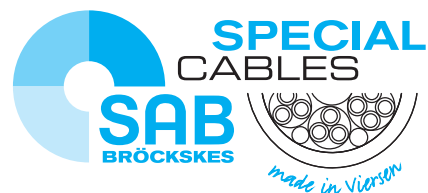


SPECIAL CABLES
TEMPERATURE MEASUREMENT · CABLE HARNESSING



LIFT

CONTROL CABLES



WHO WE ARE

A SURVEY

70 years of experience in temperature measurement and control technique as well as in cable production have made a one man business a company with nearly 500 staff members. Our strength is not only the production of standard products but also the development and manufacturing of special products acc. to customers' specifications. Every year we manufacture more than 1500 special products on our customers' request. Every single product is a challenge for our technical team. We at **SAB** Bröckskes see ourselves as manufacturer and service provider - in the sense of real partnership and customer oriented work.

The quality of our products is known in more than 40 countries worldwide. Our customers have tested our products intensively and confirm that they have a longer service life than others. In all product ranges we are certified acc. to ISO 9001:2015. Besides we established an environmental management system for our company acc. to ISO 14001:2015, an occupational health and safety management acc. to NLF/ILO-OSH 2001 and OHSAS 18001:2007 as well as an energy management system acc. to DIN EN ISO 50001:2011. And our future slogan is:

WE GO FORWARD!

FOUNDED:	1947 by Peter Bröckskes sen. an independent, medium-sized company.
CEO:	Peter Bröckskes and Sabine Bröckskes-Wetten
PLANT/LOCATION:	In Viersen (Lower Rhine) 110.000 m ² company site. Own manufacturing from copper conductor to outer sheath. VDE proved burnchamber and laboratory within the company.
EMPLOYEES/WORKERS:	Approx. 420 at the plant in Viersen, 500 worldwide
YEARLY SALES:	Approx. 95 Mio. € worldwide
PRODUCTS:	Special Cables Temperature Measurement Cable Harnessing

CERTIFICATES AND APPROVALS:



Quality management system acc. to ISO 9001:2015
for every manufacturing field

Environmental management system acc. to ISO 14001:2015

Occupational health and safety management
acc. to NLF/ILO-OSH 2001 and OHSAS 18001:2007

Energy management system acc. to DIN EN ISO 50001:2011

WE ARE AT YOUR DISPOSAL, WHENEVER YOU NEED US ...

From our central stock in Viersen-Süchteln or our external stocks, we supply standard lengths as well as special dimensions, often within 24 hours. It is our strength to be at different places at the same time. This shows also our wide product range. Being always ready to deliver our products of constant quality is our strength at **SAB BRÖCKSKES**. Challenge, obligation - but also guarantee at the same time. This is your advantage - we are present whenever you need our assistance.

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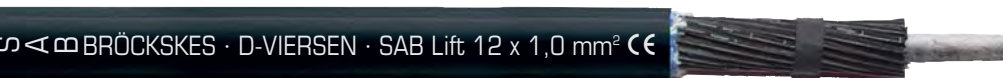
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Internet: <http://www.fabritius.be>

SAB Lift Lift control cable with sisal cord as suspension unit



Marking for SAB Lift 37901210:

SAB BRÖCKSKES · D-VIERSEN · SAB Lift 12 x 1,0 mm² CE

Construction:

Conductor:	bare copper strands acc. to IEC 60228, EN 60228, DIN VDE 0295, class 6
Insulation:	special PVC
Colour code:	black cores with consecutive numbers acc. to EN 50334 and green-yellow earth wire
Strain relief:	sisal cord
Stranding:	sisal cord as core, optimized twisting of the conductors in layers
Wrapping:	non-woven tape on each layer with overlap wrapping
Supporting braid:	special torsion protecting net
Sheath material:	special PVC
Sheath colour:	black (RAL 9005)

Technical data:

Nominal voltage:	U ₀ /U 300/500 V
Testing voltage:	conductor/conductor 2000 V
Min. bending radius:	15 x d
Temperature range	
fixed laying:	- 30/+70 °C
flexible application:	- 15/+70 °C
Fire performance:	flame retardant and self-extinguishing acc. to IEC 60322-1-2 and EN 60332-1-2
Suspended height:	up to 60 m
Absence of harmful substances:	acc. to RoHS directive of the European Union

Product advantages:

