

Safety contact edges

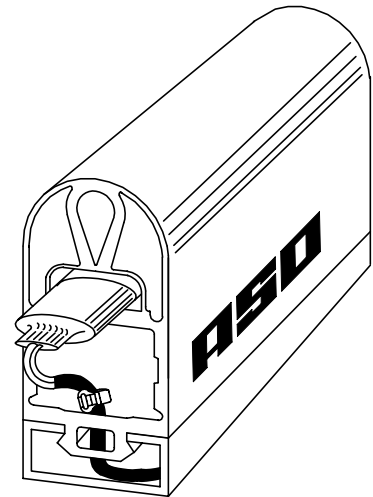
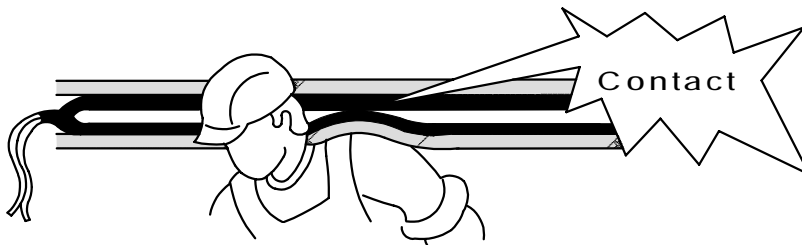
Safety contact edges are employed to guard closing edges at possible crushing or shearing points. They are used in gates, machines and handling facilities to protect people and equipment. They consist of an aluminium support profile, the contactor profile and the safety contact edge. The special shape of the EPDM or NBR rubber profiles protects the inside safety contact edge in the best possible way from damage and allows actuating angles to exceed 90°. Constant monitoring is achieved using the closed-circuit principle.

The last safety contact edge in a possible serial connection is fitted with a terminal resistor, which is continuously monitored by an electronic evaluation unit. This design allows the entire circuit to be monitored for shorts and wire breaks.

The guaranteed safety is documented by the various approval certificates in compliance with the German employers' liability insurance association, DIN and EN standards. The test certificates are available on special request.



**Baumuster
geprüft**

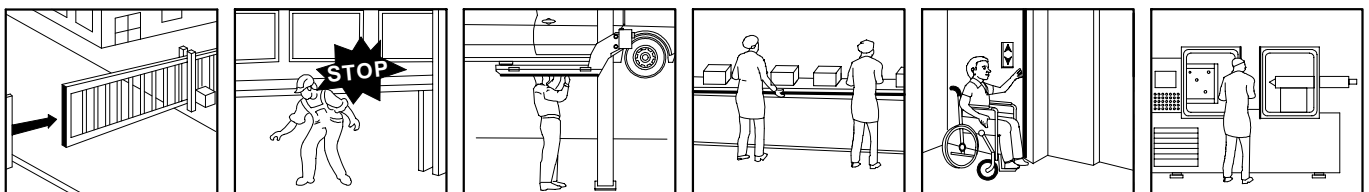
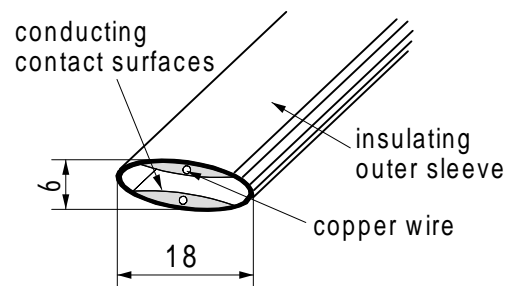


The design

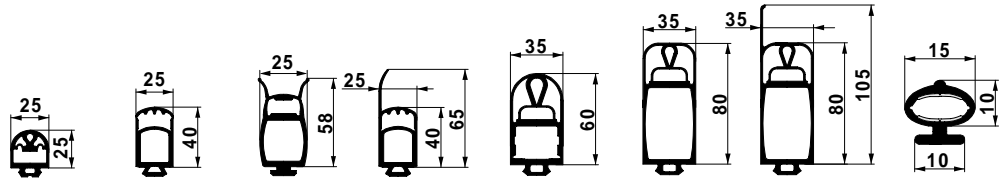
The safety contact strip - the actual contactor - is located inside the safety contact edge. This contact strip contains two double-wire cables which lead outwards as the connecting cables. To provide protection against damage and to enable the proper use, this contact strip is inserted into the switching chamber of a contactor profile. These different EPDM or NBR rubber profiles are then sealed with a permanently elastic special adhesive and end cap to make them watertight. The safety contact edge is then pressed into the aluminium C profile.

