Installation instructions (translation from original)

SIN 1 xxx / SIN2 xxx

83.xxx.xxxx

Safety switch with separate actuator and guard lock

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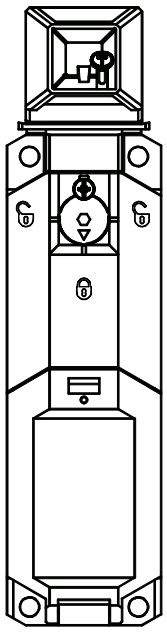
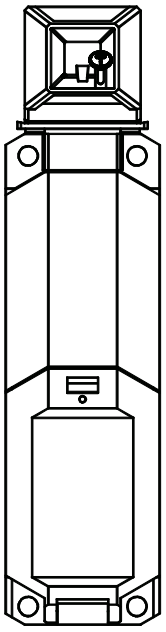
SIN 1...



SIN 2...



Safety switch identification

SIN X X X 0

Lock
- 1 = Spring force lock
- 2 = Magnet force lock

Design
- 1 = AC/DC 24V
- 2 = AC 115/230 V
- 3 = AC/DC 24V + LED

Contacts
- 2 = two NC + two NC contacts
- 3 = two NC + one NC/one NO contact
- 5 = one NC/one NO + one NC/one NO contact

Type description

Article number
Please quote this article number in all correspondence and when placing orders with Wieland Electric GmbH.

Production year
WW/JJ
week/year

CAUTION

- Only trained electricians may install and commission this device. They must have read and understood this instruction manual before they carry out installation.
- Do not open the device. Do not insert any foreign objects. Keep the device away from water and fire.
- Only connect or disconnect the device if it has been de-energised.
- The relevant standards, directives, regulations and provisions of the particular country are to be observed. Installation, commissioning, modification and retrofitting must only be performed by a qualified electrician.
- In the case of improper use or any use other than for the intended purpose, the device must no longer be used and any warranty claim is void. Invalidating causes can be: strong mechanical loading of the device, such as occur when falling or voltages, currents, temperatures, humidity outside the specifications.

DANGER

Improper installation or manipulation of the safety switch renders the personal protection function useless and can cause serious injury or accidental death.

NOTE

Failure to follow these instructions (intended use, safety instructions, installation and connection by trained personnel, safe function test) will invalidate any liability.

1 Intended use

SIN safety switches are locking fixtures with an electromechanical latching device and low level coding according to EN ISO 14119. Interacting with the control system of a machine they are used to monitor the position of moving safety guards.

In connection with the safety switches SIN, moving safety guards can only be opened if no hazardous conditions are present.

The actuating signals in relation to hazardous situations are only effective when the safety guard is in active position and the latching device is in lock position.

Standards governing installation and operation:

- EN ISO 13849-1 Safety components of control systems
- EN 14119 Locking devices in connection with separating safety guards
- EN 60 204-1 Electrical machine equipment

Risk assessment at the machine in accordance with:

- EN ISO 13849-1 Safety components of control systems
- EN ISO 12100 Machine safety, risk assessment

The safety switch can be installed in any position that enables access to the auxiliary release mechanism as well as its inspection and, if necessary, replacement by authorised technical personnel.

2 Installation

ATTENTION

- Do not use the safety switch and actuator as a stop!
- Foreign particles must be prevented from entering the actuator opening when the safety guard is open.
- Installation must be carried out in accordance with EN ISO 14119. Particular attention must be paid to measures designed to reduce the possibilities of bypassing the system.
- To maintain the safety level, the actuators can only be ordered with the belonging safety switch in one unit.
- Replacement actuators and keys have to be securely monitored. The same applies to keys for resetting the emergency release or escape release function.
- The safety switch must not to be used as mechanical limit stop.
- The SLK safety position switch with escape release option must be installed within the hazardous area.
- The escape release option can only be used in order to quit the hazardous area in case of a system failure.
- The escape release must be on the escape side.

