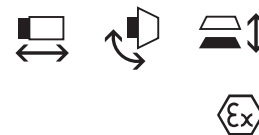


1.  
1.2

Ex switchgear  
Safety switches  
Solenoid interlocks



**Application**

AZM and AZP range Ex solenoid and pneumatic interlocks ensure that sliding, hinged and removable guarding devices, such as grids, hoods or doors, cannot be opened until dangerous conditions (e.g. run-on movements) have been terminated. This takes place in coordination with the control system of a machine. Fail-safe standstill monitors or delay timers monitor run-on movements or time sequences. These solenoid and pneumatic interlocks are also used for cases in which the opening of a guarding device represents a non-permissible intrusion in a production process.

In combination with the "Protect" range safety monitoring modules, the AZM and AZP range Ex solenoid and pneumatic interlocks achieve Control Category 3 or 4 to EN 954-1, subject to suitable circuit arrangements.

**Design and mode of operation**

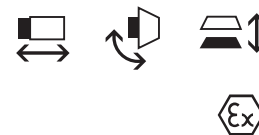
On the AZM and AZP range Ex solenoid and pneumatic interlocks, the switching element with interlock is not physically connected to the actuator but functionally brought together or separated on switching. When the guard device is opened in the uninterlocked condition, the actuator is separated from the base unit. In the process, NC contacts are positively opened and NO contacts closed. The machine control circuit is only enabled when the actuator has been inserted into the interlock and is interlocked. The Ex solenoid and pneumatic interlocks operate on the principle of "actuated without power supply", whereby the actuator is held in the interlock by spring pressure. When power/air is supplied to the solenoid/pneumatic cylinder, the interlock is released. The guarding device can then be opened. Or the AZM range with the power-to-lock principle working in the opposite way.

The solenoid and pneumatic interlocks can be mounted in any desired mounting position.

Protection class of the solenoid and pneumatic interlocks is IP 67.

**1.**  
**1.2**

**Ex switchgear**  
**Safety switches**  
**Solenoid interlocks**



**Features**  
**EEx AZM 415**

- Two Ex contact blocks in one enclosure
- Spring-to-lock or power-to-lock principle
- Problem-free opening of stressed doors by means of bell-crank system
- High holding force 3500 N
- Ball latch
- Wiring compartment

**EEx AZP 415**

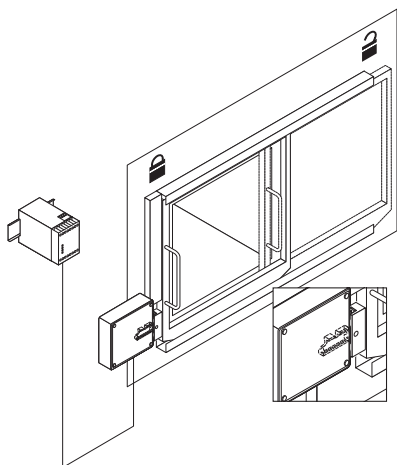
- Two Ex contact blocks in one enclosure
- Release by means of pneumatic cylinder
- Actuated with air supply off
- Problem-free opening of stressed doors by means of bell-crank system
- High holding force 3500 N
- Ball latch
- Wiring compartmentsraum

**Note**

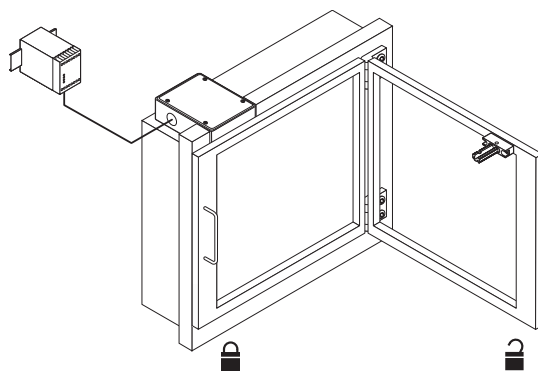
Technical data are shown in tabular form in chapter 1.2.5.

