EN

Position Switches according to EN 50041

EUCHNER
More than safety.

EUCHNER

More than safety.

Headquarters in Leinfelden-Echterdingen

Logistics center in Leinfelden-Echterdingen

Production location in Unterböhringen

Internationally successful – the EUCHNER company

EUCHNER GmbH + Co. KG is a world-leading company in the area of industrial safety technology. EUCHNER has been developing and producing high-quality switching systems for mechanical and systems engineering for more than 60 years.
The medium-sized family-operated company based in Leinfelden, Germany, employs more than 600 people around the world.

In addition to the production locations in Unterböhringen and Shanghai/China, 15 subsidiaries and other sales partners in Germany and abroad work for our international success on the market.

Quality and innovation – the EUCHNER products

A look into the past shows EUCHNER to be a company with a great inventive spirit. We take the technological and ecological challenges of the future as an incentive for extraordinary product developments.

EUCHNER safety switches monitor safety doors on machines and installations, help to minimize dangers and risks and thereby reliably protect people and processes. Today, our products range from electromechanical and electronic components to intelligent integrated safety solutions. Safety for people, machines and products is one of our dominant themes.

We define future safety technology with the highest quality standards and reliable technology. Extraordinary solutions ensure the great satisfaction of our customers. The product ranges are subdivided as follows:

- Transponder-coded Safety Switches (CES)
- Transponder-coded Safety Switches with guard locking (CET)
- Interlocking and guard locking systems (Multifunctional Gate Box MGB)
- Access management systems (Electronic-Key-System EKS)
- Electromechanical Safety Switches
- Magnetically coded Safety Switches (CMS)
- Enabling Switches
- Safety Relays
- Emergency Stop Devices
- Hand-Held Pendant Stations and Handwheels
- Safety Switches with AS-Interface
- Joystick Switches
- Position Switches

made in Germany

Contents

Position Switches According to EN 50041

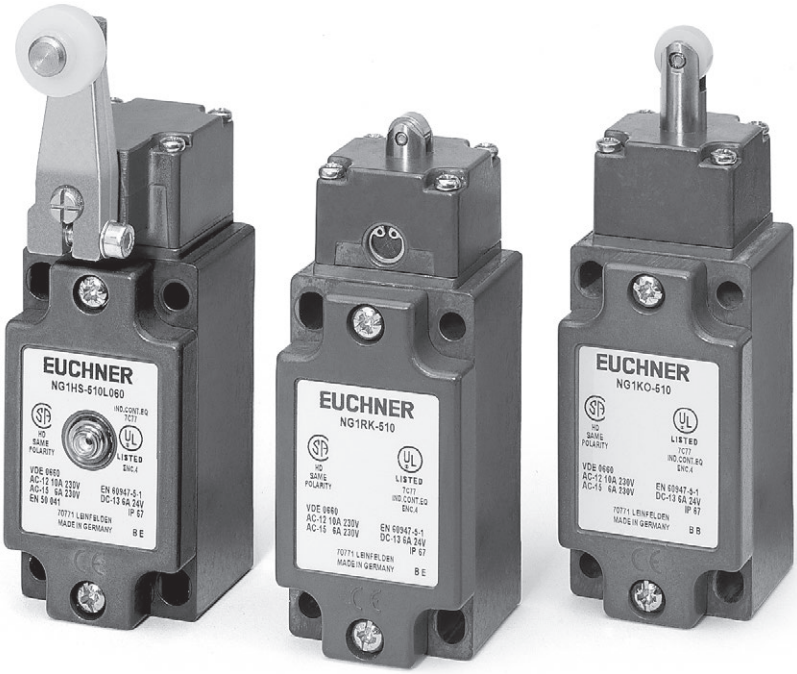
General information

EUCHNER position switches – precise, reliable and versatile

EUCHNER position switches are manufactured in accordance with European standard EN 50041. Robust construction and the use of high quality corrosion resistant materials, precision finishing and degree of protection IP 67 according to IEC 60529 guarantee trouble-free and reliable operation under the toughest conditions.

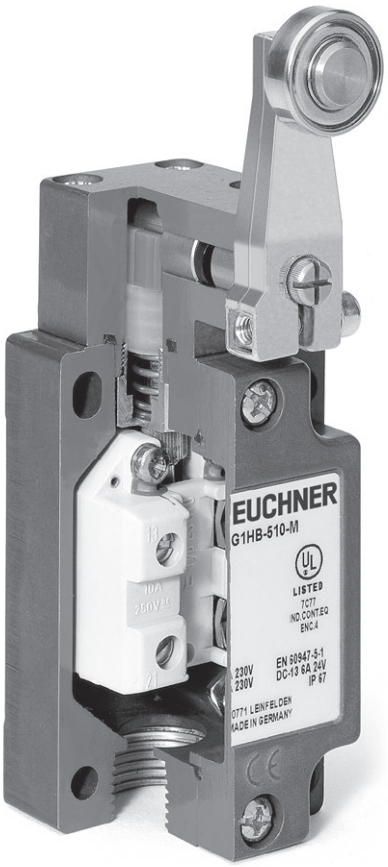
Various EUCHNER position switch variants are also equipped as safety switches with switching elements whose NC contacts are positively opened by a rigid plunger, even if the switching element is damaged due to a broken spring or contact weld. Positively driven position switches are used in those cases where a guarantee of machine and/or human safety is absolutely essential, e.g. end travel position switching or an EMERGENCY STOP.

Approvals for series NG... and NZ...

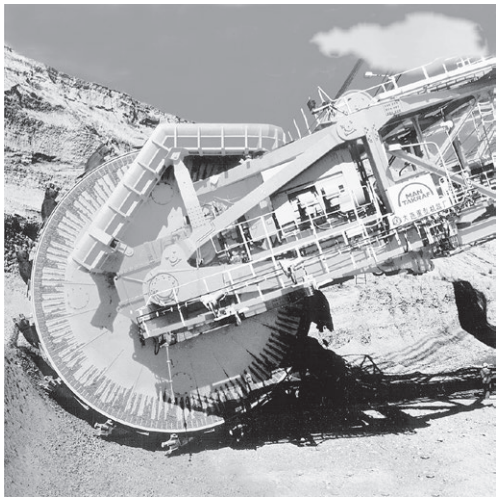


EUCHNER position switches offer important advantages and special features

- Housing and cover made of robust die-cast aluminum to take 10 different actuators
- Actuating heads can be adjusted 4 x 90°, lever arms can be adjusted and fixed either continuously or 4 x 90°
- Double or quadruple switching elements (e.g. 2 positively driven NC contacts + 2 NO contacts), silver alloy contacts, gold flashed
- Cable entry M20 x 1.5 or plug connection
- Mechanical life up to 30 million operating cycles
- Degree of protection according to IEC 60529 IP 67
- High operating point accuracy to ± 0.002 mm
- Use of silicone-free lubricants
- Cover made of die-cast aluminum with inserted edge seal
- Diaphragm seal and cover seal made of NBR plastic (acrylonitrile-butadiene rubber): protection of the switching space against coolants and lubricants
- Great versatility thanks to LED function display, plug connector and multiple adjustment options



Application examples for position switches from series NG... and NZ...



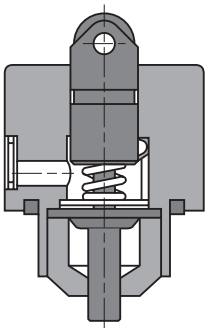
Position switch in detail

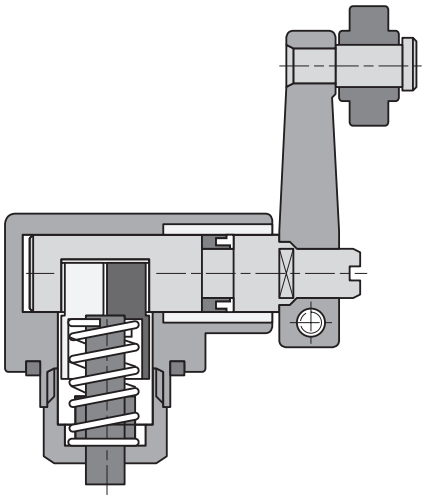
Plunger actuation
The plunger actuated versions allow the user a choice of six different designs.
The stainless steel hardened standard plunger with telescopic action (safety position switches with positively driven NC contacts have rigid plungers) is precisely guided within the anodized actuator head, and is almost maintenance free.
The approach direction of the actuator head can easily be changed by 90°.

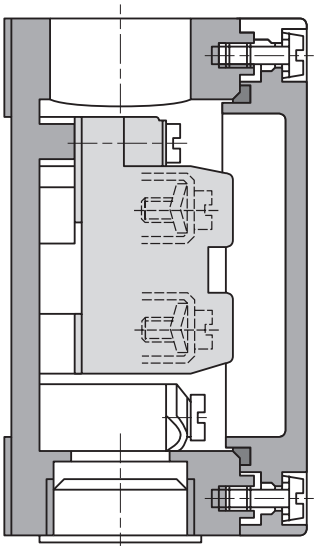
Lever arm actuation
Different types of actuators may be used for lever arm actuation. The stainless steel shaft is guided precisely through the housing.
With the numerous adjusting options, a high degree of flexibility is given:

- Approach direction adjustable by 4 x 90°
- Actuator direction for lever arm actuation adjustable by 4 x 90°
- Switches to the left or to the right, or on both sides

The housing
With their robust design, the die-cast alloy housings have proven themselves highly resistant to corrosion even under the toughest conditions.
The control cable can be connected with a cable gland M20 x 1.5 or via pre-wired plug connectors with straight or angled outlet. The right-angle plug connectors can be adjusted in seven directions around the longitudinal axis of the switch.







The diaphragm seal
In switches with plunger actuation, the plunger compartment and the interior of the switch are separated by a diaphragm seal made of NBR (acrylonitrile-butadiene rubber). Because of their outstanding technical properties, NBR materials are used wherever possible for all mechanical and systems engineering applications.
The seal is permanently connected to the plunger, and the plunger – not the switching element – returns it to the free position by means of the plunger return spring after every switching operation. Any build-up of pressure during plunger actuation is reliably prevented by a relief valve.
The switching element is actuated by means of a metal cap pressed onto the seal.
Switching point displacement (a logical consequence due to the high elasticity of the seal) is therefore completely eliminated.

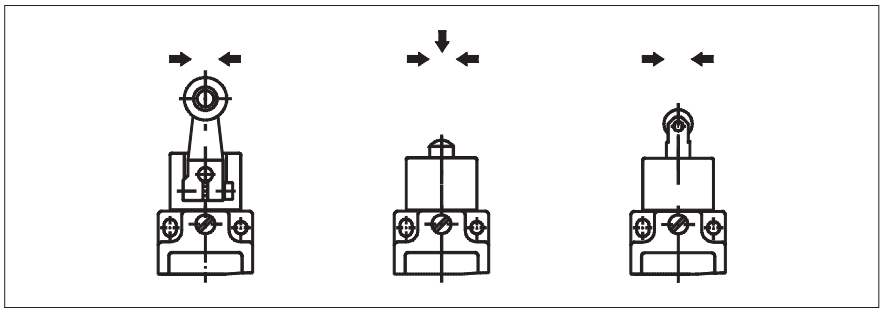
The edge seal
In lever arm actuated switches, an edge seal protects the actuating mechanism and the switch chamber against dirt and dust. The edge seal, which is made of NBR, is resistant to all known coolants and lubricants.

Cable connections
EUCHNER position switches according to EN 50041 undergo routine check tests for compliance with degree of protection IP 67 before delivery to the customer. To achieve this degree of protection, only high-quality metal cable glands with a captive sealing ring or the pre-wired straight or angled plug connectors must be used.

Function display
The position switches can be fitted with a function display (LED) on request. The voltage ranges of 10 to 60 V AC/DC, 110 V AC and 230 V AC are available.

Adjustment options

Actuator and approach directions



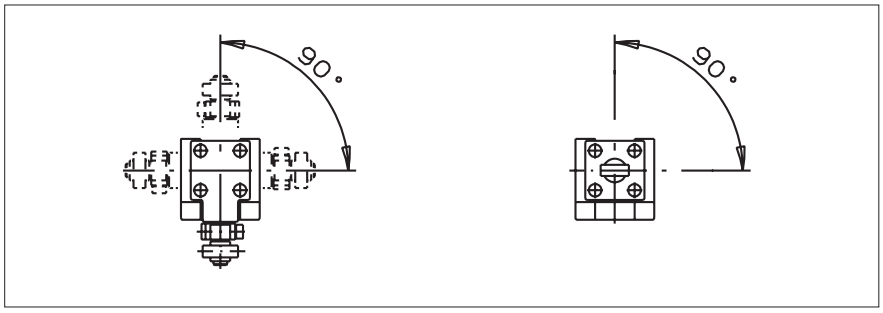
Lever arm
HS = steel roller
HB = plastic roller

WO = domed plunger
KO = ball plunger

RG = plastic roller
RS, RK, RL = steel roller

The large selection of actuator heads guarantees maximum flexibility and is suitable for a variety of applications.
For example, the aluminum lever arm is used for high approach speeds and generous actuating mechanism tolerances.
The chisel plunger with polish-ground surface is designed for a high operating point accuracy of ± 0.002 mm.
The ball plungers can be actuated from a number of different directions.

Adjustment option for the actuator
Horizontal adjustment 4 x 90°

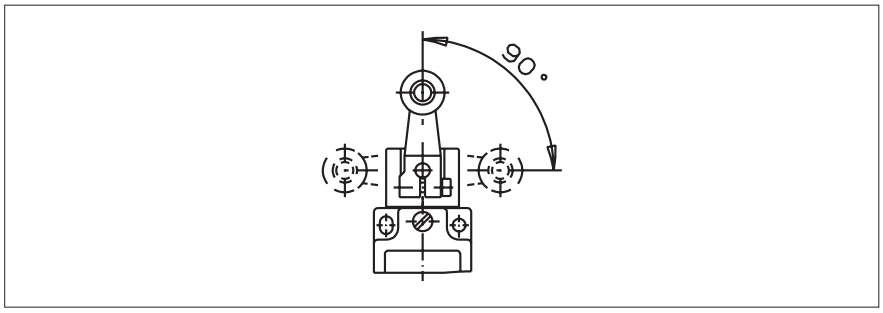


Lever arm

Straight actuator

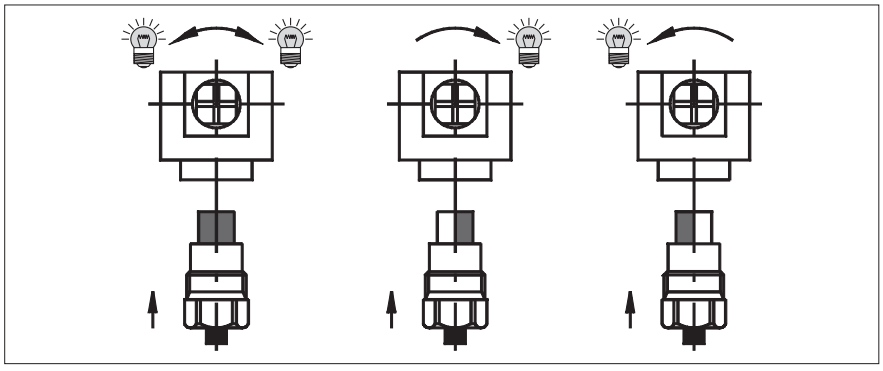
After removal of the stainless steel fixing screws, the actuator heads can each be adjusted horizontally by 90°.

Vertical adjustment 4 x 90°



The lever arm can be adjusted continuously for position switches without a safety function and by 90° for position switches with a safety function.

Adjustment option for switching direction



left/right switching
(default setting)

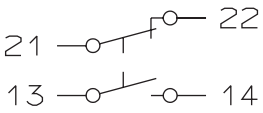
right switching

left switching

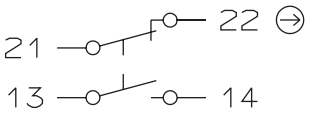
On delivery, the lever arm actuation is set to left and right switching.
If necessary, it can be set to right switching or left switching only.

Switching elements

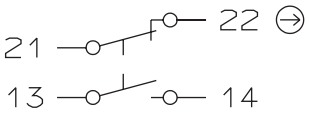
Switching element 510 [2]
(without positively driven NC contact)
Snap-action switching contact with one NC contact and one NO contact.
Double gap, electrically isolated switching bridge, silver alloy gold flashed contact, screw terminal with self-lifting clamp washers.
Used for NG…



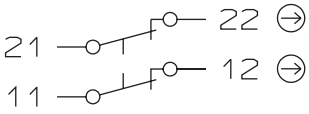
Switching element 511 [2]
Snap-action switching contact with one positively driven NC contact and one NO contact.
Double gap, electrically isolated contacts, silver alloy gold flashed contact, screw terminal with self-lifting clamp washers.
Used for NZ…



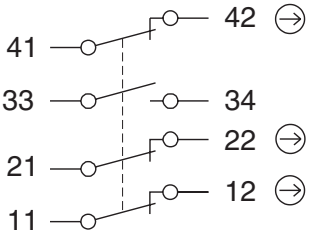
Switching element 528H [1] [3]
Slow-action switching contact with one positively driven NC contact and one NO contact.
Double gap, electrically isolated H contact bridges for currents from 1 mA to 4 A, silver alloy gold flashed contact, screw terminal with self-lifting clamp washers.
Used for NZ…



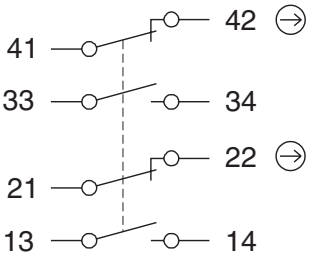
Switching element 538H [1] [3]
Slow-action switching contact with two positively driven NC contacts.
Double gap, electrically isolated H contact bridges for currents from 1 mA to 4 A, silver alloy gold flashed contact, screw terminal with self-lifting clamp washers.
Used for NZ…



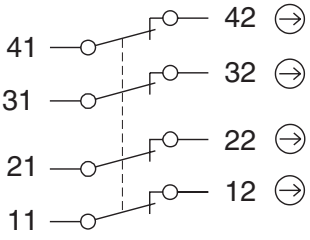
Switching element 2131 H [3]
Slow-action switching contact with three positively driven NC contacts and one NO contact.
Double gap, electrically isolated H contact bridges for currents from 1 mA to 4 A, silver alloy gold flashed contact, screw terminal with self-lifting clamp washers.
Used for NZ…



Switching element 3131 H [3]
Slow-action switching contact with two positively driven NC contacts and two NO contacts.
Double gap, electrically isolated H contact bridges for currents from 1 mA to 4 A, silver alloy gold flashed contact, screw terminal with self-lifting clamp washers.
Used for NZ…



Switching element 2121 H [3]
Slow-action switching contact with four positively driven NC contacts.
Double gap, electrically isolated H contact bridges for currents from 1 mA to 4 A, silver alloy gold flashed contact, screw terminal with self-lifting clamp washers.
Used for NZ…



EUCHNER position switches marked with this symbol meet the IEC 60947-5-1 requirements for positively driven position switches.
Safety switching elements marked with this symbol are not available as replacement switching elements.