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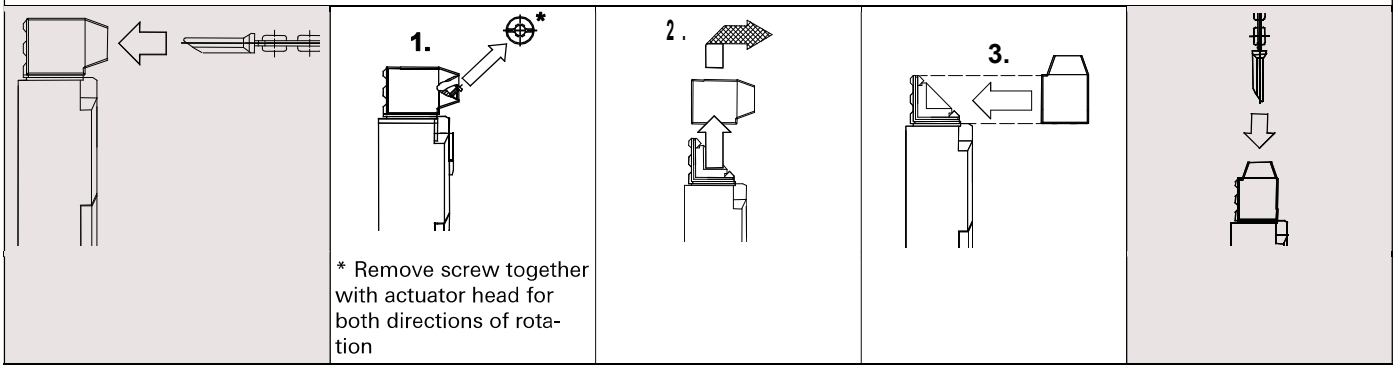
2.1 Aligning actuator head

