



EN Operating instructions.pages 1 to 6
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.

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



If multiple safety components are wired in series, the Performance Level to EN ISO 13849-1 will be reduced due to the restricted error detection under certain circumstances. The entire concept of the control system, in which the safety component is integrated, must be validated to EN ISO 13849-2.

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. The relevant requirements of the standard EN 1088 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:

TV8S 521-①

No.	Option	Description
①	11/11	Switch insert 1: 1 NO / 1 NC Switch insert 2: 1 NO / 1 NC
	02/20	Switch insert 1: 2 NC Switch insert 2: 2 NO



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 safety switches are suitable for hinged guards, which need to be closed in order to ensure the necessary operational safety. The hinge safety switch is equipped with two switch inserts S1 and S2 with differentiated operating principle. When the safety guard is closed (starting position), switch insert S1 is not actuated and S2 is actuated. The hinges are not included in delivery.



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

2.4 Technical data

Standards:	IEC/EN 60947-5-1, EN ISO 13849-1, BG-GS-ET-15
Enclosure:	light-alloy diecast, paint finish
Shaft bore:	Inner toothing
Protection class:	IP67 to IEC/EN 60529
Ambient temperature:	-25 °C ... +70 °C
Degree of pollution:	3
Contact material:	Silver
Contact type:	Two change-over contacts with double break, type Zb, with galvanically separated contact bridges
Switching system:	⊖ IEC 60947-5-1; slow action, NC contact with positive break
Connection:	screw terminals
Cable type:	rigid / flexible
Cable section:	min. 0.75 mm ² , max. 1.5 mm ² , (including conductor ferrules)
Cable entry:	2 x M16
Utilisation category:	AC-15, DC-13
I _e /U _e :	4 A / 230 VAC, 4 A / 24 VDC
U _{imp} :	4 kV
U _i :	250 V
I _{the} :	10 A
Max. fuse rating:	6 A gG D-fuse
Mechanical life:	> 1 million operations
Switching frequency:	max. 1000/h
Positive break angle:	14°
Positive break torque:	0.8 Nm

2.5 Safety classification

Standards:	EN ISO 13849-1
B _{10D} (NC contact):	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_{op} , d_{op} and t_{cycle} as well as the load.)

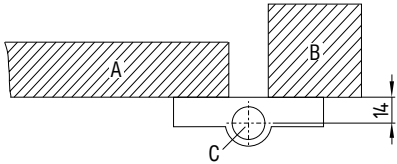
3. Mounting

3.1 General mounting instructions

Any mounting position. The hinge switch and the switch must be fitted so that the hinge switch and the switch are in alignment with the universal joint (execute the optimal setting by means of a continuity tester). The universal joint must be fixed in the switch and the hinge by means of the supplied spiral pin.

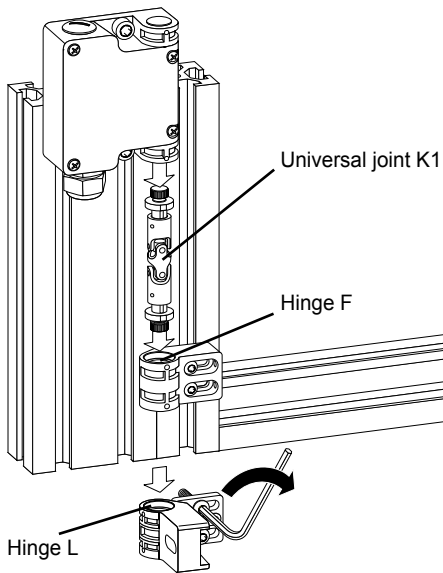


The distance of the door to the door hinge centre must be 14 mm.