1) **Slow-action switching element**
The slow-action switching element has a switching contact which opens and closes depending on its actuation speed.
2) **Snap-action switching element**
The snap-action switching element has a switching contact which opens and closes regardless of its actuation speed.
3) **H contact bridge**
The design properties of the H contact bridge (H-shaped) ensure that these switching elements reliably switch currents from 1 mA to 4 A.

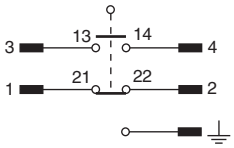
Wiring diagrams

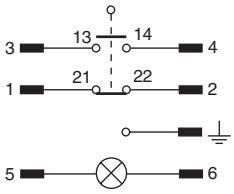
Plug connector SR6

Pin assignment for male socket
(top view of
switch mounted connector)

Terminal assignment for switching elements

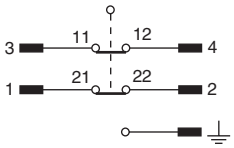
510 / 511 / 528H

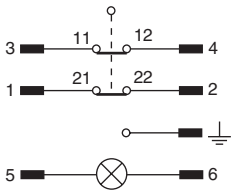




with LED indicator

538H

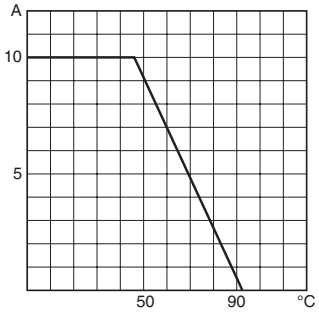




with LED indicator

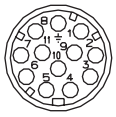
Current rating curve

for connection cross section 1.5 mm²



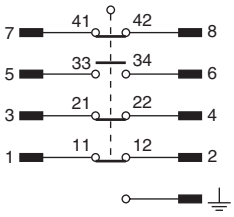
Plug connector SR11

Pin assignment for male socket
(top view of
switch mounted connector)

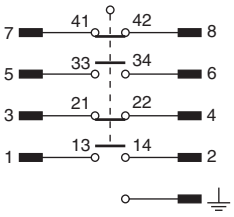


Terminal assignment for switching elements

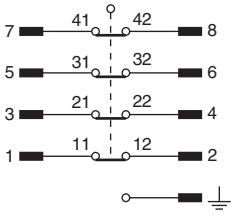
2131H



3131H

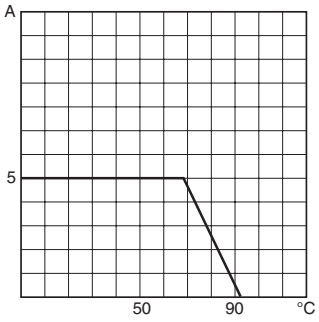


2121H



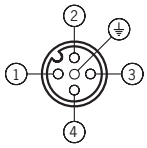
Current rating curve

for connection cross section 0.5 mm²



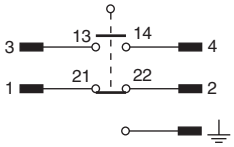
Plug connector SVM5 (M12, 5-pin)

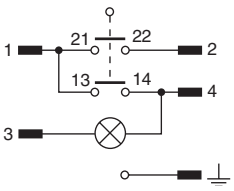
Pin assignment for male socket
(top view of
switch mounted connector)



Terminal assignment for switching elements

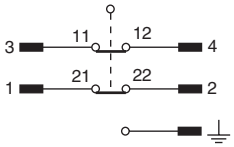
510 / 511 / 528H

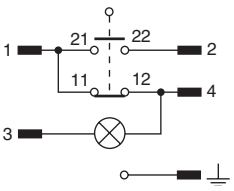




with LED indicator

538H





with LED indicator

Plunger types

Plungers for position switches are made of stainless steel and are extremely accurate.
In conjunction with a plunger guide with a special surface finish, operation is extremely reliable and maintenance-free.

There are two different types of actuating systems, depending on the application. For standard applications, the plunger is fitted with a telescopic device. With this system, the plunger can be depressed to the reference surface without damaging the switching element.

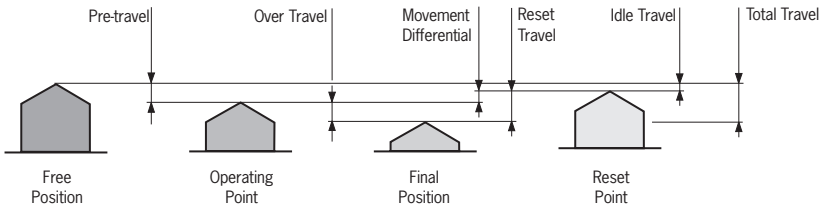
Instead of this telescopic plunger, position switches with safety function (with safety switching element) have a *rigid* plunger to ensure positive driving according to EC 60947-5-1. This means that the contact point will be reliably opened in the event of mechanical failure of the switching element – e.g. owing to the failure of a contact spring or contact weld resulting from an overload.

Plunger travel

The pictures show the various positions of the plunger actuated by a trip dog.
The precise values for the relevant design are shown in the technical data.

Travel ratio for plunger/trip dog

All the plunger travel data shown in the technical data refers to axial actuation. The travel for radial actuation with angled trip dogs is increased, and this must be calculated.



Plunger types

Depending on the technical requirements, four different plunger types (chisel, roller, ball and domed plungers) are used.

Chisel plunger

Hardened and polish-ground.
Operating point accuracy to ± 0.002 mm.
Max. approach speed of 10 m/min.
With its high operating point accuracy, the chisel plunger is ideal for setting reference points for moderate approach speeds.

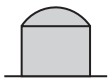
Roller plunger

Hardened roller.
Operating point accuracy to ± 0.01 mm.
Max. approach speed of 50 m/min.
The roller plunger is suitable for higher approach speeds. For very high approach speeds and long travel distances, roller plungers with a protected bearing can be offered on request.

Ball plunger

Hardened ball.
Operating point accuracy to ± 0.01 mm.
Max. approach speed of 10 m/min.
This plunger can be actuated from a number of different directions.
It must not be used in conjunction with safety switching elements!

Domed plunger



Hardened and polish-ground.
Operating point accuracy to ± 0.002 mm.
Max. approach speed of 10 m/min.
This plunger can be actuated from a number of different directions.
For use in conjunction with safety switching elements!

Extended roller plunger

Robust roller plunger for moderate approach speeds.

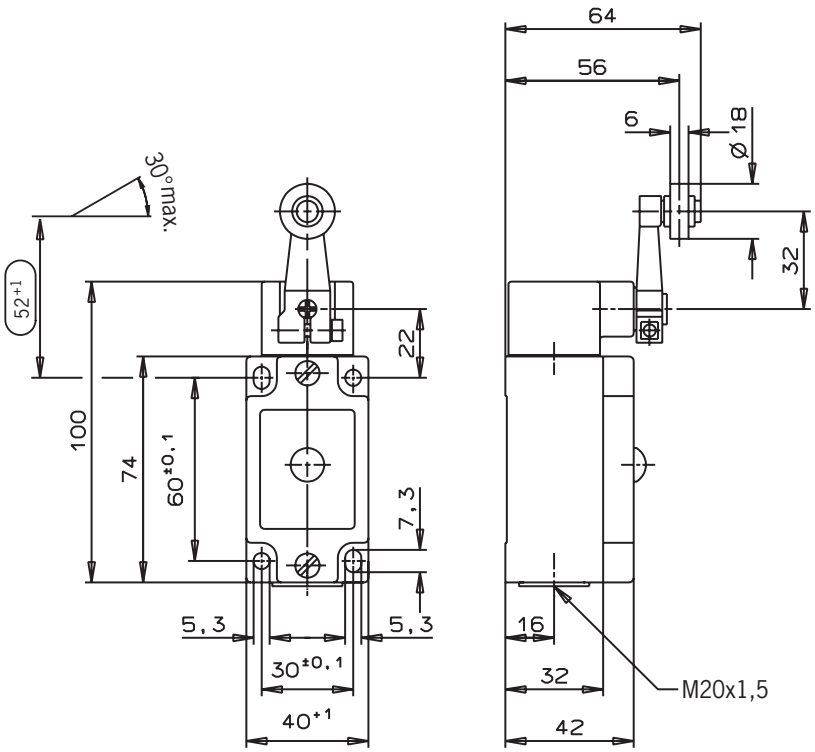
Position switch series NG1.../NZ1...

- **Roller lever arm** **HB** (plastic roller)
  HS (steel roller)
- **Cable entry M20 x 1.5**

NG...

NZ...

Dimension drawing



Switching elements

- **510** Snap-action switching contact
  1 NC + 1 NO
- **511** Snap-action switching contact
  1 NC ⊖ + 1 NO
- **528H** Slow-action switching contact
  1 NC ⊖ + 1 NO
- **538H** Slow-action switching contact
  2 NC ⊖
- **2131H** Slow-action switching contact
  3 NC ⊖ + 1 NO
- **3131H** Slow-action switching contact
  2 NC ⊖ + 2 NO

(further information: see page 9)

LED function display

A red function display LED is available for the following voltage ranges:

12-60 V	AC/DC		L060
110 V	AC ±15%		L110
230 V	AC ±15%	(on request)	L220

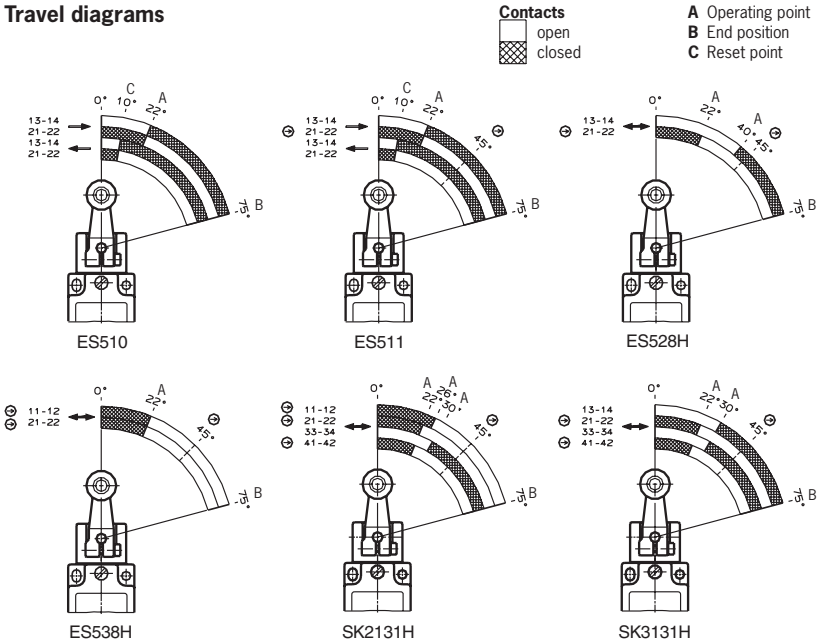
Adjustment options

Horizontal and vertical 4 x 90° (see page 8).

Switching direction

Switches to the right, left or both sides (see page 8).

Travel diagrams



⚠ If damaged or worn, safety switches must be replaced as a unit.

⚠ **Notes on installation for position switches with safety switching elements**

To achieve the positively driven travel, the dimension (52 +1) must be maintained by the trip dog. Actuating elements such as cam approach guides must be positively mounted in accordance with EN 1088, i.e. riveted, welded or otherwise secured against becoming loose.

Technical data

Parameter		Value					Unit
Housing material		Anodized die-cast alloy					
Degree of protection acc. to IEC 60529		IP 67					
Installation position		Any					
Mechanical life		30 x 10^6 operating cycles					
Ambient temperature		- 25 ... + 80 (-40 °C on request)					°C
Mass		approx. 0.3					kg
Actuator		Roller lever arm					
Roller material		Plastic (HB)		Steel (HS)			
Approach speed, max. [1]		300		60			m/min
Approach speed, min.		0.1					m/min
Operating point accuracy		± 0.25					°
Positively driven according to IEC 60947-5-1, appendix K		See symbol ⊖ in travel diagram					
Actuating force, min.		15					N
Switching elements		**510** 1 NC + 1 NO		**528H** 1 NC ⊖ + 1 NO		**538H** 2 NC ⊖	
		511 1 ⊖ + 1 NO		**2131H** 3 NC ⊖ + 1 NO		**3131H** 2 NC ⊖ + 2 NO	
Switching principle		Snap-action switching contact		Slow-action switching contact with H contact bridge			
Contact material		Silver alloy, gold flashed					
Contact closing time		< 4					ms
Contact bounce time		< 3					ms
Rated impulse withstand voltage U_{imp}		2.5					kV
Rated insulation voltage U_i		250					V
Utilization category according to IEC 60947-5-1							
	AC12	I_e 10 A U_e 230 V		-			
	AC15	I_e 6 A U_e 230 V		I_e 4 A U_e 230 V			
	DC13	I_e 6 A U_e 24 V		I_e 4 A U_e 24 V			
Switching current, min., at		10		1	10	1 10	mA
switching voltage		24		24	12	24 12	V DC
Conventional thermal current I_{th}		6		4			A
Short circuit protection acc. to IEC 60269-1 (control circuit fuse)		10/6		4			A gG
Connection		Screw terminal [2]					
Conductor cross-section, max.		2 x 1.5					mm^2

1) The specified approach speed applies to an approach angle of 30°.

2) Wiring diagram: see page 9.

Ordering table

Series	Roller	Switching element	Order no.		
			Function display		
			Without	L060	L110
NG1...-M	**HB** Plastic roller	510	**079926**	**090360**	On request
NZ1...-M		511	**079952**	**090039**	
		528	**088199**	**090965**	
		538	**090966**	**090967**	
		2131	**090968**	-	-
		3131	**090969**	-	-
NG1...-M	**HS** Steel roller	510	**079927**	**079937**	On request
NZ1...-M		511	**079953**	**090035**	
		528	**090970**	**090971**	
		538	**090972**	**090760**	
		2131	**090973**	-	-
		3131	**090747**	-	-

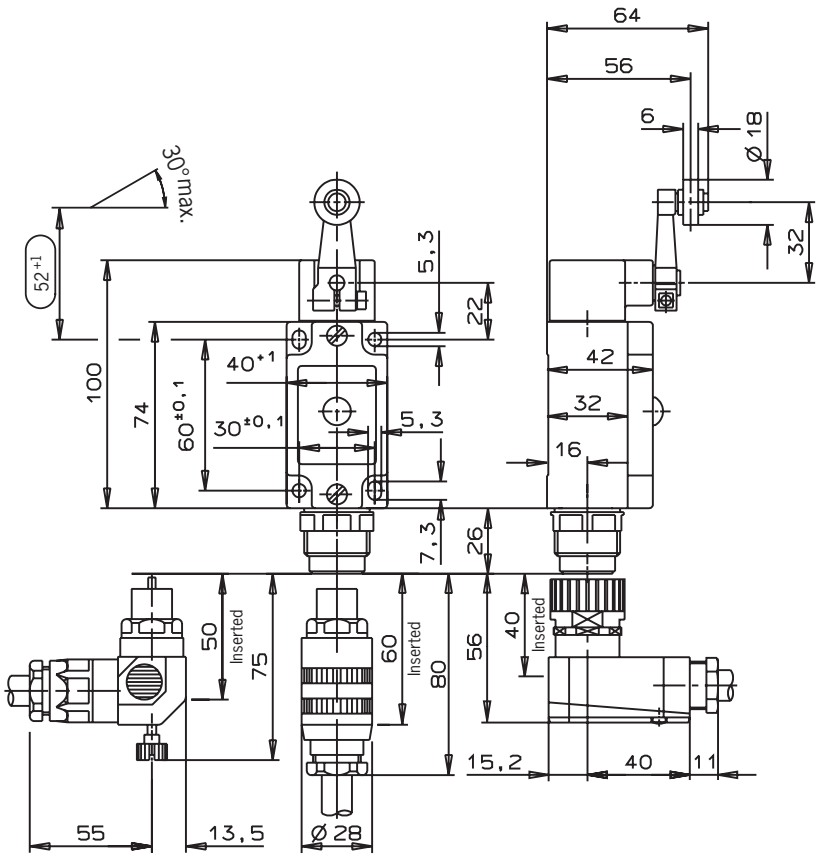
Ordering example: Position switch without safety function **NG**, cable entry **1**,
roller lever arm with steel roller **HS**, snap-action switching element **510**,
function display **L060** 10 - 60 V, metric thread M20 x 1.5 **M**
NG1HS-510L060-M **Order no. 079937**

Position switch series NG2.../NZ2...

- **Roller lever arm** **HB** (plastic roller)
  HS (steel roller)
- **Plug connectors SR6 and SR11**

NZ...

Dimension drawing



SR6WF SR6EF/SR11EF SR11WF

Switching elements

- **510** Snap-action switching contact
  1 NC + 1 NO
- **511** Snap-action switching contact
  1 NC ⊖ + 1 NO
- **528H** Slow-action switching contact
  1 NC ⊖ + 1 NO
- **538H** Slow-action switching contact
  2 NC ⊖
- **2131H** Slow-action switching contact
  3 NC ⊖ + 1 NO
- **3131H** Slow-action switching contact
  2 NC ⊖ + 2 NO

(further information: see page 9)

LED function display

A red function display LED is available for the following voltage ranges:

12-60 V	AC/DC	(standard)	L060
110 V	AC ±15%	(on request)	L110
230 V	AC ±15%	(on request)	L220

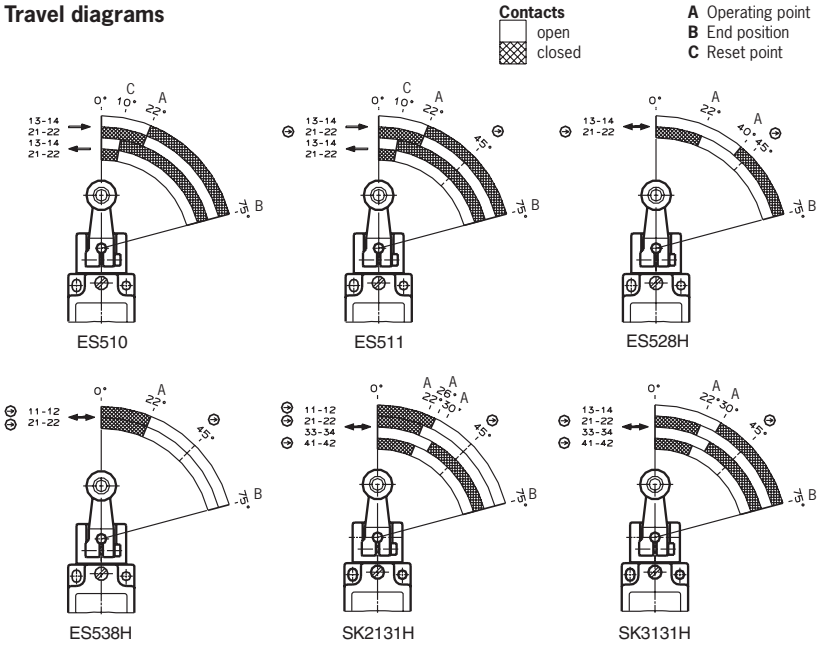
Adjustment options

Horizontal and vertical 4 x 90° (see page 8).

Switching direction

Switches to the right, left or both sides (see page 8).

Travel diagrams



⚠ If damaged or worn, safety switches must be replaced as a unit.

