

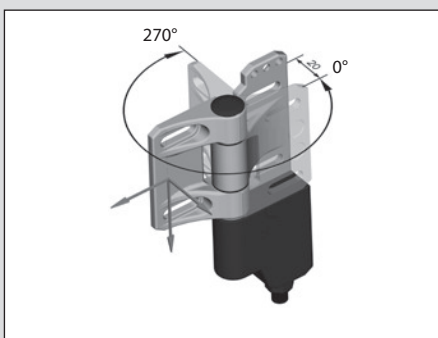
Safety Switches for Hinged Protective Equipment

Safety Hinge Switch – SHS3



With the SHS3 safety hinge switch we present the logical further development of the SHS series and a solution that makes it unnecessary to replace the safety hinge switch when equipment such as safety gates are damaged as the result of mechanical stress, such as after being bumped by a forklift truck for instance. Even after the switching point has been set, if need be, the user can now correct the hinge setting with the aid of the integrated fine adjustment system. The SHS3 hinge switch is reusable even when the entire system needs to be converted: With the aid of a change kit, the user can redefine the switching point without using the high protection rating of IP67 / IP69 K.

The SHS3 has a swivel range from 0° to 270°. The switching point is also freely selectable within this range.



The SHS3 hinge switch has virtually no limits in terms of its installation flexibility. Not only does the SHS3 enable front and interior installation, right-hinged or left-hinged mounting or freely selectable direction of electric connection, but thanks to the switching point which can be set in an angle range of 270°, this hinge switch can also be installed in places that were previously not possible.

Safe:

With suitable system layout, the switch can be used up to performance level e. Following variants are available:

- 2 positive opening safety contacts
- 2 positive opening safety contacts with additional normally-open signalling contact
- With integrated AS interface Safety at Work.

Flexible:

- Freely and repeatedly adjustable switching point
- Switching point freely adjustable by user over a range of 270°
- Uncomplicated re-adjustment even of set switching point by $\pm 1.5^\circ$ thanks to integrated fine adjustment system
- Slots for mounting on sections and welded structures

- In addition to the plug connection version, an SHS with fixed cable connection at the rear is also available
- Right and left hinged systems possible for optimum cable routing
- Mounting between sections while maintaining the required finger guard gap

Fast:

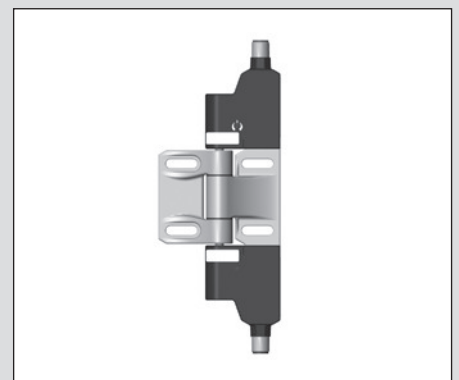
To connect the SHS3 even more efficiently, the two contacts are designed as normally-closed contacts with Ultra-Lock technology, thus enabling connection with an M12 cable.

Reliable:

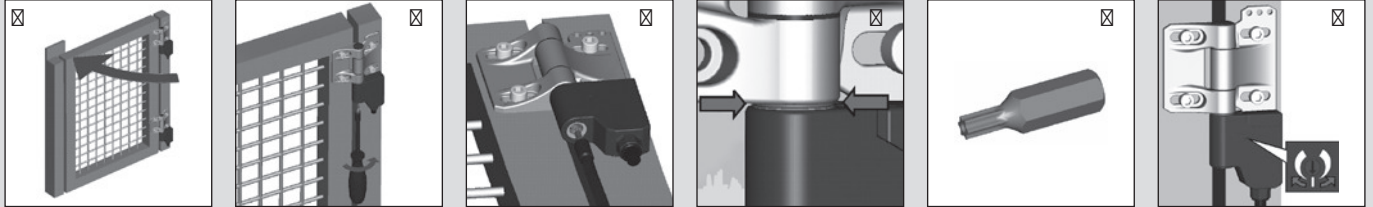
- The protection rating is IP67 / IP69 K
- The load-bearing hinge is made from stainless steel while the switching system is housed in a high quality plastic enclosure

Double hinge

Thanks to its two switching elements on one hinge, the BG (occupational health and safety)-approved variant of the SHS3 provides two independently adjustable switching points. This arrangement not only makes it possible to monitor the opening of a safety guard but also the direction of opening of swing doors.



SHS3 – Setting the switching point



On delivery, the SHS3 hinge switch allows for all possible settings. With your specific application you define and lock the safe status of the hinged safety equipment (the closed position) (Fig. 1).

The adjusting screw located in axial direction in the switching system is then tightened with the special bit supplied with the hinge switch. The arrangement of the adjusting screw makes it possible to adjust the switching point in all installation positions (Fig. 2+3)

After establishing a form-fit connection, a green ring in the gap between the stainless steel hinge and switch enclosure indicates that the switching point has been set correctly at a min. torque of 2 Nm/+10% (Fig. 4).