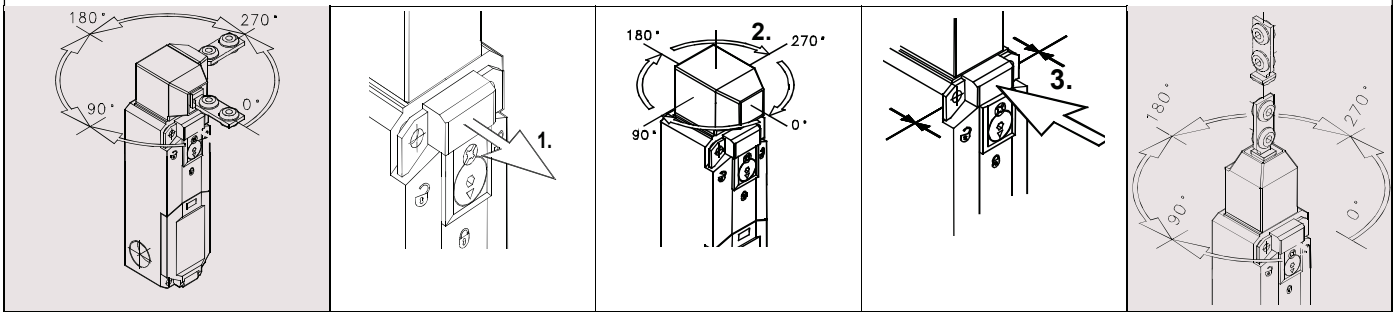
Horizontal H	Procedure	Vertical V

1. Choose approach direction

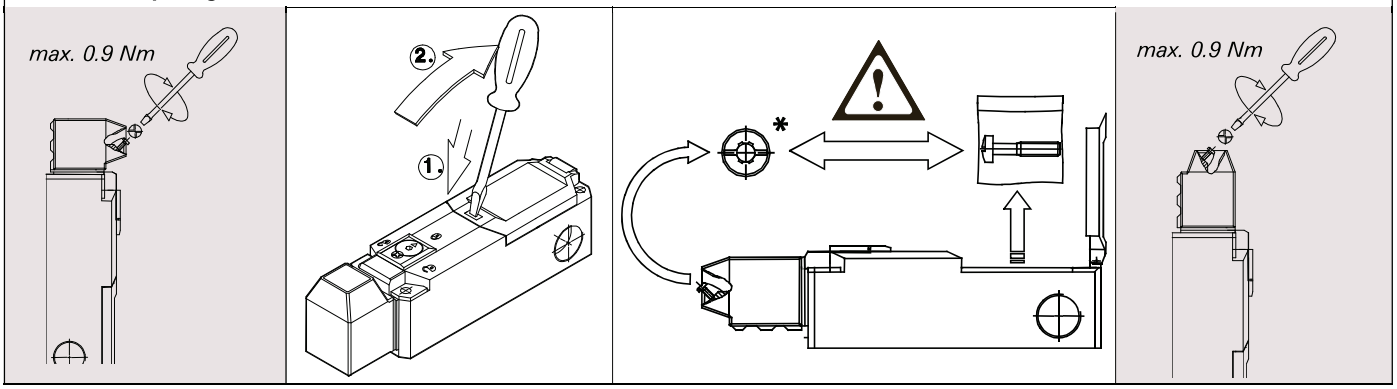


* Remove screw together with actuator head for both directions of rotation

2. Turn head 4 × 90°



3. Anti-tampering device



CAUTION

Exceeding the maximum torque of 0.9 Nm or fitting the actuator in such a way as to cause shearing force may irreparably damage the actuator on the switching device.
⇒⇒ **Loss of personal protection function**

* Replace screw with actuator head for both directions of rotation by the one-way screw supplied with the switch

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2.2 Securing the switch / actuator

1. Secure switching device that it is positively locked (see Fig. 1 for dimensions). The mounting surface must be flat (even).
2. Fit actuator such that the moulded end of the actuator is flush with the edge of the enclosure (see "STOP" mark in illustrations below).

   Align actuator with the safety guard such that shearing forces cannot affect the actuator head even after repeated opening/ closing.
3. Permanently attach the actuator to the safety guard with a rivet or one-way screws.

3 Actuators and dimensions

The actuator is **not included** in the scope of delivery and must be ordered separately.

CAUTION
To maintain the safety level, the actuators should only be ordered and installed as a unit together with the corresponding safety switch.

All dimensions in millimetres.

SIN 9001 (Standard)

The positive lock mounting must be made with ⌀ 12 M4 screws (ISO7093/DIN 9021)!

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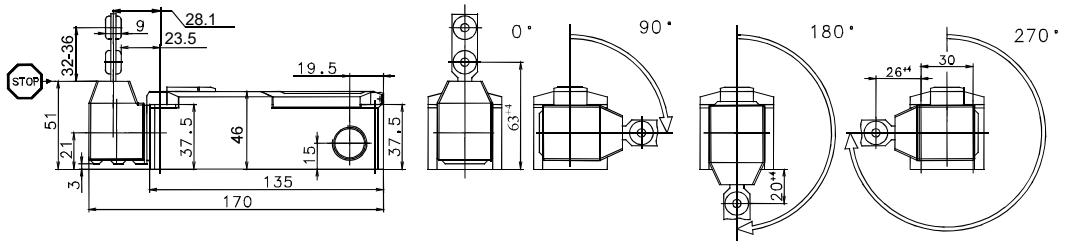

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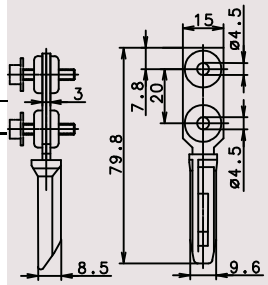

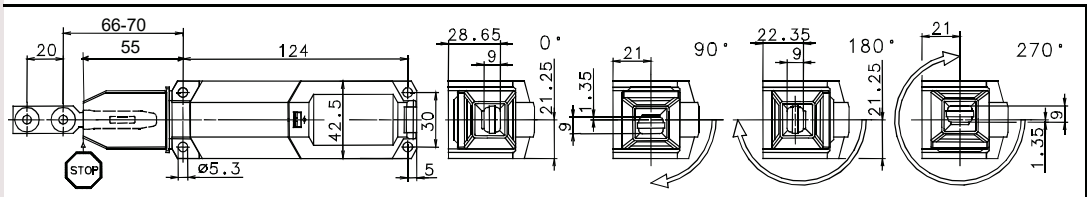

SIN 9003 (radius with dust cap)

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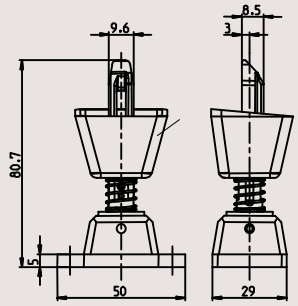