- long service life
- elevated economic efficiency
- flame retardant and self-extinguishing

item no.	no. of cores x cross section	medium outer-ø	copper figure	cable weight	ohmic resistance at 20 °C
	n x mm²	mm	kg/km	≈ kg/km	max. Ω/km
37900510	5 x 1,00	11,1	48,0	150	19,5
37900710	7 x 1,00	11,6	67,2	179	19,5
37900910	9 x 1,00	13,0	86,4	226	19,5
37901210	12 x 1,00	15,4	115,2	308	19,5
37901810	18 x 1,00	20,7	172,8	480	19,5
37902410	24 x 1,00	20,7	230,4	549	19,5
37903010	30 x 1,00	21,9	288,0	653	19,5
37901215	12 x 1,50	18,2	172,8	419	19,5
37905215	52 x 1,50	34,3	748,8	1712	19,5
37901225	12 x 2,50	23,4	288,0	688	19,5

Further dimensions or special constructions on request.



Possible on request!

with total copper braiding
with different conductor
and sheath colours

Note: Please pay attention to the installation guidelines!

SAB Lift ST Lift control cable with steel center as suspension unit



BRÖCKSKES · D-VIERSEN · SAB Lift ST 12 x 1,0 mm² CE

Marking for SABIX Lift 37911210:
SAB BRÖCKSKES · D-VIERSEN · SAB Lift ST 12 x 1,0 mm² CE

Construction:

Conductor:	bare copper strands acc. to IEC 60228, EN 60228, DIN VDE 0295, class 6
Insulation:	special PVC
Colour code:	black cores with consecutive numbers acc. to EN 50334 and green-yellow earth wire
Strain relief:	steel rope
Stranding:	steel rope as core, optimized twisting of conductors in layers
Wrapping:	non-woven tape on each layer with overlap wrapping
Supporting braid:	special torsion protecting net
Sheath material:	special PVC
Sheath colour:	black (RAL 9005)

Technical data:

Nominal voltage:	U ₀ /U 300/500 V
Testing voltage:	conductor/conductor 2000 V
Min. bending radius:	15 x d
Temperature range	
fixed laying:	-30/+70 °C
flexible application:	-15/+70 °C
Fire performance:	flame retardant and self-extinguishing acc. to IEC 60322-1-2 and EN 60332-1-2
Suspended height:	up to 200 m
Absence of harmful substances:	acc. to RoHS directive of the European Union

Product advantages:

- highest hanging lengths
- long service life
- flame retardant and self-extinguishing

item no.	no. of cores x cross section	medium outer-ø	copper figure	cable weight	ohmic resistance at 20 °C
	n x mm ²	mm	kg/km	≈ kg/km	max. Ω/km
37912407	24 x 0,75	17,1	172,8	417	19,5
37910510	5 x 1,00	9,3	48,0	133	19,5
37910710	7 x 1,00	10,4	67,2	174	19,5
37910910	9 x 1,00	11,9	86,4	266	19,5
37911210	12 x 1,00	14,8	115,2	375	19,5
37911810	18 x 1,00	17,4	172,8	460	19,5
37912410	24 x 1,00	17,6	230,4	536	19,5
37913010	30 x 1,00	20,6	172,8	471	19,5

Further dimensions or special constructions on request.



Possible on request!

with total copper braiding
with different conductor
and sheath colours

Note: Please pay attention to the installation guidelines!

SABIX® Lift Lift control cable with sisal cord as suspension unit



Marking for SABIX Lift ST 53902410:

SAB BRÖCKSKES · D-VIERSEN · SABIX Lift 24 x 1,0 mm² CE

Our halogen-free lift cables are used whenever there are highest safety requirements, especially in public buildings and institutions as for example department stores, hospitals, railway and airport institutions, etc.

