 5 mm

Actuator L, bent, for insertion funnel With rubber bush, overtravel 5 mm





Designation	Design	Min. door radius r [mm]	Packaging unit	Order no./item
Actuator S	S-G-SN-C2115 Without rubber bush, 5 mm overtravel incl. 2 safety screws M5 x 10	300	1 pcs.	<b>097861</b> ACTUATOR S-G-SN-C2115
Straight	<b>S-GT-SN</b> With rubber bush, 5 mm overtravel incl. 2 safety screws M4 x 14	300	1 pcs.	<b>095738</b> ACTUATOR S-GT-SN
Actuator S Angled	<b>S-WQ-SN</b> With rubber bush, 5 mm overtravel incl. 2 safety screws M4 x 14	300	1 pcs.	<b>095740</b> ACTUATOR S-WQ-SN
Actuator L Straight	<b>S-GT-LN</b> With rubber bush, 5 mm overtravel incl. 2 safety screws M4 x 14	300	1 pcs.	<b>095739</b> ACTUATOR S-GT-LN
<b>Actuator L</b> Angled	<b>S-WQ-LN</b> With rubber bush, 5 mm overtravel incl. 2 safety screws M4 x 14	300	1 pcs.	<b>095741</b> ACTUATOR S-WQ-LN

- Two stainless safety screws per actuator
- Actuators with and without rubber bush

#### Notice

Type S actuators must not be used in conjunction with insertion funnels.

L actuators must be used for insertion funnels.

#### **Bent actuator**

Suitable for a maximum tensile force of 1,000 N.

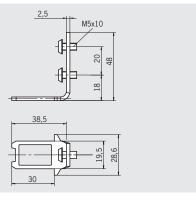
#### Screws made of stainless steel

The safety screws included can be inserted with a normal tool, but cannot be removed again.

#### Standard actuator S, bent

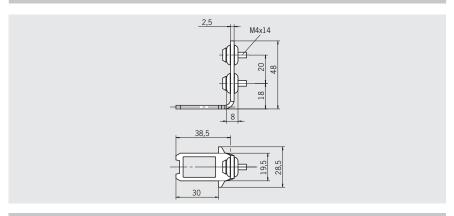
Without rubber bush, overtravel 5 mm

#### **Dimension drawings**



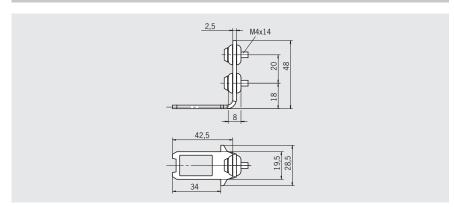
#### Standard actuator S, bent

With rubber bush, overtravel 5 mm



#### Actuator L, bent, for insertion funnel

With rubber bush, overtravel 5 mm



Designation	Version	Min. door radius r [mm]	Packaging unit	Order no.
Actuator S	<b>S-W-SN</b> Without rubber bush, overtravel 5 mm incl. 2 non-removable screws M5 x 10	300	1 pcs.	<b>115073</b> ACTUATOR S-W-SN-C2115
Angled	S-WT-SN With rubber bush, overtravel 5 mm incl. 2 safety screws M4 x 14	300	1 pcs.	<b>105808</b> ACTUATOR S-WT-SN-C2115
<b>Actuator L</b> Angled	<b>S-WT-LN</b> With rubber bush, overtravel 5 mm incl. 2 safety screws M4 x 14	300	1 pcs.	<b>105809</b> ACTUATOR S-WT-LN-C2115



#### Hinged actuators for safety switches SGA/STA

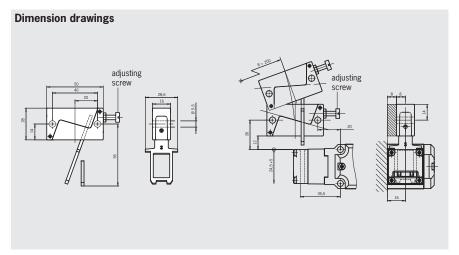
- Actuators made of stainless steel
- Two stainless safety screws per actuator
- For doors hinged at top and bottom
- For doors hinged on the right and left

#### **Hinged actuator**

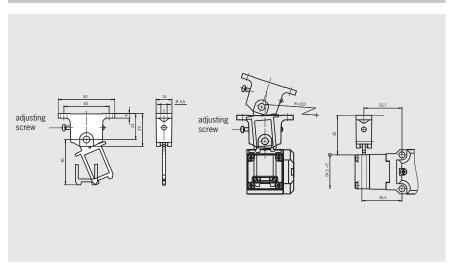
For door radii less than 1,000 mm a hinged actuator should be used. The spring action movement of the actuator prevents damage due to the actuator jamming in the actuating head. Depending on the movement of the guard, the actuator must be selected for left/right or top/bottom.

#### Hinged actuator S-OU-SN

Radius ≥ 200 mm, guard hinged at top/bottom, overtravel 5 mm



Hinged actuator S-LR-SN Radius  $\geq 200$  mm, guard hinged on left/right, overtravel 5 mm



Designation	Design	Min. door radius r [mm]	Packaging unit	Order no./item
Iliano de cabroston	S-OU-SN For doors hinged at top and bottom 5 mm overtravel incl. 2 safety screws M5 x 25	200	1 pcs.	095315 HINGED ACTUATOR-S-OU-SN
Hinged actuator	S-LR-SN For doors hinged on the left and right 5 mm overtravel incl. 2 safety screws M5 x 10	200	1 pcs.	096838 HINGED ACTUATOR-S-LR-SN

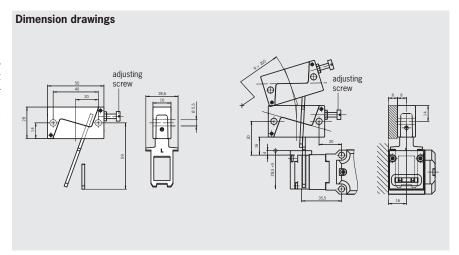
- Actuators made of stainless steel
- Two stainless safety screws per actuator
- For doors hinged at top and bottom
- ► For doors hinged on the right and left

#### **Hinged actuator**

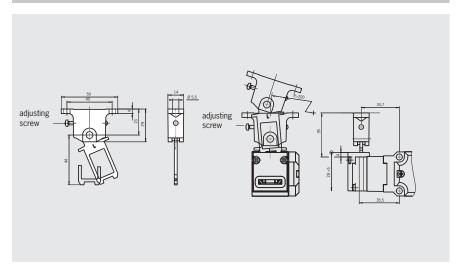
For door radii less than 1,000 mm a hinged actuator should be used. The spring action movement of the actuator prevents damage due to the actuator jamming in the actuating head. Depending on the movement of the guard, the actuator must be selected for left/right or top/bottom.

#### Hinged actuator S-OU-LN for insertion funnel

Radius ≥ 200 mm, guard hinged at top/bottom, overtravel 5 mm



**Hinged actuator S-LR-LN for insertion funnel** Radius ≥ 200 mm, guard hinged on left/right, overtravel 5 mm



Designation	Design	Min. door radius r [mm]	Packaging unit	Order no./item
S-OU-LN For doors hinged at top and bottom 5 mm overtravel incl. 2 safety screws M5 x 25		200	1 pcs.	096697 HINGED ACTUATOR-S-OU-LN
Hinged actuator	S-LR-LN For doors hinged on the left and right 5 mm overtravel incl. 2 safety screws M5 x 10	200	1 pcs.	096844 HINGED ACTUATOR-S-LR-LN



#### Plug connector M12

For safety switches series NZ and N1A

- ▶ Plug connector M12 with cable
- ▶ 90° angled optional

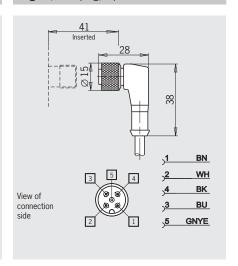
#### Cable

Cable sleeve PUR, color black, halogen free, flame retardant. Reduction of toxic gases and smoke in case of fire.

#### **Plug connector SGLF with cable** M12 plug, 5-pin

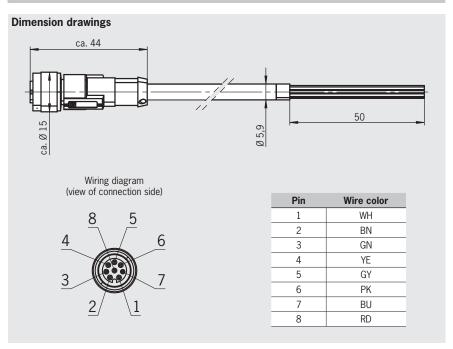
# View of connection side Dimension drawings 56 Inserted 43 1 BN 2 WH 4 BK 3 BU 5 GNYE

#### Plug connector SWLF with cable angled, M12 plug, 5-pin



#### Straight plug connector with cable

M12-plug, 8-pin, flying lead



Designation	Number of	Version	Cable length					
Designation	pins	ver sion	5 m	10 m	20 m	30 m		
	_	SGLF Female connector M12 for male plug SVM5	<b>073461</b> SGLF5-5000P	-	-	-		
Plug connector M12	5 x 0.34 mm <sup>2</sup>	SWLF Female connector M12, angled, for male plug SVM5	<b>073462</b> SWLF5-5000P	-	-	-		
	<b>8</b> 8 x 0.25 mm <sup>2</sup>	Female connector M12 for male plug SM8	<b>115112</b> C-M12F08-08X025PU05,0-MA	<b>115113</b> C-M12F08-08X025PU10,0-MA	<b>115114</b> C-M12F08-08X025PU20,0-MA	<b>115257</b> C-M12F08-08X025PU30,0-MA		

#### Plug connectors SS4, C16-1, RC12 and solenoid plugs

#### For safety switches series NZ and TZ

- ► Plugs and sockets
- ► Blanking plug
- Solenoid plugs

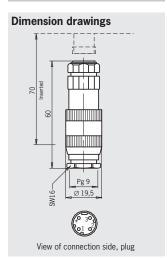
#### Blanking plug

To cover the socket for the enabling switch on the safety switch TZ with socket RC12.

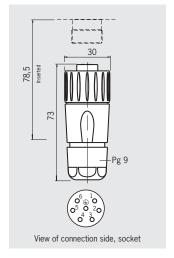
#### Plug connector for solenoid locking NZ.VZ.VS

- Without rectifier For the connection of DC.
- With rectifier
- For the connection of AC 110 VAC 230 V.

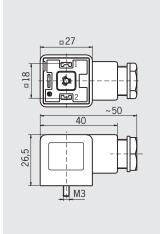
#### Male plug SS4 3-pin + PE



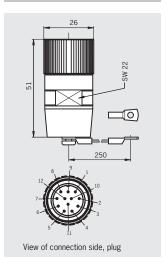
#### Female connector C16-1 6-pin + PE



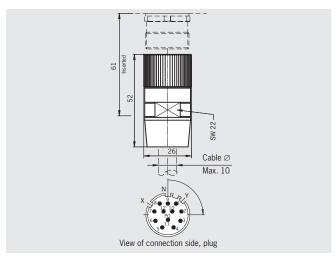
#### **Solenoid plug NZ.VZ.VS** 2-pin + PE



#### Blanking plug RC12 12-pin



#### Male plug RC12 12-pin



#### Ordering table

Designation	Version	Order no./item
<b>SS4</b> 3-pin + PE	Plug for socket BD4	<b>002787</b> SS4
<b>C16-1</b> 1) 6-pin + PE	Female connector	<b>043861</b> Cable socket 6 + PE
RC12 1)	Male plug	<b>073294</b> RC-12P1N8A8096
12-pin	Blanking plug without bridges	<b>073293</b> RC-12P1N8A8300
Solenoid plugs NZ.VZVS	Fir DC without rectifier	028345 Plug connector for solenoid locking
2-pin + PE	For AC with rectifier max. AC 240 V	028338 Plug connector with rectifier for solenoid locking

For information on crimp contacts, see page 162.

1) Crimp contacts are included.



#### Plug connectors SR6 and SR11

- Plugs and sockets
- **Crimp contacts**
- 90° angled optional
- Cable optional
- Coding shells

#### Angled plug connector

On plug connectors without cables the direction of the cable exit can be adjusted.

#### Male socket

For fitting in safety switches.

#### **Coding shells**

Two coding shells and screws. Only matching connectors can be mated when coding shells are used.

#### Cable (optional)

with cable

Pin

2

3

4

5

6

(1)

Cable sleeve PUR, color gray, conductor cross-section 1.0 mm<sup>2</sup>.

Connector assignment for plug

Wire

2

3

4

5

6

7

SR11

Wire

2

3

4

5

6

7

8

9

10 11

12

Pin

2

3

4

5

6

7

8

9

10

11

(1)

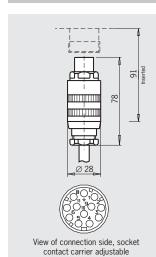
Female connector SR6 EF

91

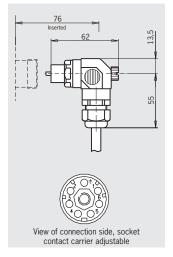
28/

**Dimension drawings** 

6-pin + PE



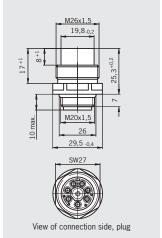
#### Female connector SR6 WF angled 6-pin + PE



Female connector SR11 WF

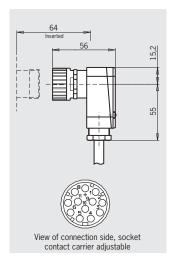
angled 11-pin + PE

#### Male socket SR6 AM 6-pin + PE

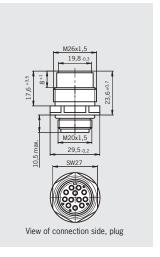


#### Female connector SR11 EF 11-pin + PE

View of connection side, socket



#### Male socket SR11 AM 11-pin + PE



Danismatian	Vavaian	Cable						
Designation	Version	without	5 m	10 m	15 m	20 m	25 m	
	<b>EF</b> Female connector	<b>013176</b> SR6EF	<b>077632</b> C-M26F07-07X1,0PU05,0- MA-077632	<b>077633</b> C-M26F07-07X1,0PU10,0- MA-077633	<b>077634</b> C-M26F07-07X1,0PU15,0- MA-077634	<b>098128</b> C-M26F07-07X1,0PU20,0- MA-098128	-	
SR6 1)	<b>WF</b> Female connector angled	<b>024999</b> SR6WFPG11R	<b>077638</b> C-R22F07-07X1,0PU05,0- MA-077638	<b>077639</b> C-R22F07-07X1,0PU10,0- MA-077639	<b>077640</b> C-R22F07-07X1,0PU15,0- MA-077640	-	-	
6-pin + PE	<b>CI</b> Coding shells	<b>013178</b> SR6K	-	-	-	-	-	
	AM Male socket, connection M20x1.5	<b>087180</b> SR6AM2-M20	-	-	-	-	-	
	<b>EF</b> Female connector	<b>070859</b> SR11EF	<b>077629</b> C-M26F12-12X1,00PU05,0- MA-077629	<b>077630</b> C-M26F12-12X1,00PU10,0- MA-077630	<b>077631</b> C-M26F12-12X1,00PU15,0- MA-077631	<b>096632</b> C-M26F12-12X1,0PU20,0- MA-096632	<b>094749</b> C-M26F12-12X1,0PU25,0- MA-094749	
<b>SR11</b> 1) 11-pin + PE	WF Female connector angled	<b>054773</b> SR11WF	<b>077635</b> C-M26F12-12X1,0PU05,0- MA-077635	<b>077636</b> C-M26F12-12X1,0PU10,0- MA-077636	<b>077637</b> C-M26F12-12X1,0PU15,0- MA-077637	-	-	
	AM Male socket, connection M20x1.5	<b>091296</b> SR11AM2-M20	-	-	-	-	-	
SR6 and SR11	Socket crimp contacts Conductor cross-section 0.5 - 1.5 mm <sup>2</sup>	<b>071260</b> SRF	-	-	-	-	-	
	Pin crimp contacts Conductor cross-section 0.5 - 1.5 mm <sup>2</sup>	<b>071261</b> SRM	-	-	-	-	-	

<sup>1)</sup> Crimp contacts are included. For information on crimp contacts, see page 162.

#### Plug connector M23 (RC18) and M23 (RC18) with option C1825

- Straight and angled plug connectors
- With and without plug connector

#### **Crimp contacts**

With 19 crimp pins for conductor cross-section 0.75 - 1.00 mm<sup>2</sup>.

#### Option C1825

With 16 crimp pins for conductor cross-section 0.25 - 0.5 mm<sup>2</sup> and 3 pins for conductor cross-section 0.75 - 1.0  $\mbox{mm}^{2}$  for control of the guard locking solenoid. This plug is easier to connect.

**Important**: Only for switch with option C1826.

#### Angled plug connector (optional)

On plug connectors with cables the direction of the cable exit can be chosen on left/right. On plug connectors without cables the direction can be adjusted in 45° steps.

#### **Coupling socket**

Coupling socket straight, 19-pin, with screen bonding clamp. Suitable for extension of female connector RC18EF-C1825 and RC18WF-C1825.

#### Halogen-free cable

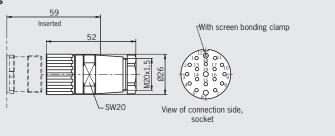
Cable sleeve PUR, color black, halogen-free, silicone-free. Reduction of toxic gases and smoke in case of fire.

Conductor cross-section 0.5 mm<sup>2</sup> or 1.0 mm<sup>2</sup>.

#### Female connector M23 (RC18) / M23 (RC18)..C1825

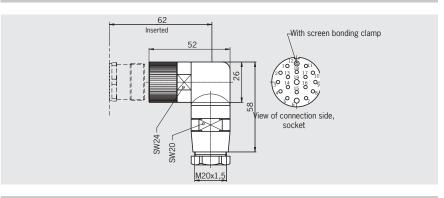
18-pin + PE (for cable diameter 10 ... 14 mm)

#### **Dimension drawings**



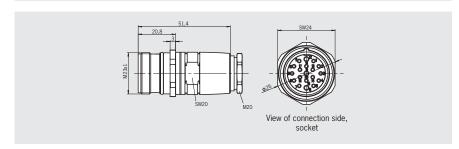
#### Female connector M23 (RC18) / M23 (RC18)..C1825

Angled 18-pin + PE (for cable diameter 10 ... 14 mm)



#### Coupling socket M23 (RC18) / M23 (RC18)..C1825

18-pin + PE (for cable diameter 10 ... 14 mm)



#### Ordering table

ering table	v :	MPst . II
Designation	Version	Without cable
	<b>EF</b> Female connector	<b>074616</b> RC18EF
	WF Female connector angled 1)	<b>074617</b> RC18WF
	Replacement pin crimp contacts Conductor cross-section 19 x 0.75 - 1 mm <sup>2</sup>	<b>094309</b> Pin crimp contact RCF
	EF-C1825 Female connector	<b>077025</b> RC18EF-C1825
M23 (RC18) 2)	WF-C1825 Female connector angled 1)	<b>077026</b> RC18WF-C1825
18-pin + PE	Replacement crimp contacts Conductor cross-section 16 x 0.25 - 0.5 mm <sup>2</sup> 3 x 0.75 - 1 mm <sup>2</sup>	<b>094310</b> Pin crimp contact RCF-C1825
	EM-C1825 Coupling socket	<b>129500</b> RC18EM-C1815
	Replacement crimp contacts Conductor cross-section 16 x 0.25 - 0.5 mm <sup>2</sup> 3 x 0.75 - 1 mm <sup>2</sup>	<b>155811</b> Pin crimp contact RCM-C1825

For information on crimp contacts, see page 162

1) Plug connector RC18 on the switches STA not aligned. 2) Crimp contacts are included.

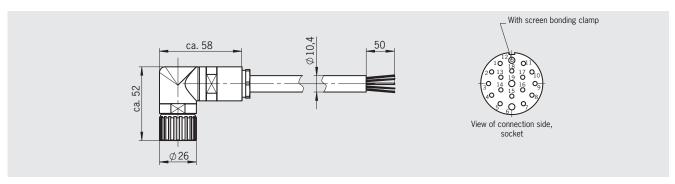


#### Plug connector M23 (RC18) and M23 (RC18) option C1825 with cable

Female connector M23 (RC18) / M23 (RC18)..C1825 with cable  $18\mbox{-pin} + \mbox{PE} \slash 919\mbox{-pin} \mbox{PUR}$ 

# Dimension drawings With screen bonding clamp SW20 View of connection side, socket

#### Female connector M23 (RC18) / M23 (RC18)..C1825 angled with cable $18\mbox{-pin}$ + PE



#### Connector assignment plug M23 (RC18) with cable and option C1825

Pin	Wire color	Cross-section [mm]
1	VT	0.5
2	RD	0.5
3	GY	0.5
4	RD/BU	0.5
5	GN	0.5
6	BU	1.0
7	GY/PK	0.5
8	GN/WH	0.5
9	YE/WH	0.5

10	GY/WH	0.5
11	BK	0.5
12	GN/YE	1.0
13	PK	0.5
14	BN/GY	0.5
15	BN/YE	0.5
16	BN/GN	0.5
17	WH	0.5
18	YE	0.5
19	BN	1.0

De-	Version					Ca	ble				
scrp.	version	1.5 m	3 m	6 m	8 m	10 m	15 m	20 m	25 m	30 m	40 m
RC18	Straight female connector	<b>092761</b> C-M23F19-19XDIF- PU01,5-MA-092761	<b>092816</b> C-M23F19-19XDIF- PU03,0-MA-092816	<b>077014</b> C-M23F19-19XDIF- PU06,0-MA-077014	<b>077015</b> C-M23F19-19XDIF- PU08,0-MA-077015	<b>092898</b> C-M23F19-19XDIF- PU010,0-MA-092898	<b>077016</b> C-M23F19-19XDIF- PU15,0-MA-077016	<b>092726</b> C-M23F19-19XDIF- PU20,0-MA-092726	<b>092727</b> C-M23F19-19XDIF- PU25,0-MA-092727	<b>095993</b> C-M23F19-19XDIF- PU30,0-MA-095993	<b>102490</b> C-M23F19-19XDIF- PU40,0-MA-102490
18-pin + PE with	Female connector angled cable exit left	<b>092906</b> C-M23F19-19XDIF- PU01,5-MA-092906	<b>092908</b> C-M23F19-19XDIF- PU03,0-MA-092908	<b>077018</b> C-M23F19-19XDIF- PU06,0-MA-077018	<b>077019</b> C-M23F19-19XDIF- PU08,0-MA-077019	<b>092901</b> C-M23F19-19XDIF- PU010,0-MA-092901	<b>077020</b> C-M23F19-19XDIF- PU15,0-MA-077020	<b>092910</b> C-M23F19-19XDIF- PU20,0-MA-092910	<b>092912</b> C-M23F19-19XDIF- PU25,0-MA-092912	-	-
cable	Female connector angled cable exit right		<b>092909</b> C-M23F19-19XDIF- PU03,0-MA-092909	<b>085194</b> C-M23F19-19XDIF- PU06,0-MA-085194	<b>085195</b> C-M23F19-19XDIF- PU08,0-MA-085195	<b>092902</b> C-M23F19-19XDIF- PU010,0-MA-092902	<b>085196</b> C-M23F19-19XDIF- PU15,0-MA-085196	<b>092911</b> C-M23F19-19XDIF- PU20,0-MA-092911	<b>092913</b> C-M23F19-19XDIF- PU25,0-MA-092913	-	-



#### Plug connectors MR8/MR9/MR10/MR12 with cable

#### Female connector with cable 8-, 9-, 10-, 12-pin

#### **Dimension drawings** Cable length L Female connector Dimension 8-pin 9-pin 10-pin 12-pin Ø 29 Ø 32 Ø 32 Ø 32 59 64 64 В 64

Ø 8.9

Ø 9.7

#### Pin assignment (conductor cross-section 0.82 mm<sup>2</sup> / 18 AWG)

8-pin
5 0 0 0 2 0 0 8 0 40 0 3
View of connection

	Pin	Wire color
)	1	OG
	2	BU
	3	WH/BK
	4	BK
/	5	WH
	6	RD
	7	GN/YE
	8	RD/BK



	PIN	wire color
	1	OG
	2	BU
	3	RD/BK
2) ) )))	4	GN/BK
/////	5	WH
	6	RD
tion	7	GN/YE
t	8	WH/BK
	9	BK



Ø 9.8

Ø 10.4





		WII C COIOI
	1	OG
	2	BU
	3	WH/BK
)))	4	RD/BK
//	5	GN/BK
	6	OG/BK
	7	BU/BK
	8	BK/WH
	9	GN/YE
	10	RD
	11	WH
	12	BK

Version	Connection Material -			Cable length L [mm]							
version	Connection	wateriai	910	1,800	3,600	6,000	9,100	12,100	15,200	18,200	24300
	MDO	PVC	-	100938	-	100940	100941	100942	103152	103153	-
	MR8	PUR	-	102506	100945	100946	102507	102508	102509	103149	103150
	MR9	PVC	100947	102502	100948	102503	102504	103154	-	103156	-
Female connector		PUR	-	102510	102511	102512	102513	102514	102515	103151	-
with cable	MR10	PVC	-	100949	100950	100951	100952	102505	100953	103157	-
		PUR	-	102516	102517	102518	100956	102519	102520	102521	-
	MR12	PVC	-	-	100960	100961	100962	103158	103159	103160	-
		PUR	-	-	100967	102522	102523	102524	102525	102526	-

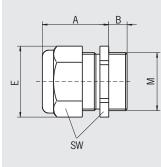


#### Cable glands

- ► M12 x 1.5
- ► M16 x 1.5 ► M20 x 1.5

#### Cable glands

Suitable for various cable diameters. Versions available in plastic and metal.



Item	Thread	Cable ∅ [mm]	A [mm]	B [mm]	E [mm]	SW [mm]
EKV.12/04	M12 x 1.5	4 - 6.5	20	5	15.5	14
EKV.16/04	M16 x 1.5	4 - 6.5	20	6	20	18
EKP.16/05	M16 x 1.5	5 - 10	28	8	22	20
EKV.16/06	M16 x 1.5	6.5 - 9.5	20	6	20	18
EKV.20/06	M20 x 1.5	6.5 - 9.5	20	6	24.4	22
EKP.20/06	M20 x 1.5	6 - 12	26	11	27	24
EKV.20/09	M20 x 1.5	9 - 13	20	6	24.4	22
EKV.12/06	NPT 1/2"	6 - 12	22	13	27	24
EKVP0.12/06	NPT ½"	6 - 12	26	13	27	24

Thread	Version	Mate	erial
Inread	version	Metal	Plastic
M12 x 1.5	Cable diameter 4 - 6.5 mm	<b>086327</b> EKVM12/04	-
	Cable diameter 4 - 6.5 mm	<b>086328</b> EKVM16/04	-
M16 x 1.5	Cable diameter 5 - 10 mm	-	<b>084572</b> EKPM16/05
	Cable diameter 6.5 - 9.5 mm	<b>086330</b> EKVM16/06	
	Cable diameter 6 - 12 mm	-	<b>077679</b> EKPM20/06
M20 x 1.5	Cable diameter 6.5 - 9.5 mm	<b>077683</b> EKVM20/06	
	Cable diameter 9 - 13 mm	<b>077684</b> EKVM20/09	
NPT ½"	Cable diameter 6 - 12 mm	<b>077691</b> EKVN12/06	<b>077692</b> EKPON12/06

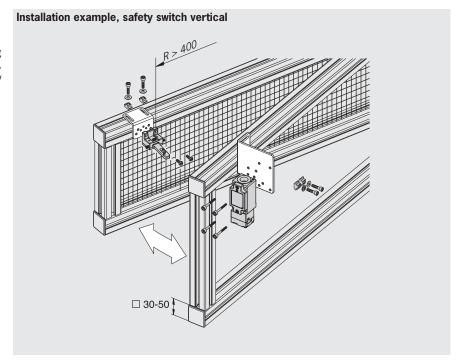
#### Mounting plates EMP for safety switches NZ.VZ

► For vertical and horizontal mounting of safety switch NZ.VZ

The mounting plates are used for fastening safety switches NZ and actuators to guards. The safety switches can be attached vertically or horizontally.

#### Note

▶ Mounting plate material: galvanized St37.



Switch	Mounting plate Switch	Installation meth- od Switch	Mounting plate Actuator	Actuator	Minimum distance hinged actuator to switch
	<b>085753</b> EMP-SC		<b>093457</b> EMP-B1	024298 024299	
		<b>A</b> Vertical	M4 (4x)	M5 x 16 (2x) Page 118	> 400 mm
NZ	000000000000000000000000000000000000000	В	M5 (4x)	100406 100407	> 200 mm
		Horizontal	<b>093458</b> EMP-B2	048850 057950	
			6.5 M5 (2x) 6	M5 x 25 (2x)	> 165 mm
				Page 118	



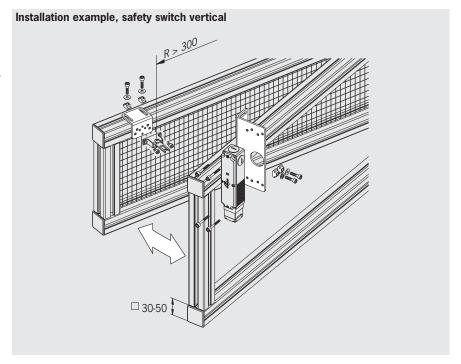
#### Mounting plates EMP for safety switches STA

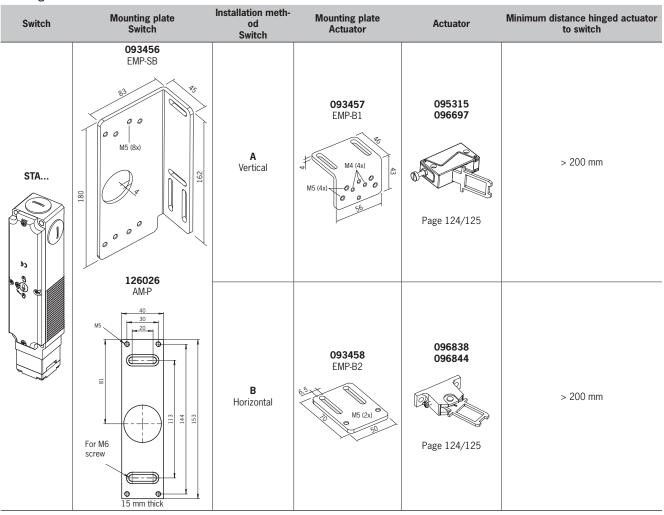
► For vertical and horizontal mounting of safety switch STA

The mounting plates are used for fastening safety switches STA and actuators to guards. The safety switches can be attached vertically or horizontally.