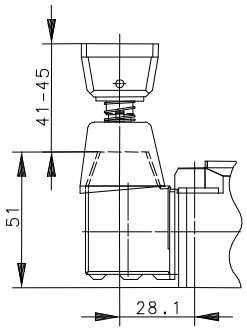

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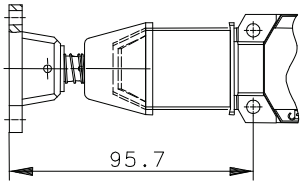
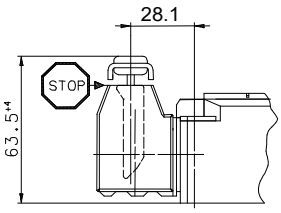
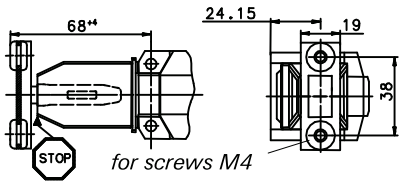


SIN 9005 (transverse actuator with rubber grommets)

Must be installed with supplied washers ⌀ 15 / t=1.5 / ⌀ 4.3!





* Dust cap

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SIN 9004 (flexible)

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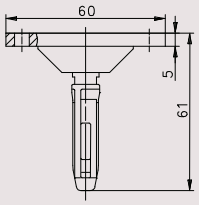

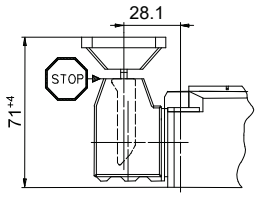

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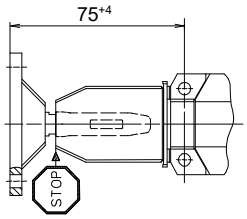

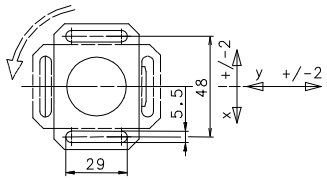

SIN 9002 (radius)

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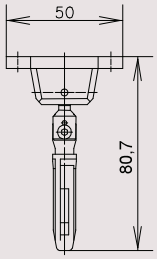

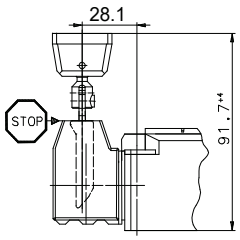

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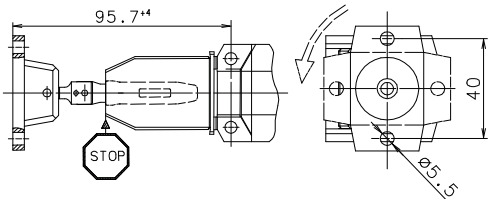
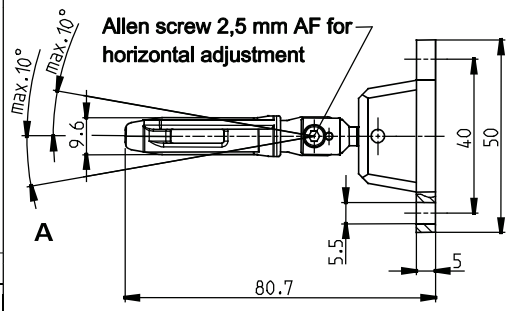
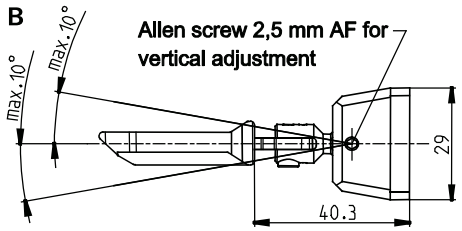


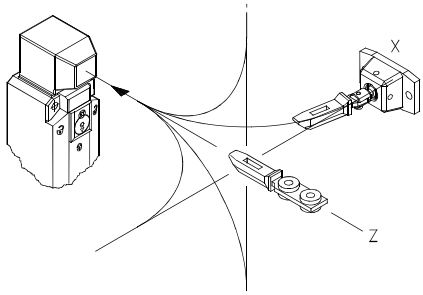
Presetting SIN 9002

Preset actuator only for position A **or** B!
Preset in such a way that the actuator can travel into the switch head without exerting shearing forces.



