

Interlocking devices with and without guard locking

T/04 catalogue



Subject to technical modifications and error. The data specified in this catalogue are carefully checked typical standard values.

Or as the ancient Greeks already knew:

The Gods do not reveal everything to mortals from the beginning. But during the course of time our search will show us what is better.

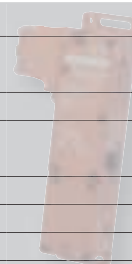
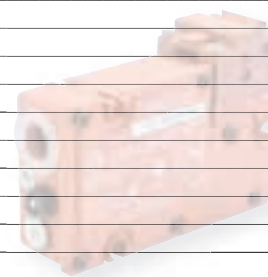
Xenophanes (Greek philosopher, 580/577 B.C.)

Descriptions of technical correlations, details on external control units, installation and operating instructions or similar have been provided to the best of our knowledge. However, this does not mean that warranted characteristics or other properties under liability law may be assumed which extend beyond the "General Terms of Delivery of

Products and Services of the Electrical Industry". We trust you will understand that the user must therefore check out information and recommendations before using our equipment.

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Interlocking devices with and without guard locking

This catalogue presents safety door interlocks and hinge monitoring switches.

Models from the product range of many years standing continue to be available, but are not shown here in order to ensure a clear summary.



Background information
Safety door interlocks and hinge monitoring switches belong to the group of interlocking devices with and without guard locking within the meaning of European standards (EN 1088).

Information regarding areas of application, aspects to be considered when selecting the products and Assembly instructions as well as wiring examples and practical tips for handling devices of this type are contained in the Schmersal brochure entitled "Guard locking systems for the protection of man and machine".

If you are interested in receiving this brochure please request it from us or from K.A. Schmersal GmbH, Postfach 240263, D-42232 Wuppertal, Telephone +49-(0)202/64 74-0, Fax +49-(0)202/64 74-100 E-mail: info@schmersal.de or on the Internet at

<http://www.schmersal.com>

Hinge monitoring switches Special functional features

The main advantage of the hinge monitoring switches of the TESZ type series is the significantly easier installation by comparison with other hinge switches. The position of a hinged safeguard is monitored by a monitoring switch integrated in the hinge.

Under the aspect of simplified assembly, by comparison with safety switches with separate actuators, the hinge monitoring switches of the TESZ range do not require additional measures to protect the interlocking device from circumvention.

The hinge monitoring switches comply with the special safety requirements of EN 1088. All standard versions are BIA/BG prototype tested.

Mode of function of the TESZ type series. Depending on the rotating movement a specially shaped cam of the hinge pin actuates the plunger and opens the safety contact(s) in the switch after approx. 4° by positive actuation against the force of the plunger reset spring. If the guard is closed again the safety contacts close, signalling the safe state of the guard to the follow-up circuitry.



Safety door interlocks

Special design features

Elan safety door interlocks – both the TZ and TZK type series – are characterised by a particularly spacious interaction between actuator and operating head.

The funnel-shaped entry in the operating head of the devices permits specific tolerances – existing right from the start or developing during wear – in the guide of the moving safety guard by providing a self-centring of the actuator when the guard closes.

This largely avoids any malfunction in the interaction between the actuator fixed to the guard and the operating head of an interlock-

ing device. The maximum admissible misalignment is ± 4 mm.

The functional features of self-centring is supported by the actuators which are fixed in a “floating” manner by means of rubber bushings (with integrated spacers in the fixing bore holes). Actuators are also available with telescopic part (with flexible bearing) for special applications.

In addition, the design of actuator and operating mechanism also permits tolerances in closed or locked state of the guard, i.e. a “play” of approximately 11 mm (TZ type series) and 5 mm (TZK type series).

For use in particularly aggressive ambient conditions the devices of the TZM/TZF type series can be equipped with Viton seals on request.

Elan safety door interlocks are offered both a spring-operated (closed-circuit current based) versions and solenoid power-operated (working current based) versions, optionally with manual release, escape release and emergency release. They comply with the special safety requirements of EN 1088. All standard versions are BIA/BG prototype tested.



Special design feature:
funnel-shaped entry

Designs

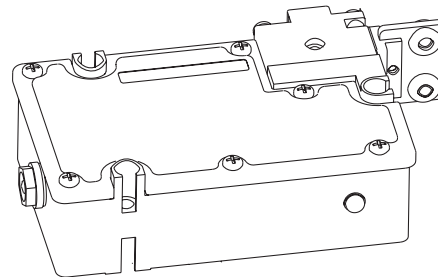
The product range consists of two different designs:

- Rectangular parallelepiped shaped (TZ type series), for universal use;

and

- L-shaped (TZK type series), in particular for mounting on the inside of hinged guards.
- In addition, if the devices are to be mounted on the outside of machine cells, so-called safety guard handles are available, facilitating application on hinged guards as well as on sliding guards.

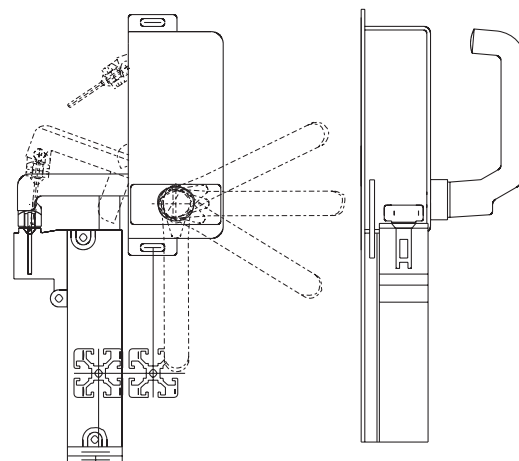
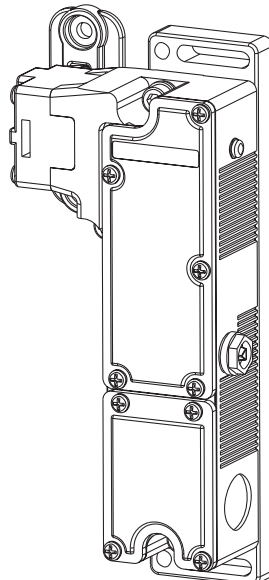
Safety guard handles are also available with an escape release handle if the devices are mounted inside the machine cell.



Left: safety door interlocks, TZK type series

Top: safety door interlocks, TZ type series

Bottom: safety guard handle, TR-TZK



Interlocking devices with and without locking – Functional and design features in detail

Safety door interlocks TZ

- Interlocking device with guard locking to EN 1088, BIA/BG prototype testing of standard versions
- For sliding and hinged guards
- Funnel-shaped entries
- Fail-safe operation¹⁾
- Ball operation in operating head to fix the actuator
- Operating heads adjustable 3 x 90°
- Different contact arrangements (max. 5 contacts), connection with screw terminals, 1 cable entry M20 x 1.5
- Spring-operated or solenoid-operated versions
- Different supply voltages
- Plastic-encapsulated version, class of protection IP 67
- Optionally
 - Viton seals
 - LED indicators, connecting plugs etc.
 - Manual release, escape release and emergency release (refer also to page 8/9 in this respect)

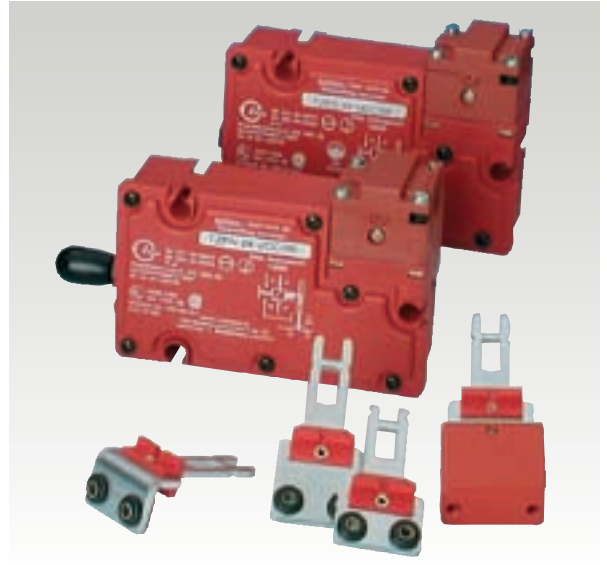
Data sheets/product tables

- Spring-operated versions: refer to pages 36 et seq.
- Solenoid-operated versions: refer to pages 51 et seq.

Safety door interlocks TZK

- Interlocking device with guard locking to EN 1088, BIA/BG prototype testing of standard versions
- With lateral operating head, particularly suitable for hinged guards (mounting on inside of machine cells)
- Special versions for guard fencing and profile systems
- Funnel-shaped entries with dust cap
- Fail-safe operation¹⁾
- Ball operation in operating head to fix the actuator
- Operating heads adjustable 4 x 90°
- Different contact arrangements (max. 4 contacts), connection with screw terminals, 2 cable entry M20 x 1.5
- Spring-operated or solenoid-operated versions
- Different supply voltages
- Plastic-encapsulated version, class of protection IP 67
- Optionally
 - LED indicators, connecting plugs etc.
 - Manual release, escape release and emergency release (refer also to page 8/9 in this respect)

For further information:
refer to pages 6/7



Safety door interlocks, right parallelepiped design, TZ type series



Safety door interlocks, L-shaped design, TZK type series

1) Fail-safe operation in connection with guard locking means that the interlocking bolt cannot advance to the lock position when the guard is open. The interlocking function can only become effective after the guard is closed. Under certain circumstances this design feature makes the design of a safe guard monitoring device more simple. For further information refer to the Schmersal brochure, page 8.

**Safety door handles
TR-TZK**

- For mounting of TZK type series to the outside of machine cells
- Suitable for hinged doors and sliding doors
- Heavy duty design
- Release of the devices from forces in pull, push and lateral direction
- Linear transmission of the 90° rotating movement of the handle
- End positions 0°/90° with spring latching
- Optionally with escape release handle if mounted inside machine cells

Data sheets/product tables: refer to pages 106 et seq.

Guard handles for type series TZM/TZF: refer to pages 62 et seq.



Safety door interlocks, TZK type series, with guard handle, TR-TZK... for mounting outside machines cells



Safety door interlocks, TZK type series, with guard handle and escape release handle TR-TZK/PG... for mounting inside machine cells

**Hinge monitoring switch
TESZ**

- Interlocking device without guard locking to EN 1088, BIA/BG prototype tested for standard versions
- Scope of delivery: 1 hinge with monitoring switch, 1 hinge without switch as well as fixing material for material thicknesses up to 4 mm
- Simple assembly, especially to (Al) profile systems (with 30, 35, 40 and 45 mm width)
- Different contact arrangements (max. 3 contacts), connection with screw terminals
- 2 cable entries, M20 x 1.5, connector versions: on request
- Plastic-encapsulated version, class of protection IP 65
- Optionally
 - Standard versions (type series TESZ)
 - V4A stainless steel versions (type series TESZX)
 - Versions with additional (mechanical) restart inhibit (type series TESZR)

Data sheets/product tables: refer to pages 11 et seq.



Versions of hinge monitoring switches:

- Standard (type series TESZ)
- in V4A (type series TESZX)
- with additional (mechanical) restart inhibit (type series TESZR)



Safety door interlocks

Application: locking of hinged guards

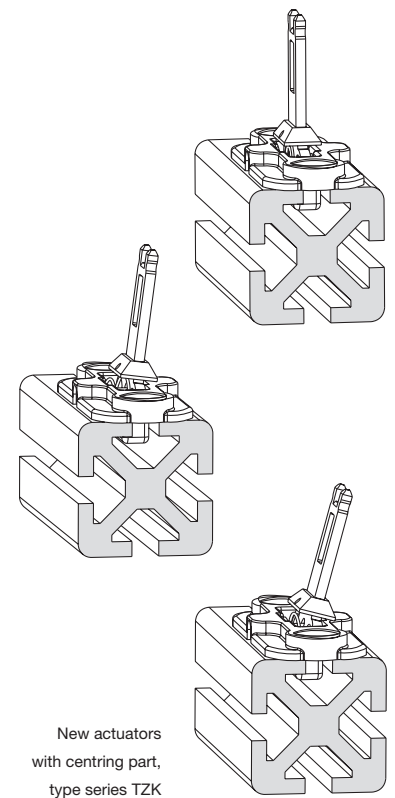
Safety door interlocks TZK in L-shaped design

In order to suit the special mounting conditions of hinged guards even better the TZK type series has been considerably extended. The special design feature is the lateral operating head (= L-shaped type series).

In particular, this versions permits the devices to be installed simply on the inside of the machine cell without the need of special kits, mounting brackets or similar.

For commercially available Al profile systems the new versions permit

- a reduced installation depth (54 mm) by means of actuators which can be centred and attached directly to the grooves (8/10 mm) of commercially available profile systems (with a width of 40, 45, 50 and 60 mm);
- a mirror-inverted assembly of the devices* by a second mounting plate, whereby the version TZK-APLV is intended for right-hung doors and the version TZK/APLVD for left-hung doors.



* The cover side of the device is mounted directly to the mounting plate TZK/APLVD. The labelling is then no longer visible. A separate sticker on the rear side provides necessary information.

Data sheets/product tables

- Spring-operated versions: refer to pages 72 et seq.
- Solenoid-operated versions: refer to pages 96 et seq.

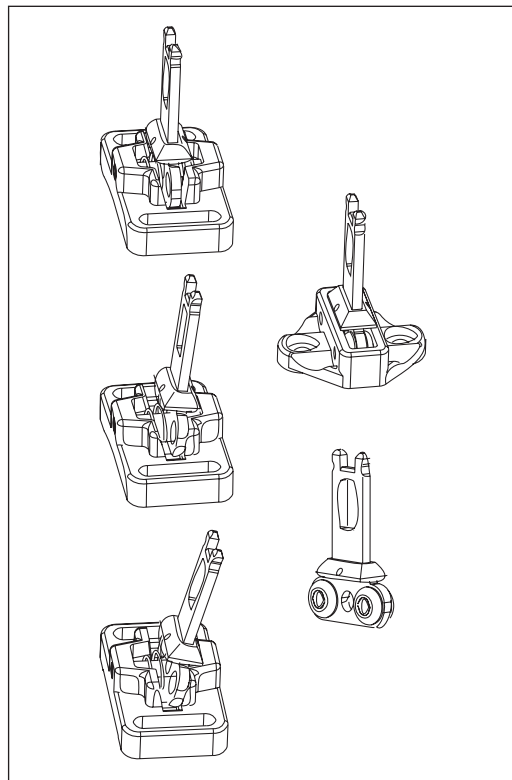


New versions for left- and right-hung guards with installation depth of 54 mm (with new actuators, see above, and mounting plates, see illustrations).

The former TZK versions with actuators with standard screwed fixing and TZK-APL mounting plate are available for hinged guards in fences which are not made of (Al) profile systems but of tubular steel profile systems, for example, (but also if it is not possible to directly fix the actuator into the groove of the profile), as well as for other sliding doors and flaps.

Data sheets/product tables

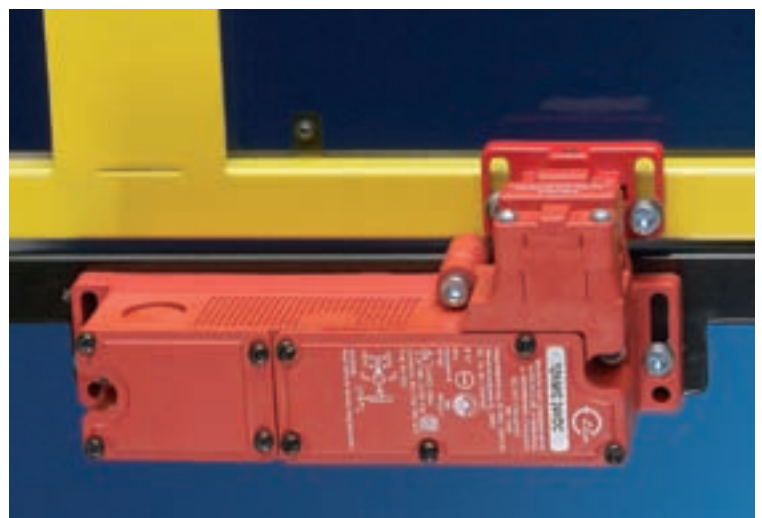
- Spring-operated versions: refer to pages 90 et seq.
- Solenoid-operated versions: refer to pages 96 et seq.



Standard actuators in the TZK type series



Example of use: TZK use on sliding doors of tool machines



Example of use: TZK attachment to a tubular steel frame with standard actuators and standard mounting plate

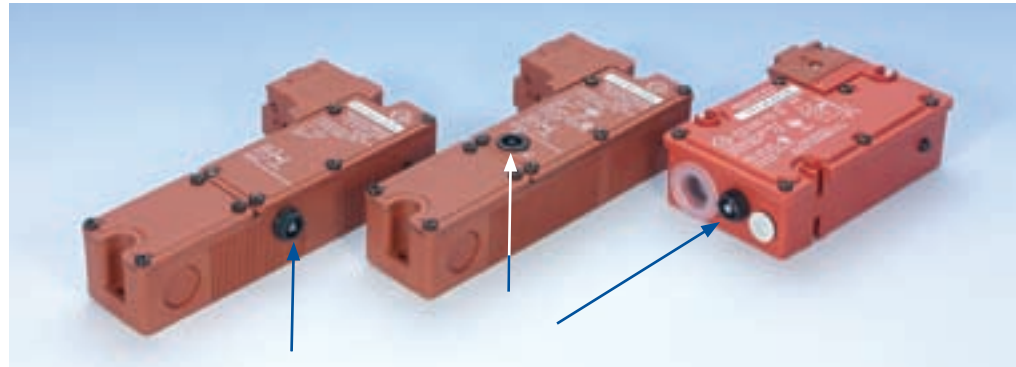
Safety door interlocks

Manual release, escape release and emergency release

Both the safety door interlocks of the type series TZ and the type series TZK are available with manual release, escape release and emergency release devices.

The common feature of all three types is that if the release function is actuated, the safety solenoid monitoring contact is always opened positively and an unexpected machine restart is prevented or a machine movement is electrically interrupted immediately.

Devices with **manual release** or **emergency release** may be attached to the outside of machine cells. However, as is the case with all interlocking devices with separate actuators, it is advisable to choose a concealed position (with access for unlocking) in order to prevent manipulation to the devices, e.g. with second actuators. Alternatively, the devices can be installed on the inside of the machine cell.



In the case of spring-operated safety door interlocks, manual release devices enable the opening of a safeguard by means of a 3-square socket key even if there is no power. The device is reset to an operative state similarly using the 3-square socket key.

Emergency releases permit an immediate interruption of the machine function because they can be actuated without additional tools. However, since emergency releases are accessible from outside, resetting requires repair-like work in order to prevent inadmissible actuation.

In the case of Elan safety door interlocks of type series TZK, the manual release is attached to the side of the devices (if mounted on the inside of machine cells) or in the lid of the devices (if mounted on the outside of the machine cell) and on the side of devices of type series TZ (opposite the operating head).



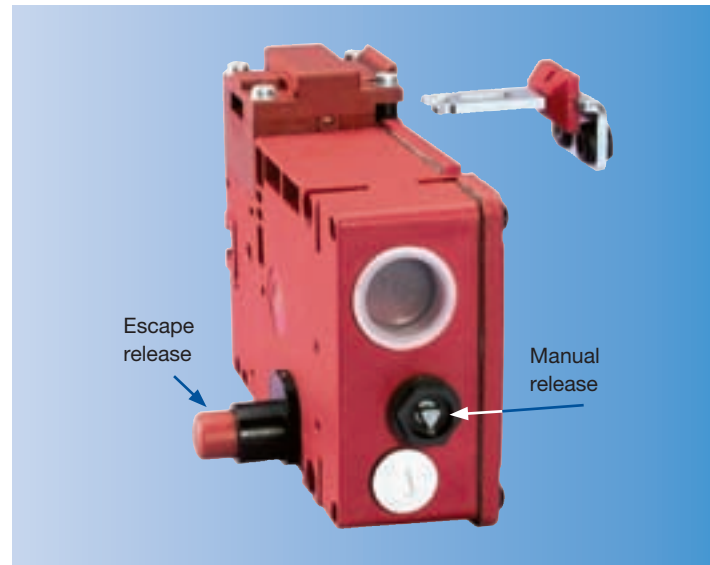
In the case of Elan safety door interlocks of type series TZ, the emergency release is attached laterally (opposite the operating head) and in the case of the TZK type series in the device lid (if the devices are attached to the outside of the machine cell this is advisable with door handle TR-TZK).

The **escape release** may be accessible exclusively from the inside of a machine cell. Therefore the device is installed inside the cell (whereby in the case of spring-operated interlocking device the manual release feature is normally not accessible from the outside). If the device is mounted outside the machine cell the escape release must be accessible via an opening in the safeguard or when using a safety door handle direct access to the escape release handle must be provided.

An escape release on a safety door interlock is recommended for accessible danger zones in which individuals can be trapped.

In the type series TZK an escape release can only be installed if the devices are fitted inside the machine cell.

The escape release is reset by means of a pushbutton on the side of the device.



In the case of the Elan safety door interlocks of the type series TZ, a combination of escape release and manual release is provided. The devices are mounted outside of the machine cell so that the manual release feature is accessible as usual whilst the button for escape release (similar to an impact or a pushbutton) is freely accessible from inside via an opening.



In the type series TZK the escape release (similar to an impact or a pushbutton) is located in the device lid (for right-hung doors) or in the rear side of the device (for left-hung doors).



Alternatively an escape release can be installed as a safety door handle solution with escape release handle in the TZK type series.

Hinge monitoring switches



Hinge monitoring switches

TESZ series

for 30 mm profiles

Features

- Simple installation to all popular 30 mm aluminium profiles, square tubes and conventional machine cladding.
- Material:
 - Housing: glass-fibre-reinforced thermoplastic, self-extinguishing to UL 94-V-0
 - Hinge: Al Mg Si 0.5 F25
 - Hinge pin: steel 1.4104

Cross references

- General description: refer to page 5
- Contact arrangement selectable: see below
- Calculation door angle/door gap: refer to page 30
- Assembly instructions: refer to page 31
- Technical data: refer to page 32

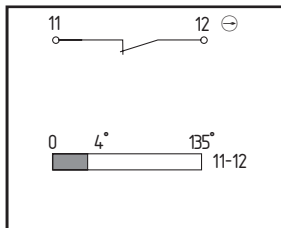
Options (on request)

- Other switching angles: 5°, 8° (standard: 4°)
- With adapter for AS Interface Safety at Work
- Plug connection

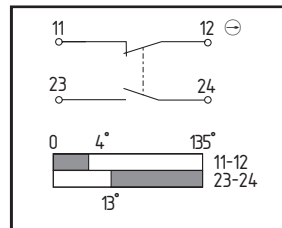


Contact configurations

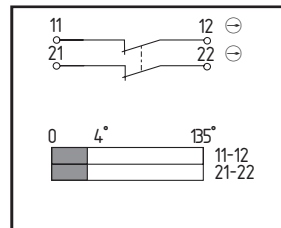
TESZ 10../30



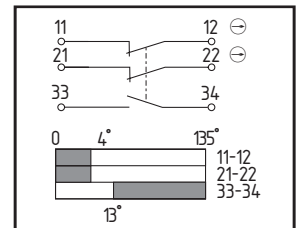
TESZ 102../30



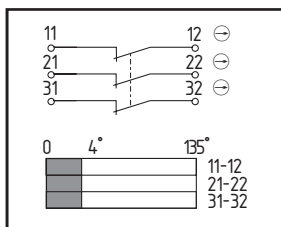
TESZ 110../30



TESZ 1102../30



TESZ 1110../30



Representation of the contacts in non-actuated state (guard closed), switching angle in new state. Tolerance 4°±2.

Test symbol (with respect to the basic design)

BIA 994005

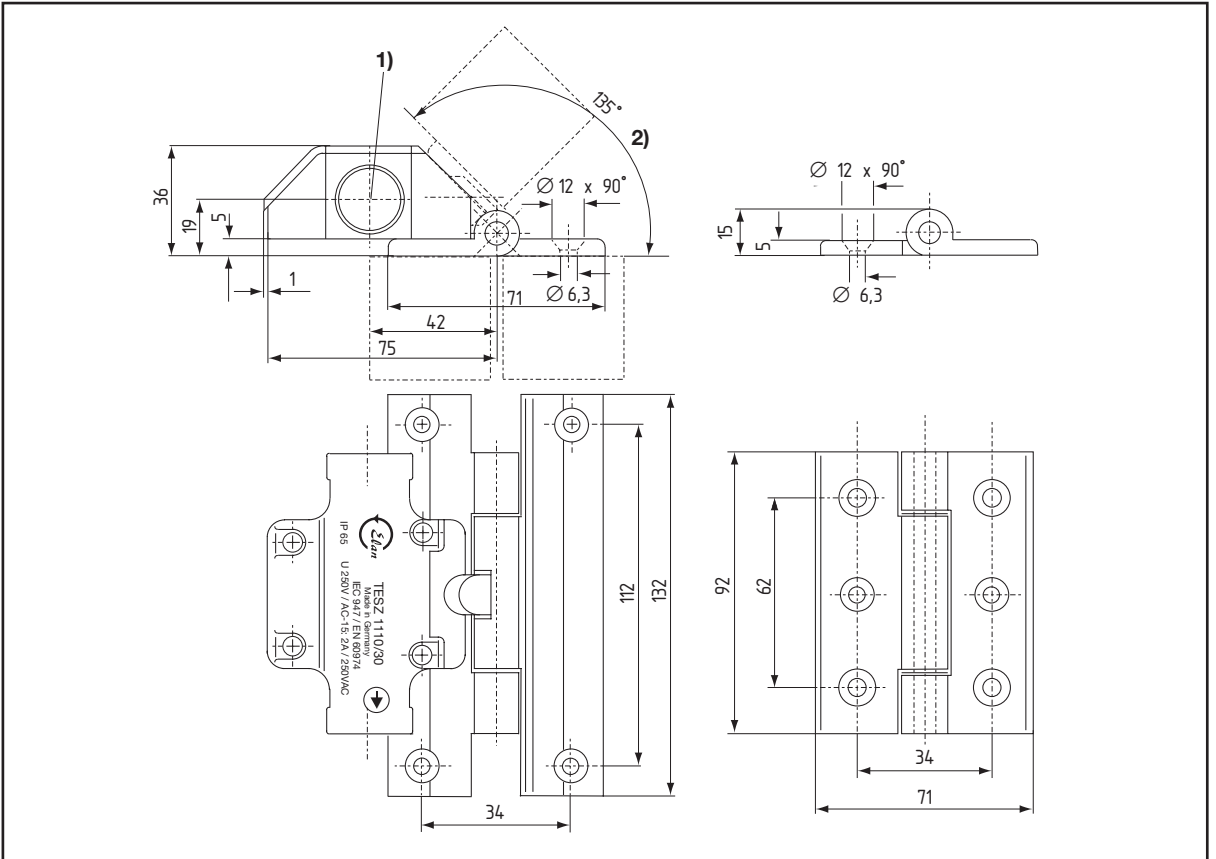
Scope of delivery

Hinge switch with or without additional hinge, fixing material

Product table

Type	Version	Part number
With additional hinge		
TESZ 10/30	1 NC	1348710
TESZ 102/30	1 NC/1 NO	1348713
TESZ 110/30	2 NC	1348722
TESZ 1102/30	2 NC/1 NO	1348716
TESZ 1110/30	3 NC	1348719
Without additional hinge		
TESZ 10/S/30	1 NC	1348711
TESZ 102/S/30	1 NC/1 NO	1348714
TESZ 110/S/30	2 NC	1348723
TESZ 1102/S/30	2 NC/1 NO	1348717
TESZ 1110/S/30	3 NC	1348720
Additional hinge		
TESZ/S/30		1348821

Dimensions TESZ .../30



- 1) Punch-out bore hole M20 x 1.5
- 2) Maximum opening angle 135°

Hinge monitoring switches

TESZ series

for 35 mm profiles

Features

- Simple installation to all popular 35 mm aluminium profiles, square tubes and conventional machine cladding.
- Material:
 - Housing: glass-fibre-reinforced thermoplastic, self-extinguishing to UL 94-V-0
 - Hinge: Al Mg Si 0.5 F25
 - Hinge pin: steel 1.4104

Cross references

- General description: refer to page 5
- Contact arrangement selectable: see below
- Calculation door angle/door gap: refer to page 30
- Assembly instructions: refer to page 31
- Technical data: refer to page 32

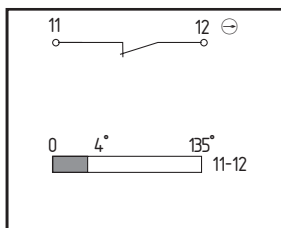
Options (on request)

- Other switching angles: 5°, 8° (standard: 4°)
- With adapter for AS Interface Safety at Work
- Plug connection

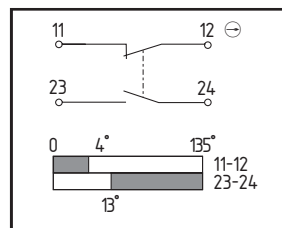


Contact configurations

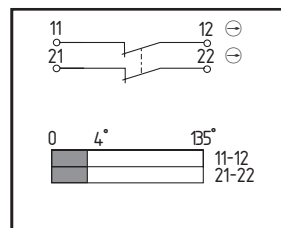
TESZ 10../35



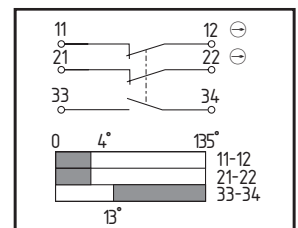
TESZ 102../35



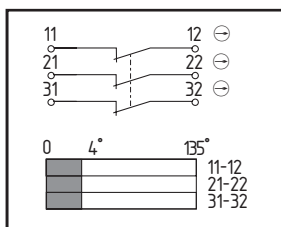
TESZ 110../35



TESZ 1102../35



TESZ 1110../35



Representation of the contacts in non-actuated state (guard closed), switching angle in new state. Tolerance 4°±2.

Test symbol (with respect to the basic design)

BIA 994006

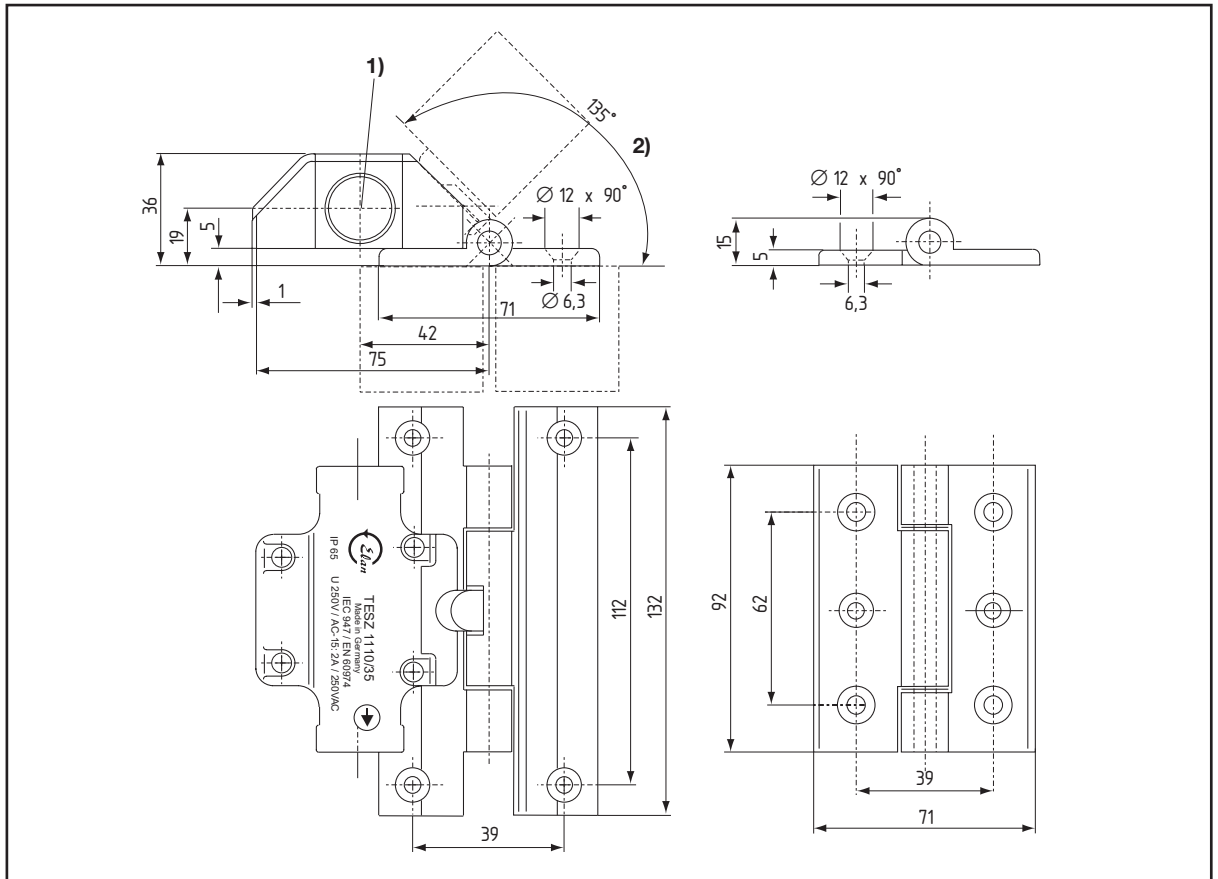
Scope of delivery

Hinge switch with or without additional hinge, fixing material

Product table

Type	Version	Part number
With additional hinge		
TESZ 10/35	1 NC	1348730
TESZ 102/35	1 NC/1 NO	1348733
TESZ 110/35	2 NC	1348742
TESZ 1102/35	2 NC/1 NO	1348736
TESZ 1110/35	3 NC	1348739
Without additional hinge		
TESZ 10/S/35	1 NC	1348731
TESZ 102/S/35	1 NC/1 NO	1348734
TESZ 110/S/35	2 NC	1348743
TESZ 1102/S/35	2 NC/1 NO	1348737
TESZ 1110/S/35	3 NC	1348740
Additional hinge		
TESZ/S/35		1348822

Dimensions TESZ .../35



- 1) Punch-out bore hole M20 x 1.5
- 2) Maximum opening angle 135°

Hinge monitoring switches

TESZ series

for 40 mm profiles

Features

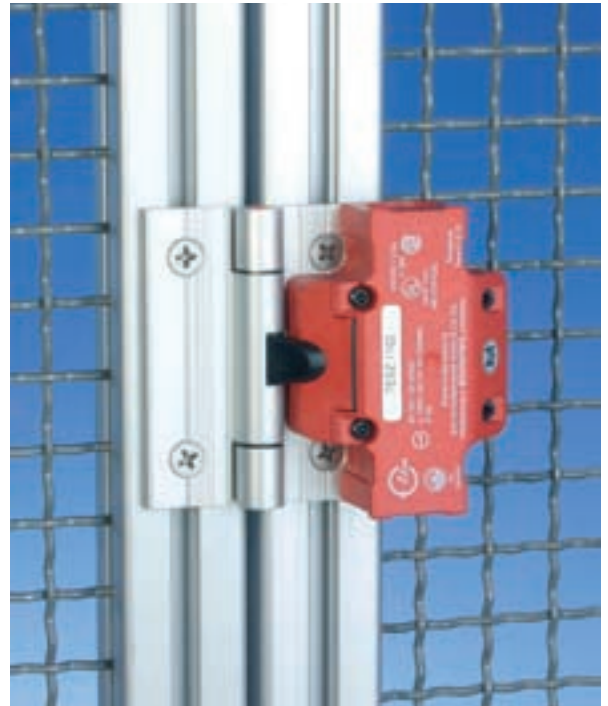
- Simple installation to all popular 40 mm aluminium profiles, square tubes and conventional machine cladding.
- Material:
 - Housing: glass-fibre-reinforced thermoplastic, self-extinguishing to UL 94-V-0
 - Hinge: Al Mg Si 0.5 F25
 - Hinge pin: steel 1.4104

Cross references

- General description: refer to page 5
- Contact arrangement selectable: see below
- Calculation door angle/door gap: refer to page 30
- Assembly instructions: refer to page 31
- Technical data: refer to page 32

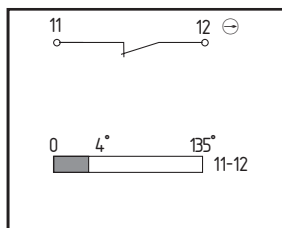
Options (on request)

- Other switching angles: 5°, 8° (standard: 4°)
- With adapter for AS Interface Safety at Work
- Plug connection

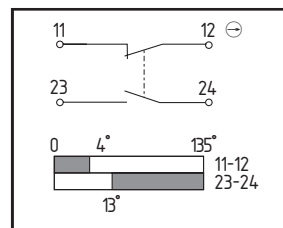


Contact configurations

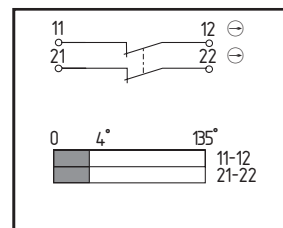
TESZ 10..