**Application**

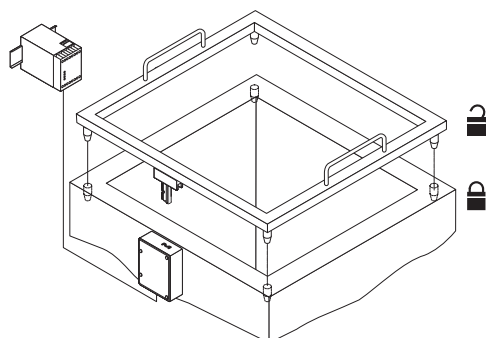
On sliding doors



On hinged doors



On removable covers



**1. Ex switchgear**  
**1.2 Safety switches**  
**1.2.1 Solenoid interlocks**  
**1.2.1 EEx AZM 415 range**

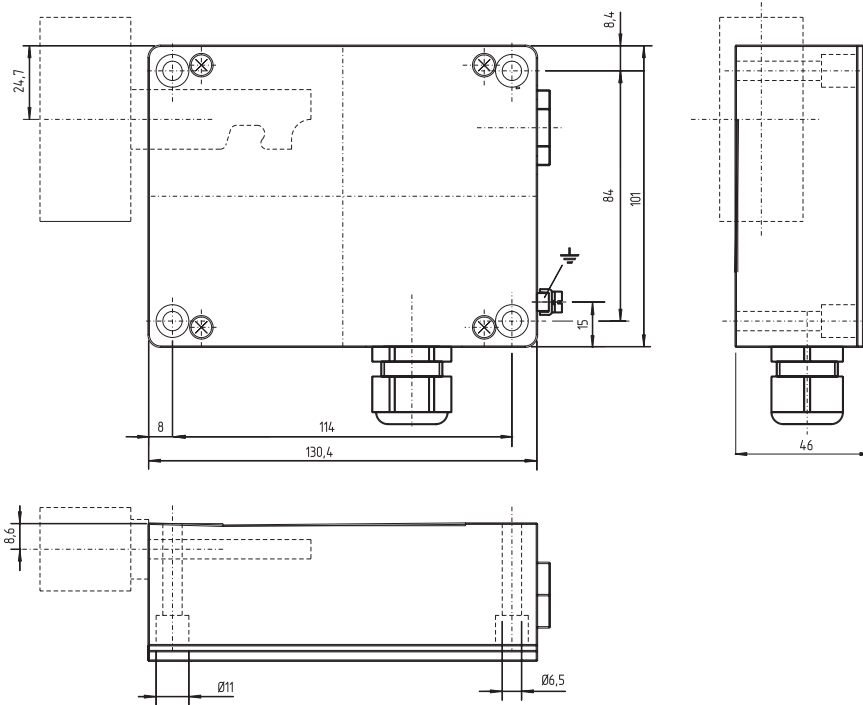


**Features**

- Metal enclosure
- Two Ex contact blocks in one enclosure
- $\text{Ex}$  II 2G EEx dem IIC T6 II 2D IP67 T80°C
- Spring-to-lock or power-to-lock principle
- Problem-free opening of stressed doors by means of bell-crank system
- Robust design
- Long life
- High holding force 3,500 N
- Ball latch
- Wiring compartment
- Spring-loaded actuator
- Includes 2 cable entries M 20 x 1.5

**Info**

Version for equipment category 3D (dust-Ex zone 22) available  
 Ordering suffix: -3D



**Approvals** EC Type test certificate: DTM 02 ATEX E 255 X

**1. Ex switchgear**  
**1.2 Safety switches**  
**1.2.1 Solenoid interlocks**  
**1.2.1 EEx AZM 415 range**



**Ordering details** Ex interlock, spring-to-lock principle, two NO and two NC contacts: EEx AZM 415 2Ö/2S-R  
 Actuators and accessories must be ordered separately, e.g. straight actuator: AZ/AZM 415-B1

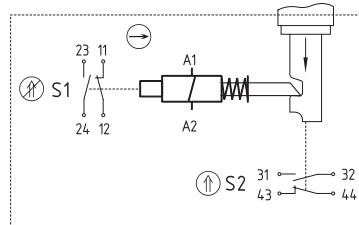
**Info** Further variants not shown here are available on request. The applicable ordering suffix is added at the end of the part number of the safety switch.

- Available with gold-plated contacts

**Contacts**

**Spring-to-lock principle**

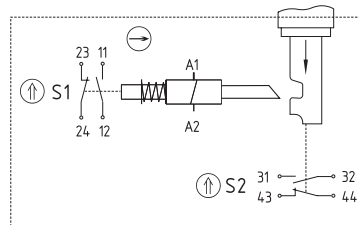
**2 NO  
2 NC**



**EEx AZM 415 2Ö/2S-R**

**Power-to-lock principle**

**2 NO  
2 NC**



**EEx AZM 415 2Ö/2S-A**

**Note** Circuit diagrams show condition without power supply, with actuator inserted (0 in switch travel diagram). Actuators must be ordered separately.

**A selection of suitable actuators and accessories can be found on the following pages.**

**1. Ex switchgear**  
**1.2 Safety switches**  
**1.2.2 Pneumatic interlocks**  
**1.2.2 EEx AZP 415 range**

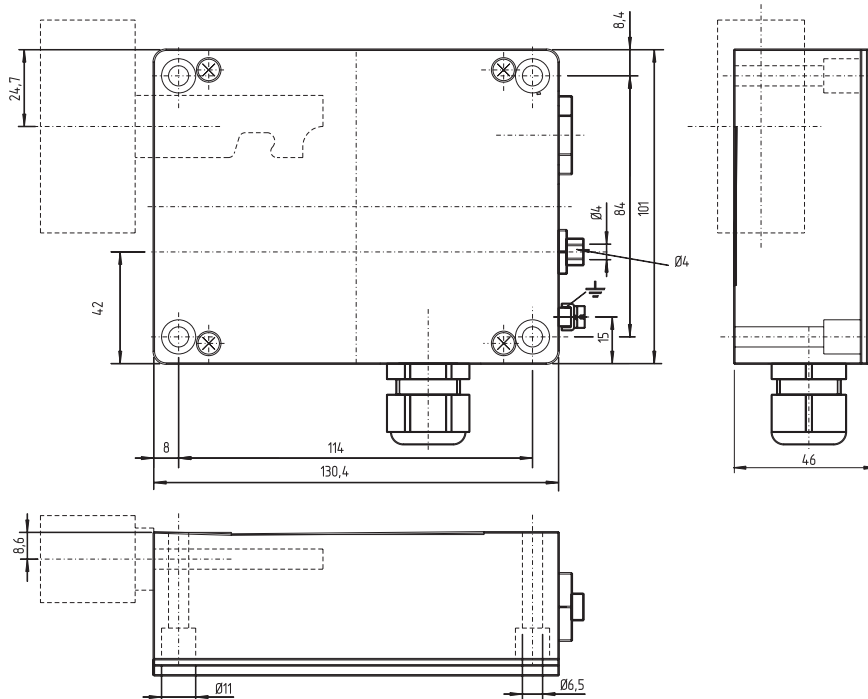


**Features**

- Metal enclosure
- Two Ex contact blocks in one enclosure
- $\text{Ex}$  II 2G EEx de IIC T6  
II 2D IP67 T80°C
- Release by means of pneumatic cylinder
- Actuated with air supply off
- Problem-free opening of stressed doors by means of bell-crank system
- Robust design
- Long life
- High holding force 3500 N
- Ball latch
- Wiring compartment
- Spring-loaded actuator
- Includes 2 cable entries M20 x 1.5

