



Manual

300.000.155 | Version 02.2019

Progressive safety gear SG braking up- and downwards

Safety gear

SG2D-1

Version 1 and 2

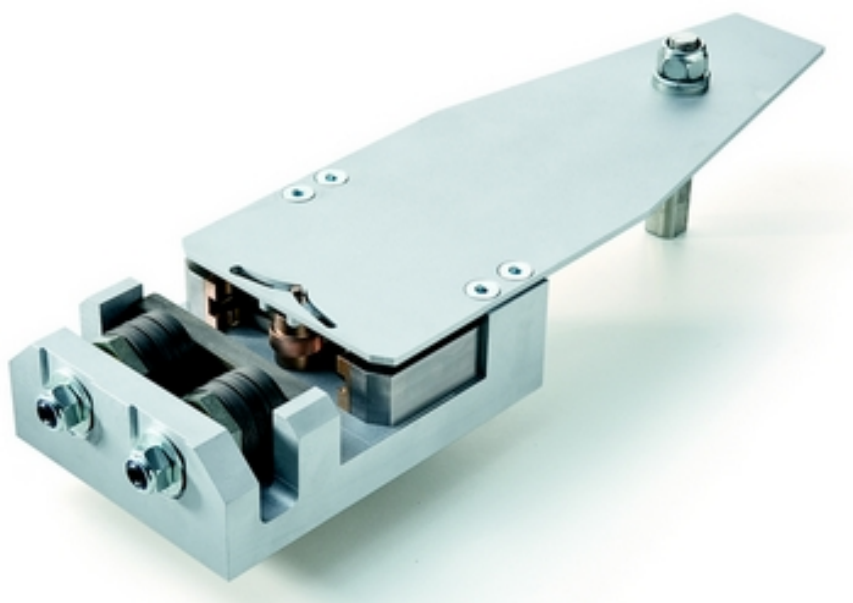


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1. Safety instructions

This product information refers to the progressive safety gear type SG2D-1 Version 1 and 2 braking up- and downwards and contains important information on correct and safe installation, putting into service, use and maintenance of the safety gear. Observing these instructions helps to avoid danger, to reduce repair costs and downtimes and to increase the reliability and life of the safety gear.

The product information has to be supplemented by instructions based on national rules and regulations concerning accident prevention.

The product information must always be available wherever the safety gear is in use. The manual must be read and applied by any person in charge of carrying out work with and on the safety gear.

In addition to the product information and to the mandatory rules and regulations for accident prevention in the country and place of use of the safety gear the generally recognized technical rules for safe and proper working must also be observed.

1.1 Designation and signs

The following designations and signs are used in this product information to designate instructions of particular importance:



DANGER

In this manual refers to the risk of death, heavy injuries and extensive damage if the required prevention measures are not taken.



WARNING

In this manual refers to light injuries or damage if the required prevention measures are not taken.



IMPORTANT

In this manual refers to important information about the product or is meant to attract the readers' attention to important parts of the product information.

1.2 Principle / intended use of the safety gear

The safety gear has been built in accordance with current standards and the recognized safety rules. Nevertheless, its use may constitute a risk to life and limb of the user or cause damage to the safety gear and to other material property.

The safety gear must be operated in technically perfect condition only, in accordance with its intended use and with the instructions set out in this product information.

Any functional disorders, especially those affecting the safety of the safety gear should therefore be rectified immediately!

The safety gear SG braking up- and downwards is designed exclusively for preventing the fall of the lift car up- and downwards (see EN81-20:2014-11, chapter 5.6.2:1 and EN81-1/2:1998 +A3: 2009, chapter 9.8)

The safety gear SG2-D-1 works also as part system of the protection device against unintended car movement (see EN81-20:2014-11, chapter 5.6.7 and EN81-1/2:1998 +A3: 2009, chapter 9.11)

Using the safety gear for purposes other than those mentioned above is considered contrary to its designated use. The manufacturer cannot be held liable for any damage resulting from such use. The risk of any misuse lies entirely with the user.

Operating the safety gear within the limits of its designated use also involves observing the instructions set out in this manual and complying with the inspection and maintenance directives.

Never make any modifications, additions or conversions that might affect safety without the supplier's approval!

Spare parts must comply with the technical requirements specified by the manufacturer. Spare parts from original equipment manufacturers can be relied to do so.

Adhere to prescribed intervals for routine checks and inspections!

For the execution of maintenance work tools and workshop equipment adapted to the task on hand are absolutely indispensable.

1.3 Selection and qualification of personnel / basic responsibilities

Any work on and with the safety gear must be executed by reliable personnel only. Statutory minimum age limits must be observed!