The SKS 18 safety contact strip

The SKS 18 safety contact strip is used as a switching element in safety contact edges. The material components and good geometry are major advantages compared with other connections. The absolutely homogeneous highly insulating outer EPDM material has been furnished with two inside conducting contact surfaces. This conducting elastomer contains two copper wires that permit low-resistance evaluation even in lengths exceeding 100 metres.

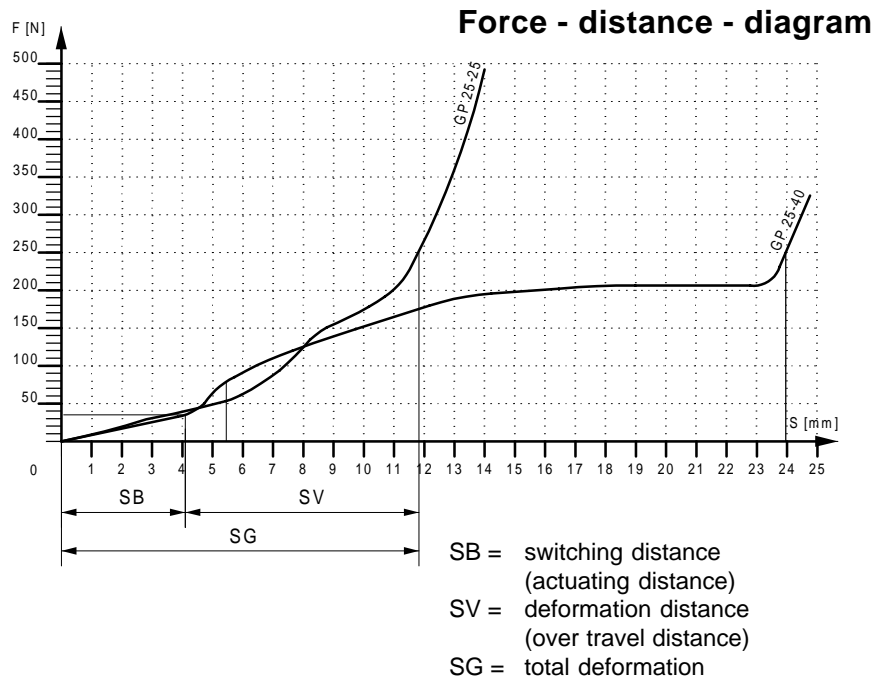


Technical data



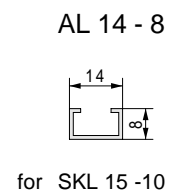
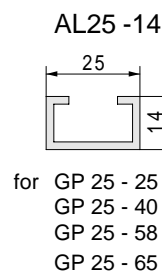
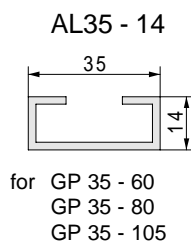
Type	(I)	GP25-25	GP25-40	GP 25-58	GP 25-65	GP 35 - 60	GP 35 - 80	GP 35 - 105	SKL 15 - 10
Approvals		current test certificates can be requested							
C-profile		AL 25 - 14	AL 25 - 14	AL 25 - 14	AL 25 - 14	AL 35 - 14	AL 35 - 14	AL 35 - 14	AL 14 - 8
Material		EPDM / NBR	EPDM / NBR	EPDM	EPDM / NBR	EPDM	EPDM	EPDM	EPDM
Available lengths [m]	(II)	25	25	25	25	25	25	25	25
Weight [Kg]		0,37	0,48	0,71	0,54	0,96	1,1	1,15	0,12
Weightt incl. C-profile[Kg]		0,69	0,8	1,03	0,86	1,38	1,52	1,57	0,15
Actuating force [N]	(III)	49	38	101	143	61	72	106	50
Actuating distance [mm]	(IV)	5,4	4,1	17,4	4	4,8	8,1	8,5	4
Total deformation[mm]		11,8	24	34,8	9,8	13	50,4	45,3	6
Reaction time [ms]	(V)	540	410	1740	400	480	810	1060	500
Actuating angl (max.) [°]	(VI)	2x45°	2x60°	2x45°	2x60°	2x60°	2x30°	2x30°	2x45°