#### Note

Mounting plate material: galvanized St37.





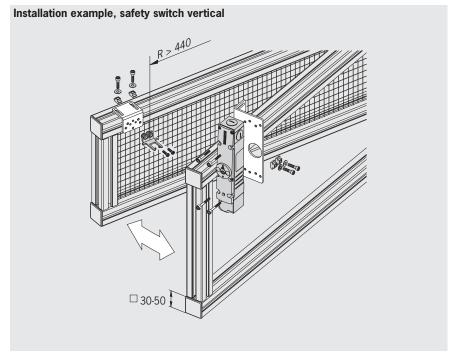
#### Mounting plates EMP for safety switches TX

#### ► For vertical mounting of safety switch TX

The mounting plates are used for fastening safety switches TX and actuators to guards. The safety switches can be attached vertically.

#### Note

- Mounting plate material: galvanized St37.
- ► The mounting plate EMP-SB is also suitable for the safety switches TX...C1991 with escape release from the rear.



Switch	Mounting plate Switch	Installation meth- od Switch	Mounting plate Actuator	Actuator	Minimum distance hinged actuator to switch
TX	093456 EMP-SB	<b>C</b> Vertical	093457 EMP-B1	079740 079742 M4 x 14 Page 120 098082	> 400 mm
		093458 EMP-B2	097906 Page 121	> 100 mm	



#### Mounting plates EMP for safety switches TZ

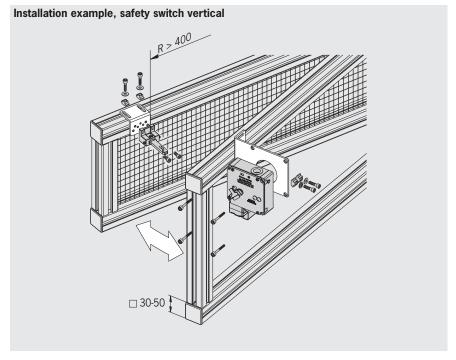
► For vertical and horizontal mounting of safety switch TZ

The mounting plates are used for fastening safety switches TZ and actuators to guards. The safety switches can be attached horizontally or vertically.

The mounting plate EMP-SA is also suitable for safety switches with escape release from the rear.

#### Note

- Mounting plate material: galvanized St37.
- ► The mounting plate EMP-SA is also suitable for the safety switches TZ...C1684, TZ... C1815 and TZ...C1828 with escape release from the rear.



Switch	Mounting plate Switch	Installation meth- od Switch	Mounting plate Actuator	Actuator	Minimum distance hinged actuator to switch
	<b>094401</b> EMP-SA		<b>093457</b> EMP-B1	024298 024299	
	<b>↑</b> 45	<b>A</b> Vertical	M4 (4x)	M5 x 16 (2x) Page 118	> 400 mm
1Z	114.5	В	M5 (4x)	100406 100407	> 200 mm
		Horizontal	<b>093458</b> EMP-B2	048850 057950	
			6.5 M5 (2x) 0 50	0 0 0 0 M5 x 25 (2x)	> 165 mm
				Page 118	

- Lockout bar
- Insertion funnel

#### Lockout bar

With the safety door open, can be slid into the actuator head on a switch type 2 instead of an actuator. Removal can be prevented using a commercially available padlock. For the protection of people in areas with a possible hazard.

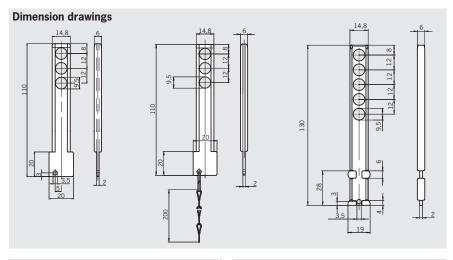
Cannot be used in combination with the protective plate.

#### Insertion funnel

If an insertion funnel is used, even inexactly positioned actuators are inserted reliably in the actuating head due to the large opening funnel, thus protecting the safety switch against mechanical influences.

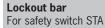
#### **Lockout bars**

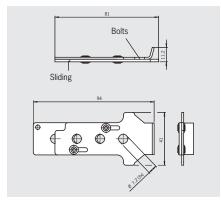
For safety switches series NZ.VZ and TZ

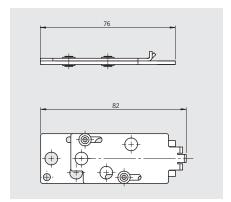


#### Lockout bar

For safety switches NX and TX

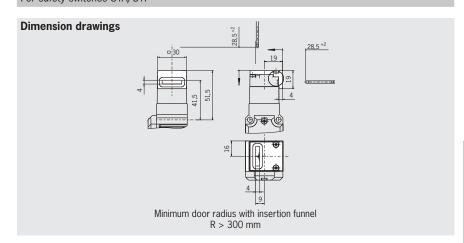






#### Insertion funnel

For safety switches STA/STP



Designation	Version	Use	Order no./item
	3 holes	For safety switches series NZ.VZ and TZ without protective plate	<b>046730</b> Lockout bar Z
	3 holes with chain	For safety switches series NZ.VZ and TZ without protective plate	<b>091305</b> Lockout bar with chain
Lockout bar	3 holes	For safety switch STA	105701 Lockout bar STP
	5 holes	For safety switches series NZ.VZ and TZ without protective plate	<b>086538</b> Lockout bar Z
	3 holes	For safety switches NX and TX	<b>096098</b> Lockout bar TX
Insertion funnel	incl. 2 fixing screws	For safety switches STA/STP	<b>093157</b> Insertion funnel STA

- ▶ Protective plate
- ► Replacement head for NZ.VZ
- Lead seal kit
- ► LED function display
- Safety screws

#### Protective plate

Optimal protection against tampering on safety switches type 2 (NZ.VZ and TZ). The protective plate prevents modification of the safety switch via the actuator outlet opening.

#### Replacement head for NZ.VZ

Replacement head for a safety switch type 2 (NZ.VZ). With 4 safety screws and replacement screws. As the switches are safety components, in case of defects we recommend replacing the entire safety switch. **Not suitable for the safety switches TZ!** 

#### Lead seal kit TZ

For sealing the mechanical release on the safety switch TZ. The locking screw is included.

#### Lead seal kit TZ-C1937

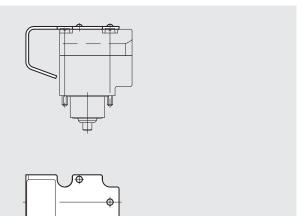
For sealing the emergency unlocking on the safety switch TZ.

#### Safety screws

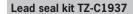
To prevent unscrewing of actuators and actuating heads. The screws can be tightened using a normal tool, but cannot be removed again.

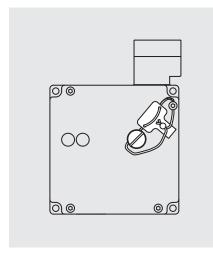
#### **Protective plate**

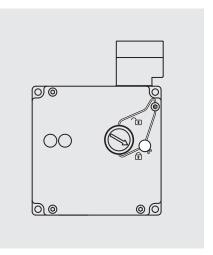
#### **Dimension drawings**



#### Lead seal kit TZ







Designation	Version	Use	Order no./item
Protective plate		For safety switch type 2 (NZ.VZ and TZ)	<b>059136</b> Protective plate NZ/TZ
Replacement head NZ.VZ		Not suitable for safety switch TZ!	<b>076250</b> Actuating head NZVZ
Lead seal kit	Consisting of lead seal, wire, locking screw and key	For safety switches TZ	<b>048257</b> Lead seal kit TZ
Lead seal Kit	Consisting of lead seal and sealing wire	For safety switches TZ with rotating emergency unlocking	<b>087256</b> Lead seal kit TZ-C1937
	M4 x 14	For actuator 079739, 079740, 079741 and 079742	<b>074063</b> M4X14/V100
	M5 x 10	For actuator 016849, 072251, 100406 and 100407	<b>073455</b> M5X10/V100
Safety screws	M5 x 16	For hinged actuator 024299 and 024298	<b>073456</b> M5X16/V100
Packaging unit: 100 pcs.	M5 x 25	For hinged actuator 048850 and 057950	<b>073457</b> M5X25/V100
	M3 x 40	For actuator head NZ and TZ	<b>075530</b> M3X40/V100
	M3 x 70	For actuator head NZ.VZVSE and NZ.VZVSM	<b>075531</b> M3X70/V100

#### ► LED function display

**LED function display**Upgrade kits with LEDs are available for the safety switches N1A and NZ. The intensity of the light from the indicators is always the same, independent of the voltage applied.

Notice: The LED function display can only be used in conjunction with double switching

### **LED function display Dimension drawings** 080rt 12-60V NGLE... LE..

#### Ordering table

		Voltage					
Designation	Version	12-60 V red LED	12-60 V yellow	12-60 V green	110 V LED red	230 V red LED	230 V yellow LED
LED function display NGLE	For safety switch NZ	<b>029220</b> NGLE060RT	<b>029222</b> NGLE060GE	<b>029221</b> NGLE060GR	<b>045822</b> NGLE110RT	<b>045825</b> NGLE220RT	<b>045827</b> NGLE220GE
LED function display LE	For safety switch N1A	<b>035495</b> LE060RT	<b>035497</b> LE060GE	<b>035496</b> LE060GR	<b>045579</b> LE110RT	<b>045582</b> LE220RT	<b>045584</b> LE220GE

#### ► Replacement roller arm

#### Replacement roller arm

Replacement roller lever for safety switches type 1 with lever arm. As the switches are safety components, in case of defects we recommend replacing the entire switch. Complete switch heads are not available.

#### Replacement roller arm

# **Dimension drawings** NHS (steel roller) NHBC569

Designation	Version	Order no./item
	Replacement plunger For NZ.HS	<b>012043</b> Roller arm NHS
Replacement roller arm	Replacement plunger For NZ.HB	<b>012042</b> Roller arm NHB
	replacement plunger For NZ.HBC569	<b>012044</b> Roller arm NHBC569



- Emergency unlocking for safety switches STA and TX
- ► Release for safety switches TX
- Lock for emergency unlocking with manual return for safety switches TX
- ► Triangular key for safety switches TZ

#### **Emergency unlocking**

Is used for the manual release of the guard locking without tools. The emergency unlocking mechanism must be returned to the locked state manually. Sealing can be fitted to protect against tampering.

**Attention:** Prior to mounting, the locking screw for the mechanical release must be removed.

#### Release

Is used for the manual release of the guard locking. The integrated spring automatically resets the emergency unlocking to the locked state. Sealing can be fitted to protect against tampering.

**Attention:** Prior to mounting, the locking screw for the mechanical release must be removed.

#### Lock

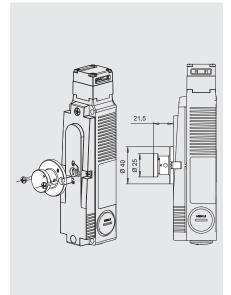
The lock is used in combination with safety switch TX. The mechanical key release enables authorized personnel to actuate the mechanical release using the related key in certain situations. The unlocking mechanism holds the solenoid in the "unlocked" position.

Two screws are used to fix the lock to the cover of the safety switch TX (above the mechanical release).

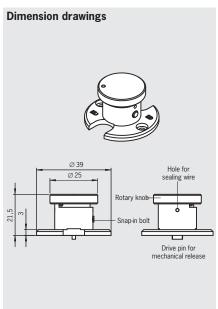
**Attention:** Prior to mounting, the locking screw for the mechanical release must be removed.

- Please order safety switch TX separately
- 2 keys are included
- Every safety switch of series TX can be upgraded to include a lock

#### **Emergency unlocking**For safety switch STA

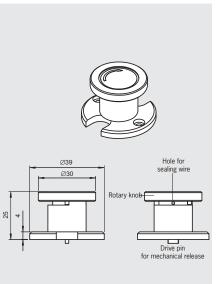


#### **Emergency unlocking**For safety switches TX

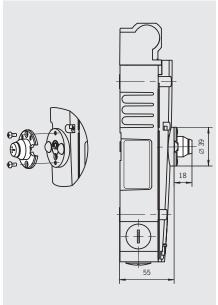


#### Release

For safety switches TX



#### **Lock**For safety switches TX



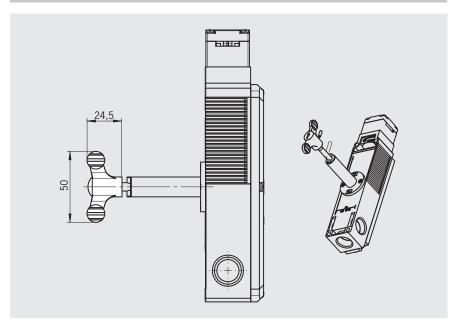
Designation	Version	Use	Order no./item
Emergency unlocking	incl. 2 screws 3.5 x 19	For safety switch STA	<b>099876</b> Emergency unlocking STA
Emergency unlocking	incl. 2 screws M3 x 6	For safety switches TX	<b>094771</b> Emergency unlocking TX
Release	incl. 2 screws M3 x 6	For safety switches TX	<b>094773</b> Release with automatic return TX
Lead seal kit		For emergency unlocking TX and release TX	<b>087256</b> Lead seal kit
	Unique locking (unique key needed to open)	For safety switches TX	<b>079796</b> Lock TX
Lock	Identical locking (identical locks)	For safety switches TX	<b>079795</b> Lock TX
	Replacement key (2 x) for identical locking	For safety switches TX	<b>077206</b> Replacement key TX
triangular key	DIN 22417 M5 100 mm	For safety switches TZ	<b>103057</b> Triangular key

#### ► Handle for escape release

#### Handle for escape release

Can be mounted on all escape release actuator shafts C1993 for safety switches STA for easier use.

#### **Handle for escape release** For safety switch STA



Designation	Use	Order no./item
Handle for escape r lease	For safety switch STA With escape releases with long actuator shaft (74.7 mm)	<b>105329</b> Escape release handle



- Wire front release (bowden) (no automatic return)
- ► Handle for wire front release (bowden)
- Safety screws
- replacement screws

#### Wire front release (bowden)

Flexible routing of the pull wire permits release of the guard locking in inaccessible installation situations.

- Usage as emergency unlocking if the safety switch is mounted in an inaccessible position
- Usage as escape release for unlocking the guard locking from the danger zone
- Can be retrofitted to all series STA safety switches

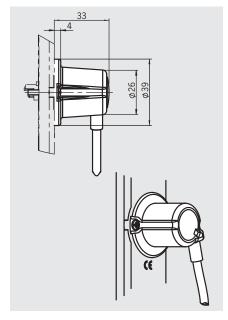
#### Safety screws

To prevent unscrewing of actuators and actuating heads. The screws can be tightened using a normal tool, but cannot be removed again.

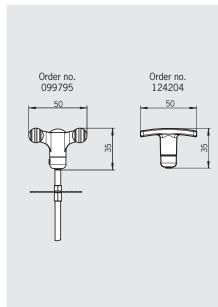
#### Replacement screws

For mounting actuating heads (not safety screws).

#### Wire front release (bowden) For safety switch STA



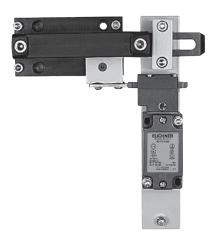
#### **Handle for wire front release (bowden)** For safety switch STA



Designation	Version	Detent mechanism	Use	Order no.
	Length 6 m (2 m sheathed)	No automatic return	For safety switch STA	<b>096230</b> AE-B-A1-02,0-096230
W		Automatic return	For safety switch STA	<b>097747</b> AE-B-A1-02,0-F-097747
Wire front release (bowden) incl. pull wire and sheath	Length 6 m (3 m sheathed)	No automatic return	For safety switch STA	<b>098313</b> AE-B-A1-03,0-098313
mei. pun wire and sneath		Automatic return	For safety switch STA	<b>111233</b> AE-B-A1-03,0-F-111233
	Length 6 m (4 m sheathed)	No automatic return	For safety switch STA	<b>098314</b> AE-B-A1-04,0-098314
Bowden cable	Length 6 m	Automatic return	For safety switch STA	<b>124770</b> AE-B-A1-06,0-F-124770
Without sheath		No automatic return	For safety switch STA	<b>125582</b> AE-B-A1-06,0-125582
Sheath For bowden cable	Length 50 m	-	For safety switch STA	<b>123032</b> AY-CAH-50,0-123032
Handle for wire front		-	For safety switch STA	099795 Handle for wire front release (bowden)
release (bowden)				<b>124204</b> AY-HDL-124204

#### **Bolts for guards**

- For safety switches NZ.VZ and NZ.VZ. VS
- ▶ Bolt NZ-.B with ball detent mechanism
- ► Bolt NZ-.R2 with detent knob
- For doors hinged on the right or left



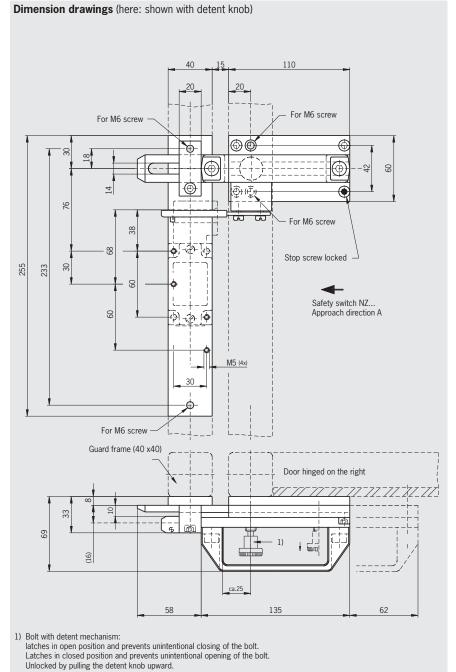
#### **Special features**

- Bolt NZ-.B latches in open and closed position
  - Prevents unintentional opening and closing of the bolt
- Bolt NZ-.R2 latches in open and closed position. Unlocked by pulling the detent knob upward

#### **Features**

- Easily fitted to standard aluminum profiles and machine covers by screw connection
- Easy to use
- Distinctive yellow color for easy recognition
- Rugged construction for heavy doors
- No additional door handle necessary
- Slot on the bolt permits attachment of padlocks

#### Bolt for safety switches NZ.VZ and NZ.VZ.VS

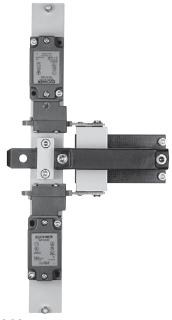


Designation	Detent mechanism	Version	Order no./item
Bolt NZ-A	Without	For doors hinged on the right, actuator included	<b>057734</b> Bolt NZ-A
Bolt NZ-C	Without	For doors hinged on the left, actuator included	<b>057735</b> Bolt NZ-C
Bolt NZ-AB	Ball detent mechanism	For doors hinged on the right, actuator included	<b>083890</b> Bolt NZ-AB
Bolt NZ-CB	Ball detent mechanism	For doors hinged on the left, actuator included	<b>083892</b> Bolt NZ-CB
Bolt NZ-AR2	Detent knob	For doors hinged on the right, actuator included	<b>078455</b> Bolt NZ-AR2
Bolt NZ-CR2	Detent knob	For doors hinged on the left, actuator included	<b>078456</b> Bolt NZ-CR2



#### **Bolts for guards**

► For 2 safety switches NZ.VZ on one bolt



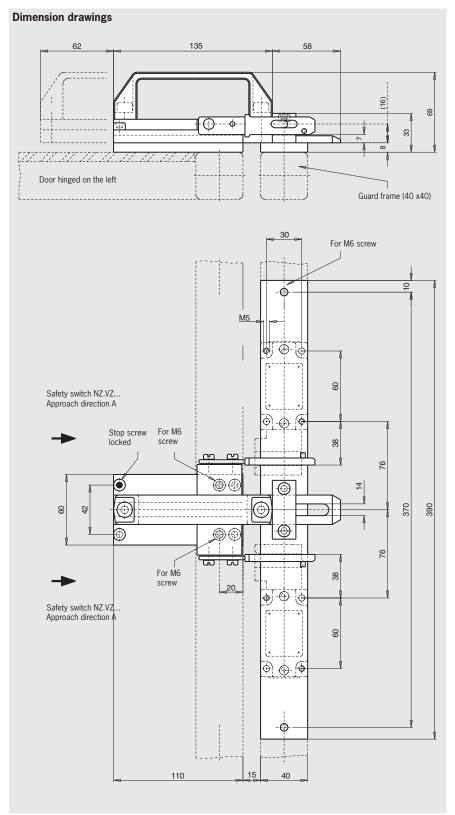
#### **Special features**

- One bolt for 2 safety switches
  - A higher safety category according to EN ISO 13849-1 (e.g. category 4) is achieved
- Bolt can be used for doors hinged on the right or left

#### **Features**

- ► Easily fitted to standard aluminum profiles and machine covers by screw connection
- Distinctive yellow color for easy recognition
- Rugged construction for heavy doors
- No additional door handle necessary
- Slot on the bolt permits attachment of padlocks

#### Bolt for 2 safety switches NZ.VZ on one bolt



Designation	Detent mechanism	Version	Order no./item
Bolt NZ-AC	Without	For doors hinged on the right or left, 2 safety switches on one bolt, actuator included	<b>076188</b> Bolt NZ-AC

- ► For safety switches NZ.VZ
- Lever for escape release from the danger zone
- Bolt with detent knob
- For doors hinged on the right or left



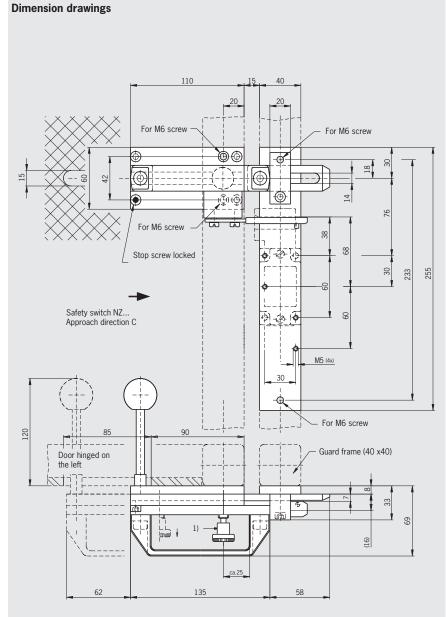
#### **Special features**

 Bolt with detent mechanism
 Bolt latches in open position to prevent unintentional closing of the bolt

#### **Features**

- Easily fitted to standard aluminum profiles and machine covers by screw connection
- ▶ Distinctive yellow color for easy recognition
- Rugged construction for heavy doors
- No additional door handle necessary
- Slot on the bolt permits attachment of padlocks

## **Bolt for safety switches NZ.VZ**



# Bolt with detent mechanism: latches in open position and prevents unintentional closing of the bolt. Unlocked by pulling the detent knob upward.

Designation	Detent mechanism	Version	Order no./item
Bolt NZ-AF	Detent knob	For doors hinged on the right, Escape release from the danger zone, actuator included	<b>078451</b> Bolt NZ-AF
Bolt NZ-CF	Detent knob	For doors hinged on the left, Escape release from the danger zone, actuator included	<b>078452</b> Bolt NZ-CF



- For safety switches NZ.VZ and NZ.VZ. VS
- ► Material: Die-cast aluminum
- Lever for escape release from the danger zone (optional)
- For doors hinged on the right or left



#### **Special features**

(only for bolt BTC-NZVZ-S-TH-01-F with escape release)

- Bolt with detent mechanism
   Bolt latches in open position to prevent unintentional closing of the bolt. Unlocked by pressing the knob
- Lever for escape release from the danger zone (optional)

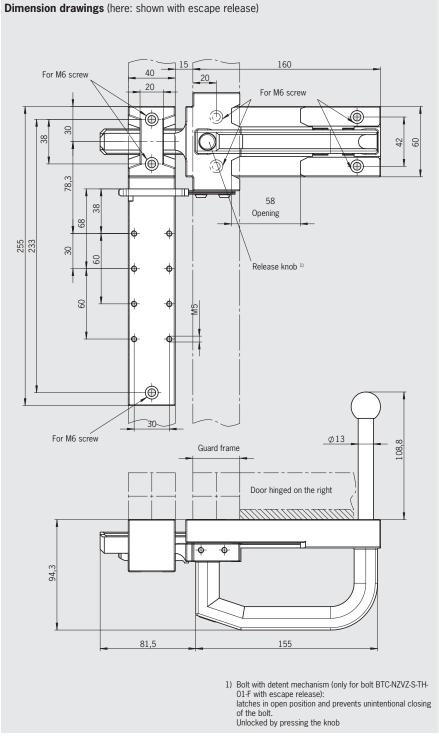
#### **Features**

- Easily fitted to standard aluminum profiles and machine covers by screw connection
- Distinctive yellow color for easy recognition
- Rugged construction for heavy doors
- No additional door handle necessary

## Notes

- Actuator included
- Order safety switch separately

## Bolt for safety switches NZ.VZ and NZ.VZ.VS



Designation	Detent mechanism	Version	Order no./item
Bolt	1 x detent mechanism open	For doors hinged on the right or left,	<b>104399</b>
BTC-NZVZ-S-TH-01-F		with escape release	Bolt BTC-NZVZ-S-TH-01-F
Bolt	Without	For doors hinged on the right or left,	<b>104398</b>
BTC-NZVZ-S-TH-00-X		without escape release	Bolt BTC-NZVZ-S-TH-00-X

- ► For safety switches NZ.VZ
- Material: reinforced plastic
- ► Lever for escape release from the danger zone
- Bolt with detent knob
- ► For doors hinged on the right or left



#### **Special features**

Bolt with detent mechanism (only bolts with escape release)

Bolt latches in open position to prevent unintentional closing of the bolt

#### **Features**

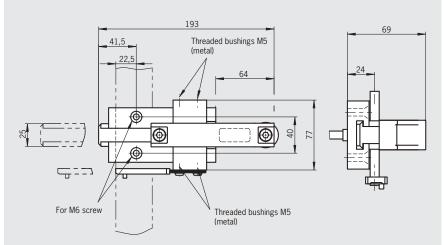
- Easily fitted to standard aluminum profiles and machine covers by screw connection
- ▶ Distinctive yellow color for easy recognition
- Rugged construction for heavy doors
- No additional door handle necessary
- Slot on the bolt permits attachment of padlocks

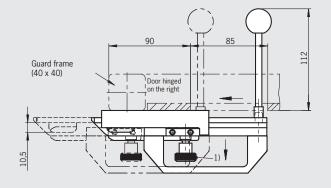
## Notes

- Functions only in conjunction with switch bracket NZ-GFK
- Actuator included
- Order safety switch separately
- Order switch bracket separately

## **Bolt for safety switches NZ.VZ**

#### **Dimension drawings**





Bolt with detent mechanism (only for bolts with escape release):
 latches in open position and prevents unintentional closing of the bolt.
 Unlocked by pulling the detent knob upward.