⚠ **Notes on installation for position switches with safety switching elements**

To achieve the positively driven travel, the dimension (52 +1) must be maintained by the trip dog. Actuating elements such as cam approach guides must be positively mounted in accordance with EN 1088, i.e. riveted, welded or otherwise secured against becoming loose.

Technical data

Parameter		Value					Unit
Housing material		Anodized die-cast alloy					
Degree of protection acc. to IEC 60529		IP 65					
Installation position		Any					
Mechanical life		30 x 10^6 operating cycles					
Ambient temperature		- 25 … + 80 (-40 °C on request)					°C
Mass		approx. 0.3					kg
Actuator		Roller lever arm					
Roller material		Plastic (HB)		Steel (HS)			
Approach speed, max. [1]		300		60			m/min
Approach speed, min.		0.1					m/min
Operating point accuracy		± 0.25					°
Positively driven according to IEC 60947-5-1, appendix K		See symbol ⊖ in travel diagram					
Actuating force, min.		15					N
Switching elements		**510** 1 NC + 1 NO	**528H** 1 NC ⊖ + 1 NO		**538H** 2 NC ⊖		
		511 1 ⊖ + 1 NO	**2131H** 3 NC ⊖ + 1 NO		**3131H** 2 NC ⊖ + 2 NO		
Switching principle		Snap-action switching contact	Slow-action switching contact with H contact bridge				
Contact material		Silver alloy, gold flashed					
Contact closing time		< 4					ms
Contact bounce time		< 3					ms
Switching current, min., at		10	1	10	1	10	mA
switching voltage		24	24	12	24	12	V DC
Conventional thermal current I_{th}		6	4				A
Short circuit protection acc. to IEC 60269-1 (control circuit fuse)		6	4				A gG
Connection		Plug connector according to DIN 43651 [2]					
Rated impulse withstand voltage U_{imp}							
with plug connector SR6		2.5					kV
with plug connector SR11		1.5					
Rated insulation voltage U_i							
with plug connector SR6		250					V
with plug connector SR11		50					
Utilization category according to IEC 60947-5-1							
with plug connector SR6	AC15	I_e 6 A U_e 230 V	I_e 4 A U_e 230 V				
	DC13	I_e 6 A U_e 24 V	I_e 4 A U_e 24 V				
with plug connector SR11	AC15		I_e 4 A U_e 50 V				
	DC13		I_e 4 A U_e 24 V				

1) The specified approach speed applies to an approach angle of 30°.

2) Wiring diagram: see page 10.

Ordering table

Series	Roller	Switching element	Order no.		
			Plug connector / function display		
			SR6	SR6	SR11
			Without	L060	L110
NG2...	**HB** Plastic roller	510	**089088**	**089089**	-
NZ2...		511	**089091**	**089092**	-
		528	**090845**	**090846**	-
		538	**090847**	**090848**	-
		2131	-	-	**090136**
		3131	-	-	**090137**
NG2...	**HS** Steel roller	510	**090851**	**089090**	-
NZ2...		511	**089093**	**089094**	-
		528	**090852**	**088196**	-
		538	**090853**	**090854**	-
		2131	-	-	**090146**
		3131	-	-	**090856**

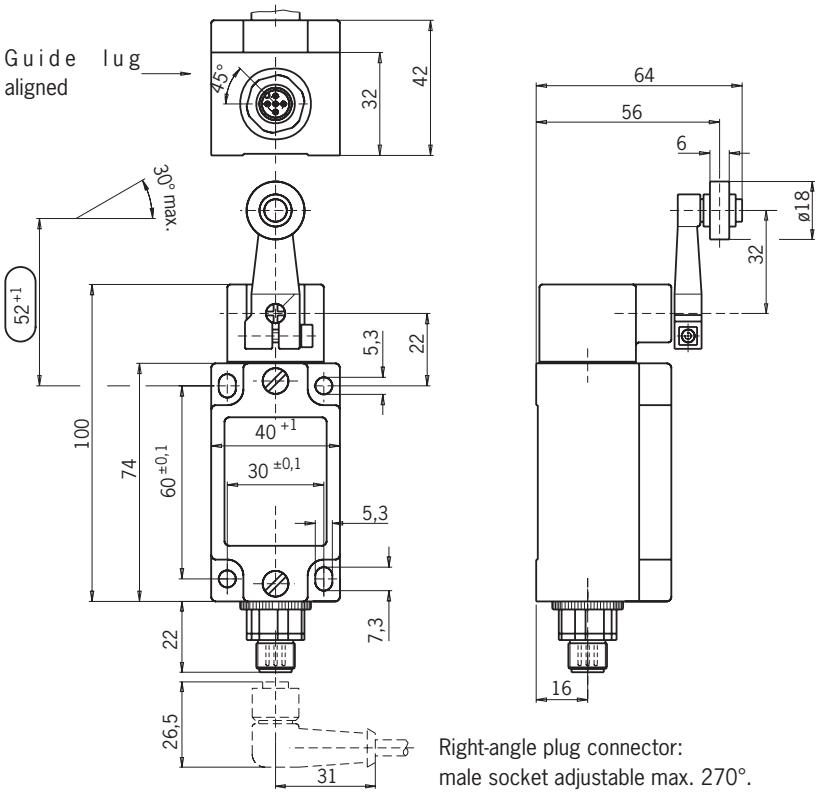
Ordering example: Position switch without safety function **NG**, plug connector **2**, roller lever arm with steel roller **HS**, snap-action switching element **510**, function display **L060** 10 - 60 V
NG2HS-510L060 **Order no. 089090**

Position switch series NG2.../NZ2...

- **Roller lever arm** **HB** (plastic roller)
  HS (steel roller)
- **Plug connector M12/SVM5**

NZ...

Dimension drawing



Right-angle plug connector: male socket adjustable max. 270°. Default setting: cable outlet to the right.

Switching elements

- **510** Snap-action switching contact 1 NC + 1 NO
- **511** Snap-action switching contact 1 NC ⊖ + 1 NO
- **528H** Slow-action switching contact 1 NC ⊖ + 1 NO
- **538H** Slow-action switching contact 2 NC ⊖

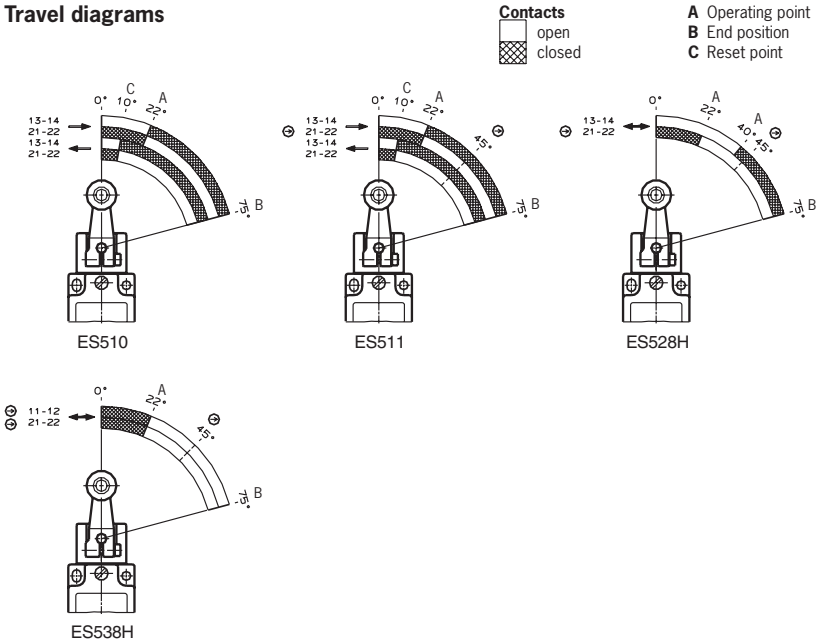
(further information: see page 9)

LED function display
Available on request

Adjustment options
Horizontal and vertical 4 x 90° (see page 8).

Switching direction
Switches to the right, left or both sides (see page 8).

Travel diagrams



⚠ If damaged or worn, safety switches must be replaced as a unit.

⚠ **Notes on installation for position switches with safety switching elements**

To achieve the positively driven travel, the dimension (52 +1) must be maintained by the trip dog. Actuating elements such as cam approach guides must be positively mounted in accordance with EN 1088, i.e. riveted, welded or otherwise secured against becoming loose.

Technical data

Parameter		Value					Unit
Housing material		Anodized die-cast alloy					
Degree of protection acc. to IEC 60529		IP 67					
Installation position		Any					
Mechanical life		30 x 10^6 operating cycles					
Ambient temperature		- 25 … + 80 (-40 °C on request)					°C
Mass		approx. 0.3					kg
Actuator		Roller lever arm					
Roller material		Plastic (HB)		Steel (HS)			
Approach speed, max. [1]		300		60			m/min
Approach speed, min.		0.1					m/min
Operating point accuracy		± 0.25					°
Positively driven according to IEC 60947-5-1, appendix K		See symbol ⊖ in travel diagram					
Actuating force, min.		15					N
Switching elements		**510** 1 NC + 1 NO		**528H** 1 NC ⊖ + 1 NO		**538H** 2 NC ⊖	
		511 1 ⊖ + 1 NO					
Switching principle		Snap-action switching contact		Slow-action switching contact with H contact bridge			
Contact material		Silver alloy, gold flashed					
Contact closing time		< 4					ms
Contact bounce time		< 3					ms
Rated impulse withstand voltage U_{imp}		2.0					kV
Rated insulation voltage U_i		50					V
Utilization category according to IEC 60947-5-1							
with plug connector SVM5	AC15	I_e 4 A U_e 30 V		I_e 4 A U_e 30 V			
	DC13	I_e 4 A U_e 24 V		I_e 4 A U_e 24 V			
Switching current, min., at		10	1	10	1	10	mA
switching voltage		24	24	12	24	12	V DC
Conventional thermal current I_{th}		4	4				A
Short circuit protection acc. to IEC 60269-1 (control circuit fuse)		4	4				A gG
Connection		Plug connector M12 [2]					

1) The specified approach speed applies to an approach angle of 30°.

2) Wiring diagram: see page 10.

Ordering table

Series	Roller	Switching element	Order no. Plug connector SVM5
NG2…	**HB** Plastic roller	510	**088631**
NZ2…		511	**090861**
		528	**090864**
		538	**090862**
NG2…	**HS** Steel roller	510	**090866**
NZ2…		511	**090867**
		528	**090868**
		538	**090869**

Ordering example: Position switch without safety function **NG**, plug connector **2**, roller lever arm with steel roller **HS**, snap-action switching element **510**, M12 male socket with PE connection **SVM5**
NG2HS-510SVM5 **Order no. 090866**

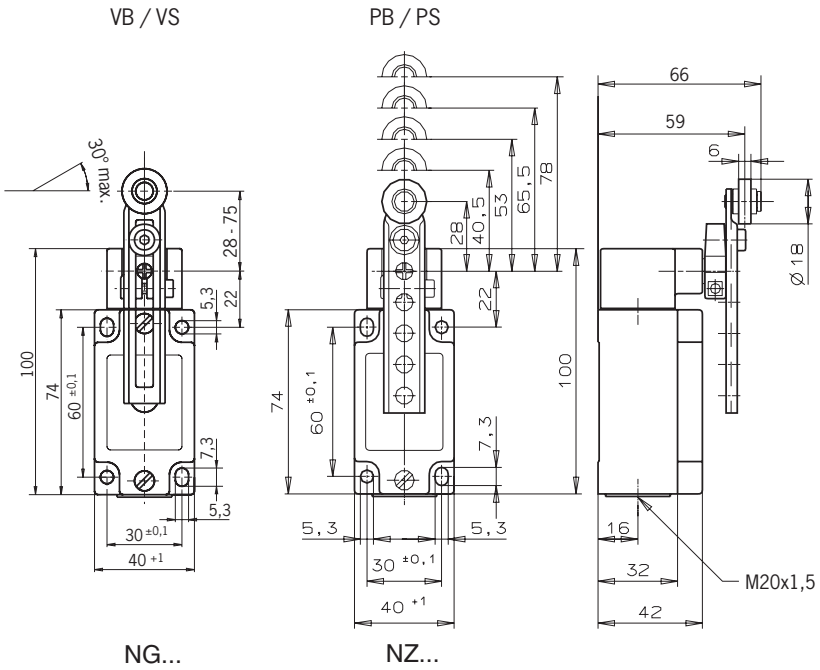
Position switch series NG1.../NZ1...

- **Adjustable roller lever arm**
  VB (plastic) / **PB** (plastic roller)
  VS (steel roller) / **PS** (steel roller)
- **Cable entry M20 x 1.5** (plug connector on request)

NZ...

* Approval pending

Dimension drawing



Switching elements

- **510** Snap-action switching contact 1 NC + 1 NO
- **511** Snap-action switching contact 1 NC ⊖ + 1 NO
- **528H** Slow-action switching contact 1 NC ⊖ + 1 NO
- **538H** Slow-action switching contact 2 NC ⊖
- **2131H** Slow-action switching contact 3 NC ⊖ + 1 NO
- **3131H** Slow-action switching contact 2 NC ⊖ + 2 NO

(further information: see page 9)

LED function display

A red function display LED is available for the following voltage ranges:

12-60 V	AC/DC	(standard)	L060
110 V	AC ±15%	(on request)	L110
230 V	AC ±15%	(on request)	L220

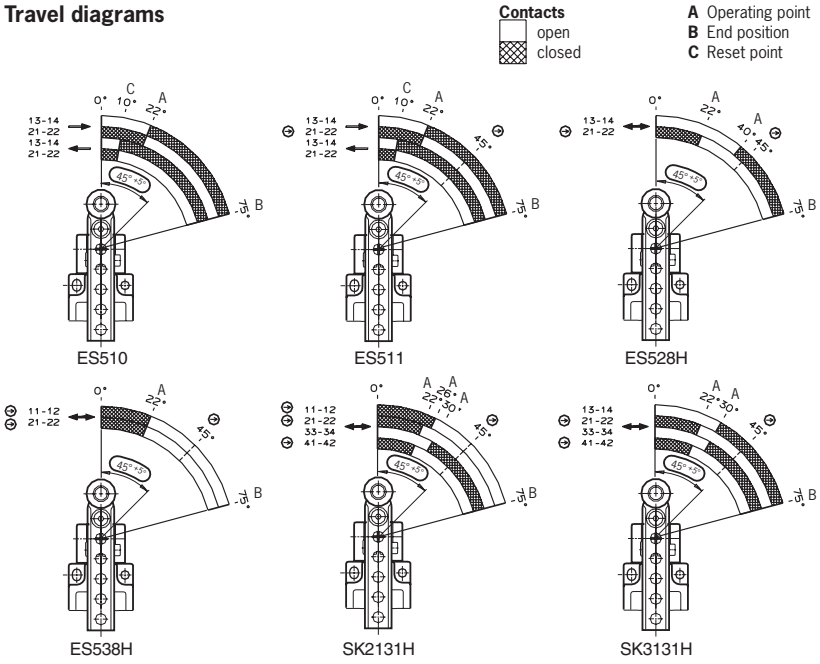
Adjustment options

Horizontal and vertical 4 x 90° (see page 8).

Switching direction

Switches to the right, left or both sides (see page 8).

Travel diagrams



⚠ If damaged or worn, safety switches must be replaced as a unit.

⚠ **Notes on installation for position switches with safety switching elements**

To achieve the positively driven travel, the trip dog must be mounted so that it actuates the lever arm to the angle (45°+5°). Actuating elements such as cam approach guides must be positively mounted in accordance with EN 1088, i.e. riveted, welded or otherwise secured against becoming loose.

Technical data

Parameter		Value					Unit
Housing material		Anodized die-cast alloy					
Degree of protection acc. to IEC 60529		IP 67					
Installation position		Any					
Mechanical life		30 x 10^6 operating cycles					
Ambient temperature		- 25 ... + 80 (-40 °C on request)					°C
Mass		approx. 0.3					kg
Actuator		Adjustable roller lever arm					
Roller material		Plastic (VB)	Plastic (PB)	Steel (VS)	Steel (PS)		
Approach speed, max. [1]		120	120	30	30		m/min
Approach speed, min.		0.5					m/min
Positively driven according to IEC 60947-5-1, appendix K		See symbol ⊖ in travel diagram					
Actuating force, min.		15					N
Switching elements		**510** 1 NC + 1 NO	**528H** 1 NC ⊖ + 1 NO		**538H** 2 NC ⊖		
		511 1 ⊖ + 1 NO	**2131H** 3 NC ⊖ + 1 NO		**3131H** 2 NC ⊖ + 2 NO		
Switching principle		Snap-action switching contact	Slow-action switching contact with H contact bridge				
Contact material		Silver alloy, gold flashed					
Contact closing time		< 4					ms
Contact bounce time		< 3					ms
Rated impulse withstand voltage U_{imp}		2.5					kV
Rated insulation voltage U_i		250					V
Utilization category according to IEC 60947-5-1							
	AC12	I_e 10 A U_e 230 V	-				
	AC15	I_e 6 A U_e 230 V	I_e 4 A U_e 230 V				
	DC13	I_e 6 A U_e 24 V	I_e 4 A U_e 24 V				
Switching current, min., at		10	1	10	1	10	mA
switching voltage		24	24	12	24	12	V DC
Conventional thermal current I_{th}		6	4				A
Short circuit protection acc. to IEC 60269-1 (control circuit fuse)		10/6	4				A gG
Connection		Screw terminal [2]					
Conductor cross-section, max.		2 x 1.5					mm^2

1) The specified approach speed applies to an approach angle of 30°.

2) Wiring diagram: see page 9.