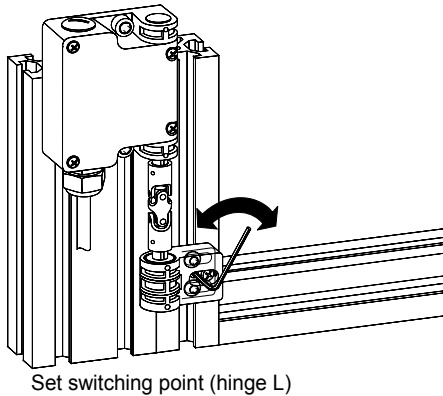


A = safety guard
B = door post
C = door hinge

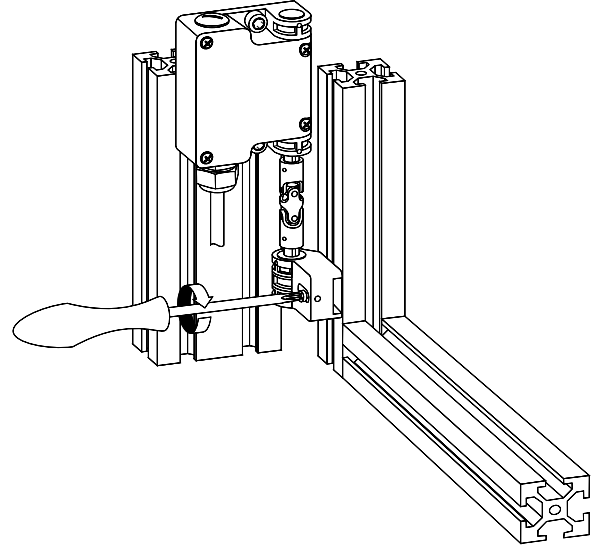
Mounting



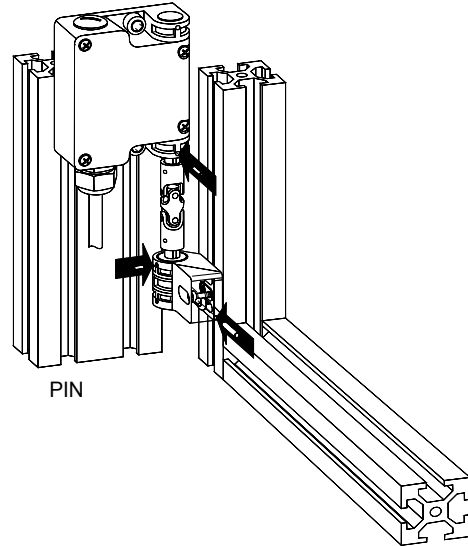
1



2

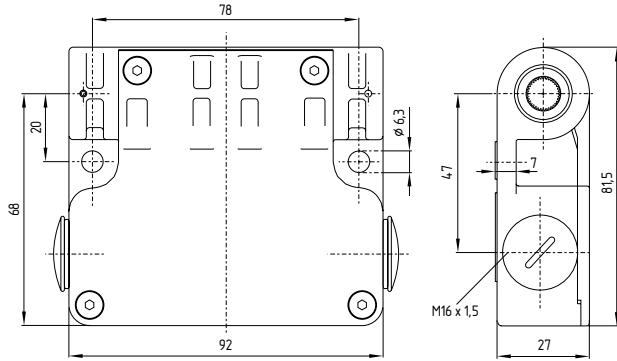


3



3.2 Dimensions

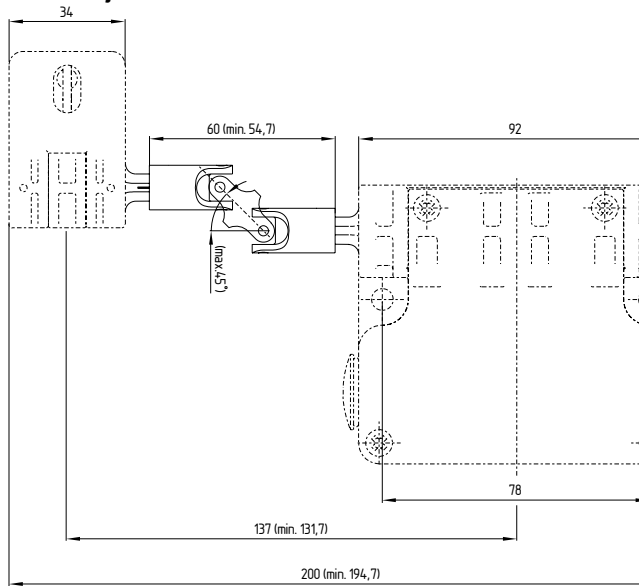
All measurements in mm.



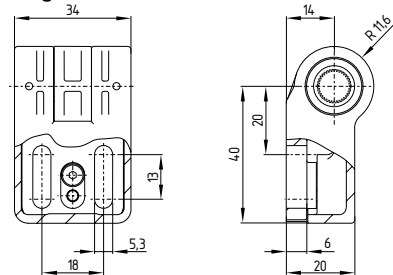
Hinge L is shown on the picture

Overall length with hinge F: 196 mm (min. 191.7 mm)

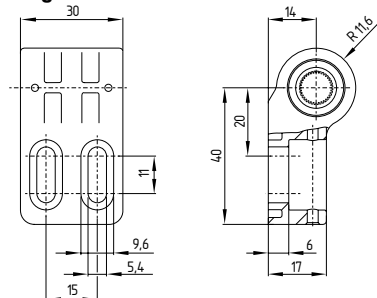
Universal joint K1



Hinge L



Hinge F



Please observe the remarks of the standards EN ISO 12100, EN 953 and EN 1088.

4. Rear side Electrical connection

4.1 General information for electrical connection

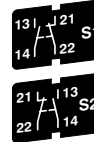
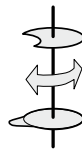


The electrical connection may only be carried out by authorised personnel in a de-energised condition.

For the cable entry, suitable cable glands with an appropriate degree of protection must be used. Non-used openings must be sealed by means of threaded plugs. Check the switch point setting by means of a multimeter prior to the wiring.

4.2 Contact variants

Contacts are shown with safety guard closed.



TV8S 521-11/11Z

TV8S 521-02/20Z

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 the positive link between the shaft and the door hinge
2. Check for correct installation of the hinge safety switch
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 the positive link between the shaft and the door hinge
2. Check the switch enclosure for damage
3. Check for correct installation of the hinge safety switch
4. Remove particles of dust and soiling
5. Check cable entry and connections

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
K.A. Schmersal GmbH & Co. KG
Möddinghofe 30
42279 Wuppertal
Germany
Internet: www.schmersal.com

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: TV8S 521

Type: See ordering code

Description of the component: Hinge safety switch

Relevant Directives: Machinery Directive 2006/42/EC
RoHS-Directive 2011/65/EU

Applied standards: DIN EN 60947-5-1:2010,
DIN EN ISO 14119:2014

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

Place and date of issue: Wuppertal, November 10, 2017

Authorised signature
Philip Schmersal
Managing Director

TV8S521-C-EN



The currently valid declaration of conformity can be downloaded from the internet at www.schmersal.net.



K. A. Schmersal GmbH & Co. KG
Möddinghofe 30, D - 42279 Wuppertal
Postfach 24 02 63, D - 42232 Wuppertal

Telefon +49 - (0)2 02 - 64 74 - 0
Telefax: +49 - (0)2 02 - 64 74 - 1 00
E-mail: info@schmersal.com
Internet: <http://www.schmersal.com>