Employ only trained and instructed staff and set out clearly the individual responsibilities of the personnel for operation, set-up, maintenance and repair!

Make sure that only authorized personnel works on or with the safety gear!

1.4 Safety instructions governing assembly and specific operational phases

Assembly	Always wear personal protective equipment during assembly work.
Standard operation	Avoid any operational mode that might be prejudicial to safety! Take the necessary precautions to ensure that the safety gear is used only when in a safe and reliable state!
Maintenance	Ensure that the maintenance area is adequately secured! For carrying out overhead assembly work always use specially designed or otherwise safety-oriented ladders and working platforms. Wear a safety harness when carrying out maintenance work at greater heights! Before cleaning with water or detergents cover or tape up all openings which - for safety and functional reasons - must be protected against water or detergent penetration. After cleaning remove all covers and tapes applied for that purpose! Always tighten any screwed connections that have been loosened during maintenance and repair! Ensure that all consumables and replaced parts are disposed safely and with minimum environmental impact!
Gas Dust Steam Smoke	Carry out welding or grinding work on the safety gear only if this has been expressly authorized, as there may be a risk of explosion and fire! Before carrying out welding or grinding operation, clean the safety gear and its surroundings from dust and other inflammable substances and make sure that the premises are adequately ventilated (risk of explosion)! When there is little space for working observe the national rules and regulations!
Oil Grease etc.	When handling oil, grease and other chemical substances, observe the product-related safety regulations! Be careful when handling hot consumables (risk of burning or scalding)!

2. General notes

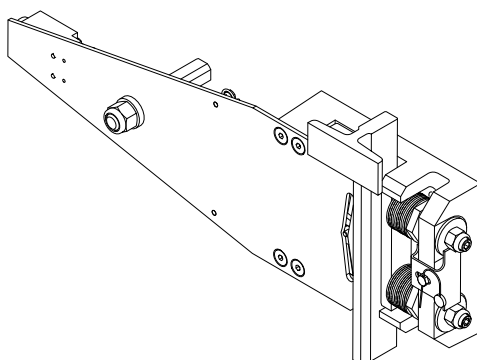
The safety gear of type SG is a double-sided acting safety device for passenger and goods lifts as well as for counterweights.

The double-sided acting safety gear prevents the car from falling upwards as well as downwards.

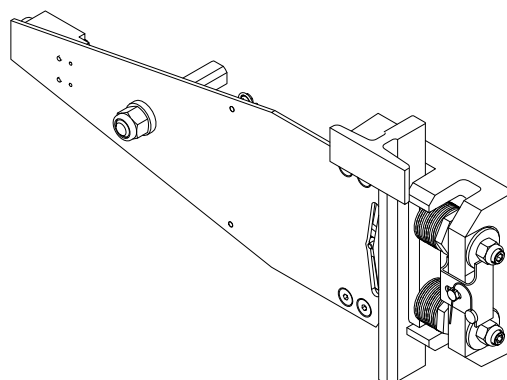
All safety gears are type-examined.

Tripping
device
straight,
standard

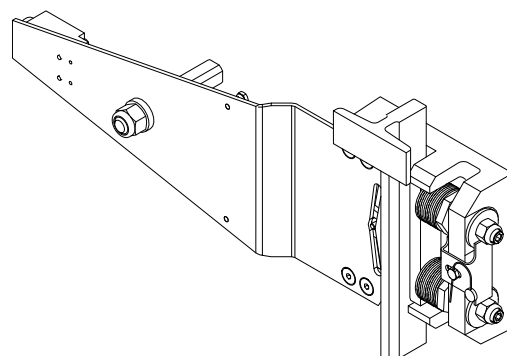
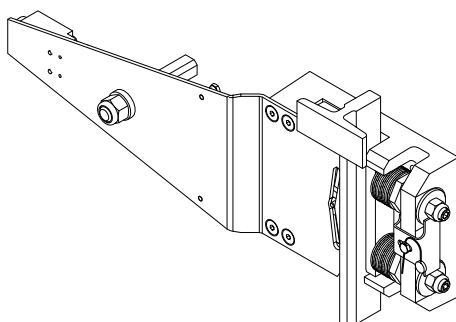
Version 1