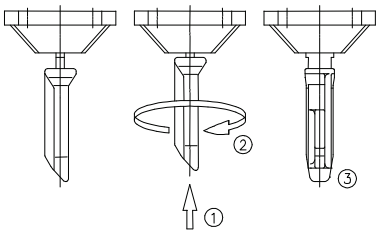


4 Approach radii



SIN 9001, 9003, 9005:	R min > 400mm
SIN 9004	R min > 350mm
SIN 9002	R min > 150mm

5 Changing the mounting surface for SIN 9002 and SIN 9004



Only possible before installation for SIN 9002.

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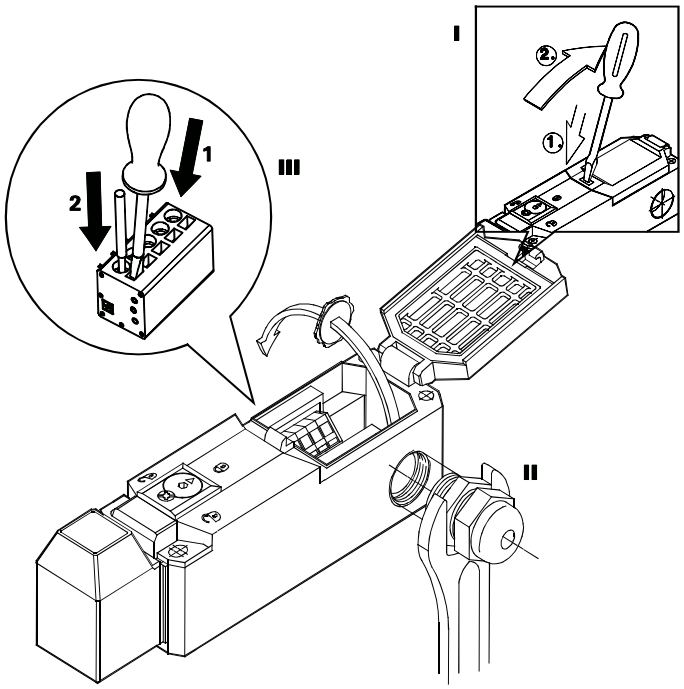
6 Electrical connection

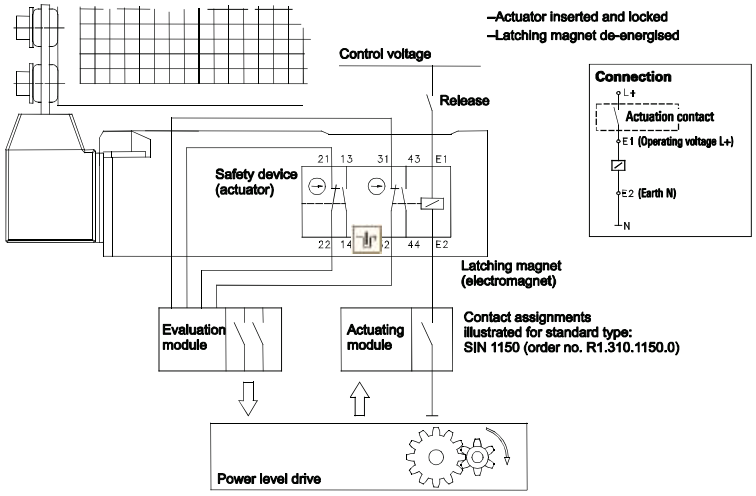
I Release snap-on cover with screw driver.
II Remove press-out blank by screwing in cable gland, remove plastic part.
III Connect to spring terminal
1) Insert screwdriver (2.5 mm blade) in lower opening.
2) Insert flexible cable with a cross section of 0.5 - 1.5 mm² into upper opening, remove screwdriver.
IV Close snap-on cover.



7 System description - Suggested application with redundant configuration also on the power level

NOTE
The overall control concept which includes the safety switch SIN must be validated by the end user/ machine designer in accordance with EN ISO 13849-2.

NOTE
The performance level in accordance with DIN EN 13849-1 is reduced if latching devices/position switches are connected in series. This is due the fact that fault recognition is reduced. The overall control concept, into which the position switch has been integrated, must be validated in accordance with DIN EN ISO 13849-2 or evaluated according to DIN EN 62061.