Common features		
mech. force [N]	(V)	500
Actuating angl (DIN)[°]	(V)	2 x 20°
Switching block	(V)	10 ⁵
Operating temp. [°C]	(V)	-20° → + 55°
max. temp. range [°C]	(VI)	-25° → + 70°
Protection class		IP65
Electric capacity		24V 100mA
spez. resistance [Ohm/m]		0,6 Ohm
max. length of contact edge(s) [m]		200
max.cable length [m]		200
Cables		2 x 0,25mm ²
Material,cables		PVC / PU



Fasting profiles

- (I) the SKL 15 - 10 is a single-chamber profile
- (II) 10 m lengths on request
- (III) measured with test piece 80 mm diameter
- (IV) test speed 100 mm/s except GP25-25, GP25-40, GP25-65, GP35-60 10 mm/s
- (V) according to DIN 31006/2 (GS - BE -17)
- (VI) without consideration of DIN 31006/2 (GS - BE - 17)



Physical and chemical material properties

Features	NBR	EPDM	Resistance	NBR	EPDM	EPDM
Tear resistance	2	3	Water (dest.)	1	1-2	good resistance to ozone and weathering. Particularly suitable for aggressive chemicals.
Tear elongation	2	3	Acides (verd.)	3	1	NBR good resistance to oil and petrol.
Abrasion	2	3	Lyes (verd.)	2	2	ASTM American Society for Testing Materials
further tearing ability	3	3	Non oxid. acids	3	2	hc's hydrocarbon
Cold flexibility	3	2	oxidizing acids	5	4	Ester organic solvent
Heat resistance	2	2	ASTM-oil No.3	1	6	Ketone oxygen-containing solvent
Oxidation resistance	3	1	Vegetable oils	1	5	aliphatic e.g. petrols
UV-resistance	3	1	Ester solvent	5	2	aromatic e.g. benzene
Environmental resis.	3	1	Keton solvent	5	3	
Flame resistance	6	6	Aliphatic hc's	1	5	
Gas permeability	2	4	Aromatic hc's	2-3	6	
			Halogen hc's	5	6	
			Alcohols	5	1	
1 = very good — 6 = insufficient						

1 = no effects	for permanent contact
2 = few effects	with falling
3 = medium effects	requirements
4 = noticable effects	restricted use
5 = serve effects	short duration contact
6 = extreme effects	avoid contact

! This information is based on the findings by the material suppliers concerned. In spite of all the experience, unknown factors in practice can considerably restrict general statements so that the information provided here cannot be generally binding.

- We can gladly provide rubber samples for your own tests or we can test resistance properties for you.

Important installation and maintenance instructions

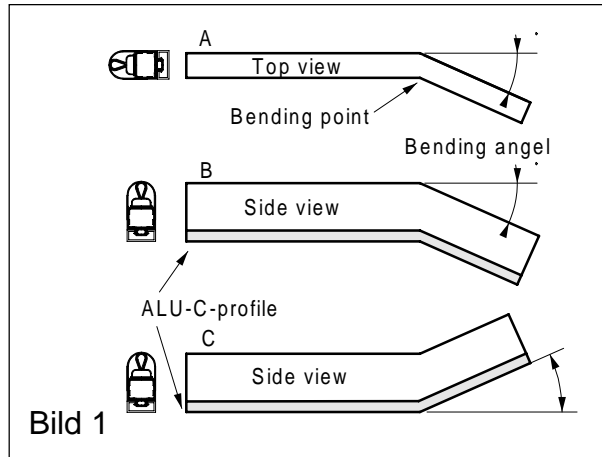
- Powered windows, doors, gates must be checked for safety by an expert before first-time use and subsequently at least once a year. The checks must be documented with written records (prEN 12978) (ZH 1/494).
- In the event of low switching rates, actuate the safety contact edge at least once a month to check that it is in working order.
- The edge should be installed at a sufficient distance from strong sources of heat.
- Do not use aggressive cleaning agents; soap suds are recommended.
- The feed line to the contact edge should not be exposed to high electromagnetic interference. Use shielded cables if necessary.
- Avoid cable lengths exceeding 50 meters.
- The switching device should be located as close as possible to the safety contact edge in order to keep the wires to the contactor short.
- The safety contact edges fulfil the requirements of EN 1760-2 „Safety of machinery - Pressure sensitive protecting devices“ and the requirements of prEn 12978 "Safety devices for power operated doors - Requirements and test methods"
- Test certificates only apply for safety contact edges procured directly from the manufacturer. Self-completed and bent contact edges are not subject to the tests according to EN 1760-2 (GS - BE - 17).
- Depending on the switching device used, the system complies with Safety Category 2 or 3 of En 954-1. Make sure that following control components are at least in the same category.
- We reserve the right to make technical changes and design improvements.