Designation	Detent mechanism	Version	Order no./item
Bolt NZ-GFK	Without	For doors hinged on the right or left, without escape release, Actuator included	<b>096617</b> Bolt NZ-GFK
Switch bracket NZ-GFK		Separate	096614 Switch bracket NZ-GFK



- ► For safety switches NZ.VZ, NZ.VZ.VS and TZ...
- ► Bolt with ball handle
- For doors hinged on the right or left



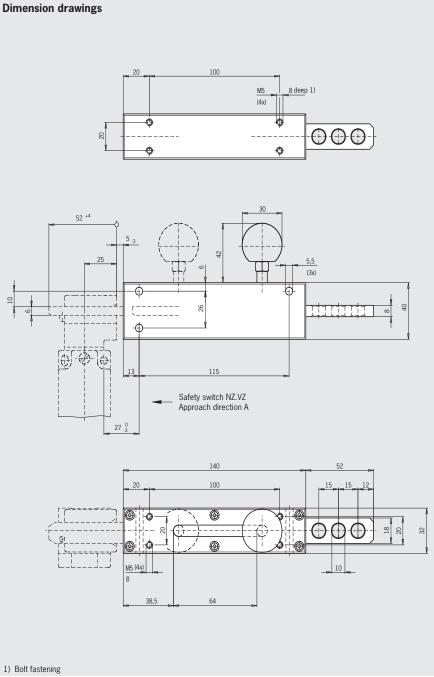
#### **Special features**

- On bolt **NZ/TZ-S1**, actuating pin on bottom
  - Safety switch fastened as shown in illustration
- On bolt NZ/TZ-S2, actuating pin on top
   Safety switch fastened rotated by 180°
- After the door is opened, the actuator is automatically withdrawn into the bolt by a built-in return spring
  - The operator is protected When the door is open there is no risk of injury due to protruding actuator
  - The actuator is protected When hinged doors are closed it is ensured that the actuator is not used as an end stop

#### Features

► Three holes enable padlocks to be attached

## Bolt for safety switches NZ.VZ, NZ.VZ.VS and TZ



Designation	Detent mechanism	Version	Order no./item
Bolt NZ/TZ-S1	without	For doors hinged on the right or left, actuating pin on bottom, Actuator included	<b>028357</b> Bolt NZ/TZ-S1
Bolt NZ/TZ-S2	without	For doors hinged on the right or left, actuating pin on top, Actuator included	<b>028359</b> Bolt NZ/TZ-S2

- Lever for escape release from the danger zone
- ► Bolt with ball handle
- For doors hinged on the right or left



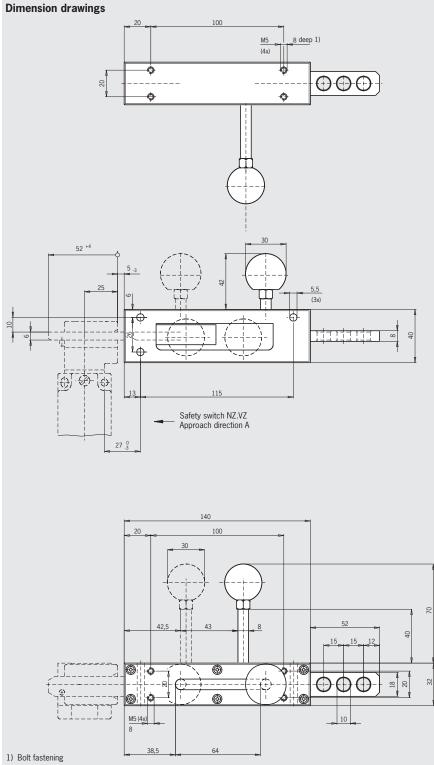
## **Special features**

- After the door is opened, the actuator is automatically withdrawn into the bolt by a built-in return spring
  - The operator is protected When the door is open there is no risk of injury due to protruding actuator
  - The actuator is protected When hinged doors are closed it is ensured that the actuator is not used as an end stop

## Features

- ► The lever for the escape release only enables the doors to be **opened** from inside the danger zone
- ► Three holes enable padlocks to be attached

## Bolt for safety switches NZ.VZ, NZ.VZ.VS and TZ with escape release



Designation	Detent mechanism	Version	Order no./item
Bolt NZ/TZ-S1/AF	Without	For doors hinged on the right, escape release from the danger zone, Actuator included	<b>079786</b> Bolt NZ/TZ-S1/AF
Bolt NZ/TZ-S1/CF	Without	For doors hinged on the left, escape release from the danger zone, Actuator included	<b>079785</b> Bolt NZ/TZ-S1/CF



- ► For safety switches NZ.VZ and TZ with escape release
- Lever for escape release from the danger zone
- For 2 safety switches on one bolt (NZ and TZ)
- For doors hinged on the right or left



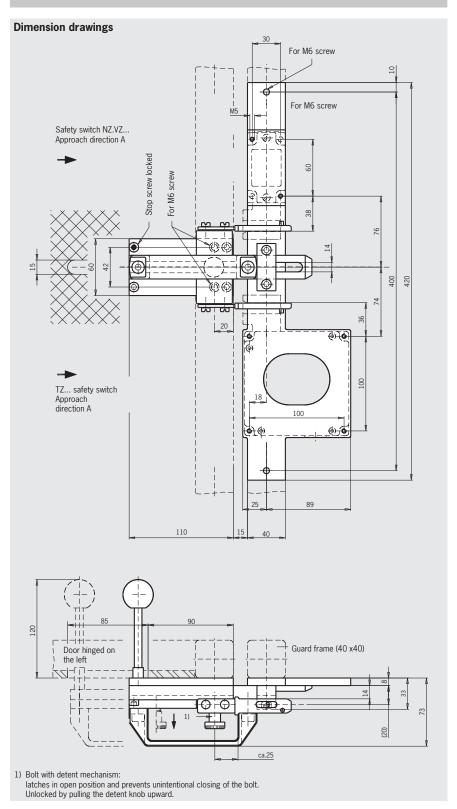
## **Special features**

- One bolt for 2 safety switches (NZ and TZ with guard locking)
  - A higher safety category according to EN ISO 13849-1 (e.g. category 4) is achieved
- Bolt with detent mechanism
   Bolt latches in open position to prevent unintentional closing of the bolt

#### **Features**

- Easily fitted to standard aluminum profiles and machine covers by screw connection
- Distinctive yellow color for easy recognition
- Rugged construction for heavy doors
- No additional door handle necessary
- Slot on the bolt permits attachment of padlocks

## Bolt for 2 safety switches NZ.VZ and TZ on one bolt



Designation	Detent mechanism	Version	Order no./item
Bolt NZ/TZ-ACF	Detent knob	For doors hinged on the right or left, 2 safety switches on one bolt, escape release from the danger zone, Actuator included	<b>083900</b> Bolt NZ/TZ-ACF

- ► For safety switches TZ with escape release
- Lever for escape release from the danger zone
- ► Optional stainless steel bolt
- For doors hinged on the right or left



#### **Special features**

 Bolt with detent mechanism
 Bolt latches in open position to prevent unintentional closing of the bolt

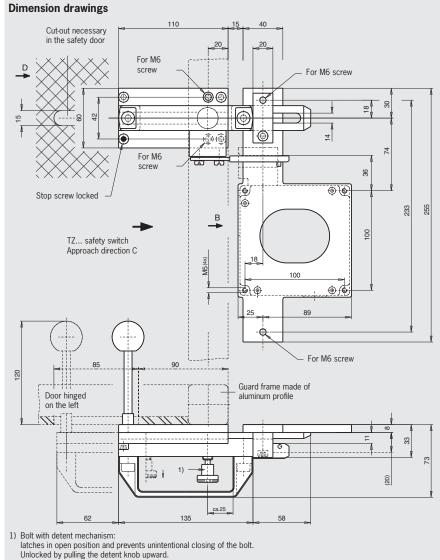
#### **Features**

- Easily fitted to standard aluminum profiles and machine covers by screw connection
- ▶ Distinctive yellow color for easy recognition
- Rugged construction for heavy doors
- No additional door handle necessary
- Slot on the bolt permits attachment of padlocks

## Version in stainless steel

- Suitable for use in the chemical and foodstuff industries
- Screw material stainless steel
- Handle material polypropylene
- Slide strip material polyethylene

## Bolt for safety switch TZ with escape release



Designation	Detent mechanism	Version	Order no./item
Bolt TZ-AF	Detent knob	For doors hinged on the right, escape release from the danger zone, actuator and switch bracket included	<b>076200</b> Bolt TZ-AF
Bolt TZ-CF	Detent knob	For doors hinged on the left, escape release from the danger zone, actuator and switch bracket included	<b>076199</b> Bolt TZ-CF
Bolt TZ-CF-NIRO	Detent knob	For doors hinged on the left, stainless steel bolt, actuator and switch bracket included	<b>121716</b> Bolt TZ-CF-NIRO
Bolt TZ-C-NIRO	Without	For doors hinged on the left, stainless steel bolt, actuator and switch bracket included	<b>117194</b> Bolt TZ-C-NIRO
Bolt TZ-A-NIRO	Without	For doors hinged on the right, stainless steel bolt, actuator and switch bracket included	<b>117193</b> Bolt TZ-A-NIRO



- ► For safety switches TZ
- ► Optional stainless steel bolt
- For doors hinged on the right or left



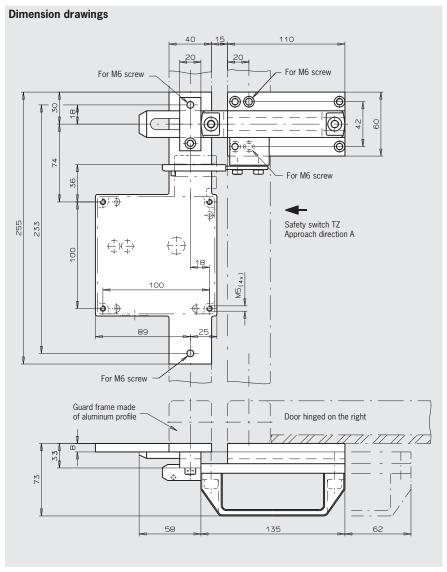
#### **Features**

- Easily fitted to standard aluminum profiles and machine covers by screw connection
- Easy to use
- Distinctive yellow color for easy recognition
- Rugged construction for heavy doors
- No additional door handle necessary
- Slot on the bolt permits attachment of padlocks

## Version in stainless steel

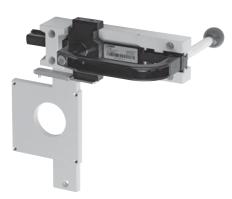
- Suitable for use in the chemical and foodstuff industries
- Screw material stainless steel
- Handle material polypropylene
- Slide strip material polyethylene

## **Bolts for safety switches series TZ**



Designation	Detent mech- anism	Version	Order no./item
Bolt TZ-A	Without	For doors hinged on the right Actuator and switch bracket included	<b>057736</b> Bolt TZ-A
Bolt TZ-C	Without	For doors hinged on the left Actuator and switch bracket included	<b>057737</b> Bolt TZ-C
Bolt TZ-A-NIRO	Without	For doors hinged on the right, stainless steel bolt, Actuator and switch bracket included	<b>079798</b> Bolt TZ-A-NIRO
Bolt TZ-C-NIRO	Without	For doors hinged on the left, stainless steel bolt, Actuator and switch bracket included	<b>079799</b> Bolt TZ-C-NIRO
Bolt TZ-A-NIRO-C2101	Without	For doors hinged on the right, stainless steel bolt, Screws made of stainless steel, handle and slide strips made of stainless steel 1.4 Actuator and switch bracket included	<b>096057</b> Bolt TZ-A-NIRO-C2101
Bolt TZ-C-NIRO-C2101	without	For doors hinged on the left, stainless steel bolt, Screws made of stainless steel, handle and slide strips made of stainless steel 1.4 Actuator and switch bracket included	<b>096058</b> Bolt TZ-C-NIRO-C2101

- ► For safety switches TZ
- ► Material: Die-cast aluminum
- ► Lever for escape release from the danger zone (optional)
- ► For doors hinged on the right or left



#### **Special features**

(only for bolt BTC-TZ00 A/C-TH-01-F with escape release)

- Bolt with detent mechanism Bolt latches in open position to prevent unintentional closing of the bolt. Unlocked by pressing the knob
- Lever for escape release from the danger zone (optional)

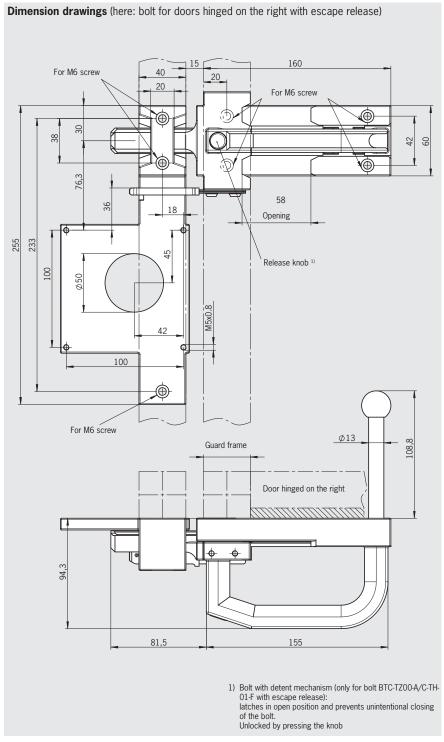
#### **Features**

- Easily fitted to standard aluminum profiles and machine covers by screw connection
- ▶ Distinctive yellow color for easy recognition
- Rugged construction for heavy doors
- No additional door handle necessary

#### **Notes**

- Actuator included
- Order safety switch separately

## **Bolts for safety switches series TZ**



Designation	Detent mechanism	Version	Order no./item
Bolt	1 x detent mechanism open	For doors hinged on the right,	<b>106279</b>
BTC-TZ00-A-TH-01-F		with escape release	Bolt BTC-TZ00-A-TH-01-F
Bolt	1 x detent mechanism open	For doors hinged on the left,	<b>106281</b>
BTC-TZ00-C-TH-01-F		with escape release	Bolt BTC-TZ00-C-TH-01-F
Bolt	Without	For doors hinged on the right,	<b>106278</b>
BTC-TZ00-A-TH-00-X		without escape release	Bolt BTC-TZ00-A-TH-00-X
Bolt	Without	For doors hinged on the left,	<b>106280</b>
BTC-TZ00-C-TH-00-X		without escape release	Bolt BTC-TZ00-C-TH-00-X



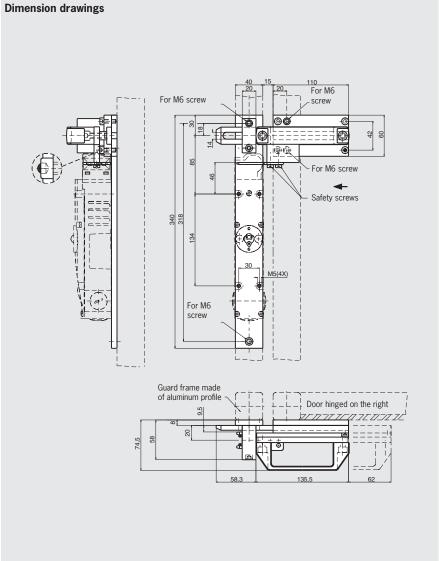
- For safety switches TX and NX
   For doors hinged on the right or left



#### **Features**

- Easily fitted to standard aluminum profiles and machine covers by screw connection
- Distinctive yellow color for easy recognition
- No additional door handle necessary
- Slot on the bolt tongue permits attachment of padlocks

## Bolt for safety switches series TX and NX



Designation	Detent mechanism	Version	Order no./item
Bolt TX-A	without	Without escape release, for doors hinged on the right, actuator and switch bracket included	<b>082990</b> Bolt TX-A
Bolt TX-C	without	Without escape release, for doors hinged on the left, actuator and switch bracket included	<b>082991</b> Bolt TX-C

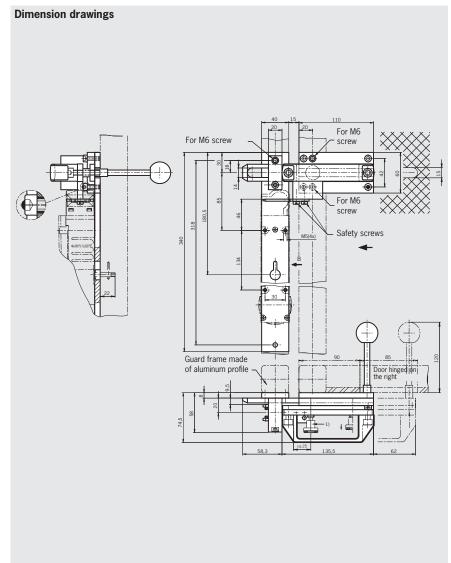
- ► For safety switches with escape release TX...C1991/C2161
- ► For doors hinged on the right or left



#### **Features**

- Easily fitted to standard aluminum profiles and machine covers by screw connection
- Distinctive yellow color for easy recognition
- No additional door handle necessary
- Slot on the bolt tongue permits attachment of padlocks

# **Bolts for safety switches series TX...C1991/C2161** with escape release



Designation	Detent mechanism	Version	Order no./item
Bolt TX-AF	Detent knob	With escape release, for doors hinged on the right, actuator and switch bracket included	<b>085392</b> Bolt TX-AF
Bolt TX-CF	Detent knob	With escape release, for doors hinged on the left, actuator and switch bracket included	<b>085393</b> Bolt TX-CF



## Bolts for guards for safety switches STP/STA/SGP/SGA

 Lever for escape release from the danger zone (optional)



## **Special features**

(only for bolt S-AF and S-CF with escape release)

- Bolt with detent mechanism
   Bolt latches in open position to prevent unintentional closing of the bolt
- Lever for escape release from the danger zone (optional)

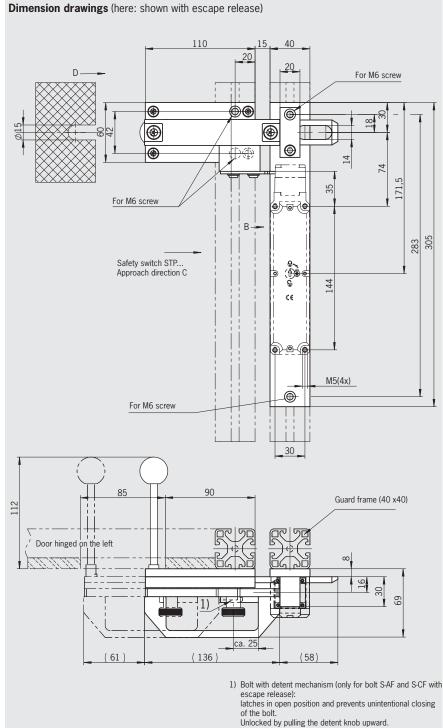
#### **Features**

- ► Easily fitted to standard aluminum profiles and machine covers by screw connection
- Distinctive yellow color for easy recognition
- Rugged construction for heavy doors
- No additional door handle necessary
- Slot on the bolt permits attachment of padlocks

#### **Notes**

- The bolts are only suitable for the series STP.../STA.../SGP.../SGA...
- Actuator included
- Order safety switch separately

## Bolt for safety switches STP.../STA.../SGP.../SGA...



Designation	Detent mechanism	Version	Order no.
Bolt S-AF	Detent knob	For doors hinged on the right with escape release	<b>096390</b> Bolt S-AF
Bolt S-CF	Detent knob	For doors hinged on the left with escape release	<b>096391</b> Bolt S-CF
Bolt S-A	without	For doors hinged on the right without escape release	<b>096384</b> Bolt S-A
Bolt S-C	without	For doors hinged on the left without escape release	<b>096385</b> Bolt S-C

## Bolt for guards for safety switches STA/SGA

- ► Material: Die-cast aluminum
- ► Lever for escape release from the danger zone (optional)
- For doors hinged on the right or left



#### **Special features**

(only for bolt BTC-ST/G-S-TH-01-F with escape release)

- Bolt with detent mechanism Bolt latches in open position to prevent unintentional closing of the bolt. Unlocked by pressing the knob
- Lever for escape release from the danger zone (optional)

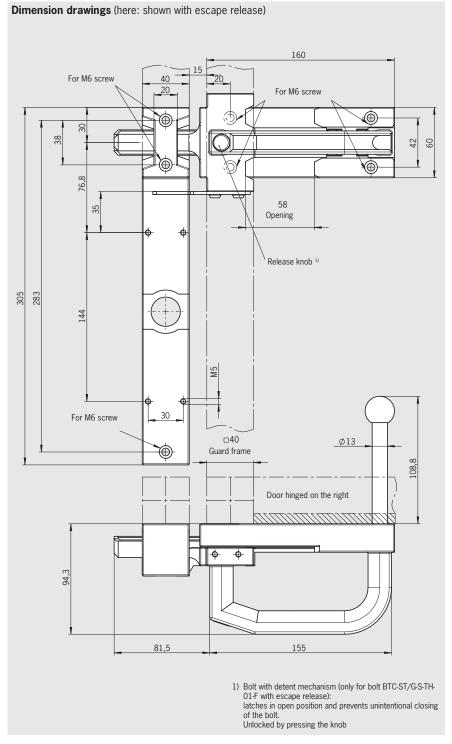
#### **Features**

- Easily fitted to standard aluminum profiles and machine covers by screw connection
- ▶ Distinctive yellow color for easy recognition
- Rugged construction for heavy doors
- No additional door handle necessary

## Notes

- The bolts are only suitable for series STA.../ SGA...
- Actuator included
- Order safety switch separately

## Bolt for safety switch STA.../SGA...



Designation Detent mechanism		Version	Order no./item
Bolt	1 x detent mechanism open	For doors hinged on the right or left,	<b>106285</b>
BTC-ST/G-S-TH-01-F		with escape release	Bolt BTC-ST/G-S-TH-01-F
Bolt	without	For doors hinged on the right or left,	<b>106284</b>
BTC-ST/G-S-TH-00-X		without escape release	Bolt BTC-ST/G-S-TH-00-X



## Bolt for guards for safety switches SGA/STA

- Material: reinforced plastic
- For doors hinged on the left or right



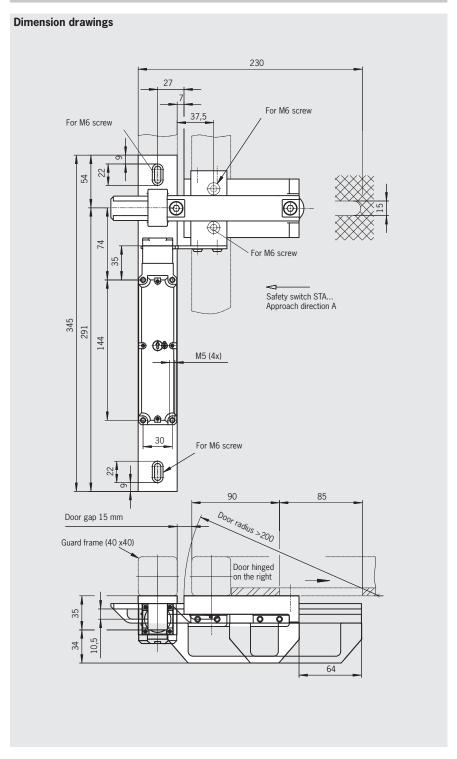
#### **Features**

- ► Easily fitted to standard aluminum profiles and machine covers by screw connection
- Distinctive yellow color for easy recognition
- Rugged construction for heavy doors
- No additional door handle necessary
- Slot on the bolt permits attachment of padlocks

## Notes

- Functions only in conjunction with switch bracket TP-GFK
- Actuator included
- Order safety switch separately
- Order switch bracket separately

## **Bolt for safety switch SGA/STA**



Ordering table			
Designation	Detent mechanism	Version	Order no./item
Bolt STP-GFK	without	For doors hinged on the right or left, without escape release (also for SGA/STA)	<b>098121</b> Bolt STP-GFK
Switch bracket TP-GFK		Separate (also for SGA/STA)	096613 Switch bracket TP-GFK

## **Accessories for bolts**

- Adapter NZ/TZ... for safety switches NZ.../TZ... for Bosch EcoSafe 45x45 and 30x30
- Replacement handle for EUCHNER bolts

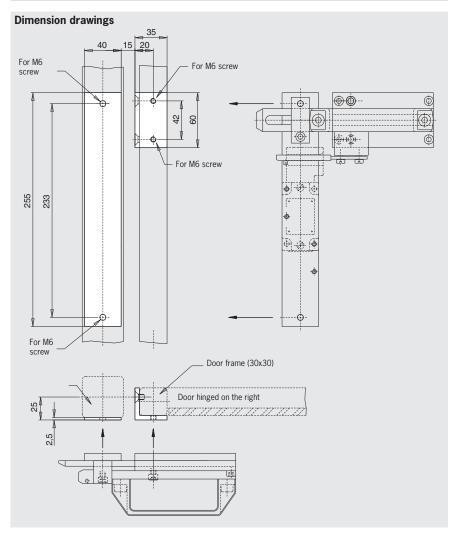
## Adapter NZ/TZ

Using the adapter set the bolts **NZ...** and **TZ...** can be fastened to aluminum profiles (Bosch EcoSafe).

The adapter set is only suitable for profiles 45x45 mm in combination with safety doors 30x30 mm

- ► Simple screw mounting
- Symmetrical design for doors hinged on the right or left

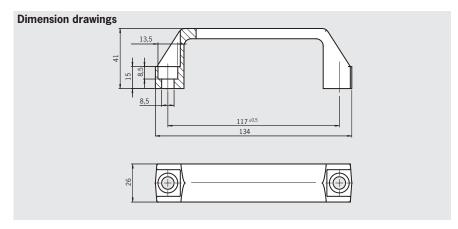
## Adapter NZ/TZ...



## Replacement handle for EUCHNER bolts

- Material: plastic, reinforced polypropylene (PP)
- ▶ Color: black, matt
- ► Temperature resistance up to 100 °C

## Replacement handle EUCHNER bolts



Designation	Version	Order no./item
Adapter NZ/TZ 45/30	incl. 4 fixing screws for elbow adapter	<b>079033</b> Adapter NZ/TZ 45/30
Bolt handle/V5	Packaging unit 5 pieces, screws not included	<b>093500</b> Bolt handle/V5



## **Accessories for bolts**

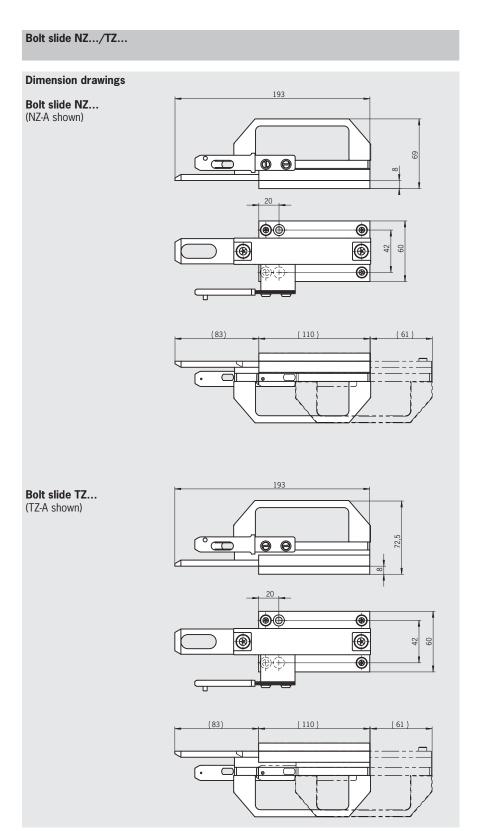
► Replacement bolt slide for EUCHNER bolt NZ.../TZ...

#### **Features**

With upright handle

#### Notes

Actuator included



Designation	Version	Order no./item
Bolt slide NZ-A	For safety switches NZ, for doors hinged on the right, actuator included	116559 BOLT SLIDE NZ-A
Bolt slide NZ-C	For safety switches NZ, for doors hinged on the left, actuator included	116560 BOLT SLIDE NZ-C
Bolt slide TZ-A	For safety switches TZ, for doors hinged on the right, actuator included	116561 BOLT SLIDE TZ-A
Bolt slide TZ-A	For safety switches TZ, for doors hinged on the left, actuator included	116562 BOLT SLIDE TZ-C

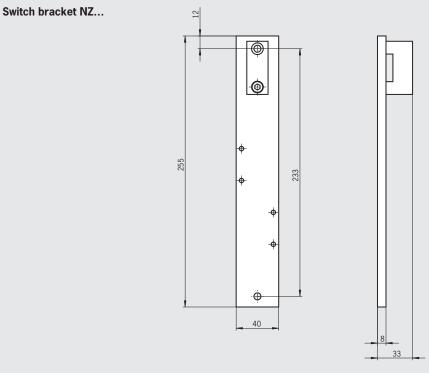
► Switch bracket for NZ.../TZ...

## **Features**

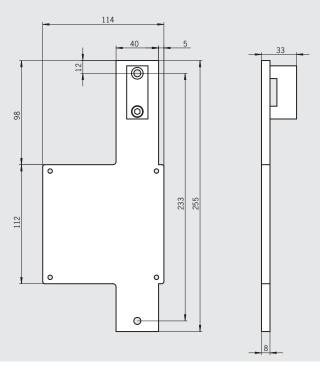
- Simple screw mounting
- Symmetrical design for doors hinged on the right or left

## Switch bracket NZ.../TZ...

## **Dimension drawings**







Designation	Version	Order no./item
Switch bracket NZ	For safety switches NZ in conjunction with bolt slide NZ	116563
Switch bracket 142	Tot safety switches NZ In conjunction with boil slide NZ	SWITCH BRACKET NZ
Switch bracket TZ	Francisch with the T7 in a colon still with the Rel T7	116564
	For safety switches TZ in conjunction with bolt slide TZ	SWITCH BRACKET TZ



## List of plug connector suppliers

We provide no guarantee for the completeness and correctness of the ordering data given. The data was valid in October 2004. The related manufacturers reserve the right to make changes without notice. The plug connectors and accessories listed are also available from other manufacturers.