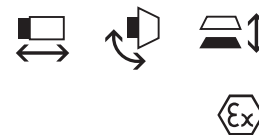
**Info**

Version for equipment category 3D (dust-Ex zone 22) available  
Ordering suffix: -3D



**Approvals** EC Type test certificate: DTM 02 ATEX E 255 X

**1.** Ex switchgear  
**1.2** Safety switches  
**1.2.2** Pneumatic interlocks  
**1.2.2** EEx AZP 415 range



**Ordering details** EEx interlock, actuated with air supply off, with pneumatic cylinder, two NO and two NC contacts:  
 EEx AZP 415 2Ö/2S  
 Actuators and accessories must be ordered separately, e.g. straight actuator: AZ/AZM 415-B1

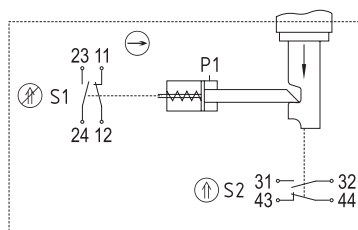
**Info** Further variants not shown here are available on enquiry. The applicable ordering suffix is added at the end of the part number of the safety switch.

- Available with gold-plated contacts

**Contacts**

**Actuation with air supply off**

**2 NO  
 2 NC**



**EEx AZP 415-22zpk**

**Note** The contacts 11-12 and 23-24 of the switch insert S1 are actuated on air supply being connected to or disconnected from the pneumatic cylinder P1. Circuit diagrams show condition without air supply, with actuator inserted (0 in switch travel diagram). Actuators must be ordered separately.

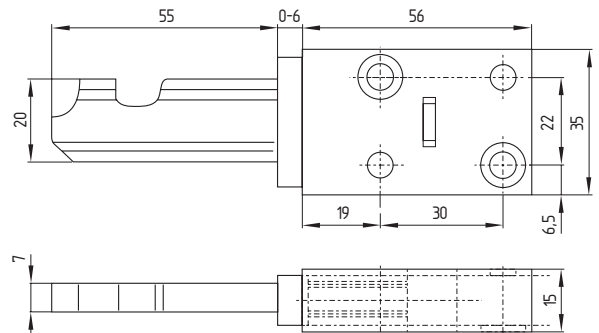
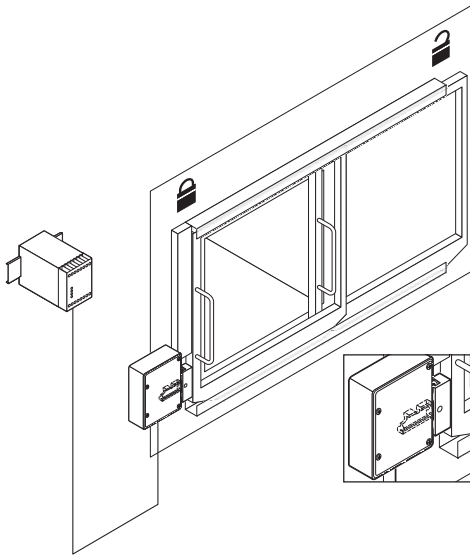
**A selection of suitable actuators and accessories can be found on the following pages.**

1. Ex switchgear  
 1.2 Safety switches  
 1.2.3 Solenoid interlocks  
 1.2.3 Actuators



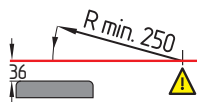
**Straight actuator AZ/AZM 415-B1**

- Particularly suitable for sliding doors
- Actuator with return spring
- Tolerates up to max. 6 mm overtravel

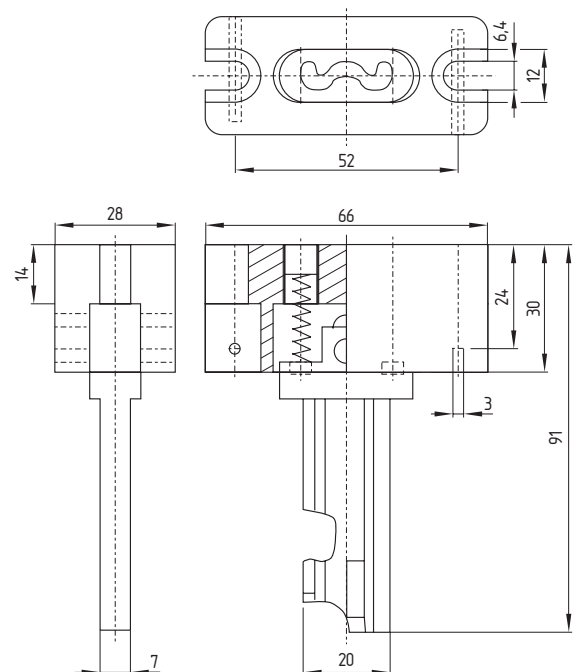
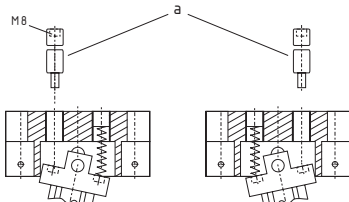


**Adjustable actuator AZ/AZM 415-B2**

- Particularly suitable for hinged guards
- For very small actuating radii in line with the plane of the actuator
- Actuating radius adjustable, minimum 250 mm, using a hexagonal key wrench 4 mm A/F
- Removal of the actuator can be prevented by fitting dowel pins in the holes provided.
- The actuator can be brought into any desired position by adjustment of the socket screw (a). This actuator can also be used for sliding doors.