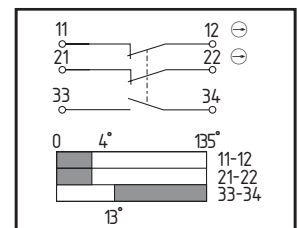
TESZ 102..



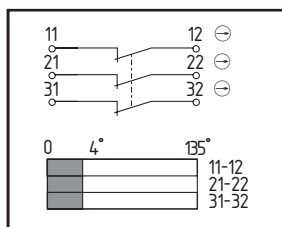
TESZ 110..



TESZ 1102..



TESZ 1110..



Representation of the contacts in non-actuated state (guard closed), switching angle in new state. Tolerance 4°±2.

Test symbol (with respect to the basic design)

BIA 994006

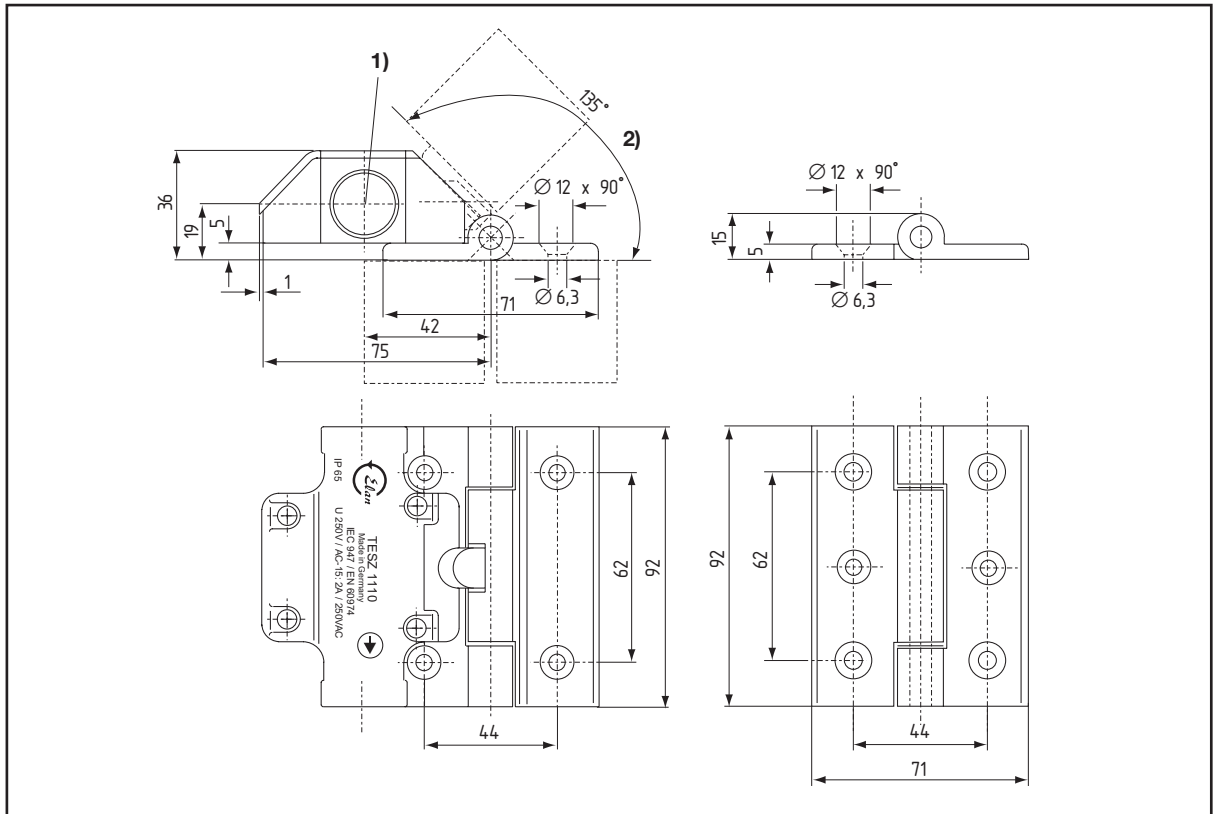
Scope of delivery

Hinge switch with or without additional hinge, fixing material

Product table

Type	Version	Part number
With additional hinge		
TESZ 10	1 NC	1348760
TESZ 102	1 NC/1 NO	1348764
TESZ 110	2 NC	1348776
TESZ 1102	2 NC/1 NO	1348768
TESZ 1110	3 NC	1348772
Without additional hinge		
TESZ 10/S	1 NC	1348761
TESZ 102/S	1 NC/1 NO	1348765
TESZ 110/S	2 NC	1348777
TESZ 1102/S	2 NC/1 NO	1348769
TESZ 1110/S	3 NC	1348773
Additional hinge		
TES/S		1348819

Dimensions TESZ ...



- 1) Punch-out bore hole M20 x 1,5
- 2) Maximum opening angle 135°

Hinge monitoring switches

TESZ series

for 45 mm profiles

Features

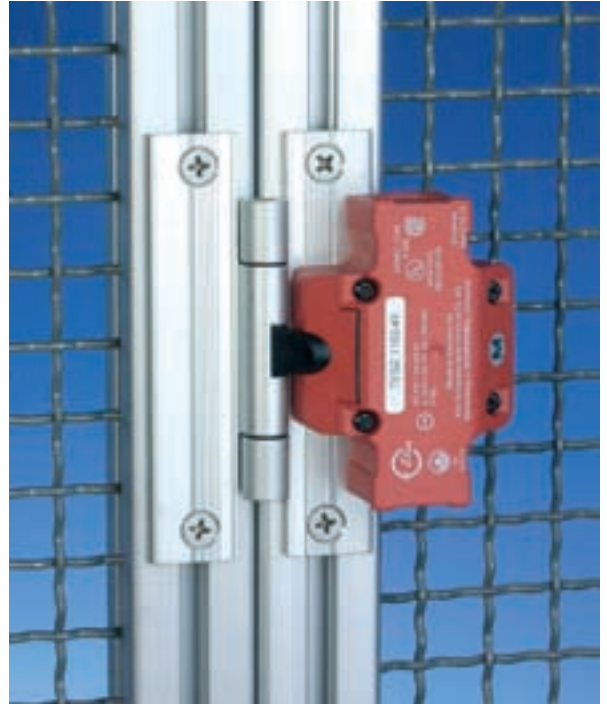
- Simple installation to all popular 45 mm aluminium profiles, square tubes and conventional machine cladding.
- Material:
 - Housing: glass-fibre-reinforced thermoplastic, self-extinguishing to UL 94-V-0
 - Hinge: Al Mg Si 0.5 F25
 - Hinge pin: steel 1.4104

Cross references

- General description: refer to page 5
- Contact arrangement selectable: see below
- Calculation door angle/door gap: refer to page 30
- Assembly instructions: refer to page 31
- Technical data: refer to page 32

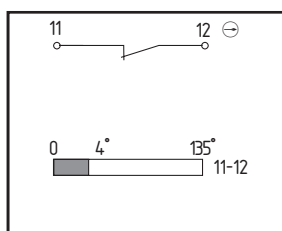
Options (on request)

- Other switching angles: 5°, 8° (standard: 4°)
- With adapter for AS Interface Safety at Work
- Plug connection

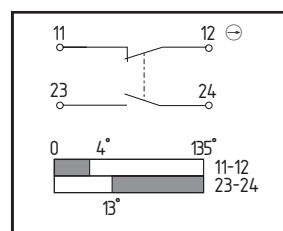


Contact configurations

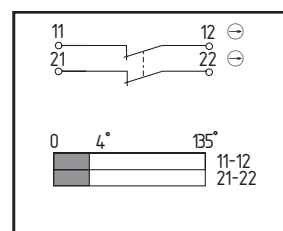
TESZ 10../45



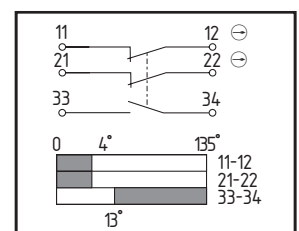
TESZ 102../45



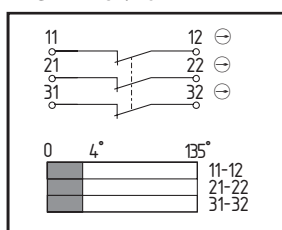
TESZ 110../45



TESZ 1102../45



TESZ 1110../45



Representation of the contacts in non-actuated state (guard closed), switching angle in new state. Tolerance 4°-2.

Test symbol (with respect to the basic design)



BIA 994006

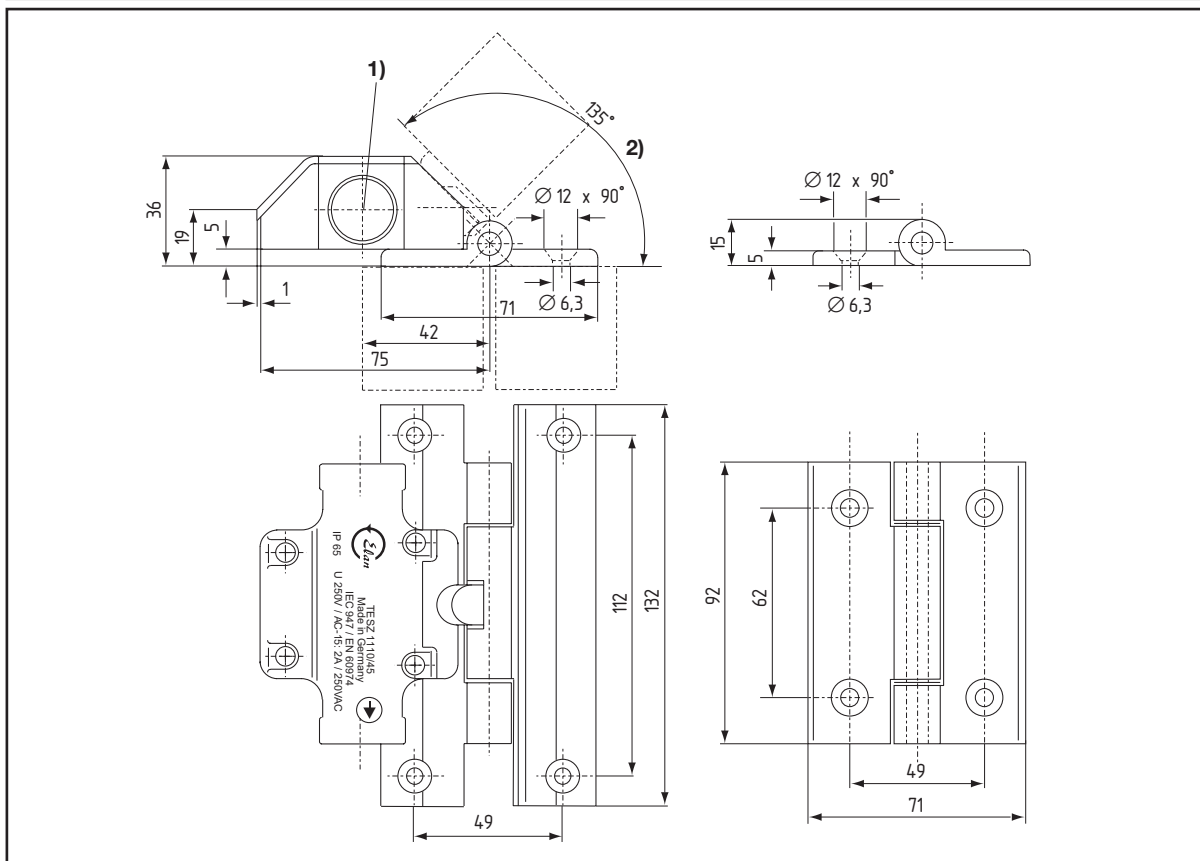
Scope of delivery

Hinge switch with or without additional hinge, fixing material

Product table

Type	Version	Part number
With additional hinge		
TESZ 10/45	1 NC	1348600
TESZ 102/45	1 NC/1 NO	1348601
TESZ 110/45	2 NC	1348602
TESZ 1102/45	2 NC/1 NO	1348603
TESZ 1110/45	3 NC	1348604
Without additional hinge		
TESZ 10/S/45	1 NC	1348610
TESZ 102/S/45	1 NC/1 NO	1348611
TESZ 110/S/45	2 NC	1348612
TESZ 1102/S/45	2 NC/1 NO	1348613
TESZ 1110/S/45	3 NC	1348614
Additional hinge		
TESZ/S/45		1348818

Dimensions TESZ .../45



- 1) Punch-out bore hole M20 x 1.5
- 2) Maximum opening angle 135°

Hinge monitoring switches

TESZR series

for 40 mm profiles with restart inhibit

Features

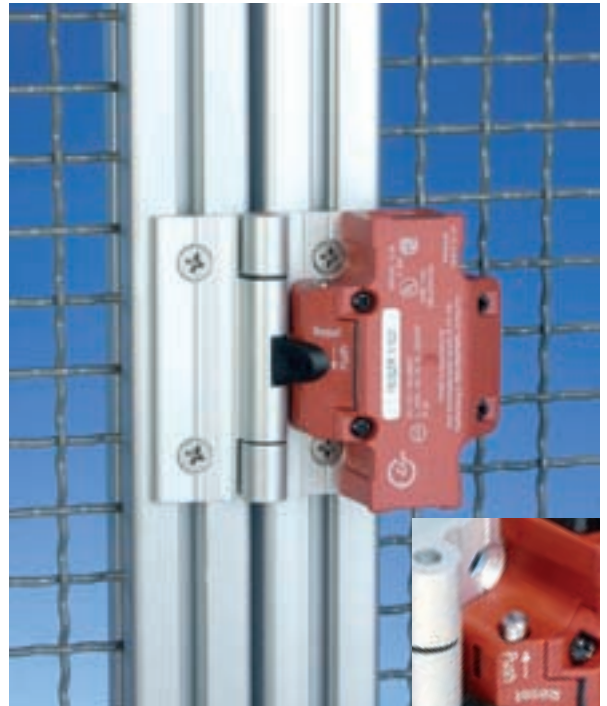
- Simple installation to all popular 40 mm aluminium profiles, square tubes and conventional machine cladding.
- With restart inhibit
- Material:
 - Housing: glass-fibre-reinforced thermoplastic, self-extinguishing to UL 94-V-0
 - Hinge: Al Mg Si 0.5 F25
 - Hinge pin: steel 1.4104

Cross references

- General description: refer to page 5
- Contact arrangement selectable: see below
- Calculation door angle/door gap: refer to page 30
- Assembly instructions: refer to page 31
- Technical data: refer to page 32

Options (on request)

- Other switching angles: 5°, 8° (standard: 4°)
- Other hinge versions
- With adapter for AS Interface Safety at Work
- Plug connection



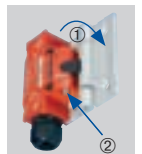
Restart inhibit

The restart inhibit prevents an unintentional restart of the hazardous movement when the guard is closed. Reset by pressing a restart button.



Picture to the left: The restart inhibit latches in when the guard is opened; safety contacts are open.

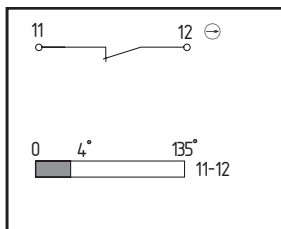
Picture to the right: After closing (1) the guard the safety contacts are held in open state by the restart inhibit. Only once the reset button (2) is pressed do the safety contacts close again.



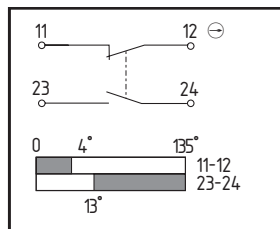
Attention: If reset of restart inhibit is used exclusively to initiate dangerous movements, switch must be replaced after max. 100,000 switching cycles.

Contact configurations

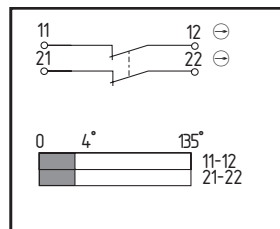
TESZR 10..



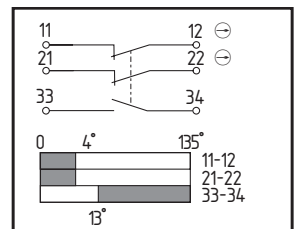
TESZR 102..



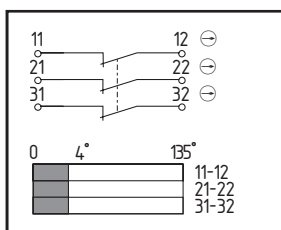
TESZR 110..



TESZR 1102..



TESZR 1110..



Representation of the contacts in non-actuated state (guard closed), switching angle in new state. Tolerance 4°-2.

Test symbol (with respect to the basic design)



in preparation

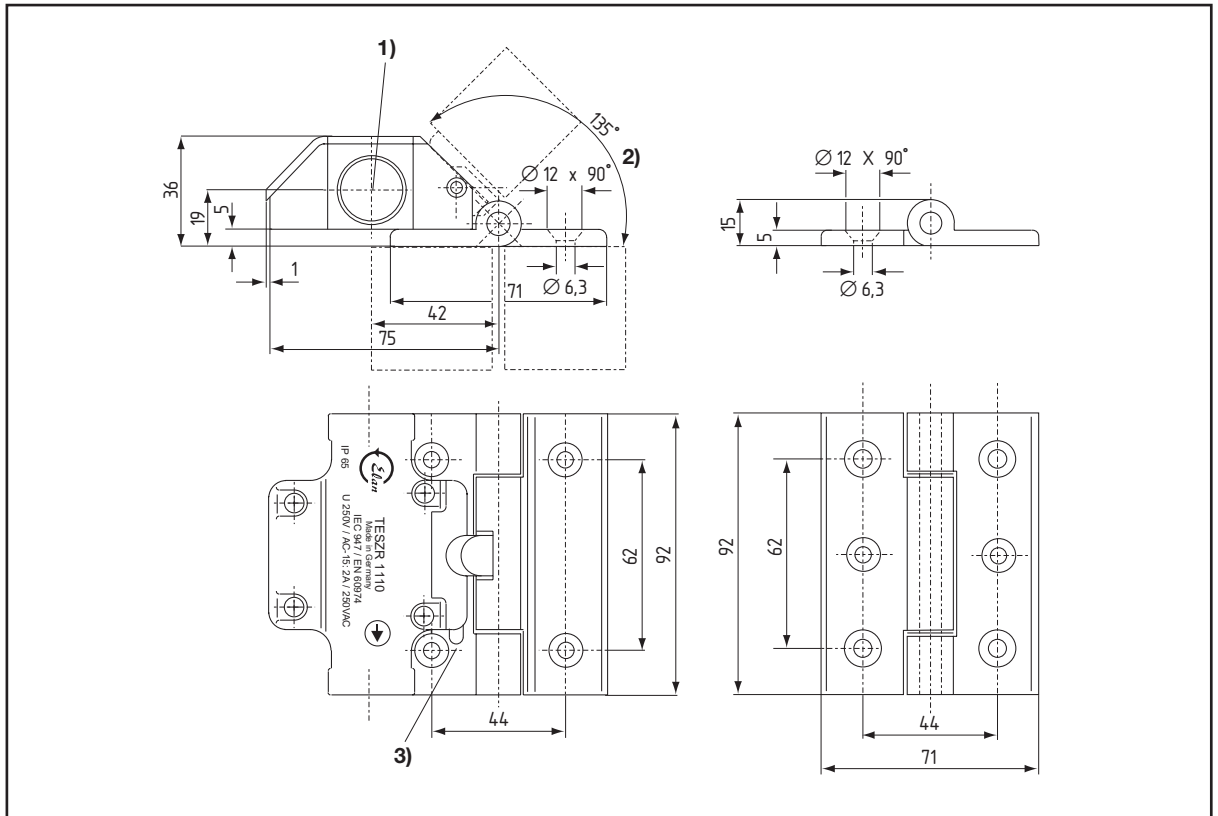
Scope of delivery

Hinge switch with or without additional hinge, fixing material

Product table

Type	Version	Part number
With additional hinge		
TESZR 10	1 NC	1348660
TESZR 102	1 NC/1 NO	1348665
TESZR 110	2 NC	1348670
TESZR 1102	2 NC/1 NO	1348675
TESZR 1110	3 NC	1348680
Without additional hinge		
TESZR 10/S	1 NC	1348661
TESZR 102/S	1 NC/1 NO	1348666
TESZR 110/S	2 NC	1348671
TESZR 1102/S	2 NC/1 NO	1348676
TESZR 1110/S	3 NC	1348681
Additional hinge		
TES/S		1348819

Dimensions TESZR ...



- 1) Punch-out bore hole M20 x 1.5
- 2) Maximum opening angle 135°
- 3) Reset button

Hinge monitoring switches

TESZX series

with stainless steel hinge

Features

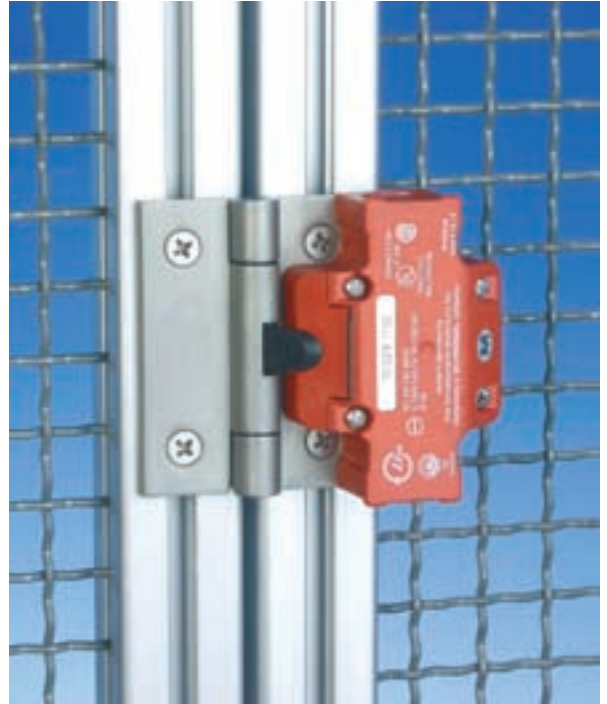
- Simple installation to all popular 40 mm aluminium profiles, square tubes and conventional machine cladding.
- Housing: glass-fibre-reinforced thermoplastic, self-extinguishing to UL 94-V-0
- All outside metallic parts are made of stainless steel:
 - Hinge 1.4404
 - Hinge pin 1.4301
 - Bolts, nuts and washers 1.4303

Cross references

- General description: refer to page 5
- Contact arrangement selectable: see below
- Calculation door angle/door gap: refer to page 30
- Assembly instructions: refer to page 31
- Technical data: refer to page 32

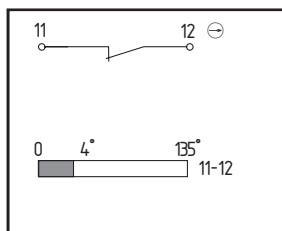
Options (on request)

- Other switching angles: 5°, 8° (standard: 4°)
- With restart inhibit
- With adapter for AS Interface Safety at Work
- Plug connection

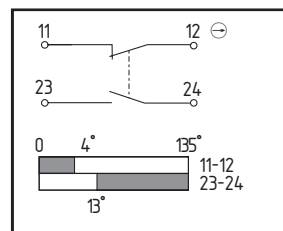


Contact configurations

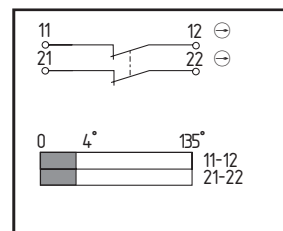
TESZX 10..



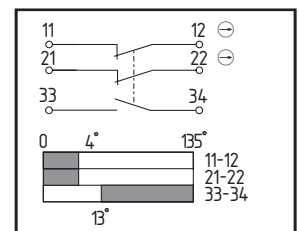
TESZX 102..



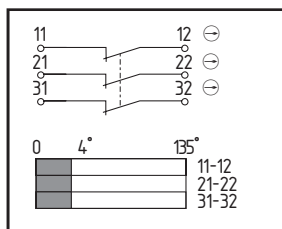
TESZX 110..



TESZX 1102..



TESZX 1110..



Representation of the contacts in non-actuated state (guard closed), switching angle in new state. Tolerance 4°-2.

Test symbol (with respect to the basic design)



BIA 994006

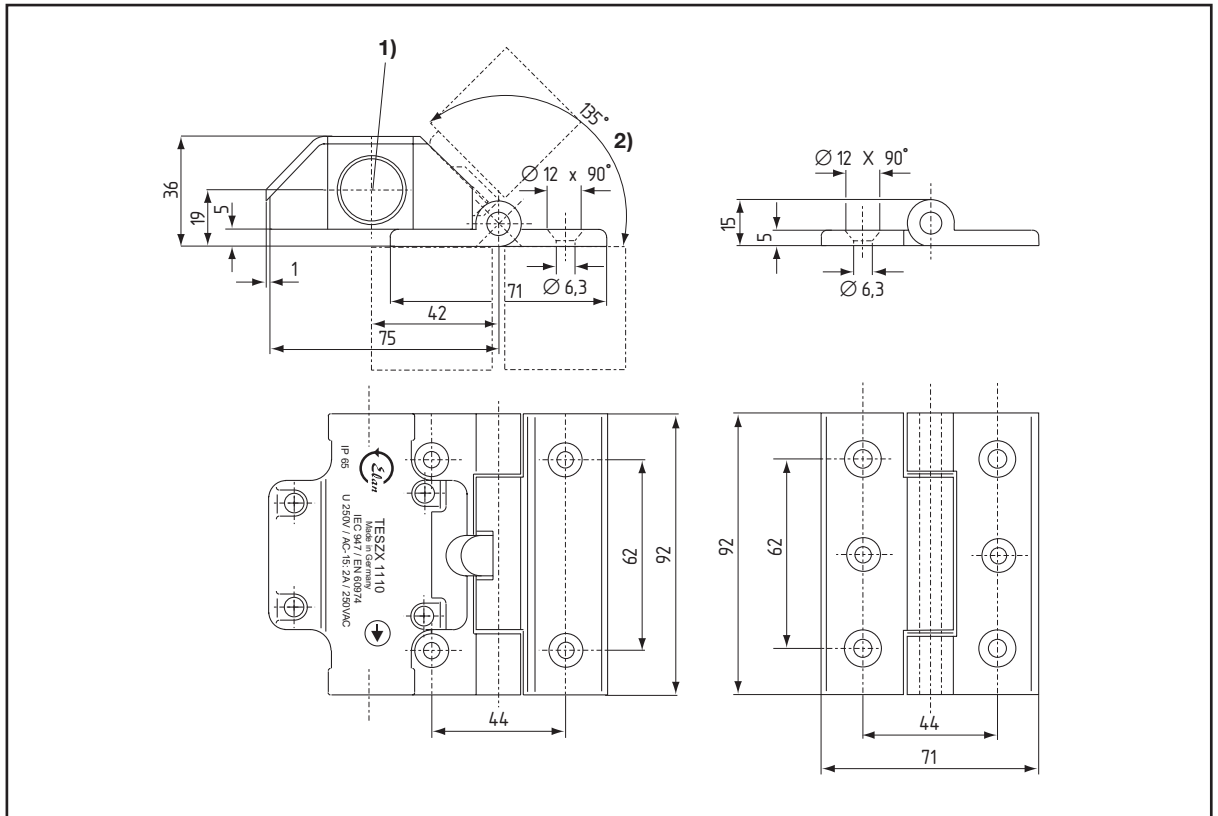
Scope of delivery

Hinge switch with or without additional hinge, fixing material

Product table

Type	Version	Part number
With additional hinge		
TESZX 10	1 NC	134 8620
TESZX 102	1 NC/1 NO	134 8621
TESZX 110	2 NC	134 8622
TESZX 1102	2 NC/1 NO	134 8623
TESZX 1110	3 NC	134 8624
Without additional hinge		
TESZX 10/S	1 NC	134 8625
TESZX 102/S	1 NC/1 NO	134 8626
TESZX 110/S	2 NC	134 8627
TESZX 1102/S	2 NC/1 NO	134 8628
TESZX 1110/S	3 NC	134 8629
Additional hinge		
TESZX/S		134 8690

Dimensions TESZX ...



1) Punch-out bore hole M20 x 1.5

2) Maximum opening angle 135°

Hinge monitoring switches

Calculation of the door gap as dependent on the opening angle, door width and overlap

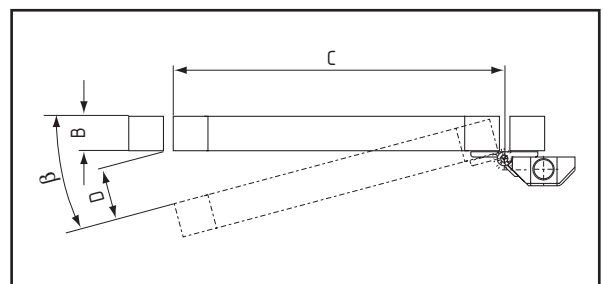
Opening angle „β” of the door	4°	5°	6°	7°	8°	9°	10°
Door width “C” in mm	Door gap “D” in millimetres with overlap “B” = 0 mm						
100	7.0	8.7	10.4	12.2	13.9	15.6	17.4
150	10.5	13.1	15.7	18.3	20.9	23.5	26.0
200	13.9	17.4	20.9	24.4	27.8	31.3	34.7
250	17.4	21.8	26.1	30.5	34.8	39.1	43.3
300	20.9	26.1	31.3	36.5	41.7	46.9	52.1
350	24.4	30.5	36.6	42.6	48.7	54.7	60.7
400	27.9	34.8	41.8	48.7	55.6	62.5	69.4
450	31.4	39.2	47.0	54.8	62.6	70.4	78.1
500	34.9	43.6	52.2	60.9	69.6	78.2	86.8
550	38.3	47.9	57.5	67.0	76.5	86.0	95.5
600	41.8	52.3	62.7	73.1	83.5	93.8	104.1
650	45.3	56.6	67.9	79.2	90.4	101.6	112.8
700	48.8	61.0	73.1	85.3	97.4	109.4	121.5
750	52.3	65.3	78.4	91.4	104.3	117.3	130.2
800	55.8	69.7	83.6	97.4	111.3	125.1	138.8
850	59.3	74.0	88.8	103.5	118.2	132.9	147.5
900	62.7	78.4	94.0	109.6	125.2	140.7	156.2
950	66.2	82.8	99.3	115.7	132.1	148.5	164.9
1,000	69.7	87.1	104.5	121.8	139.1	156.4	173.6
1,050	73.2	91.5	109.7	127.9	146.1	164.2	182.2
1,100	76.7	95.8	114.9	134.0	153.0	172.0	190.9
1,150	80.2	100.2	120.1	140.1	160.0	179.8	199.6
1,200	83.7	104.5	125.4	146.2	166.9	187.6	208.3
1,250	87.2	108.9	130.6	152.3	173.9	195.4	217.0
1,300	90.6	113.2	135.8	158.4	180.8	203.3	225.6
1,350	94.1	117.6	141.0	164.4	187.8	211.1	234.3
1,400	97.6	122.0	146.3	170.5	194.7	218.9	243.0
1,450	101.1	126.3	151.5	176.6	201.7	226.7	251.7
1,500	104.6	130.7	156.7	182.7	208.7	234.5	260.3

Calculation example

The actual door gap “D1” is calculated from the door gap “D” calculated according to the above table less the overlap of door and frame “B”:

$$D1 = D - B$$

Example: A door made of 40 mm aluminium profile with a length of 950 mm is to be secured with a TESZ102. According to the technical data sheet the safety contact of the TESZ102 opens at 4° in new state (6° at end of useful life). In new state a door gap of approx. 66.2 mm is derived from the above table. The actual door gap, calculated using the above formula $D1 = D - B$ produces $(66.2 - 40 = 26.2)$; **D1 = 26.2 mm**. At the end of useful life there is a door gap of approximately 99.3 mm and an actual door gap of $(99.3 - 40 = 59.3)$; **D1 = 59.3 mm**.