## ▶ Plug connectors and accessories

For plug connector	Function	Manufacturer's designation	
	Female connector M12	<b>99-0436-57-05</b> Cable socket	ector.de
SVM5 5 pins	Female flange connector M12	09-3442-700-05 flange connector with flexible wires	Binder www.binder-connector.de
	Blanking plug M12	<b>08-2425-000-000</b> Protective cap for socket with retaining strap	www.bin
<b>CE5</b> 3-pin + N + PE	Mating connector (socket)	CEE plug as per CEE standard	
	Female flange connector	T3107 500 Female receptacle	uchel hel.com
<b>C16-1</b> 6 pins + PE	Socket crimp contacts for C16-1, VPE 100 pcs.	<b>VN02 016 0002 (1)</b> Single contact, silver, 0.5-1.5 mm <sup>2</sup>	Amphenol-Tuchel
	Blanking plug	T6483 000 Protective cap for female receptacle	Amph www.am
	Flange connector 1 cable exit	19 20 010 0251 Socket housing 1 cable exit	
HAN10	Socket contacts (installation for flange connector)	09 20 010 3101 Socket contact insert crimp connection	Harting www.harting.com
10 pins + PE	socket contacts for crimping	<b>09 33 000 6220</b> Socket crimp contacts 0.5 mm <sup>2</sup>	Hari www.hari
	Blanking plug	<b>09 20 010 5425</b> Cover	
RC17-Y coded	Female flange connector, solderable for male plug RC17Y)	RC-17S1Y122000 Flange plug connector 17-pin	vers.com
17 pins	Blanking plug	RC-17P1N8A83NN Protective cap for socket with retaining strap	Coninvers www.coninvers.com

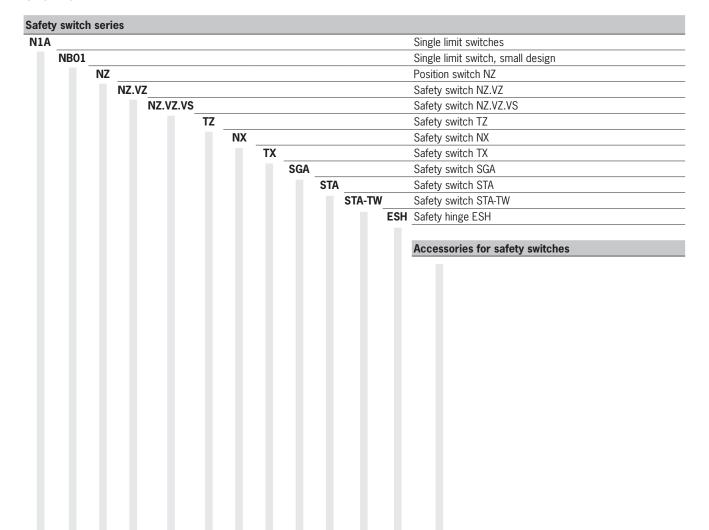
## ► Crimp and extraction tools

For plug connector	Function	Manufacturer's designation	
SR6 and SR11	Crimp tool	<b>932 507-002</b> XZC 0701	<b>тапп</b> -тапп.сош
SKO and SKII	Extraction tool	<b>931 812-001</b> XWA 164	Hirschmann www.hirsch-mann.com
C16-1	Crimp tool	TA0500 + TA0000163 + TA0002016001 Crimp pliers, jaws and contact receptacle	Amphenol-Tuchel
C16-1	Extraction tool	FG 0300 1461 Extraction tool	Ampheno www.amphen
RC12	Crimp tool	RC-Z2504 Crimp pliers for machined contacts	
ROIZ	Extraction tool	RC-Z2494 Extraction tool/insertion tool	Coninvers www.coninvers.com
M22 (DC10)	Crimp tool	RC-Z2504 Crimp pliers for machined contacts	Conir www.conir
M23 (RC18)	extraction tool	RC-Z2274 / RC-Z2494 <sup>1)</sup> Extraction tool	
VP19	Crimp tool	T98143 DAK 83S-30 / 11-7576T3 Insertion tool	Litton/Veam www.littonveam.com
VP19	Extraction tool	<b>46592-MT50 / 11-7576T3</b> Removal tool	Litton/ www.litton/
UTOO	Crimp tool	Y16RCM Crimping tool for machined contacts	<b>ndy</b> ndy.com
UT23	Extraction tool	RX2025GE1 Extraction tool	Burndy www.burndy.com
TB24	Crimp tool	WT10-04 Crimp tool	Thomas & Betts
1024	Extraction tool	TRT16 Contact removal tool	Thomas www.tn

<sup>1)</sup> Only with option C1825

Technical Data **EUCHNER** 

## **Overview**



	Safety switch series												
N1A	NB01	NZ	NZ.VZ	NZ.VZ.VS	TZ	NX	TX	SGA	STA	STA-TW	ESH	Accessories	Page
•													164
	•												166
		•											168
			•										172
				•									175
					•								178
						•							181
							•						183
								•					187
									•				189
										•			192
											•		194
												•	195

**Technical Data** 

## Single limit switch N1A...



Reliability values acc. to EN ISO 13849-1						
Parameter	Value	Unit				
B10d	2 x 10 <sup>7</sup> operating cycles					

Switch Parameter		<b>P</b> ✓ Val	ue		Unit
Housing material		Die-cast alumii	num, anodized		
Ambient temperature	- 25 + 80				°C
Weight		Approx	c. 0.25		kg
Approach speed, min.		0.	.1		m/min
Switching element	N1AD	N1AR/N1AB	N1ARL	N1AW	
Approach speed, max. 1), depending on actuator	40	80	20	10	m/min
Operating point accuracy depending on actuator 2)	± 0.002	± 0.01	± 0.1	± 0.002	mm

Switching element	<u>†</u> 1 <u>†</u> 2		
Parameter	Va	lue	Unit
Switching principle	Slow-action switching contact	Snap-action switching contact	
Switching element with 1 switching contact	<b>508</b> 1 NC ⊖	-	
Switching element with 2 switching contacts	-	<b>514</b> 1 NC → + 1 NO	
Mechanical life	30 x 10 <sup>6</sup> operating cycles	1 x 10 <sup>6</sup> operating cycles	
Actuating force, min.	15	30	N
Contact closing time	-	< 5	ms
Contact bounce time	-	< 3	ms
Min. switching current at 24 V DC	1	.0	mA
Switching current, max.		6	Α
Rated impulse withstand voltage Uimp		4	kV
Contact material	Silver alloy,	gold flashed	

Connection, cable entry M16 x 1.	5	M16x1,5		
Parameter		Va	lue	Unit
Connection		Screw	terminal	
Version		M16	x 1.5	
Connection cross-section, max.		1.5 mm <sup>2</sup> pe		
Degree of protection acc. to IEC 60529		IP		
Rated insulation voltage Ui		2	V AC/DC	
Switching element		508	514	
Conventional thermal current lth		10	10	А
Short circuit protection according to IEC 60269-(control circuit fuse)	1	10	6	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 6 A Ue 230 V	le 2.5 A Ue 230 V	
	DC-13	le 6 A Ue 24 V	le 6 A Ue 24 V	

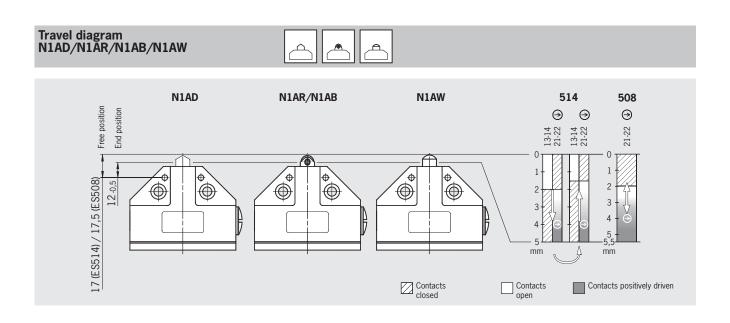
<sup>1)</sup> The approach speed given applies in conjunction with EUCHNER trip dogs at an approach angle of 30°. At a smaller approach angle this approach speed can be exceeded.

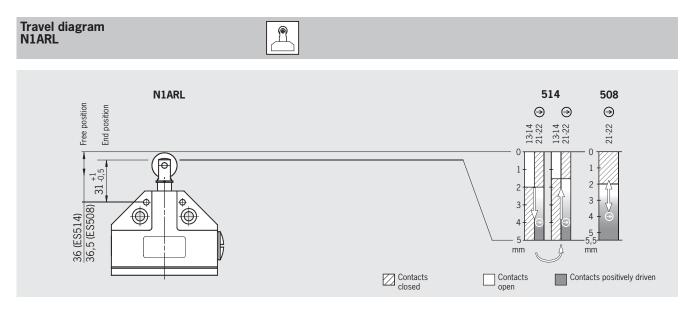
2) The reproducible operating point accuracy relates to axial actuation, after run-in of approx. 2,000 operating cycles



Connection, plug connector SVM5	(M12)	5-pol	
Parameter		Value	Unit
Connection		Plug connector	
Version		M12 (4-pin + PE), male socket adjustable (max. 270o) for elbow connector	
Degree of protection acc. to IEC 60529		IP 67 <sup>3)</sup>	
Rated insulation voltage Ui		30	V AC/DC
Switching element		514	
Conventional thermal current Ith		10	A
Short circuit protection according to IEC 60269-1 (control circuit fuse)		6	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 4 A Ue 30 V	
	DC-13	le 4 A Ue 24 V	

<sup>3)</sup> Screwed tight with the related plug connector (see page 126)





Technical Data **EUCHNER** 

# Single limit switch NB01...



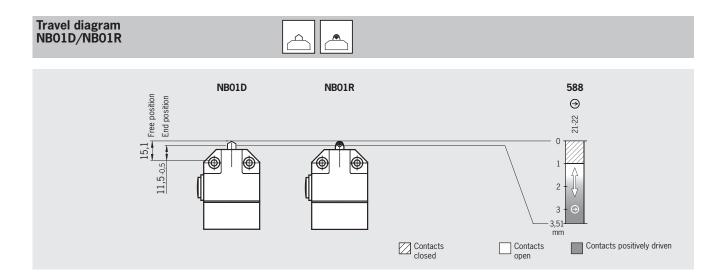
Reliability values acc. to EN ISO 13849-1		
Parameter	Value	Unit
B10d	2 x 10 <sup>7</sup> operating cycles	

Switch Parameter	Val	ue	Unit
Housing material	Die-cast alumi		
Ambient temperature	- 25	. + 70	°C
Weight	Appro	x. 0.2	kg
Switching element	NB01D	NB01R	m/min
Approach speed, max. 1), depending on actuator	20	50	111/111111
Operating point accuracy depending on actuator 2)	± 0.02	± 0.05	mm

Switching element	<u>‡</u> 1	
Parameter	Value	Unit
Switching principle	Slow-action switching contact	
Switching element with 1 switching contact	588 1 NC ⊖	
Mechanical life	10 x 10 <sup>6</sup> operating cycles	
Actuating force, min.	15	N
Min. switching current at 24 V DC	1	mA
Switching current, max.	6	A
Rated impulse withstand voltage U <sub>imp</sub>	4	kV
Contact material	Silver alloy, gold flashed	

Connection, cable entry M12 x 1	.5	M12x1,5	
Parameter		Value	Unit
Connection		Screw terminal	
Version		M12 x 1.5	
Connection cross-section, max.		1.5 mm <sup>2</sup> per flexible wire	
Degree of protection acc. to IEC 60529		IP 67	
Rated insulation voltage Ui		250	V AC/DC
Switching element		588	
Conventional thermal current Ith		6	A
Short circuit protection according to IEC 60269 (control circuit fuse)	9-1	6	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 4 A Ue 230 V	
	DC-13	le 3 A Ue 24 V	

<sup>1)</sup> The approach speed given applies in conjunction with EUCHNER trip dogs at an approach angle of 30°. At a smaller approach angle this approach speed can be exceeded.



Technical Data **EUCHNER** 

## Position switch NZ...





Reliability values acc. to EN ISO 13849-1		
Parameter	Value	Unit
B10d	2 x 10 <sup>7</sup> operating cycles	

Switch								
Parameter				Value				Unit
Housing material			Anoc	dized die-cas	st alloy			
Mechanical life			30 x 1	LO <sup>6</sup> operatin	g cycles			
Ambient temperature				- 25 + 8	0			°C
Weight				Approx. 0.3	3			kg
Approach speed, min.				0.1				m/min
Approach speed, max. 1), depending on actuator	НВ	HS	РВ	PS	RG, RL, RS	RK	wo	m/min
	300	60	120	30	20	50	10	1
Actuating force, min.		15				N		

Switching element	<u>‡</u> 2 <u>‡</u> 4					
Parameter		Va	lue			Unit
Switching principle	Snap-action switching contact	Slo	w-action switchi	ing con	tact	
Switching element with 2 switching contacts	511 1 NC → + 1 NO	<b>528H</b> 1 NC → + 1	NO		<b>538H</b> 2 NC ⊖	
Switching element with 4 switching contacts	-	<b>2121H</b> 4 NC ⊖	2131H 3 NC → + 1		<b>3131H</b> 2 NC → + 2 NO	
Min. switching current at 24 V DC	1		1			mA
Switching current, max.	6		4			Α
Contact closing time	< 4		-			ms
Contact bounce time	< 3		-			ms
Rated impulse withstand voltage Uimp		2	.5			kV
Contact material		Silver alloy,	gold flashed			

Connection, cable entry M20 x 1.	5	M20x1,5		
Parameter		Ψ	Value	Unit
Connection		Scre	ew terminal	
Version		M	20 x 1.5	
Connection cross-section, max.		1.5 mm <sup>2</sup>	per flexible wire	
Degree of protection acc. to IEC 60529		IP 67		
Rated insulation voltage Ui		250		
Switching element		Snap-action switching contact 511	Slow-action switching contact <b>528H, 538H, 2121H, 2131H, 3131H</b>	
Conventional thermal current lth		6	4	Α
Short circuit protection according to IEC 60269-(control circuit fuse)	1	6	4	A gG
Utilization category acc. to IEC 60947-5-1	AC-12	le 10 A Ue 230 V	-	
	AC-15	le 6 A Ue 230 V	le 4 A Ue 230 V	
	DC-13	le 6 A Ue 24 V	le 4 A Ue 24 V	

<sup>1)</sup> The approach speed given applies in conjunction with EUCHNER trip dogs at an approach angle of 30°. At a smaller approach angle this approach speed can be exceeded.

Connection, plug connector			
SVM5, MDC5, SEM5 (M12)		5-pol	
Parameter		Value	Unit
Connection		Plug connector	
Version		M12 (4-pin + PE), male socket adjustable (max. 270o) for elbow connector	
Degree of protection acc. to IEC 60529		IP 67 <sup>2)</sup>	
Rated insulation voltage Ui		30	V AC/DC
Switching element		Snap-action switching contact <b>511</b> , Slow-action switching contact <b>528H</b> , <b>538H</b>	
Conventional thermal current lth		4	А
Short circuit protection according to IEC 60269-(control circuit fuse)	1	4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 4 A Ue 30 V	
	DC-13	le 4 A Ue 24 V	

Connection, plug connector SR6		7-pol		
Parameter		Va	lue	Unit
Connection		Plug connector acc	ording to DIN 43651	
Version		SR6 (6-	pin + PE)	
Degree of protection acc. to IEC 60529		IP (		
Rated insulation voltage Ui		2	V AC/DC	
Switching element		Snap-action switching contact 511	Slow-action switching contact 528H, 538H	
Conventional thermal current Ith		6	4	А
Short circuit protection according to IEC 60269-(control circuit fuse)	-1	6	4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 6 A Ue 230 V	le 4 A Ue 230 V	
	DC-13	le 6 A Ue 24 V	le 4 A Ue 24 V	

Connection, plug connector SM8	(M12)	8-pol		
Parameter			Value	Unit
Connection			Plug connector	
Version			8-pin	
Degree of protection acc. to IEC 60529			IP 65 1)	
Rated insulation voltage Ui			30	V AC/DC
Rated impulse withstand voltage Uimp			1.5	kV
Conventional thermal current lth			1	A
Short circuit protection according to IEC 60269 (control circuit fuse)	9-1		1	A gG
Utilization category acc. to IEC 60947-5-1	AC-15		le 1 A Ue 24 V	
	DC-13		le 4 A Ue 24 V	

Connection, plug connector MR8		8-pol		
Parameter			Value	Unit
Connection			Plug connector	
Version			MR8 (7-pin + PE)	
Degree of protection acc. to IEC 60529			IP 65 <sup>2)</sup>	
Rated insulation voltage Ui			250	V AC/DC
Switching element			Slow-action switching contact <b>3131H</b>	
Conventional thermal current Ith			4	A
Short circuit protection according to IEC 60269 (control circuit fuse)	9-1		4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15		le 4 A Ue 230 V	
	DC-13		le 4 A Ue 24 V	

Connection, plug connector MR9		9-pol	
Parameter		Value	Unit
Connection		Plug connector	
Version		MR9 (8-pin + PE)	
Degree of protection acc. to IEC 60529		IP 65 <sup>2)</sup>	
Rated insulation voltage Ui		250	V AC/DC
Switching element		Slow-action switching contact 2131H, 3131H	
Conventional thermal current lth		4	A
Short circuit protection according to IEC 60269-1 (control circuit fuse)		4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 4 A Ue 230 V	
	DC-13	le 4 A Ue 24 V	

<sup>2)</sup> Screwed tight with the related plug connector (see page 126, 128 and 131)



Connection, plug connector MR10		10-pol	
Parameter		Value	Unit
Connection		Plug connector	
Version		MR10 (9-pin + PE	Ε)
Degree of protection acc. to IEC 60529		IP 65 <sup>2)</sup>	
Rated insulation voltage Ui		250	V AC/DC
Conventional thermal current lth		4	A
Short circuit protection according to IEC 60269-1 (control circuit fuse)	1	4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 4 A Ue 230 V	
	DC-13	le 4 A Ue 24 V	

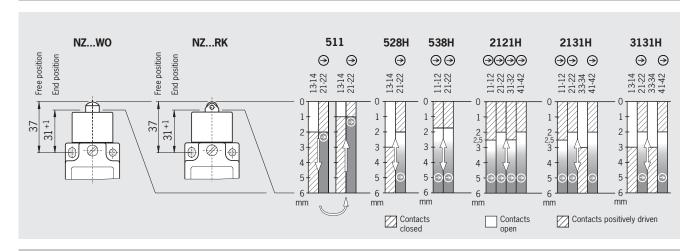
Connection, plug connector SR11		[] 12-pol	
Parameter		Value	Unit
Connection		Plug connector	
Version		SR11 (11-pin + PE)	
Degree of protection acc. to IEC 60529		IP 65 <sup>2)</sup>	
Rated insulation voltage Ui		50	V AC/DC
Switching element		Slow-action switching contact 2121H, 2131H, 3131H	
Conventional thermal current lth		4	A
Short circuit protection according to IEC 60269 (control circuit fuse)	-1	4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 4 A Ue 50 V	
	DC-13	le 4 A Ue 24 V	

<sup>2)</sup> Screwed tight with the related plug connector (see page 131 and 128)

# Travel diagram NZ.WO/NZ.RK

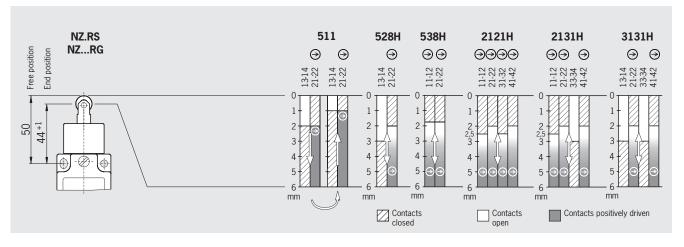




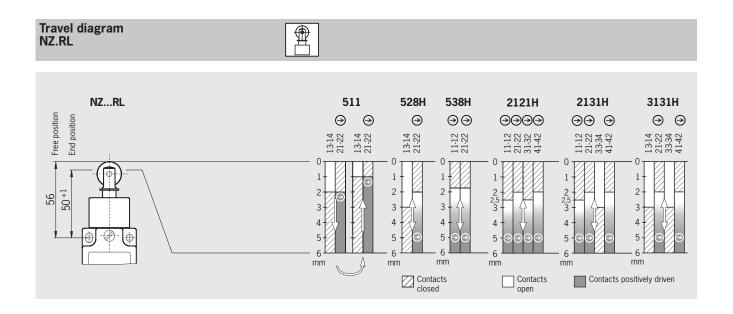


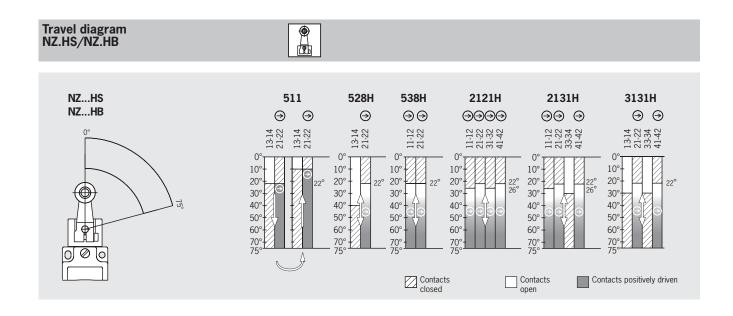
# Travel diagram NZ.RS/NZ.RG

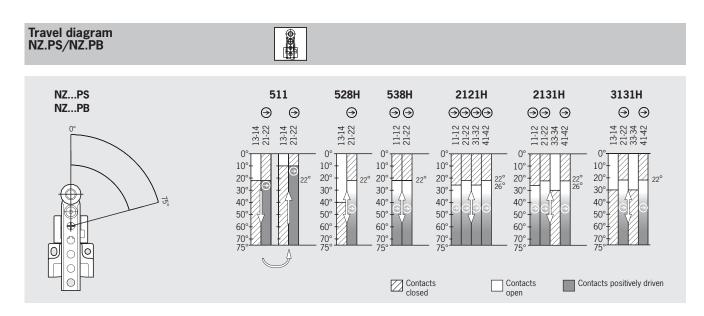












# Safety switch NZ.VZ



Reliability values acc. to EN ISO 13849-1					
Parameter	Value	Unit			
B10d	4.5 x 10 <sup>6</sup> operating cycles				

Switch	Я	
Parameter	Value	Unit
Housing material	Anodized die-cast alloy	
Mechanical life	2 x 10 <sup>6</sup> operating cycles	
Ambient temperature	- 25 + 80	°C
Weight	Approx. 0.3	kg
Approach speed, max.	20	m/min
Approach speed, min.	0.02 (for switching element ES511)	m/min
Actuating force	35	N
Extraction force	35	N
Retention force	8	N

Switching element	1 2 1 4				
Parameter		Va	alue		Unit
Switching principle	Snap-action switching contact	Slo	ow-action switching cor	ıtact	
Switching element with 2 switching contacts	<b>511</b> 1 NC ⊕ + 1 NO	<b>528H</b> 1 NC → + 1	NO	<b>538H</b> 2 NC ⊖	
Switching element with 4 switching contacts	-	<b>2121H</b> 4 NC ⊖	2131H 3 NC → + 1 NO	<b>3131H</b> 2 NC → + 2 NO	
Min. switching current at 24 V DC	1		1		mA
Switching current, max.	6		4		Α
Contact closing time	< 4		-		ms
Contact bounce time	< 3		-		ms
Rated impulse withstand voltage Uimp		2	2.5		kV
Contact material		Silver allov	gold flashed		

Connection, cable entry M20 x 1.5		M20x1,5		
Parameter		V	alue	Unit
Connection		Screw	terminal	
Version		M20	0 x 1.5	
Connection cross-section, max.		1.5 mm <sup>2</sup> pe	er flexible wire	
Degree of protection acc. to IEC 60529		IP 67		
Rated insulation voltage Ui		250		V AC/DC
Switching element		Snap-action switching contact 511	Slow-action switching contact <b>528H, 538H, 2121H, 2131H, 3131H</b>	
Conventional thermal current lth		6	4	Α
Short circuit protection according to IEC 60269-1 (control circuit fuse)		6	4	A gG
Utilization category acc. to IEC 60947-5-1	AC-12	le 10 A Ue 230 V	-	
	AC-15	le 6 A Ue 230 V	le 4 A Ue 230 V	
	DC-13	le 6 A Ue 24 V	le 4 A Ue 24 V	

Connection, plug connector SVM	5 (M12)	5-pol Value	
Parameter		Value	Unit
Connection		Plug connector	
Version		M12 (4-pin + PE), male socket adjustable (max. 270o) for elbow connector	
Degree of protection acc. to IEC 60529		IP 67 <sup>1)</sup>	
Rated insulation voltage Ui		30	V AC/DC
Switching element		Slow-action switching contact 538H	
Conventional thermal current lth		4	A
Short circuit protection according to IEC 60269 (control circuit fuse)	9-1	4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 4 A Ue 30 V	
	DC-13	le 4 A Ue 24 V	

Connection, plug connector C16-	1	7-pol	
Parameter		Value	Unit
Connection		Plug connector	
Version		C16-1 (6-pin + PE)	
Degree of protection acc. to IEC 60529		IP 67 1)	
Rated insulation voltage Ui		250	V AC/DC
Switching element		Slow-action switching contact 538H	
Conventional thermal current lth		4	A
Short circuit protection according to IEC 60269 (control circuit fuse)	-1	4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 4 A Ue 30 V	
	DC-13	le 4 A Ue 24 V	

Connection, plug connector SR6		7-pol		
Parameter		Va	alue	Unit
Connection		Plug connector acc	cording to DIN 43651	
Version		SR6 (6-	-pin + PE)	
Degree of protection acc. to IEC 60529		IP	65 <sup>1)</sup>	
Rated insulation voltage Ui		2	V AC/DC	
Switching element		Snap-action switching contact 511	Slow-action switching contact 528H, 538H	
Conventional thermal current lth		6	4	A
Short circuit protection according to IEC 60269-1 (control circuit fuse)		6	4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 6 A Ue 230 V	le 4 A Ue 230 V	
	DC-13	le 6 A Ue 24 V	le 4 A Ue 24 V	

Connection, plug connector MR8		8-pol	
Parameter		Value	Unit
Connection		Plug connector	
Version		MR8 (7-pin + PE)	
Degree of protection acc. to IEC 60529		IP 65 <sup>1)</sup>	
Rated insulation voltage Ui		250	V AC/DC
Switching element		Slow-action switching contact 2131H	
Conventional thermal current lth		4	A
Short circuit protection according to IEC 60269 (control circuit fuse)	)-1	4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 4 A Ue 230 V	
	DC-13	le 4 A Ue 24 V	

Connection, plug connector MR9		9-pol	
Parameter		Value	Unit
Connection		Plug connector	
Version		MR9 (8-pin + PE)	
Degree of protection acc. to IEC 60529		IP 65 <sup>1)</sup>	
Rated insulation voltage Ui		250	V AC/DC
Switching element		Slow-action switching contact 2131H	
Conventional thermal current lth		4	A
Short circuit protection according to IEC 60269 (control circuit fuse)	-1	4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 4 A Ue 230 V	
	DC-13	le 4 A Ue 24 V	

<sup>1)</sup> Screwed tight with the related plug connector (see page 126, 127, 128 and 131)

Technical Data **EUCHNER** 

Connection, plug connector MR10		[] 10-pol	
Parameter		Value	Unit
Connection		Plug connector	
Version		MR10 (9-pin + PE)	
Degree of protection acc. to IEC 60529		IP 65 <sup>1)</sup>	
Rated insulation voltage Ui		250	V AC/DC
Conventional thermal current lth		4	A
Short circuit protection according to IEC 60269-1 (control circuit fuse)		4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 4 A Ue 230 V	
	DC-13	le 4 A Ue 24 V	

Connection, plug connector SR11		12-pol	
Parameter		Value	Unit
Connection		Plug connector	
Version		SR11 (11-pin + PE)	
Degree of protection acc. to IEC 60529		IP 65 <sup>1)</sup>	
Rated insulation voltage Ui		50	V AC/DC
Switching element		Slow-action switching contact 2121H, 2131H, 3131H	
Conventional thermal current Ith		4	A
Short circuit protection according to IEC 60269-1 (control circuit fuse)		4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 4 A Ue 50 V	
	DC-13	le 4 A Ue 24 V	

<sup>1)</sup> Screwed tight with the related plug connector (see page 131 and 128)

# Safety switch NZ.VZ.VS... with guard locking



Reliability values acc. to EN ISO 13849-1				
Parameter	Value	Unit		
B10d	4.5 x 10 <sup>6</sup> operating cycles			

Switch	F	
Parameter	Value	Unit
Housing material	Anodized die-cast alloy	
Mechanical life	2 x 10 <sup>6</sup> operating cycles	
Ambient temperature	- 25 + 80	°C
Weight	Approx. 0.7	kg
Approach speed, max.	20	m/min
Approach speed, min.	0.02 (for switching element ES511)	m/min
Actuating force	45	N
Extraction force	40	N
Retention force	35	N
Locking force, max.	2,000	N
Locking force Fzh in accordance with test principles GS-ET-19	1,500	N

Switching element	<u>‡</u> 2 <u>‡</u> 4			
Parameter		Value		Unit
Switching principle	Snap-action switching contact	Slow-action sw	ritching contact	
Switching element with 2 switching contacts	<b>511</b> 1 NC → + 1 NO	<b>528H</b> 1 NC → + 1 NO	<b>538H</b> 2 NC ⊖	
Switching element with 4 switching contacts	-	<b>2131H</b> 3 NC → + 1 NO	<b>3131H</b> 2 NC → + 2 NO	
Min. switching current at 24 V DC	1		ĺ	mA
Switching current, max.	6		4	А
Contact closing time	< 4		-	ms
Contact bounce time	< 3		-	ms
Rated impulse withstand voltage Uimp		2.5		kV
Contact material		Silver alloy, gold flashed		

Guard locking	4 8 8			
Parameter		Value		Unit
Solenoid operating voltage	DC 24 V +10/-15%	AC 110 V +10/-15% 1)	AC 230 V +10/-15% 1)	
Connection	Switch mounted	connector (2-pin + PE) accord	ling to DIN 43650	
Connection cross-section	For technica	al data on the solenoid plug, s	ee page 127	
Duty cycle		100		%
Power consumption		< 10		W

<sup>1)</sup> Use only solenoid plug with integrated rectifier

Technical Data **EUCHNER** 

Connection, cable entry M20 x 1.5	5	M20x1,5		
Parameter		Va	alue	Unit
Connection		Screw	terminal	
Version		M20	) x 1.5	
Connection cross-section, max.		1.5 mm² pe	er flexible wire	
Degree of protection acc. to IEC 60529		IF	9 67	
Rated insulation voltage Ui		250		V AC/DC
Switching element		Snap-action switching contact 511	Slow-action switching contact 528H, 538H, 2131H, 3131H	
Conventional thermal current lth		6	4	A
Short circuit protection according to IEC 60269-(control circuit fuse)	1	6	4	A gG
Utilization category acc. to IEC 60947-5-1	AC-12	le 10 A Ue 230 V	-	
	AC-15	le 6 A Ue 230 V	le 4 A Ue 230 V	
	DC-13	le 6 A Ue 24 V	le 4 A Ue 24 V	

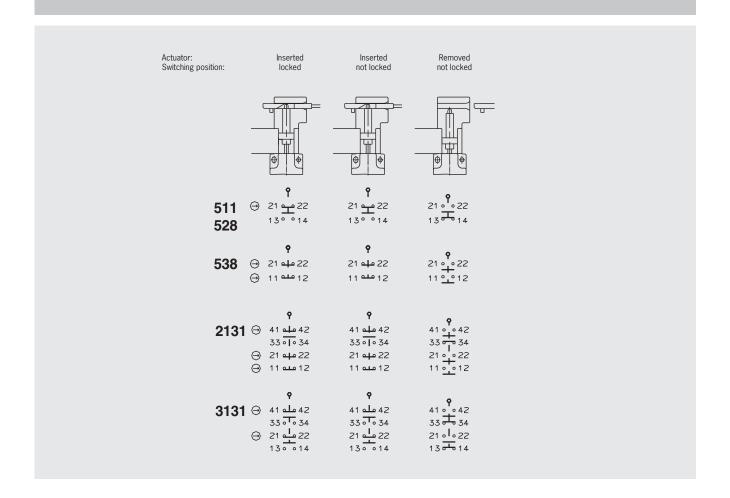
Connection, plug connector SR6		7-pol	
Parameter		Value	Unit
Connection		Plug connector according to DIN 43651	
Version		SR6 (6-pin + PE)	
Degree of protection acc. to IEC 60529		IP 65 <sup>2)</sup>	
Rated insulation voltage Ui		250	V AC/DC
Switching element		Slow-action switching contact 528H, 538H	
Conventional thermal current lth		4	A
Short circuit protection according to IEC 60269-(control circuit fuse)	l	4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 4 A Ue 230 V	
	DC-13	le 4 A Ue 24 V	

Connection, plug connector SR11	L	[] 12-pol	
Parameter		Value	Unit
Connection		Plug connector	
Version		SR11 (11-pin + PE)	
Degree of protection acc. to IEC 60529		IP 65 <sup>2)</sup>	
Rated insulation voltage Ui		50	V AC/DC
Switching element		Slow-action switching contact 2131H, 3131H	
Conventional thermal current lth		4	A
Short circuit protection according to IEC 60269 (control circuit fuse)	9-1	4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 4 A Ue 50 V	
	DC-13	le 4 A Ue 24 V	

<sup>2)</sup> Screwed tight with the related plug connector (see page 128)



## **Switching functions NZ.VZ.VS**





# Safety switch TZ with guard locking and guard locking monitoring



Reliability values acc. to EN ISO 13849-1		
Parameter	Value	Unit
B10d	3 x 10 <sup>6</sup> operating cycles	

Switch	• @	
Parameter	Value	Unit
Housing material	Anodized die-cast alloy	
Mechanical life	1 x 10 <sup>6</sup> operating cycles	
Ambient temperature	- 25 + 80	°C
Weight	Approx. 1.2	kg
Approach speed, max.	20	m/min
Actuating force	35	N
Extraction force	30	N
Retention force	10	N
Locking force, max.	2,000	N
Locking force Fzh in accordance with test principles GS-ET-19	1,500	N

Switching element	<u></u> 2			
Parameter	Value	<b>)</b>	Unit	
Switching principle	Slow-action switch	hing contact		
Switching element with 2 switching contacts		SK: <b>528H</b> / ÜK: <b>528H</b> 1 NC ⊖ + 1 NO / 1 NC ⊖ + 1 NO		
Switching element with 4 switching contacts	SK: <b>2131H</b> / ÜK: <b>3131H</b> 3 NC ⊖ + 1 NO / 2 NC ⊖ + 2 NO	SK: <b>2121H</b> / ÜK: <b>2121H</b> 4 NC ⊖ / 4 NC ⊖		
Min. switching current at 24 V DC	1	1		
Rated impulse withstand voltage Uimp	2.5		kV	
Contact material	Silver alloy, go	ld flashed		

Guard locking Parameter	\$ \overline{\begin{align*} \begin{align*} al	Value		Unit
Solenoid operating voltage	AC/DC 24 V +10/-15%	AC 110 V +10/-15% 1)	AC 230 V +10/-15% 1)	
Duty cycle		100		%
Power consumption		10		W

Connection, cable entry M20 x 1.5	1	M20x1,5			
Parameter		L		Value	Unit
Connection				Screw terminal	
Version				M20 x 1.5	
Connection cross-section, max.				1.5 mm <sup>2</sup> per flexible wire	
Degree of protection acc. to IEC 60529		IP 67	IP 65:	With escape release TZC1815, TZC1828 With emergency release TZC1816, TZC1823	
Rated insulation voltage Ui				250	V AC/DC
Conventional thermal current lth				4	A
Short circuit protection according to IEC 60269-1 (control circuit fuse)				4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15			le 4 A Ue 230 V	
	DC-13			le 4 A Ue 24 V	

Technical Data **EUCHNER** 

Connection, plug connector SR6		7-pol	
Parameter		Value	Unit
Connection		Plug connector according to DIN 43651	
Version		SR6 (6-pin + PE)	
Degree of protection acc. to IEC 60529		IP 65 <sup>1)</sup>	
Rated insulation voltage Ui		250	V AC/DC
Conventional thermal current Ith		4	A
Short circuit protection according to IEC 60269-1 (control circuit fuse)		4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 4 A Ue 230 V	
	DC-13	le 4 A Ue 24 V	

## Standard wiring TZ...SR6

The green LED indicates the state of the safety circuit and the red LED the state of the monitoring circuit.

