



**EN** Operating instructions. . . . .pages 1 to 4  
Original

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## 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

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: [www.schmersal.net](http://www.schmersal.net).

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.

### 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:

#### TQ 200-①

No.	Option	Description
①	01	1 NC contact
	11	1 NO contact / 1 NC contact



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 hoist limit switch is used on machinery and plants and especially on cranes, where a safe stop command needs to be triggered when the highest permitted position of the bottom crane flange is reached.

In normal operating conditions, a weight keeps the NC contact closed. If the bottom crane flange reaches the highest permitted position, the contact is opened and the electric circuit interrupted.



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 60947-5-1
Enclosure:	light-alloy diecast
Switching system:	slow action, 1 NC contact or 1 NO / 1 NC contact
Termination:	shielded cable 4 x 1 mm <sup>2</sup> , 3 m, conductor labelling 1 ... 4
Mechanical life:	1 million operations
Actuating speed:	60 mm / min
Spring preload:	40.4 ± 3.6 N
- after 7 mm spring travel:	48.5 ± 3.8 N
Weight force F <sub>G</sub> :	max. 5 kN
Utilisation category:	DC-13
Rated operating current/voltage I <sub>e</sub> /U <sub>e</sub> :	24 VDC / 1 A; 36 VDC / 0.8 A
Thermal test current I <sub>the</sub> :	1 A
Protection class:	IP54,
- Switching element:	IP67
Ambient temperature:	-40 °C ... +80 °C
Storage and transport temperature:	-40 °C ... +80 °C
Relative humidity:	ca. 93 %, nicht kondensierend
Resistance to vibration:	10 ... 150 Hz (0.5 mm / 5 g)
Resistance to shock:	30 g
- Continuous shocks:	10 g
Protection rating:	II, □
Overvoltage category:	III
Degree of pollution:	3
Rated impulse withstand voltage U <sub>imp</sub> :	2.5 kV
Rated insulation voltage U <sub>i</sub> :	40 V
Max. fuse rating:	6 A gG D-fuse
Required rated short-circuit current:	1000 A

### 2.5 Safety classification

Standards:	EN ISO 13849-1
B <sub>10D</sub> (NO contact) at 10% ohmic contact load:	2,000,000
Service life:	20 years

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

(Specifications can vary depending on the application-specific parameters h<sub>op</sub>, d<sub>op</sub>, t<sub>cycle</sub> as well as the load.)

### 3. Mounting

#### 3.1 General mounting instructions

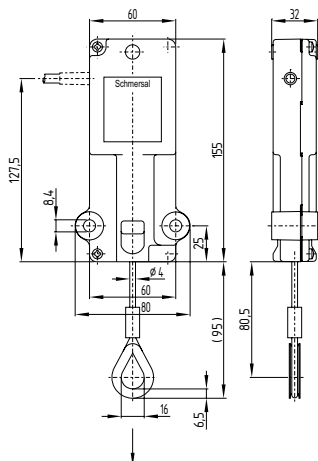


The installation may only be carried out by authorised personnel. The hoist limit switch must be fitted in suspended condition. Maximum permitted deflection  $\pm 45^\circ$ .

Sufficient space must be provided for the installation of the counterweight. The counterweight must be fixed to the retaining ring of the hoist limit switch.

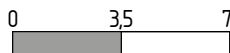
#### 3.2 Dimensions

All measurements in mm.

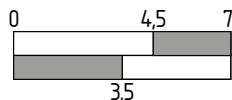


#### Switch travel

TQ200-01



TQ200-11



### 4. Rear side Electrical connection

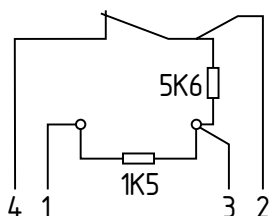
#### 4.1 General information for electrical connection



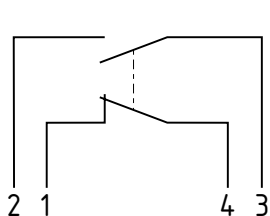
The electrical connection may only be carried out by authorised personnel in a de-energised condition.

Contact symbols are shown in a pretensioned condition caused by the counterweight.

TQ200-01



TQ200-11



### 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. Correct fixing of the hoist limit switch
2. Fitting and integrity of the cable
3. Check the switch enclosure for damage
4. Check the functionality of the switch

#### 5.2 Maintenance

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

1. Check the hoist limit switch for damage and correct fixing
2. Check the cable
3. Check the functionality of the switch
4. Remove particles of dust and soiling

**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		 <b>SCHMERSAL</b>
Original	K.A. Schmersal GmbH & Co. KG Möddinghofe 30 42279 Wuppertal Germany Internet: <a href="http://www.schmersal.com">www.schmersal.com</a>	
We hereby certify that the hereafter described components both in their basic design and construction conform to the applicable European Directives.		
<b>Name of the component:</b>	TQ 200	
<b>Type:</b>	See ordering code	
<b>Description of the component:</b>	Hoist limit switch	
<b>Relevant Directives:</b>	Machinery Directive RoHS-Directive	2006/42/EC 2011/65/EU
<b>Applied standards:</b>	DIN EN 60947-5-1:2010	
<b>Person authorised for the compilation of the technical documentation:</b>	Oliver Wacker Möddinghofe 30 42279 Wuppertal	
<b>Place and date of issue:</b>	Wuppertal, november 2, 2017	
TQ200-E-EN		
	Authorised signature <b>Philip Schmersal</b> Managing Director	



The currently valid declaration of conformity can be downloaded from the internet at [www.schmersal.net](http://www.schmersal.net).



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