Assembly instructions for TESZ type series

Fixing

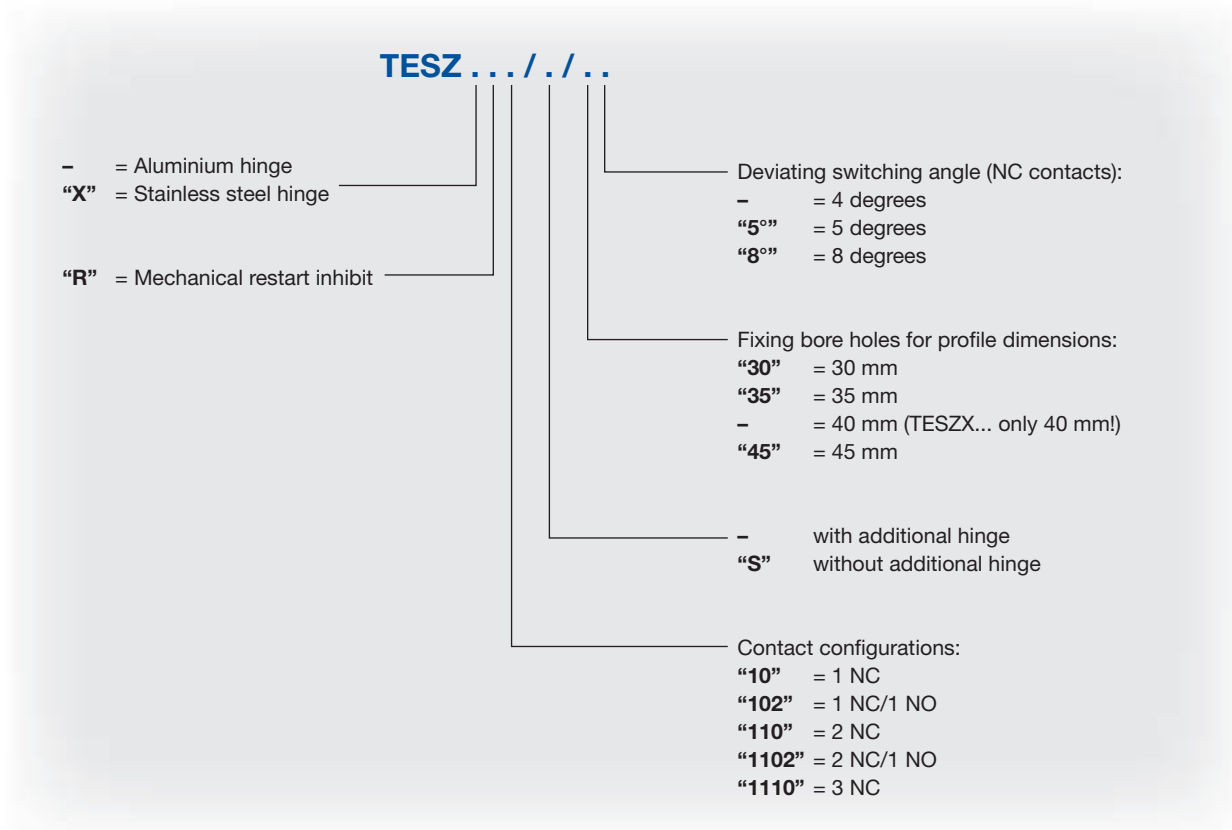
Installed position	Random, but protected from damage (in the top part of the door if possible)
Fixing of hinge switch	With 4 screws DIN 965 M6 x 20, washers and nuts (supplied) or corresponding screws and grooved blocks of the respective profile manufacturer Additional hinges similarly with 4 screws DIN 965 M6 x 20, washers and nuts (supplied) or corresponding screws and grooved blocks of the respective profile manufacturer. The hinge switch may not be used as door stop when opening the door!
Requirement placed on the arrangement of the position switch	<ul style="list-style-type: none">– Please observe the safety distances in compliance with the standards EN 294 and EN 349– Please observe the information in standards EN 292, EN 953 and EN 1088– Page 00 contains a door angle table to calculate the door gap as dependant on the door width and switching angle of the hinge switch– Positive fixing of the switch to the guard– Securing of the fixing elements of the switch against self-loosening– Sufficiently protected cable line to hinge switch
Requirement placed on the circuitry and signal processing system	<ul style="list-style-type: none">– Signal processing according to the closed-circuit current principle– Use of contactors or relay modules with adequate switching capacity– Preswitching of a short-circuit element according to manufacturer's instructions

Technical data for TESZ type series

Device type	TESZ
Regulations	IEC 60947, EN 60947, DIN VDE 0660, EN 1088
Type of switch	Interlocking device without guard locking
Rated operating voltage U_g max.	250 V
Utilisation category to DIN VDE 0660 Teil 200	AC-15, DC-13
Rated operating current I_e^*	AC-15: 2 A/250 VAC, DC-13: 1 A/24 VDC
Thermal rated current I_{th}	2.5 A
Short-circuit protection	gG 2 A
Air clearance and creepage to DIN VDE 0110	Pollution degree 3, overvoltage category III
Proof of positive opening	2.5 kV peak voltage
Positive opening angle (after switching point)	Form Zb; approx. 5° (equal to 2 x 0.5 mm contact aperture)
Contact system	cross-point system
Contact material	AgNi 10, gold plated
Contact force	0.5 N per contact point = 1 N per contact
Switching of small loads	min. 5 VDC/1 mA
Switching frequency (recommended)	120 s/h
Chatter time	<2 ms at 100 mm/s
Climatic resistance	to DIN EN 60068-2-78
Temperature range	-25 ... +65 °C
Installed position	random
Mechanical life	min. 1×10^6 switching cycles, restart-inhibit TESZR max. 1×10^5 switching cycles
Shock resistance to DIN EN 60068-2-27	30 g/18 ms
Vibration resistance to DIN EN 60068-2-6	20 g, 10 ... 200 Hz
Terminal designation to DIN EN 50005 and DIN EN 50013	refer to contact diagrams
Mechanical loading capacity	max. torque 3 kN/m at 1 m distance of the hinges
Housing material	Plastic, glass-fibre-reinforced, self-extinguishing, highly inflammable
Connection system	Screwed connection up to $2 \times 0.5 \dots 2.5 \text{ mm}^2$ (with wire-end ferrules TESZ..10, TESZ..110, TESZ..102: solid up to 0.75 mm^2 , litz wire up to 1.5 mm^2 with wire-end ferrule)
Switching points	New state: NC max. 4°, NO approx. 13° Attainment of the serviceable life limit: NC approx. 6°, NO approx. 15°
Rated insulation voltage U_i	250 V, test voltage 2,000 V
Class of protection of the housing to DIN EN 60529	IP 65
Sealing	Flat seals, V rings
Approvals	CSA, UL, BIA
Cable entry	2 x M20 x 1.5

* Depending on utilisation category and test voltage



Selection plan for type series TESZ



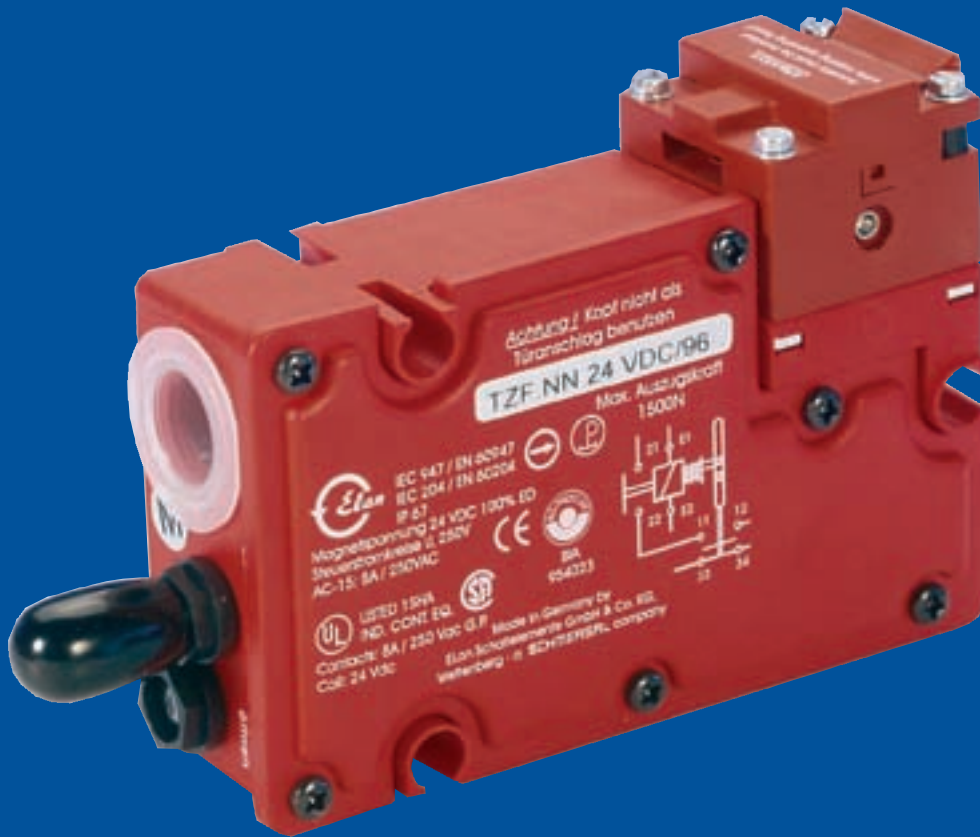
Order example:

TESZR1102/S/45 Hinge switch with aluminium hinge,
 with mechanical restart inhibit,
 2 NC/1 NO,
 without additional hinge,
 fixing bore holes for 45 mm profile system

Product range
Safety door interlocks

Right prallelepiped version TZ		L-shaped version TZK	
			
		for hinged doors in AI profile systems, installation on inside, with shorter installed depth	for other applications
Spring-operated versions	refer to page 36		
ditto with manual release	refer to page 39	refer to pages 72/78	refer to page 90
ditto with emergency release	refer to page 42		refer to page 93
ditto with escape release		refer to pages 75/81	
ditto with escape and manual release	refer to page 48		
Solenoid-operated version	refer to page 51		siehe Seite 96

Safety door interlocks
TZM/TZF types series



Safety door interlocks

TZM/TZF type series

Spring-operated versions

Features

- Interlocking device to EN 1088 with failsafe device
- Funnel-shaped entry for actuator, suitable for large door tolerances
- Holding force 1,500 N
- Operating head adjustable 3 x 90°
- Closed circuit-current principle (unlocked under voltage)

Cross-references

- General description: refer to page 3
- Contact configuration: see below
- Actuator: refer to page 54
- Accessories: refer to page 58
- Assembly instructions: refer to page 68
- Technical data: refer to page 69

Options (on request)

- Plug connection
- Version with Viton seals for use with particularly aggressive media
- Individually coded actuator
- Other voltages



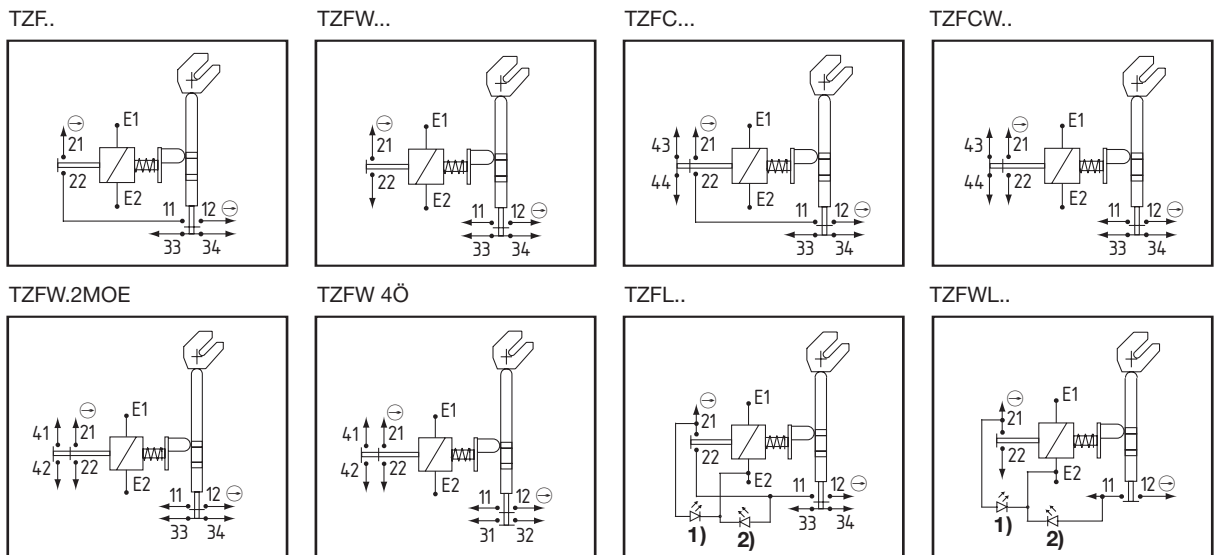
N.B.

Actuator: standard actuator TZ/CO supplied. Refer to page 54 for dimensions and other actuators.



LED display: In the case of devices with LED display the NC contacts are not floating. Only sequencing circuitry may be used in which the two channels are controlled with positive potential.

Contact configurations



Representations of the contacts with unlocked solenoid and open guard.
LED display: 1) green "locked", 2) yellow "door closed"

Test symbol (with respect to the basic design)

BIA 954023

A031156

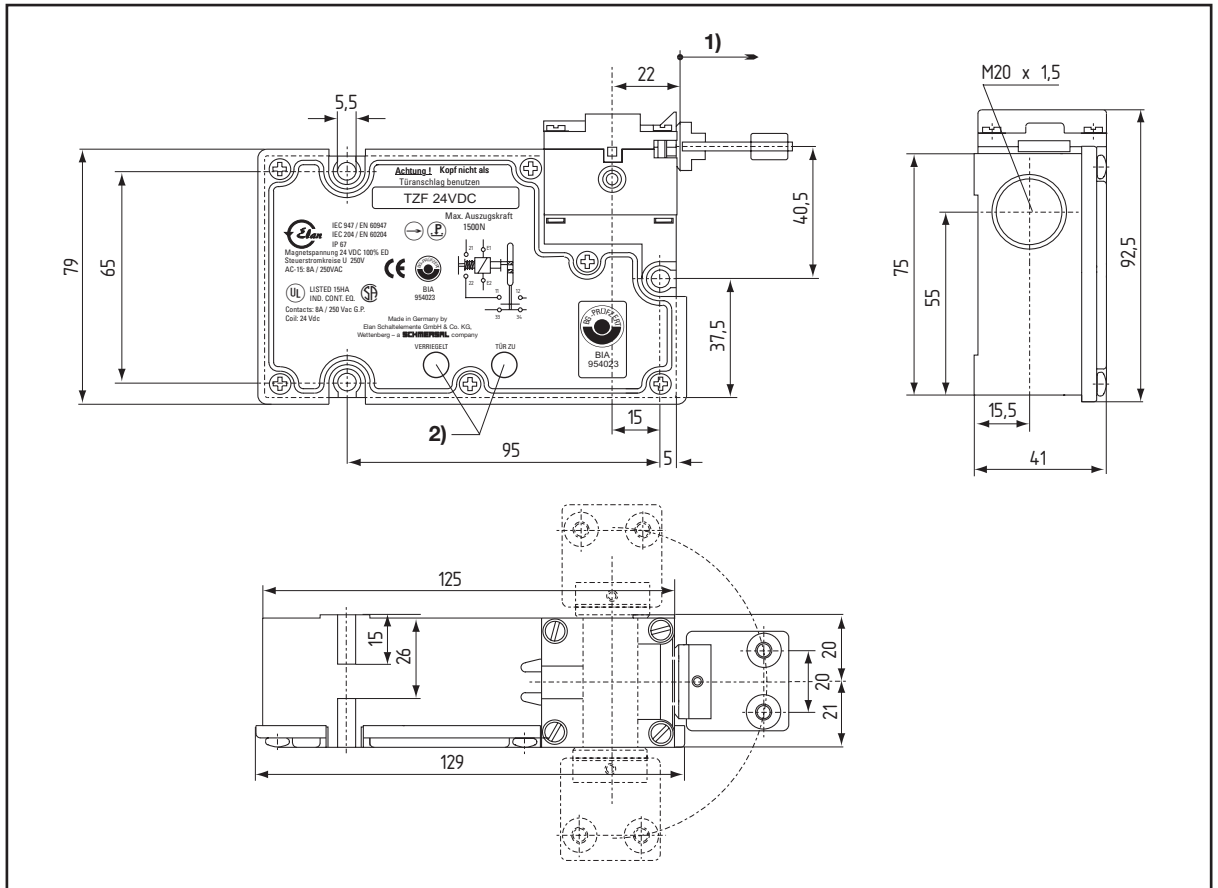
Scope of delivery

Door interlock, standard actuator, fixing material, disposable screws

Product table

Type	Version	Supply voltage	Part number
2 NC in series ...			
TZF	... + 1 NO	24 VDC	191 5000
TZF 115	... + 1 NO	115 VAC	191 5120
TZF 230	... + 1 NO	230 VAC	191 5300
TZFL	... + 1 NO, with LED display	24 VDC	191 5060
2 NC parallel			
TZFW	... + 1 NO	24 VDC	191 5080
TZFW 115	... + 1 NO	115 VAC	191 5087
TZFW 230	... + 1 NO	230 VAC	191 5380
TZFWL	... with LED display	24 VDC	191 5085
TZFCW	... + 2 NO	24 VDC	191 5103
3 NC parallel			
TZFW.2MOE	... + 1 NO	24 VDC	191 5124
TZFW 4Ö	4 NC parallel	24 VDC	191 5125

Dimensions TZF ...



- 1) Dimensional base for actuator
- 2) LED display optional

Safety door interlocks

TZM/TZF type series

Spring-operated versions

with manual release

Features

- Interlocking device to EN 1088 with failsafe device
- Funnel-shaped entry for actuator, suitable for large door tolerances
- Manual release with 3-square socket key
- Holding force 1,500 N
- Operating head adjustable 3 x 90°
- Closed circuit-current principle (unlocked under voltage)

Cross-references

- General description: refer to page 3
- Contact configuration: see below
- Actuator: refer to page 54
- Accessories: refer to page 58
- Assembly instructions: refer to page 68
- Technical data: refer to page 69

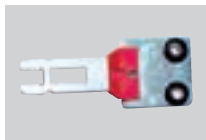
Options (on request)

- Plug connection
- Version with Viton seals for use with particularly aggressive media
- Individually coded actuator
- Other voltages



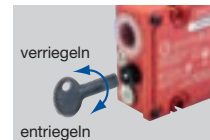
N.B.

Actuator: standard actuator TZ/CO supplied. Refer to page 54 for dimensions and other actuators.



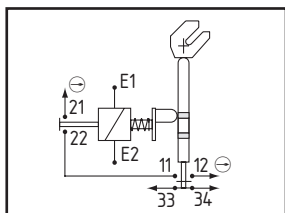
LED display: In the case of devices with LED display the NC contacts are not floating. Only sequencing circuitry may be used in which the two channels are controlled with positive opening.

Manual release: for the manual release with 3-square socket key for maintenance, setting up, power failure etc.

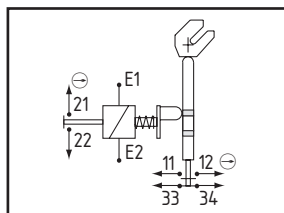


Contact configurations

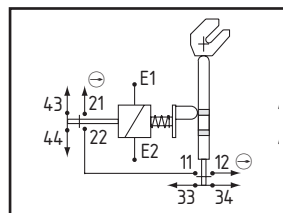
TZFS..



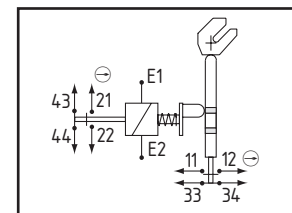
TZFSWS...



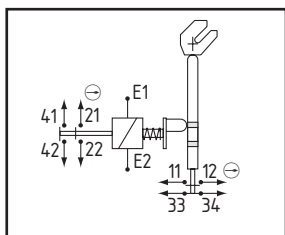
TZFCFS...



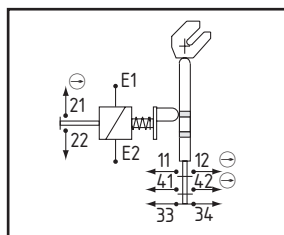
TZFCWS



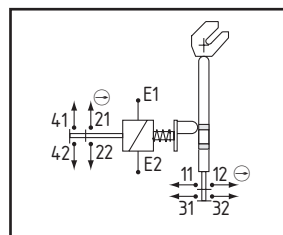
TZFSWS.2MOE



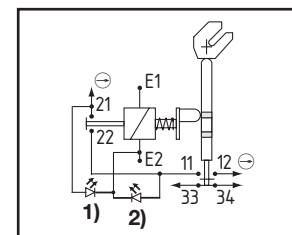
TZFSWS 3Ö



TZFSWS 4Ö



TZFSL..



Representations of the contacts with unlocked solenoid and open guard.
LED display: 1) green "locked", 2) yellow "door closed"

Test symbol (with respect to the basic design)



BIA 954023



A031156

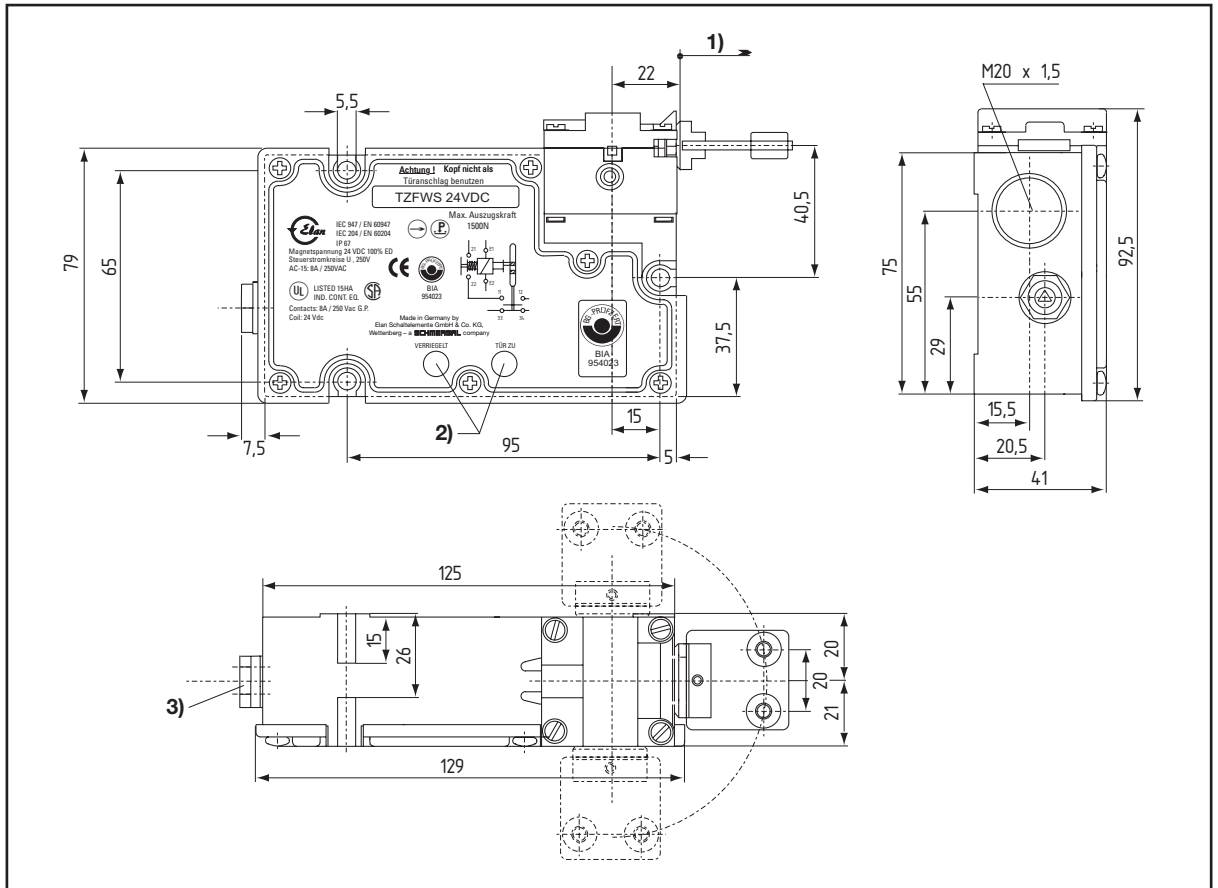
Scope of delivery

Door interlock, standard actuator, fixing material, disposable screws, standard 3-square socket key (refer to page 58 for further information)

Product table

Type	Version	Supply voltage	Part number
2 NC in series ...			
TZFS	... + 1 NO	24 VDC	191 5040
TZFS115	... + 1 NO	115 VAC	191 5140
TZFS230	... + 1 NO	230 VAC	191 5340
TZFSL	... + 1 NO, with LED display	24 VDC	191 5045
2 NC parallel ...			
TZFCS	... + 2 NO	24 VDC	191 5102
TZFCS115	... + 2 NO	115 VAC	191 5115
TZFCS230	... + 2 NO	230 VAC	191 5116
3 NC parallel			
TZFWS	... + 1 NO	24 VDC	191 5095
TZFWS115	... + 1 NO	115 VAC	191 5096
TZFWS230	... + 1 NO	230 VAC	191 5097
TZFCWS	... + 2 NO	24 VDC	191 5112
4 NC parallel			
TZFWS.2MOE	... + 1 NO	24 VDC	191 8954
TZFWS 3Ö	... + 1 NO	24 VDC	191 8950
TZFWS 4Ö	... + 1 NO	24 VDC	191 8951

Dimensions TZF ...S



- 1) Dimensional base for actuator
- 2) LED display optional
- 3) Manual release

Safety door interlocks

TZM/TZF type series

Spring-operated versions

with emergency release, concealed installation

Features

- Interlocking device to EN 1088 with failsafe device
- Funnel-shaped entry for actuator, suitable for large door tolerances
- Emergency release with pull-bar
- Holding force 1,500 N
- Operating head adjustable 3 x 90°
- Closed circuit-current principle (unlocked under voltage)

Cross-references

- General description: refer to page 3
- Contact configuration: see below
- Actuator: refer to page 54
- Accessories: refer to page 58
- Assembly instructions: refer to page 68
- Technical data: refer to page 69

Options (on request)

- Plug connection
- Version with Viton seals for use with particularly aggressive media
- Individually coded actuator
- Other voltages



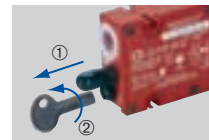
N.B.

Actuator: standard actuator TZ/CO supplied. Refer to page 54 for dimensions and other actuators.



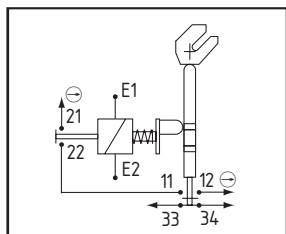
LED display: In the case of devices with LED display the NC contacts are not floating. Only sequencing circuitry may be used in which the two channels are controlled with positive opening.

Emergency release: for manual release by pulling on the release rod (1), reset by turning the 3-square socket key (2).

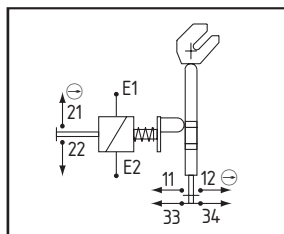


Contact configurations

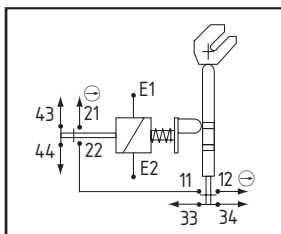
TZFN..



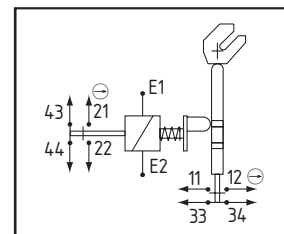
TZFWN...



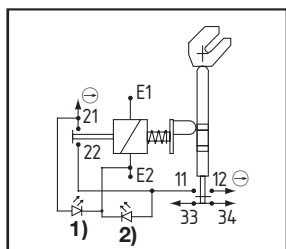
TZFCN...



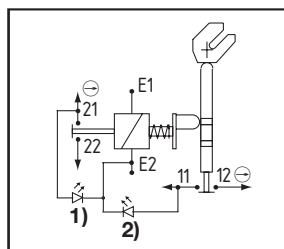
TZFCWN...



TZFNL...



TZFWNL...



Representations of the contacts with unlocked solenoid and open guard.

LED display: 1) green "locked", 2) yellow "door closed"

Test symbol (with respect to the basic design)



BIA 954023

A031156

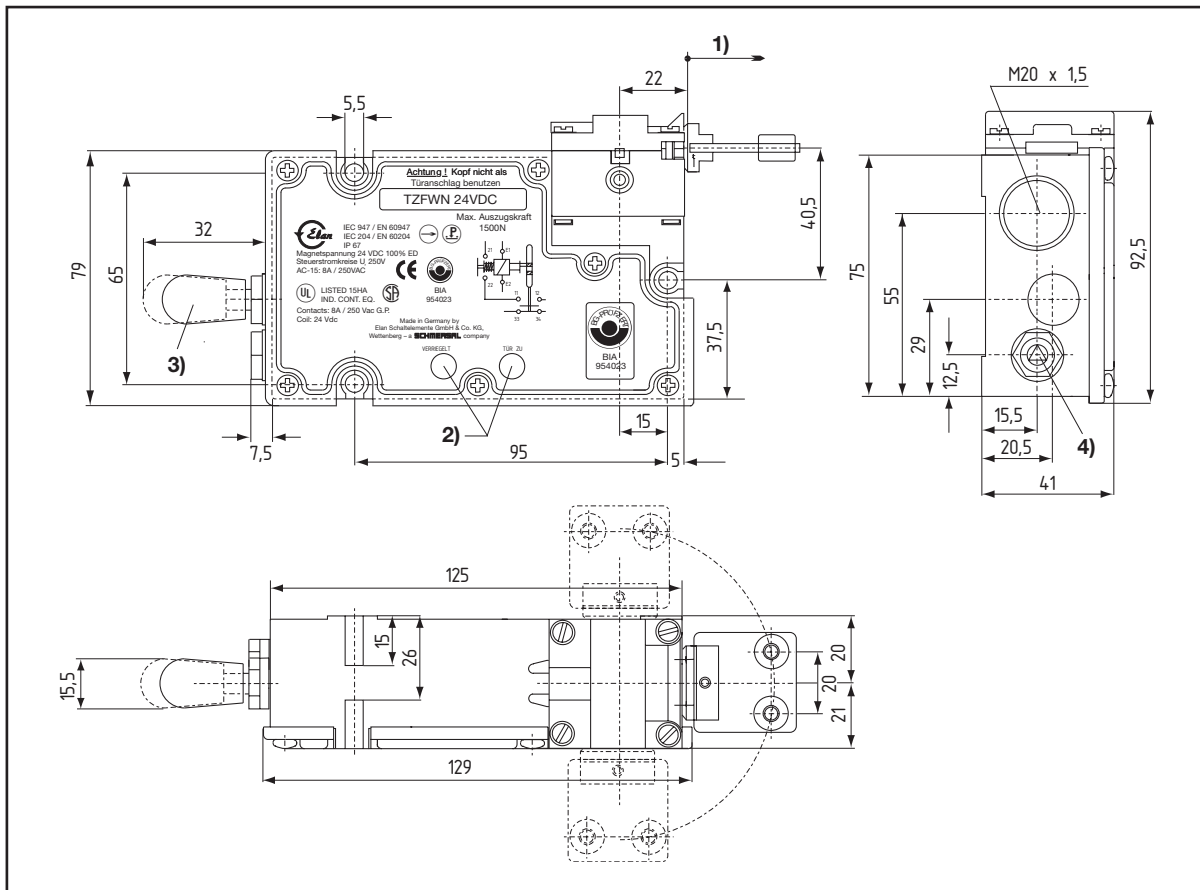
Scope of delivery

Door interlock, standard actuator, fixing material, disposable screws, standard 3-square socket key (refer to page 58 for further information)

Product table

Type	Version	Supply voltage	Part number
2 NC in series ...			
TZFN	... + 1 NO	24 VDC	191 5020
TZFN115	... + 1 NO	115 VAC	191 5140
TZFN230	... + 1 NO	230 VAC	191 5340
2 NC parallel ...			
TZFCN	... + 2 NO	24 VDC	191 5136
TZFCN115	... + 2 NO	115 VAC	191 5137
TZFCN230	... + 2 NO	230 VAC	191 5138
2 NC parallel ...			
TZFWN	... + 1 NO	24 VDC	191 5095
TZFWN115	... + 1 NO	115 VAC	191 5096
TZFWN230	... + 1 NO	230 VAC	191 5097
TZFCWN	... + 2 NO	24 VDC	191 5172
TZFNL	... + 1 NO, with LED display	24 VDC	191 5045
TZFWNL	... with LED display	24 VDC	191 5139

Dimensions TZF..N



- 1) Dimensional base for actuator
- 2) LED display optional
- 3) Manual release
- 4) Reset

Safety door interlocks

TZM/TZF type series

Spring-operated versions

with BG-tested emergency release

Features

- Interlocking device to EN 1088 with failsafe device
- Funnel-shaped entry for actuator, suitable for large door tolerances
- BG-tested emergency release with pull-rod
- Holding force 1,500 N
- Operating head adjustable 3 x 90°
- Closed circuit-current principle (unlocked under voltage)

Cross-references

- General description: refer to page 3
- Contact configuration: see below
- Actuator: refer to page 54
- Accessories: refer to page 58
- Assembly instructions: refer to page 68
- Technical data: refer to page 69

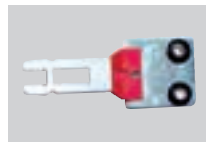
Options (on request)

- Plug connection
- Version with Viton seals for use with particularly aggressive media
- Individually coded actuator
- Other voltages

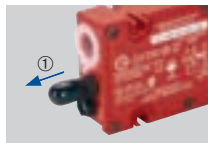


N.B.

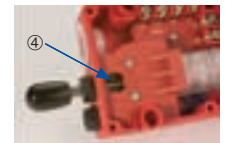
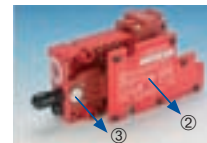
Actuator: standard actuator TZ/CO supplied. Refer to page 54 for dimensions and other actuators.



Emergency release: for the manual release by pulling the release rod (1).

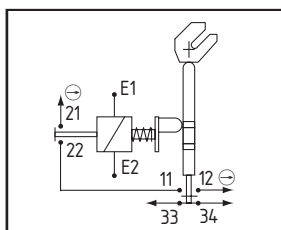


To reset remove device lid (2), unscrew grey plug (3) and push in lug (4) with a screwdriver. Then replace plug and housing lid and screw tight.



Contact configuration

TZF.NN



Representations of the contacts with unlocked solenoid and open guard.

Test symbol (with respect to the basic design)



BIA 954023

A031156

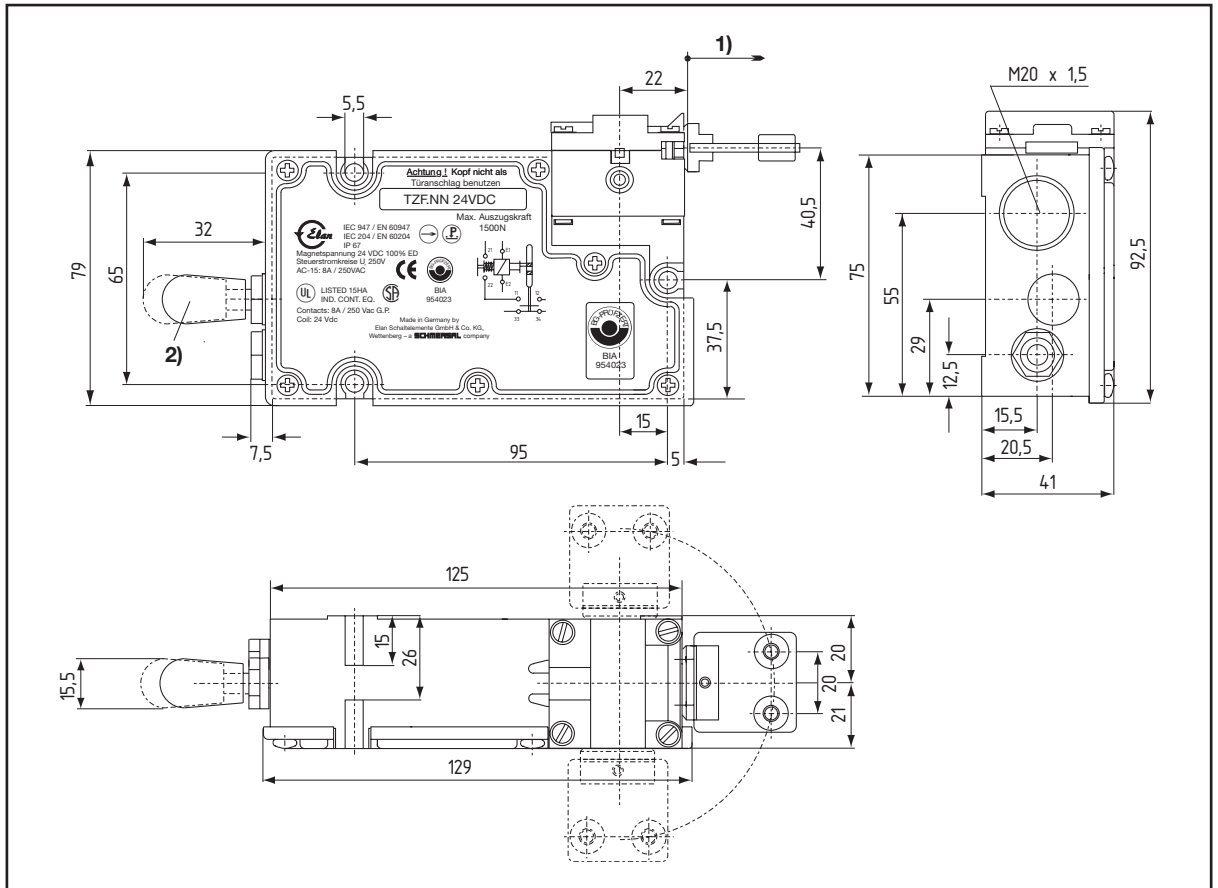
Scope of delivery

Door interlock, standard actuator, fixing material, disposable screws

Product table (Fortsetzung)

Type	Version	Supply voltage	Part number
2 NC in series ...			
TZF.NN	... + 1 NO	24 VDC	191 5030
TZF.NN115	... + 1 NO	115 VAC	191 5135
TZF.NN230	... + 1 NO	230 VAC	191 5330

Dimensions TZF.NN



- 1) Dimensional base for actuator
- 2) Emergency release

Safety door interlocks

TZM/TZF type series

Spring-operated versions

with escape release and manual release

Features

- Interlocking device to EN 1088 with failsafe device
- Funnel-shaped entry for actuator, suitable for large door tolerances
- Escape release via impact button, reset via pushbutton
- Manual release with 3-square socket key
- Holding force 1,500 N
- Operating head adjustable 3 x 90°
- Closed circuit-current principle (unlocked under voltage)

Cross-references

- General description: refer to page 3
- Contact configuration: see below
- Actuator: refer to page 54
- Accessories: refer to page 58
- Assembly instructions: refer to page 68
- Technical data: refer to page 69

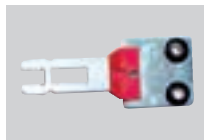
Options (on request)

- Plug connection
- Version with Viton seals for use with particularly aggressive media
- Individually coded actuator
- Other voltages

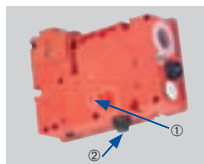


N.B.