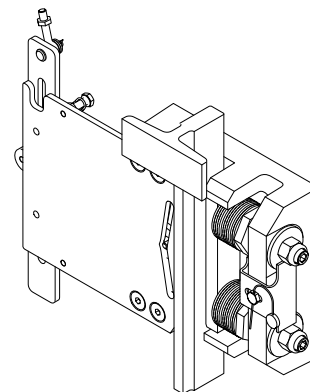
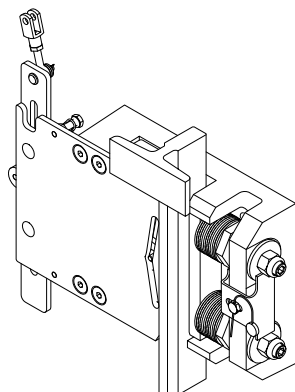
Version 2



Tripping
device
cranked



Short
plate



2.1 Designation

SG...- Safety Gear

1D braking in **1 Direction** ↓ (see manual 300.000.154)

2D braking in **2 Directions** ↑↓

- 1 Type 1

Example SG2D-1 = Safety gear SG braking up- and downwards, type 1

2.2 Criteria for the selection of safety gears

Rail head width			
Load of safety operation P+Q			
Counterweight mass			
Car speed			
Guide rail	→	machined	→ dry oiled
	→	drawn	→ dry oiled

2.3 EC type-examination certificate

Certification number of the EC type-examination certificate:

Type	Certification no.
SG2D-1 Version 1	EC-SG 710/1
SG2D-1 Version 2	EC-SG 710/1



Please note:

Type-examination certificates according to 95/16/EC can be downloaded at the homepage:
<http://www.slc-liftco.com/en/12/downloads.html>



2.4 Manufacturer of the safety gear

Manufacturer of the safety gear and holder of the type-examination certificate:

Sautter Lift Components GmbH

Remsstraße 26

70806 Kornwestheim | Germany

3. Technical Data

3.1 Range of application

3.1.1 Application range of safety gear as protection against fall up- and downwards

	Machined rails		Drawn rails	
	dry	oiled ¹	dry	oiled ¹
SG2D-1 – Version 1 and Version 2				
Min. width of running surface	19 mm			
Rail head width	5 – 16 mm			
Max. rated speed [m/s]	3.23		3.23	
Total mass min.-max. [kg]	293 – 2'814	303-2'889	303 – 2'489	292 – 2'368

Maximum tripping speed of the overspeed governor and range of maximum rated speed:

Max. tripping speed [m/s]	3.23
Max. rated speed [m/s]	2.50 – 2.80

3.1.2 Application range as a part system of the protection against unintended car movements

For application as a part system of the protection device against unintended car movements the following range applies:

	Machined rails		Drawn rails	
	dry	oiled ¹	dry	oiled ¹
SG2D-1 – Version 1 und Version 2				
Min. width of running surface	19 mm			
Rail head width	5 – 16 mm			
Max. rated speed ²	2.2 Application against unintended movement of the car (not to be mistaken for the maximum permissible rated or tripping speed)			
Braking force acting downwards [N]	4.001 - 44'166	4.010 - 45'353	4.350 - 39'068	4.126 - 37'173
Braking force acting upwards [N]	4.001 - 44'166	4.010 - 45'353	4.350 - 39'068	4.126 - 37'173

¹ The indications for oiled guide rail refer to use of mineral oils without additive (for example lubricant C according to DIN 51517, Part 1).

² Incl. increase of speed after tripping and after running through of braking element from normal position to acting position. This should be considered when used as a sub-system of the protection device against unintended car movement. This condition is assured with tripping speed max. 2.0 m/s of the part system, if the overspeed governor rope is actuated with a standard tripping device as described in this product information.

3.1.3 Requirements and conditions

Due to the fact that this part system is just the braking system of the protection device against unintended car movement, the complete system of the protection device against unintended car movement must be complemented by the adequate systems for detection and tripping according to EN81-20:2014-11 (EN81-1/2:1998 + A3:2009).

The complete protection device according to EN81-20:2014-11 (EN81-1/2:1998 + A3:2009), consisting of detecting, tripping and braking component, must assure, that the values given in EN81-1/2:1998+A3:2009, clause 9.11.5 and 9.11.6 are fulfilled. Dimensioning of the complete system to fulfill the required values is in the responsibility of the lift installer. For dimensioning the device as braking system, information of chapter 4 in this product information can be used auxiliary.

The forces applied to the guide rails in up and down direction must be safely carried by the guide rails (e.g. without sliding the guide rails up or down in their fixings).

In addition, all operating conditions and limitations of use according to type examination certificate EU-SG 710/1 (bi-directional acting safety gear type SG2D-1) are valid.

3.2 Tripping

Below the minimum tripping force required to trip the safety gear

Type	Braking up- and downwards
SG2D-1 Version 1 and 2	120 N

The maximum admissible tripping force required at the safety gear shall not exceed 1600 N.