Bending angles and radii

The aluminium C-profile must be prepared at the factory if it has to be bent.

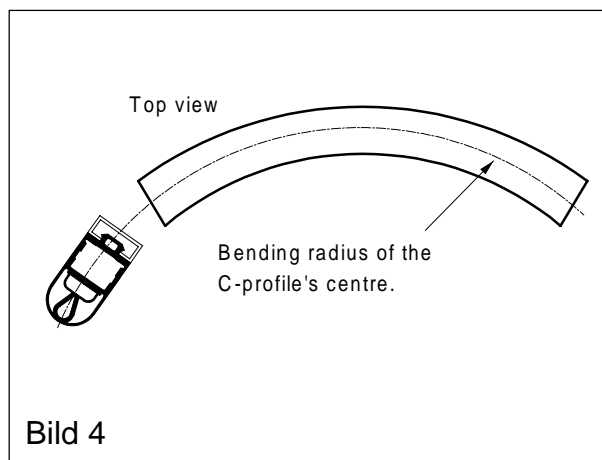
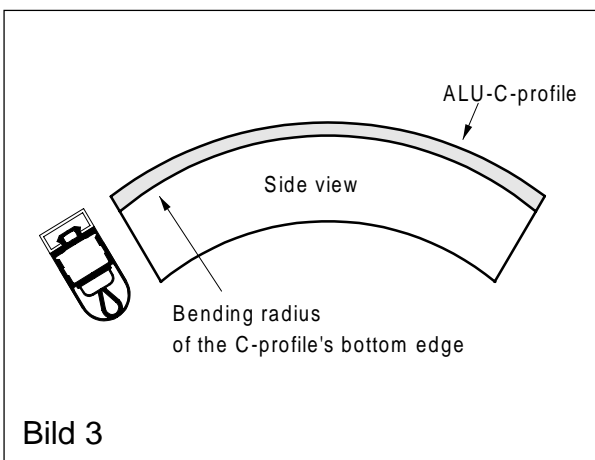
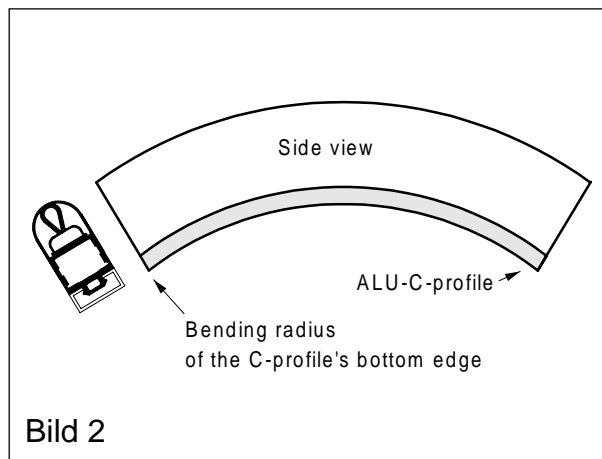
Bending angles for different assembly arrangements**

Typ	Fig. 1		
	A	B	C
GP 25 - 25 K/N	35°	20°	20°
GP 25 - 40 K/N	30°	15°	15°
GP 25 - 65 KL/NL*	30°	15°	15°
GP 25 - 58 KL*	35°	15°	20°
GP 35 - 60 K	20°	15°	10°
GP 35 - 80 K	15°	10°	10°
GP 35 - 105 KL*	15°	10°	10°
SKL 15 - 10	45°	20°	10°