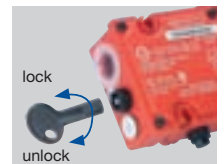
Actuator: standard actuator TZ/CO supplied. Refer to page 54 for dimensions and other actuators.



Escape release: actuation by pressing the release button (1), reset by pressing the reset button (2).

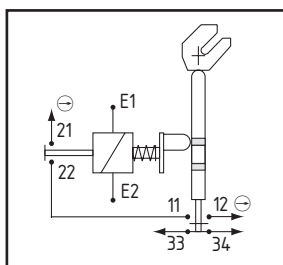


Manual release: for manual release with 3-square socket key for maintenance, setting up, power failure etc.

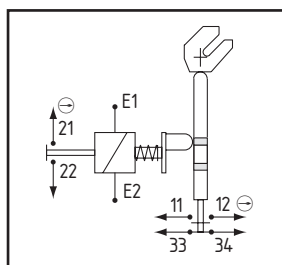


Contact configurations

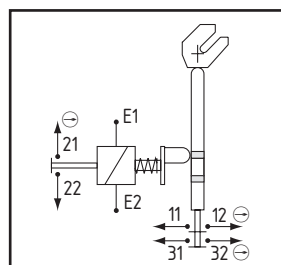
TZFS.NF



TZFWS.NF



TZFWS.NF3Ö



Representations of the contacts with unlocked solenoid and open guard.

Test symbol (with respect to the basic design)



BIA 954023

A031156

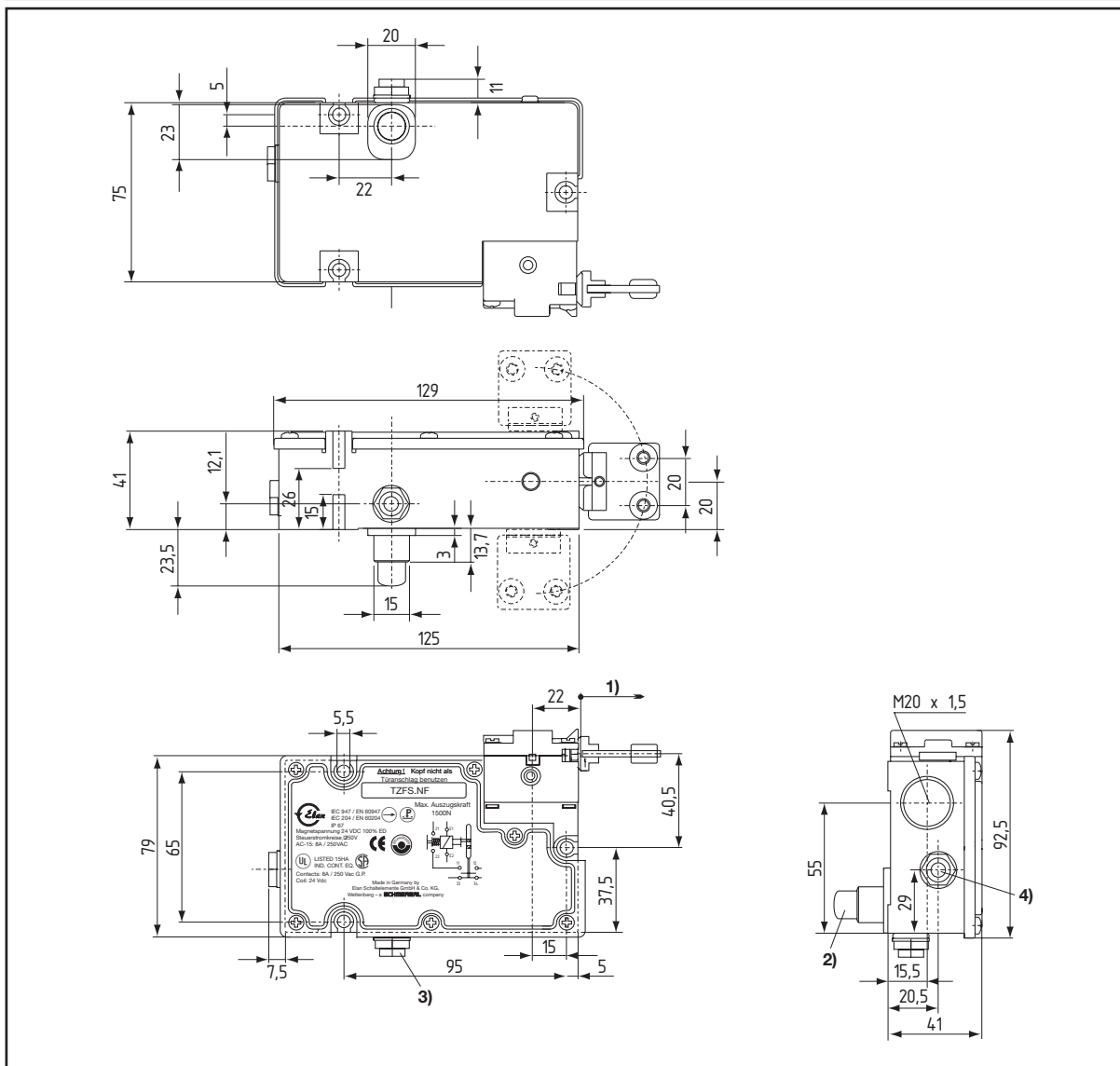
Scope of delivery

Door interlock, standard actuator, fixing material, disposable screws, standard 3-square socket key (refer to page 58 for additional information)

Product table

Type	Version	Supply voltage	Part number
2 NC in series ...			
TZFS.NF	... + 1 NO	24 VDC	191 5058
2 NC parallel ...			
TZFWS.NF	... + 1 NO	24 VDC	191 5057
TZFWS.NF3Ö	... + 1 NC	24 VDC	191 5061

Dimensions TZFS.NF



- 1) Dimensional base for actuator
- 2) Escape release
- 3) Reset button for escape release
- 4) Manual release

Safety door interlocks

TZM/TZF type series

Solenoid-operated versions

Features

- Interlocking device to EN 1088 with failsafe device
- Funnel-shaped entry for actuator, suitable for large door tolerances
- Holding force 1,500 N
- Operating head adjustable 3 x 90°
- Closed circuit-current principle (unlocked under voltage)

Cross-references

- General description: refer to page 3
- Contact configuration: see below
- Actuator: refer to page 54
- Accessories: refer to page 58
- Assembly instructions: refer to page 68
- Technical data: refer to page 69

Options (on request)

- Plug connection
- Version with Viton seals for use with particularly aggressive media
- Individually coded actuator
- Other voltages



N.B.

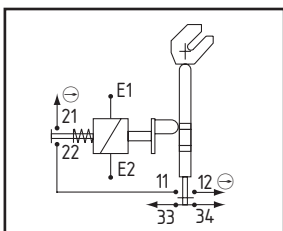
Actuator: standard actuator TZ/CO supplied. Refer to page 54 for dimensions and other actuators.



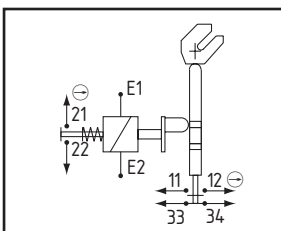
LED display: In the case of devices with LED display the NC contacts are not floating. Only sequencing circuitry may be used in which the two channels are controlled with positive potential.

Contact configurations

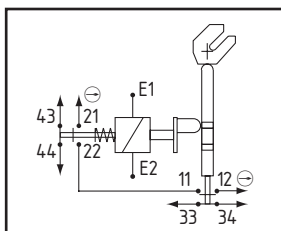
TZM..



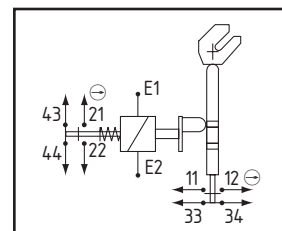
TZMW..



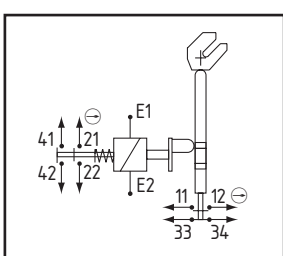
TZMC...



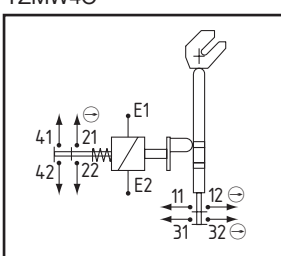
TZMCW..



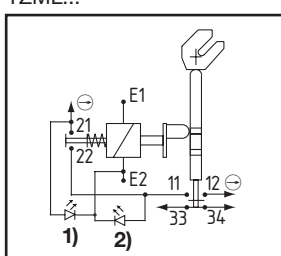
TZMW2MOE



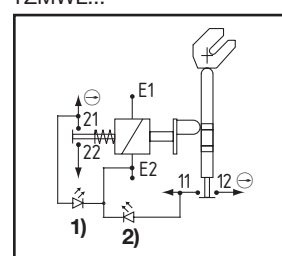
TZMW4Ö



TZML...



TZMWL...



Representations of the contacts with unlocked solenoid and open guard.

LED display: 1) green "locked", 2) yellow "door closed"

Test symbol (with respect to the basic design)



BIA 954023



A031156

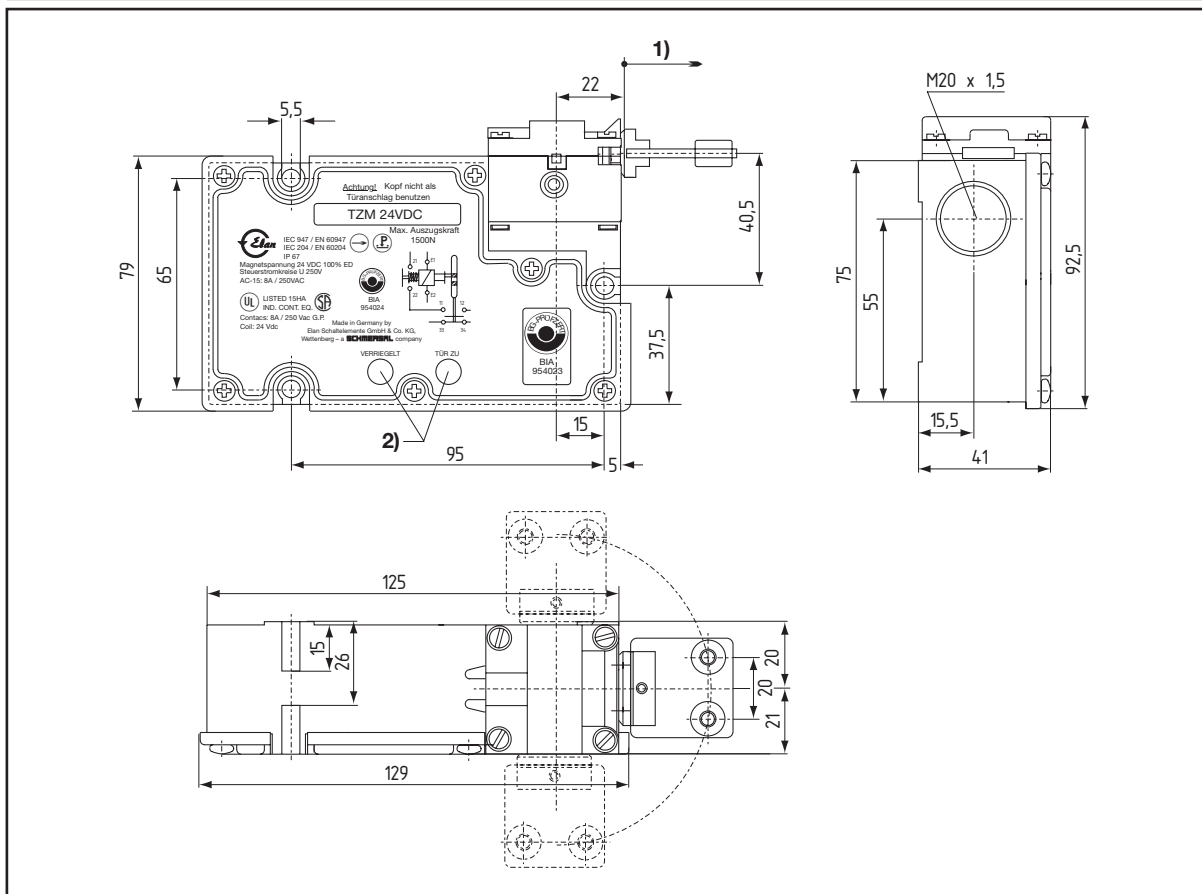
Scope of delivery

Door interlock, standard actuator, fixing material, disposable screws

Product table

Type	Version	Supply voltage	Part number
2 NC in series ...			
TZM	... + 1 NO	24 VDC	191 0000
TZM115	... + 1 NO	115 VAC	191 0420
TZM230	... + 1 NO	230 VAC	191 0300
TZMC	... + 2 NO	24 VDC	191 0091
TZMC115	... + 2 NO	115 VAC	191 0092
TZMC230	... + 2 NO	230 VAC	191 0093
TZML	... + 1 NO, with LED display	24 VDC	191 0060
2 NC parallel			
TZMW	... + 1 NO	24 VDC	191 0080
TZMW115	... + 1 NO	115 VAC	191 0480
TZMW230	... + 1 NO	230 VAC	191 0380
TZMCW	... + 2 NO	24 VDC	191 0094
TZMWL	... + with LED display	24 VDC	191 0085
3 NC parallel			
TZMW2MOE	... + 1 NO	24 VDC	191 0007
TZMW4Ö	4 NC parallel	24 VDC	191 0052

Dimensions TZM...



- 1) Dimensional base for actuator
- 2) LED display optional

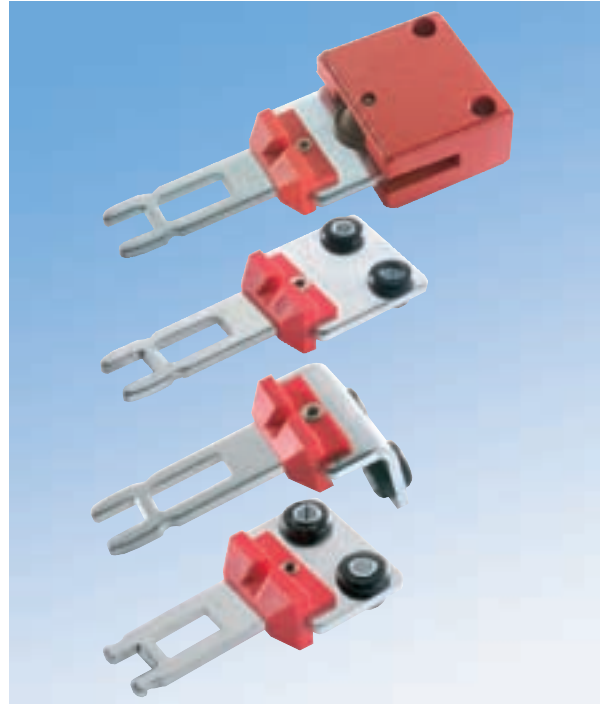
Safety door interlocks

TZM/TZF type series

Actuators

Features

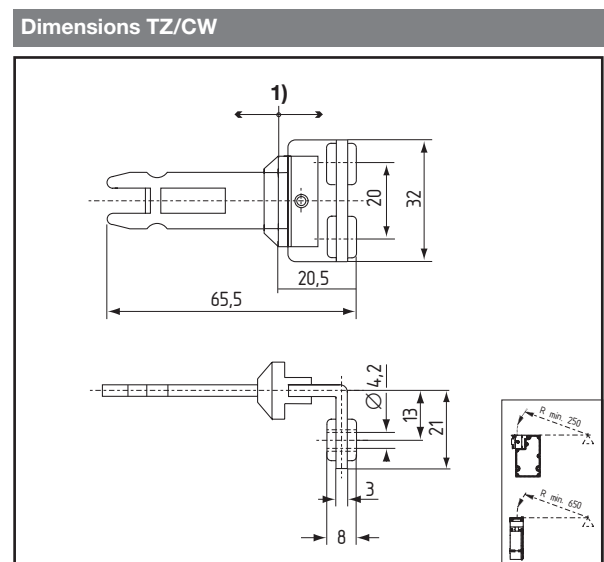
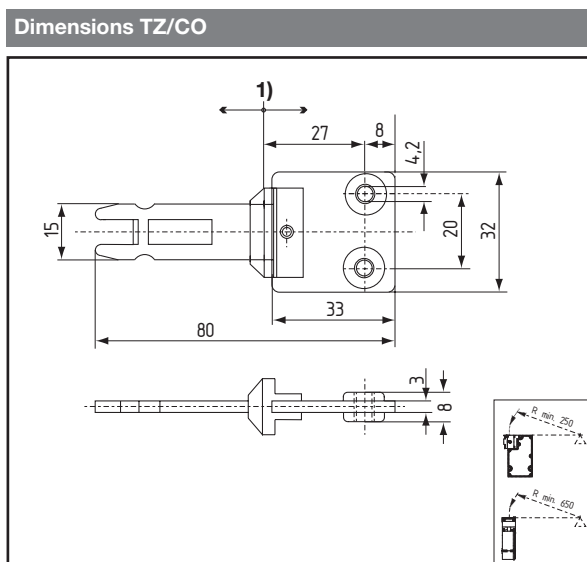
- Balances out tolerances between the guide of the moving guard and the entry of the operating heads by means of rubber buffers with integrated spacer sleeves.
- Resilient actuator insert.
- Versions also available for small door radii.
- Actuator play in locked state 11 mm (TZ/CK, TZ/CWK 4 mm).
- Material:
 - actuator: galvanised steel
 - auxiliary stop: glass-fibre-reinforced thermoplastic, self-extinguishing to UL 94-V-0.
 - Rubber buffer: perbunan, oil and petrol resistant.
 - Telescopic bracket and assembly block: AlSi 12, painted



Scope of delivery

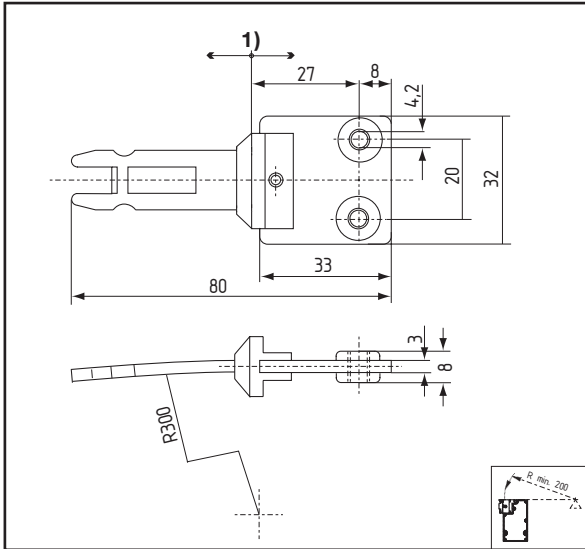
Actuator, disposable screws, adjuster

Product table		
Type	Version	Part number
Standard actuator ...		
TZ/CO	... straight (supplied with the TZM/TZF type series)	191 9600
TZ/CW	... with angled fixing level	191 9630
Radius actuator ...		
TZK/COR	... standard	191 9610
TZ/CWR	... with angled fixing level	191 9640
Short actuator ...		
TZ/CK	... straight	191 9603
TZ/CWK	... with angled fixing level	191 9606
Telescopic actuator ...		
TZ/COF/HIS.1	... with rear attachment	191 9617
TZ/COF/HIS.2	... with top attachment	191 9618
TZ/CORF/HIS.1	... for smaller radii, rear attachment	191 9627
TZ/CORF/HIS.2	... for smaller radii, top attachment	191 9628

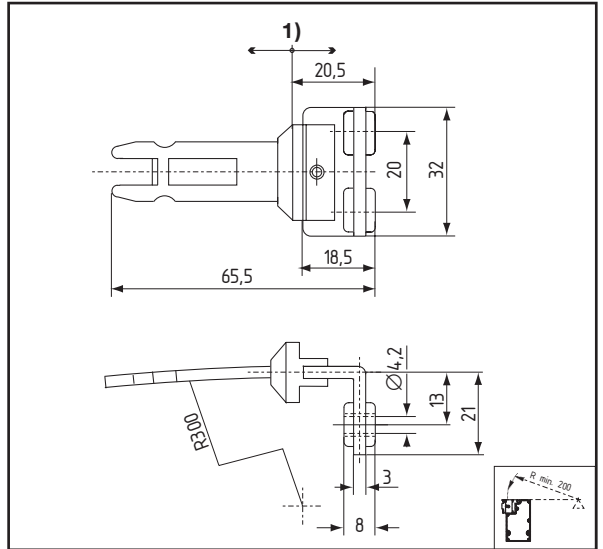


1) Dimensional base for door interlock

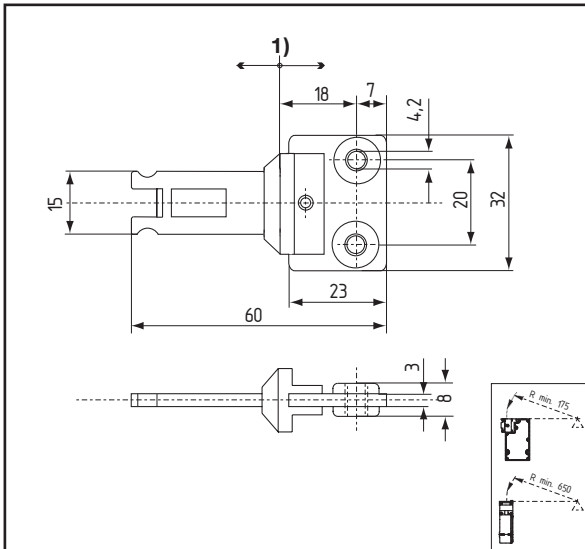
Dimensions TZ/COR



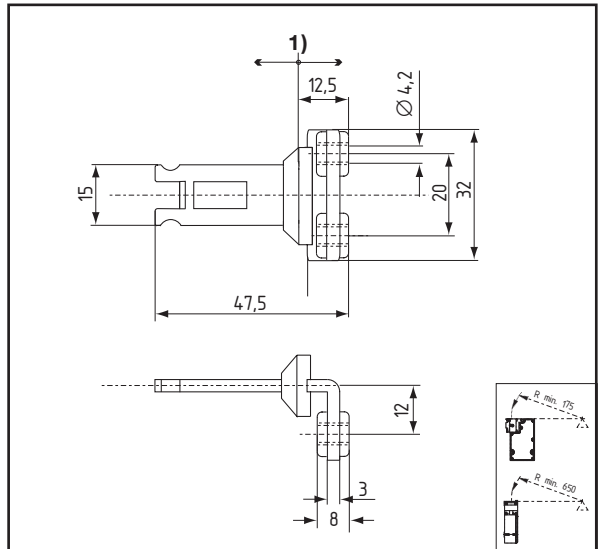
Dimensions TZ/CWR



Dimensions TZ/CK

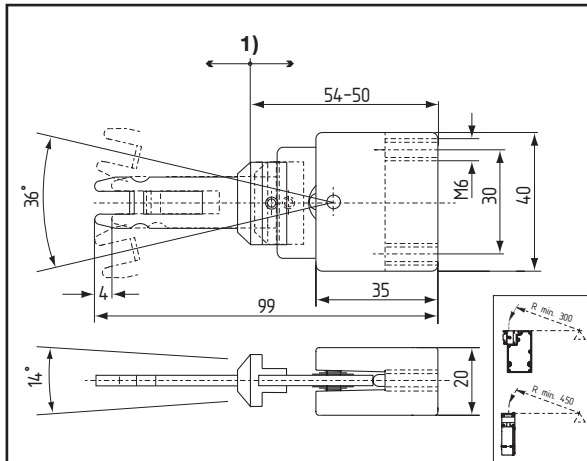


Dimensions TZ/CWK

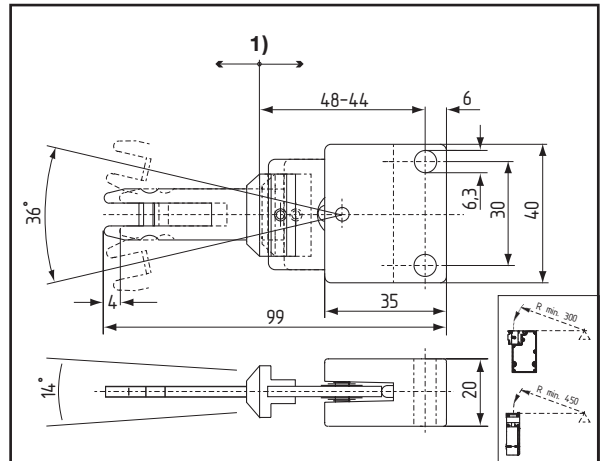


1) Dimensional base for door interlock

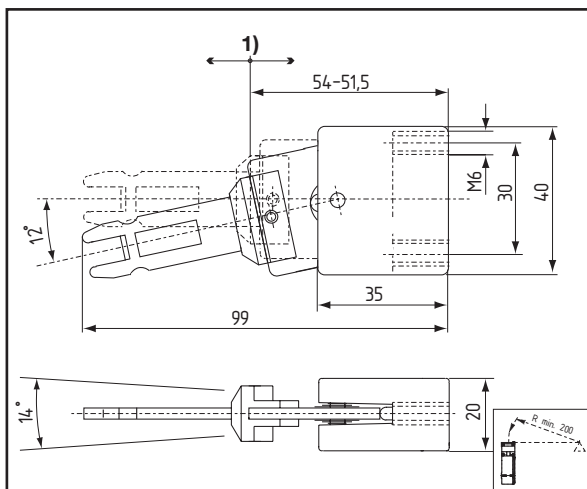
Dimensions TZ/COF/HIS.1



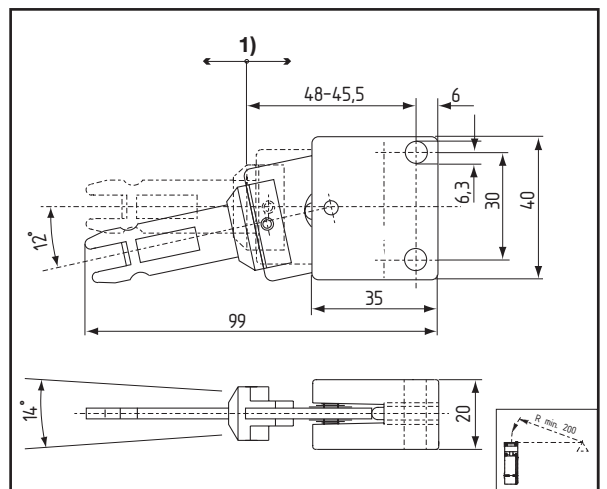
Dimensions TZ/COF/HIS.2



Dimensions TZ/CORF/HIS.1



Dimensions TZ/CORF/HIS.2



1) Dimensional base for door interlock

Safety door interlocks

TZM/TZF type series

Accessories – 3-square socket key

Features

- Straight 3-square socket key for actuation of the manual release (part of scope of delivery in all appropriate devices).
- Angled 3-square socket key for use in places difficult to access.
- Long 3-square socket key for use in the case of larger distances between door interlock and machine cladding.



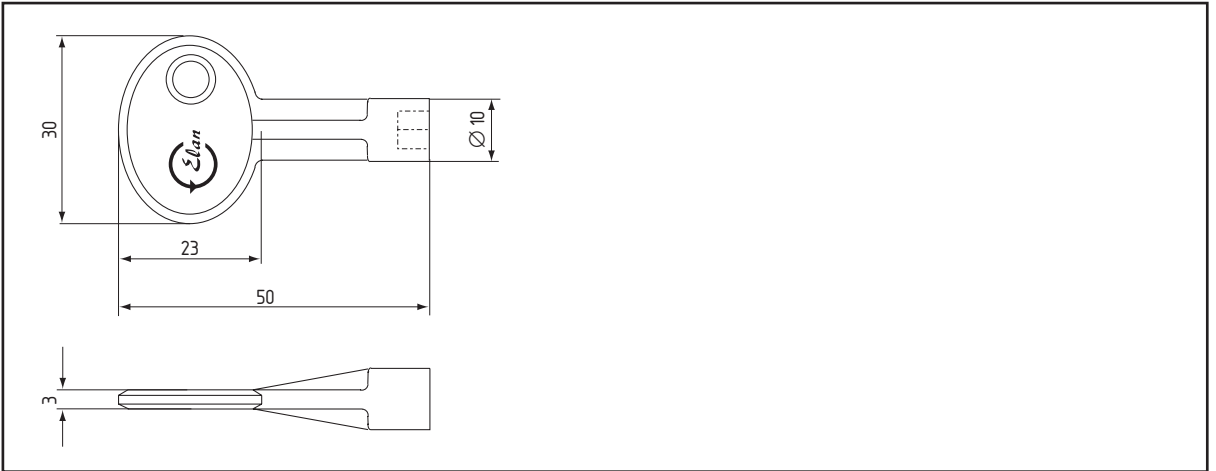
Scope of delivery

3-square socket key

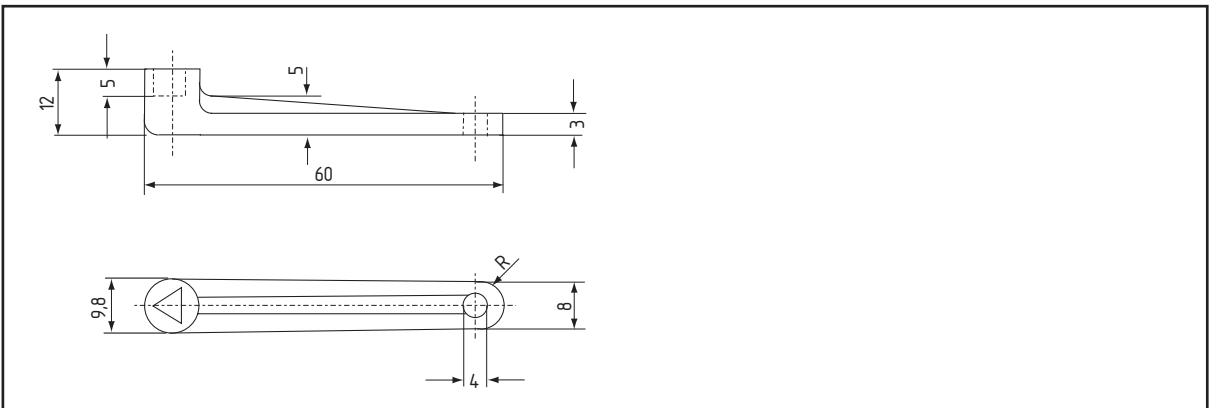
Product table

Type	Version	Part number
TZ-69	Straight 3-square socket key	191 9622
TZ-75	Angled 3-square socket key	191 9623
TZ-96	Long 3-square socket key	191 9625

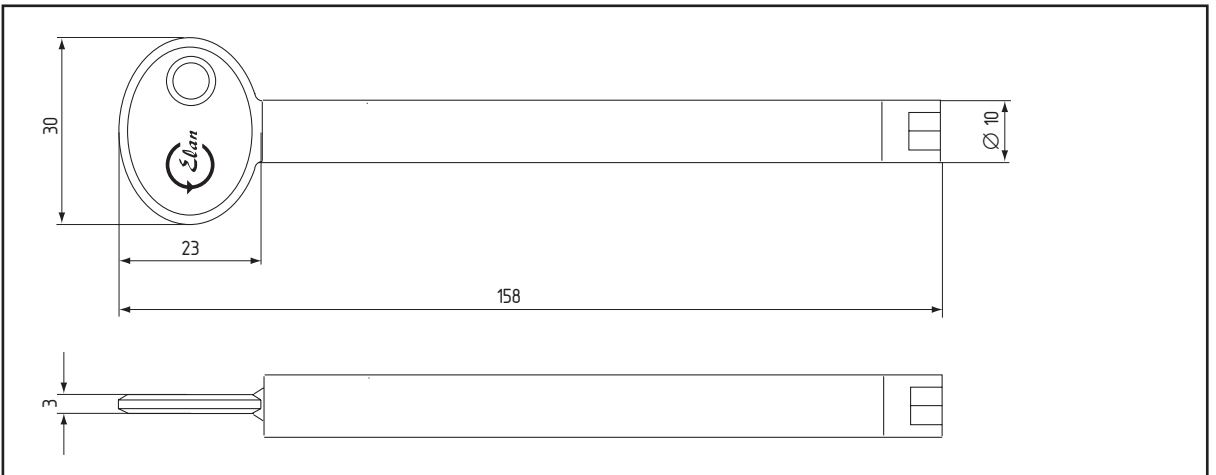
Dimensions TZ-69



Dimensions TZ-75



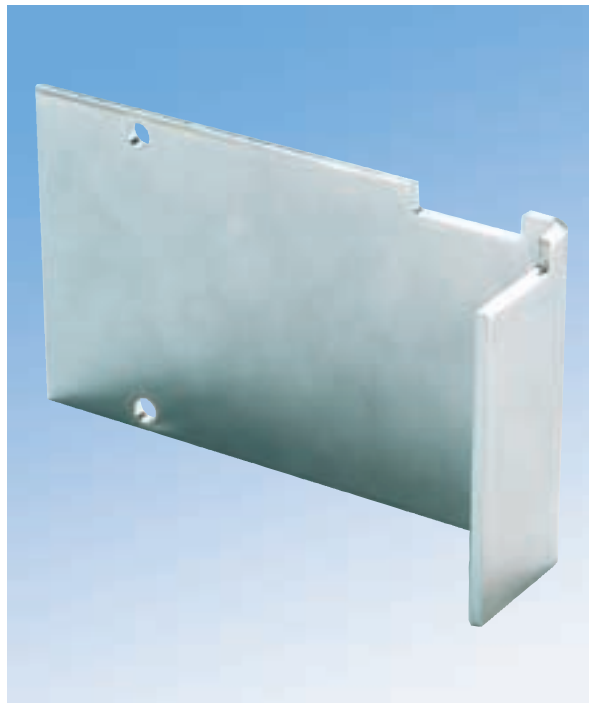
Dimensions TZ-96



Safety door interlocks
TZM/TZF type series
 Accessories – Mounting bracket

Features

- Increases the maximum extraction force of the TZM/ TZF type series from 1,500 N to 2,000 N in 2 actuation directions
- Material: galvanised steel

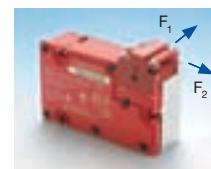


N.B.