The individually needed tripping force has to be ascertained at the lift, considering all components.

Standard EN81-20:2014-11 rules that for the tripping of safety gears twice the required tripping force has to be available – at least 300 N!

3.3 State of delivery

The safety gear is adjusted in the factory to the following lift specific characteristics:

- ❖ Mass of lift car (P)
- ❖ Mass of payload (Q)
- ❖ Mass of compensation ropes
- ❖ Rated speed of the lift car
- ❖ Rail head width (5 – 16 mm)
- ❖ Manufacturing mode of rails (machined, drawn)
- ❖ Surface condition of rails (dry, oiled)

The setting is secured against alterations by the manufacturer by means of a seal.



DANGER

Wrong setting of the safety gear can result in falling-down of the lift.

The safety gear is adjusted by the manufacturer. As the deceleration depends on different, partially lift-specific factors (material of guide rail, surface hardness of the rail, ...) a precise pre-adjustment cannot be guaranteed.

If a setting correction is exceptionally required, the setting has to be carried out only by specially trained personnel after consultation with the manufacturer. The new setting has to be secured against unauthorized alterations by means of a seal.



WARNING

The manufacturer cannot be held liable for damages caused by unauthorized setting alterations!



WARNING

Before installing the safety gear on the lift car its type plate characteristics have to be compared with the lift characteristics. The type plate is mounted on the safety gear.

The safety gear must only be applied within the permission scope of application: see EU type-examination certificate "Scope of application", certificate no. see chapter 2.3.



IMPORTANT

The safety gear is set at work according to values specified in the order form for safety gears to obtain the required braking force.

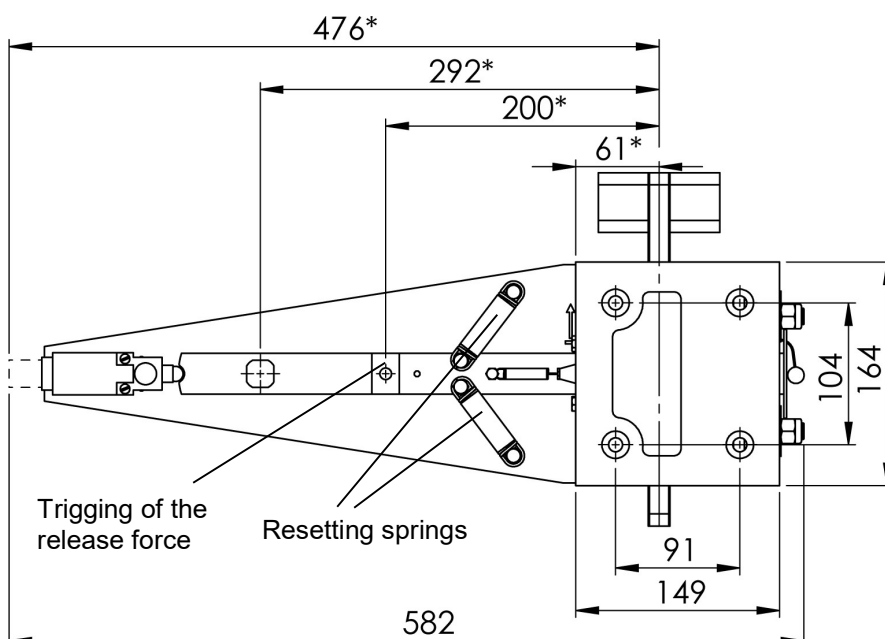
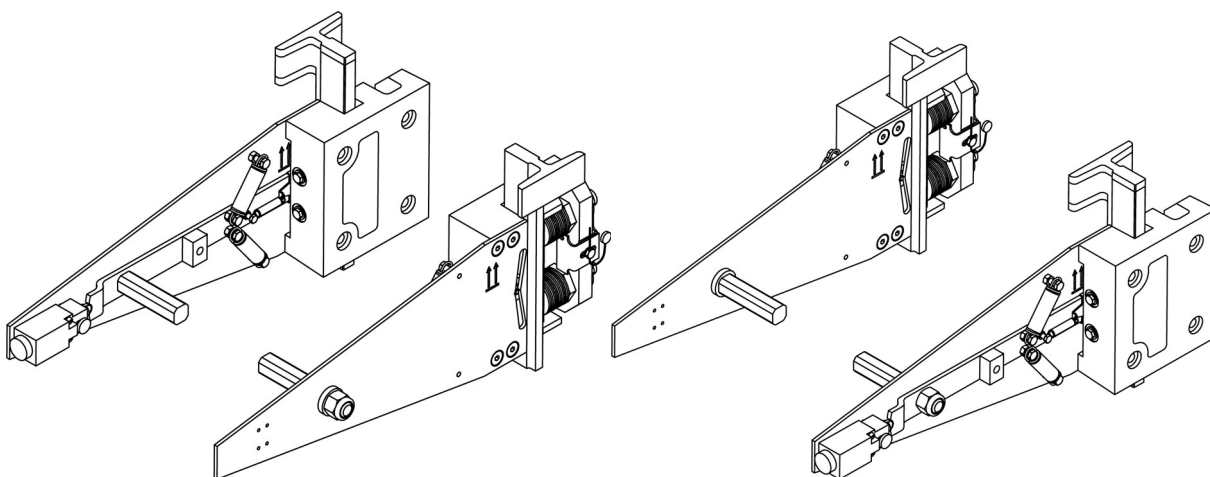
The order form can be downloaded on the homepage of SLC:
<http://www.slc-liftco.com/en/12/downloads.html>



