



EN Operating instructions.pages 1 to 6
Original

Content

1 About this document	
1.1 Function	1
1.2 Target group: authorised qualified personnel.	1
1.3 Explanation of the symbols used	1
1.4 Appropriate use	1
1.5 General safety instructions	1
1.6 Warning about misuse	2
1.7 Exclusion of liability	2
2 Product description	
2.1 Ordering code	2
2.2 Special versions.	2
2.3 Purpose	2
2.4 Technical data	2
2.5 Safety classification	2
2.6 Function	3
3 Mounting	
3.1 Dimensions	3
3.2 Mounting of the position switches	3
3.3 Actuation of the position switches	3
4 Electrical connection	
4.1 General information for electrical connection.	4
4.2 Contact variants	4
4.3 Switch travel diagrams.	4
4.4 Wiring example Z.M476E.	4
5 Set-up and maintenance	
5.1 Functional testing.	4
5.2 Maintenance	4

6 Disassembly and disposal

6.1 Disassembly.	4
6.2 Disposal	4

7 EU Declaration of conformity

1. About this document

1.1 Function

This operating instructions manual provides all the information you need for the mounting, set-up and commissioning to ensure the safe operation and disassembly of the safety switchgear. The operating instructions must be available in a legible condition and a complete version in the vicinity of the device.

1.2 Target group: authorised qualified personnel

All operations described in this operating instructions manual must be carried out by trained specialist personnel, authorised by the plant operator only.

Please make sure that you have read and understood these operating instructions and that you know all applicable legislations regarding occupational safety and accident prevention prior to installation and putting the component into operation.

The machine builder must carefully select the harmonised standards to be complied with as well as other technical specifications for the selection, mounting and integration of the components.

1.3 Explanation of the symbols used



Information, hint, note:

This symbol is used for identifying useful additional information.



Caution: Failure to comply with this warning notice could lead to failures or malfunctions.

Warning: Failure to comply with this warning notice could lead to physical injury and/or damage to the machine.

1.4 Appropriate use

Products in Schmersal's range are not intended to be used by private end consumers.

The products described in these operating instructions are developed to execute safety-related functions as part of an entire plant or machine. It is the responsibility of the manufacturer of a machine or plant to ensure the correct functionality of the entire machine or plant.

The safety switchgear must be exclusively used in accordance with the versions listed below or for the applications authorised by the manufacturer. Detailed information regarding the range of applications can be found in the chapter "Product description".

1.5 General safety instructions

The user must observe the safety instructions in this operating instructions manual, the country-specific installation standards as well as all prevailing safety regulations and accident prevention rules.



Further technical information can be found in the Schmersal catalogues or in the online catalogue on the Internet: products.schmersal.com.

The information contained in this operating instructions manual is provided without liability and is subject to technical modifications.

There are no residual risks, provided that the safety instructions as well as the instructions regarding mounting, commissioning, operation and maintenance are observed.

1.6 Warning about misuse



In case of improper use or manipulation of the safety switchgear, personal hazards or damages to machinery or plant components cannot be excluded when safety switchgear is used. The relevant requirements of the standard EN ISO 14119 must be observed.

1.7 Exclusion of liability

We shall accept no liability for damages and malfunctions resulting from defective mounting or failure to comply with this operating instructions manual. The manufacturer shall accept no liability for damages resulting from the use of unauthorised spare parts or accessories.

For safety reasons, invasive work on the device as well as arbitrary repairs, conversions and modifications to the device are strictly forbidden; the manufacturer shall accept no liability for damages resulting from such invasive work, arbitrary repairs, conversions and/or modifications to the device.

2. Product description

2.1 Ordering code

This operating instructions manual applies to the following types:

Z①② 476E-③-④-⑤-⑥

No.	Option	Description
①	S	Plunger
	1R	Offset roller lever 1R
	3K	Angle roller lever 3K
	K4	Angle roller lever K4
②	M	Latching with magnetic remote reset
	R	Latching with manual reset
③	02	2 NC contacts
④		Actuating head can be rotated
	U90	90°
	U180	180°
	U270	270°
⑤		Free for type with manual reset (Z.R476E)
	024	Magnetic remote reset, 24 VDC
	230	Magnetic remote reset, 230 VAC
⑥	1816	With reset lever, only for Z.R 476E



Only if the information described in this operating instructions manual are realised correctly, the safety function and therefore the compliance with the Machinery Directive is maintained.