**Green only:**Safety circuit closed **Red only:**Actuator unlocked, safety circuit open

The exact states of the safety circuit and the actuator can be seen in the adjacent table for the safety switch TZ...SR6.

	LED		Actu	ator	Safety	circuit	
	Red	Green	Locked	unlocked	closed	open	
	ON	ON		X	X		
	ON	OFF		X		X	
_	OFF	ON	Χ		X		
	OFF	OFF	Not defined or no power				

Connection, plug connector MR8		8-pol		
Parameter			Value	Unit
Connection			Plug connector	
Version			MR8 (7-pin + PE)	
Degree of protection acc. to IEC 60529			IP 65 1)	
Rated insulation voltage Ui			250	V AC/DC
Conventional thermal current lth			4	A
Short circuit protection according to IEC 60269-(control circuit fuse)	1		4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15		le 4 A Ue 230 V	
	DC-13		le 4 A Ue 24 V	

Connection, plug connector MR10		10-pol		
Parameter			Value	Unit
Connection			Plug connector	
Version			MR10 (9-pin + PE)	
Degree of protection acc. to IEC 60529			IP 65 1)	
Rated insulation voltage Ui			250	V AC/DC
Conventional thermal current lth			4	A
Short circuit protection according to IEC 60269-1 (control circuit fuse)			4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15		le 4 A Ue 230 V	
	DC-13		le 4 A Ue 24 V	

Connection, plug connector MR12	2	[] 12-pol	
Parameter		Value	Unit
Connection		Plug connector	
Version		MR12 (11-pin + PE)	
Degree of protection acc. to IEC 60529		IP 65 <sup>1)</sup>	
Rated insulation voltage Ui		230	V AC/DC
Conventional thermal current lth		4	A
Short circuit protection according to IEC 60269 (control circuit fuse)	-1	4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 4 A Ue 60 V	
	DC-13	le 4 A Ue 24 V	

Connection, plug connector SR11		[12-pol	
Parameter		Value	Unit
Connection		Plug connector	
Version		SR11 (11-pin + PE)	
Degree of protection acc. to IEC 60529		IP 65 <sup>1)</sup>	
Rated insulation voltage Ui		50	V AC/DC
Conventional thermal current lth		4	A
Short circuit protection according to IEC 60269-1 (control circuit fuse)		4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 4 A Ue 50 V	
	DC-13	le 4 A Ue 24 V	

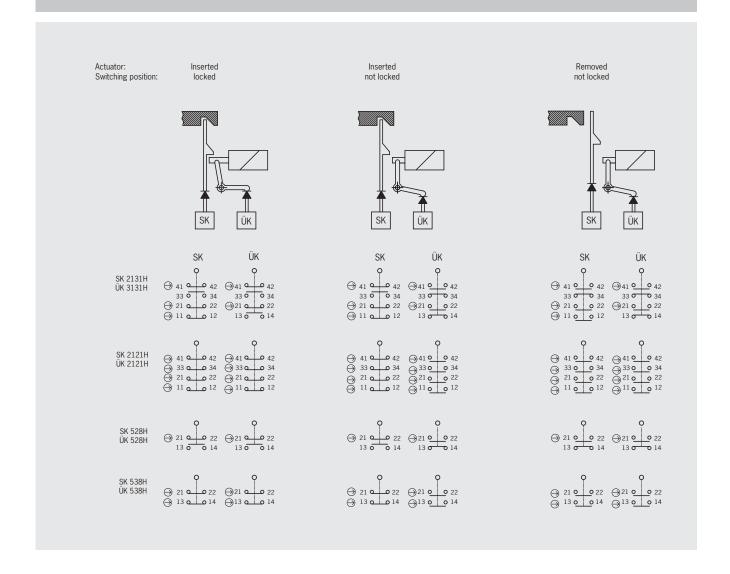
<sup>1)</sup> Screwed tight with the related plug connector (see page 128 and 131)



Connection, plug connector M23 (F	RC18)	□ 18-pol	
Parameter		Value	Unit
Connection		Plug connector	
Version		M23 (RC18, 18-pin + PE)	
Degree of protection acc. to IEC 60529		IP 65 <sup>1)</sup>	
Rated insulation voltage Ui		110	V AC/DC
Conventional thermal current Ith		4	A
Short circuit protection according to IEC 60269-1 (control circuit fuse)		4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 4 A Ue 110 V	
	DC-13	le 4 A Ue 24 V	

<sup>1)</sup> Screwed tight with the related plug connector (see page 129 and 130)

## **Switching functions TZ**





## Safety switch NX



The technical data on switches and switching elements apply to all connections. Further technical data are given for the connection selected.

Reliability values acc. to EN ISO 13849-1		
Parameter	Value	Unit
B10d	4.5 x 10 <sup>6</sup> operating cycles	

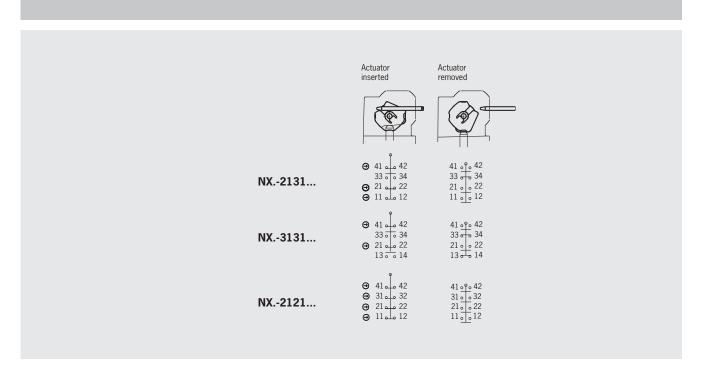
Switch	R		
Parameter	Va	alue	Unit
Housing material	Die-cast alloy, ca	athodically dipped	
Mechanical life	2 x 10 <sup>6</sup> ope	erating cycles	
Ambient temperature	- 20	+ 80	°C
Weight	Appro	ox. 0.4	kg
Approach speed, max.		20	m/min
Actuating force	4	40	N
Extraction force	!	50	N
Retention force		10	N
Insertion depth	Standard actuator	Overtravel actuator	
Required insertion depth smin	32	32	mm
Maximum insertion depth smax	33	40	mm
Actuator travel (in the locked state)	6	13	mm

Switching element	<u>‡</u> 4			
Parameter		Value		Unit
Switching principle		Slow-action switching contact	İ	
Switching element with 4 switching contacts	<b>2121</b> 4 NC ⊖	<b>2131</b> 3 NC → + 1 NO	3131 2 NC → + 2 NO	
Min. switching current at 24 V DC		1		mA
Switching voltage, min., at 10 mA		12		V
Contact material		Silver alloy, gold flashed		

Connection, cable entry M20 x 1	.5	M20x1,5	
Parameter		Value	Unit
Connection		Screw terminal	
Version		M20 x 1.5	
Connection cross-section		0.34 1.5	mm²
Degree of protection acc. to IEC 60529		IP 67	
Rated insulation voltage Ui		250	V AC/DC
Rated impulse withstand voltage Uimp		2.5	kV
Conventional thermal current lth		4	A
Short circuit protection according to IEC 60269 (control circuit fuse)	)-1	4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 4 A Ue 230 V	
	DC-13	le 4 A Ue 24 V	



## Switching functions NX





## Safety switch TX... with guard locking and guard locking monitoring



The technical data on switches, switching elements and guard locking apply to all connections. Further technical data are given for the connection selected.

Reliability values acc. to EN ISO 13849-1		
Parameter	Value	Unit
B10d	6 x 10 <sup>6</sup> operating cycles	

Switch	A		
Parameter	Ľ <sup>⊥</sup> Val	ue	Unit
Housing material	Die-cast alloy, ca	thodically dipped	
Mechanical life	> 1 x 10 <sup>6</sup> ope	erating cycles	
Ambient temperature	- 20	. + 80	°C
Weight	Appro	x. 0.8	kg
Approach speed, max.	2	0	m/min
Actuating force	3	5	N
Extraction force	3	5	N
Retention force	2	0	N
Locking force, max.	1,7	700	N
Locking force Fzh in accordance with test principles GS-ET-19	1,3	300	N
Insertion depth	Standard actuator	Overtravel actuator	
Required insertion depth smin	32	32	mm
Maximum insertion depth smax	33	40	mm
Actuator travel (in the locked state)	6	13	mm

Switching element	<u>‡</u> 2 <u>‡</u> 3 <u>‡</u> 4			
Parameter		Value		Unit
Switching principle		Slow-action switching contact		
Switching element with 4 switching contacts	<b>ETX B</b> 2 NC → + 1 NO + 1 NC	<b>ETX C</b> 2 NC → 1 NO + 1 NO	<b>ETX D</b> 2 NC → + 2 NC →	
Min. switching current at 24 V DC		1		mA
Switching voltage, min., at 10 mA		12		V
Contact material		Silver alloy, gold flashed		_

Guard locking	½ (a) (₹ (a) (b) (b) (b) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c			
Parameter		Value		Unit
Solenoid operating voltage	AC/DC 24 V +10/-15%	AC 110 V +10/-15% 1)	AC 230 V +10/-15% 1)	
Connection	Reverse pol	arity protected, integrated brida	ge rectifier	
Duty cycle		100		%
Power consumption		8		W

Connection, cable entry M20 x 1.	5	M20x1,5	
Parameter		Value	Unit
Connection		Screw terminal	
Version		M20 x 1.5	
Connection cross-section		0.34 1.5	mm²
Degree of protection acc. to IEC 60529		IP 67	
Rated insulation voltage Ui		250	V AC/DC
Rated impulse withstand voltage Uimp		2.5	kV
Conventional thermal current Ith		4	A
Short circuit protection according to IEC 60269-(control circuit fuse)	1	4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 4 A Ue 230 V	
	DC-13	le 4 A Ue 24 V	

Technical Data **EUCHNER** 

Connection, cable entry NPT ½"		NPT ½"	
Parameter		Value	Unit
Connection		Screw terminal	
Version		NPT ½"	
Connection cross-section, max.		0.34 1.5 mm <sup>2</sup>	
Degree of protection acc. to IEC 60529		IP 67	
Rated insulation voltage Ui		250	V AC/DC
Rated impulse withstand voltage Uimp		2.5	kV
Conventional thermal current lth		4	A
Short circuit protection according to IEC 60269 (control circuit fuse)	-1	4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 4 A Ue 230 V	
	DC-13	le 4 A Ue 24 V	

Connection, plug connector SVM5 (	(M12)	□ 5-pol	
Parameter		Value	Unit
Connection		Plug connector	
Version		M12 (4-pin + PE), male socket adjustable (max. 270o) for elbow connector	
Degree of protection acc. to IEC 60529		IP 67 <sup>1)</sup>	
Rated insulation voltage Ui		30	V AC/DC
Conventional thermal current lth		4	A
Short circuit protection according to IEC 60269-1 (control circuit fuse)		4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 4 A Ue 30 V	
	DC-13	le 4 A Ue 24 V	

Connection, plug connector BH10		10-pol	
Parameter		Value	Unit
Connection		Plug connector	
Version		BH10 (9-pin + PE)	
Degree of protection acc. to IEC 60529		IP 65 <sup>1)</sup>	
Rated insulation voltage Ui		50	V AC/DC
Rated impulse withstand voltage Uimp		2.5	kV
Conventional thermal current Ith		4	A
Short circuit protection according to IEC 60269-3 (control circuit fuse)	1	4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 4 A Ue 24 V	
	DC-13	le 4 A Ue 24 V	

Connection, plug connector SR11		[] 12-pol	
Parameter		Value	Unit
Connection		Plug connector	
Version		SR11 (11-pin + PE)	
Degree of protection acc. to IEC 60529		IP 65 <sup>1)</sup>	
Rated insulation voltage Ui		50	V AC/DC
Rated impulse withstand voltage Uimp		1.5	kV
Conventional thermal current lth		4	A
Short circuit protection according to IEC 60269-(control circuit fuse)	1	4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 4 A Ue 50 V	
	DC-13	le 4 A Ue 24 V	

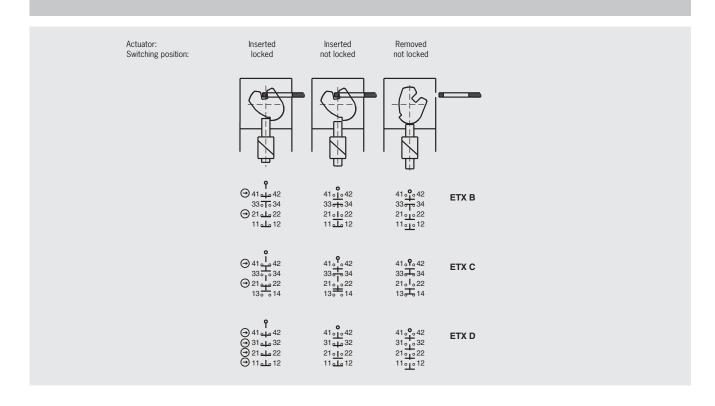
<sup>1)</sup> Screwed tight with the related plug connector (see page 126, 131 and 128)



Connection, plug connector M23	(RC18)	18-pol	
Parameter		Value	Unit
Connection		Plug connector	
Version		M23 (RC18, 18-pin + PE)	
Degree of protection acc. to IEC 60529		IP 65 <sup>1)</sup>	
Rated insulation voltage Ui		50	V AC/DC
Rated impulse withstand voltage Uimp		2.5	kV
Conventional thermal current Ith		4	A
Short circuit protection according to IEC 60269 (control circuit fuse)	-1	4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 4 A Ue 24 V	
	DC-13	le 4 A Ue 24 V	

<sup>1)</sup> Screwed tight with the related plug connector (see page 129 and 130)

## Switching functions $\mathsf{TX}$



**Technical Data** 

### Switching characteristics safety switch TX3... (mechanical guard locking)

The application of a voltage  $U_{\rm p}/U_{\rm s}$  when the actuator is not inserted does not produce **any** change in the state of the switching element.

Solenoid operating voltage  $\mathbf{U}_{\rm B}$  On versions TX...110 and TX...230 release is performed using the voltage  $\mathbf{U}_{\rm B}.$ A control voltage  $U_s$  is not necessary.

Control voltage  $U_s$ On the version TX...24 an additional control voltage  $U_s$  is only required if  $U_B$  cannot supply the required current of 2 A for  $T_{IMP} = 250$  ms when the solenoid is switched on.

Otherwise, the connection terminals  $U_{\rm S}$  and  $U_{\rm B}$  must be bridged on the version TX...24.

## Safety switch TX3... with door monitoring contact (mechanical guard locking)

			Actuator	inserted	A - t t
			locked	not locked	Actuator removed
Switching element		ЕТХ В	→ 41 → 42 33 → 34 → 21 → 22 11 → 12	$ \begin{array}{c}                                     $	$ \begin{array}{c}                                     $
Switching		ЕТХ С	<ul> <li>→ 41 → 42</li> <li>→ 33 → 34</li> <li>→ 21 → 22</li> <li>→ 14</li> </ul>	$ \begin{array}{c}                                     $	
£,	TX324	Control voltage U <sub>s</sub>	0 V	24 V	24 V or 0 V
desig	17324	Operating voltage U <sub>B</sub>	0 V	24 V	24 V or 0 V
Switch design	TX3110 /	Control voltage U <sub>s</sub>		Not connected	
Š	TX3230	Operating voltage U <sub>B</sub>	0 V	110 V or 230 V	110 V, 230 V or 0 V



## Safety switch SGA



The technical data on switches and switching elements apply to all connections. Further technical data are given for the connection selected.

Reliability values acc. to EN ISO 13849-1			
Parameter	Value	Unit	
B10d	3 x 10 <sup>6</sup> operating cycles		

Switch	A	
Parameter	Value	Unit
Housing material	Anodized die-cast	
Mechanical life	2 x 10 <sup>6</sup> operating cycles	
Ambient temperature	- 20 + 80	°C
Weight	Approx. 0.275	kg
Approach speed, max.	20	m/min
Actuating force	25	N
Extraction force	25	N
Retention force	10	N
Insertion depth (minimum required travel + permissible overtravel)	Actuator S standard	
Lateral approach direction (h)	24.5 + 5	mm
Approach direction from above (v)	24.5 + 5	mm

Switching element	<u>‡</u> 4		
Parameter		/alue	Unit
Switching principle	Slow-action	switching contact	
Switching element with 4 switching contacts	<b>2121</b> 4 NC ⊖	<b>2131</b> 3 NC → + 1 NO	
Min. switching current at 24 V DC		1	mA
Switching voltage, min., at 10 mA		12	V
Contact material	Silver allo	y, gold flashed	

Connection, cable entry M20 x 1	.5	M20x1,5	
Parameter		Value	Unit
Connection		Screw terminal	
Version		M20 x 1.5	
Connection cross-section		0.34 1.5	mm <sup>2</sup>
Degree of protection acc. to IEC 60529		IP 67	
Rated insulation voltage Ui		250	V AC/DC
Rated impulse withstand voltage Uimp		2.5	kV
Conventional thermal current lth		4	A
Short circuit protection according to IEC 60269 (control circuit fuse)	9-1	4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 4 A Ue 230 V	
	DC-13	le 4 A Ue 24 V	

Technical Data **EUCHNER** 

Connection, plug connector SR11		12-pol	
Parameter		Value	Unit
Connection		Plug connector	
Version		SR11 (11-pin + PE)	
Degree of protection acc. to IEC 60529		IP 65 <sup>1)</sup>	
Rated insulation voltage Ui		50	V AC/DC
Rated impulse withstand voltage Uimp		1.5	kV
Conventional thermal current lth		4	A
Short circuit protection according to IEC 60269-1 (control circuit fuse)		4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 4 A Ue 50 V	
	DC-13	le 4 A Ue 24 V	

Connection, plug connector M23	(RC18)	□ 18-pol	
Parameter		Value	Unit
Connection		Plug connector	
Version		M23 (RC18, 18-pin + PE)	
Degree of protection acc. to IEC 60529		IP 65 <sup>1)</sup>	
Rated insulation voltage Ui		50	V AC/DC
Rated impulse withstand voltage Uimp		2.5	kV
Conventional thermal current lth		4	A
Short circuit protection according to IEC 60269 (control circuit fuse)	-1	4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 4 A Ue 24 V	
	DC-13	le 4 A Ue 24 V	

<sup>1)</sup> Screwed tight with the related plug connector (see page 128, 129 and 130)



## Safety switch STA... with guard locking and guard locking monitoring



The technical data on switches, switching elements and guard locking apply to all connections. Further technical data are given for the connection selected.

Reliability values acc. to EN ISO 13849-1		
Parameter	Value	Unit
B10d	1.2 x 10 <sup>7</sup> operating cycles	

Switch	R		
Parameter	Val	ue	Unit
Housing material	Anodized		
Mechanical life	1 x 10 <sup>6</sup> oper	rating cycles	
Ambient temperature	- 20	. + 80	°C
Weight	Appro	x. 0.6	kg
Approach speed, max.	2	0	m/min
Actuating force	3	5	N
Extraction force (not locked)	3	N	
Retention force	20		N
Locking force, max.	Approach direction		
	From top (v)	Side (h)	N
	3,000	3,000	
Locking force Fzh in accordance with test principles GS-ET-19	Approach direction		
	From top (v)	Side (h)	N
	2,300	2,300	
Insertion depth (minimum required travel + permissible overtravel)	Actuator S standard	Actuator L for insertion funnel	
Lateral approach direction (h)	24.5 + 5	28.5 + 5	mm
Approach direction from above (v)	24.5 + 5	28.5 + 5	mm

Switching element	<u>‡</u> 4				
Parameter		Val	lue		Unit
Switching principle		Slow-action switching contact			
Switching element with 4 switching contacts	2131 2 NC → + 1 NO + 1 NC	4121 2 NC → + 1 NC + 1 NO	<b>4131</b> 2 NC → + 2 NO	<b>4141</b> 2 NC → + 2 NC →	
Min. switching current at 24 V DC			Ì		mA
Switching voltage, min., at 10 mA		1	2		V
Contact material		Silver alloy,	gold flashed		

Guard locking	1 A B B B	
Parameter	Value	Unit
Solenoid operating voltage	AC/DC 24 V +10/-15%	
Connection	Reverse polarity protected, integrated bridge rectifier	
Duty cycle	100	%
Power consumption	8	W

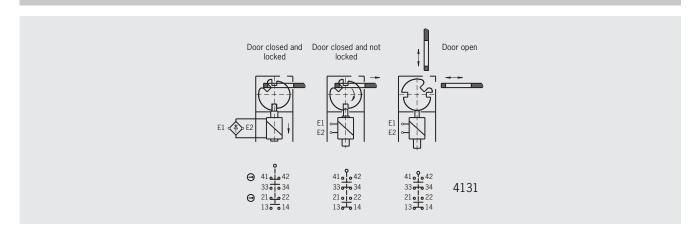
Connection, cable entry M20 x 1.	5	M20x1,5	
Parameter		Value	Unit
Connection		Screw terminal	
Version		M20 x 1.5	
Connection cross-section		0.34 1.5	mm²
Degree of protection acc. to IEC 60529		IP 67	
Rated insulation voltage Ui		250	V AC/DC
Rated impulse withstand voltage Uimp		2.5	kV
Conventional thermal current Ith		4	A
Short circuit protection according to IEC 60269-(control circuit fuse)	1	4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 4 A Ue 230 V	
	DC-13	le 4 A Ue 24 V	

Connection, plug connector SR11		12-pol	
Parameter		Value	Unit
Connection		Plug connector	
Version		SR11 (11-pin + PE)	
Degree of protection acc. to IEC 60529		IP 65 <sup>1)</sup>	
Rated insulation voltage Ui		50	V AC/DC
Rated impulse withstand voltage Uimp		1.5	kV
Conventional thermal current Ith		4	A
Short circuit protection according to IEC 60269-1 (control circuit fuse)		4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 4 A Ue 50 V	
	DC-13	le 4 A Ue 24 V	

Connection, plug connector M23 (R0		□ 18-pol	
Parameter		Value	Unit
Connection		Plug connector	
Version		M23 (RC18, 18-pin + PE)	
Degree of protection acc. to IEC 60529		IP 65 <sup>1)</sup>	
Rated insulation voltage Ui		110	V AC/DC
Rated impulse withstand voltage Uimp		2.5	kV
Conventional thermal current lth		4	A
Short circuit protection according to IEC 60269-1 (control circuit fuse)		4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 4 A Ue 110 V	
	DC-13	le 4 A Ue 24 V	

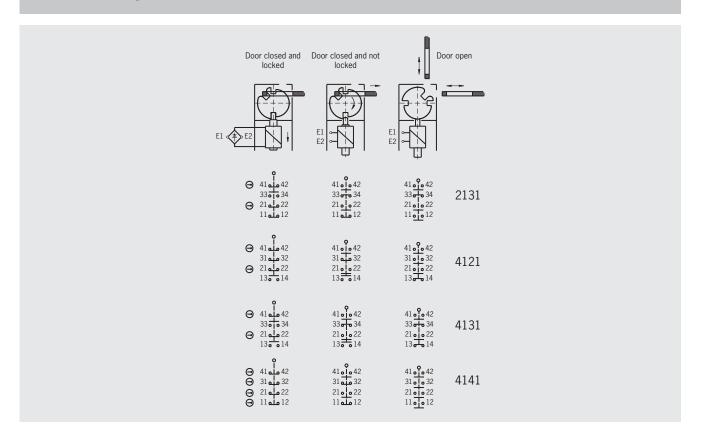
<sup>1)</sup> Screwed tight with the related plug connector (see page 128, 129 and 130)

# Switching functions STA1/STA2 Without door monitoring contact





# Switching functions STA3/STA4 With door monitoring contact



## Safety switch STA-TW with guard locking and guard locking monitoring



The technical data on switches, switching elements and guard locking apply to all connections. Further technical data are given for the connection selected.

Reliability values acc. to EN ISO 13849-1		
Parameter	Value	Unit
B10d	4.5 x 10 <sup>6</sup> operating cycles	

Switch		Я		
Parameter		L L L	alue	Unit
Housing material	Housing	Anodize	ed die-cast	
	Actuating heads	Die-cas	t aluminum	
	Cam in actuating head	Stainl	ess steel	
Mechanical life		1 x 10 <sup>6</sup> op	erating cycles	
Ambient temperature		- 20	+ 55	°C
Weight		Appr	ox. 0.62	kg
Approach speed, max.			20	
Actuating force			35	
Extraction force (not lo	cked)		30	N
Retention force			20	N
Locking force, max.		Approach direction		
		Top (v)	Side (h)	N
		2,500	2,500	
Locking force Fzh in acc	cordance with test principles GS-ET-19	Approach direction		
		Top (v)	Side (h)	N
		2,000	2,000	
Insertion depth (minimun	m required travel + permissible overtravel)	Actuator S standard		
Lateral approach direct	tion (h)	24.5 + 5		mm
Approach direction fron	m above (v)	24.5 + 5		mm

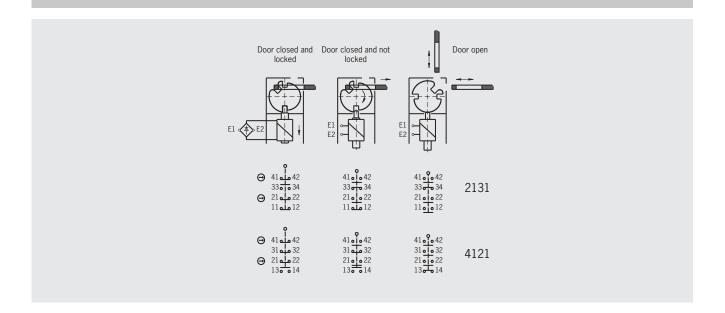
Switching element	4		
Parameter	Va	lue	Unit
Switching principle	Slow-action sv	vitching contact	
Switching element with 4 switching contacts	2131 2 NC → + 1 NO + 1 NC	4121 2 NC → + 1 NC + 1 NO	
Min. switching current at 24 V DC		1	mA
Switching voltage, min., at 10 mA		12	V
Contact material	Silver alloy,	gold flashed	

Guard locking	<b>1</b>	
Parameter	Value	Unit
Solenoid operating voltage	AC/DC 24 V +10/-15%	
Connection	Reverse polarity protected, integrated bridge rectifier	
Duty cycle	100	%
Power consumption	8	W

Connection, cable entry M20 x 1.5	5	M20x1,5	
Parameter		Value	Unit
Connection		Screw terminal	
Version		M20 x 1.5	
Connection cross-section		0.34 1.5	mm²
Degree of protection acc. to IEC 60529		IP 67	
Rated insulation voltage Ui		250	V AC/DC
Rated impulse withstand voltage Uimp		2.5	kV
Conventional thermal current lth		4	A
Short circuit protection according to IEC 60269-1 (control circuit fuse)		4	A gG
Utilization category acc. to IEC 60947-5-1	AC-15	le 4 A Ue 230 V	
	DC-13	le 4 A Ue 24 V	



## **Switching functions STA-TW**



Technical Data **EUCHNER** 

## Safety hinge ESH



The technical data on switches and switching elements apply to all connections. Further technical data are given for the connection selected.