Assembly of the mounting bracket



Increase of the maximum extraction force in directions F_1 and F_2



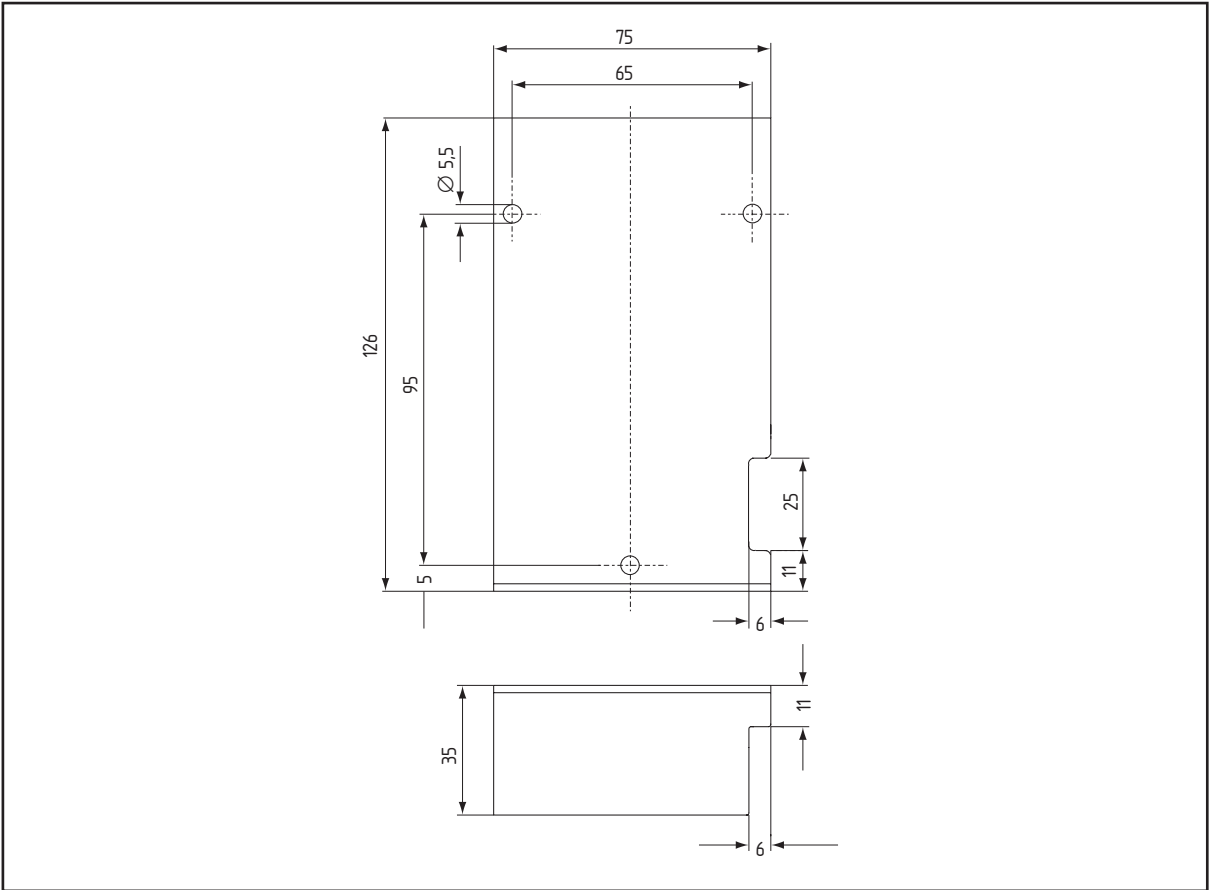
Scope of delivery

Mounting bracket

Product table

Type	Version	Part number
TZ-44	Mounting bracket for greater extraction forces	1919805

Dimensions TZ-44



Door handles

for TZM../TZF.. type series

Light-weight version for outside installation

Features

- Less work due to ease of installation particularly to commercially available (Al) profile systems, and also to square tubes and other machine cladding.
- Minimum wear to the operating head due to straight actuator guidance.
- Reduction of forces in pull, push and lateral direction due to integrated front rubber.
- No additional door handle necessary.
- With slot for max. 3 padlocks to protect against actuation of the system by third parties.
- Refer to pages 36 et seq. for door interlock.



N.B.

Attachment for right-hung doors



Attachment for left-hung doors



Scope of delivery

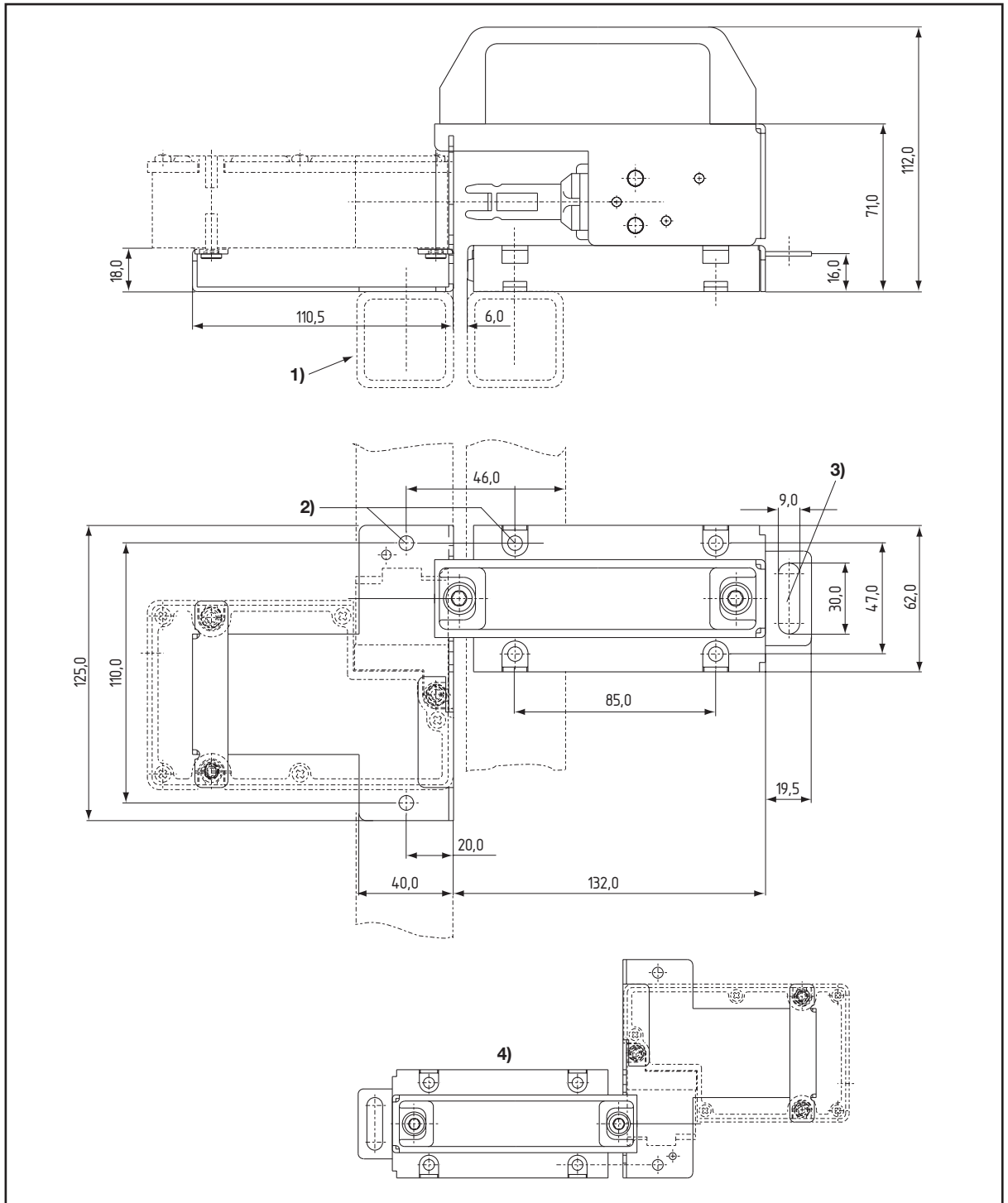
Door handles including actuator for TZM/TZF (please order door interlock separately)

Product table

Type	Version	Part number
TR-LTZ	Attachment on outside left for right-hung doors*	1919812

* In the case of left-hung doors the door handle must be mounted in a position turned through 180° (see above).

Dimensions TR-LTZ



1) Protective screen frame, e.g. 40 x 40 mm

2) Fixing bore hole 6.2 mm diameter

3) Slot for max. 3 padlocks with 6 mm arch

4) In the case of assembly to left-hung doors the door handle must be mounted in a position turned through 180°.

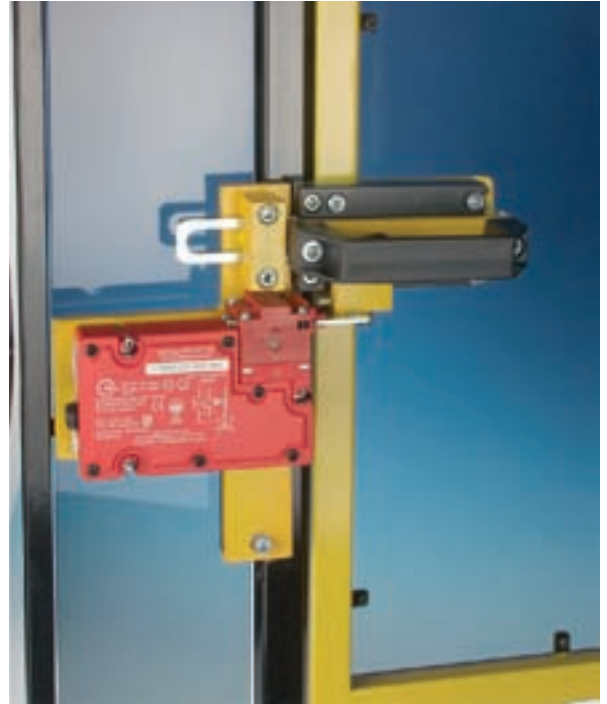
Door handles

for TZM../TZF.. type series

Heavy-duty version for outside installation

Features

- Less work due to ease of installation particularly to commercially available (Al) profile systems, and also to square tubes and other machine cladding.
- Minimum wear to the operating head due to straight actuator guidance.
- Reduction of forces in pull, push and lateral direction due to integrated front rubber.
- No additional door handle necessary.
- With slot for max. 3 padlocks to protect against actuation of the system by third parties.
- Refer to pages 36 et seq. for door interlock.



N.B.

Attachment for right-hung doors



Attachment for left-hung doors



Scope of delivery

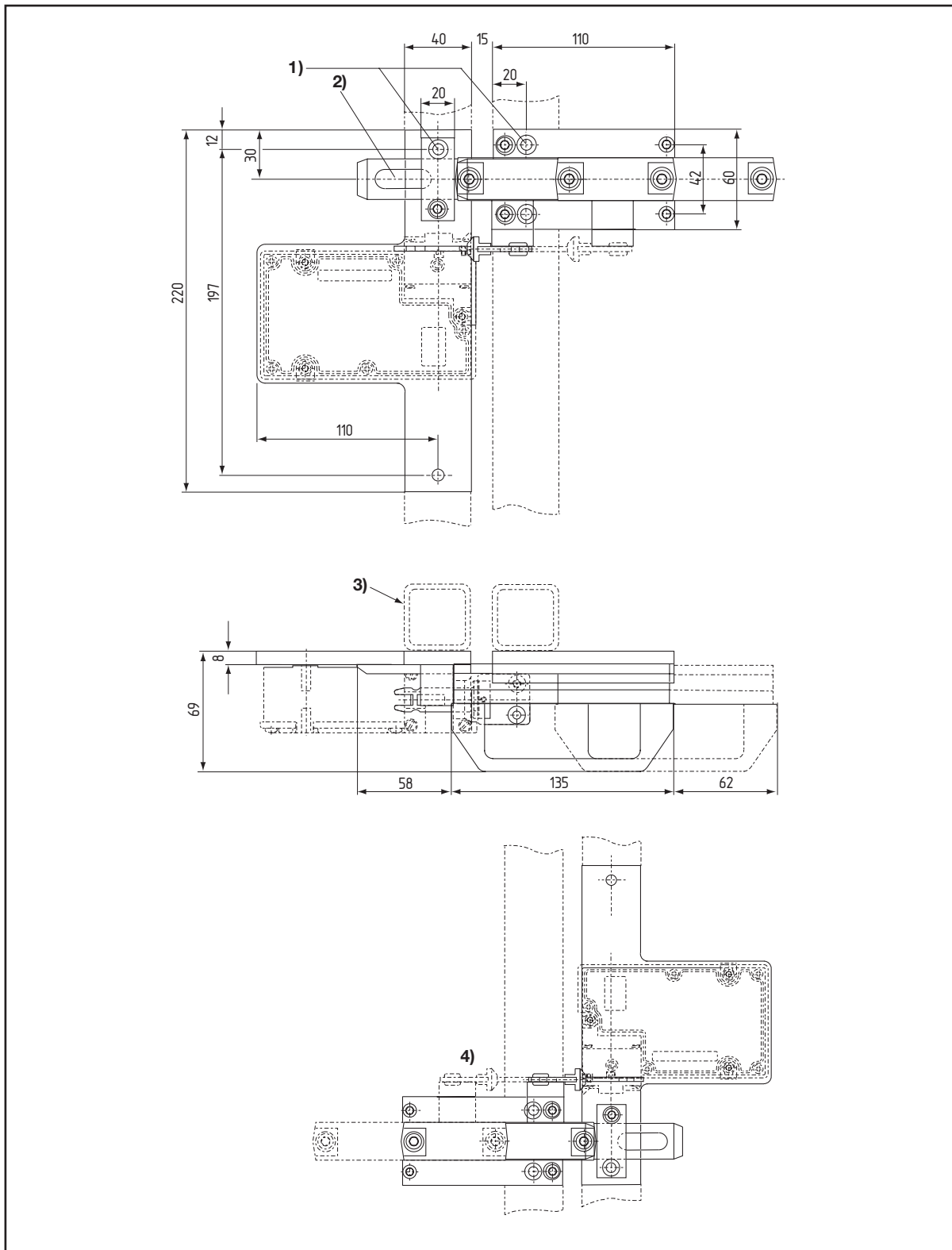
Door handle including actuator for TZM/TZF (please order door interlock separately)

Product table

Type	Version	Part number
TR-STZ	Attachment on outside left for right-hung doors*	1919814

* In the case of left-hung doors the door handle must be mounted in a position turned through 180° (see above).

Dimensions TR-STZ



- 1) For screw M6 – DIN 912, 2) Slot for max. 3 padlocks with 6 mm arch, 3) Protective screen frame, e.g. 40 x 40 mm
 4) In the case of assembly to left-hung doors the door handle must be mounted in a position turned through 180°.

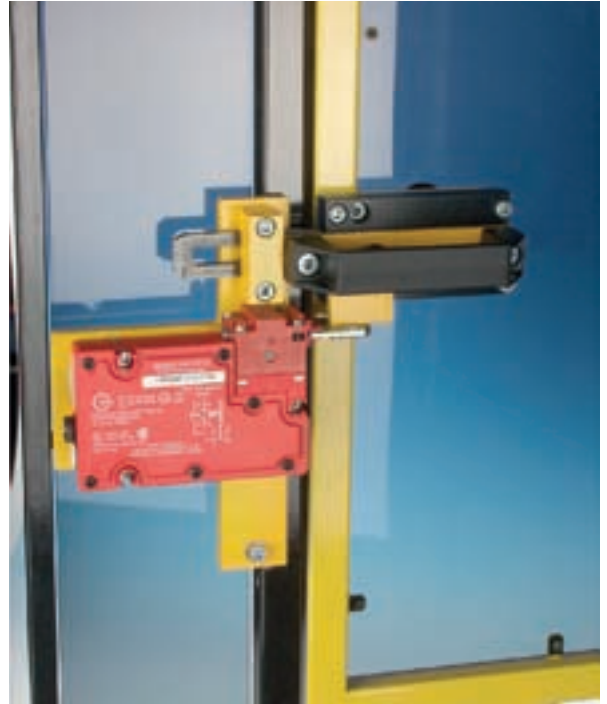
Door handles

for TZFS.NF.. type series

Heavy-duty version for outside installation with escape release handle

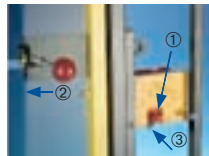
Features

- Less work due to ease of installation particularly to commercially available (Al) profile systems, and also to square tubes and other machine cladding.
- The escape release handle in connection with the escape release of the TZFS.NN type series enables any persons trapped in the machine cell to free themselves.
- Latched button to prevent unintentional closing.
- Minimum wear to the operating head due to straight actuator guidance.
- Reduction of forces in pull, push and lateral direction due to integrated front rubber.
- No additional door handle necessary.
- With slot for max. 3 padlocks to protect against actuation of the system by third parties.
- Refer to pages 48 et seq. for door interlock.



N.B.

Escape release handle/escape release: actuation of the escape release by pressing the unlock button (1), actuation of the escape release handle to open the guard (2), cancellation of the escape release by pressing the reset button (3).



Attachment for right-hung doors



Attachment for left-hung doors



Scope of delivery

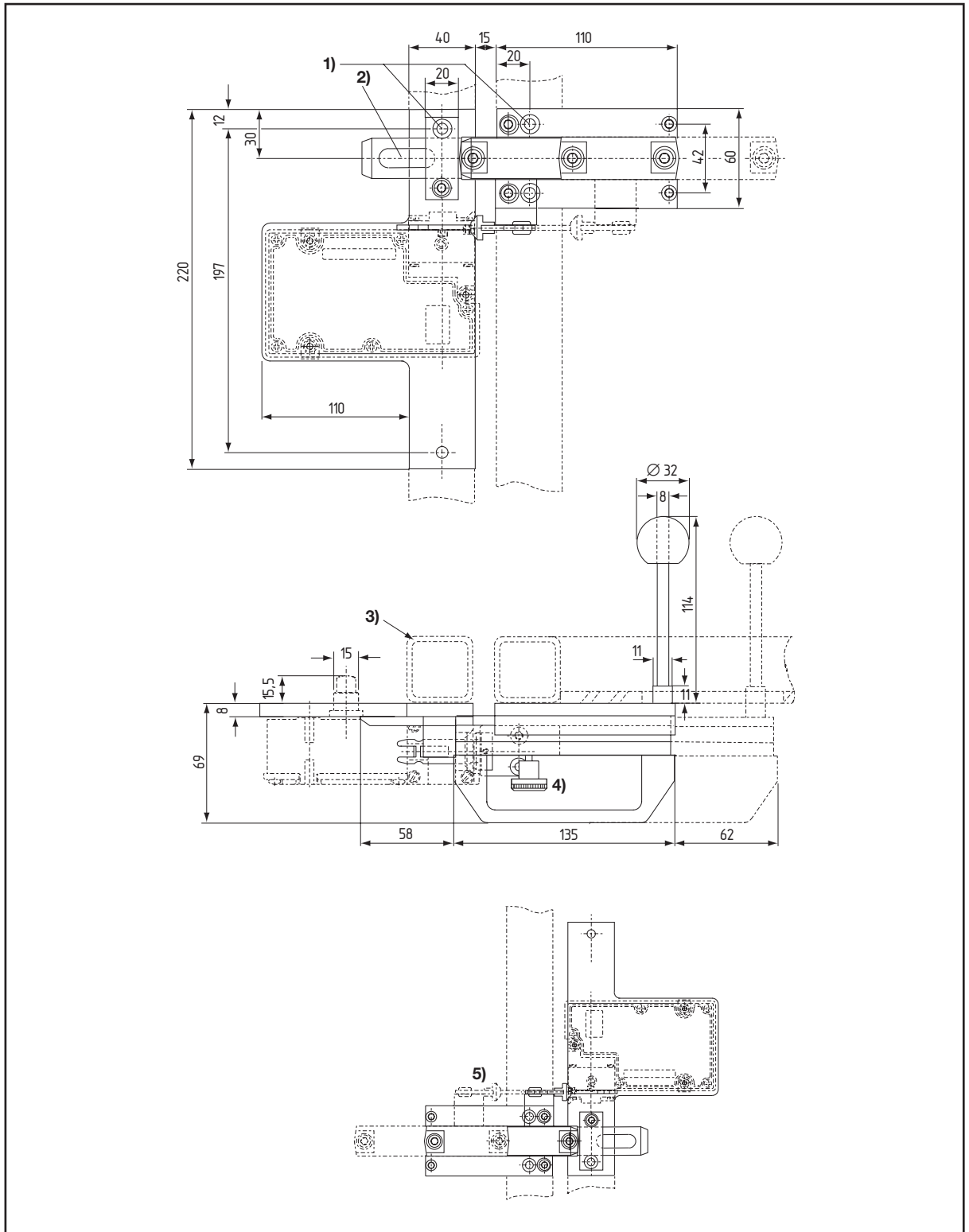
Door handle including actuator for TZFS.NF, sticker (please order door interlock separately)

Product table

Type	Version	Part number
TR-STZ/PG	Attachment on outside left for right-hung doors*	1919813

* In the case of left-hung doors the door handle must be mounted in a position turned through 180° (see above).

Dimensions TR-STZ/PG



- 1) For screw M6 – DIN 912, 2) Slot for max. 3 padlocks with 6 mm arch, 3) Protective screen frame, e.g. 40 x 40 mm
 4) Latched button latches when the bolt is open in order to prevent unintended closing. Unlocked by pulling the latched button.
 5) In the case of assembly to left-hung doors the door handle must be mounted in a position turned through 180°.

Assembly instructions for TZM/TZF type series Plastic-encapsulated safety door interlocks

Fixing	
Installed position	Random, but operating head protected from direct influence from dirt, flying chips, cooling and cutting oils etc.
Actuator	2 x disposable screws M4 (supplied) or suitable rivet. The actuator must be secured against dismantling by simple means.
Safety door interlock attachment	With 3 screws DIN 912 M5 x 35 and special spring washers (supplied). The devices should not be used as dead stop for the door. The ball lock in the operating head permits the door to be positioned the end position of which should be adjusted to the ball lock. The devices are also to be installed in a concealed manner to effectively prevent the insertion of a second actuator. An axial door clearance of approx. 11 mm actuator play is possible in locked state (TZ/CK and TZ/CWK version: 4 mm).
Head attachment	<p>The enclosed disposable screws can be used to replace the standard screws supplied in the operating head.</p> <p>This slight alteration ensures that the operating head cannot be tampered with after installation.</p> <p>The advantage of being able to turn the heads to suit the condition of installation of the devices and the simplified storage is thus not affected. It is sufficient to replace two screws diagonally in the operating head.</p> <p>Caution: In the case of TZF.. spring-operated safety door interlocks, the separate actuator must be inserted during the turning of the operating head.</p> <p><i>Please remember that when fitting disposable screws, the cover of the operating head should not be separated from the bottom part.</i></p>
Requirements as to arrangement of door interlock	<ul style="list-style-type: none"> – For doors, flap doors and sliding grills, the switch should be placed on the closing edge. – The coded actuator should be exactly guided into the opening of the switch. – The swivel radius of doors and flap doors must not be below the manufacturer's instructions. – Positive fixing of the actuator to the safety guard. – The fixing elements of the switch and of the actuator should be protected against self-loosening. – The cables to the door interlock switch should be adequately protected. – The device should not be used as a mechanical stop.
Requirements placed on protective circuit and signal processing	<ul style="list-style-type: none"> – Signal processing in accordance with the closed circuit current principle. – Contactors or relay modules with sufficient switching capacity should be used. – A short-circuit element should be connected in accordance with manufacturer's instructions.

Technical data

for TZM/TZF type series

Device type	TZM/TZF
Standards	IEC 60947, EN 60947, DIN VDE 0660, EN 1088
Switch type	Interlocking device without locking, solenoid or spring-operated
Rated operating voltage U_g max.	250 V
Utilisation category to DIN VDE 0660 Part 200	AC-15, DC-13
Rated operating current I_e^*	AC-15: 8 A/250 VAC, DC-13: 5 A/24 VDC
Thermal rated current I_{th}	10 A
Short circuit protection	gG 10 A
Clearance and creepage distance to DIN VDE 0110	Pollution degree 3, overvoltage category III
Proof of positive opening	2,5 kV impulse voltage
Positive opening path with full actuation	Door monitoring approx. 2 x 3.5 mm, Solenoid monitoring approx. 2 x 3 mm
Contact system	Form Zb; 4-way contact bridge with micro movement
Contact material	Fk-Ag, silver-plated, passivated
Contact force	0.5 N per contact point = 2 N per contact
Switching of small loads	min. 24 VDC/10 mA
Switching frequency (recommended)	120 s/h
Chatter time	< 5 ms at 100 mm/s
Climatic resistance	to DIN EN 60068-2-78
Temperature range	0 ... +50 °C
Installation position	Any chosen position, the entry throats for the actuator should, however, be positioned in such a way that they are protected from coarse dirt and moisture.
Mechanical serviceable life	min. 2 x 10 ⁶ switching cycles
Shock resistance to DIN EN 60068-2-27	30 g/11 ms
Vibration resistance to DIN EN 60068-2-6	20 g, 10 ... 55 Hz
Terminal designation to DIN EN 50005 and DIN EN 50013	see circuit diagram
Actuating force (actuator inserted or withdrawn)	Inserted: approx. 10 N, withdrawn: approx. 20 N (holding force during withdrawal)
Destruction force	approx. 1,750 N
Extraction force	1,500 N, max. admissible door weight 40 kg (increase of force approx. 200 N/sec.), as from tensile force \geq 50 N a release of the door is no longer ensured.
Housing material	Plastic, glass-fibre reinforced, self-extinguishing, hardly flammable
Connection system	Screwed connection up to 2 x 0.5 ... 2.5 mm ² (with wire end ferrules up to 1,5 mm ²), single and multi-core.
Rated isolated voltage U_i	440 V, test voltage 2,500 V
Protection class to DIN EN 60529	IP 67
Sealing	Membrane flat sealing, O rings
Approvals	CSA, UL, BIA, CCC
Cable entry	1 x M20 x 1.5
Solenoid voltage	24 VDC, 48 VAC, 230 VAC, voltage tolerance +5%/-10%, c.d.f. = 100%
Rated frequency	50/60 Hz
Power consumption of solenoid	24 VDC 300 mA cold, 250 mA hot; 48 VAC 100 mA cold, 85 mA hot; 115 VAC 72 mA cold, 50 mA hot; 230 VAC 35 mA cold, 30 mA hot

* Depending on utilisation category and test voltage

Special versions

TZM/TZF type series

TZF.CHI

This version permits the operating head to approach from the left-hand side. The devices of the TZM/TZF type series presented in this chapter can only approach from the right-hand side, from the rear or from the front. This version is available on request for almost all device versions listed in this chapter.



TZF.NE

This version has a manual unlocking facility in the form of a pull-rod. Unlocking is performed by pulling the pull-rod which latches in unlocked state. The unlocking is reset by pushing in the pull-rod. A range of this version is available on request.



Safety door interlocks

TZKM/TZKF type series, specially for (Al) profile systems



Safety door interlocks

TZKM/TZKF type series for inside attachment to right-hung* doors

Spring-operated versions with manual release

* Refer to page 78 for version for left-hung doors

Features

- Interlocking device to EN 1088 with failsafe device
- Funnel-shaped entry with dust cap for actuator, suitable for large door tolerances
- Manual release, lateral, with 3-square socket key
- Simpler installation particularly to commercially available (AI) profile systems
- Holding force 1,750 N
- Operating head adjustable 4 x 90°
- Closed circuit-current principle (unlocked under voltage)

Cross-references

- General description: refer to page 6
- Contact configuration: see below
- Actuator: refer to page 84
- Accessories: refer to page 86
- Assembly instructions: refer to page 109
- Technical data: refer to page 110

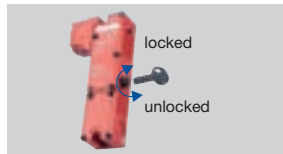
Options (on request)

- With adapter for AS-Interface Safety at Work
- Plug connection
- Other voltages



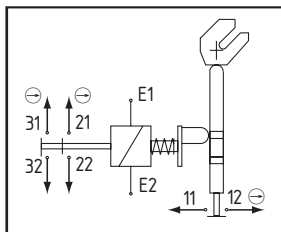
N.B.

Manual release: for the manual release with 3-square socket key for maintenance, setting up, power failure etc.

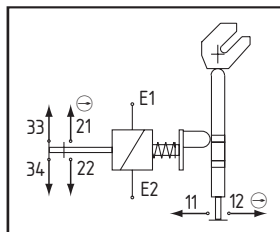


Contact configurations

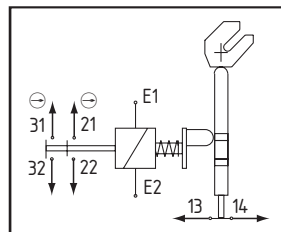
TZKF/BSR



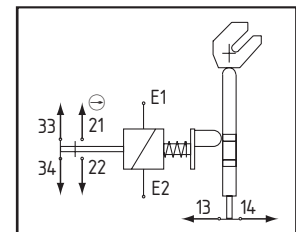
TZKF/CSR



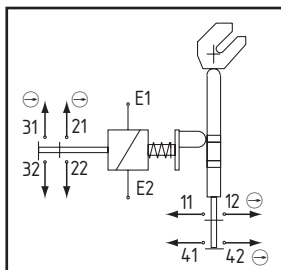
TZKF/ESR



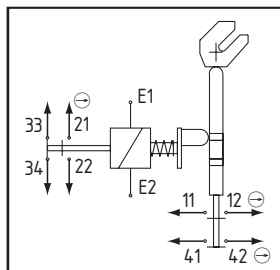
TZKF/GSR



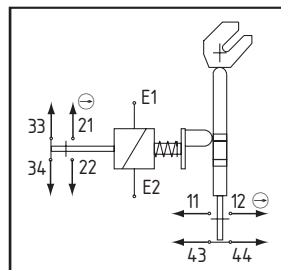
TZKF/HSR



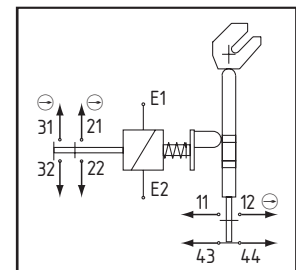
TZKF/KSR



TZKF/MSR



TZKF/PSR



Representations of the contacts with unlocked solenoid and open guard.

Test symbol (with respect to the basic design)



BIA 994011

A031156

Scope of delivery

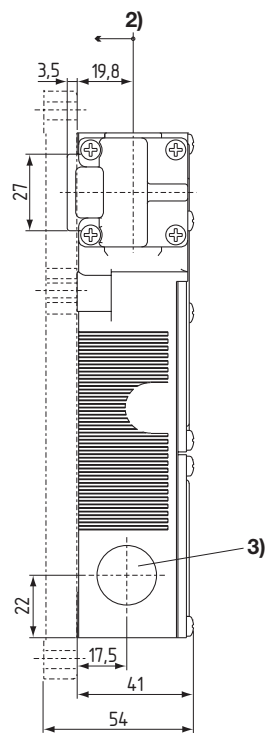
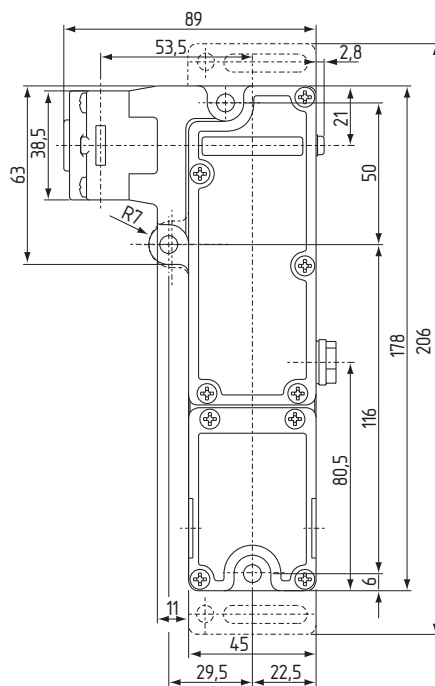
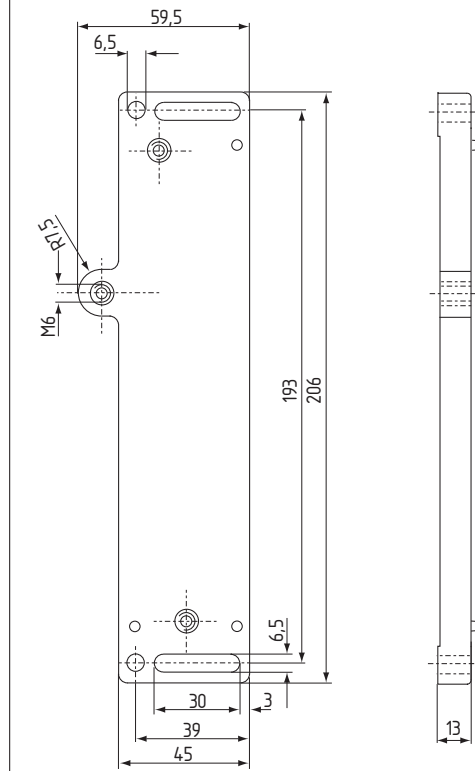
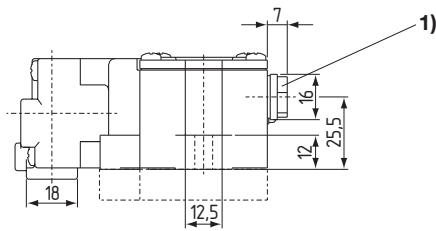
Door interlock, mounting plate TZK-APLV, fixing material, disposable screws, standard 3-square socket key (refer to page 58 for further information)

Product table

Attachment on inside left for right-hung doors

Type	Version	Supply voltage	Part number
TZKF/BSR	1 NC – 2 NC	24 VDC	191 5521
TZKF/BSR115	1 NC – 2 NC	115 VAC	191 5522
TZKF/BSR230	1 NC – 2 NC	230 VAC	191 5523
TZKF/CSR	1 NC – 1 NC/1 NO	24 VDC	191 5524
TZKF/CSR115	1 NC – 1 NC/1 NO	115 VAC	191 5525
TZKF/CSR230	1 NC – 1 NC/1 NO	230 VAC	191 5526
TZKF/ESR	1 NO – 2 NC	24 VDC	191 5527
TZKF/ESR115	1 NO – 2 NC	115 VAC	191 5528
TZKF/ESR230	1 NO – 2 NC	230 VAC	191 5529
TZKF/GSR	1 NO – 1 NC/1 NO	24 VDC	191 5530
TZKF/GSR115	1 NO – 1 NC/1 NO	115 VAC	191 5531
TZKF/GSR230	1 NO – 1 NC/1 NO	230 VAC	191 5532
TZKF/HSR	2 NC – 2 NC	24 VDC	191 5533
TZKF/KSR	2 NC – 1 NC/1 NO	24 VDC	191 5534
TZKF/MSR	1 NC/1 NO – 1 NC/1 NO	24 VDC	191 5535
TZKF/PSR	1 NC/1 NO – 2 NC	24 VDC	191 5536

Dimensions TZKF/SR incl. Montageplatte TZK/APLV



- 1) Manual release
- 2) Dimensional base for actuator
- 3) Punch-out opening M20 x 1.5

Safety door interlocks

TZKM/TZKF type series for inside attachment to right-hung* doors

Spring-operated versions with escape release

* Refer to page 81 for version for left-hung doors

Features

- Interlocking device to EN 1088 with failsafe device
- Funnel-shaped entry for actuator with dust cap, suitable for large door tolerances
- Escape release via impact button, reset via pushbutton
- Holding force 1,750 N
- Operating head adjustable 4 x 90°
- Closed circuit-current principle (unlocked under voltage)

Cross-references

- General description: refer to page 6
- Contact configuration: see below
- Actuator: refer to page 84
- Accessories: refer to page 86
- Assembly instructions: refer to page 109
- Technical data: refer to page 110

Options (on request)

- With adapter for AS-Interface Safety at Work
- Plug connection
- Other voltages



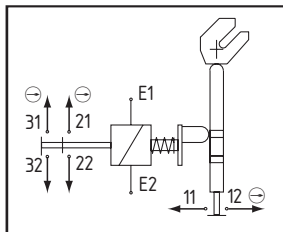
N.B.