A red ring at this point additionally indicates wear, e.g. caused by abrasive substances. With the same special bit you can not only freely adjust the switching point to suit your application but you can also change the mounting arrangement of your safety equipment from right-hinged to left-hinged (Fig. 5).

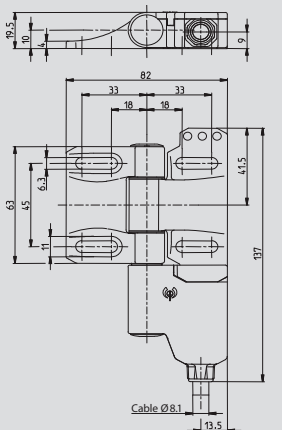
Fine adjustment

The set switching point can be subsequently varied by up to $\pm 1.5\%$ by turning the adjusting screw in the corresponding direction (Fig. 6).

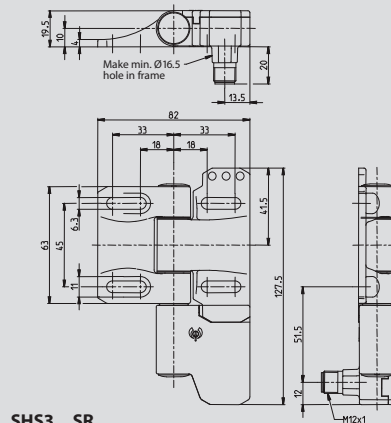
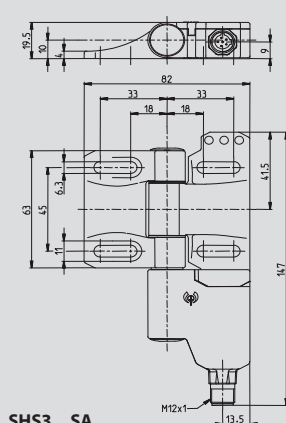
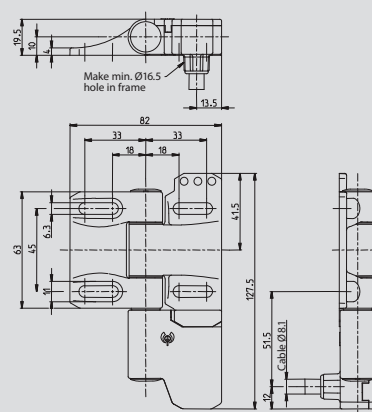
In many cases this fine adjustment makes it unnecessary to replace the switch or readjust the switching point due to mechanical deformation of the safety guard. The switching angle should generally be selected as small as possible.

Dimensioned drawings

SHS3...KA...



SHS3...KR...



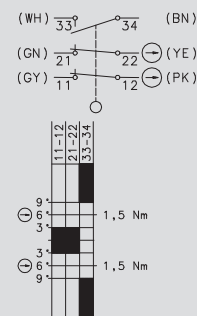
SHS3...SA...

SHS3...SR...

Switching diagram

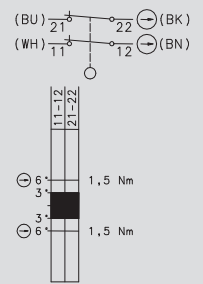
U15Z

2 NC contacts,
1 NO contacts (Zb)



A2Z

2 NC contacts (Zb)



Setting point freely selectable in range from 0°... 270° and 0°... 180°

Tolerances:

- Switching angle (opening) $\pm 1.5^\circ$
- Positive opening torque 10 %
- Positive opening angle $\pm 1.5^\circ$

Safety Switches for Hinged Protective Equipment

Product selection for die-cast zinc version

Article number	Designation	Switching contact	Max. switching voltage	Type of voltage	Type of connection and direction	Required cable coupling / type	Mounting
					radial	axial	
6019490050	SHS3Z-U15Z-KA5 R	2NC/1NO	230 V	AC/DC		Cable	Right
6019490051	SHS3Z-U15Z-KA5 L	2NC/1NO	230 V	AC/DC		Cable	Left
6019490052	SHS3Z-U15Z-KR5 R	2NC/1NO	230 V	AC/DC	Cable		Right
6019490053	SHS3Z-U15Z-KR5 L	2NC/1NO	230 V	AC/DC	Cable		Left
6019490054	SHS3Z-U15Z-SA R	2NC/1NO	230 V	AC/DC		M12 D	Right
6019490055	SHS3Z-U15Z-SA L	2NC/1NO	230 V	AC/DC		M12 D	Left
6019490056	SHS3Z-U15Z-SR R	2NC/1NO	230 V	AC/DC	M12	D	Right
6019490063	SHS3Z-U15Z-SR L	2NC/1NO	230 V	AC/DC	M12	D	Left
6019490057	SHS3Z-U1Z-SA R	1NC/1NO	230 V	AC/DC		M12 E	Right
6019490058	SHS3Z-U1Z-SA L	1NC/1NO	230 V	AC/DC		M12 E	Left
6019490059	SHS3Z-U1Z-SR R	1NC/1NO	230 V	AC/DC	M12	E	Right
6019490060	SHS3Z-A2Z-SA R	2NC	230 V	AC/DC		M12 E	Right
6019490061	SHS3Z-A2Z-SA L	2NC	230 V	AC/DC		M12 E	Left
6019490062	SHS3Z-A2Z-SR R	2NC	230 V	AC/DC	M12	E	Right
6019490049	SHS3Z-HINGE						