Reliability values acc. to EN ISO 13849-1		
Parameter	Value	Unit
Blod	2 x 10 <sup>6</sup> operating cycles	

Switch	F	
Parameter	Value	Unit
Housing material	Die-cast zinc, nickel-plated	
Ambient temperature	- 25 + 70	°C
Weight	Approx. 0.77	kg
Pivoting angle	- 10 180	0
Max. load as per mechanical life test according to EN 1935	Door hinge class 12 (100 kg door weight)	m/min

Switching element	<u>‡</u> 2		
Parameter	Va	lue	Unit
Switching principle	Slow-action sw	vitching contact	
Switching element with 2 switching contacts	<b>20</b> 2 NC ⊖	<b>11</b> 1 NC ⊖ + 1 NO	
Mechanical life	1 x 10 <sup>6</sup> operating cycles		
Operating point	4° from fixing point		
Positively driven	Approx. 10° from fixing point		
Actuation frequency	max. 1200/h		
Degree of contamination (external, according to EN 60947)	3 (ind	ustrial)	
Min. switching current at 24 V DC		1	mA
Rated impulse withstand voltage U <sub>imp</sub>	2.5		kV
Contact material	Silve	r alloy	

Connection, plug connector SVM5	(M12)	5-pol		
Parameter			Value	Unit
Connection			Plug connector	
Version			M12 (4-pin + PE)	
Degree of protection acc. to IEC 60529			IP 67 1)	
Rated insulation voltage Ui			60	V AC/DC
Conventional thermal current Ith			3	A
Short circuit protection according to IEC 60269-(control circuit fuse)	1		2	A gG
Utilization category acc. to IEC 60947-5-1	AC-15		le 1.5 A Ue 30 V	
	DC-13		le 2 A Ue 24 V	

<sup>1)</sup> Screwed tight with the related plug connector (see page 126)



## Accessories for safety switches

Solenoid plugs	□ 3-pol	
Parameter	Value	Unit
Housing material	Plastic	
Number of pins	3 (2 + PE)	
Nominal voltage max.	240	V AC/DC
Degree of protection according to IEC 60529 (inserted)	IP 65	
Connection	female connector terminals and flat-head terminals	

SS4	4-pol	
Parameter	Value	Unit
Housing material	Brass matt chromium plated	
Number of pins	4 (3 + PE)	
Cable diameter	6 - 8	mm
Nominal voltage max.	250	V AC/DC
Degree of protection according to IEC 60529 (inserted)	IP 67	
Connection	Soldered connections	

M12 with cable (SGLF, SWLF)	5-pol	
Parameter	Value	Unit
Housing material	Metal / plastic	
Number of pins	5	
Nominal voltage max.	30	V AC/DC
Degree of protection according to IEC 60529 (inserted)	IP 68	
Connection	5 open cable ends	

SR6	7-pol	
Parameter	Value	Unit
Housing material	Plastic	
Number of pins	7 (6 + PE)	
Cable diameter	7-9	mm
Nominal voltage max.	250	V AC/DC
Degree of protection according to IEC 60529 (inserted)	IP 65	
Connection	Crimp contacts 0.5 to 1.5 mm <sup>2</sup>	

M12 with cable	□ 8-pol	
Parameter	Value	Unit
Housing material	Metal / plastic	
Number of pins	8	
Nominal voltage max.	30	V AC/DC
Degree of protection according to IEC 60529 (inserted)	IP 67	
Connection	8 open cable ends	

SR11	12-pol	
Parameter	Value	Unit
Housing material	Plastic	
Number of pins	12 (11 + PE)	
Cable diameter	8 - 10	mm
Nominal voltage max.	50	V AC/DC
Degree of protection according to IEC 60529 (inserted)	IP 65	
Connection	Crimp contacts 0.5 to 1.5 mm <sup>2</sup>	

RC12	13-pol	
Parameter	Value	Unit
Housing material	Metal	
Number of pins	12	
Cable diameter	10.5	mm
Nominal voltage max.	150	V AC/DC
Degree of protection according to IEC 60529 (inserted)	IP 67	
Connection	12 crimp contacts 0.75 to 1.0 mm <sup>2</sup>	

Technical Data **EUCHNER** 

RC18	19-pol	
Parameter	Value	Unit
Housing material	Metal	
Number of pins	19 (18 + PE)	
Cable diameter	10 - 14	mm
Nominal voltage max.	32	V AC/DC
Degree of protection according to IEC 60529 (inserted)	IP 65	
Connection	19 crimp contacts 0.75 to 1.0 mm <sup>2</sup>	

RC18C1825	19-pol	
Parameter	Value	Unit
Housing material	Metal	
Number of pins	19 (18 + PE)	
Cable diameter	10 - 14	mm
Nominal voltage max.	32	V AC/DC
Degree of protection according to IEC 60529 (inserted)	IP 65	
Connection	16 crimp contacts 0.38 to 0.5 mm <sup>2</sup> 3 crimp contacts 0.75 to 1.0 mm <sup>2</sup>	

M8/MR9/MR10/MR12 with cable	8-pol 9-pol 10-pol 12-pol	
Parameter	Value	Unit
Housing material	PVC/PUR	
Number of pins	8/9/10/12	
Nominal voltage max.	300	V AC/DC
Degree of protection according to IEC 60529 (inserted)	IP 67	
Connection	Plug connector/flying leads	

### **Glossary**

### **Actuating force**

Switches \*type 1:

The actuating force is the minimum force required to perform a switching operation.

Switches \*type 2:

The actuating force is the force required to insert the \*actuator in order to thus perform a switching operation.

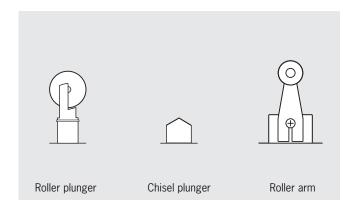
#### Actuation (electrical / mechanical)

Transition of a moving contact from one switch position to another. This will result in a change to the switch state of an item of switchgear. A differentiation is made between electrical actuation (e.g. switching on – switching off) and mechanical actuation (e.g. closing – opening).

#### Actuator/actuating element

Switches type 1:

Mechanical element on a safety position switch that triggers the switching operation. Actuators are available in different designs, for example, as roller plungers, chisel plunger or roller arms.



#### Approach speed

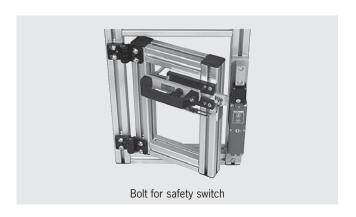
Speed at which a \*position switch can be mechanically actuated. The permitted approach speed is dependent on the shape and material of the \*actuating element and the approach angle. The higher the approach speed, the shallower the approach angle that should be chosen.

#### **Automatic mode**

The automatic mode is an \*operating mode in which, unlike the \*manual mode, only system starting is triggered by human intervention. All other actions are performed automatically.

#### **Bolts**

Bolts function as follows: The bolt tongue mechanically guides the \*actuator when it is inserted into the \*safety switch actuating head. The bolt mounted on the door frame comprises a protruding bolt tongue, the handle and the actuator, mounted offset somewhat to the rear. The switch bracket with the safety switch is fitted to the frame. The bolt absorbs forces that act on the switch and the \*actuator and that could damage the switch and actuator.



#### Category

The \*categories according to EN ISO 13849-1 (B, 1, 2, 3 and 4) provide an assessment of the performance of safety-related parts of a control system on the occurrence of failures.

#### Closed-circuit current principle

On a \*guard with \*guard locking based on the closed-circuit current principle, the guard is locked by spring force until the guard locking solenoid is supplied with power. Unlocking is by solenoid force. The term \*mechanical guard locking is also used.

#### Cyclic mode

An \*operating mode in which each the working space on the machine is opened during every operating cycle and the operator therefore frequently needs to work in the \*danger zone.

### Danger zone

Any area in or around a machine in which a person is subject to a risk of injury or a health hazard.

The hazard can

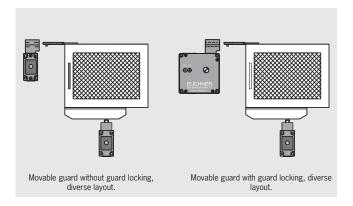
- Either be present continuously on the correct use of the machine (movement of hazardous moving parts, arcs during welding, etc.)
- Or can occur unexpectedly (unintentional, unexpected starting, etc.).

### Degree of protection

The degree of protection is defined according to EN 60529-1 and is given as an IP. "IP" is followed by two digits; the first digit gives the degree of protection against the penetration of solid foreign bodies and the second digit gives the degree of protection against the penetration of liquids. For \* safety switches the degree of protection IP 55 is to be provided as a matter of preference (DGUV Information 203-079).

#### **Diversity**

Diversity is the use of two different concepts to provide a function. For instance, the use of a switch \*type 1 and a switch \*type 2 on a \*guard. Here it is assumed that a single failure cannot affect two different concepts in the same way. Diversity also makes \*tampering more difficult and the safety of \*redundant systems is increased.



#### **Electrical guard locking**

Guard locking based on the \*open-circuit current principle.

#### **Emergency release for guard locking**

The emergency release is used to unlock \* guard locking in an emergency. The guard locking can be unlocked without tools.



#### **Emergency unlocking**

The emergency unlocking is used to unlock \*guard locking in an emergency. The guard locking can be unlocked without tools and from the access side. With the emergency unlocking, the switch engages in the unlocked position and can only be reset to its original position after an action similar to a repair.



#### **Enable path**

An enable path is used to generate a safety-related output signal. Enable paths act to the exterior like normally open contacts.

#### **Enabling switches**

If a \*guard is open, movements are only to be possible if the controls are operated continuously. These are controls with automatic return to their original position. In general the term enabling switches is used here.



#### Escape release

The escape release must make it possible to unlock the guard from within the \*danger zone without the use of tools. The device must be manually operated and must positively act on the \*locking mechanism. Actuation must result in permanent disabling of the \*guard locking.

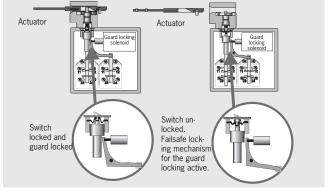
## Extraction force (also: positively driven opening force)

The extraction force is the required minimum force to achieve positively driven opening of the NC contacts.

#### Failsafe locking mechanism

The design feature of a \*guard locking which ensures that the locking mechanism (solenoid plunger) cannot go into the locking position if the \*guard is open is also referred to in DGUV Information 203-079 as failsafe locking mechanism.

The failsafe locking mechanism on an interlocking device with \*guard locking mechanically prevents the \*safety switch changing to the locked position with the \*guard open and therefore signaling a safe state.



#### Guard

A \*guard is the part of the machine that is used as a barrier to protect against hazards. Guards form a physical barrier to the \*danger zone. They can be, e.g. safety doors, covers, fences, housings, etc.

## Guard locking monitoring

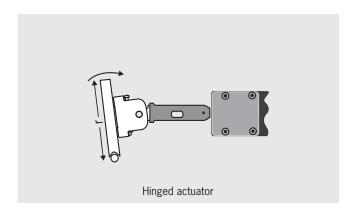
The guard locking monitoring monitors the position of the guard locking solenoids. This device is positively linked to the switching element ÜK via a locking arm. On intentional or unintentional unlocking of the guard locking solenoid, the \*positively driven contact in this switching element is actuated and therefore signals the position of the guard locking solenoid. The sectional drawings show the safety switch TZ in its three switch states:

### **Hazardous states**

Are states that could result in injury. \* Safety switches prevent this hazard on the correct use of the \*guard (cf. \* Safe state).

### **Hinged actuator**

The hinged actuator, unlike the straight \*actuator, is spring mounted and as a result the actuator can be inserted in the actuating head without problems even with small door radii. With larger radii, a straight actuator can be used.



### Interlocking, interlocking device

According to EN ISO 14119 an interlocking device is a mechanical, electrical or other device with the purpose of preventing operation of hazardous machine under certain conditions (usually as long as a \*guard is not closed).

### **Locking force**

The locking force  $F_{2h}$  is the force that \*guard locking can withstand without damage.

The locking force in accordance with EN ISO 14119 includes an additional safety coefficient (S = 1.3) which is prescribed by the employers' liability insurance association in its test principles.

The locking force  $F_{\rm Zh}$  acc. to EN ISO 14119 can be calculated as follows:

$$F_{zh} = \frac{Locking force, max.}{Safety coefficient}$$

#### Manual mode

Manual mode is an \* operating mode in which the machine movements are not performed automatically, but using individual commands from the user.

### Mechanical guard locking

Guard locking based on the \*closed-circuit current principle.

#### Mechanical release

The mechanical release makes it possible to access the machine if there is a malfunction, e. g. a power failure. Unlocking is performed using a tool or a key. The mechanical release should be protected against misuse (seal, lacquer).



#### Mounting safety switches and actuators

\* Safety switches must be mounted such that they are adequately secured against changes to their position. Easy bypassing of the \* safety switch must be prevented.

#### Open-circuit current principle

On a \*guard with \*guard locking based on the open-circuit current principle, the guard is locked until the power supply to the guard locking solenoid is interrupted. Unlocking is by spring force. The term \*electrical guard locking is also used.

#### **Operating modes**

Every machine can have one or more operating modes that are defined by the type of machine and their application. If selection of operating mode can cause a hazardous situation, selection of this operating mode must be prevented by suitable means (e.g. key-operated switch, access code). Selection of operating mode on its own is not allowed to trigger machine operation. A separate action on the part of the operator must be required to start the operation of the machine. A means of indication of the selected operating mode is to be provided (e.g. the position of an operating mode selector switch, an indicator, a screen indication, etc.). Technical protective measures must remain effective for all operating modes. If it is necessary to disable technical protective measures (e.g. for setting up or maintenance work), a device for selection of operating mode is to be provided that can be secured in the required operating mode (e.g. locked with a key) so that automatic operation can be prevented. In addition, one or more of the following devices should be provided:

- Movement enable using an \*enabling switch. The machine only runs as long as the enabling switch is operated.
- A portable control unit with a device for shutting down in an emergency or an enabling device. If a portable control unit is used, it must only be possible to trigger a movement from this point
- Movement speed or movement energy restriction
- Movement area restriction

#### **PDF**

The abbreviation PDF can have several meanings in safety engineering:

Probability of Dangerous Failure

According to EN 61508, PDF is the probability of failure of a component and is used to determine the Safety Integrity Level (\* SIL) for the overall machine

Proximity Devices with defined behavior under Fault conditions Proximity switches with defined behavior under fault conditions (see EN 60947-5-3).

#### **Position switches**

Position switches are used to acquire the position of axes or moving \*guards. As soon as a position switch is used as a safety-relevant component, the term position switch with safety function or safety-related position switch is used. In this case the switching element must contain at least one \*positively driven contact.

#### Positive actuation

Positive actuation is the positive movement of a moving mechanical component together with another component – either by direct contact or via rigid parts. The second component is, as a result, moved positively by the first.

### Positively driven opening force

#### \*Extraction force Single-fault tolerance

Single-fault tolerance means that even after the occurrence of a single failure, the agreed safe function continues to be provided.

### **Protective plate**

For switches type 2, a protective plate is available as an option; this plate makes it more difficult to tamper with the actuating head.

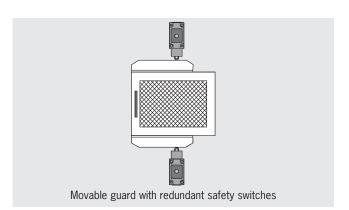


Protective plate on safety switch without guard locking

#### Redundancy

Redundancy is the use of more than one system to retain the same safety function at all times, even on the failure of individual components.

Even for the use of a \*position switch with two positively driven NC contacts, the term redundant (dual-channel) system is often used. However, here it is to be noted that only duplication of the safety contacts is achieved, the mechanical drive (trip dog and plunger) remains single-channel as before. To setup a redundant system (from safety category 3 according to EN ISO 13849-1), both the mechanism (two \*position switches) and the electronics should be of dual-channel layout. The safety of a redundant system is further increased by \*diversity.



#### Retention force

The retention force is the maximum force that is allowed to be applied to the \*actuator with the \*safety switch in the locked state so that the guard locking cannot be unlocked.

In the case of switches without guard locking, the retention force is the maximum force that may be applied to the \*actuator in the withdrawal direction while still guaranteeing reliable contact.

#### Risk

The combination of the probability of occurrence of harm and the severity of that harm in a hazardous situation.

#### Risk assessment

The \*standard EN ISO 12100 contains procedures necessary to perform a risk assessment. The risk assessment initially involves a risk analysis and a subsequent risk evaluation. In EN ISO 13849-1 there is a simple procedure for determining the required \*category\* to match the \*risk.

#### Standards

The European Machinery Directive states that if harmonized standards are observed, it is allowed to assume that the directive is met. Standards specify the requirements of the directive in more detail and as a rule represent the *general state-of-the-art*. Manufacturers of \* safety switches must comply with EN 60947-5. All EUCHNER safety switches comply with this standard.

#### Safe state

A safe state is provided if no hazard can be produced by an installation or machine on correct use (cf. \*Hazardous states).

#### Safeguard

A safeguard is intended to protect personnel, products and the environment against hazards. A differentiation is made between \*guards and protective devices.

### Safety relay

Safety relays are used to evaluate switchgear connected (\* safety switches, emergency stop switchgear, etc.). They ensure that the OSSD (Output Signal Switching Device) is opened.



#### Safety Switch

A safety switch is part of a safety chain. It provides a safe signal in the input circuit. A stop signal is generated when the \*guard is opened. In this way unintentional machine starting is prevented if the guard is open, that is \*interlocking\* is achieved.

#### SIL (Safety Integrity Level)

According to EN 61508 the objective for the probability of failure on the execution of risk-reducing functions. The standard defines the requirements that are necessary to achieve a specific safety level (SIL).

#### **Snap-action contact elements**

On snap-action contact elements the \*switching element jumps to the other switch state from a defined \*actuator position. The movement of the switching contact is independent of the speed at which the actuator is moved. Snap-action contact elements typically have hysteresis.

#### Start (automatic or manual)

An item of safety switchgear (e.g. \* safety relay) can be started manually or automatically. On a manual start, an enable signal is generated after the Start button is pressed and a \* safe state has been detected. This function is also termed static operation and is stipulated for emergency stop devices (EN 60204-1).

On an automatic start, an enable signal is generated after a safe state has been detected without any manual enable. This function is also termed dynamic operation and is not allowed for emergency stop devices.

#### Stop category

EN 60204-1 defines various stop categories; here stopping refers to the shutdown of the machine.

Stop category 0 means that the machine is shutdown by the immediate shutdown of the power.

Stop category 1 means that the machine is shutdown in a controlled manner while the supply of power is maintained to bring the machine to a standstill. Once standstill has been reached, the power is interrupted. Stop category 2 means that the machine is shutdown in a controlled manner while the supply of power is maintained to bring the machine to a standstill. The power is not interrupted at standstill. This stop category is not allowed to be used for shutdown in an emergency according to EN 60204.

### **Tampering**

Tampering is the conscious disabling or bypassing of \*guards and their components. \*Safety switches and other safety devices must be designed such that the protective function cannot be changed or defeated by hand or using one simple action. Simple actions include using:

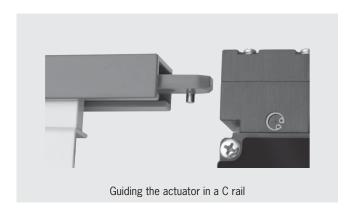
- Screwdrivers
- Ball-point pens
- Nails
- Pieces of wire
- Adhesive tape
- etc.

Actions that are not regarded as simple are actions that require more than one work step with tools.

The inability to bypass by simple means (DGUV Information 203-079) is:

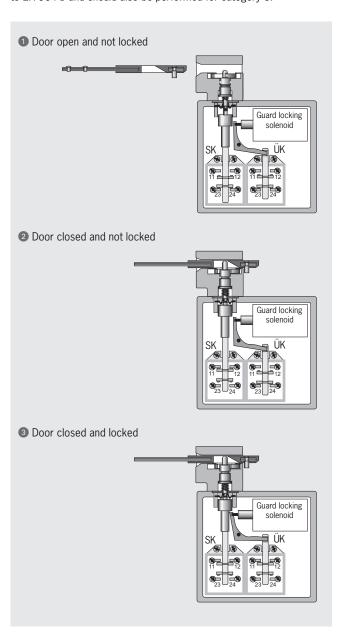
- The removal or turning away of components of the locking surface with the aid of heavy tools (e.g. crowbar, angle grinder)
- ▶ The turning of the safety switch away from its protective position
- ► The use of a second \*actuator
- The bridging of the contacts

It should be taken into account in the design that, despite \*guards, straightforward and correct operation of machines and installations must be possible. If this aspect is not taken into account, the probability of defeating safety measures will increase.



#### **Testing**

Testing is intended to ensure that a safety system functions correctly. Testing can be performed automatically, by the control system, in the form of monitoring or testing during the process. Depending on the requirements, a combination of automatic and manual testing is also possible. The testing must be repeated at defined intervals as a function of the risk analysis. Testing is required for \*category 2 and 4 according to EN 954-1 and should also be performed for category 3.