4. Mounting and dimensions

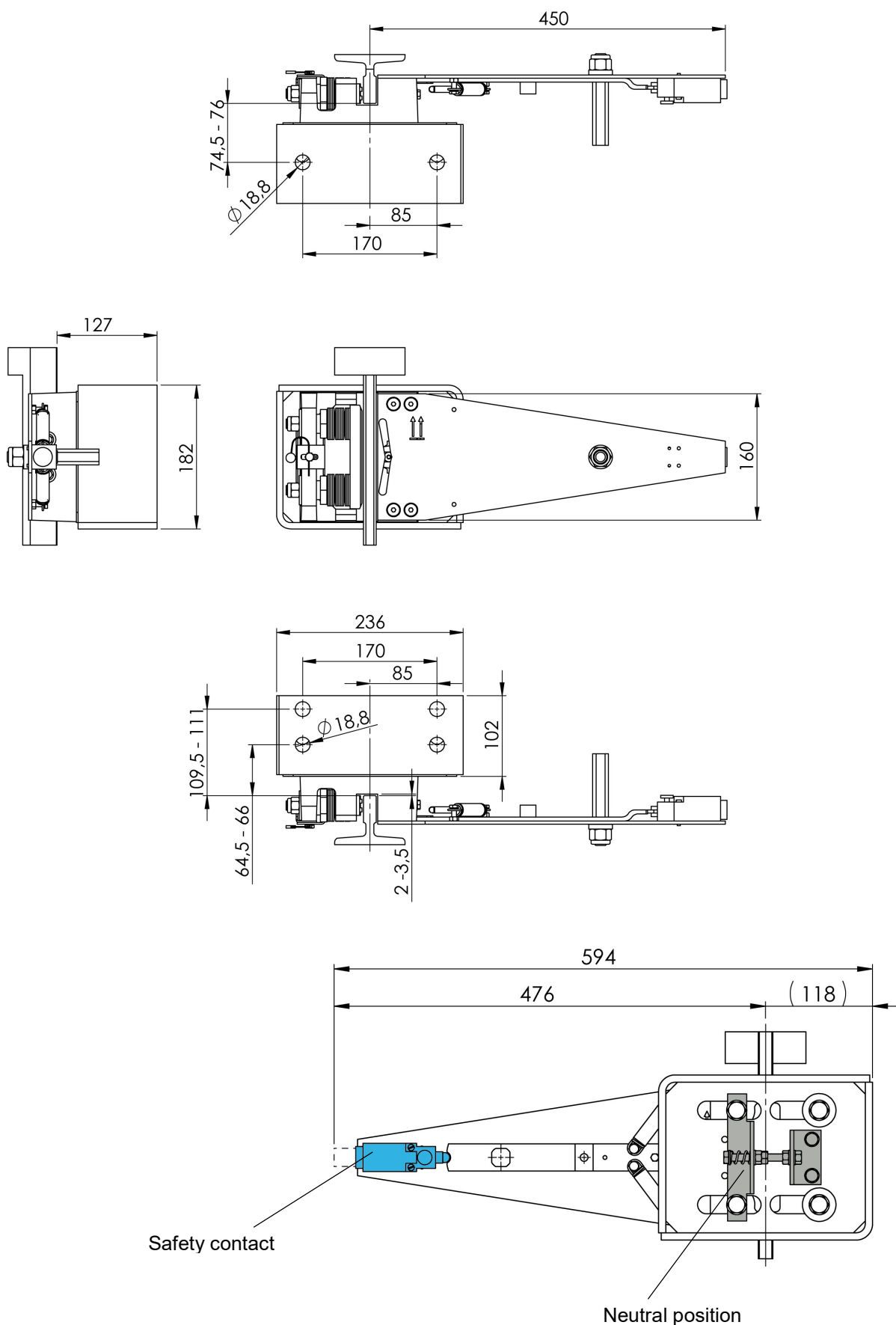
Type	Installation dimensions			
	Weight (Pair)	Height	Width	Depth
SG2D-1-Version 1	23 kg	163 mm	201 mm	60.5 mm
SG2D-1-Version 2	20 kg	163 mm	149 mm	60.5 mm