- The axis of the hinge should be 36 mm above the top edge of the solenoid interlock and in the same plane

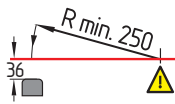


**1.** Ex switchgear  
**1.2** Safety switches  
**1.2.3** Solenoid interlocks  
**Actuators**

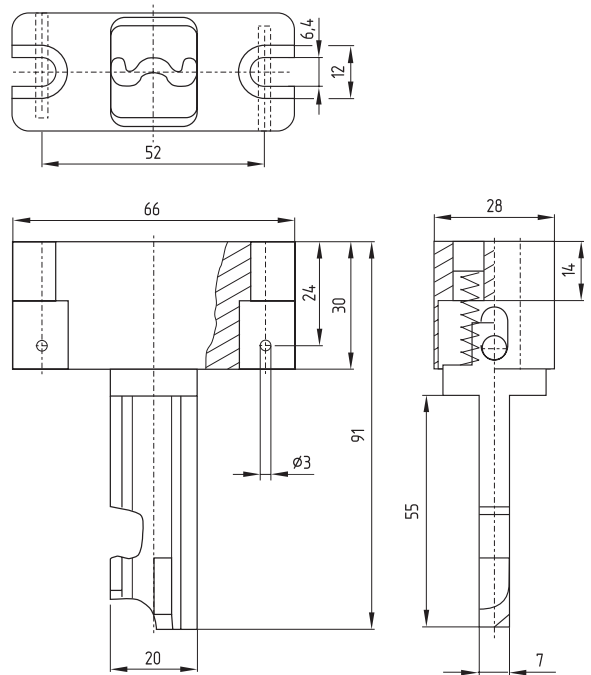
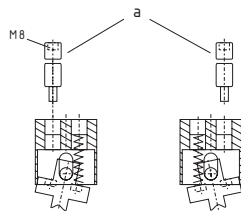


**Adjustable actuator AZ/AZM 415-B3**

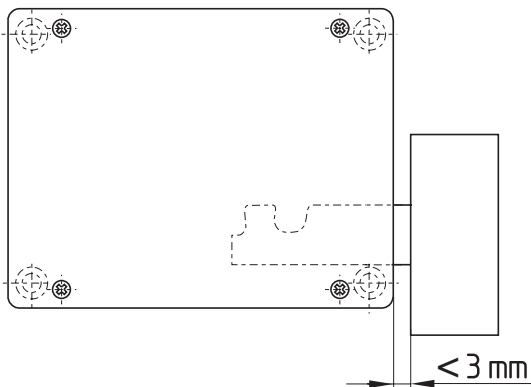
- Particularly suitable for hinged guards
- For very small actuating radii at 90° to the plane of the actuator
- Actuating radius adjustable, minimum 250 mm, using a hexagonal key wrench 4 mm A/F
- Removal of the actuator can be prevented by fitting dowel pins in the holes provided.
- The actuator can be brought into any desired position by adjustment of the socket screw (a). This actuator can also be used for sliding doors.



- The axis of the hinge should be 36 mm above the top edge of the solenoid interlock and in the same plane



**Note** The distance between the flange of the actuator and the switch enclosure must be less than 3 mm when the actuator is inserted.