Ordering table

Series	Roller	Switching element	Order no.	
			Function display	
			Without	L060
NG1...-M	**VB** Plastic roller	510	**086322**	**091288**
	VS Steel roller	510	**079934**	**090599**
NZ1...-M	**PB** Plastic roller	511	**088618**	**094753**
		528	**090870**	On request
		538	**090871**	
		2131	**090872**	-
		3131	**090873**	-
	PS Steel roller	511	**088613**	-
		528	**090874**	**090430**
		538	**090875**	-
		2131	**090876**	-
		3131	**090877**	-

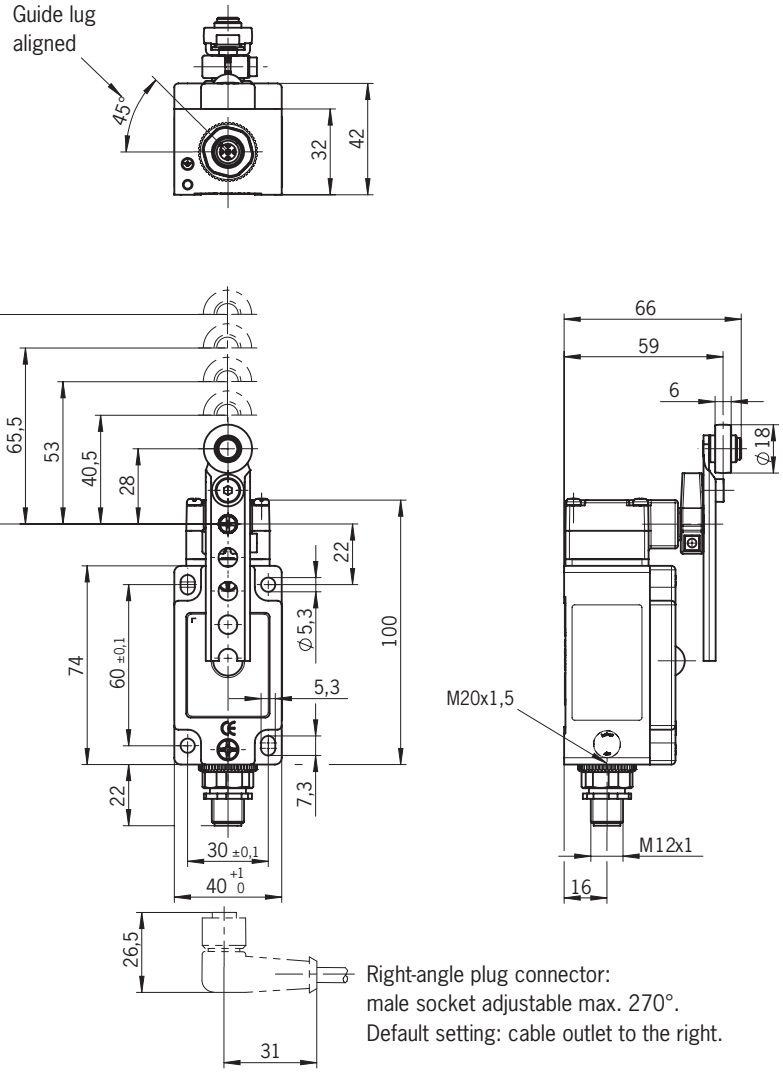
Ordering example: Position switch with safety function **NZ**, cable entry **1**, adjustable roller lever arm with plastic roller **PB**, snap-action switching element **511**, metric thread M20 x 1.5 **M**
NZ1PB-511-M

Order no. 088613

Position switch series NZ2...

- **Adjustable roller lever arm**
  PB (plastic roller)
  PS (steel roller)
- **Plug connector M12/SVM5**

Dimension drawing



Right-angle plug connector:
male socket adjustable max. 270°.
Default setting: cable outlet to the right.

Switching elements

- **511** Snap-action switching contact
  1 NC ⊖ + 1 NO

(further information: see page 9)

LED function display

A yellow function display is available for the following voltage ranges:

- 12-60 V AC/DC (standard) L060

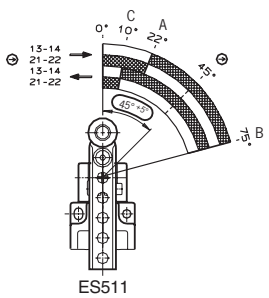
Adjustment options

Horizontal and vertical 4 x 90° (see page 8).

Switching direction

Switches to the right, left or both sides (see page 8).

Travel diagrams



Contacts
open
closed

A Operating point
B End position
C Reset point

⚠ If damaged or worn, safety switches must be replaced as a unit.

⚠ **Notes on installation for position switches with safety switching elements**

To achieve the positively driven travel, the trip dog must be mounted so that it actuates the lever arm to the angle (45°+5°). Actuating elements such as cam approach guides must be positively mounted in accordance with EN 1088, i.e. riveted, welded or otherwise secured against becoming loose.

Technical data

Parameter		Value		Unit
Housing material		Anodized die-cast alloy		
Degree of protection acc. to IEC 60529		IP 67		
Installation position		Any		
Mechanical life		30 x 10^6 operating cycles		
Ambient temperature		- 25 ... + 80 (-40 °C on request)		°C
Mass		approx. 0.3		kg
Actuator		Adjustable roller lever arm		
Roller material		Plastic (PB)	Steel (PS)	
Approach speed, max. [1]		120	30	m/min
Approach speed, min.		0.5		m/min
Positively driven according to IEC 60947-5-1, appendix K		See symbol ⊖ in travel diagram		
Actuating force, min.		15		N
Switching elements		**511** 1 ⊖ + 1 NO		
Switching principle		Snap-action switching contact		
Contact material		Silver alloy, gold flashed		
Contact closing time		< 4		ms
Contact bounce time		< 3		ms
Rated impulse withstand voltage U_{imp}		2.0		kV
Rated insulation voltage U_i		50		V
Utilization category according to IEC 60947-5-1				
with plug connector SVM5	AC15	I_e 4 A U_e 30 V		
	DC13	I_e 4 A U_e 24 V		
Switching current, min., at switching voltage		10 24		mA V DC
Conventional thermal current I_{th}		4		A
Short circuit protection acc. to IEC 60269-1 (control circuit fuse)		4		A gG
Connection		Plug connector M12 [2]		

1) The specified approach speed applies to an approach angle of 30°.

2) Wiring diagram: see page 10.

Ordering table

Series	Roller	Switching element	Order no.	
			Function display	
			Without	L060
NZ2...	**PB** Plastic roller	511	-	**098646**
	PS Steel roller	511	**106697**	**098645**

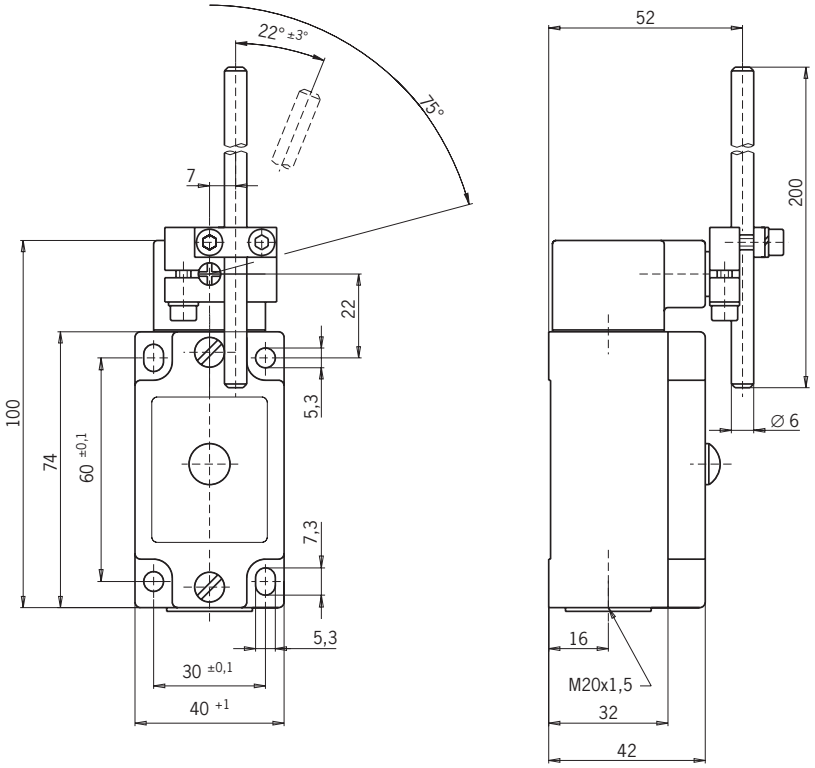
Ordering example: Position switch with safety function **NZ**, plug connector **2**,
adjustable roller lever with steel roller **PS**,
snap-action switching element **511**, M12 male socket with PE connection **SVM5**
NZ2PS-511SVM5

Order no. 106697

Position switch series NG1...

- **Pivoted lever arm SB** (plastic rod)
  SM (aluminum rod)
- **Cable entry M20 x 1.5** (plug connector on request)

Dimension drawing



Switching elements

- **510** Snap-action switching contact
  1 NC + 1 NO

(further information: see page 9)

LED function display

A red function display LED is available for the following voltage ranges:

12-60 V	AC/DC	(standard)	L060
110 V	AC ±15%	(on request)	L110
230 V	AC ±15%	(on request)	L220

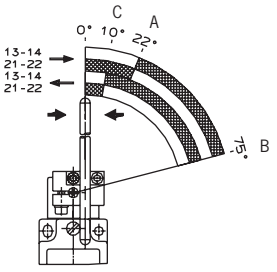
Adjustment options

Horizontal and vertical 4 x 90° (see page 8).

Switching direction

Switches to the right, left or both sides (see page 8).

Travel diagrams



Contacts
open
closed

A Operating point
B End position
C Reset point

Technical data

Parameter		Value		Unit
Housing material		Anodized die-cast alloy		
Degree of protection acc. to IEC 60529		IP 67		
Installation position		Any		
Mechanical life		30 x 10^6 operating cycles		
Ambient temperature		- 25 ... + 80 (-40 °C on request)		°C
Mass		approx. 0.3		kg
Actuator		Pivoted lever arm		
Roller material		Plastic (SB)	Aluminum (SM)	
Approach speed, max.		60		m/min
Approach speed, min.		0.5		m/min
Operating point accuracy		± 1		°
Actuating force, min.		15		N
Switching elements		**510** 1 NC + 1 NO		
Switching principle		Snap-action switching contact		
Contact material		Silver alloy, gold flashed		
Contact closing time		< 4		ms
Contact bounce time		< 3		ms
Rated impulse withstand voltage U_{imp}		2.5		kV
Rated insulation voltage U_i		250		V
Utilization category according to IEC 60947-5-1				
	AC12	I_e 10 A U_e 230 V		
	AC15	I_e 6 A U_e 230 V		
	DC13	I_e 6 A U_e 24 V		
Switching current, min., at switching voltage		10 24		mA V DC
Conventional thermal current I_{th}		6		A
Short circuit protection acc. to IEC 60269-1 (control circuit fuse)		10/6		A gG
Connection		Screw terminal [1]		
Conductor cross-section, max.		2 x 1.5		mm^2

1) Wiring diagram: see page 9.

Ordering table

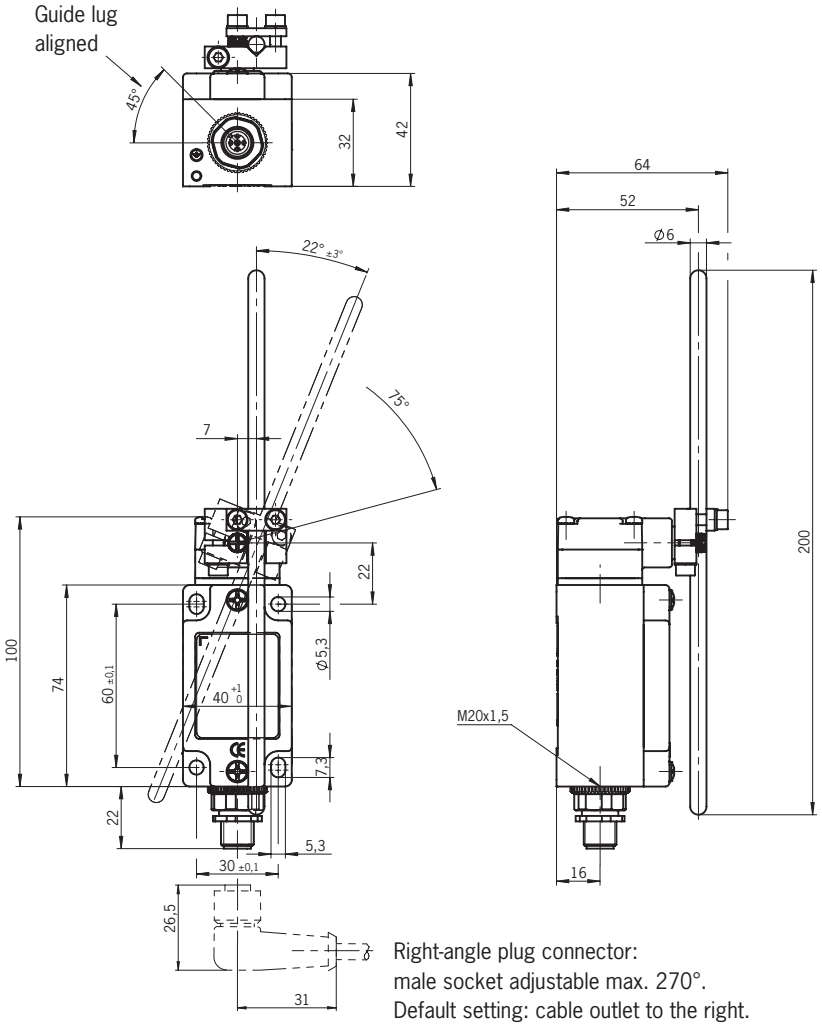
Series	Actuator	Switching element	Order no.	
			Function display	
			Without	L060
NG1...-M	**SB** plastic rod	510	**088609**	**090577**
	SM Aluminum rod	510	**079932**	**090575**

Ordering example: Position switch without safety function **NG**, cable entry **1**,
pivoted lever arm with plastic rod **SB**, snap-action switching element **510**,
function display **L060** 10 - 60 V, metric thread M20 x 1.5 **M**
NG1SB-510L060-M **Order no. 090577**

Position switch series NG2...

- **Pivoted lever arm SB** (plastic rod)
  SM (aluminum rod)
- **Plug connector M12/SVM5**

Dimension drawing



Right-angle plug connector:
male socket adjustable max. 270°.
Default setting: cable outlet to the right.

Switching elements

- **510** Snap-action switching contact
  1 NC + 1 NO

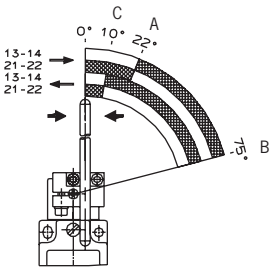
(further information: see page 9)

LED function display
Available on request

Adjustment options
Horizontal and vertical 4 x 90° (see page 8).

Switching direction
Switches to the right, left or both sides (see page 8).

Travel diagrams



Contacts
open
closed

A Operating point
B End position
C Reset point

Technical data

Parameter		Value		Unit
Housing material		Anodized die-cast alloy		
Degree of protection acc. to IEC 60529		IP 67		
Installation position		Any		
Mechanical life		30 x 10^6 operating cycles		
Ambient temperature		- 25 ... + 80 (-40 °C on request)		°C
Mass		approx. 0.3		kg
Actuator		Pivoted lever arm		
Roller material		Plastic (SB)	Aluminum (SM)	
Approach speed, max.		60		m/min
Approach speed, min.		0.5		m/min
Operating point accuracy		± 1		°
Actuating force, min.		15		N
Switching elements		**510** 1 NC + 1 NO		
Switching principle		Snap-action switching contact		
Contact material		Silver alloy, gold flashed		
Contact closing time		< 4		ms
Contact bounce time		< 3		ms
Rated impulse withstand voltage U_{imp}		2.0		kV
Rated insulation voltage U_i		50		V
Utilization category according to IEC 60947-5-1				
Plug connector SVM5	AC15	I_e 4 A U_e 30 V		
	DC13	I_e 4 A U_e 24 V		
Switching current, min., at		10		mA
switching voltage		24		V DC
Conventional thermal current I_{th}		4		A
Short circuit protection acc. to IEC 60269-1 (control circuit fuse)		4		A gG
Connection		Plug connector M12 [1]		

1) Wiring diagram: see page 10.

Ordering table

Series	Actuator	Switching element	Order no. Plug connector SVM5
NG2...	**SB** plastic rod	510	**091303**
	SM Aluminum rod	510	**094059**

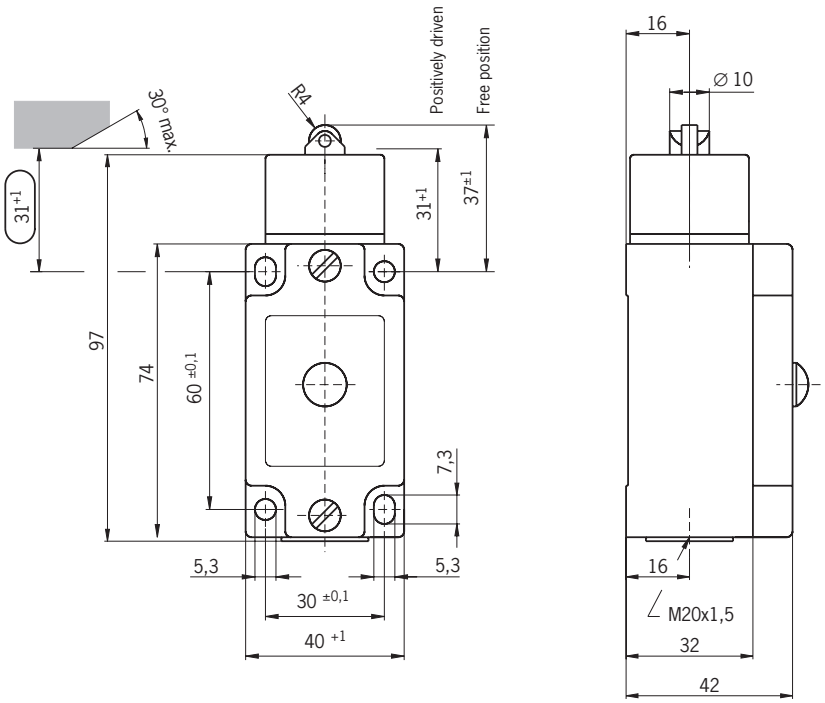
Ordering example: Position switch without safety function **NG**, plug connector **2**, pivoted lever arm with plastic rod **SB**, snap-action switching contact **510**, M12 male socket with PE connection **SVM5**
NG2SB-510SVM5 **Order no. 091303**

Position switch series NG1.../NZ1...

- **Plunger actuator**
  WO (domed plunger) / **KO** (ball plunger)
  DO (chisel plunger) / **RK** (roller plunger with small steel roller)
- **Cable entry M20 x 1.5**

NG... **NZ...**

Dimension drawing



Switching elements

- **510** Snap-action switching contact
  1 NC + 1 NO
- **511** Snap-action switching contact
  1 NC ⊖ + 1 NO
- **528H** Slow-action switching contact
  1 NC ⊖ + 1 NO
- **538H** Slow-action switching contact
  2 NC ⊖
- **2131H** Slow-action switching contact
  3 NC ⊖ + 1 NO
- **3131H** Slow-action switching contact
  2 NC ⊖ + 2 NO

(further information: see page 9)

LED function display

A red function display is available for the following voltage ranges:

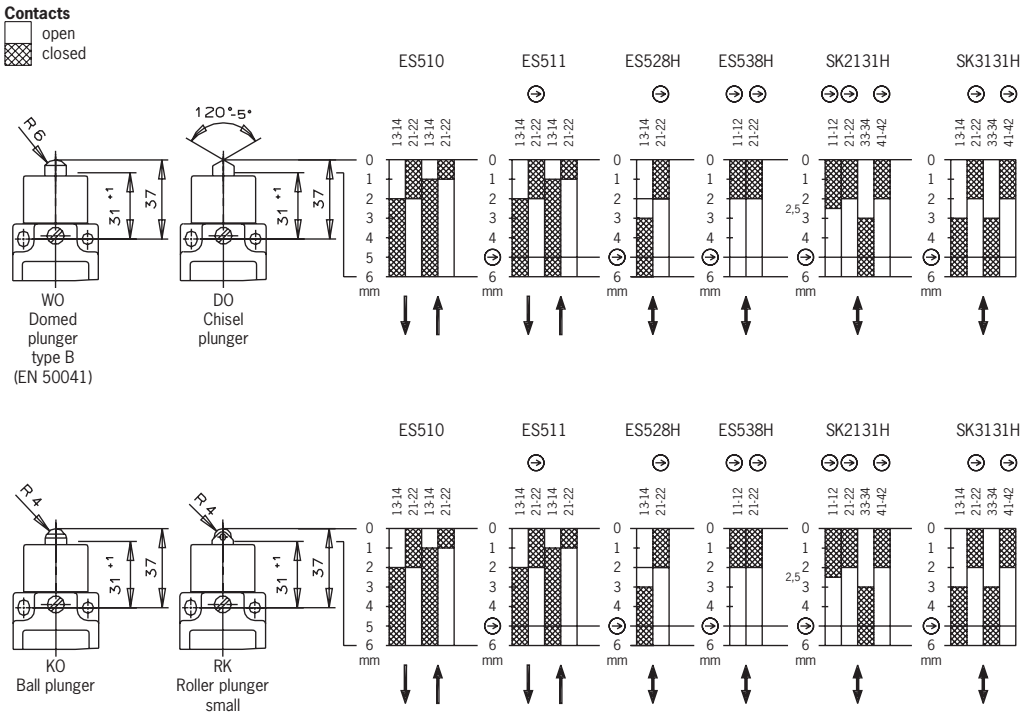
12-60 V	AC/DC	(standard)	L060
110 V	AC ±15%	(on request)	L110
230 V	AC ±15%	(on request)	L220

Adjustment options

Horizontal 4 x 90° (see page 8).