Bending radii for different assembly arrangements**

Typ	Fig. 2	Fig. 3	Fig. 4
GP 25 - 25 K/N	300	400	200
GP 25 - 40 K/N	500	700	300
GP 25 - 65 KL/NL*	500	700	300
GP 25 - 58 KL*	700	800	300
GP 35 - 60 K	600	700	500
GP 35 - 80 K	900	1000	500
GP 35 - 105 KL*	1000	1100	500
SKS18	400	---	200
SKL 15 - 10	500	400	130

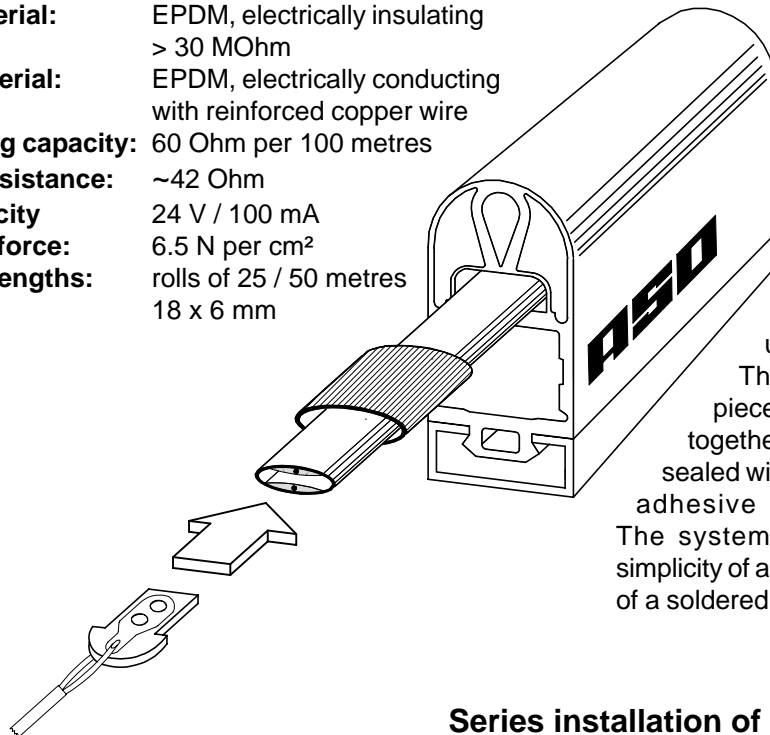


* By bending the safety contact edges the sealing lip becomes compressed and corrugated.

** Bending angle and radii are not part of the tests complying with DIN 31006/2 and GS-BE 17

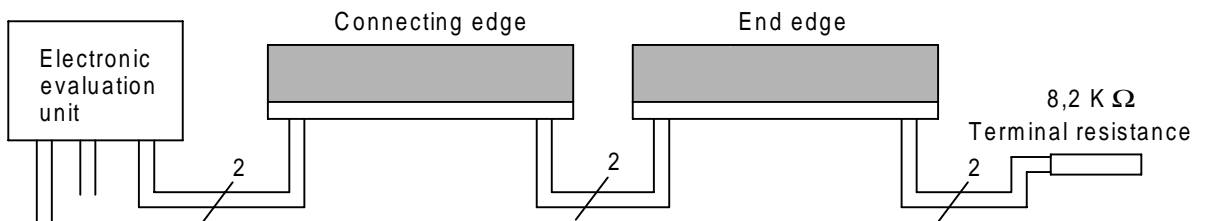
Installing the SKS18

- Outer material:** EPDM, electrically insulating > 30 MOhm
- Inside material:** EPDM, electrically conducting with reinforced copper wire
- Conducting capacity:** 60 Ohm per 100 metres
- Contact resistance:** ~42 Ohm
- Max. capacity:** 24 V / 100 mA
- Actuating force:** 6.5 N per cm²
- Available lengths:** rolls of 25 / 50 metres
- Size:** 18 x 6 mm



The ASO safety contact edges can be easily installed by the users themselves. The pre-finished connecting pieces are inserted and pressed together. Then the inserted end is sealed with a shrink hose and special adhesive to make it watertight. The system therefore combines the simplicity of a connector with the reliability of a soldered connection.