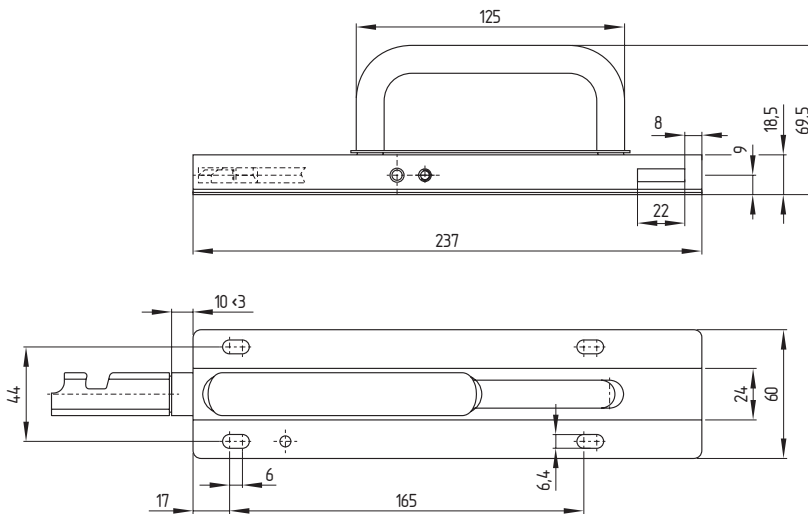
**1.**  
**1.2**  
**1.2.3**

**Ex switchgear**  
**Safety switches**  
**Solenoid interlocks**  
**Actuators**



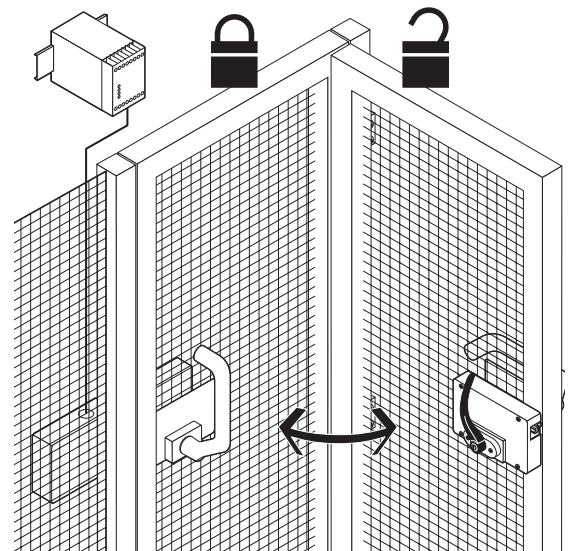
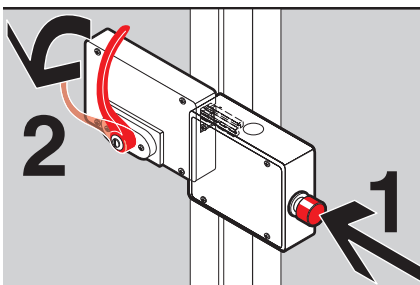
**Actuator AZ/AZM 415-B4pS with locking bolt and ball latch**

- Suitable for all types of guard
- Hinge radius not critical
- No other handle or lever needed on the guard
- Shearing force 25,000 N
- Mounting plate to simplify mounting, see accessories
- Lockout tag SZ 415-B4pS to prevent unintentional closing, see accessories



**Actuator AZ/AZM 415-B30 with or without emergency handle**

- Suitable for all guard types
- No other handle or lever needed on the guard
- Hinge radius not critical
- Latching actuating handle
- Emergency handle to open the guard from within the guarded area



1.  
1.2  
1.2.3

Ex switchgear  
Safety switches  
Solenoid interlocks  
Actuators

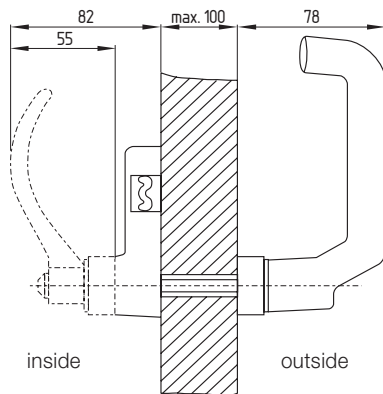


Actuator AZ/AZM 415-B30 with or without emergency handle

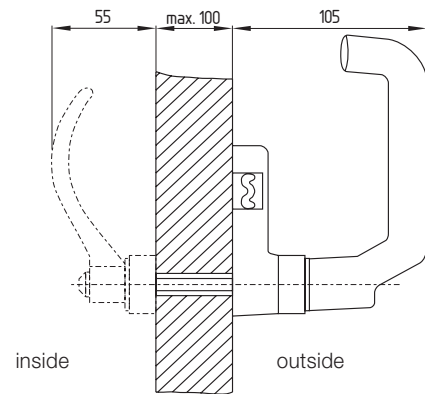
Mounting details

- SZ 415 lockout tag to prevent unintentional closing, see 2.36
- Shearing force 25,000 N
- Mounting plates to simplify mounting, see 2.36

Actuator mounted inside



Actuator mounted outside



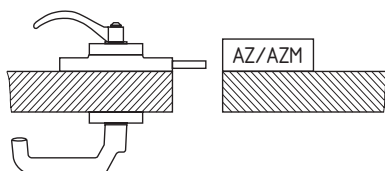
Actuators AZ/AZM 415-B30-02, -01 with emergency handle

- Actuator mounted inside
- AZ/AZM 415-B30-02: Door hinge on left-hand side
- AZ/AZM 415-B30-01: Door hinge on right-hand side
- For door thickness max. 100 mm

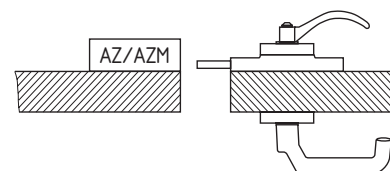
Note

This version is only to be used in combination with an **EEx AZM 415 2Ö/2S-RT** solenoid interlock with emergency release.

AZ/AZM 415-B30-02



AZ/AZM 415-B30-01



1.  
1.2  
1.2.3

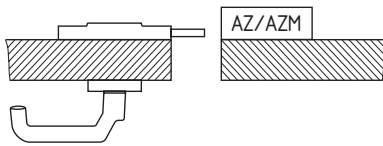
Ex switchgear  
Safety switches  
Solenoid interlocks  
Actuators



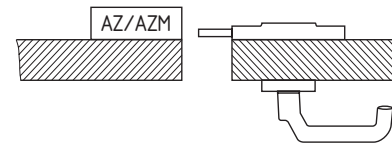
**Actuators AZ/AZM 415-B30-04, -03**

- Actuator mounted inside
- AZ/AZM 415-B30-04: Door hinge on left-hand side
- AZ/AZM 415-B30-03: Door hinge on right-hand side
- For door thickness max. 100 mm

**AZ/AZM 415-B30-04**



**AZ/AZM 415-B30-03**



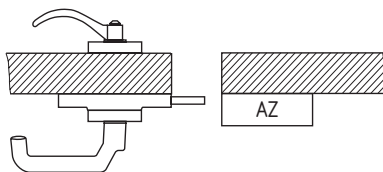
**Actuators AZ/AZM 415-B30-06, -05 with emergency handle**

- Actuator mounted outside
- AZ/AZM 415-B30-06: Door hinge on left-hand side
- AZ/AZM 415-B30-05: Door hinge on right-hand side
- For door thickness max. 100 mm