⚠ To achieve the positively driven travel, the dimension (31 +1) must be maintained by the trip dog. Actuating elements such as cam approach guides must be positively mounted in accordance with EN 1088, i.e. riveted, welded or otherwise secured against becoming loose.

Travel diagrams



Technical data

Parameter		Value					Unit
Housing material		Anodized die-cast alloy					
Degree of protection acc. to IEC 60529		IP 67					
Installation position		Any					
Mechanical life		30 x 10^6 operating cycles					
Ambient temperature		- 25 ... + 80 (-40 °C on request)					°C
Mass		approx. 0.3					kg
Actuator		Domed plunger (WO)	Chisel plunger (DO)	Ball plunger (KO)	Roller plunger, small (RK)		
Approach speed, max. [1]		10			50		m/min
Approach speed, min.		0.1					m/min
Operating point accuracy [2]		± 0.002		0.01			mm
Positively driven according to IEC 60947-5-1, appendix K		See symbol ⊖ in travel diagram					
Actuating force, min.		15					N
Switching elements		**510** 1 NC + 1 NO	**528H** 1 NC ⊖ + 1 NO	**538H** 2 NC ⊖			
		511 1 ⊖ + 1 NO	**2131H** 3 NC ⊖ + 1 NO	**3131H** 2 NC ⊖ + 2 NO			
Switching principle		Snap-action switching contact	Slow-action switching contact with H contact bridge				
Contact material		Silver alloy, gold flashed					
Contact closing time		< 4					ms
Contact bounce time		< 3					ms
Rated impulse withstand voltage U_{imp}		2.5					kV
Rated insulation voltage U_i		250					V
Utilization category according to IEC 60947-5-1							
	AC12	I_e 10 A U_e 230 V	-				
	AC15	I_e 6 A U_e 230 V	I_e 4 A U_e 230 V				
	DC13	I_e 6 A U_e 24 V	I_e 4 A U_e 24 V				
Switching current, min., at		10	1	10	1	10	mA
switching voltage		24	24	12	24	12	V DC
Conventional thermal current I_{th}		6	4				A
Short circuit protection acc. to IEC 60269-1 (control circuit fuse)		10/6	4				A gG
Connection		Screw terminal [3]					
Conductor cross-section, max.		2 x 1.5					mm^2

1) The approach speed specified applies in conjunction with EUCHNER trip dogs according to DIN 69639.

2) The reproducible operating point accuracy refers to the plunger's axial travel, after a run-in of approx. 2,000 operating cycles.

3) Wiring diagram: see page 9.

Ordering table

Series	Actuator	Switching element	Order no. Function display: Without	Order no. Function display: L060
NG1...-M	**WO** Domed plunger	510	**079945**	On request
NZ1...-M		511	**088611**	**089057**
		528	**089624**	**089078**
		538	**090878**	**089046**
		2131	**089629**	-
		3131	**089626**	-
NG1...-M	**DO** Chisel plunger	510	**088616**	On request
NZ1...-M		511	**088620**	
		528	**090901**	
		538	**090902**	
		2131	**090903**	
		3131	**090904**	
NG1...-M	**RK** Roller plunger, small	510	**088619**	On request
NZ1...-M		511	**088608**	**090354**
		528	**090905**	**090358**
		538	**090906**	On request
		2131	**090907**	-
		3131	**090908**	-
NG1...-M	**KO** Ball plunger	510	**088604**	On request

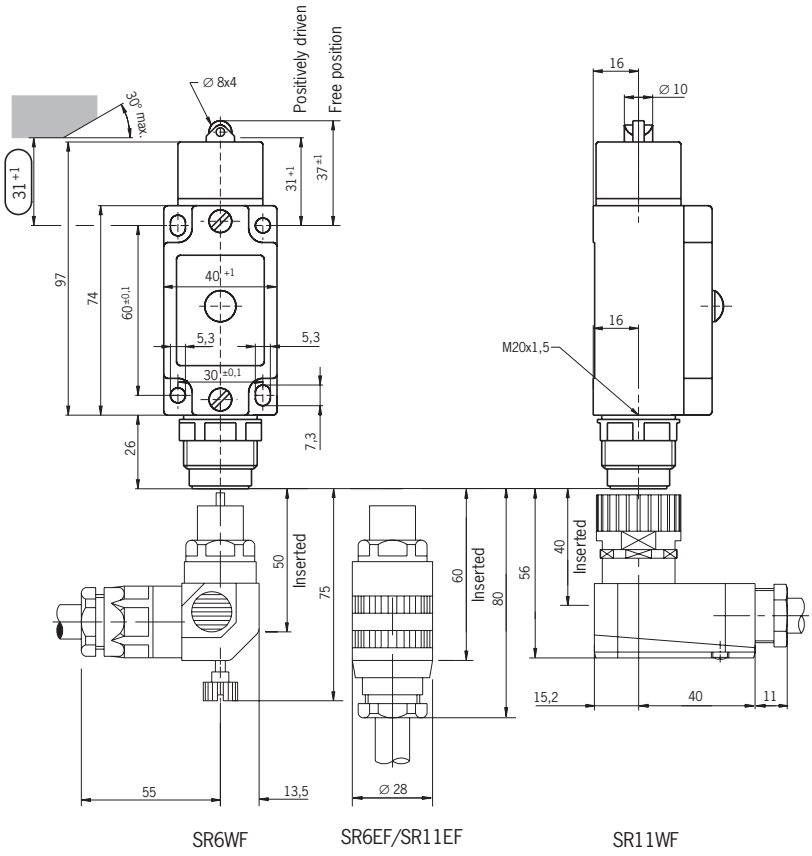
Ordering example: Position switch with safety function **NZ**, cable entry **1**,
domed plunger **WO**, snap-action switching element **511**, function display **L060** 10 - 60 V,
metric thread M20 x 1.5 **M**
NZ1WO-511L060-M **Order no. 089057**

Position switch series NG2.../NZ2...

- **Plunger actuator**
  WO (domed plunger) / **KO** (ball plunger)
  DO (chisel plunger) / **RK** (roller plunger with small steel roller)
- **Plug connectors SR6 and SR11**

NZ...

Dimension drawing



Switching elements

- **510** Snap-action switching contact
  1 NC + 1 NO
- **511** Snap-action switching contact
  1 NC ⊖ + 1 NO
- **528H** Slow-action switching contact
  1 NC ⊖ + 1 NO
- **538H** Slow-action switching contact
  2 NC ⊖
- **2131H** Slow-action switching contact
  3 NC ⊖ + 1 NO
- **3131H** Slow-action switching contact
  2 NC ⊖ + 2 NO

(further information: see page 9)

LED function display

A red function display LED is available for the following voltage ranges:

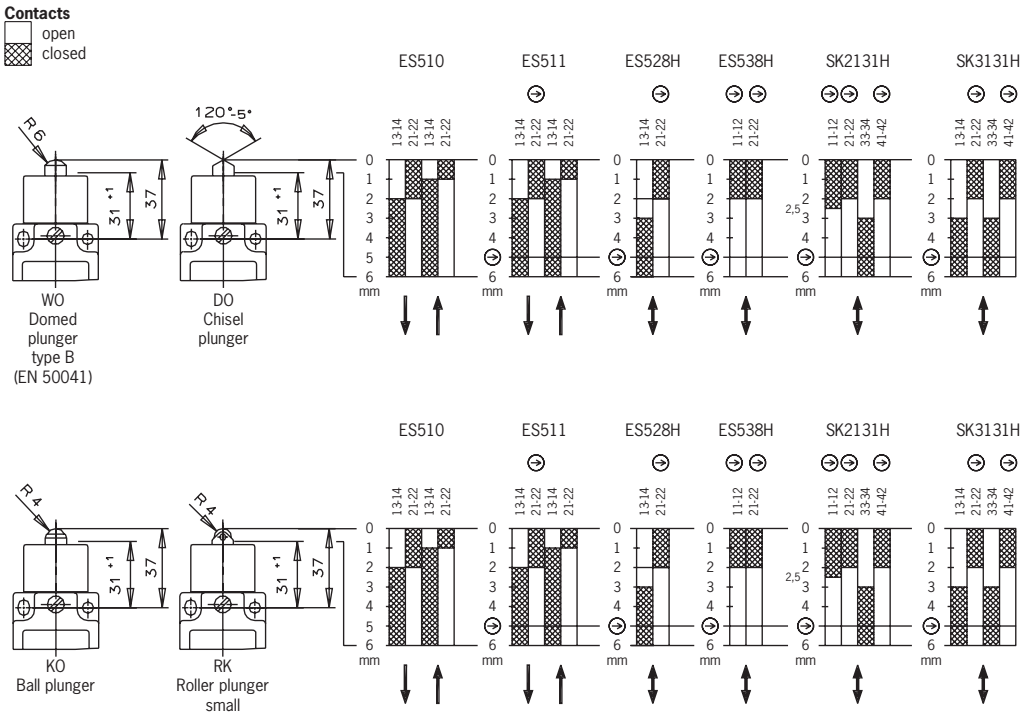
12-60 V	AC/DC	(standard)	L060
110 V	AC ±15%	(on request)	L110
230 V	AC ±15%	(on request)	L220

Adjustment options

Horizontal 4 x 90° (see page 8).

⚠ To achieve the positively driven travel, the dimension (31 +1) must be maintained by the trip dog. Actuating elements such as cam approach guides must be positively mounted in accordance with EN 1088, i.e. riveted, welded or otherwise secured against becoming loose.

Travel diagrams



Technical data

Parameter			Value					Unit
Housing material			Anodized die-cast alloy					
Degree of protection acc. to IEC 60529			IP 65					
Installation position			Any					
Mechanical life			30 x 10^6 operating cycles					
Ambient temperature			- 25 ... + 80 (-40 °C on request)					°C
Mass			approx. 0.3					kg
Actuator			Domed plunger (WO)	Chisel plunger (DO)	Ball plunger (KO)	Roller plunger, small (RK)		
Approach speed, max. [1]			10			50		m/min
Approach speed, min.			0.1					m/min
Operating point accuracy [2]			± 0.002		0.01			°
Positively driven according to IEC 60947-5-1, appendix K			See symbol ⊖ in travel diagram					
Actuating force, min.			15					N
Switching elements			**510** 1 NC + 1 NO	**528H** 1 NC ⊖ + 1 NO		**538H** 2 NC ⊖		
			511 1 ⊖ + 1 NO	**2131H** 3 NC ⊖ + 1 NO		**3131H** 2 NC ⊖ + 2 NO		
Switching principle			Snap-action switching contact	Slow-action switching contact with H contact bridge				
Contact material			Silver alloy, gold flashed					
Contact closing time			< 4					ms
Contact bounce time			< 3					ms
Switching current, min., at			10	1	10	1	10	mA
switching voltage			24	24	12	24	12	V DC
Conventional thermal current I_{th}			6	4				A
Short circuit protection acc. to IEC 60269-1 (control circuit fuse)			6	4				A gG
Connection			Plug connector according to DIN 43651 [3]					
Rated impulse withstand voltage U_{imp}								
with plug connector SR6			2.5					kV
with plug connector SR11			1.5					
Rated insulation voltage U_i								
with plug connector SR6			250					V
with plug connector SR11			50					
Utilization category according to IEC 60947-5-1								
with plug connector SR6		AC15	I_e 6 A U_e 230 V	I_e 4 A U_e 230 V				
		DC13	I_e 6 A U_e 24 V	I_e 4 A U_e 24 V				
with plug connector SR11		AC15		I_e 4 A U_e 50 V				
		DC13		I_e 4 A U_e 24 V				

1) The approach speed specified applies in conjunction with EUCHNER trip dogs according to DIN 69639.

2) The reproducible operating point accuracy refers to the plunger's axial travel, after a run-in of approx. 2,000 operating cycles.

3) Wiring diagram: see page 10.

Ordering table

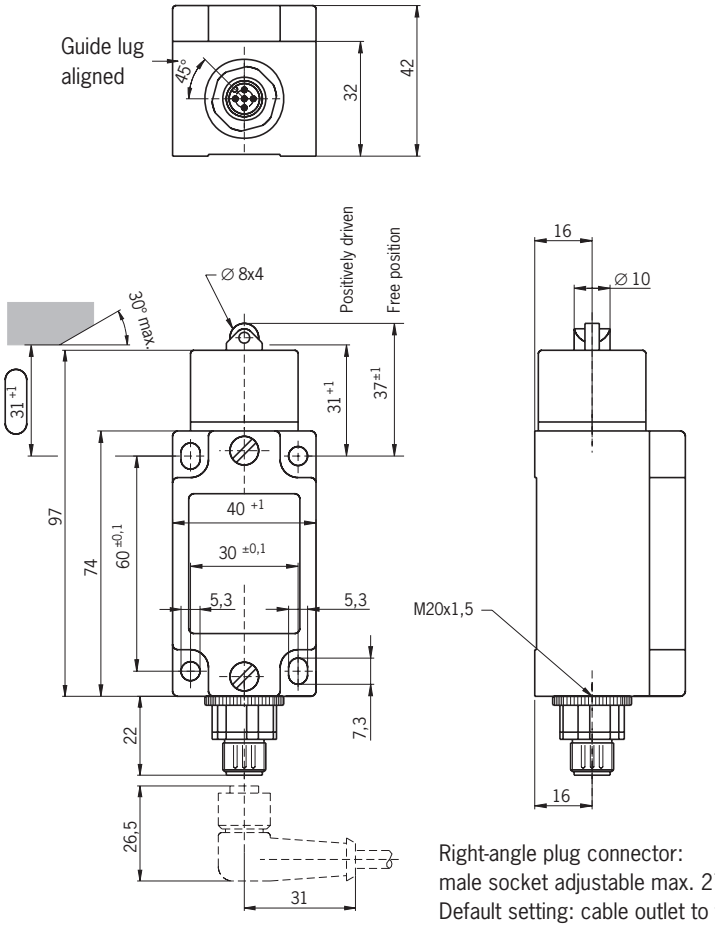
Series	Actuator	Switching element	Order no.	
			Function display	
			Without	L060
NG2...	**WO** Domed plunger	510	**090012**	On request
NZ2...		511	**090909**	**091280**
		528	**090910**	**091279**
		538	**090911**	**087558**
		2131	**090912**	-
		3131	**090913**	-
NG2...	**DO** Chisel plunger	510	**090011**	On request
NZ2...		511	**090015**	
		528	**090914**	
		538	**090915**	
		2131	**090916**	**-**
		3131	**090917**	**-**
NG2...	**RK** Roller plunger, small	510	**090918**	**091300**
NZ2...		511	**090016**	**099273**
		528	**090919**	**091292**
		538	**090920**	On request
		2131	**090921**	-
		3131	**090922**	-
NG2...	**KO** Ball plunger	510	**090020**	On request

Position switch series NG2.../NZ2...

- **Plunger actuator**
  WO (domed plunger) / **KO** (ball plunger)
  DO (chisel plunger) / **RK** (roller plunger with small steel roller)
- **Plug connector M12/SVM5**

NZ...

Dimension drawing



Right-angle plug connector:
male socket adjustable max. 270°.
Default setting: cable outlet to the right.

Switching elements

- **510** Snap-action switching contact
  1 NC + 1 NO
- **511** Snap-action switching contact
  1 NC ⊖ + 1 NO
- **528H** Slow-action switching contact
  1 NC ⊖ + 1 NO
- **538H** Slow-action switching contact
  2 NC ⊖

(further information: see page 9)

LED function display

A red function display LED is available for the following voltage ranges:

12-60 V	AC/DC	(standard)	L060
110 V	AC ±15%	(on request)	L110
230 V	AC ±15%	(on request)	L220

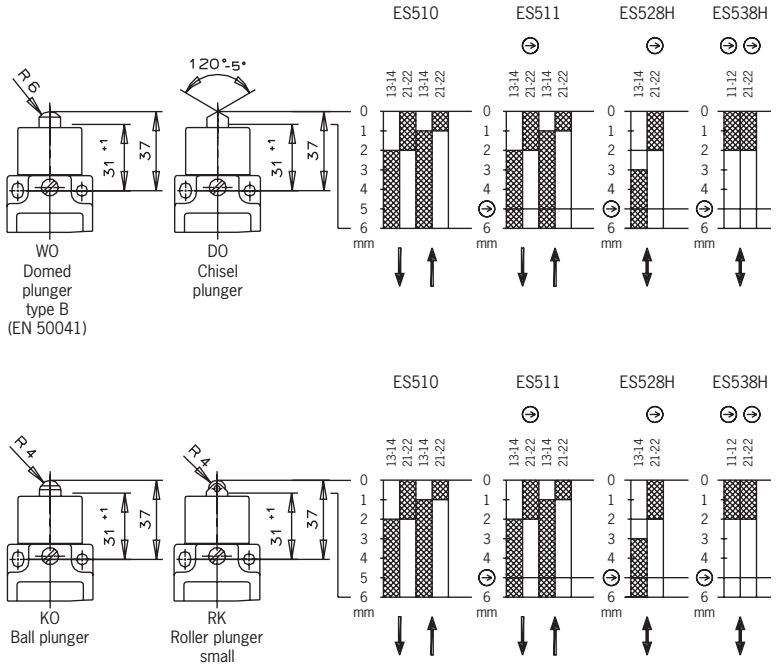
Adjustment options

Horizontal 4 x 90° (see page 8).

⚠ To achieve the positively driven travel, the dimension (31 +1) must be maintained by the trip dog. Actuating elements such as cam approach guides must be positively mounted in accordance with EN 1088, i.e. riveted, welded or otherwise secured against becoming loose.