Escape release: actuated by pressing the unlock button (1), cancelled by pressing the reset button (2).

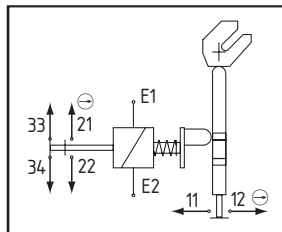


Contact configurations

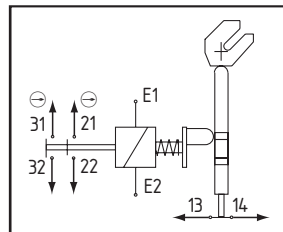
TZKF/BNF



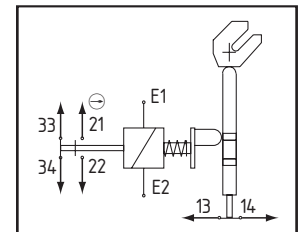
TZKF/CNF



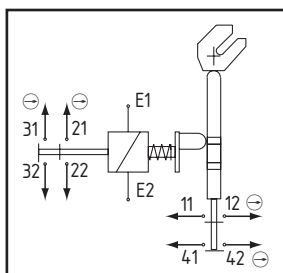
TZKF/ENF



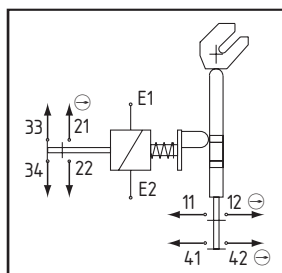
TZKF/GNF



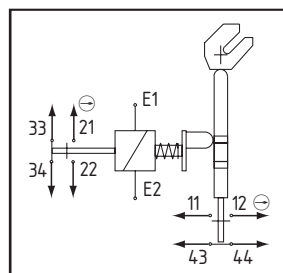
TZKF/HNF



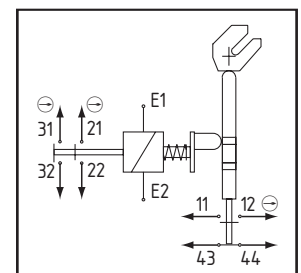
TZKF/KNF



TZKF/MNF



TZKF/PNF



Representations of the contacts with unlocked solenoid and open guard.

Test symbol (with respect to the basic design)

BIA 994011

A031156

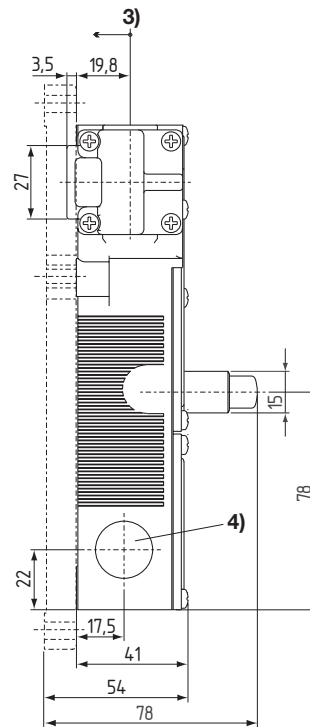
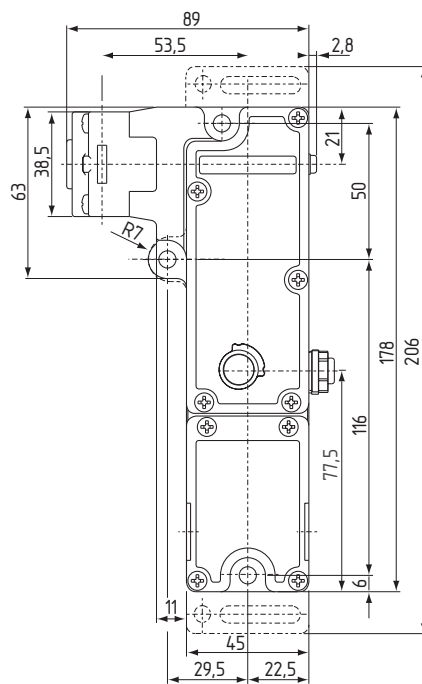
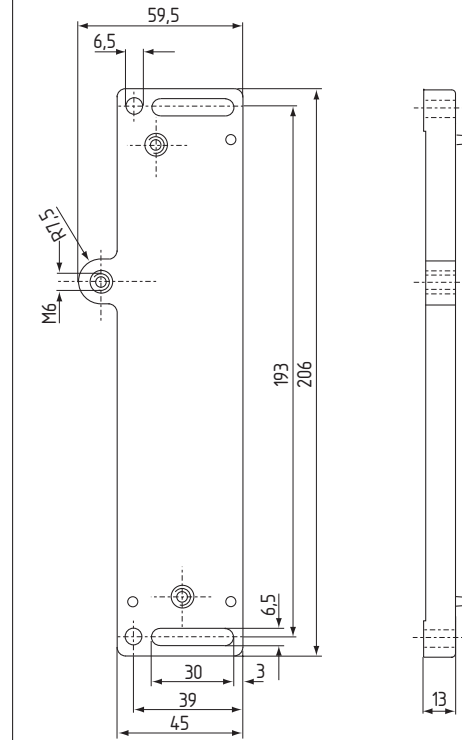
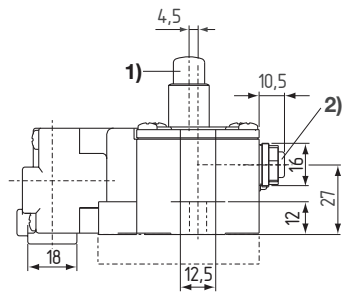
Scope of delivery

Door interlock, mounting plate TZK-APLV, fixing material, disposable screws

Product table**Attachment on inside left for right-hung doors**

Type	Version	Type	Supply voltage	Part number
TZKF/BNF	1 NC – 2 NC		24 VDC	191 5630
TZKF/BNF115	1 NC – 2 NC		115 VAC	191 5557
TZKF/BNF230	1 NC – 2 NC		230 VAC	191 5554
TZKF/CNF	1 NC – 1 NC/1 NO		24 VDC	191 5631
TZKF/CNF115	1 NC – 1 NC/1 NO		115 VAC	191 5555
TZKF/CNF230	1 NC – 1 NC/1 NO		230 VAC	191 5556
TZKF/ENF	1 NO – 2 NC		24 VDC	191 5632
TZKF/ENF115	1 NO – 2 NC		115 VAC	191 5557
TZKF/ENF230	1 NO – 2 NC		230 VAC	191 5558
TZKF/GNF	1 NO – 1 NC/1 NO		24 VDC	191 5633
TZKF/GNF115	1 NO – 1 NC/1 NO		115 VAC	191 5559
TZKF/GNF230	1 NO – 1 NC/1 NO		230 VAC	191 5560
TZKF/HNF	2 NC – 2 NC		24 VDC	191 5561
TZKF/KNF	2 NC – 1 NC/1 NO		24 VDC	191 5562
TZKF/MNF	1 NC/1 NO – 1 NC/1 NO		24 VDC	191 5563
TZKF/PNF	1 NC/1 NO – 2 NC		24 VDC	191 5564

Dimensions TZKF/.NF incl. Montageplatte TZK/APLV



- 1) Escape release
- 2) Reset button for escape release
- 3) Dimensional base for actuator
- 4) Punch-out opening M20 x 1.5

Safety door interlocks

TZKM/TZKF type series for inside attachment to left-hung* doors

Spring-operated versions
with manual release

* Refer to page 72 for version for right-hung doors

Features

- Interlocking device to EN 1088 with failsafe device
- Funnel-shaped entry for actuator with dust cap, suitable for large door tolerances
- Manual release, lateral, with 3-square socket key
- Simpler installation particularly to commercially available (AI) profile systems
- Holding force 1,750 N
- Operating head adjustable 4 x 90°
- Closed circuit-current principle (unlocked under voltage)

Cross-references

- General description: refer to page 6
- Contact configuration: see below
- Actuator: refer to page 84
- Accessories: refer to page 86
- Assembly instructions: refer to page 109
- Technical data: refer to page 110

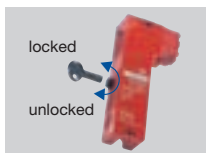
Options (on request)

- With adapter for AS-Interface Safety at Work
- Plug connection
- Other voltages



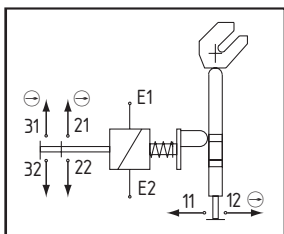
N.B.

Manual release: for the manual release with 3-square socket key for maintenance, setting up, power failure etc.

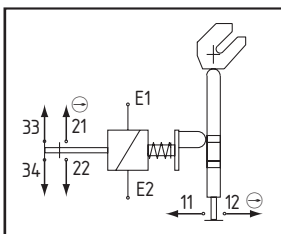


Contact configurations

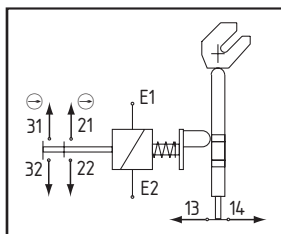
TZKFD/BSR



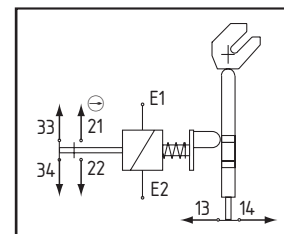
TZKFD/CSR



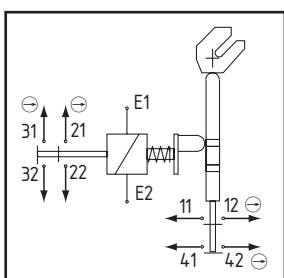
TZKFD/ESR



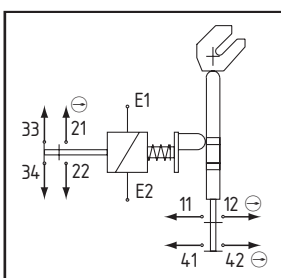
TZKFD/GSR



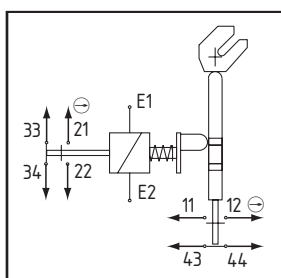
TZKFD/HSR



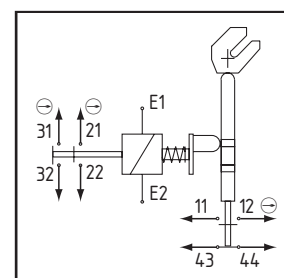
TZKFD/KSR



TZKFD/MSR



TZKFD/PSR



Representations of the contacts with unlocked solenoid and open guard.

Test symbol (with respect to the basic design)

BIA 994011



A031156

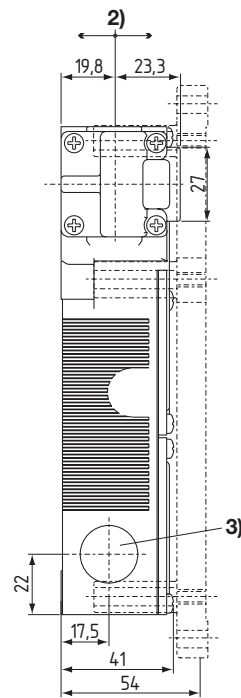
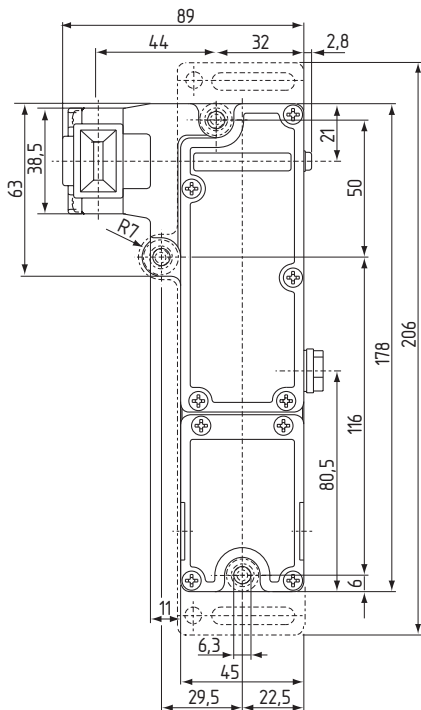
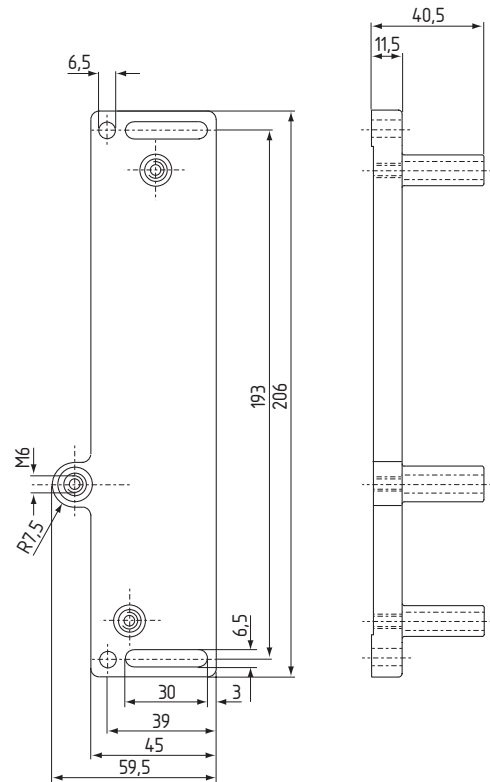
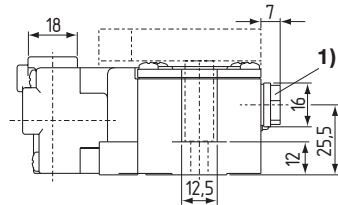
Scope of delivery

Door interlock, mounting plate TZK-APLVD, fixing material, disposable screws, standard 3-square socket key (refer to page 58 for further information)

Product table**Attachment on inside right for left-hung doors**

Type	Version	Supply voltage	Part number
TZKFD/BSR	1 NC – 2 NC	24 VDC	191 5537
TZKFD/BSR115	1 NC – 2 NC	115 VAC	191 5538
TZKFD/BSR230	1 NC – 2 NC	230 VAC	191 5539
TZKFD/CSR	1 NC – 1 NC/1 NO	24 VDC	191 5540
TZKFD/CSR115	1 NC – 1 NC/1 NO	115 VAC	191 5541
TZKFD/CSR230	1 NC – 1 NC/1 NO	230 VAC	191 5542
TZKFD/ESR	1 NO – 2 NC	24 VDC	191 5543
TZKFD/ESR115	1 NO – 2 NC	115 VAC	191 5544
TZKFD/ESR230	1 NO – 2 NC	230 VAC	191 5545
TZKFD/GSR	1 NO – 1 NC/1 NO	24 VDC	191 5546
TZKFD/GSR115	1 NO – 1 NC/1 NO	115 VAC	191 5547
TZKFD/GSR230	1 NO – 1 NC/1 NO	230 VAC	191 5548
TZKFD/HSR	2 NC – 2 NC	24 VDC	191 5549
TZKFD/KSR	2 NC – 1 NC/1 NO	24 VDC	191 5550
TZKFD/MSR	1 NC/1 NO – 1 NC/1 NO	24 VDC	191 5551
TZKFD/PSR	1 NC/1 NO – 2 NC	24 VDC	191 5552

Dimensions TZKFD/.SR incl. Montageplatte TZK/APLVD



1) Manual release

2) Dimensional base for actuator

3) Punch-out opening M20 x 1.5

Safety door interlocks

TZKM/TZKF type series for inside attachment to left-hung doors*

Spring-operated versions with escape release

* Refer to page 75 for version for right-hung doors

Features

- Interlocking device to EN 1088 with failsafe device
- Funnel-shaped entry for actuator with dust cap, suitable for large door tolerances
- Escape release via impact button, reset via pushbutton
- Holding force 1,750 N
- Operating head adjustable 4 x 90°
- Closed circuit-current principle (unlocked under voltage)

Cross-references

- General description: refer to page 6
- Contact configuration: see below
- Actuator: refer to page 84
- Accessories: refer to page 86
- Assembly instructions: refer to page 109
- Technical data: refer to page 110

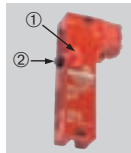
Options (on request)

- With adapter for AS-Interface Safety at Work
- Plug connection
- Other voltages



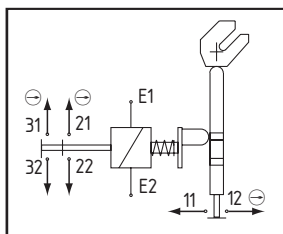
N.B.

Escape release: actuated by pressing the unlock button (1), cancelled by pressing the reset button (2).

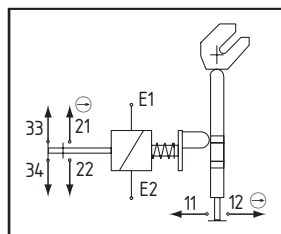


Contact configurations

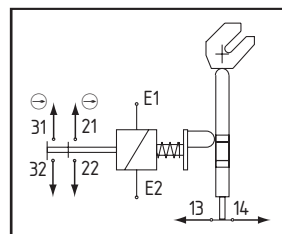
TZKFD/BNF



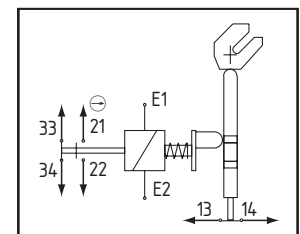
TZKFD/CNF



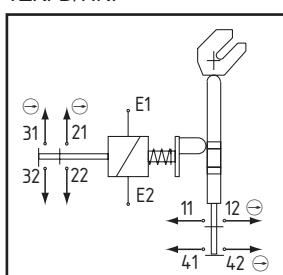
TZKFD/ENF



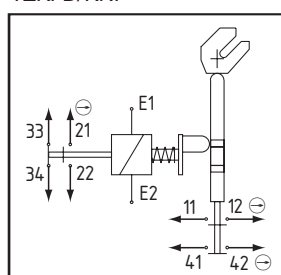
TZKFD/GNF



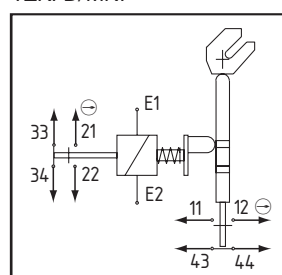
TZKFD/HNF



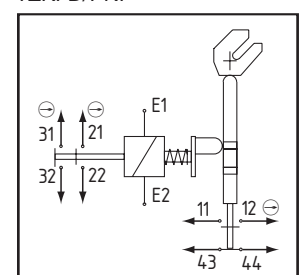
TZKFD/KNF



TZKFD/MNF



TZKFD/PNF



Representations of the contacts with unlocked solenoid and open guard.

Test symbol (with respect to the basic design)

BIA 994011

A031156

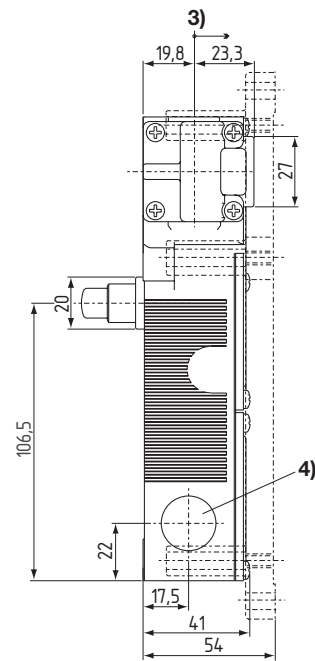
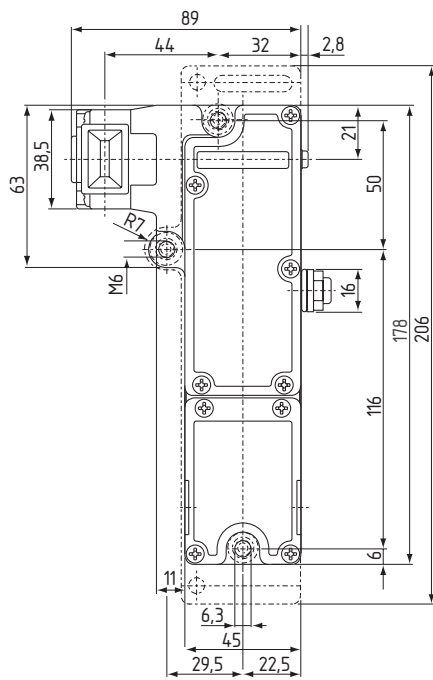
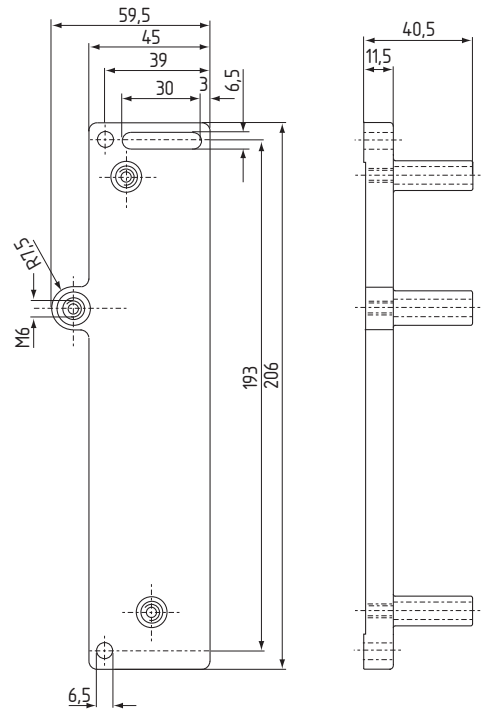
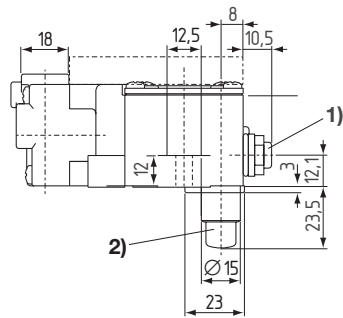
Scope of delivery

Door interlock, mounting plate TZK-APLVD, fixing material, disposable screws

Product table**Attachment for inside right for left-hung doors**

Type	Version	Type	Supply voltage	Part number
TZKFD/BNF	1 NC – 2 NC		24 VDC	191 5640
TZKFD/BNF115	1 NC – 2 NC		115 VAC	191 5565
TZKFD/BNF230	1 NC – 2 NC		230 VAC	191 5566
TZKFD/CNF	1 NC – 1 NC/1 NO		24 VDC	191 5641
TZKFD/CNF115	1 NC – 1 NC/1 NO		115 VAC	191 5567
TZKFD/CNF230	1 NC – 1 NC/1 NO		230 VAC	191 5568
TZKFD/ENF	1 NO – 2 NC		24 VDC	191 5642
TZKFD/ENF115	1 NO – 2 NC		115 VAC	191 5569
TZKFD/ENF230	1 NO – 2 NC		230 VAC	191 5570
TZKFD/GNF	1 NO – 1 NC/1 NO		24 VDC	191 5643
TZKFD/GNF115	1 NO – 1 NC/1 NO		115 VAC	191 5571
TZKFD/GNF230	1 NO – 1 NC/1 NO		230 VAC	191 5572
TZKFD/HNF	2 NC – 2 NC		24 VDC	191 5573
TZKFD/KNF	2 NC – 1 NC/1 NO		24 VDC	191 5574
TZKFD/MNF	1 NC/1 NO – 1 NC/1 NO		24 VDC	191 5575
TZKFD/PNF	1 NC/1 NO – 2 NC		24 VDC	191 5576

Dimensions TZKFD/.NF incl. mounting plate TZK/APLVD



- 1) Reset button
- 2) Escape release
- 3) Dimensional base for actuator
- 4) Punch-out opening M20 x 1.5

Safety door interlocks

TZK type series

Accessories – actuators

Features

- Good integration in (Al) profile systems with 8 and 10 mm groove width.
- Resilient actuator insert.
- Versions also available for small door radii.
- Due to the centring piece the actuator essentially needs no alignment during installation.
- Material:
 - Actuator: galvanised steel
 - Auxiliary stop: glass-fibre-reinforced thermoplastic, self-extinguishing to UL 94-V-0.
 - Telescopic bracket and assembly block: AISi 12, painted



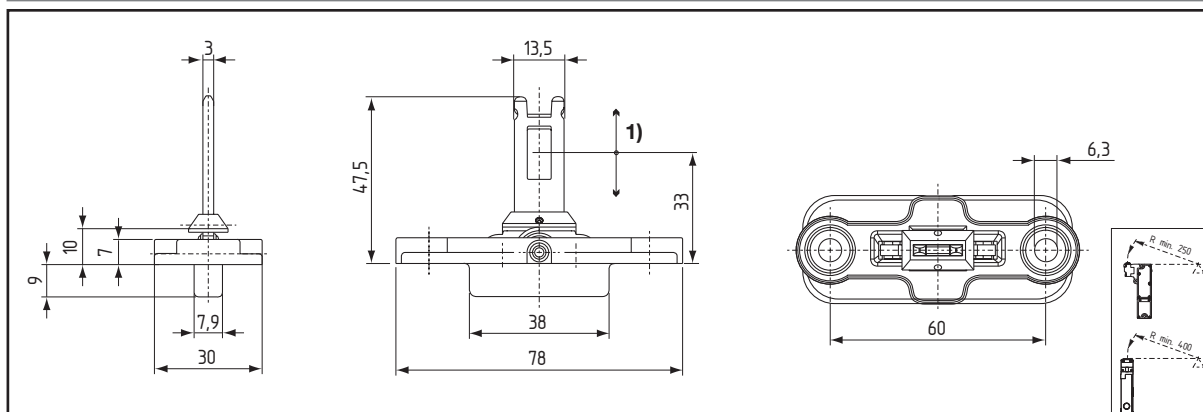
Scope of delivery

Actuator, disposable screws

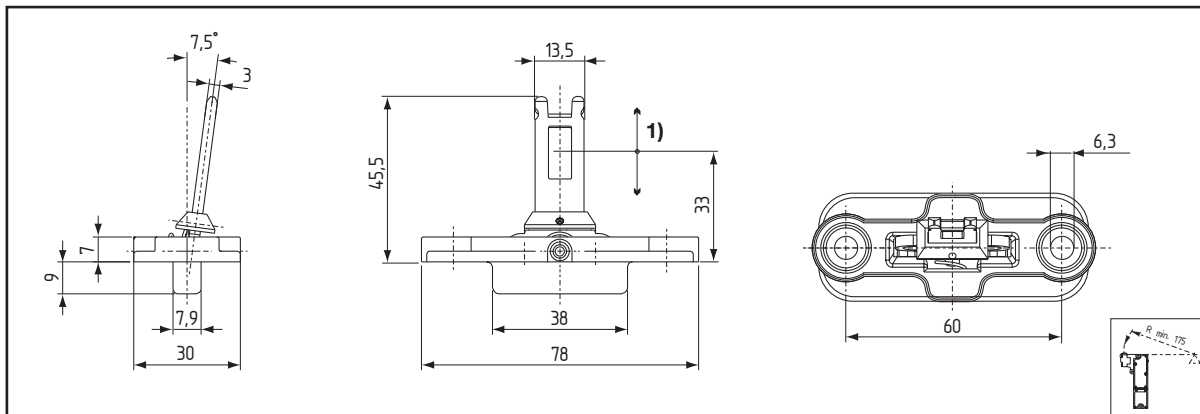
Product table

Type	Version	Part number
TZK/COFV	Actuator, centred for 8 mm groove widths	1919646
TZK/CORFV/7,5	Actuator 7,5°, pretensioned for 8 mm groove widths	1919647
TZK/CORFV/15	Actuator 15°, pretensioned for 8 mm groove widths	1919648
TZK-48	Centring piece adapter for 10 mm groove widths	1919649

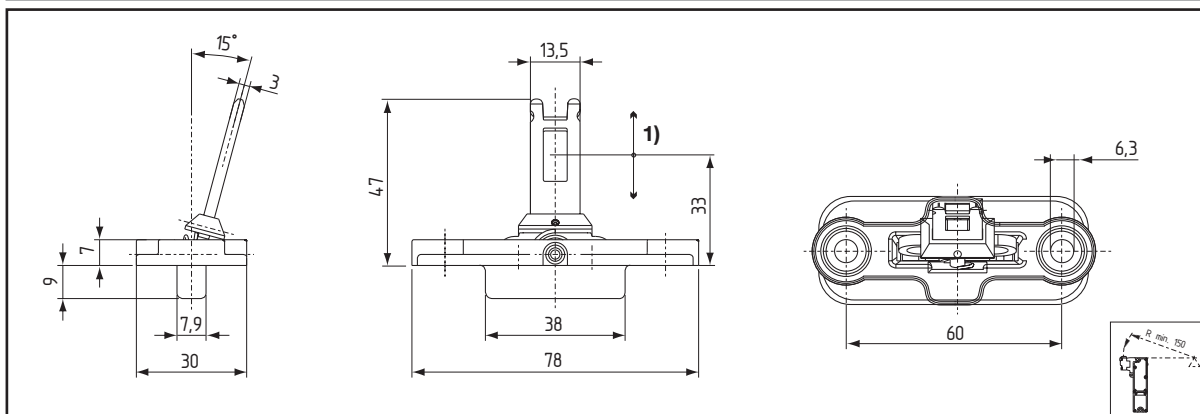
Dimensions TZK/COFV



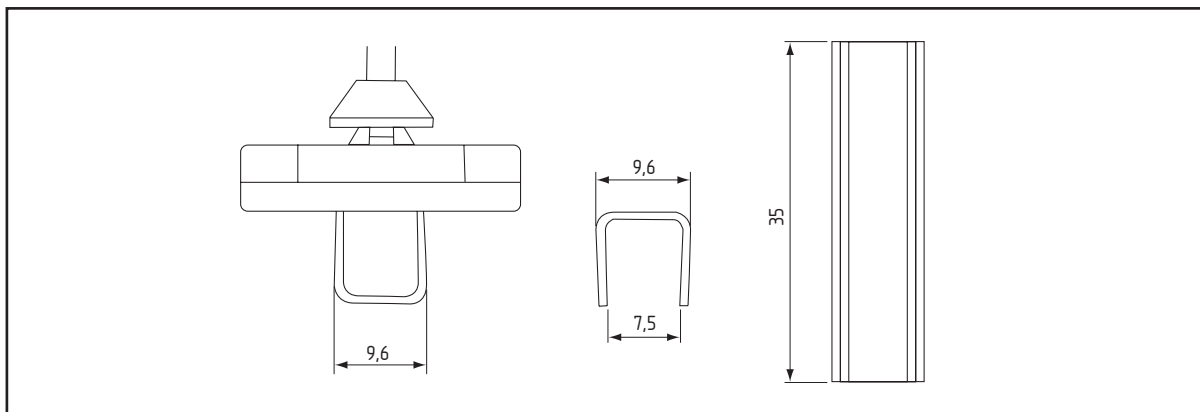
Dimensions TZK/CORFV/7,5



Dimensions TZK/CORFV/15



Dimensions TZK-48



1) Dimensional base for actuator

Safety door interlocks

TZK type series

Accessories – mounting plates

Features

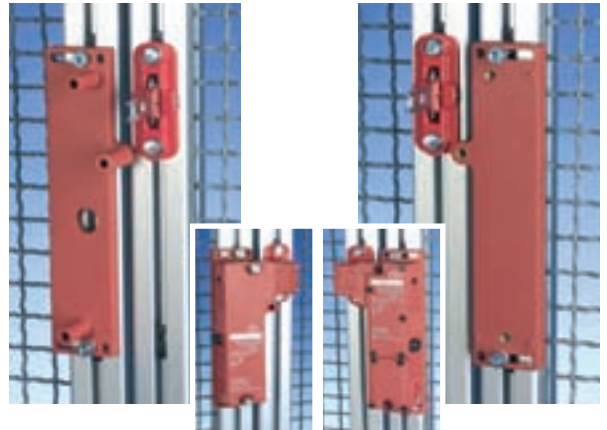
- Good integration in (Al) profile systems (in connection with the actuators TZK/COFV and TZK/CORFV).
- Suitable for the most popular (Al) profile sizes 40 ... 60 mm
- Simple installation to commercially available (Al) profile systems
- Reduced fitted height of 54 mm in connection with the interlocking devices
- Material:
 - Mounting plate: glass-fibre-reinforced thermoplastic, self-extinguishing to UL 94-V-0
 - Threaded bushes: brass



N.B.

Left: example of attachment to left-hung door with mounting plate TZK/APLVD and actuator TZK/CORFV and TZKFD/BSR.

Right: example of attachment to right-hung door with mounting plate TZK/APLV and actuator TZK/CORFV and TZKF/ESR.