2.2 Special versions

For special versions, which are not listed in the order code below 2.1, these specifications apply accordingly, provided that they correspond to the standard version.

2.3 Purpose

The Z 476E is a position switch with latching, which can be either reset remotely by reset voltage (Z..M 476E) or reset manually by reset lever (Z..R 476E). The switchgear is used in elevator technology on speed governors, doors and guardrails of access covers. In general, the remote version can be used wherever a reset from distance is necessary due to the mounting situation.

The versions with 2 NC contacts can be used in safety circuits.



The user must evaluate and design the safety chain in accordance with the relevant standards and the required safety level.



The entire concept of the control system, in which the safety component is integrated, must be validated to the relevant standards.

2.4 Technical data

Standards:	EN 60947-1, EN 60947-5-1, EN 81-20, EN 81-50
Design:	fixings to EN 50047
Enclosure:	glass-fibre reinforced thermoplastic, self-extinguishing
Degree of protection:	IP65 to EN 60529
Contact material:	Silver
Contact type:	2 NC contacts with double break
Contact break:	4 x >2 mm
Positive break force:	10 N for each NC contact
Switching principle:	Magnetic snap action, bistable
Actuating force:	3 N (± 2 N) at the plunger
Actuating speed:	0.5 m/s at the plunger
Mechanical life:	50,000 operating cycles
Installation position:	Operator definable
Mounting:	2 x M4 or 2 x M5 for safety applications
Cable entry:	3 x M20 x 1.5 (breakout, left, right and upside)
Connection - contact elements:	screw terminals, 4 x M3.5
Cable type:	rigid single-wire or flexible
Conductor cross-sections:	0.5 ... 1.5 mm ² (incl. conductor ferrules)
Connection - electromagnets:	2 x butt connector similar to DIN 46341 (crushing zone 0,5 ... 1,5 mm ²)
Utilisation category:	
- Rated operating current/voltage I _e /U _e :	AC-15: 4 A / 240 VAC DC-13: 0.27 A / 250 VDC
Rated impulse withstand voltage U _{imp} :	4 kV
Rated insulation voltage U _i :	250 V
Thermal test current I _{th} :	10 A
Max. fuse rating:	4 A gG D-fuse
Electrical data – Magnet control:	
Impulse current/voltage I _e /U _e :	0.23 A (-15%) / 230 VAC (-15% / +10%) 2.3 A (-15%) / 24 VDC (-15% / +10%)
Magnet switch-on time:	3%; t _{max} : 2 s
Ambient conditions:	
Ambient temperature:	-25 °C ... +50 °C
Storage temperature:	-40 °C ... +85 °C
Relative humidity:	max. 93 %, non condensing, non icing
Insulation protection class:	II, III
Overvoltage category:	II
Degree of pollution:	2



Same Polarity.

The switch is for use on a flat surface of a type 1 enclosure.

2.5 Safety classification

Standards:	EN ISO 13849-1
B _{10D} (NC contact):	50,000
Service life:	20 years

$$MTTF_D = \frac{B_{10D}}{0,1 \times n_{op}} \quad n_{op} = \frac{d_{op} \times h_{op} \times 3600 \text{ s/h}}{t_{cycle}}$$

(Determined values can vary depending on the application-specific parameters h_{op}, d_{op} and t_{cycle} as well as the load.)

2.6 Function

A switching operation is triggered by actuation of the triggering mechanism (plunger or lever). The switchgear latches in actuated position.

The manual reset is realised by pulling the plunger.

For the remote reset the electromagnet must be energised; it is triggered by an electrical impulse p of $0.2 \text{ s} < p < 1 \text{ s}$.



The max. switch-on time of the electromagnet of 3% is $t_{\text{max}} = 2 \text{ s}$.