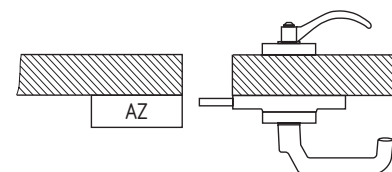
**Note**

This version is only to be used in combination with an **EEx AZM 415 2Ö/2S-A** solenoid interlock, solenoid locking principle and one push button to de-energize the solenoid mounted next to the emergency handle

**AZ/AZM 415-B30-06**



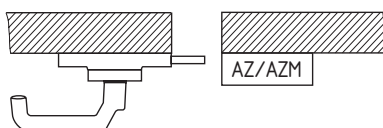
**AZ/AZM 415-B30-05**



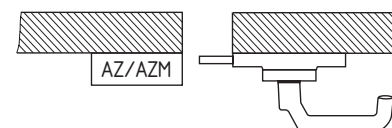
**Actuators AZ/AZM 415-B30-08, -07**

- Actuator mounted outside
- AZ/AZM 415-B30-08: Door hinge on left-hand side
- AZ/AZM 415-B30-07: Door hinge on right-hand side

**AZ/AZM 415-B30-08**



**AZ/AZM 415-B30-07**

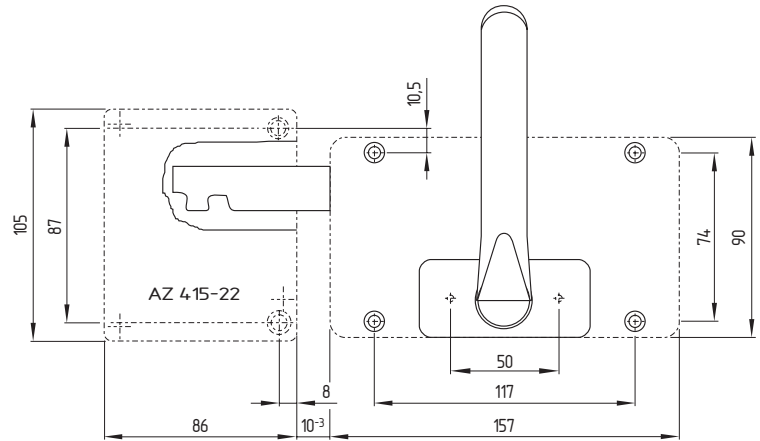


**1.** Ex switchgear  
**1.2** Safety switches  
**1.2.3** Solenoid interlocks  
**Actuators**



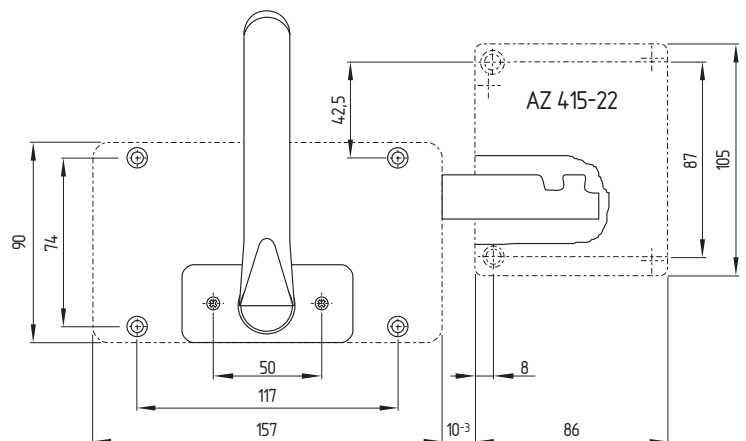
**Actuators AZ/AZM 415-B30-01, -03 with emergency handle**

- Outline drawing together with AZM 415
- Latching handle



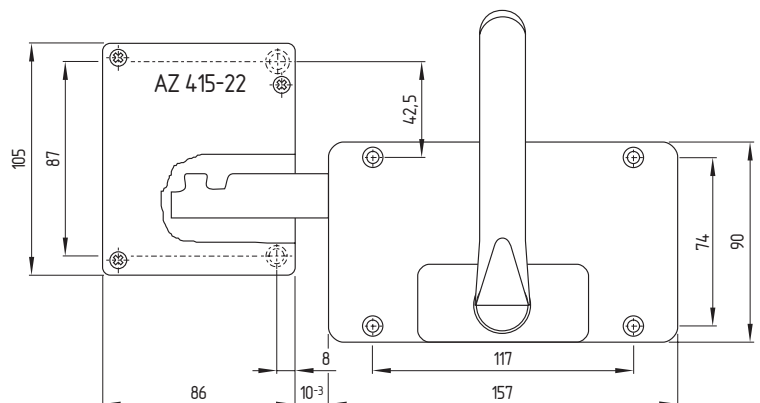
**Actuators AZ/AZM 415-B30-02, -04 with emergency handle**