Construction:

Conductor:	bare copper strands acc. to IEC 60228, EN 60228, DIN VDE 0295, class 6
Insulation:	special SABIX®
Colour code:	black cores with consecutive numbers acc. to EN 50334 and green-yellow earth wire
Strain relief:	sisal cord
Stranding:	sisal cord as core, optimized twisting of the conductors in layers
Wrapping:	non-woven tape on each layer with overlap wrapping
Torsion protecting:	special braid
Sheath material:	thermoplastic special elastomer
Sheath colour:	black (RAL 9005)

Technical data:

Nominal voltage:	Uo/U 300/500 V
Testing voltage:	conductor/conductor 2000 V
Min. bending radius:	15 x d
Temperature range	
fixed laying:	-40/+90 °C
flexible application:	-30/+90 °C
Halogen-free:	acc. to DIN VDE 0472 part 815 and IEC 60754-1
Fire performance:	no flame propagation acc. to IEC 60332 + EN 60332 category C resp. D
Suspended height:	up to 60 m
Absence of harmful substances:	acc. to RoHS directive of the European Union

Product advantages:

- halogen-free
- long service life
- elevated economic efficiency
- flame retardant and self-extinguishing
- EAC approval

item no.	no. of cores x cross section n x mm²	medium outer-ø mm	copper figure kg/km	cable weight ≈ kg/km	ohmic resistance at 20 °C max. Ω/km
53900710	5 x 1,00	10,7	48,0	132	19,5
53900710	7 x 1,00	11,2	67,2	160	19,5
53900910	9 x 1,00	12,4	86,4	199	19,5
53901210	12 x 1,00	14,4	115,2	261	19,5
53901810	18 x 1,00	19,9	172,8	421	19,5
53902410	24 x 1,00	19,9	230,4	491	19,5
53903010	30 x 1,00	20,9	288,0	581	19,5

Further dimensions or special constructions on request.



Possible on request!
with total copper braiding
with different conductor
and sheath colours

Note: Please pay attention to the installation guidelines!

SABIX® Lift ST Lift control cable with steel center as suspension unit



BRÖCKSKES · D-VIERSEN · SABIX Lift ST 30 x 1,0 mm²

Marking for SABIX Lift ST 53913010:
SAB BRÖCKSKES · D-VIERSEN · SABIX Lift ST 30 x 1,0 mm² CE

Our halogen-free lift cables are used whenever there are highest safety requirements, especially in public buildings and institutions as for example department stores, hospitals, railway and airport institutions, etc.

Construction:

Conductor:	bare copper strands acc. to IEC 60228, EN 60228, DIN VDE 0295, class 6
Insulation:	special SABIX®
Colour code:	black cores with consecutive numbers acc. to EN 50334 and green-yellow earth wire
Strain relief:	steel rope
Stranding:	steel rope as core, optimized twisting of conductors in layers
Wrapping:	non-woven tape on each layer with overlap wrapping
Torsion protecting:	special braid
Sheath material:	thermoplastic special elastomer
Sheath colour:	black (RAL 9005)

Technical data:

Nominal voltage:	U ₀ /U 300/500 V
Testing voltage:	conductor/conductor 2000 V
Min. bending radius:	15 x d
Temperature range	
fixed laying:	-40/+90 °C
flexible application:	-30/+90 °C
Halogen-free:	acc. to DIN VDE 0472 part 815 and IEC 60754-1
Fire performance:	no flame propagation acc. to IEC 60332 + EN 60332 category c resp. D
Suspended height:	up to 200 m
Absence of harmful substances:	acc. to RoHS directive of the European Union

Product advantages:

- halogen-free
- highest hanging lengths
- long service life
- flame retardant and self-extinguishing
- EAC approval

item no.	no. of cores x cross section n x mm²	medium outer-ø mm	copper figure kg/km	cable weight ≈ kg/km	ohmic resistance at 20 °C max. Ω/km
53912410	5 x 1,00	8,7	48,0	115	19,5
53910710	7 x 1,00	9,8	67,2	153	19,5
53910910	9 x 1,00	11,5	86,4	246	19,5
53911210	12 x 1,00	14,0	115,2	338	19,5
53911810	18 x 1,00	16,6	172,8	415	19,5
53912410	24 x 1,00	16,8	230,4	494	19,5
53913010	30 x 1,00	19,8	288,0	673	19,5

Further dimensions or special constructions on request.



Possible on request!
with total copper braiding
with different conductor
and sheath colours

Note: Please pay attention to the installation guidelines!