Any extended energisation of the magnet $> 2 \text{ s}$ as well as the repetitive energisation in short intervals must be imperatively avoided! This could cause overheating of the reset magnet as well as the destruction of the switch.

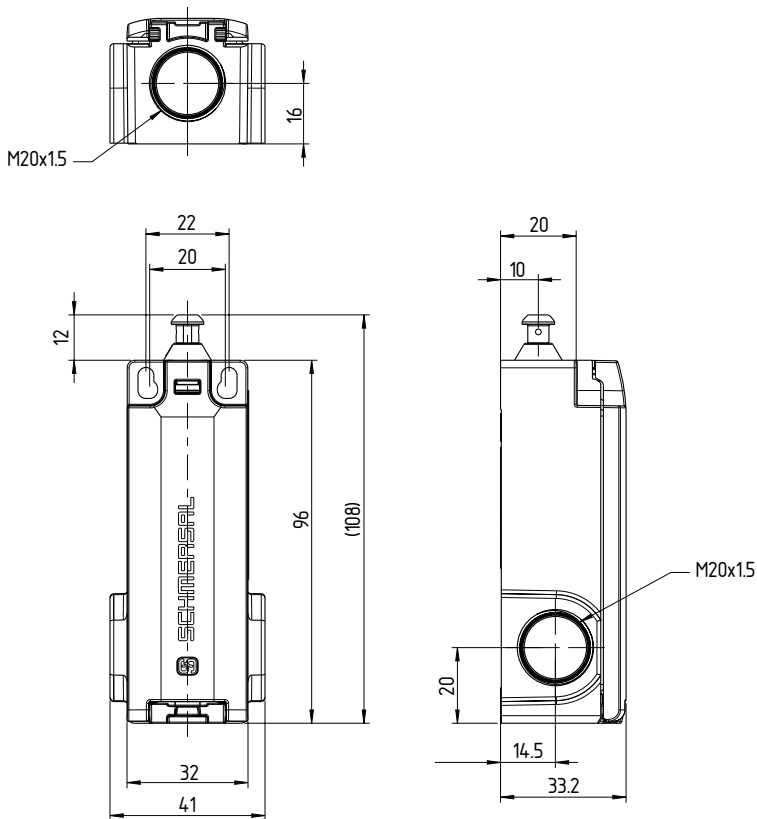


Prior to resetting the latching function, the cause of the actuation must be found and eliminated.

3. Mounting

3.1 Dimensions

All measurements in mm.



3.2 Mounting of the position switches

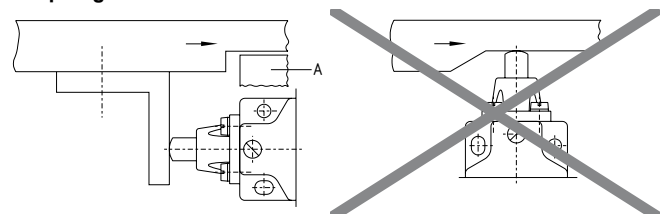
Flat-head screws with suitable washers must be used to secure the fixing screws against inadvertent loosening (tightening torque 3 Nm). The enclosure must not be used as an end stop. Any mounting position.

The switch must be mounted completely level onto a flat and planar surface. To ensure a proper functioning, the switch must be installed so that the required switch travel is obtained. For safety functions, at least the positive break travel indicated in the switch travel diagram must be obtained. All components have sufficient after-travel to compensate for inaccuracies in the guidance of the actuating system. The actuation of the switch beyond its end stop however must be avoided.

After adjustment, the switchgear must be prevented from displacement in the actuation direction by suitable and adequate measures.

3.3 Actuation of the position switches

with plunger S



Key
A End stop

4. Electrical connection

4.1 General information for electrical connection



The electrical connection may only be carried out by authorised personnel in a de-energised condition.

1. Open the cover.
2. Remove the dust shield cap.
3. Cable glands M20 x 1.5 included in delivery.
Authorised cable diameter: 6 ... 12 mm
Tightening torque: 4.5 Nm
4. When connecting, please ensure that no cables are located within the range of actuating element.
5. The inside of the switch must be imperatively cleaned (e.g. removal of cable residues), considering that foreign bodies can affect the switching behaviour
6. Clip on the cover.