Travel diagrams

Contacts
open
closed



Technical data

Parameter		Value					Unit
Housing material		Anodized die-cast alloy					
Degree of protection acc. to IEC 60529		IP 67					
Installation position		Any					
Mechanical life		30 x 10^6 operating cycles					
Ambient temperature		- 25 ... + 80 (-40 °C on request)					°C
Mass		approx. 0.3					kg
Actuator		Domed plunger (WO)	Chisel plunger (DO)	Ball plunger (KO)	Roller plunger, small (RK)		
Approach speed, max. [1]		10			50		m/min
Approach speed, min.		0.1					m/min
Operating point accuracy [2]		± 0.002		0.01			mm
Positively driven according to IEC 60947-5-1, appendix K		See symbol ⊖ in travel diagram					
Actuating force, min.		15					N
Switching elements		**510** 1 NC + 1 NO	**528H** 1 NC ⊖ + 1 NO	**538H** 2 NC ⊖			
		511 1 ⊖ + 1 NO					
Switching principle		Snap-action switching contact	Slow-action switching contact with H contact bridge				
Contact material		Silver alloy, gold flashed					
Contact closing time		< 4					ms
Contact bounce time		< 3					ms
Rated impulse withstand voltage U_{imp}		2.0					kV
Rated insulation voltage U_i		50					V
Utilization category according to IEC 60947-5-1							
Plug connector SVM5	AC15	I_e 4 A U_e 30 V	I_e 4 A U_e 30 V				
	DC13	I_e 4 A U_e 24 V	I_e 4 A U_e 24 V				
Switching current, min., at		10	1	10	1	10	mA
switching voltage		24	24	12	24	12	V DC
Conventional thermal current I_{th}		4	4				A
Short circuit protection acc. to IEC 60269-1 (control circuit fuse)		4	4				A gG
Connection		Plug connector M12 [3]					

1) The approach speed specified applies in conjunction with EUCHNER trip dogs according to DIN 69639.

2) The reproducible operating point accuracy refers to the plunger's axial travel, after a run-in of approx. 2,000 operating cycles.

3) Wiring diagram: see page 10.

Ordering table

Series	Actuator	Switching element	Order no. Plug connector SVM5
NG2...	**WO** Domed plunger	510	**090018**
NZ2...		511	**089014**
		528	**090923**
		538	**090924**
NG2...	**DO** Chisel plunger	510	**090014**
NZ2...		511	**090927**
		528	**090928**
		538	**090929**
NG2...	**RK** Roller plunger, small	510	**089020**
NZ2...		511	**089007**
		528	**090930**
		538	**089018**
NG2...	**KO** Ball plunger	510	**090931**

Ordering example: Position switch without safety function **NG**, plug connector **2**, small roller plunger with steel roller **RK**, snap-action switching contact **510**, M12 male socket with PE connection **SVM5**
NG2RK-510SVM5 **Order no. 089020**

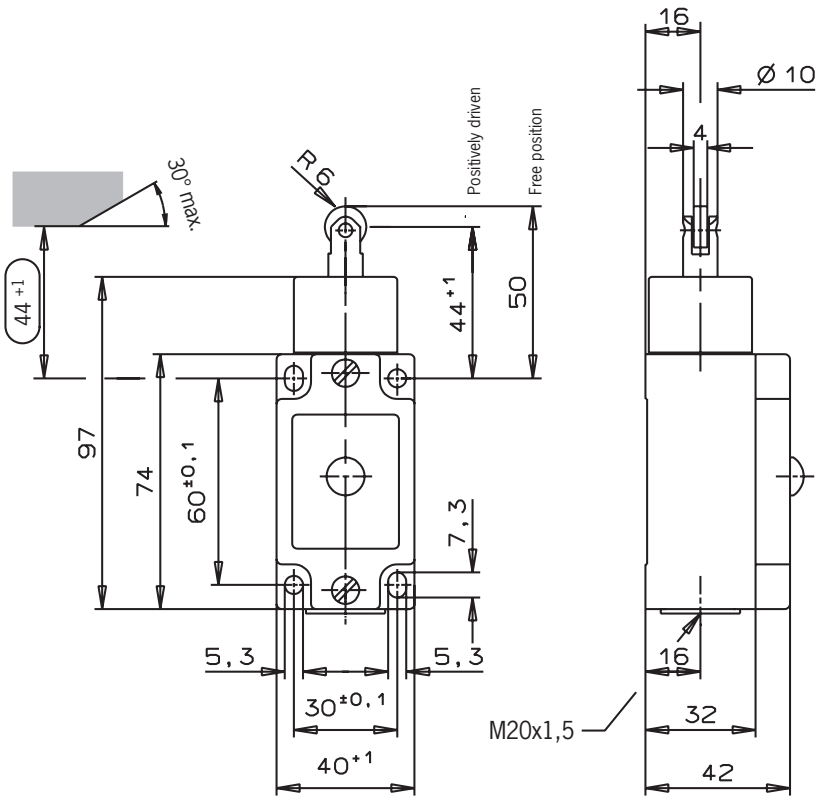
Position switch series NG1.../NZ1...

- **Plunger actuator** **RG** (roller plunger, plastic roller)
  RS (roller plunger, steel roller)
  RL (extended roller plunger)
- **Cable entry M20 x 1.5**

NG... c UL us LISTED

NZ... c UL us LISTED

Dimension drawing



Switching elements

- **510** Snap-action switching contact
  1 NC + 1 NO
- **511** Snap-action switching contact
  1 NC ⊖ + 1 NO
- **528H** Slow-action switching contact
  1 NC ⊖ + 1 NO
- **538H** Slow-action switching contact
  2 NC ⊖
- **2131H** Slow-action switching contact
  3 NC ⊖ + 1 NO
- **3131H** Slow-action switching contact
  2 NC ⊖ + 2 NO

(further information: see page 9)

LED function display

A red function display LED is available for the following voltage ranges:

12-60 V	AC/DC	(standard)	L060
110 V	AC ±15%	(on request)	L110
230 V	AC ±15%	(on request)	L220

Adjustment options

Horizontal 4 x 90° (see page 8).

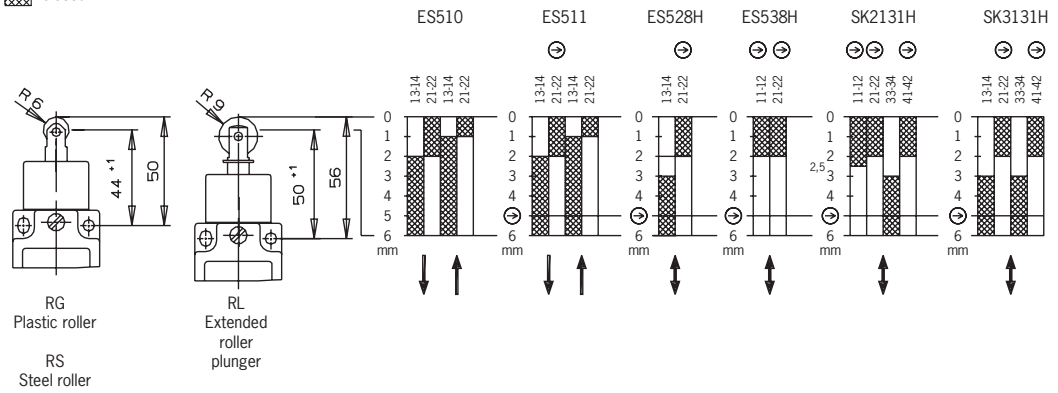
⚠ If damaged or worn, safety switches must be replaced as a unit.

⚠ **Notes on installation for position switches with safety switching elements**

To achieve the positively driven travel, the dimension (44 +1) must be maintained by the trip dog. Actuating elements such as cam approach guides must be positively mounted in accordance with EN 1088, i.e. riveted, welded or otherwise secured against becoming loose.

Travel diagrams

Contacts
open
closed



Technical data

Parameter		Value					Unit
Housing material		Anodized die-cast alloy					
Degree of protection acc. to IEC 60529		IP 67					
Installation position		Any					
Mechanical life		30 x 10^6 operating cycles					
Ambient temperature		- 25 ... + 80 (-40 °C on request)					°C
Mass		approx. 0.3					kg
Actuator		Roller plunger, plastic roller (RG)	Roller plunger, steel roller (RS)		Extended roller plunger (RL)		
Approach speed, max. [1]		20					m/min
Approach speed, min.		0.1					m/min
Operating point accuracy [2]		± 0.1					mm
Positively driven according to IEC 60947-5-1, appendix K		See symbol ⊖ in travel diagram					
Actuating force, min.		15					N
Switching elements		**510** 1 NC + 1 NO	**528H** 1 NC ⊖ + 1 NO		**538H** 2 NC ⊖		
		511 1 ⊖ + 1 NO	**2131H** 3 NC ⊖ + 1 NO		**3131H** 2 NC ⊖ + 2 NO		
Switching principle		Snap-action switching contact	Slow-action switching contact with H contact bridge				
Contact material		Silver alloy, gold flashed					
Contact closing time		< 4					ms
Contact bounce time		< 3					ms
Rated impulse withstand voltage U_{imp}		2.5					kV
Rated insulation voltage U_i		250					V
Utilization category according to IEC 60947-5-1							
	AC12	I_e 10 A U_e 230 V	-				
	AC15	I_e 6 A U_e 230 V	I_e 4 A U_e 230 V				
	DC13	I_e 6 A U_e 24 V	I_e 4 A U_e 24 V				
Switching current, min., at		10	1	10	1	10	mA
switching voltage		24	24	12	24	12	V DC
Conventional thermal current I_{th}		6	4				A
Short circuit protection acc. to IEC 60269-1 (control circuit fuse)		10/6	4				A gG
Connection		Screw terminal [3]					
Conductor cross-section, max.		2 x 1.5					mm^2

1) The approach speed specified applies in conjunction with EUCHNER trip dogs according to DIN 69639.

2) The reproducible operating point accuracy refers to the plunger's axial travel, after a run-in of approx. 2,000 operating cycles.

3) Wiring diagram: see page 9.

Ordering table

Series	Actuator	Switching element	Order no. Function display Without	Order no. Function display L060
NG1...-M	**RG** Roller plunger, plastic roller	510	**079941**	**090398**
NZ1...-M		511	**088605**	**089052**
		528	**090932**	**090008**
		538	**090933**	**090009**
		2131	**090934**	-
		3131	**090935**	-
NG1...-M	**RS** Roller plunger, steel roller	510	**079942**	**079943**
NZ1...-M		511	**079960**	**089053**
		528	**089627**	**086413**
		538	**090936**	**090555**
		2131	**089633**	**-**
		3131	**089631**	**-**
NG1...-M	**RL** Extended roller plunger	510	**086324**	**090602**
NZ1...-M		511	**088614**	**088996**
		528	**090937**	**090938**
		538	**090939**	**090940**
		2131	**090941**	-
		3131	**090942**	-

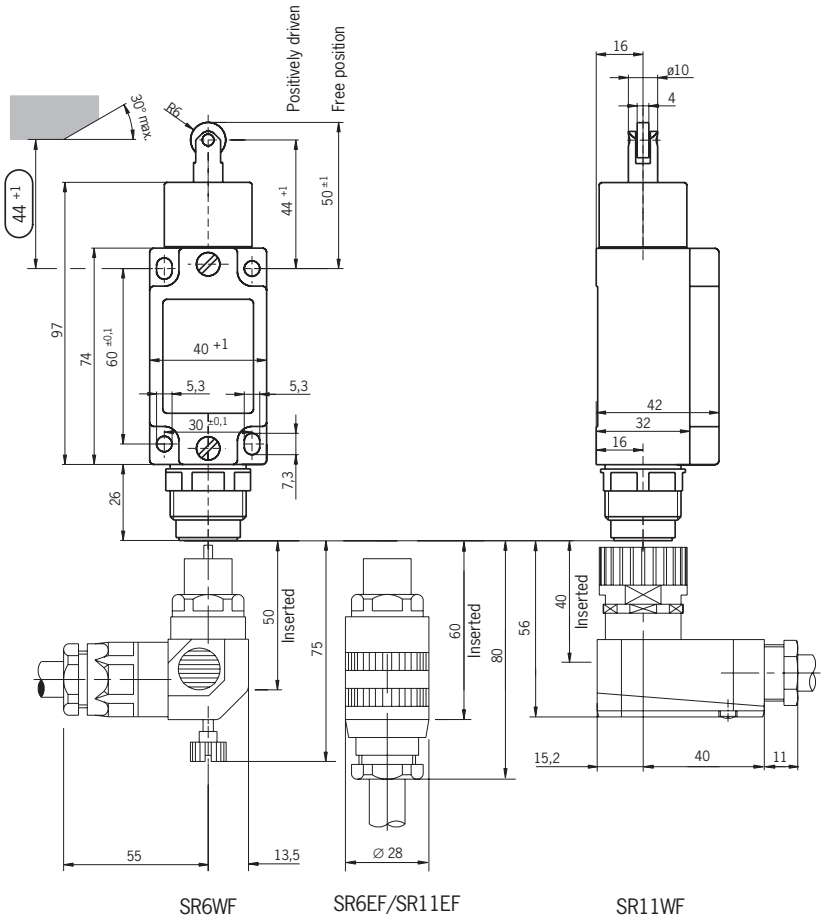
Ordering example: Position switch with safety function **NZ**, cable entry **1**,
roller plunger with plastic roller **RG**, snap-action switching element **511**,
function display **L060** 10 - 60 V, metric thread M20 x 1.5 **M**
NZ1RG-511L060-M **Order no. 089052**

Position switch series NG2.../NZ2...

- **Plunger actuator** **RG** (roller plunger, plastic roller)
  RS (roller plunger, steel roller)
  RL (extended roller plunger)
- **Plug connectors SR6 and SR11**

NZ...

Dimension drawing



Switching elements

- **510** Snap-action switching contact
  1 NC + 1 NO
- **511** Snap-action switching contact
  1 NC ⊖ + 1 NO
- **528H** Slow-action switching contact
  1 NC ⊖ + 1 NO
- **538H** Slow-action switching contact
  2 NC ⊖
- **2131H** Slow-action switching contact
  3 NC ⊖ + 1 NO
- **3131H** Slow-action switching contact
  2 NC ⊖ + 2 NO

(further information: see page 9)

LED function display

A red function display LED is available for the following voltage ranges:

12-60 V	AC/DC	(standard)	L060
110 V	AC ±15%	(on request)	L110
230 V	AC ±15%	(on request)	L220

Adjustment options

Horizontal 4 x 90° (see page 8).

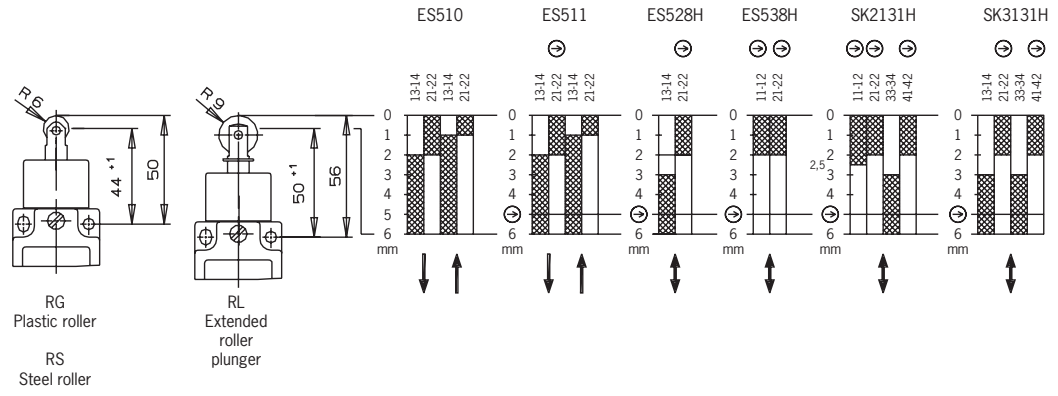
⚠ If damaged or worn, safety switches must be replaced as a unit.

⚠ **Notes on installation for position switches with safety switching elements**

To achieve the positively driven travel, the dimension (44 +1) must be maintained by the trip dog. Actuating elements such as cam approach guides must be positively mounted in accordance with EN 1088, i.e. riveted, welded or otherwise secured against becoming loose.

Travel diagrams

Contacts
open
closed



RG
Plastic roller

RS
Steel roller

RL
Extended roller plunger

Technical data

Parameter			Value					Unit
Housing material			Anodized die-cast alloy					
Degree of protection acc. to IEC 60529			IP 65					
Installation position			Any					
Mechanical life			30 x 10^6 operating cycles					
Ambient temperature			- 25 … + 80 (-40 °C on request)					°C
Mass			approx. 0.3					kg
Actuator			Roller plunger, plastic roller (RG)	Roller plunger, steel roller (RS)		Extended roller plunger (RL)		
Approach speed, max. [1]			20					m/min
Approach speed, min.			0.1					m/min
Operating point accuracy [2]			± 0.1					mm
Positively driven according to IEC 60947-5-1, appendix K			See symbol ⊖ in travel diagram					
Actuating force, min.			15					N
Switching elements			**510** 1 NC + 1 NO	**528H** 1 NC ⊖ + 1 NO		**538H** 2 NC ⊖		
			511 1 ⊖ + 1 NO	**2131H** 3 NC ⊖ + 1 NO		**3131H** 2 NC ⊖ + 2 NO		
Switching principle			Snap-action switching contact	Slow-action switching contact with H contact bridge				
Contact material			Silver alloy, gold flashed					
Contact closing time			< 4					ms
Contact bounce time			< 3					ms
Switching current, min., at			10	1	10	1	10	mA
switching voltage			24	24	12	24	12	V DC
Conventional thermal current I_{th}			6	4				A
Short circuit protection acc. to IEC 60269-1 (control circuit fuse)			6	4				A gG
Connection			Plug connector according to DIN 43651 [3]					
Rated impulse withstand voltage U_{imp}								
	with plug connector SR6		2.5					kV
	with plug connector SR11		1.5					
Rated insulation voltage U_i								
	with plug connector SR6		250					V
	with plug connector SR11		50					
Utilization category according to IEC 60947-5-1								
	with plug connector SR6	AC15	I_e 6 A U_e 230 V	I_e 4 A U_e 230 V				
		DC13	I_e 6 A U_e 24 V	I_e 4 A U_e 24 V				
	with plug connector SR11	AC15	I_e 4 A U_e 50 V	I_e 4 A U_e 50 V				
		DC13	I_e 4 A U_e 24 V	I_e 4 A U_e 24 V				

1) The approach speed specified applies in conjunction with EUCHNER trip dogs according to DIN 69639.

2) The reproducible operating point accuracy refers to the plunger's axial travel, after a run-in of approx. 2,000 operating cycles.

3) Wiring diagram: see page 10.