The safety gate is closed while the machine is operating. The actuator is inserted in the safety switch and locked. The enable circuits on the evaluation module are closed and the enable circuit on the actuating module is open. Suitable actuating or evaluation modules are for example the S4000 series devices or the samos and samos PRO safety systems.

It is necessary to reach behind the safety gate for maintenance purposes. The machine must be switched off by the operator beforehand. This causes the enable circuits on the evaluation module to open and the power level of the machine to be deactivated.

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Since the hazardous movement of the machine is not stopped immediately, the safety switch must not enable the actuator until the machine afterrunning has finished. This is ensured by a suitable actuating module such as a zero-speed relay or a delay module (timer).

The safety contacts (positively driven NC contact) prevent the machine from restarting when the safety gate is open. The additional NO contacts can be used as signalling contacts. In this case, these contact functions serve to improve the availability of the machine rather than safety.

If suitable evaluation modules are available, the NO contacts can be incorporated in the safety circuit as additional monitoring devices. The contact pair used for monitoring is positively switched by the actuator, so that the position of the safety gate is sensed directly.

The contact pair used for monitoring the locking device is positively connected to the locking bar so that a failure of the latching device is detected by the fail-safe controller. The integrated fail-safe principle prevents the locking device from being set to the locked position if the actuator is not yet inserted in the safety switch.

8 Technical Data

Output circuit			
Version		SIN 11…/13…/21…	SIN 12…/22…
Rated insulation voltage	U_I	250 V	
Rated surge withstand voltage strength	U_{IMP}	2.5 kV	
Conv. thermal current	I_{THE}	5 A	
Max. switch-on current (four contacts)		10 A	
Utilization category		AC-15, Ue /Ie 230 V / 2.5 A	
B10d		$2 \cdot 10^6$ cycles	
Mechanical life		max. $1 \cdot 10^6$ switching operations at max. 600 switching operations/h	
Positively driven opening	⊖	acc. to IEC/EN 60947-5-1, Annex K	
Rated conditional short-circuit current		1000 A	
Short-circuit protection		4 A gI	
Protection class		II	
Supply circuit E1, E2			
Operating cycles, permanent		600 / h	
Operating voltage		21.4…26.4 V AC/DC	85…115 / 195.5…253 V AC
Nominal frequency		43…63 Hz	
Duty factor		100% ED (to E1, E2)	
Thermal class		F (155°C)	
Switch-on power		12 VA (0,2 s)	65 VA (0,1 s)
Continuous power		4.4 VA	8 VA
Indicators			
LED (SIN 1330, 1350)		on: operating voltage normal	–
		flashes slowly: undervoltage	–
		flashes quickly: overvoltage	–
Mechanical data			
Enclosure		Thermoplast GV (UL94-V0)	
Cover		Thermoplast GV (UL94-V0)	
Actuator head		Thermoplast GV (UL94-V0) / Zn-GD	
Separate actuator		St/PA / Zn-GD	
Latching force F_{Zh}		max. 1500 N as per GS-ET-19	
Extraction force		min. 27 N	
Approach speed		max. V = 0.5 m/s	
Operating principle		max. four slow-action switching elements	
Mounting		4× M5	
Max. tightening torque		M = 2 Nm	
Cable entry		3× M20 × 1.5	
General data			
Ambient operating temperature, storage temperature		–25 °C to +70 °C	
Connector size spring-type terminal		0.5–1.5 mm^2 stranded (20–16 AWG)	
Stripping length		8 mm	
Weight		0.35 kg	
Installation position		Any	
Type of protection		IP67 as per IEC/EN 60529	
Standards		EN 60947-1, EN 60947-5-1 EN ISO 13849-1, EN 62061, EN ISO 14119	
Approvals		DGUV, cCSAus	

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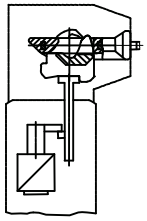
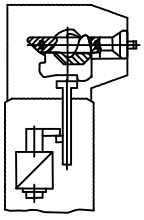
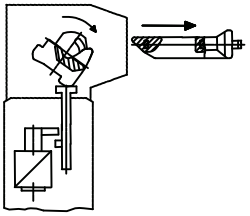
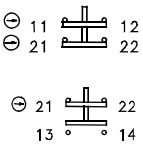
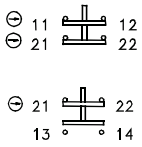
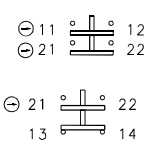
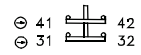
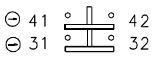
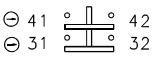
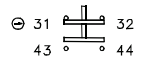
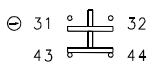
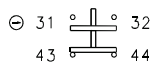
9 Circuit symbol and interlocking