Settle length x of the conductor: 5 ... 8 mm



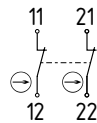
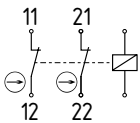
Tightening torque: 0.6 ... 0.8 Nm.

4.2 Contact variants

The contacts are shown in a non-actuated condition.

Z.M 476E-02-...

Z.R 476E-02-...

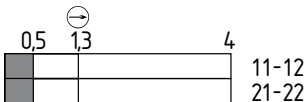


Key

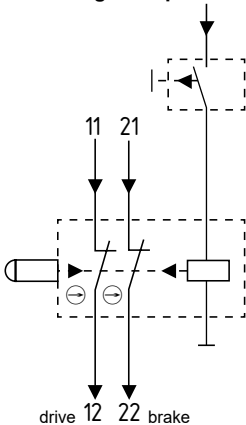
⊖ Positive break NC contact

4.3 Switch travel diagrams

Z.. 476E-02-...



4.4 Wiring example Z.M476E



5. Set-up and maintenance

5.1 Functional testing

The safety function of the safety components must be tested.

The following conditions must be previously checked and met:

1. Check whether the component is actuated up to the positive-break point
2. Check the correct fixing of the switchgear.
3. Check the switch enclosure for damage.
4. Check the integrity of the cable entry and connections.

5.2 Maintenance

In case of correct installation in accordance with the instructions described above, the component requires little maintenance.

A regular visual inspection and functional test, including the following steps, is recommended:

1. Check whether the component is actuated up to the positive-break point.
2. Check the switch enclosure for damage.
3. Check the correct fixing of the switchgear.
4. Remove particles of dust and soiling.
5. Check cable entry and connections.



Adequate measures must be taken to ensure protection against tampering either to prevent tampering of the safety guard, for instance by means of replacement actuators.

Damaged or defective components must be replaced.

6. Disassembly and disposal

6.1 Disassembly

The safety switchgear must be disassembled in a de-energised condition only.

6.2 Disposal

The safety switchgear must be disposed of in an appropriate manner in accordance with the national prescriptions and legislations.

7. EU Declaration of conformity

EU Declaration of conformity



Original
SCHMERSAL
Industrial Switchgear (Shanghai) Co., Ltd.
Cao Ying Road 3336
201712 Shanghai / Qingpu
P.R.CHINA
<http://www.schmersal.com.cn>

We hereby certify that the hereafter described components both in their basic design and construction conform to the applicable European Directives.

Name of the component: Z..476E

Type: See ordering code

Year of construction: See identification plate

Description of the component: Position switch with electric resettable magnetic snap-action system or manual reset

Relevant Directives: Machinery Directive 2006/42/EC
EMC-Directive 2014/30/EU
Lift Directive 2014/33/EU
RoHS-Directive 2011/65/EU

Applied standards: EN 60947-5-1:2017 + AC:2020
EN 81-20:2020
EN 81-50:2020

Person authorised for the compilation of the technical documentation: Oliver Wacker
Möddinghofe 30
42279 Wuppertal

Place and date of issue: Shanghai, February 1, 2023

Authorised signature
Michele Seassaro
Managing Director

Z476E-B-EN



The currently valid declaration of conformity can be downloaded from the internet at products.schmersal.com.



K.A. Schmersal GmbH & Co. KG
Möddinghofe 30, 42279 Wuppertal
Germany
Phone: +49 202 6474-0
Telefax: +49 202 6474-100
E-Mail: info@schmersal.com
Internet: www.schmersal.com

Production site:

SCHMERSAL

Industrial Switchgear (Shanghai) Co., Ltd.

Cao Ying Road 3336
201712 Shanghai / Qingpu, P.R.CHINA

Phone: +86 21 63758287
Fax: +86 21 69214398
E-Mail: info@schmersal.com.cn
Internet: www.schmersal.com.cn

施迈赛工业开关制造（上海）有限公司

地址：上海市青浦区漕盈路3336号
邮编：201712

电话：021 63758287
传真：021 69214398

网址： www.schmersal.com.cn