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NIAR514AMM 087158 21 NIAR514SVM5-M 087604 21 NIAR514SVM5-M 087604 21 NIARL508-M 087147 22 NIARL514-M 087205 23 NIAW508-M 087205 23 NIAW508-MC2222 103222 23 NIAW508-MC2222 103222 23 NIAW514-M 083850 23 NIAW514SVM5-M 090743 23 NIAW514SVM5-M 090743 23 NIAW514SVM5-M 090743 23 NIAW514SVM5-M 090743 23 NIAW516SB-M 088584 24 NB01R58-M 088584 24 NB01R58-M 088583 24 NB01R58-M 088583 24 NGLE060GE 029222 139 NGLE1060GR 029221 139 NGLE1060GR 029221 139 NGLE220GE 045827 139 NGLE220GE 045827 139 NGLE220GE 045827 139 NK1-213IAM 092625 90 NX1-213IAM 092625 90 NX1-213IAM 092626 90 NX1-313IAM 092626 90 NX1-313IAM 092626 90 NZ1-HB-2131-M 090968 40 NZ1-HB-311-M 090969 40 NZ1-HB-511-M 079952 40 NZ1-HB-511-M 079952 40 NZ1-HB-511-M 090968 40 NZ1-HB-511-M 090969 40 NZ1-HB-528-M 088199 40 NZ1-HB-528-M 088199 40 NZ1-HB-528-M 0890966 47 NZ1-HB-528-M 0890966 47 NZ1-HB-528-M 0890966 40 NZ1-HB-528-M 090966 40 NZ1-HB-528-M 090966 40 NZ1-HB-538-M 090967 40 NZ1-HB-538-M 090966 40 NZ1-HB-538-M 090867 40 NZ1-HB-538-M 090870 44 NZ1-HB-538-M 090870 44 NZ1-HB-538-M 090870 42 NZ1-	Item	Order no.	Page
N1AR514SVM5-M         087604         21           N1ARL508-M         087147         22           N1ARL514-M         087205         23           N1AW508-M         087205         23           N1AW508-MC2222         103222         23           N1AW514-M         083850         23           NB1D58-M         088583         24           NB01E58-M         088583         24           NB01E58-M         088583         24           NB01E58-M         088583         24           NGLE060GE         029221         139           NGLE060GE         029221         139           NGLE20GE         045827         139           NGLE20GE         04582			
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NIARL514-M			
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NZ1HB-2131-9C-GMMF         077390         41           NZ1HB-2131-M         090968         40           NZ1HB-3131-M         090969         40           NZ1HB-511-MC 569         079965         47           NZ1HB-511L060-M         090039         40           NZ1HB-511L060-MC 569         091091         47           NZ1HB-511L060-MC 569         091091         47           NZ1HB-51L060-MC 86525         40           NZ1HB-528-M         088199         40           NZ1HB-528-MC 569         079946         47           NZ1HB-528-MC 569         079946         47           NZ1HB-528L060-M         090965         40           NZ1HB-528L060-M         090965         40           NZ1HB-538-MC 569         091330         47           NZ1HB-538-M         090966         40           NZ1HB-538-MC 569         079999         47           NZ1HS-338-MC 569         079999         47           NZ1HS-331-9C-GMMF         077391         39           NZ1HS-2131-M         090254         37           NZ1HS-3131-9C-GMMF         077391         39           NZ1HS-3131-M         090747         37           NZ1HS-3131-M	NX1-2131AL024-M	091682	90
NZ1HB-2131-M         090968         40           NZ1HB-3131-M         090969         40           NZ1HB-511-M         079952         40           NZ1HB-511-MC569         079965         47           NZ1HB-511L060-M         090039         40           NZ1HB-511L060-MC569         091091         47           NZ1HB-511L060-MC569         091091         47           NZ1HB-51L060-MC569         091091         47           NZ1HB-528-M         088199         40           NZ1HB-528-MC569         079946         47           NZ1HB-528-MC569         079946         47           NZ1HB-528-L060-MC569         091330         47           NZ1HB-528-L060-MC569         091330         47           NZ1HB-538-M         090966         40           NZ1HB-538-MC569         079999         47           NZ1HS-538-MC569         079999         47           NZ1HS-313-9C-GMMF         077391         39           NZ1HS-2131-M         090254         37           NZ1HS-3131-PC-GMMF         073508         39           NZ1HS-3131-MC1779         079996         48           NZ1HS-311-MC1779         079996         48 <td< td=""><td>NX1-3131A-M</td><td>092626</td><td>90</td></td<>	NX1-3131A-M	092626	90
NZ1HB-3131-M         090969         40           NZ1HB-511-M         079952         40           NZ1HB-511-MC569         079965         47           NZ1HB-511L060-M         090039         40           NZ1HB-511L060-MC569         091091         47           NZ1HB-511L060GE-M         086525         40           NZ1HB-528-M         088199         40           NZ1HB-528-MC569         079946         47           NZ1HB-528-MC569         079946         47           NZ1HB-528-MC569         079946         47           NZ1HB-528-MC569         079946         47           NZ1HB-528-MC569         091330         47           NZ1HB-528-MC569         091330         47           NZ1HB-538-MC569         079999         47           NZ1HB-538-MC569         079999         47           NZ1HS-331-MC569         079999         47           NZ1HS-331-MC569         079999         47           NZ1HS-313-MC569         079999         47           NZ1HS-2121-M         090254         37           NZ1HS-313-MC560-M         090973         37           NZ1HS-2131-M         090973         37           NZ1HS-3131-MC177	NZ1HB-2131-9C-GMMF	077390	41
NZ1HB-511-M         079952         40           NZ1HB-511-MC569         079965         47           NZ1HB-511L060-M         090039         40           NZ1HB-511L060-MC569         091091         47           NZ1HB-511L060GE-M         086525         40           NZ1HB-528-M         088199         40           NZ1HB-528-MC569         079946         47           NZ1HB-528-MC569         079946         47           NZ1HB-528-MC569         091330         47           NZ1HB-528L060-MC569         091330         47           NZ1HB-538-M         090966         40           NZ1HB-538-MC569         079999         47           NZ1HB-538-MC569         079999         47           NZ1HS-313-9C-GMMF         077391         39           NZ1HS-2131-M         090254         37           NZ1HS-3131-BC-Ford/PT60577-101K01 086574         39           NZ1HS-3131-M         090747         37           NZ1HS-3131-MC1779         079996         48           NZ1HS-511-MC1833         091312         49           NZ1HS-511-MC1833         091312         49           NZ1HS-528-M         090070         37           NZ1HS-538-M<	NZ1HB-2131-M	090968	40
NZ1HB-511-MC569         079965         47           NZ1HB-511L060-M         090039         40           NZ1HB-511L060-MC569         091091         47           NZ1HB-511L060GE-M         086525         40           NZ1HB-528-M         088199         40           NZ1HB-528-MC569         079946         47           NZ1HB-528-MC569         09965         40           NZ1HB-528L060-MC569         091330         47           NZ1HB-528L060-MC569         091330         47           NZ1HB-538-M         090966         40           NZ1HB-538-MC569         079999         47           NZ1HB-538-MC569         079999         47           NZ1HS-311-M         090254         37           NZ1HS-2131-M         090254         37           NZ1HS-3131-BC-GMMF         077391         39           NZ1HS-3131-M         090973         37           NZ1HS-3131-MC1779         079996         48           NZ1HS-511-M         079953         37           NZ1HS-511-MC1833         091312         49           NZ1HS-511-MC1833         091312         49           NZ1HS-538-M         090070         37           NZ1HS-538-M </td <td>NZ1HB-3131-M</td> <td>090969</td> <td>40</td>	NZ1HB-3131-M	090969	40
NZ1HB-511-MC569         079965         47           NZ1HB-511L060-M         090039         40           NZ1HB-511L060-MC569         091091         47           NZ1HB-511L060GE-M         086525         40           NZ1HB-528-M         088199         40           NZ1HB-528-MC569         079946         47           NZ1HB-528-MC569         09965         40           NZ1HB-528L060-MC569         091330         47           NZ1HB-528L060-MC569         091330         47           NZ1HB-538-M         090966         40           NZ1HB-538-MC569         079999         47           NZ1HB-538-MC569         079999         47           NZ1HS-311-M         090254         37           NZ1HS-2131-M         090254         37           NZ1HS-3131-BC-GMMF         077391         39           NZ1HS-3131-M         090973         37           NZ1HS-3131-MC1779         079996         48           NZ1HS-511-M         079953         37           NZ1HS-511-MC1833         091312         49           NZ1HS-511-MC1833         091312         49           NZ1HS-538-M         090070         37           NZ1HS-538-M </td <td>NZ1HB-511-M</td> <td>079952</td> <td>40</td>	NZ1HB-511-M	079952	40
NZ1HB-511L060-M         090039         40           NZ1HB-511L060-MC569         091091         47           NZ1HB-511L060GE-M         086525         40           NZ1HB-528-M         088199         40           NZ1HB-528-MC569         079946         47           NZ1HB-528L060-M         090965         40           NZ1HB-528L060-MC569         091330         47           NZ1HB-538-M         090966         40           NZ1HB-538-MC569         079999         47           NZ1HB-538L060-M         090967         40           NZ1HS-2121-M         090254         37           NZ1HS-2131-M         090973         37           NZ1HS-2131-M         090973         37           NZ1HS-3131-BC-Ford/PT60577-101K01 086574         39           NZ1HS-3131-MC1779         079996         48           NZ1HS-511-M         079953         37           NZ1HS-511-MC1833         091312         49           NZ1HS-511-MC1833         091312         49           NZ1HS-528-M         090970         37           NZ1HS-538-M         090971         37           NZ1HS-538-M         090972         37           NZ1HS-538-M			
NZ1HB-511L060-MC569         091091         47           NZ1HB-511L060GE-M         086525         40           NZ1HB-528-M         088199         40           NZ1HB-528-MC569         079946         47           NZ1HB-528L060-M         090965         40           NZ1HB-528L060-MC569         091330         47           NZ1HB-538-M         086527         40           NZ1HB-538-MC569         079999         47           NZ1HB-538-MC569         079999         47           NZ1HB-538L060-M         090967         40           NZ1HS-2121-M         090254         37           NZ1HS-2131-M         090973         37           NZ1HS-2131-M         090973         37           NZ1HS-3131-8C-Ford/PT60577-101K01 086574         39           NZ1HS-3131-MC1779         079996         48           NZ1HS-3131-MC1779         079996         48           NZ1HS-511-MC1833         091312         49           NZ1HS-511-MC1833         091312         49           NZ1HS-528-M         090970         37           NZ1HS-538-M         090971         37           NZ1HS-538-M         090972         37           NZ1HS-538-M			
NZ1HB-511L060GE-M         086525         40           NZ1HB-528-M         088199         40           NZ1HB-528-MC569         079946         47           NZ1HB-528L060-M         090965         40           NZ1HB-528L060-MC569         091330         47           NZ1HB-528L060GE-M         086527         40           NZ1HB-538-M         090966         40           NZ1HB-538-MC569         079999         47           NZ1HB-538L060-M         090967         40           NZ1HS-313-9C-GMMF         077391         39           NZ1HS-2131-M         090973         37           NZ1HS-3131-BC-Ford/PT60577-101K01 086574         39           NZ1HS-3131-M         090747         37           NZ1HS-3131-MC1779         079996         48           NZ1HS-511-MC1833         091312         49           NZ1HS-511-MC1833         091312         49           NZ1HS-511-MC1833         091312         49           NZ1HS-528-M         090035         37           NZ1HS-528-M         090070         37           NZ1HS-538-M         090971         37           NZ1HS-538-M         090972         37           NZ1HS-538-M			
NZ1HB-528-M         088199         40           NZ1HB-528-MC569         079946         47           NZ1HB-528L060-M         090965         40           NZ1HB-528L060-MC569         091330         47           NZ1HB-528L060GE-M         086527         40           NZ1HB-538-M         090966         40           NZ1HB-538-MC569         079999         47           NZ1HB-538L060-M         090967         40           NZ1HS-2121-M         090254         37           NZ1HS-2131-9C-GMMF         077391         39           NZ1HS-2131-M         090973         37           NZ1HS-3131-BC-Ford/PT60577-101K01 086574         39           NZ1HS-3131-M         090747         37           NZ1HS-3131-MC1779         079996         48           NZ1HS-511-MC1833         091312         49           NZ1HS-511-MC1833         091312         49           NZ1HS-511L060-M         090035         37           NZ1HS-528-M         090070         37           NZ1HS-528-M         090971         37           NZ1HS-538-M         090972         37           NZ1HS-538-M         090972         37           NZ1HS-538-M         <			
NZ1HB-528-MC569       079946       47         NZ1HB-528L060-M       090965       40         NZ1HB-528L060-MC569       091330       47         NZ1HB-528L060GE-M       086527       40         NZ1HB-538-M       090966       40         NZ1HB-538-MC569       079999       47         NZ1HB-538L060-M       090967       40         NZ1HS-2121-M       090254       37         NZ1HS-2131-9C-GMMF       077391       39         NZ1HS-3131-WC-Ford/PT60577-101K01 086574       39         NZ1HS-3131-MC-GMMF       073508       39         NZ1HS-3131-MC1779       079996       48         NZ1HS-3131-MC1779       079996       48         NZ1HS-511-MC1833       091312       49         NZ1HS-511L060-M       090035       37         NZ1HS-51L060-M       090038       37         NZ1HS-528-M       090970       37         NZ1HS-538-M       090971       37         NZ1HS-538-M       090972       37         NZ1HS-538-M       090872       44         NZ1PB-313-M       090872       44         NZ1PB-313-M       090873       44         NZ1PB-538-M       090871 <t< td=""><td></td><td></td><td></td></t<>			
NZ1HB-528L060-M         090965         40           NZ1HB-528L060-MC569         091330         47           NZ1HB-528L060GE-M         086527         40           NZ1HB-538-M         090966         40           NZ1HB-538-MC569         079999         47           NZ1HB-538L060-M         090967         40           NZ1HS-2121-M         090254         37           NZ1HS-2131-9C-GMMF         077391         39           NZ1HS-3131-W         090973         37           NZ1HS-3131-WC-Ford/PT60577-101K01 086574         39           NZ1HS-3131-M         090747         37           NZ1HS-3131-MC1779         079996         48           NZ1HS-511-M         079953         37           NZ1HS-511-MC1833         091312         49           NZ1HS-511L060-M         090035         37           NZ1HS-511L060-M         090038         37           NZ1HS-528L060-M         090970         37           NZ1HS-538-M         090971         37           NZ1HS-538-M         090972         37           NZ1HS-538-M         090872         44           NZ1PB-3131-M         090872         44           NZ1PB-3131-M			
NZ1HB-528L060-MC569         091330         47           NZ1HB-528L060GE-M         086527         40           NZ1HB-538-M         090966         40           NZ1HB-538-MC569         079999         47           NZ1HB-538L060-M         090967         40           NZ1HS-2121-M         090254         37           NZ1HS-2131-9C-GMMF         077391         39           NZ1HS-2131-M         090973         37           NZ1HS-3131-8C-Ford/PT60577-101K01 086574         39           NZ1HS-3131-WC-Ford/PT60577-101K01 086574         39           NZ1HS-3131-MC1779         073508         39           NZ1HS-3131-MC1779         079996         48           NZ1HS-511-MC1833         091312         49           NZ1HS-511-MC1833         091312         49           NZ1HS-511L060-M         090035         37           NZ1HS-528-M         090970         37           NZ1HS-528-M         090971         37           NZ1HS-538-M         090972         37           NZ1HS-538-M         090972         37           NZ1PB-2131-M         090872         44           NZ1PB-3131-M         090873         44           NZ1PB-3131-M			
NZ1HB-528L060GE-M       086527       40         NZ1HB-538-M       090966       40         NZ1HB-538-MC569       079999       47         NZ1HB-538L060-M       090967       40         NZ1HS-2121-M       090254       37         NZ1HS-2131-9C-GMMF       077391       39         NZ1HS-2131-M       090973       37         NZ1HS-3131-8C-Ford/PT60577-101K01 086574       39         NZ1HS-3131-WC-FORD/PT60577-101K01 086574       39         NZ1HS-3131-MC-GMMF       073508       39         NZ1HS-3131-MC1779       079996       48         NZ1HS-3131-MC1779       079996       48         NZ1HS-511-MC1833       091312       49         NZ1HS-511L060-M       090035       37         NZ1HS-51L060-M       090038       37         NZ1HS-528-M       090970       37         NZ1HS-528L060-M       090971       37         NZ1HS-538-M       090972       37         NZ1HS-538-M       090972       37         NZ1PB-2131-M       090872       44         NZ1PB-3131-M       090873       44         NZ1PS-33-31-M       090876       42         NZ1PS-311-M       090876 <t< td=""><td></td><td></td><td></td></t<>			
NZ1HB-538-M       090966       40         NZ1HB-538-MC569       079999       47         NZ1HB-538L060-M       090967       40         NZ1HS-2121-M       090254       37         NZ1HS-2131-9C-GMMF       077391       39         NZ1HS-2131-M       090973       37         NZ1HS-3131-8C-Ford/PT60577-101K01 086574       39         NZ1HS-3131-MC-GMMF       073508       39         NZ1HS-3131-M       090747       37         NZ1HS-3131-MC1779       079996       48         NZ1HS-511-M       079953       37         NZ1HS-511-MC1833       091312       49         NZ1HS-511L060-M       090035       37         NZ1HS-511L060GE-M       090038       37         NZ1HS-528-M       090970       37         NZ1HS-528L060GE-M       090971       37         NZ1HS-538-M       090972       37         NZ1HS-538-M       090872       44         NZ1PB-3131-M       090873       44         NZ1PS-3131-M       090871       44         NZ1PS-3131-M       090877       42         NZ1PS-3131-M       090877       42         NZ1PS-511-M       088613       42			
NZ1HB-538-MC569       079999       47         NZ1HB-538L060-M       090967       40         NZ1HS-2121-M       090254       37         NZ1HS-2131-9C-GMMF       077391       39         NZ1HS-2131-M       090973       37         NZ1HS-3131-8C-Ford/PT60577-101K01 086574       39         NZ1HS-3131-M       073508       39         NZ1HS-3131-M       090747       37         NZ1HS-3131-MC1779       079996       48         NZ1HS-511-M       079953       37         NZ1HS-511-MC1833       091312       49         NZ1HS-511L060-M       090035       37         NZ1HS-511L060GE-M       090038       37         NZ1HS-528-M       090970       37         NZ1HS-528L060-M       090971       37         NZ1HS-538-M       09049       37         NZ1HS-538-M       090760       37         NZ1PB-3131-M       090872       44         NZ1PB-3131-M       090873       44         NZ1PS-538-M       090871       44         NZ1PS-3131-M       090876       42         NZ1PS-3131-M       090877       42         NZ1PS-511-M       088613       42			
NZ1HB-538L060-M       090967       40         NZ1HS-2121-M       090254       37         NZ1HS-2131-9C-GMMF       077391       39         NZ1HS-2131-M       090973       37         NZ1HS-3131-8C-Ford/PT60577-101K01 086574       39         NZ1HS-3131-9C-GMMF       073508       39         NZ1HS-3131-M       090747       37         NZ1HS-3131-MC1779       079996       48         NZ1HS-511-M       079953       37         NZ1HS-511-MC1833       091312       49         NZ1HS-511L060-M       090035       37         NZ1HS-511L060GE-M       090038       37         NZ1HS-528-M       090970       37         NZ1HS-528L060-M       090971       37         NZ1HS-538-M       090972       37         NZ1HS-538-M       090760       37         NZ1PB-3131-M       090872       44         NZ1PB-3131-M       090873       44         NZ1PS-538-M       090871       44         NZ1PS-3131-M       090876       42         NZ1PS-3131-M       090876       42         NZ1PS-511-M       088613       42         NZ1PS-528-M       090874       42			
NZ1HS-2121-M         090254         37           NZ1HS-2131-9C-GMMF         077391         39           NZ1HS-2131-M         090973         37           NZ1HS-3131-8C-Ford/PT60577-101K01 086574         39           NZ1HS-3131-9C-GMMF         073508         39           NZ1HS-3131-M         090747         37           NZ1HS-3131-MC1779         079996         48           NZ1HS-511-M         079953         37           NZ1HS-511-MC1833         091312         49           NZ1HS-511L060-M         090035         37           NZ1HS-511L060GE-M         090038         37           NZ1HS-528L060-M         090970         37           NZ1HS-528L060-M         090971         37           NZ1HS-538-M         090972         37           NZ1HS-538L060-M         090760         37           NZ1PB-2131-M         090872         44           NZ1PB-3131-M         090873         44           NZ1PB-538-M         090871         44           NZ1PS-3131-M         090876         42           NZ1PS-3131-M         090876         42           NZ1PS-511-M         088613         42           NZ1PS-528-M         090			
NZ1HS-2131-9C-GMMF       077391       39         NZ1HS-2131-M       090973       37         NZ1HS-3131-8C-Ford/PT60577-101K01 086574       39         NZ1HS-3131-9C-GMMF       073508       39         NZ1HS-3131-M       090747       37         NZ1HS-3131-MC1779       079996       48         NZ1HS-511-M       079953       37         NZ1HS-511-MC1833       091312       49         NZ1HS-511L060-M       090035       37         NZ1HS-511L060GE-M       090038       37         NZ1HS-528-M       090970       37         NZ1HS-528L060-M       090971       37         NZ1HS-538-M       090972       37         NZ1HS-538-M       090972       37         NZ1PB-2131-M       090872       44         NZ1PB-3131-M       090872       44         NZ1PB-3131-M       090873       44         NZ1PS-2131-M       090876       42         NZ1PS-3131-M       090877       42         NZ1PS-511-M       088613       42         NZ1PS-528-M       090874       42         NZ1PS-528-M       090874       42			
NZ1HS-2131-M       090973       37         NZ1HS-3131-8C-Ford/PT60577-101K01 086574       39         NZ1HS-3131-9C-GMMF       073508       39         NZ1HS-3131-M       090747       37         NZ1HS-3131-MC1779       079996       48         NZ1HS-511-M       079953       37         NZ1HS-511-MC1833       091312       49         NZ1HS-511L060-M       090035       37         NZ1HS-511L060GE-M       090038       37         NZ1HS-528-M       090970       37         NZ1HS-528L060-M       090971       37         NZ1HS-538-M       090972       37         NZ1HS-538L060-M       090760       37         NZ1PB-2131-M       090872       44         NZ1PB-3131-M       090873       44         NZ1PB-538-M       090871       44         NZ1PS-2131-M       090876       42         NZ1PS-3131-M       090877       42         NZ1PS-511-M       088613       42         NZ1PS-511-M       088613       42         NZ1PS-528-M       090874       42			
NZ1HS-3131-8C-Ford/PT60577-101K01 086574       39         NZ1HS-3131-9C-GMMF       073508       39         NZ1HS-3131-M       090747       37         NZ1HS-3131-MC1779       079996       48         NZ1HS-511-M       079953       37         NZ1HS-511-MC1833       091312       49         NZ1HS-511L060-M       090035       37         NZ1HS-511L060GE-M       090038       37         NZ1HS-528-M       090970       37         NZ1HS-528L060-M       090971       37         NZ1HS-528L060GE-M       090049       37         NZ1HS-538-M       090972       37         NZ1HS-538L060-M       090760       37         NZ1PB-2131-M       090872       44         NZ1PB-3131-M       090873       44         NZ1PB-538-M       090871       44         NZ1PS-2131-M       090876       42         NZ1PS-3131-M       090877       42         NZ1PS-511-M       088613       42         NZ1PS-528-M       090874       42         NZ1PS-528-M       090874       42			
NZ1HS-3131-9C-GMMF         073508         39           NZ1HS-3131-M         090747         37           NZ1HS-3131-MC1779         079996         48           NZ1HS-511-M         079953         37           NZ1HS-511-MC1833         091312         49           NZ1HS-511L060-M         090035         37           NZ1HS-511L060GE-M         090038         37           NZ1HS-528-M         090970         37           NZ1HS-528L060-M         090971         37           NZ1HS-528L060GE-M         090049         37           NZ1HS-538-M         090972         37           NZ1HS-538L060-M         090760         37           NZ1PB-2131-M         090872         44           NZ1PB-3131-M         090873         44           NZ1PB-538-M         090871         44           NZ1PS-2131-M         090876         42           NZ1PS-3131-M         090877         42           NZ1PS-511-M         088613         42           NZ1PS-528-M         090874         42           NZ1PS-528-M         090874         42			
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NZ1HS-3131-MC1779       079996       48         NZ1HS-511-M       079953       37         NZ1HS-511-MC1833       091312       49         NZ1HS-511L060-M       090035       37         NZ1HS-511L060GE-M       090038       37         NZ1HS-528-M       090970       37         NZ1HS-528L060-M       090971       37         NZ1HS-528L060GE-M       090049       37         NZ1HS-538-M       090972       37         NZ1HS-538L060-M       090760       37         NZ1PB-2131-M       090872       44         NZ1PB-3131-M       090873       44         NZ1PB-511-M       088618       44         NZ1PS-2131-M       090871       44         NZ1PS-3131-M       090876       42         NZ1PS-3131-M       090877       42         NZ1PS-511-M       088613       42         NZ1PS-511-M       088613       42         NZ1PS-528-M       090874       42	NZ1HS-3131-9C-GMMF	073508	39
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NZ1HS-511-MC1833       091312       49         NZ1HS-511L060-M       090035       37         NZ1HS-511L060GE-M       090038       37         NZ1HS-528-M       090970       37         NZ1HS-528L060-M       090971       37         NZ1HS-528L060GE-M       090049       37         NZ1HS-538-M       090972       37         NZ1HS-538L060-M       090760       37         NZ1PB-2131-M       090872       44         NZ1PB-3131-M       090873       44         NZ1PB-511-M       088618       44         NZ1PS-2131-M       090871       44         NZ1PS-3131-M       090876       42         NZ1PS-3131-M       090877       42         NZ1PS-511-M       088613       42         NZ1PS-511-M       088613       42         NZ1PS-528-M       090874       42	NZ1HS-3131-MC1779	079996	48
NZ1HS-511L060-M       090035       37         NZ1HS-511L060GE-M       090038       37         NZ1HS-528-M       090970       37         NZ1HS-528L060-M       090971       37         NZ1HS-528L060GE-M       090049       37         NZ1HS-538-M       090972       37         NZ1HS-538L060-M       090760       37         NZ1PB-2131-M       090872       44         NZ1PB-3131-M       090873       44         NZ1PB-511-M       088618       44         NZ1PB-538-M       090871       44         NZ1PS-2131-M       090876       42         NZ1PS-3131-M       090877       42         NZ1PS-511-M       088613       42         NZ1PS-511-M       088613       42         NZ1PS-511L060-M       104102       42         NZ1PS-528-M       090874       42	NZ1HS-511-M	079953	37
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NZ1HS-528L060-M       090971       37         NZ1HS-528L060GE-M       090049       37         NZ1HS-538-M       090972       37         NZ1HS-538L060-M       090760       37         NZ1PB-2131-M       090872       44         NZ1PB-3131-M       090873       44         NZ1PB-511-M       088618       44         NZ1PB-538-M       090871       44         NZ1PS-2131-M       090876       42         NZ1PS-3131-M       090877       42         NZ1PS-511-M       088613       42         NZ1PS-511L060-M       104102       42         NZ1PS-528-M       090874       42			
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NZ1PB-3131-M       090873       44         NZ1PB-511-M       088618       44         NZ1PB-538-M       090871       44         NZ1PS-2131-M       090876       42         NZ1PS-3131-M       090877       42         NZ1PS-511-M       088613       42         NZ1PS-511L060-M       104102       42         NZ1PS-528-M       090874       42			
NZ1PB-511-M       088618       44         NZ1PB-538-M       090871       44         NZ1PS-2131-M       090876       42         NZ1PS-3131-M       090877       42         NZ1PS-511-M       088613       42         NZ1PS-511L060-M       104102       42         NZ1PS-528-M       090874       42			
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NZ1PS-2131-M       090876       42         NZ1PS-3131-M       090877       42         NZ1PS-511-M       088613       42         NZ1PS-511L060-M       104102       42         NZ1PS-528-M       090874       42	-		
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NZ2WO-2131	090912	27
NZ2WO-3131	090913	27
NZ2WO-511	090909	27
NZ2WO-511L060	091280	27
NZ2WO-511L060C1630	059481	27
NZ2WO-511L060C1631	059482	27
NZ2WO-511SVM5	089014	26
NZ2WO-511SVM5L060GE	098652	26
NZ2WO-511SVM5L060GEC2273	105851	26
NZ2WO-528	090910	27
NZ2W0-528L060	091279	27
NZ2WO-528SVM5	090923	26
NZ2W0-538	090911	27
NZ2W0-538L060	087558	27
NZ2WO-538SVM5	090924	26
Pin crimp contact RCF	094309	129
Pin crimp contact RCF-C1825	094310	129
Pin crimp contact RCM-C1825	155811	129
Plug connector for solenoid locking	028345	127
Plug connector with rectifier for solen		028338
127	JIU IUCKIIIg	020330
	050126	120
Protective plate NZ/TZ	059136	138
RC-12P1N8A8096	073294	127
RC-12P1N8A8300	073293	127
RC18EF	074616	129
RC18EF-C1825	077025	129
RC18EM-C1815	129500	129
RC18WF	074617	129
RC18WF-C1825	077026	129
Release with automatic return TX	094773	140
Replacement key TX	077206	140
Roller arm NHB	012042	139
Roller arm NHBC569	012044	139
Roller arm NHS	012043	139
SGA1A-2121A-M	103725	100
SGA1A-2131A-M	106307	100
SGA1A-2131A-M-EX	123460	100
SGA2A-2121ARC18-EXT5	104012	102
SGA2A-2121ASR11	116396	101
SGA2E-2131ASR11	106736	101
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SR11AM2-M20	091296	128	TX3B-A024RC18	082964	95
SR11EF	070859	128	TX3B-A024RC18C1991	093559	97
SR11WF	054773	128	TX3C-A024M	082953	94
SR6AM2-M20	087180	128	TX3C-A024MC1991	093118	96
SR6EF	013176	128	TX3C-A024MC2161	098946	96
SR6K	013178	128	TX3C-A024RC18	082965	95
SR6WFPG11R	024999	128	TX3C-A024SR11	085396	95
SRF	071260	128	TZ1LB024MVAB-C2159	098718	73
SRM	071261	128	TZ1LE024BHA-C1902	079692	86
SS4	002787	127	TZ1LE024BHA-C1903	082095	70
STA1A-4131A024M	096439	107	TZ1LE024BHAVFG-RC1924	083190	67
STA2A-4131A024M	096935	107	TZ1LE024BHAVFG-RC1971	085569	86
STA2A-4131A024SR11	109574	108	TZ1LE024M	082050	64
STA3A-2131A024L024RC18	099658	106	TZ1LE024M-C1623	083246	85
STA3A-2131A024L024RC18C1826	106623	106	TZ1LE024M-C1684	083170	82
STA3A-2131A024M	096938	104	TZ1LE024M-C1815	087990	78
STA3A-2131A024MC1993	103660	109	TZ1LE024M-C1816	089477	74
STA3A-2131A024MF-EX	115584	105	TZ1LE024M-C2087	095245	69
STA3A-2131A230M	104171	104	TZ1LE024M-R	083164	64
STA3A-4121A024L024M	106535	104	TZ1LE024MVAB	083965	64
STA3A-4121A024M	096936	104	TZ1LE024MVAB-10C-FW	095902	86
STA3A-4121A024MF-EX	115586	105	TZ1LE024MVAB-C1623	085170	85
STA3A-4121A024SR11	105304	106	TZ1LE024MVAB-C1684	084820	82
STA3A-4131A024M	099480	104	TZ1LE024MVAB-C1828	089468	78
STA3A-4141A024L024M	100898	104	TZ1LE024MVAB-C2082	096487	80
STA3A-4141A024L024RC18C1826	114416	106	TZ1LE024MVAB-C2087	113504	69
STA3A-4141A024M	099274	104	TZ1LE024MVAB-R	089434	64
STA3A-4141A024RC18	100029	106	TZ1LE024MVAB-RC2100	096052	85
STA4A-2131A024K016	103926	104	TZ1LE024MVFG-RC1925	089464	64
STA4A-2131A024L024RC18	105323	104	TZ1LE024PG0R8C	054964	70
STA4A-2131A024L024RC18C1826	106622	106	TZ1LE024RC18VAB	084242	68
STA4A-2131A024M	096939	104	TZ1LE024RC18VAB-092998	092998	77
STA4A-2131A024MF-EX	115585	105	TZ1LE024RC18VAB-093862	093862	72
STA4A-4121A024M	096937	104	TZ1LE024RC18VAB-033802	091062	87
STA4A-4121A024M STA4A-4121A024MF-EX	123076	105	TZ1LE024RC18VAB-C1803	088090	75
STA4A-4131A024M	099481	103	TZ1LE024RC18VAB-C1826	084246	68
STA4A-4141A024M	109172	104	TZ1LE024RC18VAB-C1828	090352	79
SWITCH BRACKET NZ	116563	161	TZ1LE024RC18VAB-C1828	074260	77
Switch bracket NZ-GFK	096614	147	TZ1LE024RC18VAB-C1937	097347	84
Switch bracket TP-GFK	096613	158	TZ1LE024RC18VAB-C2123	098297	81
SWITCH BRACKET TZ	116564	161	TZ1LE024SR11	070828	66
Triangular key	103057	140	TZ1LE024SR11-093860	093860	71
TX1B-A024BH10	085380	93	TZ1LE024SR11-093860	070886	83
		92			
TX1B-A024M TX1B-A024MC2129	082921 097623	92	TZ1LE024SR11-C1816 TZ1LE024SR11VAB-C1933	077044 083230	75 66
		98			
TX1B-A024N TX1B-A024RC18	082944		TZ1LE024SR6	046502	65
	082933	93 92	TZ1LE024SR6-C1638 TZ1LE024SR6-C1677	089476	65 71
TX1C-A024M	082922			059694	
TX1C-A024MC2161	099489	96	TZ1LE110M	083160	64
TX1C-A024N	082945	92	TZ1LE110M-R	083168	64
TX1C-A024RC18	082934	93	TZ1LE110MVAB	088023	64
TX1D-A024MC1991	096173	96	TZ1LE110MVAB-C2082	095992	80
TX1D-A024MC2081	095025	92	TZ1LE110SR6	046503	65
TX2B-A024BH10	085381	93	TZ1LE220M	083166	64
TX2B-A024M	082927	92	TZ1LE220MVAB	088029	64
TX2B-A024N	082946	92	TZ1LE220SR6	046504	65
TX2B-A024RC18	082939	93	TZ1RB024MVAB-C2159	098717	73
TX2C-A024M	082928	92	TZ1RE024BHA-C1902	079693	86
TX2C-A024N	082947	92	TZ1RE024BHA-C1903	082096	70
TX2C-A024RC18	082940	93	TZ1RE024BHAVFG-RC1924	083191	67
TX2D-A024MC2081	095026	92	TZ1RE024BHAVFG-RC1971	085570	86
TX3B-A024M	082952	94	TZ1RE024M	082051	64
TX3B-A024MC1991	085391	96	TZ1RE024M-C1623	083247	85