	I	II	III
Mechanical function: I Actuator inserted and locked II Actuator inserted and unlocked III Actuator withdrawn			
Switching function 1: Safety device			
Switching function 2: Latching device (magnet)			
21 - 22, 31 - 32, 41 - 42			

Locking principle: Spring force (closed-circuit current)

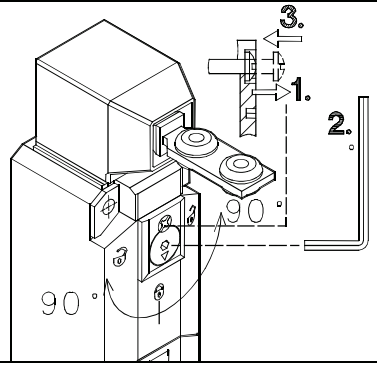
The safety guard is locked automatically when the actuator is inserted to its end position. The power supply to the electromagnet releases the lock and the safety guard can then be opened.

Locking principle: Magnetic force (working current)

The lock (latching device) is deactivated when the electromagnet is de-energised, in the event of fault in actuation or power failure. The safety guard can then be opened.

10 Mechanical Releases

Auxiliary release from front (SIN 1...)



1. Undo lock screw.
2. Turn release element by 90° with hexagon socket.
   The actuator can now be withdrawn.
   Turn release element back to original position.
3. Screw in lock screw and seal with screw locking compound (M = 0.5 Nm).

NOTE

The auxiliary release should only be operated by means of the WAF 3 hexagon socket if the latching device fails.
The access point must be sealed after installation (e.g. with locking compound).

If any defects are found, the complete switching device must be replaced.

11 Maintenance / Servicing

The switching device is maintenance-free.

For long and trouble-free operation, regular checks should be carried out to ensure that:

- all components are seated securely
- the switching function operates reliably
- all sealing elements are in proper condition
- there are no signs of wear and tear

12 Accessories

Actuator	Order No.
SIN 9001	R1.310.9001.0
SIN 9002	R1.310.9002.0
SIN 9003	R1.310.9003.0
SIN 9004	R1.310.9004.0
SIN 9005	R1.310.9005.0

Montageanleitung (Original)

SIN 1 xxx / SIN2 xxx

83.xxx.xxxx

Sicherheitsschalter mit getrenntem Betätiger und Zuhaltung

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DE

EG-KONFORMITÄTSERKLÄRUNG FÜR SICHERHEITSBAUTEILE
(gemäß Art. 5 der RICHTLINIE 2006/42/EG über Maschinen)

Wir, **Wieland Electric GmbH, Brennerstrasse 10-14, D-96052 Bamberg** erklären hiermit, dass das Gerät

Marke: **Wieland**

Name: Sicherheitsschalter

Typ: SIN...,

in seiner Auslegung und Konstruktion den Anforderungen der anwendbaren europäischen Richtlinien entspricht:

Richtlinie:	2004/108/EG 2006/42/EG 2011/65/EU
Norm:	EN 60947-1: 2011-10 EN 60947-5-1: 2011-14 EN 61000-3-2: 2010-03 EN 61000-3-3: 2009-06 EN 61000-4-2: 2009-12 EN 61000-4-3: 2011-05 EN 61000-4-4: 2013-04 EN 61000-4-5: 2007-06 EN 61000-4-6: 2009-06 EN 61000-4-8: 2010-11 EN 61000-4-11: 2005-02 EN 55011: 2007-11

sofern es gemäß seiner Bestimmung, den geltenden Vorschriften, Normen und den Herstelleranweisungen entsprechend installiert, verwendet und gewartet wird.