PVC Flat cables · H05VVH6-F



ES · D-VIERSEN · <VDE> <HAR> H05VVH6-F 24G0,75 mm² CE



Marking for PVC Flat cable 02142407:

SAB BRÖCKSKES · D-VIERSEN · <VDE> <HAR> H05VVH6-F 24G0,75 mm² CE

Construction:

Conductor:	bare copper strands acc. to IEC 60228, EN 60228, VDE 0295, class 5
Insulation:	PVC
Colour code:	black with white numbers and green-yellow earth wire
Stranding:	cores parallel side by side in groups
Sheath material:	PVC
Sheath colour:	black (RAL 9005)

Technical data:

Nominal voltage:	U ₀ /U 300/500 V
Min. bending radius:	10 x high
Temperature range	
fixed laying:	-40 °C/+70 °C
flexible application:	0 °C/+70 °C
Fire performance:	flame retardant and self-extinguishing acc. to IEC 60332-1-2 + EN 60332-1-2
Oil resistance:	acc. to internal standard
Absence of harmful substances:	acc. to RoHS directive of the European Union

Outstanding features:

- smaller bending radius in contrast to round cables
- EAC approval

Application:

- for example in elevators up to 35 m freely suspended or in fitted vehicles for cranes and hoisting systems with one level bending.

item no.	no. of cores x cross section n x mm²	largest single wire ø mm	dimension width x height approx. mm	copper figure kg/km	cable weight ≈ kg/km
02140607	6 x 0,75	0,21	17,8 x 4,2	43,2	137
02140907	9 x 0,75	0,21	25,8 x 4,2	64,8	200
02141207	12 x 0,75	0,21	39,1 x 4,2	86,4	260
02141607	16 x 0,75	0,21	43,5 x 4,2	115,2	342
02141807	18 x 0,75	0,21	48,4 x 4,2	129,6	382
02142007	20 x 0,75	0,21	53,9 x 4,2	144,0	425
02142407	24 x 0,75	0,21	64,3 x 4,2	172,8	509
02140410	4 x 1,0	0,21	12,7 x 4,3	38,4	105
02140510	5 x 1,0	0,21	15,3 x 4,3	48,0	129
02140610	6 x 1,0	0,21	18,4 x 4,3	57,6	154
02140910	9 x 1,0	0,21	26,7 x 4,3	86,4	225
02141210	12 x 1,0	0,21	34,3 x 4,3	115,2	292
02141610	16 x 1,0	0,21	45,1 x 4,3	153,6	386
02141810	18 x 1,0	0,21	50,2 x 4,3	172,8	430
02142010	20 x 1,0	0,21	55,9 x 4,3	192,0	479
02142410	24 x 1,0	0,21	66,7 x 4,3	230,4	572

Other dimensions and colours are possible on request.

Note: Please pay attention to the installation guidelines!

PVC Flat cables · H07VVH6-F



BRÖCKSKES · D-VIERSEN · <VDE> <HAR> H07VVH6-F 12G1,5 mm² C

Marking for PVC Flat cable 02491215:

SAB BRÖCKSKES · D-VIERSEN · <VDE> <HAR> H07VVH6-F 12 x 1,5 mm² CE

Construction:

Conductor:	bare copper strands acc. to IEC 60228, EN 60228, VDE 0295, class 5
Insulation:	PVC
Colour code:	coloured acc. to HD 308 (VDE 0293 part 308); black cores with consecutive numbers acc. to EN 50334 from 6 cores; green-yellow earth wire from 3 cores
Stranding:	cores parallel side by side in groups
Sheath material:	PVC
Sheath colour:	black (RAL 9005)

Technical data:

Nominal voltage:	U ₀ /U 450/750 V
Min. bending radius:	10 x high
Temperature range	
fixed laying:	-40 °C/+70 °C
flexible application:	0 °C/+70 °C
Fire performance:	flame retardant and self-extinguishing acc. to IEC 60332-1-2 + EN 60332-1-2
Oil resistance:	acc. to internal standard
Absence of harmful substances:	acc. to RoHS directive of the European Union

Outstanding features:

- smaller bending radius in contrast to round cables
- EAC approval

Application:

- for example in elevators up to 35 m freely suspended or in fitted vehicles for cranes and hoisting systems with one level bending.

item no.	no. of cores x cross section n x mm ²	largest single wire ø mm	dimension width x height approx. mm	copper figure kg/km	cable weight ≈ kg/km
02490415	4 x 1,50	0,26	15,3 x 5,2	57,6	145
02490715	7 x 1,50	0,26	25,6 x 5,2	100,8	250
02490815	8 x 1,50	0,26	28,6 x 5,2	115,2	283
02491215	12 x 1,50	0,26	41,9 x 5,2	172,8	421
02490425	4 x 2,50	0,26	18,3 x 5,8	96,0	206
02491225	12 x 2,50	0,26	50,7 x 5,8	288,0	604
02491240	12 x 4,00	0,31	57,4 x 6,8	460,8	858
02490460	4 x 6,00	0,31	22,7 x 7,3	230,4	377
02490560	5 x 6,00	0,31	27,5 x 7,3	288,0	439
02490570	5 x 10,0	0,41	35,7 x 9,3	480,0	807
02490490	4 x 25,0	0,41	42,5 x 12,9	960,0	1407

Other dimensions and colours are possible on request.