- Outline drawing together with AZM 415
- Latching handle



**Actuators AZ/AZM 415-B30-05, -07 with emergency handle**

- Outline drawing together with AZM 415
- Latching handle

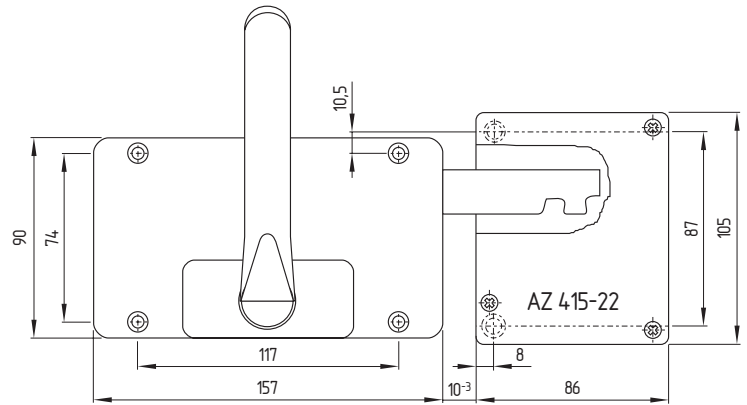


**1.** Ex switchgear  
**1.2** Safety switches  
**1.2.3** Solenoid interlocks  
**Actuators**



**Actuators AZ/AZM 415-B30-06, -08 with emergency handle**

- Outline drawing together with AZM 415
- Latching handle



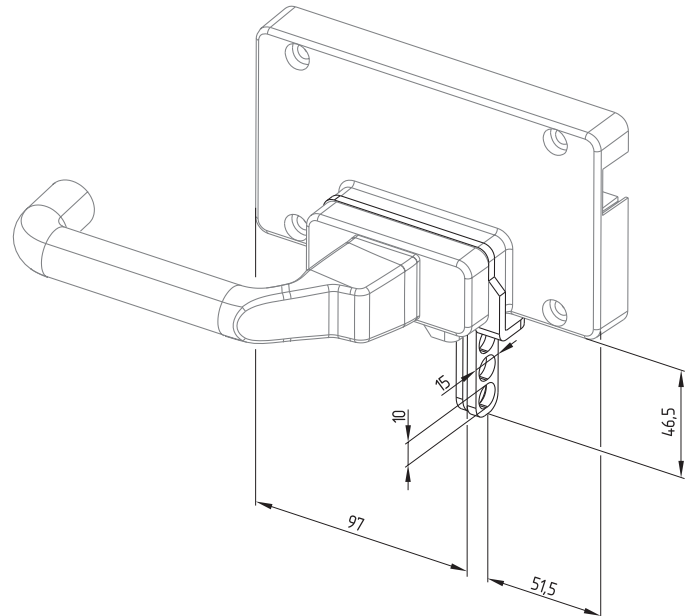
**1.**  
**1.2**  
**1.2.4**

**Ex switchgear**  
**Safety switches**  
**Solenoid interlocks**  
**Accessories**



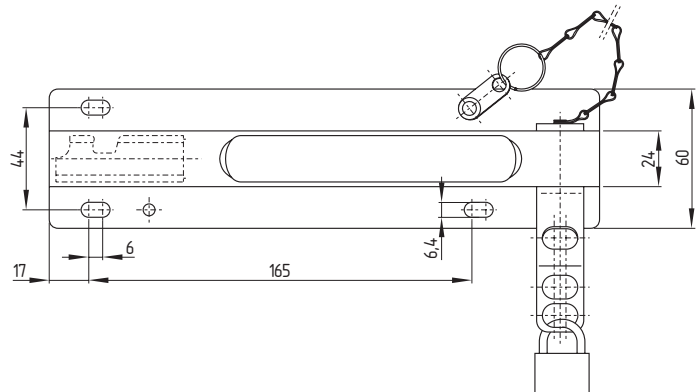
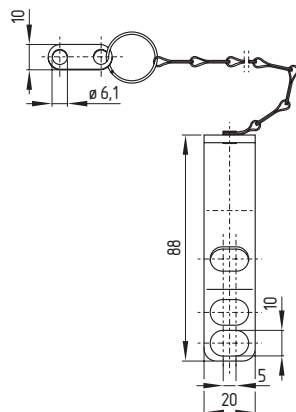
**Lockout tag SZ 415-1/-2**

- To prevent inadvertent closing, e.g. during maintenance
- For complex plant
- Prevents actuation of the switch
- Suitable for mounting inside and outside of the hazardous area
- SZ 415-1 for: AZ/AZM 415-B30-01  
AZ/AZM 415-B30-03  
AZ/AZM 415-B30-06  
AZ/AZM 415-B30-08
- SZ 415-2 for: AZ/AZM 415-B30-02  
AZ/AZM 415-B30-04  
AZ/AZM 415-B30-05  
AZ/AZM 415-B30-07
- Shown version SZ 415-1;  
version SZ 415-2 mirror-image

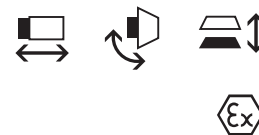


**Lockout tag SZ 415-B4pS**

- For actuator AZ/AZM 415-B4pS
- To prevent inadvertent closing, e.g. during maintenance
- For complex plant
- Prevents actuation of the switch
- With chain to fix on actuator
- Length of chain 500 mm

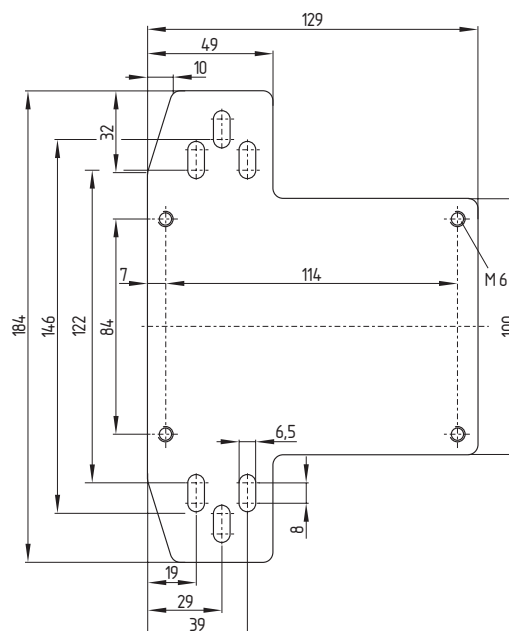


- 1. Ex switchgear
- 1.2 Safety switches
- 1.2.4 Solenoid interlocks
- 1.2.4 Accessories