Product selection for stainless steel version

Article number	Designation	Switching contact	Max. switching voltage	Type of voltage	Type of connection and direction	Required cable coupling / type	Mounting
					radial	axial	
6019390023	SHS3-U15Z-KA 5 L	2NC/1NO	230 V	AC/DC		Cable	Left
6019390022	SHS3-U15Z-KA 5 R	2NC/1NO	230 V	AC/DC		Cable	Right
6019390025	SHS3-U15Z-KR 5 L	2NC/1NO	230 V	AC/DC	Cable		Left
6019390024	SHS3-U15Z-KR 5 R	2NC/1NO	230 V	AC/DC	Cable		Right
6019390035	SHS3-U15Z-SA L	2NC/1NO	230 V	AC/DC		M12 D	Left
6019390034	SHS3-U15Z-SA R	2NC/1NO	230 V	AC/DC		M12 D	Right
6019390037	SHS3-U15Z-SR L	2NC/1NO	230 V	AC/DC	M12	D	Left
6019390036	SHS3-U15Z-SR R	2NC/1NO	230 V	AC/DC	M12	D	Right
6019390040	SHS3-A2Z-SA-R	2NC	230 V	AC/DC		M12 E	Right
6019390041	SHS3-A2Z-SA-L	2NC	230 V	AC/DC		M12 E	Left
6019390044	SHS3-A2Z-SR-R	2NC	230 V	AC/DC	M12	E	Right
6019390042	SHS3-U1Z-SA-R	1NC/1NO	230 V	AC/DC		M12 E	Right
6019390043	SHS3-U1Z-SA-L	1NC/1NO	230 V	AC/DC		M12 E	Left
6019390045	SHS3-U1Z-SR-R	1NC/1NO	230 V	AC/DC	M12	E	Right
6019390046	SHS3-2-SA/2-SA	2 x 2NC	230 V	AC/DC		M12 2 x E	Both sides
6019390047	SHS3-5-SA/5-SA	2 x 1NC/1NO	230 V	AC/DC		M12 2 x E	Both sides
6019390048	SHS3-7-KA5/7-KA5	2 x 2NC/1NO	230 V	AC/DC		Cable	Both sides
6019390039	SHS3-7-SA/7-SA	2 x 2NC/1NO	230 V	AC/DC		M12 2 x D	Both sides
6019390038	SHS3-HINGE (blank hinge)						Both sides

Product selection for stainless steel version in IP69

Article number	Designation	Switching contact	Max. switching voltage	Type of voltage	Type of connection and direction	Required cable coupling / type	Mounting
					radial	axial	
6019390064	SHS3-U15Z-KA5-R-IPX	2NC/1NO	230 V	AC/DC		Cable	Right
6019390065	SHS3-U15Z-KA5-L-IPX	2NC/1NO	230 V	AC/DC		Cable	Left
6019390066	SHS3-U15Z-KR5-R-IPX	2NC/1NO	230 V	AC/DC	Cable		Right
6019390067	SHS3-U15Z-KR5-L-IPX	2NC/1NO	230 V	AC/DC	Cable		Left
6019390068	SHS3-7-KA5-IPX/7-KA5-IPX	2 x 2NC/1NO	230 V	AC/DC		Cable	Both sides

Technical data SHS3

Electrical data		
Rated insulation voltage	U_i max.	250 V
Rated operating voltage	U_e max.	230 V AC; 24 V DC
Conventional thermal current	I_{the}	5 A
Utilization category	U_e / I_e	AC-15, U_e / I_e 230 V / 3 A; DC-13 U_e / I_e 24 V/1A
Short-circuit protection		4 A gL/gG
Protection class		II, Insulated
Mechanical data		
Switch		PBT / Hinge G-X22 Cr Ni 17
Ambient temperature		-25°C to + 70°C (Connection cable installed)
Mechanical service life		10 ⁶ switching cycles
Switching frequency max.		max. 300 switching cycles/hour
Mounting		4 x M6 Screws DIN EN ISO 7984
B10d		2 mill.
Type of connection		Fixed connection cable, 6 x 0.75 mm ² , minimum bending radius = 60 mm
Weight		approx. 0.7 kg (cable variant)
Installation position		Any
Protection class		IP67 conforming to IEC/EN 60529
Switching angle		± 3° from setting point
Positive opening angle		± 6° + 2
Positive opening torque		1.5 Nm
Mechanical load		F_{R1} = max. 1800 N, F_{R2} = max. 750 N, F_A = max. 1800 N
Standards		
VDE 0660 T100, DIN EN 60947-1, IEC 60947-1		
VDE 0660 T200, DIN EN 60947-5-1, IEC 60947-5-1		