SG2D-1 Version 2



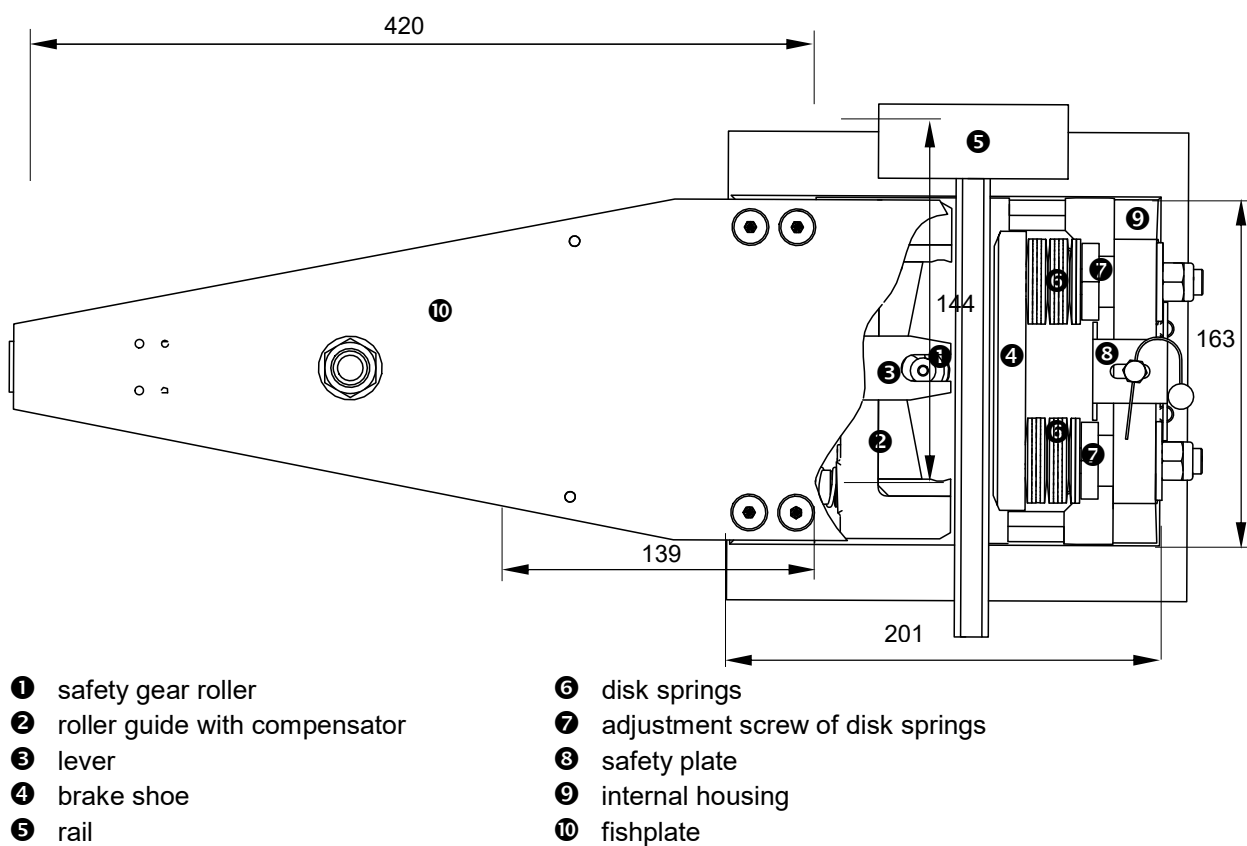
* When brake is activated, the measure increases by approximately 5 mm