Scope of delivery

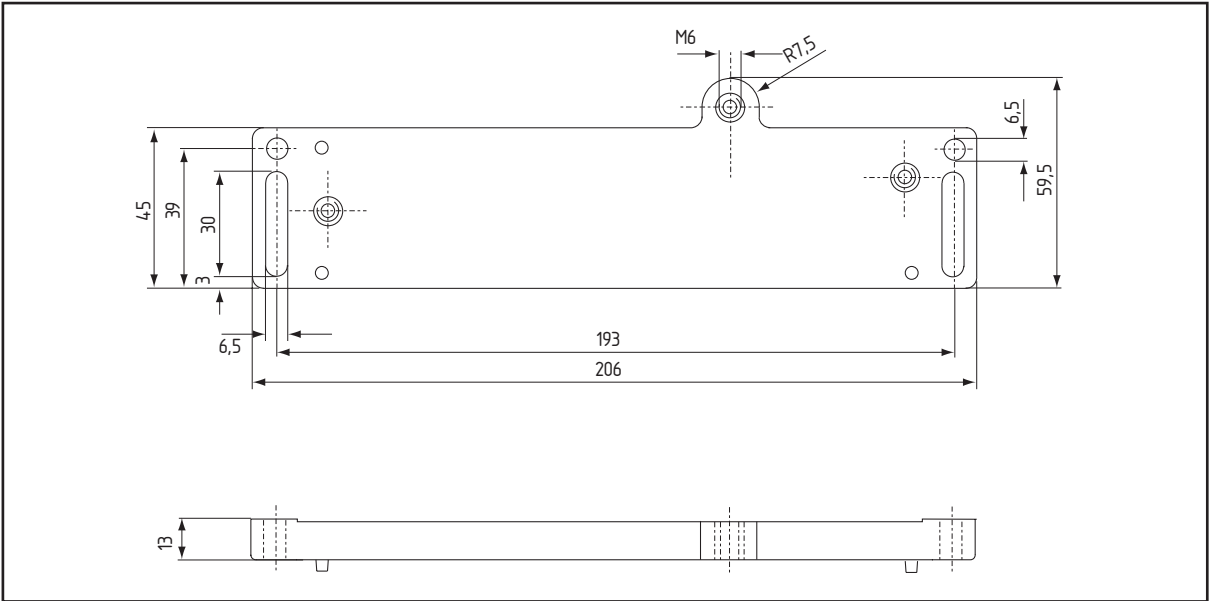
Mounting plate, fixing material

Product table

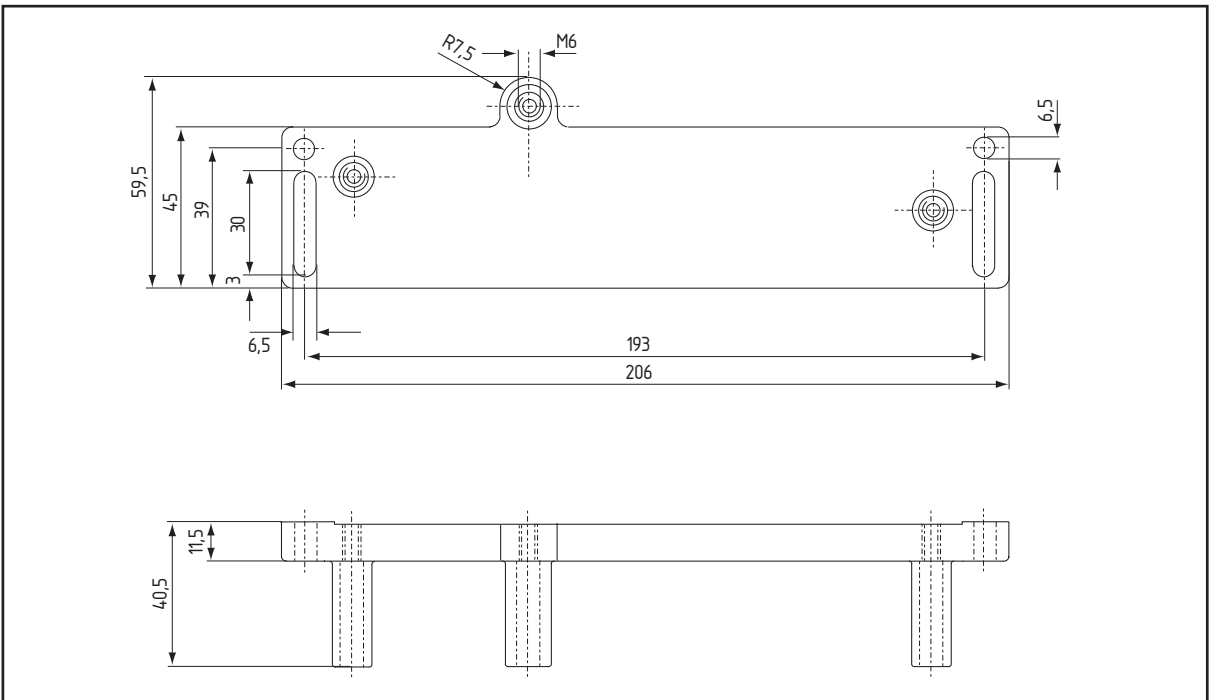
Type	Version	Part number
TZK/APLV	For attachment inside left for right-hung doors	191 9665
TZK/APLVD	For attachment inside right for left-hung doors	191 9666

N.B.: Interlocking devices with type plate TZK/APLVD adhered to the back are required for the mounting plate TZKFD/...

Dimensions TZK/APLV



Dimensions TZK/APLVD



Safety door interlocks

TZKM/TZKF type series for universal applications



Safety door interlocks

TZK.. type series

Spring-operated versions
with manual release

Features

- Interlocking device to EN 1088 with failsafe device
- Funnel-shaped entry with dust cap for actuator, suitable for large door tolerances
- Simpler installation in connection with mounting plate and telescopic actuators
- Manual release with 3-square socket key
- Holding force 1,750 N
- Operating head adjustable 4 x 90°
- Closed circuit-current principle (unlocked under voltage)

Cross-references

- General description: refer to page 4
- Contact configuration: see below
- Actuator: refer to page 99
- Accessories: refer to page 102
- Assembly instructions: refer to page 109
- Technical data: refer to page 110

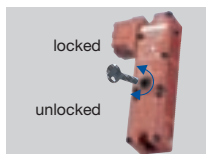
Options (on request)

- With adapter for AS-Interface Safety at Work
- Plug connection
- Other voltages



N.B.

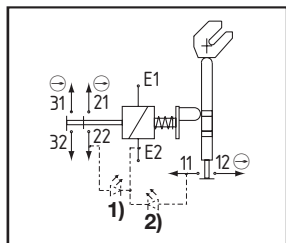
Manual release: for the manual release with 3-square socket key for maintenance, setting up, power failure etc.



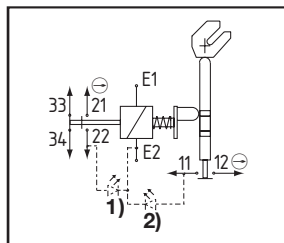
LED display: In the case of devices with LED display the NC contacts are not floating. Only sequencing circuitry may be used in which the two channels are controlled with positive potential.

Contact configurations

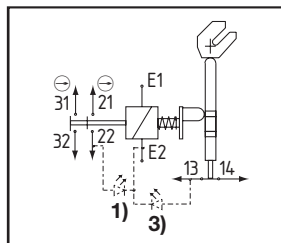
TZKF/BS



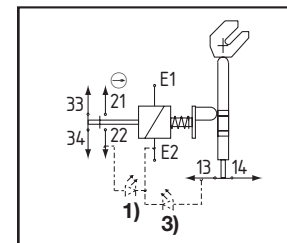
TZKF/CS



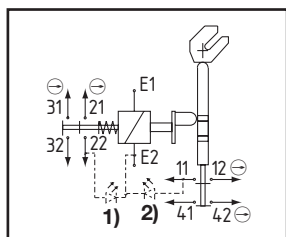
TZKF/ES



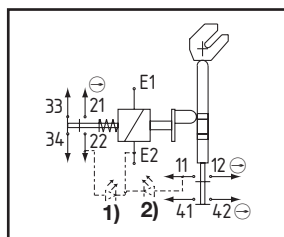
TZKF/GS



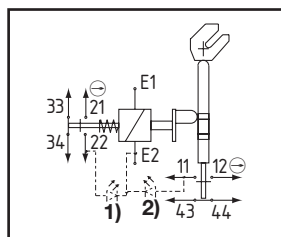
TZKF/HS



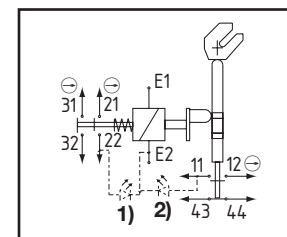
TZKF/KS



TZKF/MS



TZKF/PS



Representations of the contacts with unlocked solenoid and open guard.

LED display optional: 1) green "locked", 2) yellow "door closed", 3) yellow "door closed"

Test symbol (with respect to the basic design)

BIA 994011

A031156

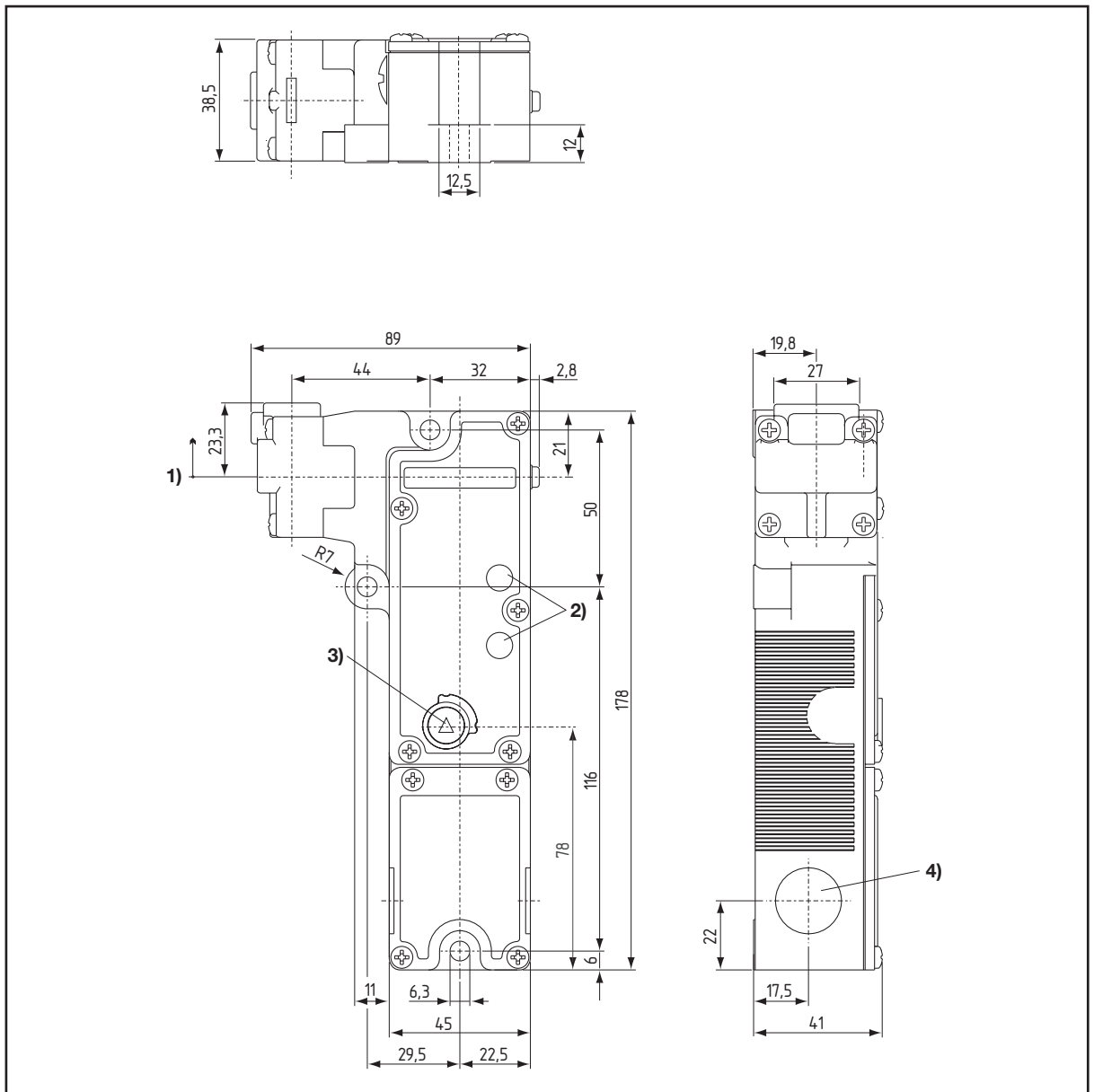
Scope of delivery

Door interlock, fixing material, disposable screws, standard 3-square socket key (refer to page 58 for further information)

Product table

Type	Version	Supply voltage	Part number
TZKF/BS	1 NC – 2 NC	24 VDC	191 5604
TZKF/BS115	1 NC – 2 NC	115 VAC	191 5606
TZKF/BS230	1 NC – 2 NC	230 VAC	191 5608
TZKF/CS	1 NC – 1 NC/1 NO	24 VDC	191 5600
TZKF/CS115	1 NC – 1 NC/1 NO	115 VAC	191 5601
TZKF/CS230	1 NC – 1 NC/1 NO	230 VAC	191 5602
TZKF/ES	1 NO – 2 NC	24 VDC	191 5610
TZKF/ES115	1 NO – 2 NC	115 VAC	191 5611
TZKF/ES230	1 NO – 2 NC	230 VAC	191 5612
TZKF/GS	1 NO – 1 NC/1 NO	24 VDC	191 5620
TZKF/GS115	1 NO – 1 NC/1 NO	115 VAC	191 5621
TZKF/GS230	1 NO – 1 NC/1 NO	230 VAC	191 5622
TZKF/HS	2 NC – 2 NC	24 VDC	191 5625
TZKF/KS	2 NC – 1 NC/1 NO	24 VDC	191 5626
TZKF/MS	1 NC/1 NO – 1 NC/1 NO	24 VDC	191 5627
TZKF/PS	1 NC/1 NO – 2 NC	24 VDC	191 5628

Dimensions TZKF/.S



- 1) Dimensional base for actuator
- 2) LED display optional
- 3) Manual release
- 4) Punch-out opening M20 x 1.5

Safety door interlocks

TZK.. type series

Spring-operated versions
with emergency release

Features

- Interlocking device to EN 1088 with failsafe device
- Funnel-shaped entry with dust cap for actuator, suitable for large door tolerances
- Simpler installation in connection with mounting plate and telescopic actuators
- Emergency release via impact button
- Holding force 1,750 N
- Operating head adjustable 4 x 90°
- Closed circuit-current principle (unlocked under voltage)

Cross-references

- General description: refer to page 4
- Contact configuration: see below
- Actuator: refer to page 99
- Accessories: refer to page 102
- Assembly instructions: refer to page 109
- Technical data: refer to page 110

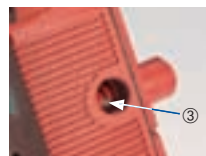
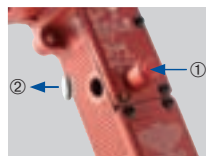
Options (on request)

- With adapter for AS-Interface Safety at Work
- Plug connection
- Other voltages



N.B.

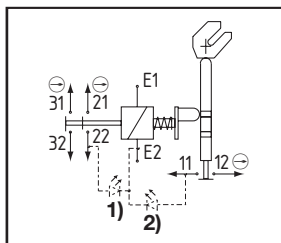
Emergency release: for the manual release by pressing the unlock button (1). Cancellation by removing the plug (2) and pressing the inner latch bolt (3). Then close plug tight again.



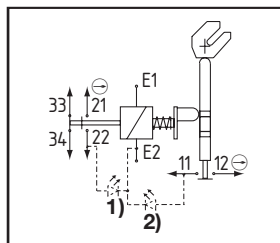
LED display: In the case of devices with LED display the NC contacts are not floating. Only sequencing circuitry may be used in which the two channels are controlled with positive potential.

Contact configurations

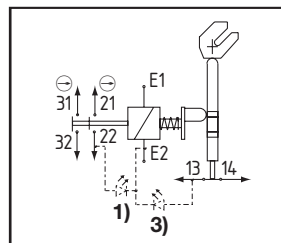
TZKF/BN



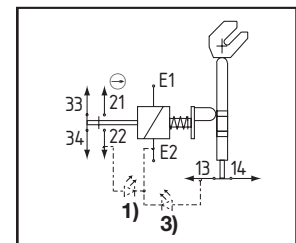
TZKF/CN



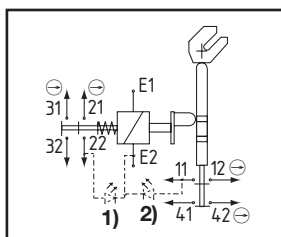
TZKF/EN



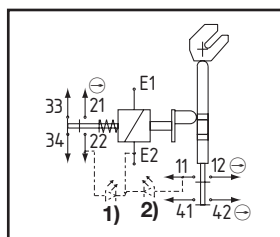
TZKF/GN



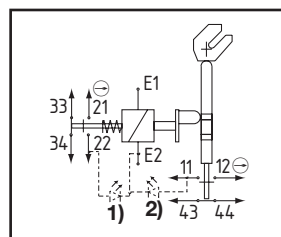
TZKF/HN



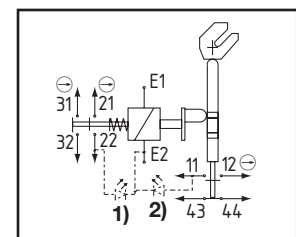
TZKF/KN



TZKF/MN



TZKF/PN



Representations of the contacts with unlocked solenoid and open guard.

LED display optional: 1) green "locked", 2) yellow "door closed", 3) yellow "door open"

Test symbol (with respect to the basic design)

BIA 994011

A031156

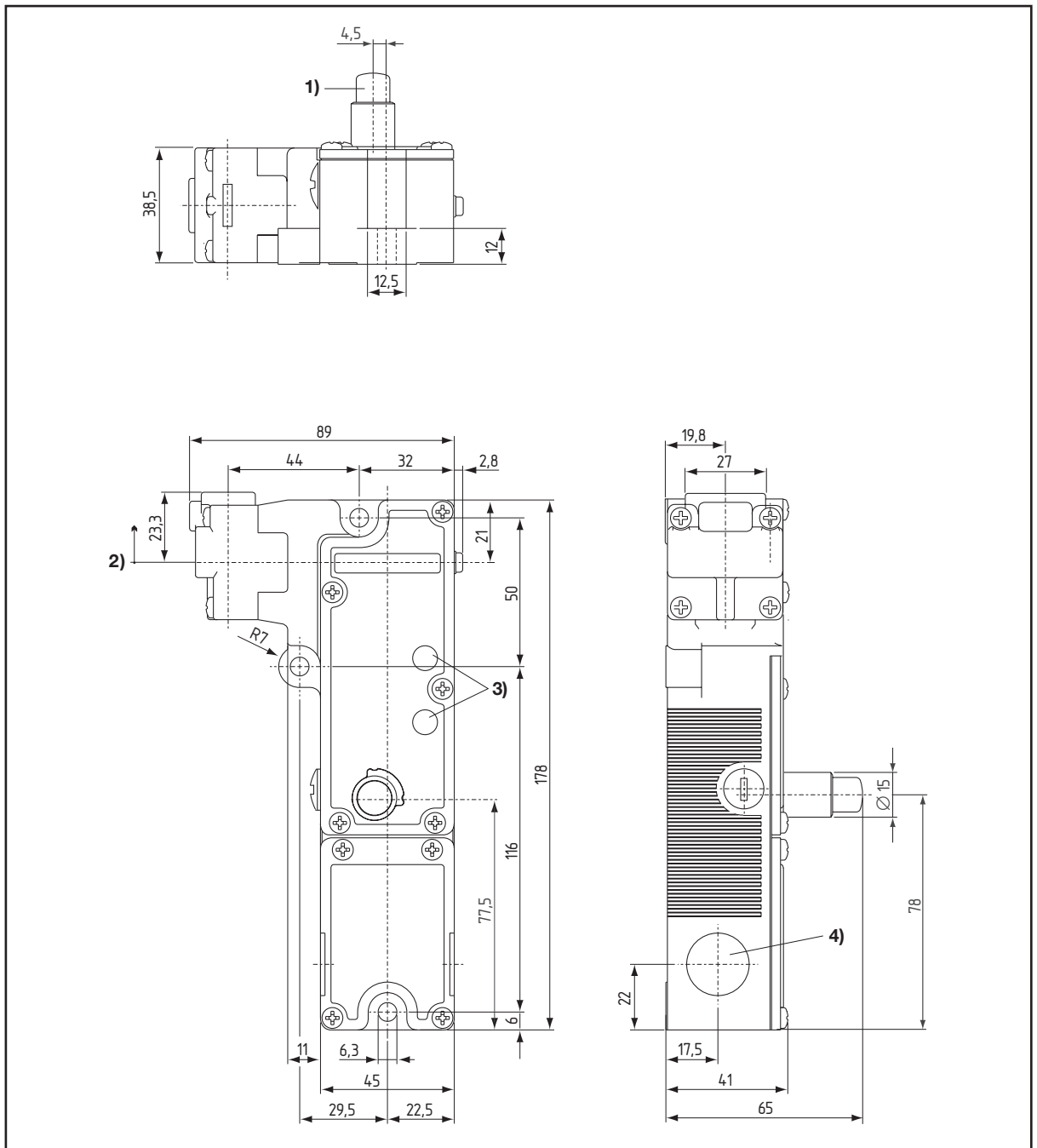
Scope of delivery

Door interlock, fixing material, disposable screws

Product table

Type	Version	Supply voltage	Part number
TZKF/BN	1 NC – 2 NC	24 VDC	191 5607
TZKF/BN115	1 NC – 2 NC	115 VAC	191 5670
TZKF/BN230	1 NC – 2 NC	230 VAC	191 5671
TZKF/CN	1 NC – 1 NC/1 NO	24 VDC	191 5603
TZKF/CN115	1 NC – 1 NC/1 NO	115 VAC	191 5672
TZKF/CN230	1 NC – 1 NC/1 NO	230 VAC	191 5673
TZKF/EN	1 NO – 2 NC	24 VDC	191 5617
TZKF/EN115	1 NO – 2 NC	115 VAC	191 5674
TZKF/EN230	1 NO – 2 NC	230 VAC	191 5675
TZKF/GN	1 NO – 1 NC/1 NO	24 VDC	191 5676
TZKF/GN115	1 NO – 1 NC/1 NO	115 VAC	191 5677
TZKF/GN230	1 NO – 1 NC/1 NO	230 VAC	191 5678
TZKF/HN	2 NC – 2 NC	24 VDC	191 5679
TZKF/KN	2 NC – 1 NC/1 NO	24 VDC	191 5680
TZKF/MN	1 NC/1 NO – 1 NC/1 NO	24 VDC	191 5681
TZKF/PN	1 NC/1 NO – 2 NC	24 VDC	191 5682

Dimensions TZKF/.N



- 1) Emergency release
- 2) Dimensional base for actuator
- 3) LED display optional
- 4) Punch-out opening M20 x 1.5

Safety door interlocks

TZKM.. type series

Solenoid-operated versions

Features

- Interlocking device to EN 1088 with failsafe device
- Funnel-shaped entry with dust cap for actuator, suitable for large door tolerances
- Simpler installation in connection with mounting plate and telescopic actuators
- Emergency release via impact button
- Holding force 1,750 N
- Operating head adjustable 4 x 90°
- Closed circuit-current principle (unlocked under voltage)

Cross-references

- General description: refer to page 4
- Contact configuration: see below
- Actuator: refer to page 99
- Accessories: refer to page 102
- Assembly instructions: refer to page 109
- Technical data: refer to page 110

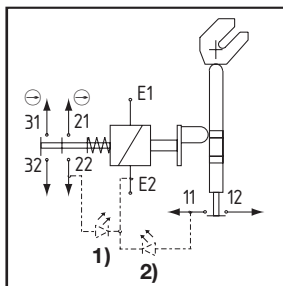
Options (on request)

- With adapter for AS-Interface Safety at Work
- Plug connection
- Other voltages

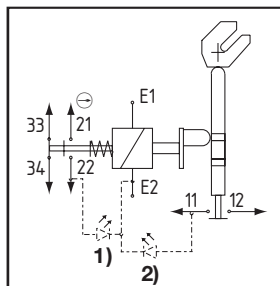


Contact configurations

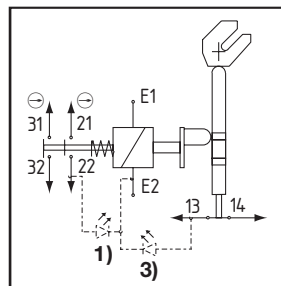
TZKM/B



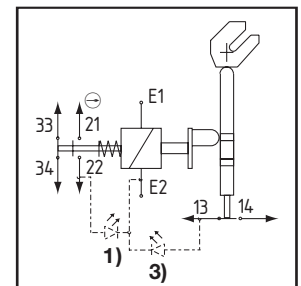
TZKM/C



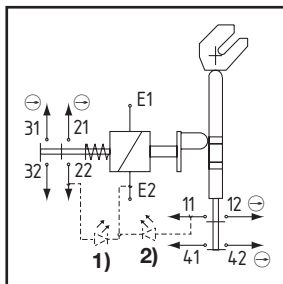
TZKM/E



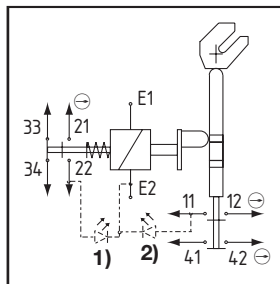
TZKM/G



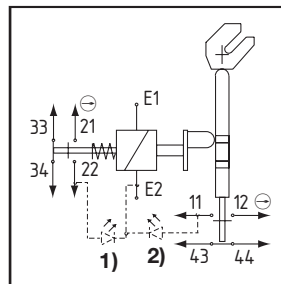
TZKM/H



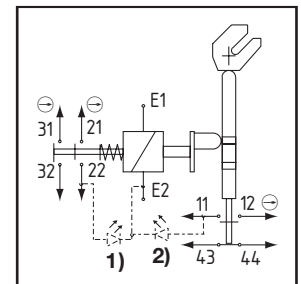
TZKM/K



TZKM/M



TZKM/P



Representations of the contacts with unlocked solenoid and open guard.

LED display optional: 1) green "locked", 2) yellow "door closed", 3) yellow "door open"

Test symbol (with respect to the basic design)

BIA 994011

A031156

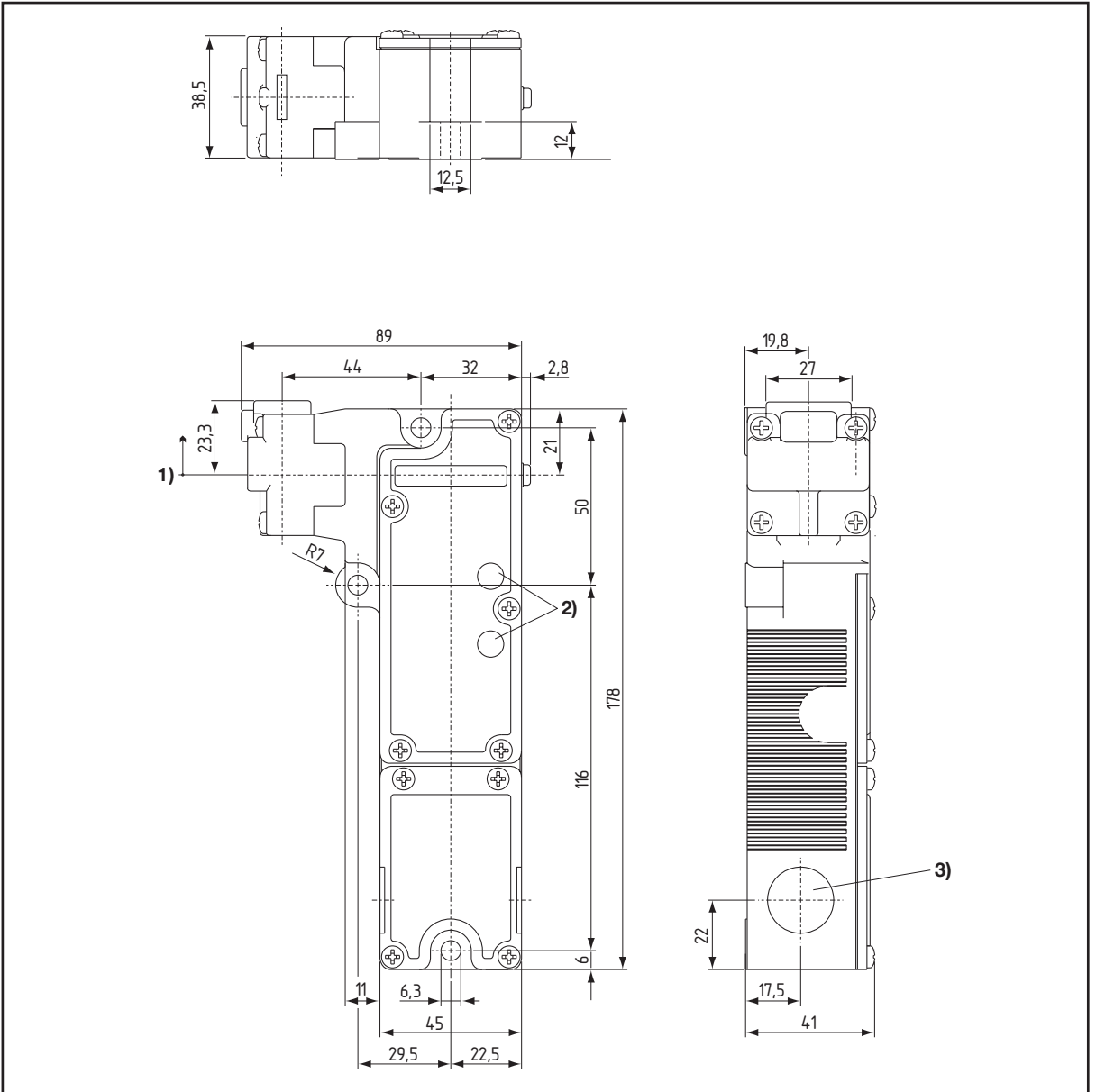
Scope of delivery

Door interlock, fixing material, disposable screws

Product table

Type	Version	Supply voltage	Part number
TZKM/B	1 NC – 2 NC	24 VDC	191 0607
TZKM/B115	1 NC – 2 NC	115 VAC	191 0609
TZKM/B230	1 NC – 2 NC	230 VAC	191 0608
TZKM/C	1 NC – 1 NC/1 NO	24 VDC	191 0600
TZKM/C115	1 NC – 1 NC/1 NO	115 VAC	191 0601
TZKM/C230	1 NC – 1 NC/1 NO	230 VAC	191 0602
TZKM/E	1 NO – 2 NC	24 VDC	191 0610
TZKM/E115	1 NO – 2 NC	115 VAC	191 0611
TZKM/E230	1 NO – 2 NC	230 VAC	191 0612
TZKM/G	1 NO – 1 NC/1 NO	24 VDC	191 0620
TZKM/G115	1 NO – 1 NC/1 NO	115 VAC	191 0621
TZKM/G230	1 NO – 1 NC/1 NO	230 VAC	191 0622
TZKM/H	2 NC – 2 NC	24 VDC	191 0623
TZKM/K	2 NC – 1 NC/1 NO	24 VDC	191 0624
TZKM/M	1 NC/1 NO – 1 NC/1 NO	24 VDC	191 0625
TZKM/P	1 NC/1 NO – 2 NC	24 VDC	191 0626

Dimensions TZKFW.



- 1) Dimensional base for actuator
- 2) LED display optional
- 3) Punch-out opening M20 x 1.5

Safety door interlocks

TZKM/TZKF type series (standard versions)

Actuators

Features

- Balances out tolerances between the guide of the moving guard and the entry of the operating heads by means of rubber buffers with integrated spacer sleeves.
- Resilient actuator insert.
- Versions also available for small door radii.
- Actuator play in locked state 5 mm.
- Material:
 - Actuator: galvanised steel
 - Auxiliary stop: glass-fibre-reinforced thermoplastic, self-extinguishing to UL 94-V-0.
 - Rubber buffer: perbunan, oil and petrol resistant
 - Assembly block: AISi 12, painted



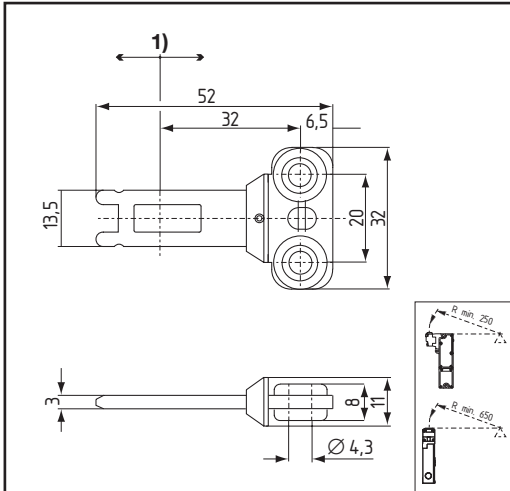
Scope of delivery

Actuator, disposable screws

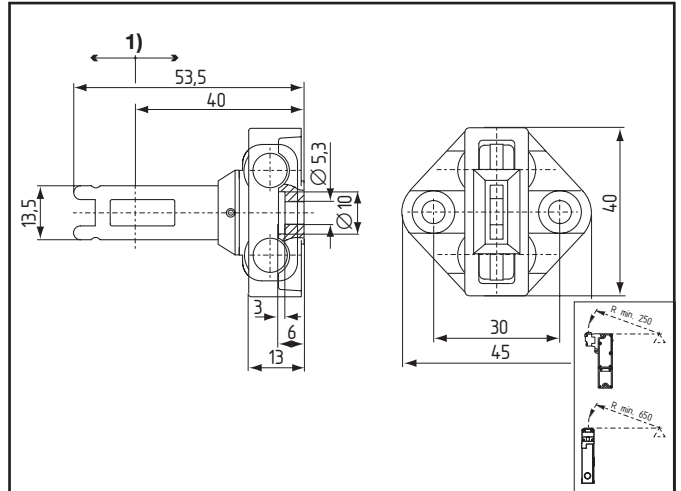
Product table

Type	Version	Part number
Standard actuators ...		
TZK/CO	... straight	191 9660
TZK/CW	... with angled fixing level	191 9661
Telescopic actuators ...		
TZK/COF	... standard	191 9662
TZ/CORF/7,5	... for smaller radii, 7,5° pretensioned	191 9663
TZ/CORF/15	... for smaller radii, 15° pretensioned	191 9664