Series installation of safety contact edges

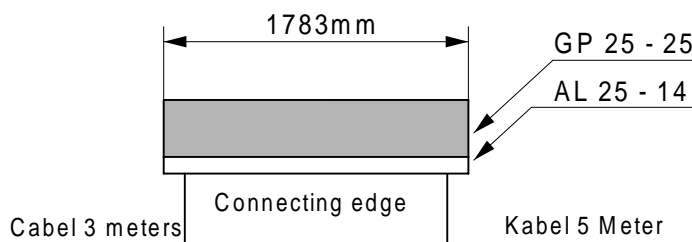


Type code and ordering information

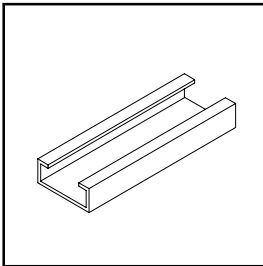
- SKL** Safety Contact Edge
- 35** Profile width. depending on the selected rubber profile
- 105** Profile height. depending on the selected rubber profile
- K** Material type. K=EPDM N=NBR B=fire resistant
- L** with sealing lip. when „L“ is stated
- 2** Type of edge 2=connecting edge 3=end edge with 8.2 KOhm resistance
- M** including alumin. C-profile. . . when „M“ is stated

Ordering example: SKL 25 - 25 K 2 M L =1,783 mm cable lengths 3 and 5 metres

Safety contact edge 1,783 mm long, complete with aluminium C-profile, as connecting edge, with two cable exits of differing lengths (standard length is 2 metres).

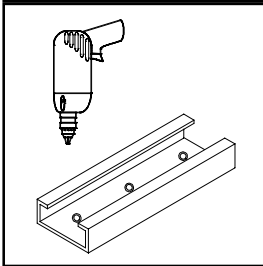


Montage

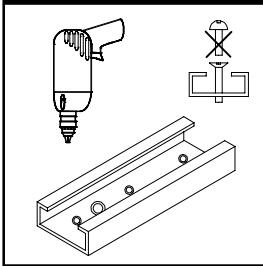


Safety contact edges may only be installed by authorized persons.

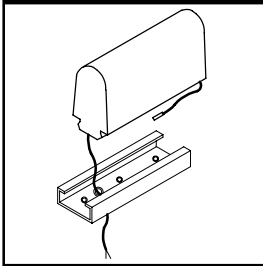
To facilitate installation of the safety contact edge, the aluminium C-profile may only be attached to even surfaces. If the safety contact edge is mounted in a bend, the radius must not be less than the specified minimum.



The aluminium C-profile must be fitted with countersunk screws or rivets. A diameter of 4 mm is sufficient. The holes of 4.5 mm must be evenly distributed over the entire length of the C-profile with the distances between them not exceeding 300 mm. They must be countersunk according to the screw size.

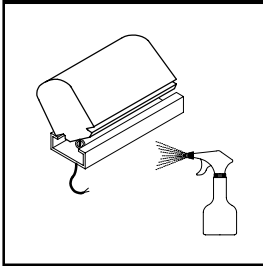


Pan- or round-head screws should not be used as otherwise the connecting wire in the aluminium C-profile will be damaged.



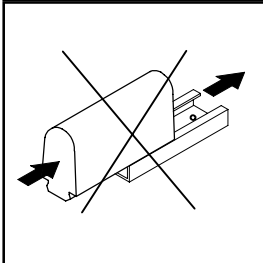
In order to feed the connecting wire through the C-profile, an 8 mm hole has to be drilled in the correct place. Carefully remove the burr from the hole edges and insert the supplied rubber collar.

The connecting wire and the 30 cm cable end with integrated terminal resistance can be placed in the aluminium C-profile.



In order to make fitting the safety contact edge easier, the aluminium C-profile and the safety contact edge should be sprayed with soap suds.

Then one side of the rubber profile must be inserted into the C-profile and then the whole profile must be pressed in. Once the soap suds have evaporated, the contact edge is firmly fitted in the C-profile. In order to prevent subsequent slipping of the safety contact edge, talcum, oils or similar permanently lubricating agents must never be used!



Pulling or pushing the safety contact edge into the aluminium C-profile can cause damage to the contact edge and should be avoided at all costs.

Any other methods of fastening are only permitted on prior agreement with the manufacturer !