Note: Please pay attention to the installation guidelines!

Installation instructions of lift control cables **SAB Lift, SAB Lift ST, SABIX® Lift and SABIX® Lift ST**

Application and use in buildings

1. In case that the cables are placed in shafts, two different methods are recommended:
 - *Placement of cables from machine room*
The placement of the cables from the machine room has to be executed in a way that the cable is led into the shaft in winding direction. In order to avoid upsetting deformation, it is advisable that a second person is in the pit and enables a perfect installation with the help of a cord.
 - *Placement of the cables from the shank pit or the first stop*
Herewith, the winding direction for unwinding has to be observed.
Note: With both methods the pulling-in of the cables has to be done with a minimum of bend. In order to avoid torsion or buckling, the placement of the cable has to be done carefully.
2. In order to guarantee a torsion-free installation, the cable has to be suspended freely for 12 h in the shaft before being finally fixed. The lower cable end is not allowed to lie on or to be in contact with the pit sole. If the cable is longer, the lower cable end (min. 0.3 m above the sole) must be looped or put up with a weight. Any material can be used as weight but it should not come to more than 15 % of the cable weight. After having been suspended the cables shall be marked parallel towards the shaft wall and on the same side. Thus a twist-free fixing of the cable is afterwards possible.

Hanging up of the cable

1. If the cables are pulled into the shaft, they have to be unwound tangentially from the drum. An axial unwinding from the drum causes torsions of the cable and finally can lead to operational disturbances.
2. The free space between lift cabin and shaft bottom shall be big enough and has to be fully used for the loop height of the cable. The cables have to be suspended at the lift cabin in the course of the natural bow.
3. A natural hanging diameter of the loop has to be guaranteed.