Ordering table

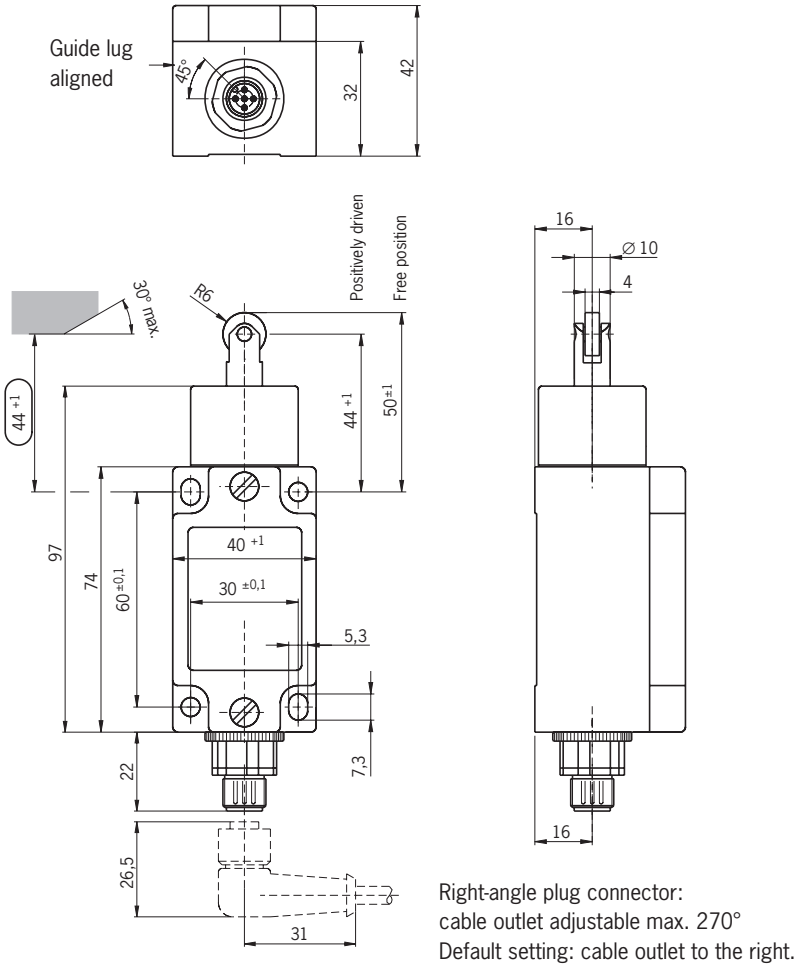
Series	Actuator	Switching element	Order no. Function display Without	Order no. Function display L060
NG2...	**RG** Roller plunger, plastic roller	510	**090021**	**090949**
NZ2...		511	**090032**	**091284**
		528	**090943**	**090944**
		538	**090945**	**090946**
		2131	**090947**	-
		3131	**090948**	-
NG2...	**RS** Roller plunger, steel roller	510	**090953**	On request
NZ2...		511	**090024**	**090147**
		528	**090950**	**088197**
		538	**090951**	**090952**
		2131	**090149**	**-**
		3131	**090954**	**-**
NG2...	**RL** Extended roller plunger	510	**090022**	**091285**
NZ2...		511	**090025**	**090955**
		528	**090956**	**091282**
		538	**090957**	**091278**
		2131	**090958**	-
		3131	**090959**	-

Position switch series NG2.../NZ2...

- **Plunger actuator** **RG** (roller plunger, plastic roller)
  RS (roller plunger, steel roller)
  RL (extended roller plunger)
- **Plug connector M12/SVM5**

NZ...

Dimension drawing



Right-angle plug connector:
cable outlet adjustable max. 270°
Default setting: cable outlet to the right.

Switching elements

- **510** Snap-action switching contact
  1 NC + 1 NO
- **511** Snap-action switching contact
  1 NC ⊖ + 1 NO
- **528H** Slow-action switching contact
  1 NC ⊖ + 1 NO
- **538H** Slow-action switching contact
  2 NC ⊖

(further information: see page 9)

LED function display

Available on request

Adjustment options

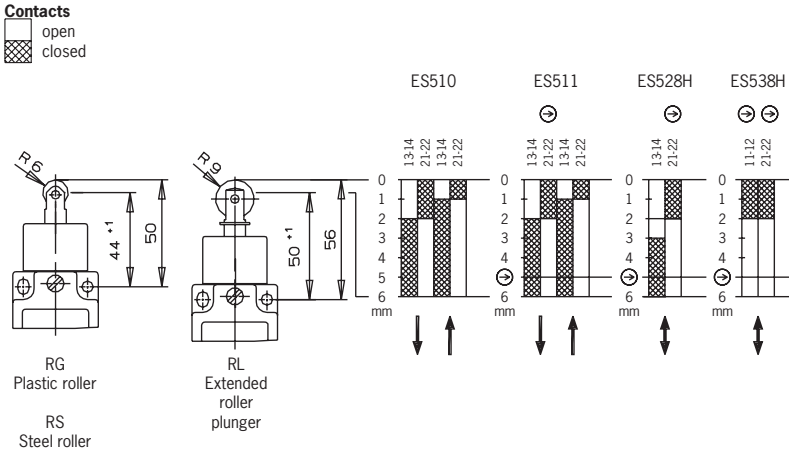
Horizontal 4 x 90° (see page 8).

⚠ If damaged or worn, safety switches must be replaced as a unit.

⚠ **Notes on installation for position switches with safety switching elements**

To achieve the positively driven travel, the dimension (44 +1) must be maintained by the trip dog. Actuating elements such as cam approach guides must be positively mounted in accordance with EN 1088, i.e. riveted, welded or otherwise secured against becoming loose.

Travel diagrams



Technical data

Parameter		Value					Unit
Housing material		Anodized die-cast alloy					
Degree of protection acc. to IEC 60529		IP 67					
Installation position		Any					
Mechanical life		30 x 10^6 operating cycles					
Ambient temperature		- 25 ... + 80 (-40 °C on request)					°C
Mass		approx. 0.3					kg
Actuator		Roller plunger, plastic roller (RG)	Roller plunger, steel roller (RS)		Extended roller plunger (RL)		
Approach speed, max. [1]		20					m/min
Approach speed, min.		0.1					m/min
Operating point accuracy [2]		± 0.1					mm
Positively driven according to IEC 60947-5-1, appendix K		See symbol ⊖ in travel diagram					
Actuating force, min.		15					N
Switching elements		**510** 1 NC + 1 NO	**528H** 1 NC ⊖ + 1 NO		**538H** 2 NC ⊖		
		511 1 ⊖ + 1 NO					
Switching principle		Snap-action switching contact	Slow-action switching contact with H contact bridge				
Contact material		Silver alloy, gold flashed					
Contact closing time		< 4					ms
Contact bounce time		< 3					ms
Rated impulse withstand voltage U_{imp}		2.0					kV
Rated insulation voltage U_i		50					V
Utilization category according to IEC 60947-5-1							
Plug connector SVM5	AC15	I_e 4 A U_e 30 V	I_e 4 A U_e 30 V				
	DC13	I_e 4 A U_e 24 V	I_e 4 A U_e 24 V				
Switching current, min., at		10	1	10	1	10	mA
switching voltage		24	24	12	24	12	V DC
Conventional thermal current I_{th}		4	4				A
Short circuit protection acc. to IEC 60269-1 (control circuit fuse)		4	4				A gG
Connection		Plug connector M12 [3]					

1) The approach speed specified applies in conjunction with EUCHNER trip dogs according to DIN 69639.

2) The reproducible operating point accuracy refers to the plunger's axial travel, after a run-in of approx. 2,000 operating cycles.

3) Wiring diagram: see page 10.

Ordering table

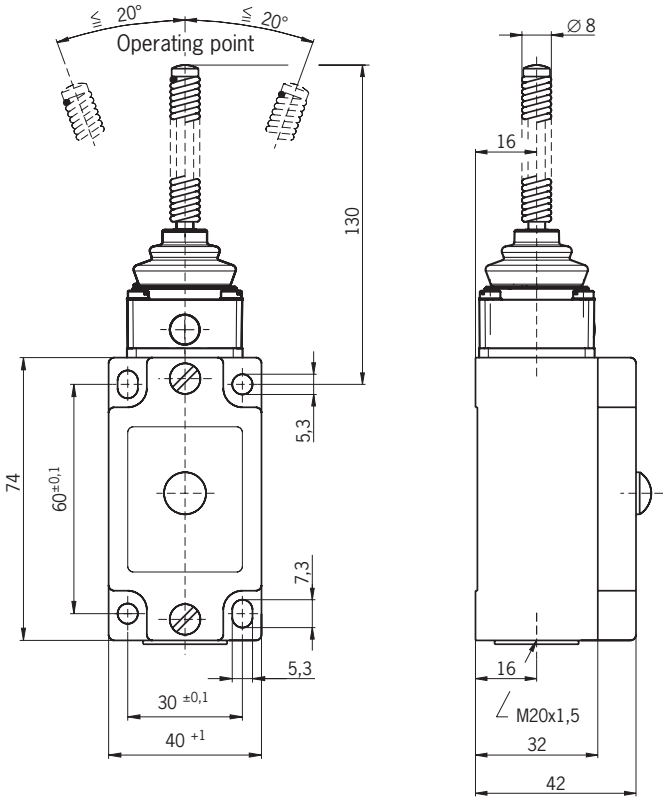
Series	Actuator	Switching element	Order no. Plug connector SVM5
NG2...	**RG** Roller plunger, plastic roller	510	**090960**
NZ2...		511	**090026**
		528	**090961**
		538	**090962**
NG2...	**RS** Roller plunger, steel roller	510	**088632**
NZ2...		511	**090027**
		528	**090963**
		538	**090964**
NG2...	**RL** Extended roller plunger	510	On request
NZ2...		511	**090028**
		528	On request
		538	

Ordering example: Position switch with safety function **NZ**, plug connector **2**, roller plunger with plastic roller **RG**, snap-action switching element **511**, M12 male socket with PE connection **SVM5**
NZ2RG-511SVM5 **Order no. 090026**

Position switch series NG1...

- **Spring actuator FO**
- **Cable entry M20 x 1.5**
- **Actuating direction: all sides**

Dimension drawing



Switching elements

- **510** Snap-action switching contact
  1 NC + 1 NO

(further information: see page 9)

LED function display

A red function display LED is available for the following voltage ranges:

12-60 V	AC/DC	(standard)	L060
110 V	AC ±15%	(on request)	L110
230 V	AC ±15%	(on request)	L220

Technical data

Parameter		Value	Unit
Housing material		Anodized die-cast alloy	
Degree of protection acc. to IEC 60529		IP 67	
Installation position		Any	
Mechanical life		30 x 10^6 operating cycles	
Ambient temperature		- 25 ... + 80 (-40 °C on request)	°C
Mass		approx. 0.35	kg
Actuator		Spring actuator made of spring steel wire (FO)	
Approach speed, max.		20	m/min
Approach speed, min.		0.5	m/min
Actuating force, min.		5	N
Switching elements		**510** 1 NC + 1 NO	
Switching principle		Snap-action switching contact	
Contact material		Silver alloy, gold flashed	
Contact closing time		< 4	ms
Contact bounce time		< 3	ms
Rated impulse withstand voltage U_{imp}		2.5	kV
Rated insulation voltage U_i		250	V
Utilization category according to IEC 60947-5-1			
	AC12	I_e 10 A U_e 230 V	
	AC15	I_e 6 A U_e 230 V	
	DC13	I_e 6 A U_e 24 V	
Switching current, min., at		10	mA
switching voltage		24	V DC
Conventional thermal current I_{th}		6	A
Short circuit protection acc. to IEC 60269-1 (control circuit fuse)		10/6	A gG
Connection		Screw terminal [1]	
Conductor cross-section, max.		2 x 1.5	mm^2

1) Wiring diagram: see page 9.

Ordering table

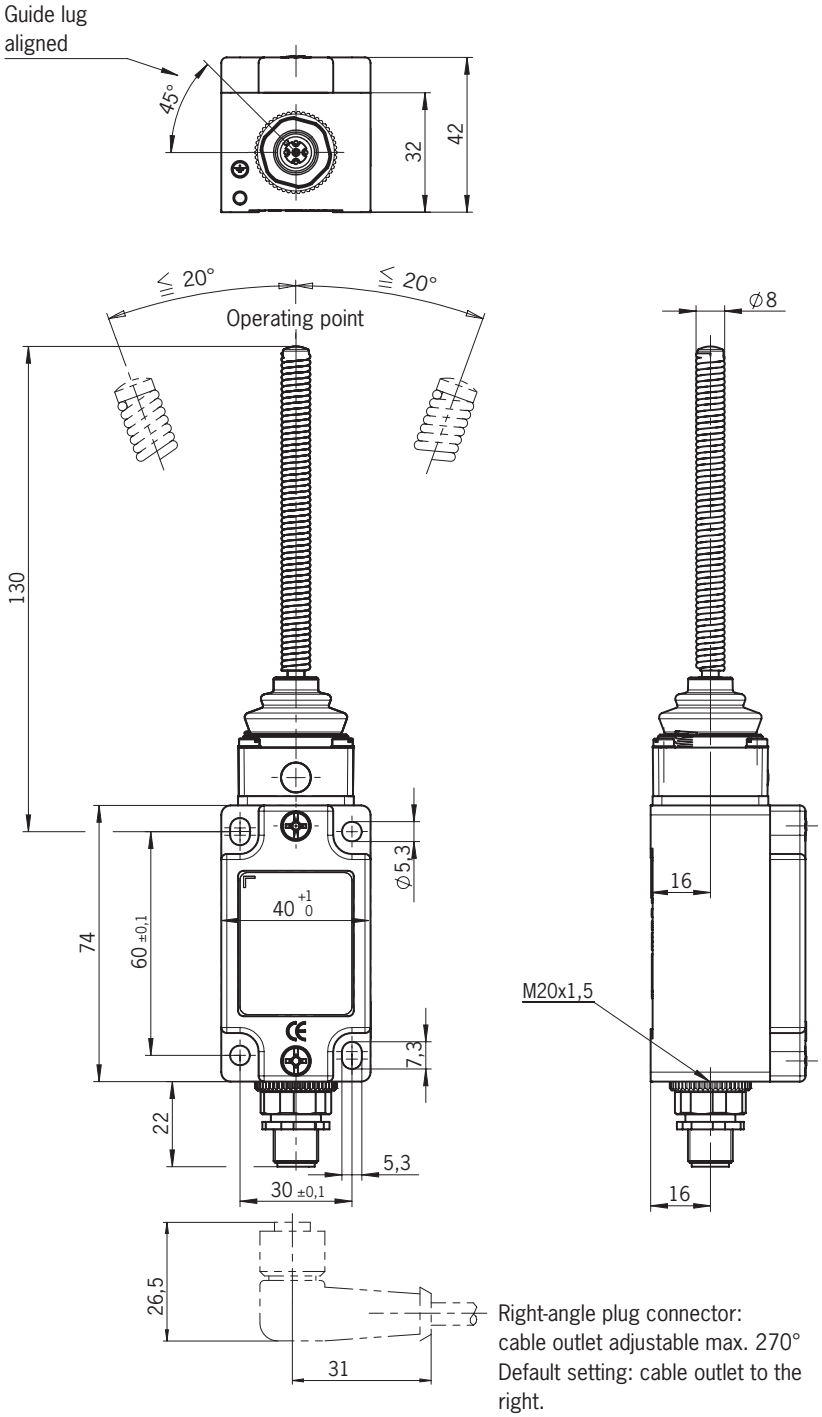
Series	Actuator	Switching element	Order no.	
			Function display	
			Without	L060
NG1...-M	**FO** Spring actuator	510	**079911**	**090029**

Ordering example: Position switch without safety function **NG**, cable entry **1**,
spring actuator made of spring steel wire **FO**, snap-action switching element **510**,
function display **L060** 10 - 60 V, metric thread M20 x 1.5 **M**
NG1FO-510L060-M **Order no. 090 029**

Position switch series NG2...

- **Spring actuator FO**
- **Plug connector M12/SVM5**
- **Actuating direction: all sides**

Dimension drawing



Right-angle plug connector:
cable outlet adjustable max. 270°
Default setting: cable outlet to the right.

Switching elements

- **510** Snap-action switching contact
  1 NC + 1 NO

(further information: see page 9)

LED function display

Available on request

Technical data

Parameter		Value	Unit
Housing material		Anodized die-cast alloy	
Degree of protection acc. to IEC 60529		IP 67	
Installation position		Any	
Mechanical life		30 x 10^6 operating cycles	
Ambient temperature		- 25 ... + 80 (-40 °C on request)	°C
Mass		approx. 0.35	kg
Actuator		Spring actuator made of spring steel wire (FO)	
Approach speed, max.		20	m/min
Approach speed, min.		0.5	m/min
Actuating force, min.		5	N
Switching elements		**510** 1 NC + 1 NO	
Switching principle		Snap-action switching contact	
Contact material		Silver alloy, gold flashed	
Contact closing time		< 4	ms
Contact bounce time		< 3	ms
Rated impulse withstand voltage U_{imp}		2.0	kV
Rated insulation voltage U_i		50	V
Utilization category according to IEC 60947-5-1			
Plug connector SVM5	AC15	I_e 4 A U_e 30 V	
	DC13	I_e 4 A U_e 24 V	
Switching current, min., at		10	mA
switching voltage		24	V DC
Conventional thermal current I_{th}		4	A
Short circuit protection acc. to IEC 60269-1 (control circuit fuse)		4	A gG
Connection		Plug connector M12 [1]	

1) Wiring diagram: see page 10.