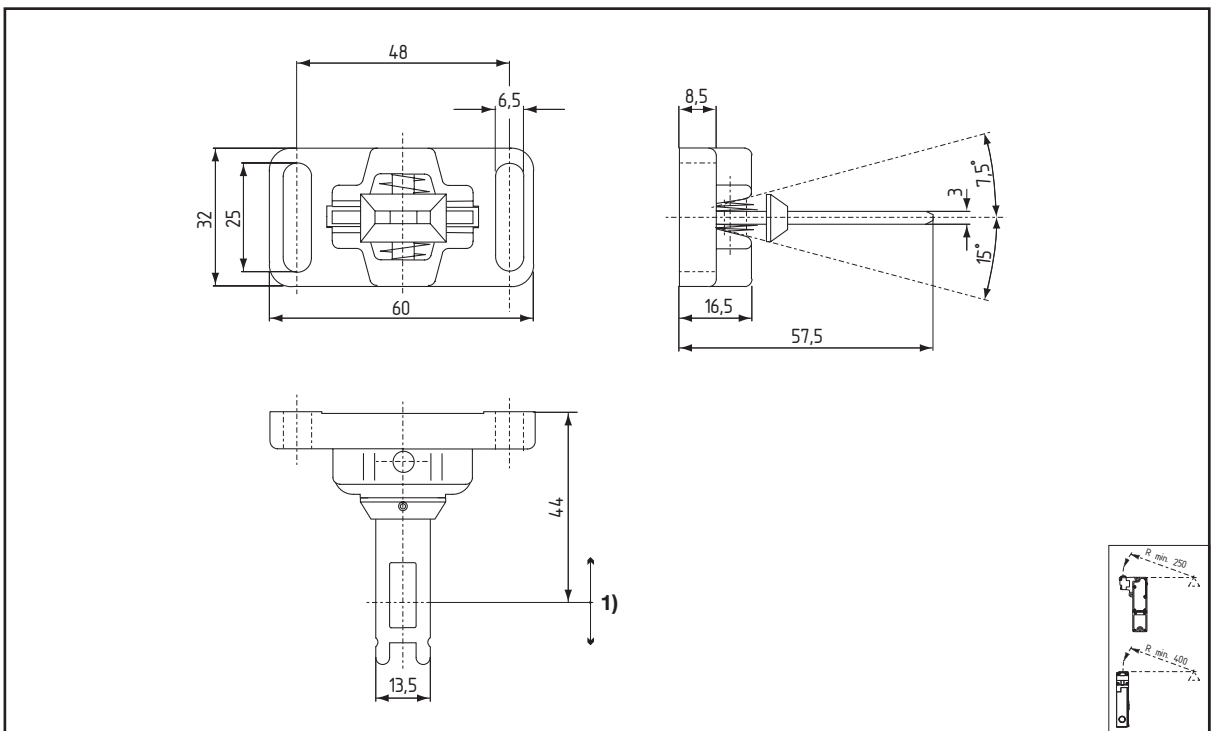
Dimensions TZK/CO



Dimensions TZK/CW

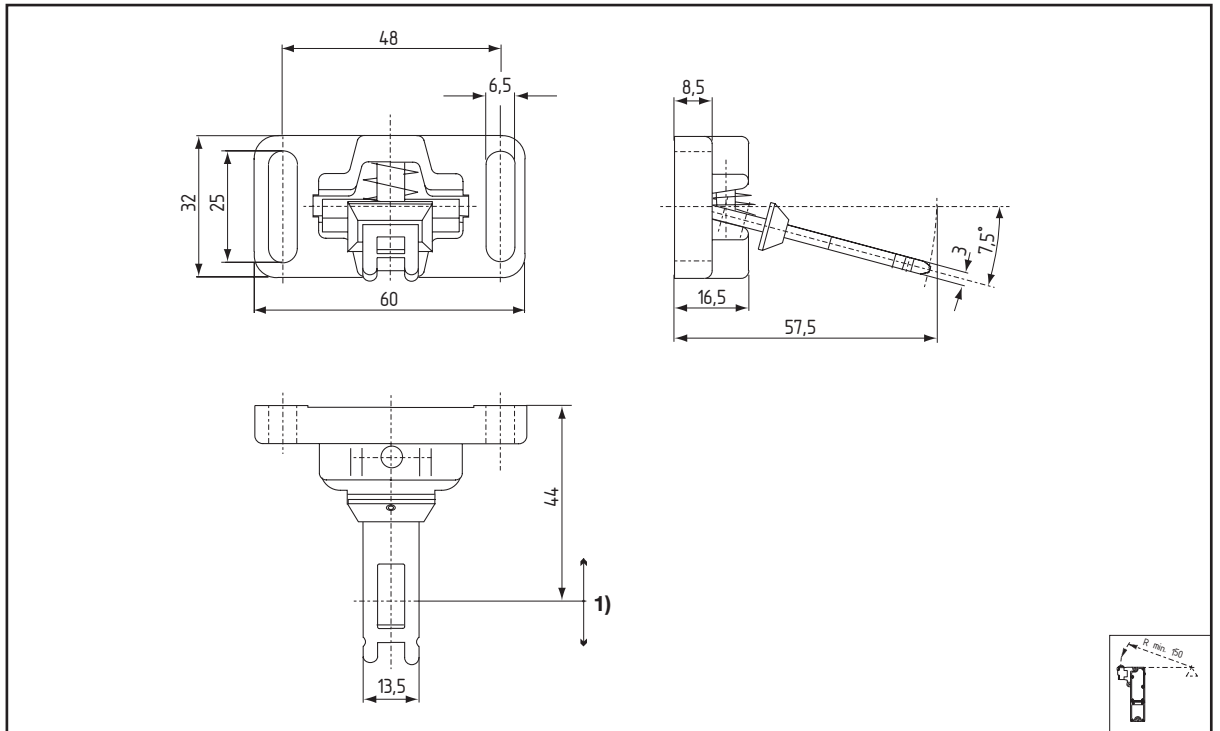


Dimensions TZK/COF

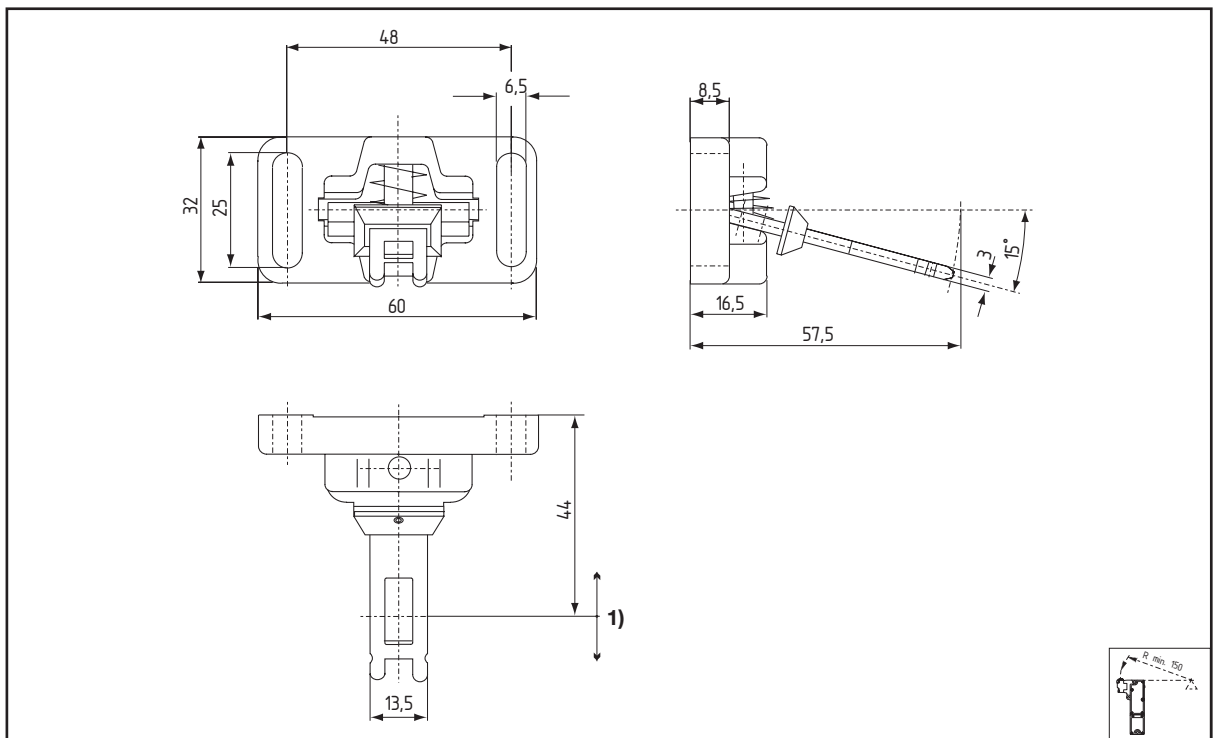


1) Dimensional base for door interlock

Dimensions TZK/CORF/7,5



Dimensions TZK/CORF/15



1) Dimensional base for door interlock

Safety door interlocks

TZK type series

Accessories – mounting plate

Features

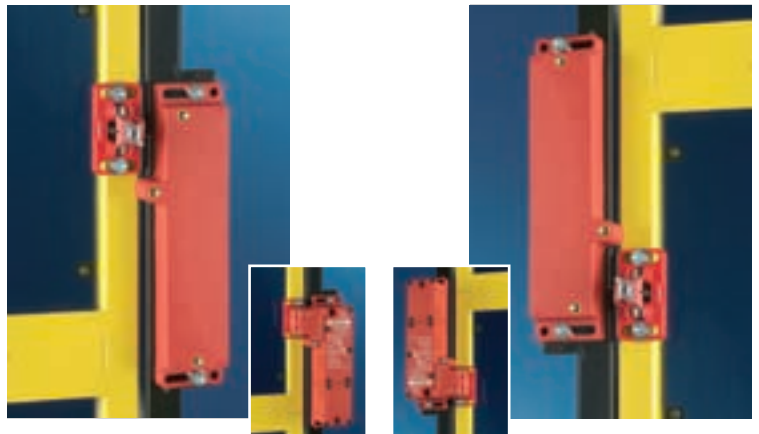
- Simplified installation to square tube structures, other machine cladding, but also to commercially available profile systems (in connection with the actuators TZK/COF, TZK/CORF/7.5 and TZK/CORF/15).
- No additional measures such as mounting bracket required.
- Material:
 - Mounting plate: glass-fibre-reinforced thermoplastic, self-extinguishing to UL 94-V-0
 - Threaded bushes: brass



N.B.

Left: example of attachment to left-hung doors with mounting plate TZK/APL and actuator TZK/COR.

Right: example of attachment to right-hung door with mounting plate TZK/APL and actuator TZK/COR.



Scope of delivery

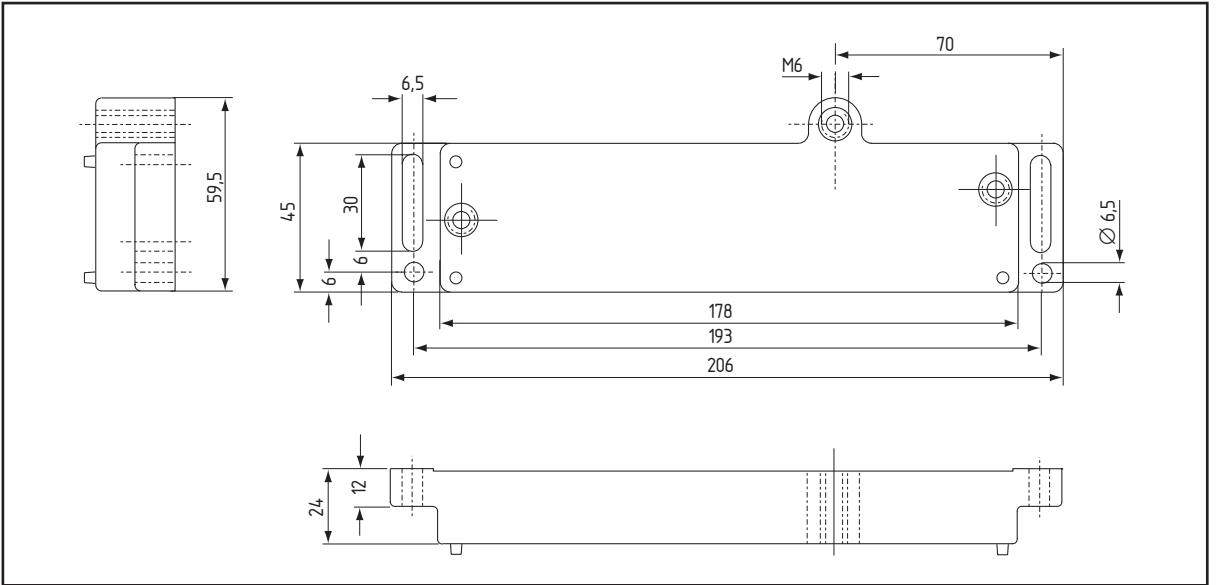
Mounting plate, fixing material

Product table

Type	Version	Part number
TZK/APL	For attachment inside left for right-hung doors	191 9667

N.B.: the mounting plate with the door interlock must be turned through 180° for left-hung doors.

Dimensions TZK/APL



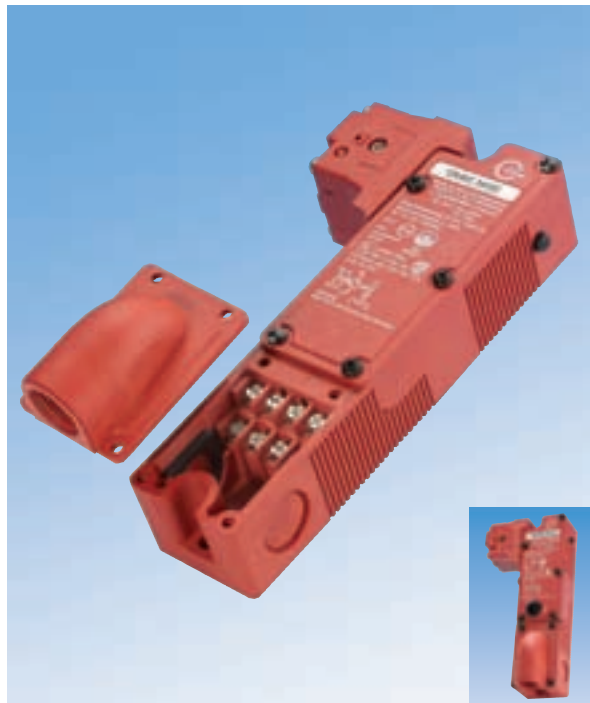
Safety door interlocks

TZK type series

Accessories – terminal compartment lid with cable outlet

Features

- Additional cable outlet M20 x 1.5 in longitudinal direction for type series TZK....
- Simple exchange with standard terminal compartment lid.
- Material:
 - terminal compartment lid: glass-fibre reinforced thermoplastic self-extinguishing to UL 94-V-0.



N.B.



Figure:

- Exchange standard terminal compartment lid against terminal compartment lid and close tight.

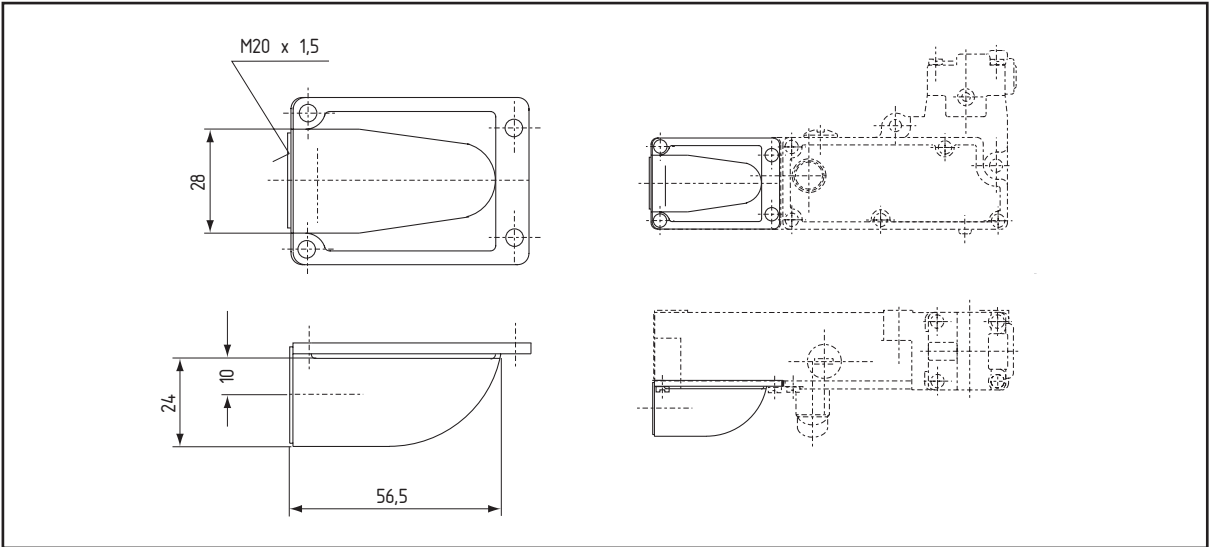
Scope of delivery

Terminal compartment lid, screws

Product table

Type	Version	Part number
TZK/PG	Terminal compartment lid with cable outlet	191 9668

Dimensions TZK/PG



Door handles

for TZK.. type series

Versions for outside and inside installation with escape release handle

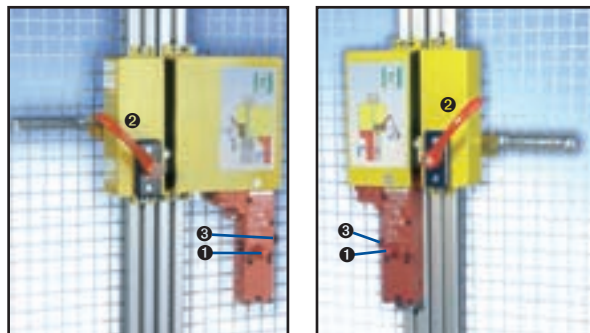
Features

- Less work due to ease of installation particularly to commercially available (Al) profile systems, and also to square tubes and other machine cladding.
- The escape release handle for inside installation versions in connection with the escape release of the TZFS.NF type series enables any persons trapped in the machine cell to free themselves.
- Suitable both for hinged and sliding doors.
- Minimum wear to the operating head due to straight actuator guidance.
- Reduction of forces in pull, push and lateral direction due to integrated front rubber.
- No additional door handle necessary.
- Refer to page 90 for suitable door interlocks



N.B.

Escape release handle/escape release: actuation of the escape release by pressing the unlocking button (1), actuation of the escape release handle to open the guard (2), cancellation of the escape release by pressing the reset button (3).



Scope of delivery

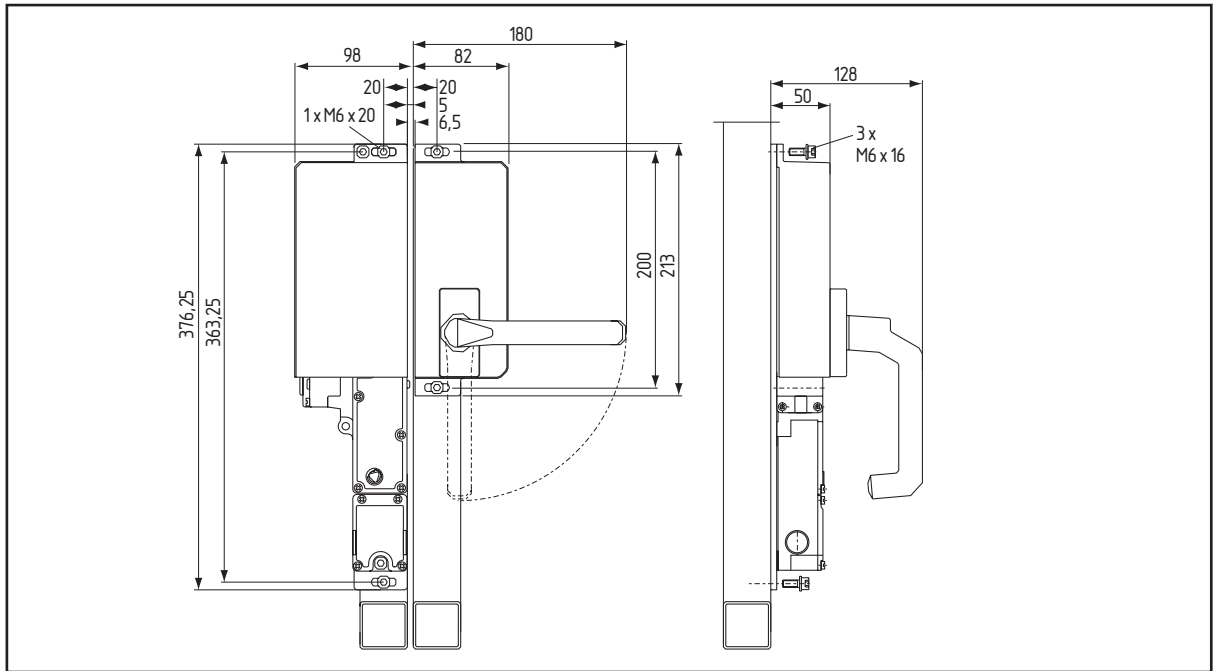
Door handle including actuator for TZKM/.. – TZKF/.., fixing material, sticker (with escape release handle), please order door interlock separately

Product table

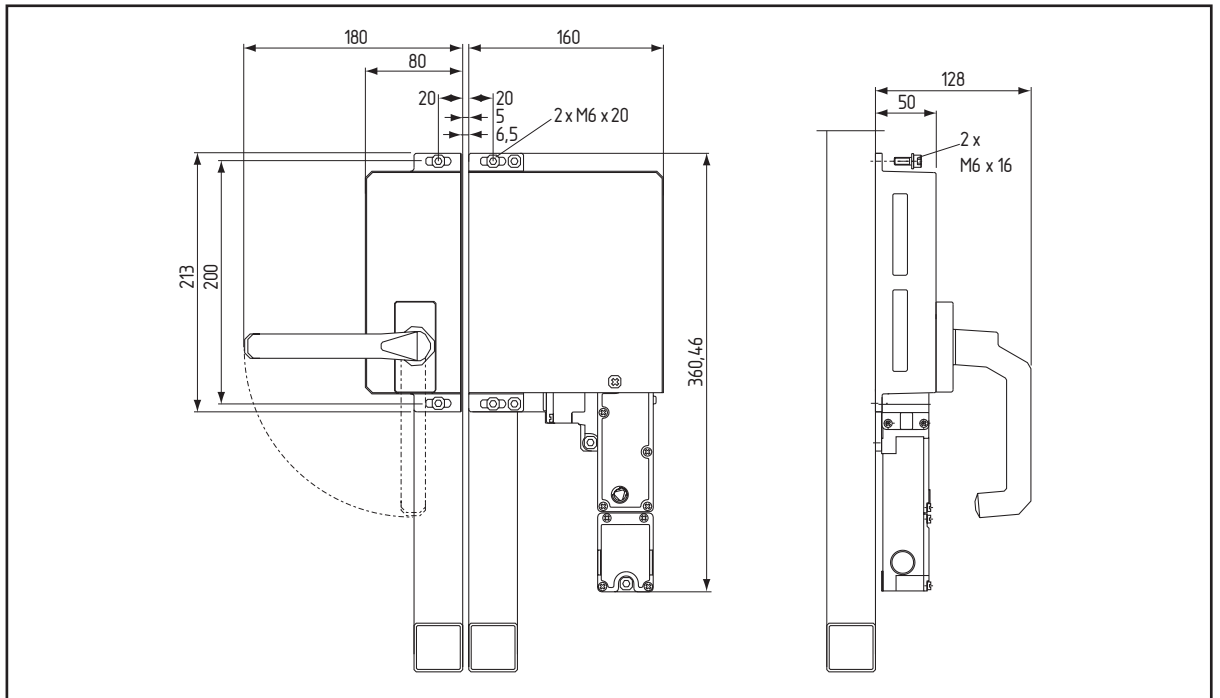
Type	Version	Part number
TR-TZK/AL	Attachment on outside left for right-hung doors	191 9820
TR-TZK/AR	Attachment on outside right for left-hung doors	191 9821
TR-TZK/PG/IL	Attachment on inside left for right-hung doors, with escape release handle	191 9822
TR-TZK/PG/IR	Attachment on inside right for left-hung doors, with escape release handle	191 9823

N.B.: The door handles for inside attachment with escape release handle may only be used with the interlocking devices with escape release TZKF/..NF.

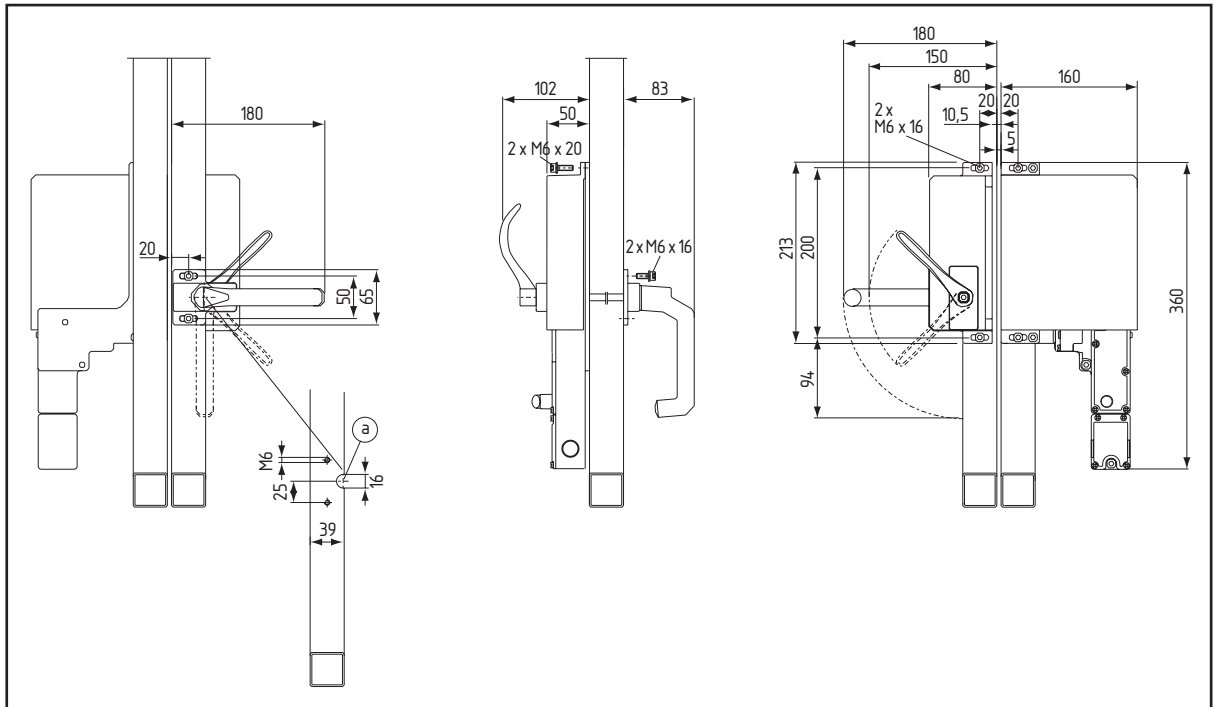
Dimensions TR-TZK/AL



Dimensions TR-TZK/AR

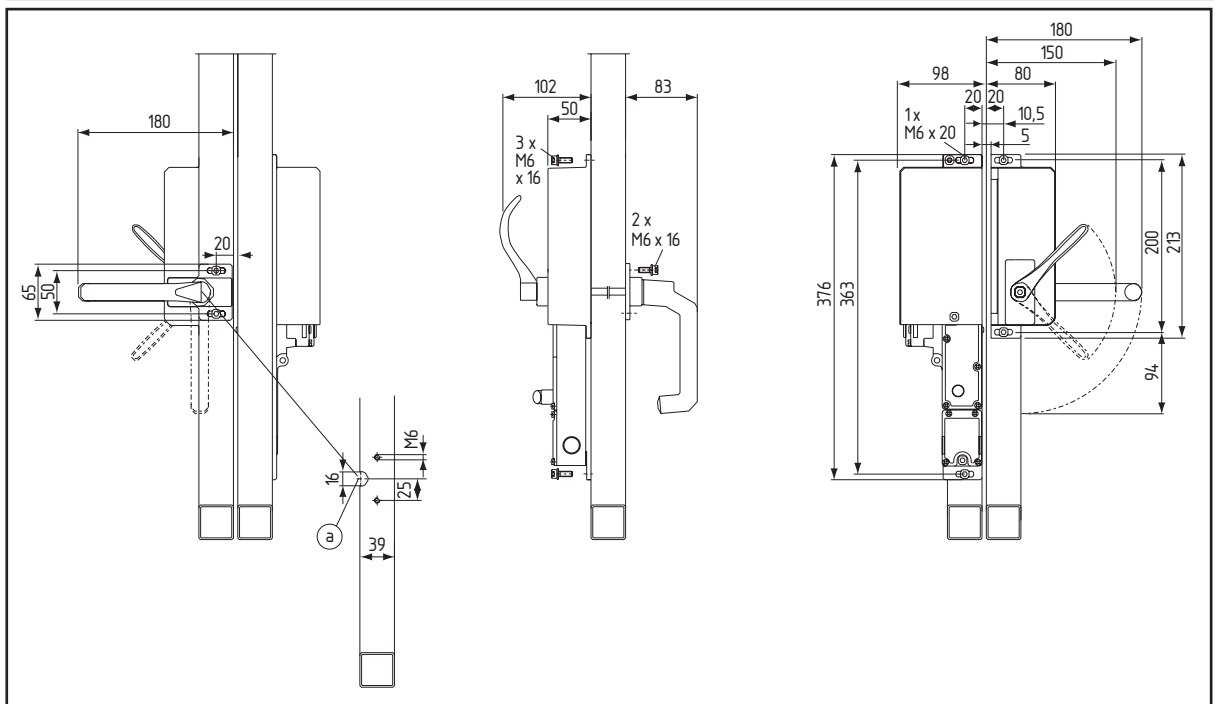


Dimensions TR-TZK/PG/IL



"a" = free bore hole for square tube rod at least 16 mm in diameter

Dimensions TR-TZK/PG/IR



"a" = free bore hole for square tube rod at least 16 mm in diameter

Assembly instructions for TZKM/TZKF type series

Fixing	
Installed position	Random, but operating head protected from direct influence from dirt, flying chips, cooling and cutting oils etc.
Actuator	2 x disposable screws M4 (supplied) with washers or suitable rivet. The actuator must be secured against dismantling by simple means.
Safety door interlock attachment	With 3 screws DIN 912 M5 x 35 and special spring washers (supplied). The devices should not be used as dead stop for the door . The ball lock in the operating head permits the door to be positioned the end position of which should be adjusted to the ball lock. The devices are also to be installed in a concealed manner to effectively prevent the insertion of a second actuator. An axial door clearance of approx. 5 mm actuator play is possible in locked state.
Head attachment	<p>The enclosed disposable screws can be used to replace the standard screws supplied in the operating head.</p> <p>This slight alteration ensures that the operating head cannot be tampered with after installation.</p> <p>The advantage of being able to turn the heads to suit the condition of installation of the devices and the simplified storage is thus not affected. It is sufficient to replace two screws diagonally on the operating head.</p> <p>Caution: In the case of TZF... spring-operated safety door interlocks, the separate actuator must be inserted during the turning of the operating head.</p> <p><i>Please remember that when fitting disposable screws, the cover of the operating head should not be separated from the bottom part.</i></p>
Requirements as to arrangement of position switch	<ul style="list-style-type: none"> - For doors, flap doors and sliding grills, the switch should be placed on the closing edge. - The coded actuator should be exactly guided into the opening of the switch. - The swivel radius of doors and flap doors must not be below the manufacturer's instructions. - Positive fixing of the actuator to the safety guard. - The fixing elements of the switch and of the actuator should be protected against self-loosening. - The cables to the position switch should be adequately protected. - The device should not be used as a mechanical stop.
Requirements placed on protective circuit and signal processing	<ul style="list-style-type: none"> - Signal processing in accordance with the closed circuit current principle. - Contactors or relay modules with sufficient switching capacity should be used. - A short-circuit element should be connected in accordance with manufacturer's instructions.

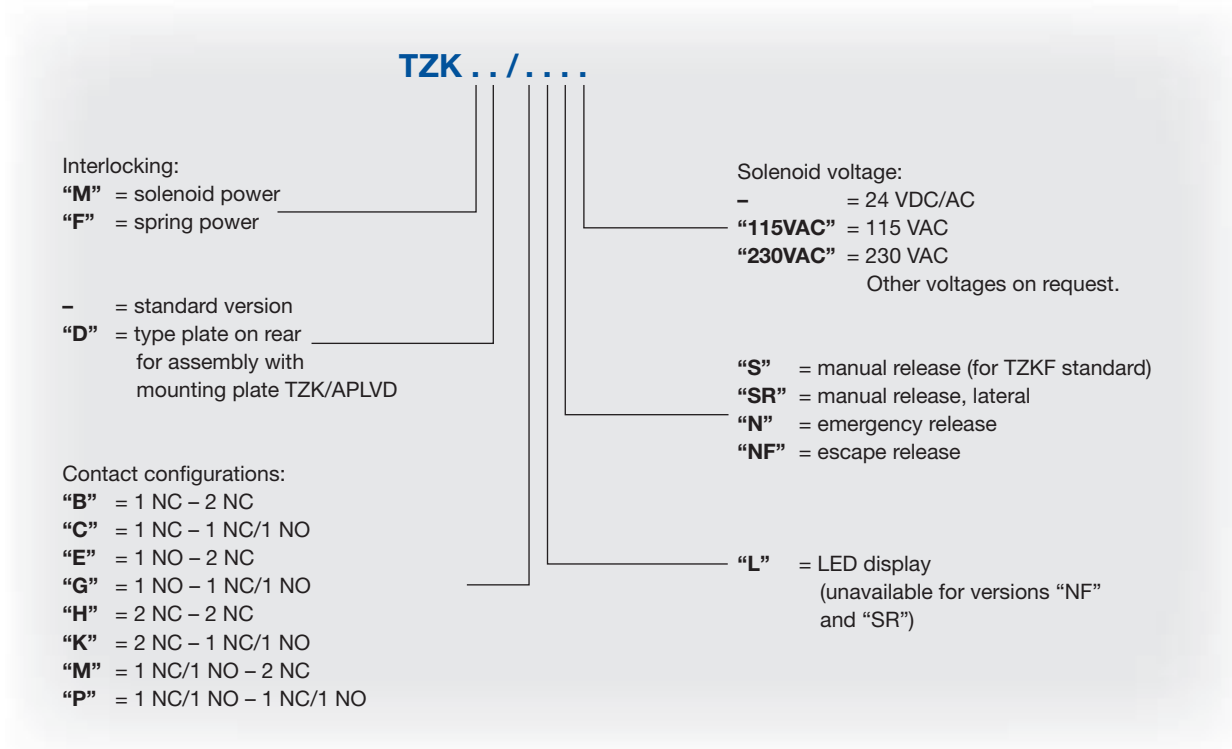
Technical data

for TZKM/TZKF type series

Device type	TZKM/TZKF
Standards	IEC 60947, EN 60947, DIN VDE 0660, EN 1088
Switch type	Interlocking device without locking, solenoid or spring-operated
Rated operating voltage U_g max.	250 V (version with 4 contacts: 150 V)
Utilisation category to DIN VDE 0660 Part 200	AC-15, DC-13
Rated operating current I_e^*	AC-15: 8 A/250 VAC, DC-13: 5 A/24 VDC (version with 4 contacts AC-15: 8 A/115 VAC)
Thermal rated current I_{th}	10 A
Short circuit protection	gG 10 A
Clearance and creepage distance to DIN VDE 0110	Pollution degree 3, overvoltage category III
Proof of positive opening	2.5 kV impulse voltage
Positive opening path with full actuation	Door monitoring approx. 2 x 3.5 mm Solenoid monitoring approx. 2 x 3 mm
Contact system	Form Zb; 4-way contact bridge with micro movement
Contact material	Fk-Ag, silver-plated, passivated
Contact force	0.5 N per contact point = 2 N per contact
Switching of small loads	mind. 24 VDC/10 mA
Switching frequency (recommended)	120 s/h
Chatter time	< 5 ms at 100 mm/s
Climatic resistance	to DIN EN 60068-2-78
Temperature range	0 ... +50 °C
Installation position	Any chosen position, the entry throats for the actuator should, however, be positioned in such a way that they are protected from coarse dirt and moisture.
Mechanical serviceable life	min. 2 x 10 ⁶ switching cycles
Shock resistance to DIN EN 60068-2-6	30 g/11 ms
Vibration resistance to DIN EN 60068-2-6	20 g, 10 ... 55 Hz
Terminal designation to DIN EN 50005 and DIN EN 50013	see circuit diagram
Actuating force (actuator inserted or withdrawn)	Insert: approx. 10 N, withdraw: approx. 20 N (holding force during withdrawal)
Destruction force	approx. 2,000 N
Extraction force	1,750 N, max. admissible door weight 40 kg (increase of force approx. 200 N/sec.), as from tensile force \geq 50 N a release of the door is no longer ensured.
Housing material	Plastic, glass-fibre reinforced, self-extinguishing, hardly flammable
Connection system	Screwed connection up to 2 x 0.5 ... 2.5 mm ² (with wire end ferrules up to 1.5 mm ²), single and multi-core
Rated isolated voltage U_i	440 V, test voltage 2,500 V
Protection class to DIN EN 60529	IP 67
Sealing	Membrane flat sealing, O rings
Approvals	CSA, UL, BIA, CCC
Cable entry	2 x M20 x 1.5
Solenoid voltage	24 VDC, 48 VAC, 115 VAC, 230 VAC, voltage tolerance +5%/–10%, c.d.f. = 100%
Rated frequency	50/60 Hz
Power consumption of solenoid	24 VDC 300 mA cold, 250 mA hot; 48 VAC 100 mA cold, 85 mA hot; 115 VAC 72 mA cold, 50 mA hot; 230 VAC 35 mA cold, 30 mA hot

* Depending on utilisation category and test voltage

Selection plan for type series TZK



Order example:

TZKF/HSR230VAC

Spring-locked version (locked without power),
 2 NC on door position watchdog,
 2 NC on solenoid position watchdog,
 manual release, lateral,
 solenoid voltage 230 VAC

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