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TZIRE024MC1815 087991 78 TZIRE024MC1816 096901 74 TZIRE024MC2087 095253 69 TZIRE024MVR 083165 64 TZIRE024MVR 083165 64 TZIRE024MVAB 083966 64 TZIRE024MVAB 083966 64 TZIRE024MVAB-01CFW 095903 86 TZIRE024MVAB-01623 085171 85 TZIRE024MVAB-01623 085171 85 TZIRE024MVAB-01828 089469 78 TZIRE024MVAB-01828 089469 78 TZIRE024MVAB-02082 096488 80 TZIRE024MVAB-02087 098205 69 TZIRE024MVAB-C1828 093469 64 TZIRE024MVAB-R 083233 64 TZIRE024MVAB-R 083233 64 TZIRE024MVAB-RC2100 096051 85 TZIRE024MVAB-RC2100 096051 85 TZIRE024RC18VAB 084243 68 TZIRE024RC18VAB-09299 092999 77 TZIRE024RC18VAB-093863 093863 72 TZIRE024RC18VAB-03866 093863 72 TZIRE024RC18VAB-03866 093863 72 TZIRE024RC18VAB-03866 084247 68 TZIRE024RC18VAB-01828 08091 75 TZIRE024RC18VAB-01828 090353 79 TZIRE024RC18VAB-01937 074261 77 TZIRE024RC18VAB-01937 074261 77 TZIRE024RC18VAB-0193861 093861 71 TZIRE024RC18VAB-01938 093861 71 TZIRE024RC18VAB-01938 093861 71 TZIRE024RC18VAB-01938 093861 71 TZIRE024RC18VAB-01938 093861 71 TZIRE024RC18VAB-0193 093861 70 TZIRE024MVAB-0193 093861 70 TZIRE024MVAB-0193 093861 7			
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TZIRE024MVAB	TZ1RE024M-C2087	095253	69
TZ1RE024MVAB-10C-FW         095903         86           TZ1RE024MVAB-C1623         085171         85           TZ1RE024MVAB-C1684         088084         82           TZ1RE024MVAB-C1828         089469         78           TZ1RE024MVAB-C2082         096488         80           TZ1RE024MVAB-C2087         098205         69           TZ1RE024MVAB-C2010         096051         85           TZ1RE024MVFGRC1925         089465         64           TZ1RE024PGOR8C         059920         70           TZ1RE024RC18VAB         084243         68           TZ1RE024RC18VAB 093863         093863         72           TZ1RE024RC18VAB-093863         093863         72           TZ1RE024RC18VAB-C1803         091063         87           TZ1RE024RC18VAB-C1823         088091         75           TZ1RE024RC18VAB-C1828         090353         79           TZ1RE024RC18VAB-C1828         090353         79           TZ1RE024RC18VAB-C1828         090353         79           TZ1RE024RC18VAB-C2123         097348         84           TZ1RE024RC18VAB-C2140         098298         81           TZ1RE024SR1-1-G1684         070884         83           TZ1RE024SR1-1-G1684	TZ1RE024M-R	083165	64
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TZ1RE024MVAB-C1828 089469 78 TZ1RE024MVAB-C2082 096488 80 TZ1RE024MVAB-C2087 098205 69 TZ1RE024MVAB-R 083233 64 TZ1RE024MVAB-RC1900 096051 85 TZ1RE024MVFGRC1925 089465 64 TZ1RE024PGORSC 059920 70 TZ1RE024RC18VAB 084243 68 TZ1RE024RC18VAB-092999 092999 77 TZ1RE024RC18VAB-093863 093863 72 TZ1RE024RC18VAB-C1823 088091 75 TZ1RE024RC18VAB-C1828 090353 79 TZ1RE024RC18VAB-C1828 090353 79 TZ1RE024RC18VAB-C1828 090353 79 TZ1RE024RC18VAB-C1937 074261 77 TZ1RE024RC18VAB-C1933 098298 81 TZ1RE024SR11-093861 093861 71 TZ1RE024SR1-1094343 094343 76 TZ1RE024SR1-108464 070884 83 TZ1RE024SR1-108464 070884 83 TZ1RE024SR1-10846 070084 83 TZ1RE024SR1-1094393 083231 66 TZ1RE024SR6-C1638 070529 65 TZ1RE024SR6-C1638 070529 65 TZ1RE024SR6-C1638 070529 77 TZ1RE110M-R 089448 64 TZ1RE110M-R 089449 65 TZ1RE024BR-C1828 095103 80 TZ1RE024BR-C1828 095103 79 TZ2LE024BR-C1828 095103 80 TZ2LE024BR-C1828 095103 79 TZ2LE024BR-C1828	TZ1RE024MVAB-C1623	085171	85
TZ1RE024MVAB-C2087 098205 69 TZ1RE024MWABR 083233 64 TZ1RE024MWABRC2100 096051 85 TZ1RE024MWABRC2100 096051 85 TZ1RE024MWG-RC11025 089465 64 TZ1RE024PGOR8C 059920 70 TZ1RE024RC18VAB 084243 68 TZ1RE024RC18VAB 084243 68 TZ1RE024RC18VAB-093863 72 TZ1RE024RC18VAB-093863 093863 72 TZ1RE024RC18VAB-C1803 091063 87 TZ1RE024RC18VAB-C1823 088091 75 TZ1RE024RC18VAB-C1823 088091 75 TZ1RE024RC18VAB-C1828 090353 79 TZ1RE024RC18VAB-C1828 090353 79 TZ1RE024RC18VAB-C1828 090353 79 TZ1RE024RC18VAB-C1828 090353 79 TZ1RE024RC18VAB-C1937 074261 77 TZ1RE024RC18VAB-C2123 097348 84 TZ1RE024RC18VAB-C2123 097348 84 TZ1RE024RC18VAB-C2123 097348 72 TZ1RE024RC18VAB-C2140 098298 81 TZ1RE024SR11 070826 66 TZ1RE024SR11-093861 093861 71 TZ1RE024SR11-093861 093861 71 TZ1RE024SR11-094343 094343 76 TZ1RE024SR1-C1816 077042 75 TZ1RE024SR1-C1816 077042 75 TZ1RE024SR6-C1638 070529 65 TZ1RE024SR6-C1638 083161 64 TZ1RE110MVAB 088024 64 TZ1RE12024MC1816 087992 74 TZ1RE024MC1816 087992 74 TZ1RE024MC1816 087992 74 TZ2LE024MC1816 087992 74 TZ2LE024MC1816 087992 74 TZ2LE024MC1816 087992 74 TZ2LE024MC1816 087992 77 TZ2LE024MC1816 099660 79 TZ2LE024MC184B-C1828 099103 79 T	TZ1RE024MVAB-C1684	088084	82
TZ1RE024MWAB-C2087         098205         69           TZ1RE024MWABR         083233         64           TZ1RE024MWABRC2100         096051         85           TZ1RE024MWFGRC1925         089465         64           TZ1RE024RC18VAB         084243         68           TZ1RE024RC18VAB         084243         68           TZ1RE024RC18VAB-092999         092999         77           TZ1RE024RC18VAB-093863         093863         72           TZ1RE024RC18VAB-01803         091063         87           TZ1RE024RC18VAB-C1823         088091         75           TZ1RE024RC18VAB-C1828         090353         79           TZ1RE024RC18VAB-C1828         090353         79           TZ1RE024RC18VAB-C1828         090353         79           TZ1RE024RC18VAB-C2123         097348         84           TZ1RE024RC18VAB-C2123         097348         84           TZ1RE024SR11         070826         66           TZ1RE024SR11-093861         073861         71           TZ1RE024SR11-093861         073861         71           TZ1RE024SR11-C1846         070824         83           TZ1RE024SR11-C1846         070824         83           TZ1RE024SR6	TZ1RE024MVAB-C1828	089469	78
TZ1RE024MVAB-RC2100 096051 85 TZ1RE024MVAB-RC2100 096051 85 TZ1RE024MVAB-RC1925 089465 64 TZ1RE024PGGR8C 059920 70 TZ1RE024PC18VAB 084243 68 TZ1RE024RC18VAB-093863 093863 72 TZ1RE024RC18VAB-093863 093863 72 TZ1RE024RC18VAB-C1803 091063 87 TZ1RE024RC18VAB-C1823 088091 75 TZ1RE024RC18VAB-C1823 088091 75 TZ1RE024RC18VAB-C1828 090353 79 TZ1RE024RC18VAB-C1828 090353 79 TZ1RE024RC18VAB-C1828 090353 79 TZ1RE024RC18VAB-C1937 074261 77 TZ1RE024RC18VAB-C1937 074261 77 TZ1RE024RC18VAB-C2123 097348 84 TZ1RE024RC18VAB-C2123 097348 84 TZ1RE024SR11-093861 093861 71 TZ1RE024SR11-094343 094343 76 TZ1RE024SR11-094343 094343 76 TZ1RE024SR11-C1684 070884 83 TZ1RE024SR11-C1684 070884 83 TZ1RE024SR1-C1684 070884 83 TZ1RE024SR1-C1684 070884 83 TZ1RE024SR6-C1638 070529 65 TZ1RE024SR6-C1638 070529 65 TZ1RE024SR6-C1677 059692 71 TZ1RE110M-R 089448 64 TZ1RE120M-R 089445 64 TZ1RE220M-R 089455 74 TZ2LE024M-C1816 087992 74 TZ2LE024M-C1818 089455 74 TZ2LE024M-R 089455 74 TZ2LE024M-R 089455 77 TZ2LE024M-R 089455 77 TZ2LE024M-R 089455 77 TZ2LE024M-R 089456 079 TZ2LE024M-R 089456 079 TZ2LE024M-R 089456 079 TZ2LE024M-R 089455 77 TZ2LE024M-R 089456 079 TZ2LE024M-R 089456 079 TZ2LE024M-R 089455 77 TZ2LE024SR6-C1638 0750955 77 TZ2LE024SR6-C1638		096488	80
TZ1RE024MVFaRC190         096051         85           TZ1RE024MVFaRC1925         089465         64           TZ1RE024PGOR8C         059920         70           TZ1RE024PGOR8C         059920         70           TZ1RE024RC18VAB         084243         68           TZ1RE024RC18VAB-093863         093863         72           TZ1RE024RC18VAB-093863         093863         72           TZ1RE024RC18VAB-C1823         098091         75           TZ1RE024RC18VAB-C1828         090353         79           TZ1RE024RC18VAB-C1828         090353         79           TZ1RE024RC18VAB-C123         097348         84           TZ1RE024RC18VAB-C2123         097348         84           TZ1RE024RC18VAB-C2123         097348         84           TZ1RE024RC18VAB-C213         097348         84           TZ1RE024RC18VAB-C2140         098298         81           TZ1RE024SR11         070826         66           6         70         70           TZ1RE024SR11-093861         093861         71           TZ1RE024SR11-C1684         070824         83           TZ1RE024SR11-C1816         077042         75           TZ1RE024SR6         046190 <t< td=""><td>TZ1RE024MVAB-C2087</td><td>098205</td><td>69</td></t<>	TZ1RE024MVAB-C2087	098205	69
TZ1RE024MVFG-RC1925         089465         64           TZ1RE024PGOR8C         059920         70           TZ1RE024RC18VAB         084243         68           TZ1RE024RC18VAB-092999         092999         77           TZ1RE024RC18VAB-093863         093863         72           TZ1RE024RC18VAB-C1823         088091         75           TZ1RE024RC18VAB-C1826         084247         68           TZ1RE024RC18VAB-C1828         090353         79           TZ1RE024RC18VAB-C1828         090353         79           TZ1RE024RC18VAB-C1828         090353         79           TZ1RE024RC18VAB-C1937         074261         77           TZ1RE024RC18VAB-C2123         097348         84           TZ1RE024RC18VAB-C2140         098298         81           TZ1RE024SR11         070826         66           TZ1RE024SR11-093861         070826         66           TZ1RE024SR11-09343         094343         76           TZ1RE024SR11-09343         094343         76           TZ1RE024SR11-C1816         077042         75           TZ1RE024SR6         046190         65           TZ1RE024SR6-C1638         070529         65           TZ1RE024SR6-C16677			
TZ1RE024PG0R8C         059920         70           TZ1RE024RC18VAB         084243         68           TZ1RE024RC18VAB-092999         092999         77           TZ1RE024RC18VAB-093863         093863         72           TZ1RE024RC18VAB-C1803         091063         87           TZ1RE024RC18VAB-C1823         088091         75           TZ1RE024RC18VAB-C1828         090353         79           TZ1RE024RC18VAB-C1937         074261         77           TZ1RE024RC18VAB-C2123         097348         84           TZ1RE024RC18VAB-C2123         097348         84           TZ1RE024SR11         070826         66           TZ1RE024SR11-093861         093861         71           TZ1RE024SR11-094343         094343         76           TZ1RE024SR11-C1684         070844         83           TZ1RE024SR11-C1816         077042         75           TZ1RE024SR6         046190         65           TZ1RE024SR6-C1638         070529         65           TZ1RE024SR6-C1677         059692         71           TZ1RE110M         083161         64           TZ1RE12OM         083167         64           TZ1RE22OM         083167         64 </td <td>TZ1RE024MVAB-RC2100</td> <td>096051</td> <td>85</td>	TZ1RE024MVAB-RC2100	096051	85
TZ1RE024RC18VAB         084243         68           TZ1RE024RC18VAB-092999         092999         77           TZ1RE024RC18VAB-093863         093863         72           TZ1RE024RC18VAB-C1803         091063         87           TZ1RE024RC18VAB-C1823         088091         75           TZ1RE024RC18VAB-C1826         084247         68           TZ1RE024RC18VAB-C1828         090353         79           TZ1RE024RC18VAB-C1937         074261         77           TZ1RE024RC18VAB-C2123         097348         84           TZ1RE024RC18VAB-C2140         098298         81           TZ1RE024SR11         070826         66           TZ1RE024SR11-093861         093861         71           TZ1RE024SR11-09343         094343         76           TZ1RE024SR11-C1684         070884         83           TZ1RE024SR11-C1816         077042         75           TZ1RE024SR6         046190         65           TZ1RE024SR6-C1638         070529         65           TZ1RE024SR6-C1638         070529         65           TZ1RE10M-R         083161         64           TZ1RE110M-R         089448         64           TZ1RE220M         083167	TZ1RE024MVFG-RC1925	089465	
TZ1RE024RC18VAB-092999         77           TZ1RE024RC18VAB-093863         093863         72           TZ1RE024RC18VAB-C1803         091063         87           TZ1RE024RC18VAB-C1823         088091         75           TZ1RE024RC18VAB-C1826         084247         68           TZ1RE024RC18VAB-C1828         090353         79           TZ1RE024RC18VAB-C1937         074261         77           TZ1RE024RC18VAB-C2123         097348         84           TZ1RE024RC18VAB-C2123         097348         84           TZ1RE024RC118VAB-C2140         098298         81           TZ1RE024SR11         070826         66           TZ1RE024SR11-093861         093861         71           TZ1RE024SR11-093443         094343         76           TZ1RE024SR11-C1684         070884         83           TZ1RE024SR1-C1684         070884         83           TZ1RE024SR6         046190         65           TZ1RE024SR6         046190         65           TZ1RE024SR6-C1638         070529         65           TZ1RE110M-R         089448         64           TZ1RE110M-R         089448         64           TZ1RE220M         083167         64			
TZ1RE024RC18VAB-093863         72           TZ1RE024RC18VAB-C1803         091063         87           TZ1RE024RC18VAB-C1823         088091         75           TZ1RE024RC18VAB-C1826         084247         68           TZ1RE024RC18VAB-C1828         090353         79           TZ1RE024RC18VAB-C1937         074261         77           TZ1RE024RC18VAB-C2123         097348         84           TZ1RE024RC18VAB-C2140         098298         81           TZ1RE024SR11         070826         66           TZ1RE024SR11-093861         093861         71           TZ1RE024SR11-094343         094343         76           TZ1RE024SR11-C1684         070884         83           TZ1RE024SR11-C1816         077042         75           TZ1RE024SR11-C1816         077042         75           TZ1RE024SR6         046190         65           TZ1RE024SR6-C1638         070529         65           TZ1RE024SR6-C1638         070529         65           TZ1RE110M         083161         64           TZ1RE110MR         083448         64           TZ1RE110MVAB         088024         64           TZ1RE110MVAB         088024         64 <t< td=""><td></td><td></td><td></td></t<>			
TZ1RE024RC18VAB-C1803         091063         87           TZ1RE024RC18VAB-C1823         088091         75           TZ1RE024RC18VAB-C1826         084247         68           TZ1RE024RC18VAB-C1828         090353         79           TZ1RE024RC18VAB-C1937         074261         77           TZ1RE024RC18VAB-C2123         097348         84           TZ1RE024RC18VAB-C2140         098298         81           TZ1RE024SR11         070826         66           TZ1RE024SR11-093861         093861         71           TZ1RE024SR11-094343         094343         76           TZ1RE024SR11-C1684         070884         83           TZ1RE024SR1-C1816         077042         75           TZ1RE024SR1-C183         083231         66           TZ1RE024SR6         046190         65           TZ1RE024SR6-C1638         070529         65           TZ1RE024SR6-C16638         070529         65           TZ1RE110M         083161         64           TZ1RE110MR         083161         64           TZ1RE110MVAB-C2082         095103         80           TZ1RE220M         083167         64           TZ1RE220MAP         088030         64			
TZ1RE024RC18VAB-C1823         088091         75           TZ1RE024RC18VAB-C1826         084247         68           TZ1RE024RC18VAB-C1828         090353         79           TZ1RE024RC18VAB-C1937         074261         77           TZ1RE024RC18VAB-C2123         097348         84           TZ1RE024RC18VAB-C2140         098298         81           TZ1RE024SR11         070826         66           TZ1RE024SR11-093861         093861         71           TZ1RE024SR11-094343         094343         76           TZ1RE024SR11-C1684         070884         83           TZ1RE024SR11-C1816         077042         75           TZ1RE024SR6         046190         65           TZ1RE024SR6-C1638         070529         65           TZ1RE024SR6-C1638         070529         65           TZ1RE024SR6-C1677         059692         71           TZ1RE110M         083161         64           TZ1RE110WAB-C2082         095103         80           TZ1RE110SR6         046191         65           TZ1RE20M         083167         64           TZ1RE220MAB         088030         64           TZ1RE220MYAB         088030         64			
TZ1RE024RC18VAB-C1826         084247         68           TZ1RE024RC18VAB-C1828         090353         79           TZ1RE024RC18VAB-C1937         074261         77           TZ1RE024RC18VAB-C2123         097348         84           TZ1RE024RC18VAB-C2140         098298         81           TZ1RE024SR11         070826         66           EZ1RE024SR11-093861         093861         71           TZ1RE024SR11-093433         094343         76           TZ1RE024SR11-C1816         077042         75           TZ1RE024SR11-C1816         077042         75           TZ1RE024SR6         046190         65           TZ1RE024SR6-C1638         070529         65           TZ1RE024SR6-C1638         070529         65           TZ1RE024SR6-C1677         059692         71           TZ1RE110M         083161         64           TZ1RE110WAB         088024         64           TZ1RE110WAB         088024         64           TZ1RE20M         083167         64           TZ1RE220M         083167         64           TZ1RE220MAB         088030         64           TZ2LE024MAC1815         089460         78			
TZ1RE024RC18VAB-C1828         090353         79           TZ1RE024RC18VAB-C1937         074261         77           TZ1RE024RC18VAB-C2123         097348         84           TZ1RE024SR11         070826         66           TZ1RE024SR11-093861         093861         71           TZ1RE024SR11-094343         094343         76           TZ1RE024SR1-C1684         070884         83           TZ1RE024SR1-C1816         077042         75           TZ1RE024SR1VAB-C1933         083231         66           TZ1RE024SR6         046190         65           TZ1RE024SR6-C1638         070529         65           TZ1RE10M         083161         64           TZ1RE110MR         083161         64           TZ1RE110MR         089448         64           TZ1RE110MVAB         088024         64           TZ1RE110MVAB-C2082         095103         80           TZ1RE220M         083167         64           TZ1RE220MVAB         088030         64           TZ1RE220MVAB         088030         64           TZ1RE2024MC1816         087992         74           TZ2LE024MC1816         087992         74           TZ2LE02			
TZ1RE024RC18VAB-C1937         074261         77           TZ1RE024RC18VAB-C2123         097348         84           TZ1RE024RC18VAB-C2140         098298         81           TZ1RE024SR11         070826         66           TZ1RE024SR11-093861         093861         71           TZ1RE024SR11-094343         094343         76           TZ1RE024SR11-C1816         077042         75           TZ1RE024SR11-C1816         077042         75           TZ1RE024SR11VAB-C1933         083231         66           TZ1RE024SR6         046190         65           TZ1RE024SR6-C1638         070529         65           TZ1RE024SR6-C1677         059692         71           TZ1RE110M         083161         64           TZ1RE110MR         089448         64           TZ1RE110MAB-C2082         095103         80           TZ1RE110SR6         046191         65           TZ1RE220M         083167         64           TZ1RE220MVAB         088030         64           TZ1RE220MVAB         088030         64           TZ2LE024M-C1815         089460         78           TZ2LE024M-C1816         087992         74           <			
TZ1RE024RC18VAB-C2123         097348         84           TZ1RE024RC18VAB-C2140         098298         81           TZ1RE024SR11         070826         66           TZ1RE024SR11-093861         093861         71           TZ1RE024SR11-094343         094343         76           TZ1RE024SR11-C1816         077042         75           TZ1RE024SR11VAB-C1933         083231         66           TZ1RE024SR6         046190         65           TZ1RE024SR6-C1638         070529         65           TZ1RE024SR6-C1677         059692         71           TZ1RE110M-R         089448         64           TZ1RE110MVAB         088024         64           TZ1RE110WAB         088024         64           TZ1RE220M         083167         64           TZ1RE220MVAB         088030         64           TZ1RE220MVAB         088030         64           TZ2LE024BHA-C1903         082083         70           TZ2LE024M-C1815         089460         78           TZ2LE024M-C1816         087992         74           TZ2LE024M-R         089445         64           TZ2LE024M-R         089455         74           TZ2LE024RV			
TZ1RE024RC18VAB-C2140         098298         81           TZ1RE024SR11         070826         66           TZ1RE024SR11-093861         093861         71           TZ1RE024SR11-094343         094343         76           TZ1RE024SR11-C1684         070884         83           TZ1RE024SR11-C1816         077042         75           TZ1RE024SR11VAB-C1933         083231         66           TZ1RE024SR6         046190         65           TZ1RE024SR6-C1638         070529         65           TZ1RE024SR6-C1677         059692         71           TZ1RE110M         083161         64           TZ1RE110MR         089448         64           TZ1RE110MVAB         088024         64           TZ1RE110SR6         046191         65           TZ1RE220M         083167         64           TZ1RE220MVAB         088030         64           TZ1RE220SR6         051879         65           TZ2LE024BHA-C1903         082083         70           TZ2LE024M-C1815         089460         78           TZ2LE024M-C1816         087992         74           TZ2LE024M-C1816         087992         74           TZ2LE024M-C18			
TZ1RE024SR11         070826         66           TZ1RE024SR11-093861         093861         71           TZ1RE024SR11-094343         094343         76           TZ1RE024SR11-C1684         070884         83           TZ1RE024SR11-C1816         077042         75           TZ1RE024SR11VAB-C1933         083231         66           TZ1RE024SR6         046190         65           TZ1RE024SR6-C1638         070529         65           TZ1RE10M         083161         64           TZ1RE110M-R         089448         64           TZ1RE110M-R         089448         64           TZ1RE110MVAB         088024         64           TZ1RE110MVAB-C2082         095103         80           TZ1RE110SR6         046191         65           TZ1RE220M         083167         64           TZ1RE220MVAB         088030         64           TZ1RE22OMVAB         088030         64           TZ2LE024M-C1815         089460         78           TZ2LE024M-C1816         087992         74           TZ2LE024M-R         089445         64           TZ2LE024M-R         089445         64           TZ2LE024R-C18VAB-C1828			
TZ1RE024SR11-093861         71           TZ1RE024SR11-094343         094343         76           TZ1RE024SR11-C1684         070884         83           TZ1RE024SR11-C1816         077042         75           TZ1RE024SR6         046190         65           TZ1RE024SR6-C1638         070529         65           TZ1RE024SR6-C1677         059692         71           TZ1RE110M         083161         64           TZ1RE110M-R         089448         64           TZ1RE110MVAB         088024         64           TZ1RE110SR6         046191         65           TZ1RE220M         083167         64           TZ1RE220MVAB         088030         64           TZ1RE22OMVAB         088030         64           TZ1RE22OSR6         051879         65           TZ2LE024BHA-C1903         082083         70           TZ2LE024M-C1815         089460         78           TZ2LE024M-R         089455         74           TZ2LE024MVAB         088070         64           TZ2LE024MVAB-C1823         089455         74           TZ2LE024RC18VAB-C1828         087290         78           TZ2LE024RC18VAB-C1828         093103<			
TZ1RE024SR11-094343         094343         76           TZ1RE024SR11-C1684         070884         83           TZ1RE024SR11-C1816         077042         75           TZ1RE024SR6         046190         65           TZ1RE024SR6-C1638         070529         65           TZ1RE024SR6-C1677         059692         71           TZ1RE110M         083161         64           TZ1RE110M-R         089448         64           TZ1RE110MVAB         088024         64           TZ1RE110SR6         046191         65           TZ1RE220M         083167         64           TZ1RE22ONVAB         088030         64           TZ1RE22OSR6         051879         65           TZ2LE024BHA-C1903         082083         70           TZ2LE024M-C1815         089460         78           TZ2LE024M-C1816         087992         74           TZ2LE024M-R         089445         64           TZ2LE024MVAB-C1823         089455         74           TZ2LE024MVAB-C1828         087290         78           TZ2LE024MVAB-C1828         093103         79           TZ2LE024RC18VAB-C1828         093103         79           TZ2LE024SR11 </td <td></td> <td></td> <td></td>			
TZ1RE024SR11-C1684         070884         83           TZ1RE024SR11-C1816         077042         75           TZ1RE024SR6         046190         65           TZ1RE024SR6-C1638         070529         65           TZ1RE024SR6-C1677         059692         71           TZ1RE110M         083161         64           TZ1RE110M-R         089448         64           TZ1RE110MVAB         088024         64           TZ1RE110MVAB-C2082         095103         80           TZ1RE110SR6         046191         65           TZ1RE220M         083167         64           TZ1RE220SR6         051879         65           TZ2LE024BHA-C1903         082083         70           TZ2LE024M         090559         64           TZ2LE024M-C1815         089460         78           TZ2LE024M-R         089445         64           TZ2LE024MVAB         088070         64           TZ2LE024MVAB         088070         64           TZ2LE024MVAB         089455         74           TZ2LE024MVAB-C1828         087290         78           TZ2LE024RC18VAB-C1828         093103         79           TZ2LE024RC18VAB-C1828			
TZ1RE024SR11-C1816         077042         75           TZ1RE024SR11VAB-C1933         083231         66           TZ1RE024SR6         046190         65           TZ1RE024SR6-C1638         070529         65           TZ1RE024SR6-C1677         059692         71           TZ1RE110M         083161         64           TZ1RE110M-R         089448         64           TZ1RE110MVAB         088024         64           TZ1RE110MVAB-C2082         095103         80           TZ1RE110SR6         046191         65           TZ1RE220M         083167         64           TZ1RE220SR6         051879         65           TZ2LE024BHA-C1903         082083         70           TZ2LE024HM         090559         64           TZ2LE024M-C1815         089460         78           TZ2LE024M-C1816         087992         74           TZ2LE024M-R         089445         64           TZ2LE024MVAB         088070         64           TZ2LE024MVAB-C1823         089455         74           TZ2LE024MVAB-C1828         087290         78           TZ2LE024RC18VAB-C1828         093103         79           TZ2LE024RC18VAB-C182			
TZ1RE024SR11VAB-C1933         083231         66           TZ1RE024SR6         046190         65           TZ1RE024SR6-C1638         070529         65           TZ1RE024SR6-C1677         059692         71           TZ1RE110M         083161         64           TZ1RE110M-R         089448         64           TZ1RE110MVAB         088024         64           TZ1RE110MVAB-C2082         095103         80           TZ1RE110SR6         046191         65           TZ1RE220M         083167         64           TZ1RE220SR6         051879         65           TZ2LE024BHA-C1903         082083         70           TZ2LE024M         090559         64           TZ2LE024M-C1815         089460         78           TZ2LE024M-C1816         087992         74           TZ2LE024M-R         089445         64           TZ2LE024MVAB         088070         64           TZ2LE024MVAB-C1823         089455         74           TZ2LE024RC18VAB-C1828         087290         78           TZ2LE024RC18VAB-C1828         093103         79           TZ2LE024RC18VAB-C1828         093103         79           TZ2LE024SR11 <td></td> <td></td> <td></td>			
TZ1RE024SR6         046190         65           TZ1RE024SR6-C1638         070529         65           TZ1RE024SR6-C1677         059692         71           TZ1RE110M         083161         64           TZ1RE110M-R         089448         64           TZ1RE110MVAB         088024         64           TZ1RE110MVAB-C2082         095103         80           TZ1RE110SR6         046191         65           TZ1RE220M         083167         64           TZ1RE220MVAB         088030         64           TZ1RE220SR6         051879         65           TZ2LE024BHA-C1903         082083         70           TZ2LE024M         090559         64           TZ2LE024M-C1815         089460         78           TZ2LE024M-C1816         087992         74           TZ2LE024M-R         089445         64           TZ2LE024MVAB         088070         64           TZ2LE024MVAB-C1823         089455         74           TZ2LE024RC18VAB-C1828         087290         78           TZ2LE024RC18VAB-C1828         093103         79           TZ2LE024RC18VAB-C1828         093103         79           TZ2LE024SR1			
TZ1RE024SR6-C1638         070529         65           TZ1RE024SR6-C1677         059692         71           TZ1RE110M         083161         64           TZ1RE110M-R         089448         64           TZ1RE110MVAB         088024         64           TZ1RE110MVAB-C2082         095103         80           TZ1RE110SR6         046191         65           TZ1RE220M         083167         64           TZ1RE220SR6         051879         65           TZ2LE024BHA-C1903         082083         70           TZ2LE024M         090559         64           TZ2LE024M-C1815         089460         78           TZ2LE024M-C1816         087992         74           TZ2LE024M-R         089445         64           TZ2LE024MVAB         088070         64           TZ2LE024MVAB-C1823         089455         74           TZ2LE024RC18VAB-C1828         087290         78           TZ2LE024RC18VAB-C1828         093103         79           TZ2LE024RC18VAB-C1828         093103         79           TZ2LE024SR11         070958         66           TZ2LE024SR6-C1638         076294         65           TZ2LE024SR6-C1638<			
TZ1RE024SR6-C1677         059692         71           TZ1RE110M         083161         64           TZ1RE110M-R         089448         64           TZ1RE110MVAB         088024         64           TZ1RE110MVAB-C2082         095103         80           TZ1RE110SR6         046191         65           TZ1RE220M         083167         64           TZ1RE220SR6         051879         65           TZ2LE024BHA-C1903         082083         70           TZ2LE024M         090559         64           TZ2LE024M-C1815         089460         78           TZ2LE024M-C1816         087992         74           TZ2LE024M-R         089445         64           TZ2LE024MVAB         088070         64           TZ2LE024MVAB-C1823         089455         74           TZ2LE024RC18VAB-C1828         087290         78           TZ2LE024RC18VAB-C1828         093103         79           TZ2LE024RC18VAB-C1828         093103         79           TZ2LE024SR11         070958         66           TZ2LE024SR6-C1638         076294         65           TZ2LE024SR6-C1638         076294         65           TZ2LE024SR6-C1638<			
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TZ1RE110M-R         089448         64           TZ1RE110MVAB         088024         64           TZ1RE110MVAB-C2082         095103         80           TZ1RE110SR6         046191         65           TZ1RE220M         083167         64           TZ1RE220MVAB         088030         64           TZ1RE220SR6         051879         65           TZ2LE024BHA-C1903         082083         70           TZ2LE024M         090559         64           TZ2LE024M-C1815         089460         78           TZ2LE024M-C1816         087992         74           TZ2LE024M-R         089445         64           TZ2LE024MVAB         088070         64           TZ2LE024MVAB-C1823         089455         74           TZ2LE024RC18VAB-C1828         087290         78           TZ2LE024RC18VAB-C1828         093103         79           TZ2LE024RC18VAB-C1828         093103         79           TZ2LE024SR11         070958         66           TZ2LE024SR6         049159         65           TZ2LE024SR6-C1638         076294         65           TZ2LE024SR6-C1638         076294         65           TZ2LE010MVAB			
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TZ2LE024M-C1816         087992         74           TZ2LE024M-R         089445         64           TZ2LE024MVAB         088070         64           TZ2LE024MVAB-C1823         089455         74           TZ2LE024MVAB-C1828         087290         78           TZ2LE024RC18VAB-C1803         075955         87           TZ2LE024RC18VAB-C1826         085180         68           TZ2LE024RC18VAB-C1828         093103         79           TZ2LE024RC18VAB-C1937         100778         77           TZ2LE024SR11         070958         66           TZ2LE024SR11-C1815         079660         79           TZ2LE024SR6         049159         65           TZ2LE024SR6-C1638         076294         65           TZ2LE024SR6-C1677         059852         71           TZ2LE110M         083162         64           TZ2LE110MVAB         088025         64	TZ2LE024M	090559	64
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TZZLE024MVAB-C1828         087290         78           TZZLE024RC18VAB-C1803         075955         87           TZZLE024RC18VAB-C1826         085180         68           TZZLE024RC18VAB-C1828         093103         79           TZLE024RC18VAB-C1937         100778         77           TZLE024SR11         070958         66           TZ2LE024SR11-C1815         079660         79           TZ2LE024SR6         049159         65           TZ2LE024SR6-C1638         076294         65           TZ2LE024SR6-C1677         059852         71           TZ2LE110M         083162         64           TZ2LE110MVAB         088025         64			
TZ2LE024RC18VAB-C1803         075955         87           TZ2LE024RC18VAB-C1826         085180         68           TZ2LE024RC18VAB-C1828         093103         79           TZ2LE024RC18VAB-C1937         100778         77           TZ2LE024SR11         070958         66           TZ2LE024SR11-C1815         079660         79           TZ2LE024SR6         049159         65           TZ2LE024SR6-C1638         076294         65           TZ2LE024SR6-C1677         059852         71           TZ2LE110M         083162         64           TZ2LE110MVAB         088025         64	TZ2LE024MVAB-C1823	089455	
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012044	Roller arm NHBC569	139	059694	TZ1LE024SR6-C1677
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013178	SR6K	128	059852	TZ2LE024SR6-C1677
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024299	HINGED ACTUATOR-Z-R	119	070529	TZ1RE024SR6-C1638
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043296	NZ2VZ-538EC1420	56	073455	M5X10/V100
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