Ordering table

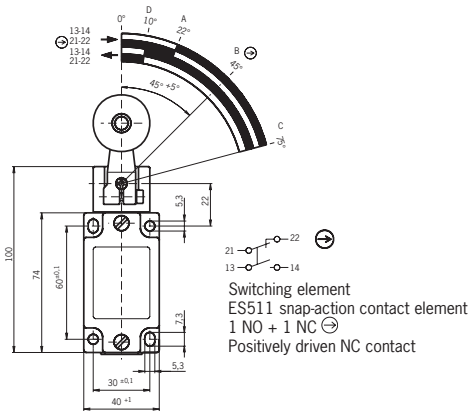
Series	Actuator	Switching element	Order no. Plug connector SVM5
NG2...	**FO** Spring actuator	510	**092058**

Ordering example: Position switch without safety function **NG**, plug connector **2**, spring actuator made of spring steel wire **FO**, snap-action switching element **510**, M12 male socket with PE connection **SVM5**
NG2FO-510SVM5 **Order no. 092 058**

Special versions (other special versions available on request)

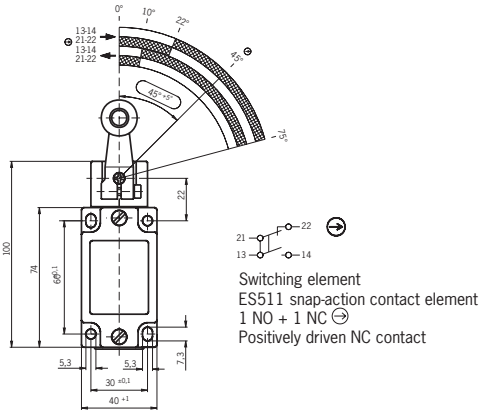
Position switch with large plastic roller
Diameter 30 mm

Item	Order no.
NZ1HB-511-MC569	**079965**



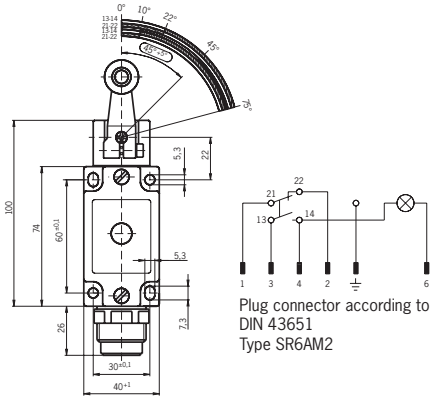
Position switch with sealed bearings
Diameter 19 mm

Item	Order no.
NZ1HS-511-MC1833	**091312**



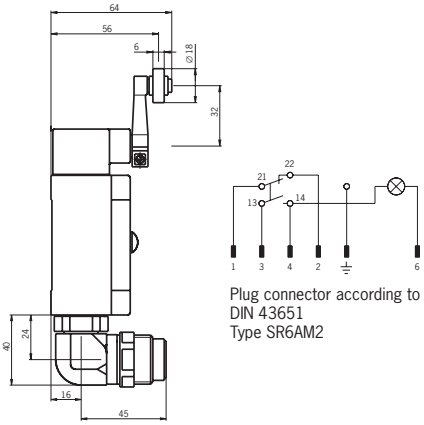
Position switch with plug connector according to DIN 43651
VW/Audi, VW mat. no. 2348

Item	Order no.
NZ2HB-511L060C1630	**054121**



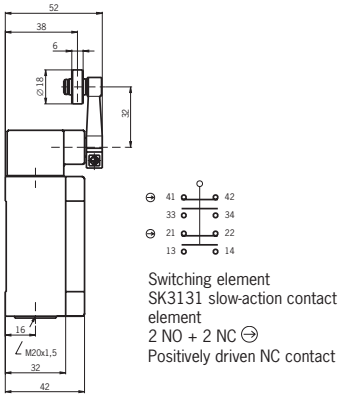
Position switch with plug connector and elbow adapter according to DIN 43651
VW/Audi, VW mat. no. 2349

Item	Order no.
NZ2HB-511L060C1631	**054122**



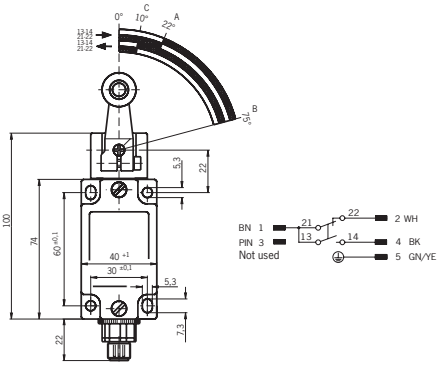
Position switch with steel roller on the inside of the lever

Item	Order no.
NZ1HS-3131-MC1779	**079996**



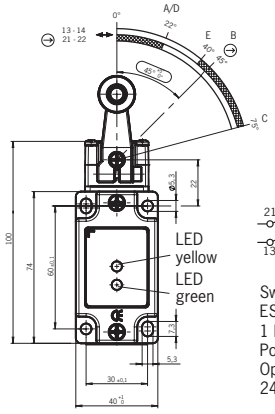
Position switch with M12 plug connector and pin assignment for LED indicator
(pin 3 not used)

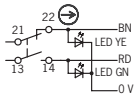
Item	Order no.
NG2HB-510SVM5C1883	**086561**



Position switch with 2 LED indicators
Diameter 18 mm

Item		Order no.
NZ1HB-528L024GEGR-M	Plastic roller	**099929**
NZ1HS-528L024GEGR-M	Steel roller	**099930**

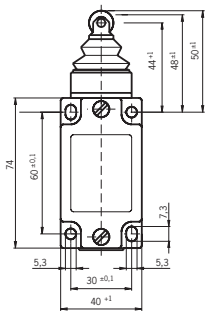


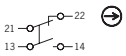


Switching element
ES528 slow-action contact element
1 NO + 1 NC ⊖
Positively driven NC contact
Operating voltage for LED indicator:
24 V DC, +10%, -15%

Position switch with protective NBR bellows on the plunger guide
Protection against serious contamination and aggressive coolants

Item	Order no.
NZ1RS-511-MC1588	**091352**

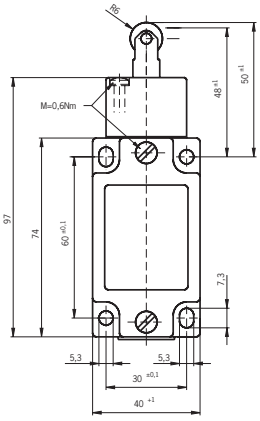




Switching element
ES511 snap-action contact element
1 NO + 1 NC ⊖
Positively driven NC contact

Position switch with gold plated contacts
For switching low currents of at least 1 mA

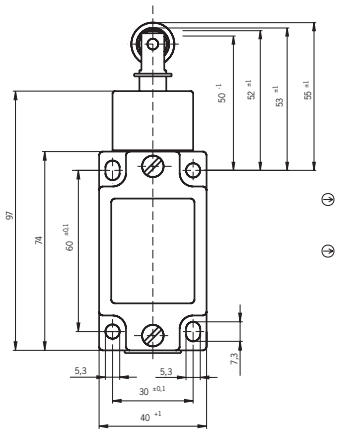
Item	Order no.
NZ1RS-510AU-M	**090416**

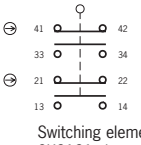


Switching element
ES510 snap-action contact element
1 NO + 1 NC
Contact material: silver alloy 10 µm electro-gold-plated
annular cutting edge contact
Breaking capacity max. 30 V / 100 mA
Breaking capacity min. 5 V / 1 mA

Position switch with sealed bearings
Diameter 16 mm

Item	Order no.
NZ1RL-3131-MC1831	**089082**

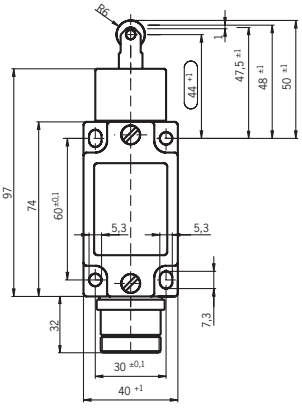


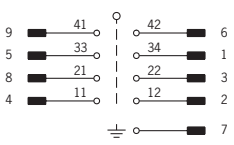


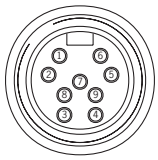
Switching element
SK3131 slow-action contact element
2 NO + 2 NC ⊖
Positively driven NC contact

Position switch with MENCOM plug connector MIN-9MR-1-18

Item	Order no.
NZ1RS-2131-9C-GMMF	**077362**

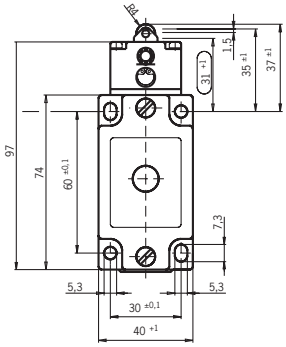


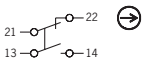




Position switch with small bearing
For high approach speeds and long travel distances

Item	Order no.
NZ1RK-528-MC1912	**090572**

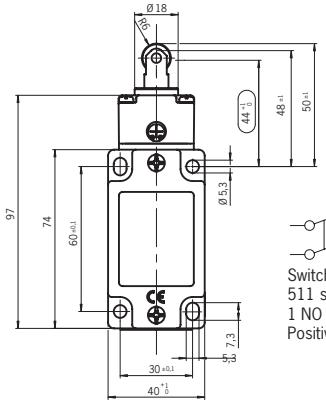


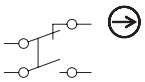


Switching element
528 slow-action contact element
1 NO + 1 NC ⊖
Positively driven NC contact

Position switch with steel sleeve
For high approach speeds and protected guidance

Item	Order no.
NZ1RS-511-MC782	**093141**



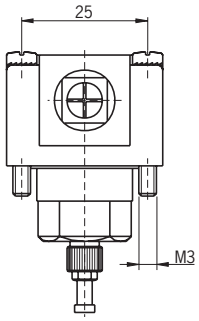


Switching element
511 snap-action contact element
1 NO + 1 NC ⊖
Positively driven NC contact

Accessories

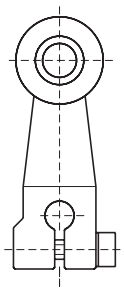
Lever arm actuation

Item	Order no.
NSA	**012051**



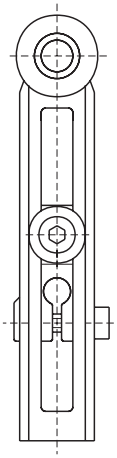
Roller arm

Item	Order no.
NHB (plastic roller)	**012042**
NHS (steel roller)	**012043**
NHSX1834 (βαλλ βεαρινγ ∅ 19 μμ)	**077349**



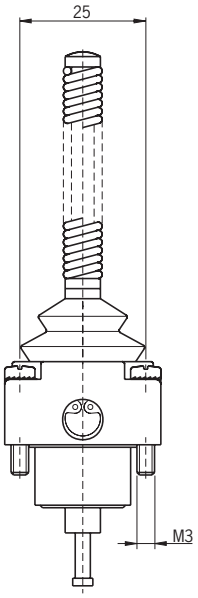
Adjustable roller arm

Item	Order no.
NVB (plastic roller)	**012064**
NVS (steel roller)	**012065**



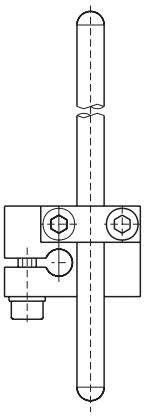
Spring actuator

Item	Order no.
NFO (spring steel wire)	**011909**



Rod lever

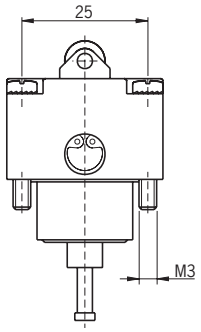
Item	Order no.
NSB (plastic rod)	**012052**
NSM (aluminum rod)	**012053**



Note:
The actuator heads shown are spare parts for position switches without safety function.
They do not fit position switches with safety function and must not be operated with these switches.

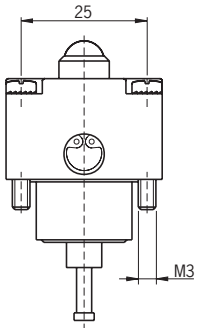
Actuator with small roller plunger

Item	Order no.
NRK (small steel roller)	**012049**



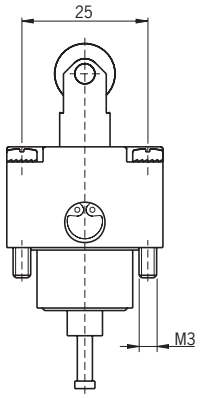
Actuator with ball plunger

Item	Order no.
NKO (steel ball)	**012045**



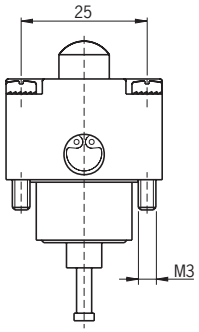
Actuator with roller plunger ∅ 12 mm

Item	Order no.
NRG (plastic roller)	**012046**
NRS (steel roller)	**012047**



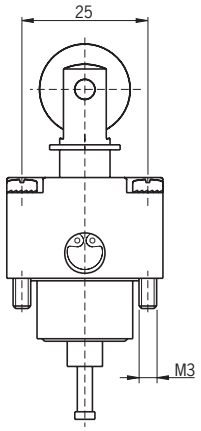
Actuator with domed plunger

Item	Order no.
NWO (polish-ground dome)	**012066**



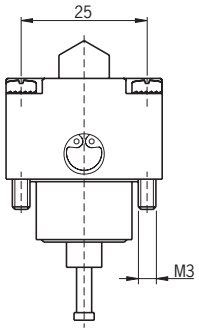
Actuator with extended roller plunger ∅ 18 mm

Item	Order no.
NRL (large steel roller)	**012050**



Actuator with chisel plunger

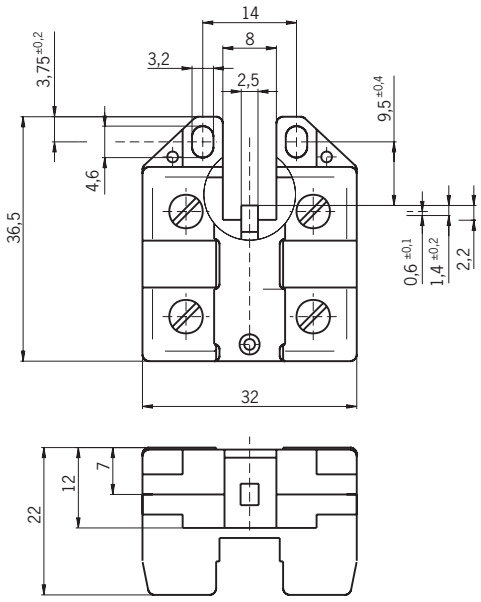
Item	Order no.
NDO (polish-ground chisel plunger)	**011908**



Note:
The actuator heads shown are spare parts for position switches without safety function.
They do not fit position switches with safety function and must not be operated with these switches.

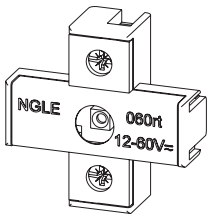
Switching element ES 510 for series NG...

Item	Order no.
ES 510	**010422**



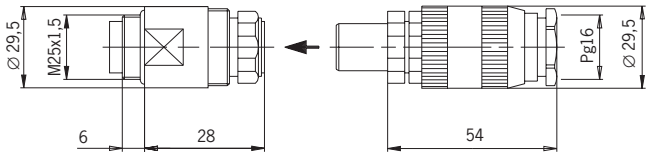
LED function display for series NG.../NZ...

Item	Voltage [V]	Current [mA]	Order no.
NGLE 060 rt	12 -60 AC/DC	≤ 6.5	**029220**
NGLE 110 rt	110 ±15% AC	≤ 3.5	**045822**
NGLE 220 rt	230 ±15% AC	≤ 3.5	**045825**



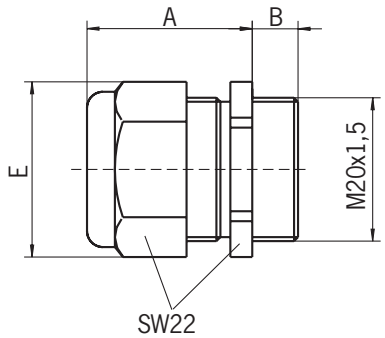
Male socket / socket plug 12-pin

Item	Order no.
Male socket SD 12-M	**085648**
Socket plug BS 12	**002763**



Cable gland M20 x 1.5

Item	Cable outer diameter [mm]	A [mm]	B [mm]	E [mm]	Order no.
EKVM20/06	6.5 - 9.5	20	6	24.5	**077683**
EKVM20/09	9 - 13	21	6	24.5	**077684**

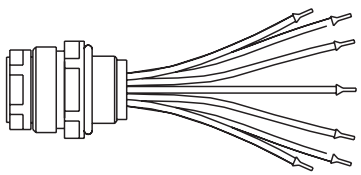


Technical data

Parameter	Value
Housing material	Metal
Number of pins	11 + PE
Nominal voltage	250 V≂
Level of contamination VDE 0110	2
Connection	Soldered connections
Max. conductor cross-section	1 mm²
Contact material / surface	CuZn 1 µ hard gold-plated
Clamping range for cable	12 - 14 mm
Degree of protection acc. to IEC 60529	IP67/inserted
Ambient temperature range	-20 °C ... +80 °C

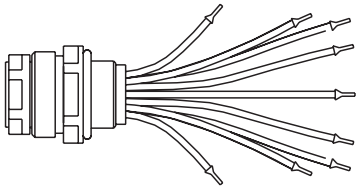
Appliance socket 7-pin
for series NG.../NZ... with plug connector SR6

Item	Order no.
Appliance socket 7-pin NG/NZ-SR6	**093342**



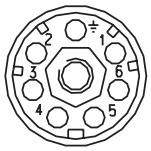
Appliance socket 12-pin
for series NG.../NZ... with plug connector SR11

Item	Order no.
Appliance socket 12-pin NZ-SR11	**093343**

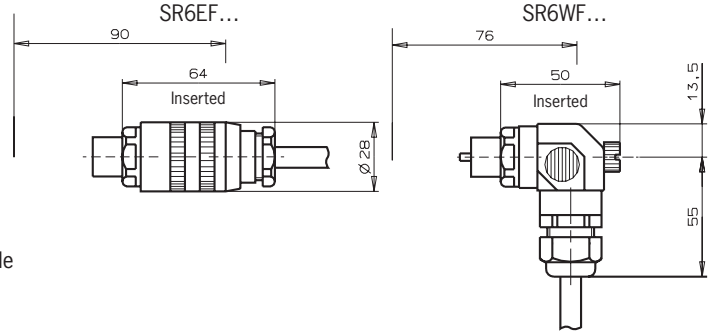


Plug connector SR6 (socket 6+PE) with / without connection cable

Socket pin	Wire number
1	1
2	2
3	3
4	4
5	5
6	6
⏚	7



View of connection side of 7-pin socket plug



Technical data

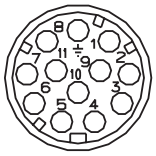
Parameter	Value
Housing material	Plastic
Number of pins	6 + PE
Nominal voltage	250 V≅
Degree of protection acc. to IEC 60529	IP65/inserted
Connection cable	PUR gray
Outer diameter	∅ 8 mm
Conductor cross-section	1.0 mm²

Ordering table

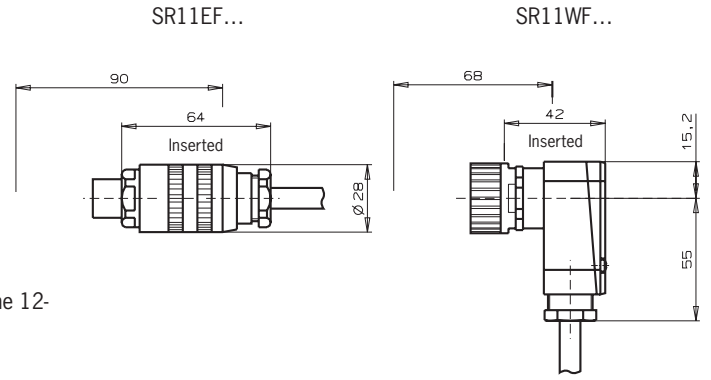
Plug version	Connection cable	Item	Order no.
Socket straight	Without	SR6EF	**013176**
	5 m	SR6EF-5000	**077632**
	10 m	SR6EF-10000	**077633**
	15 m	SR6EF-15000	**077634**
Socket angled	Without	SR6WF	**024999**
	5 m	SR6WF-5000	**077638**
	10 m	SR6WF-10000	**077639**
	15 m	SR6WF-15000	**077640**

Plug connector SR11 (socket 11+PE) with / without connection cable

Socket pin	Wire number
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
⏚	12



View on connection side of the 12-pin female connector



Technical data

Parameter	Value
Housing material	Plastic
Number of pins	11 + PE
Nominal voltage	50 V≅
Degree of protection acc. to IEC 60 529	IP65/inserted
Connection cable	PUR gray
Outer diameter	∅ 10.5 mm
Conductor cross-section	1.0 mm²

Ordering table

Plug version	Connection cable	Item	Order no.
Socket straight	Without	SR11EF	**070859**
	5 m	SR11EF-5000	**077629**
	10 m	SR11EF-10000	**077630**
	15 m	SR11EF-15000	**077631**
Socket angled	Without	SR11WF	**054773**
	5 m	SR11WF-5000	**077635**
	10 m	SR11WF-10000	**077636**
	15 m	SR11WF-15000	**077637**

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