SG2D-1 Version 2 with mounting brackets

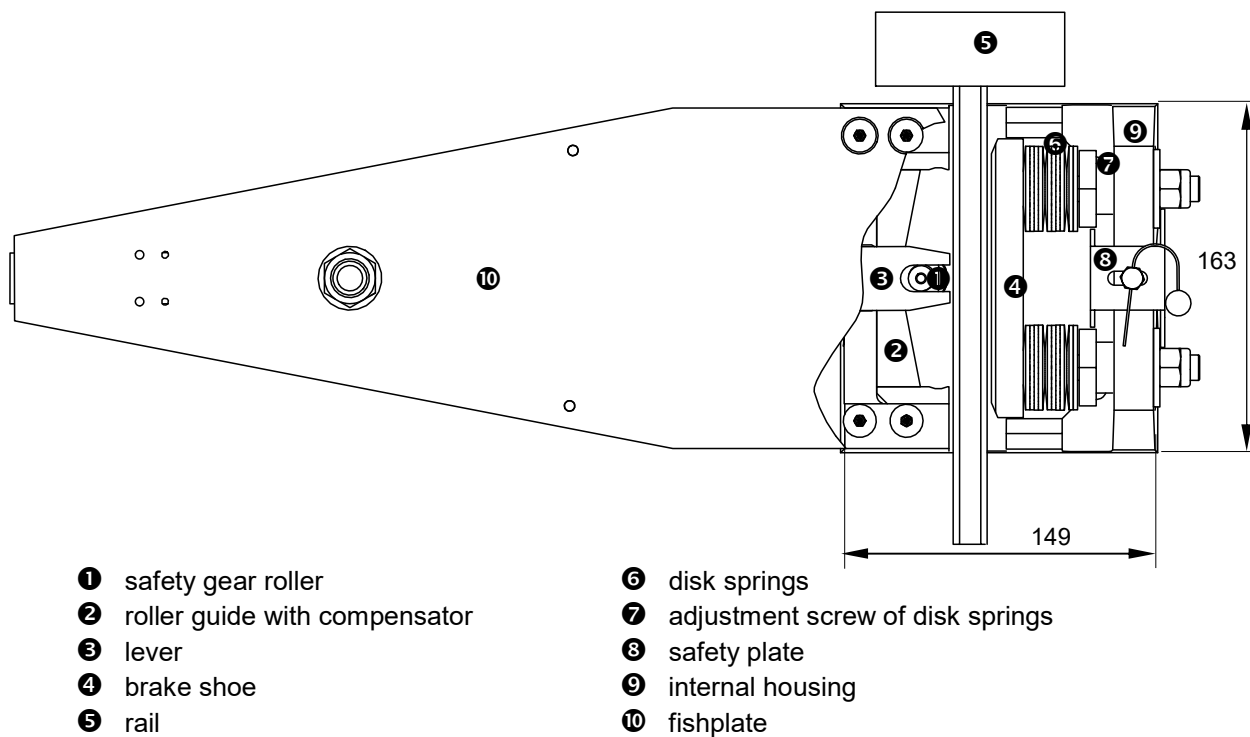


5. Specification and function

5.1 Specification of the safety gear Version 1



5.2 Specification of the safety gear Version 2



5.3 Function of safety gear

Upon tripping the overspeed governor both levers ❸ synchronised by the actuating shaft are turned by 15°.

In doing so the safety gear roller ❶ moved by the lever makes contact with the rail surface. The safety gear roller is pressed into the wedge-shaped gap between rail and roller guide ❷. Owing to the wedge effect of the roller guide the full floating beared safety gear is moved until the brake shoe ❹ rests against the rail ❺.

The disc spring transmits the braking force to the internal housing. To adapt to different widths of guide blades distance plates of various thickness ❹ are placed under the disc.

The spring pressure is preset and secured by a safety plate ❸ and a led-sealing to prevent unauthorized adjustment.

In the braking process the brake shoe fixed on the bracket cuts into the rail surface. The braking effect is caused by metal cutting in the rail surface, friction and spring tensioning work.

Moving the lift car opposite to the braking direction release the brakes and lever and the safety gear rollers return to neutral position.

The safety gear is ready for action again.