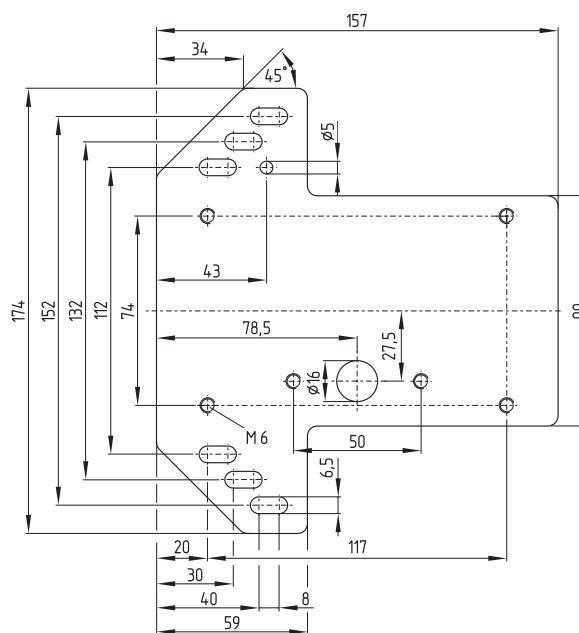
## Mounting plate MP AZM 415-22

- For simple mounting of AZM 415 on profile systems, e.g. 40, 60 or 80 mm wide
- Thickness of plate 5 mm

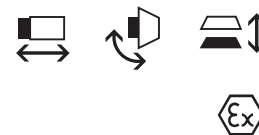


## Mounting plate MP AZ/AZM 415-B30

- For simple mounting of a door handle of the AZ/AZM 415-B30 on profile systems, e.g. 40, 60 or 80 mm wide
- Thickness of plate 5 mm

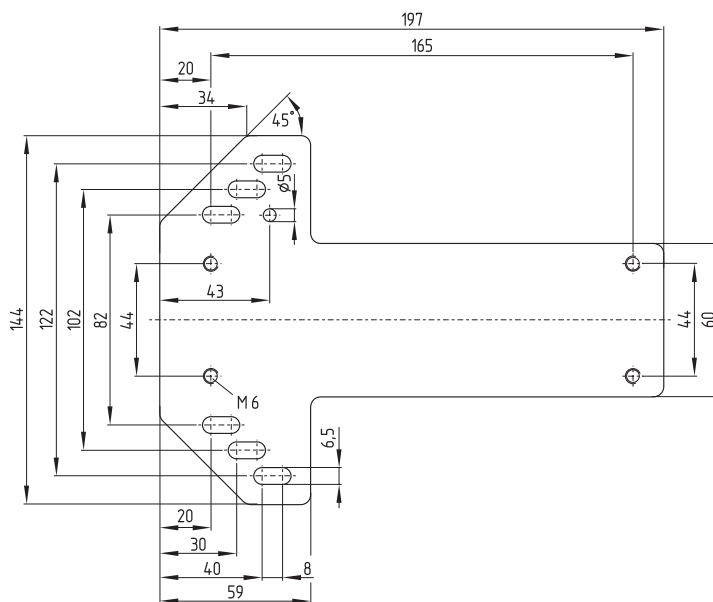


- 1. Ex switchgear
- 1.2 Safety switches
- 1.2.4 Solenoid interlocks
- 1.2.4 Accessories



## Mounting plate MP AZ/AZM 415-B4pS

- For simple mounting of AZ/AZM 415-B4pS actuators on profile systems, e.g. 40, 60 or 80 mm wide
- Thickness of plate 5 mm



**1. Ex switchgear**  
**1.2 Safety switches**  
**1.2.5 Solenoid interlocks**  
**1.2.5 Technical data**



	<b>EEx AZM 415</b>	<b>EEx AZP 415</b>
Standards:	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50019; EN 50028; EN 50281-1-1	
Ex marking:	⊕ II 2G EEx dem IIC T6, II 2D IP67-T80°C	⊕ II 2G EEx de IIC T6 II 2D IP67-T80°C
Certification:	DMT 02 ATEX E255 X	
Enclosure material:	Al die-cast, enamel finish	
Actuator and latching bolt:	Zinc-plated metal/aluminium	
Protection class:	IP 67 to IEC/EN 60529	
Contact material:	Silver	
Contact type:	Change-over contact with double break Zb, with galvanically separated contact bridges	
Switching system:	⊖ IEC 60947-5-1; slow action, NC contacts with positive break	
Termination:	M3 screw terminals, max. 2.5 mm <sup>2</sup>	
Cable entry:	2 x M20 x 1.5 for cable diameter of 5 ... 9 mm	
Rated impulse		
withstand voltage U <sub>imp</sub> :	4 kV	
Rated insulation voltage U <sub>i</sub> :	250 V	
Thermal test current I <sub>the</sub> :	6 A	
Utilisation category:	AC-15; DC-13	
Rated operating		
current/voltage I <sub>e</sub> /U <sub>e</sub> :	6 A/250 VAC; 40 mA/24 VDC	
Max. fuse rating:	6 A gL/gG D-fuse	
Magnet:	100 % ED	–
Release:	Solenoid	Pneumatic cylinder, max. 3 – 7 bar permitted
Power consumption:	max. 12 W	–
Ambient temperature:	–20 °C ... +55 °C	–20 °C ... +65 °C
Mechanical life:	> 1 million operations	
Holding force F <sub>max.</sub> :	3500 N	
Holding force of		
integral ball latch:	0 ... 500 N (adjustable)	



- 1.** Ex switchgear
- 1.2** Safety switches
- 1.2.5** Solenoid interlocks
- 1.2.5** Technical data