Dokumentationsbevollmächtigter:

Klaus Stadelmaier, Manager R&D, EL-PE

Wieland Electric GmbH, Brennerstrasse 10-14, D-96052 Bamberg

Bamberg, den 01.10.2015 i.V. Klaus Stadelmaier Manager R & D, Electronics

Wieland Electric GmbH i.V. Klaus Jungstädt Manager Approvals, Standards

Konformität mit der Richtlinie wurde bescheinigt durch:

DGUV Test-Fachausschuss Elektrotechnik
Prüf- und Zertifizierungsstelle

(Kenn-Nr.0340)

Gustav-Heinemann-Ufer 130,
50968 Köln

Bescheinigungs-Nr.:
ET 10095

EN

EG DECLARATION OF CONFORMITY FOR SAFETY COMPONENTS
(according to EC DIRECTIVE 2006/42/EC on machinery, article 5)

We, **Wieland Electric GmbH, Brennerstrasse 10-14, D-96052 Bamberg** hereby declare that the unit

Trademark: **Wieland**

Product: Safety Switches

Type: SIN...,

which, through its design and construction, conforms to the applicable European Directives:

Directive:	2004/108/EG 2006/42/EG 2011/65/EU
Standard:	EN 60947-1: 2011-10 EN 60947-5-1: 2011-14 EN 61000-3-2: 2010-03 EN 61000-3-3: 2009-06 EN 61000-4-2: 2009-12 EN 61000-4-3: 2011-05 EN 61000-4-4: 2013-04 EN 61000-4-5: 2007-06 EN 61000-4-6: 2009-06 EN 61000-4-8: 2010-11 EN 61000-4-11: 2005-02 EN 55011: 2007-11

It is important that the unit is subject to correct installation, maintenance and use conforming to its intended purpose, to the applicable regulations and standards, to the supplier's instructions.

Documentation authority:

Klaus Stadelmaier, Manager R&D, EL-PE

Wieland Electric GmbH, Brennerstrasse 10-14, D-96052 Bamberg

Bamberg, den 01.10.2015 i.V. Klaus Stadelmaier Manager R & D, Electronics

Wieland Electric GmbH i.V. Klaus Jungstädt Manager Approvals, Standards

Conformity with directive has been certified by:

DGUV Test-Fachausschuss Elektrotechnik
Prüf- und Zertifizierungsstelle

(No. 0340)

Gustav-Heinemann-Ufer 130,
50968 Köln

No. of declaration:
ET 10095

FR

DÉCLARATION DE CONFORMITÉ CE POUR COMPOSANTS DE SÉCURITÉ
(conformément à l'art. 5 de la DIRECTIVE 2006/42/CE relative aux machines)

Nous, **Wieland Electric GmbH, Brennerstrasse 10-14, D-96052 Bamberg,** déclarons que l'appareil

Marque : **Wieland**

Nom : interrupteurs de sécurité

Type : SIN...,

répond, en termes de conception et de construction, aux exigences des directives européennes applicables:

Directive:	2004/108/EG 2006/42/EG 2011/65/EU
Norme:	EN 60947-1: 2011-10 EN 60947-5-1: 2011-14 EN 61000-3-2: 2010-03 EN 61000-3-3: 2009-06 EN 61000-4-2: 2009-12 EN 61000-4-3: 2011-05 EN 61000-4-4: 2013-04 EN 61000-4-5: 2007-06 EN 61000-4-6: 2009-06 EN 61000-4-8: 2010-11 EN 61000-4-11: 2005-02 EN 55011: 2007-11

sous réserve d'installation, d'entretien et d'utilisation conformes à sa destination, à la règlementation et aux normes en vigueur, ainsi qu'aux instructions du constructeur.

Responsable de la documentation :

Klaus Stadelmaier, Manager R&D, EL-PE

Wieland Electric GmbH, Brennerstrasse 10-14, D-96052 Bamberg

Bamberg, den 01.10.2015 i.V. Klaus Stadelmaier Manager R & D, Electronics

Wieland Electric GmbH i.V. Klaus Jungstädt Manager Approvals, Standards

La conformité de l'appareil à la directive a été établie par :

DGUV Test-Fachausschuss Elektrotechnik
Prüf- und Zertifizierungsstelle

(Réf. 0340)

Gustav-Heinemann-Ufer 130,
50968 Köln

Réf. de la déclaration:ET 10095