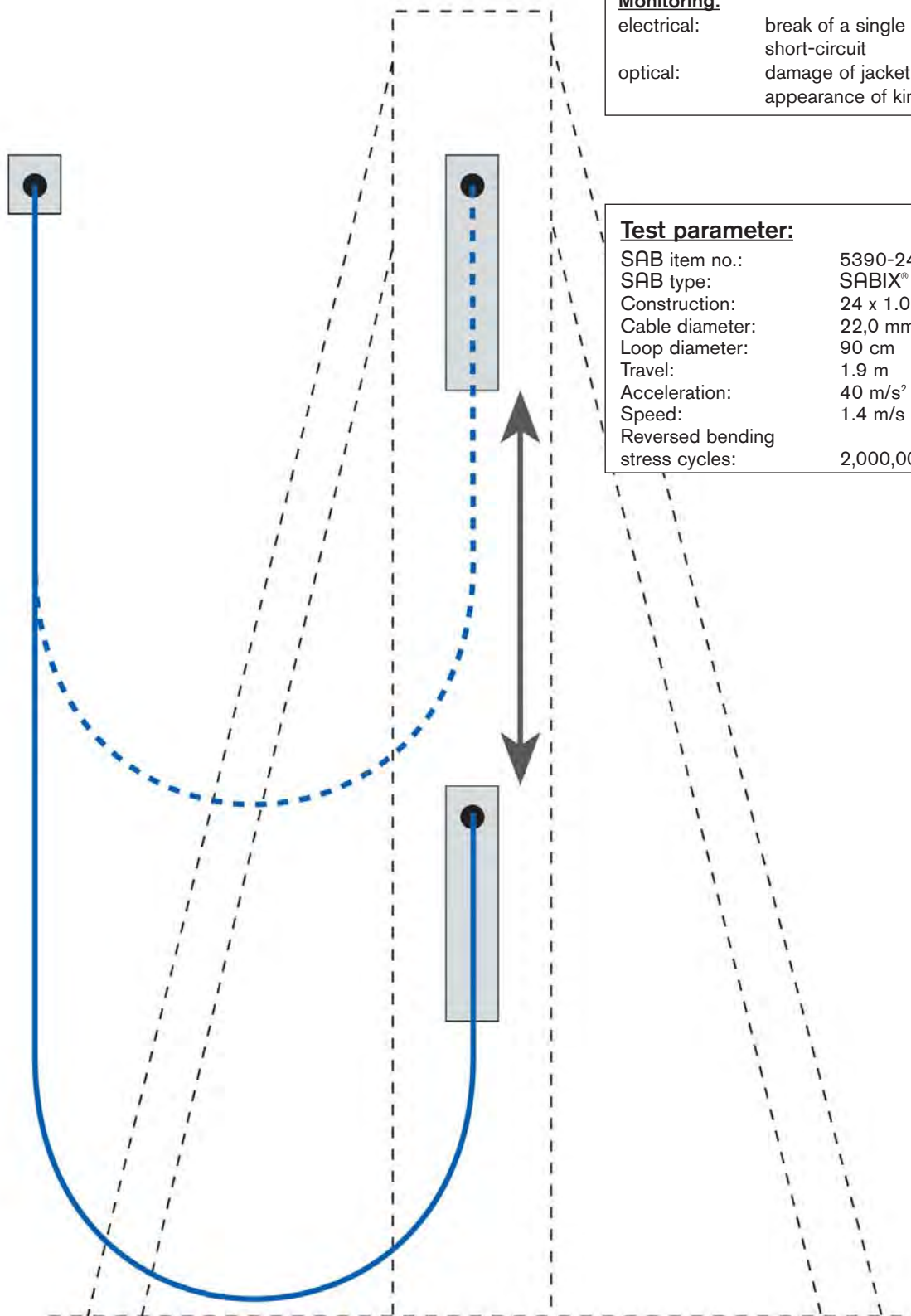
Fixing of the cables

1. At any rate large-surface clamps have to be used for the fixing of the cable. The sheath shall not be squeezed, the clamp must be seated firmly on a large surface. There should be at least one suspension at the shaft head and at the lift cabin. Additionally the carrying element has to be supported separately (at both cable ends). In case that the suspended cable length is more than 40 m, an additional suspension should be in the middle of the shaft.
2. The fixing point at the shaft wall has to be at least 2 m above the middle of the travel. At the same time the fixing points of the cables at the lift or at the shaft wall have to be arranged rectangular towards the runoff plane of the cable and with the same distance parallel to the rail axis.
3. With unsteady running behaviour that means the cable moves out of the fall line during operation, the control cable has to be slightly twisted at one of the fixing points until a perfect run of the cable is given.
Note: Additionally the run of the cable has to be controlled again after the initial operation of the lift.
4. If the lift installation requires the installation of several control cables, it is recommended due to operational reasons that the individual cables have to be hung up in a way that the different loops have a level difference of approx. 15 cm (hang up step-by-step).
5. The cables are not allowed to be tied up over their suspended length, as otherwise their free run is impeded.

General notes

1. The cables are only allowed to be applied with temperature ranges mentioned in their specifications.
2. The inner bending radius is not allowed to be lower than the cable diameter mentioned in the specification. Furthermore, the given bending radius of the cable (equally mentioned in the cable specification) has to be kept.
3. The max. hang up length is dependant on the corresponding carrying element in the cable (mentioned in the cable specification) and is not allowed to be exceeded.
4. In order to reach a perfect and long service life of the lift control cables, they have to be treated and installed with the utmost care.

schematic view

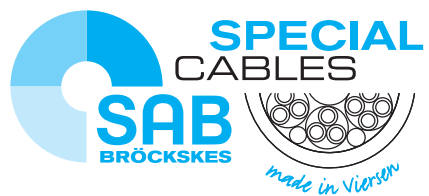


Monitoring:

electrical:	break of a single core short-circuit
optical:	damage of jacket, appearance of kinks

Test parameter:

SAB item no.:	5390-2410
SAB type:	SABIX® Lift
Construction:	24 x 1.0 mm ²
Cable diameter:	22,0 mm
Loop diameter:	90 cm
Travel:	1.9 m
Acceleration:	40 m/s ²
Speed:	1.4 m/s
Reversed bending stress cycles:	2,000,000



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