IMPORTANT

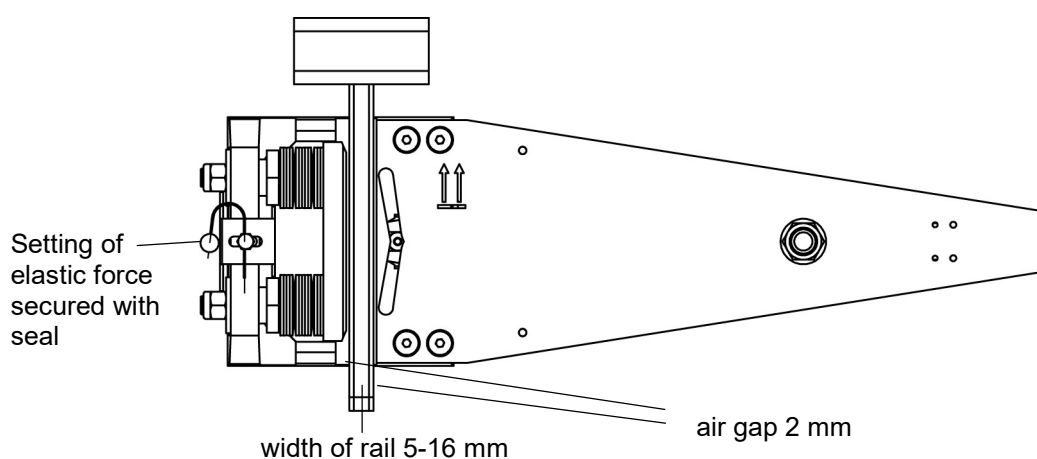
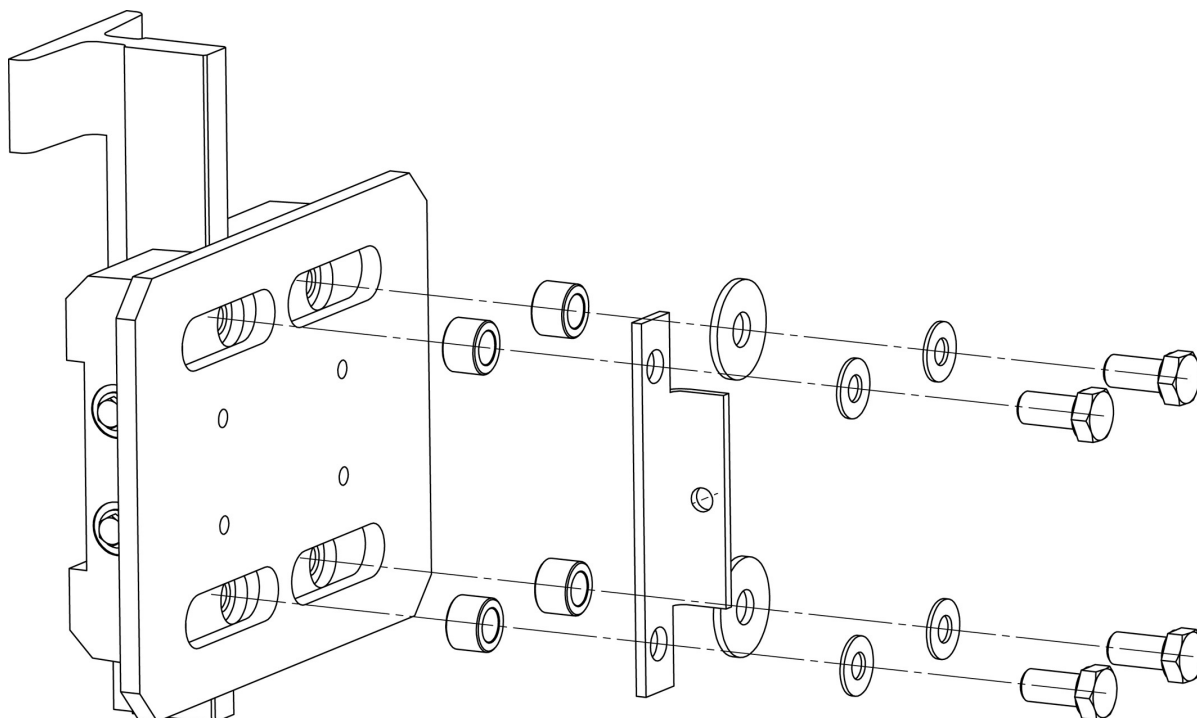
The safety gear transmits the braking force to the car. This braking force must be taken into account in the construction of the interface between safety gear and car.

6. Assembly

6.1 Assembly of the safety gear at the lift car

The safety gear is fixed to the lift car with four screws of type M12 and with bushes.

Pay attention to the full floating bearing the safety gear as this is the key to the safety gear sliding into braking position after being tripped by the overspeed governor.



WARNING

When the safety gear is in neutral position it can be adjusted using the adjustment mechanism.

The following points must be observed:

The rail running guide must cover the brake shoes completely. The air gap between the rail running surface and the brake shoe must be adjusted to 2 mm.

The safety gear must be installed so that the spring mounted brake shoe is parallel to the rail and in direction of travel.



WARNING

Ensure that the mounting screws in the long slots of the external housing have enough play in both directions in neutral positions.

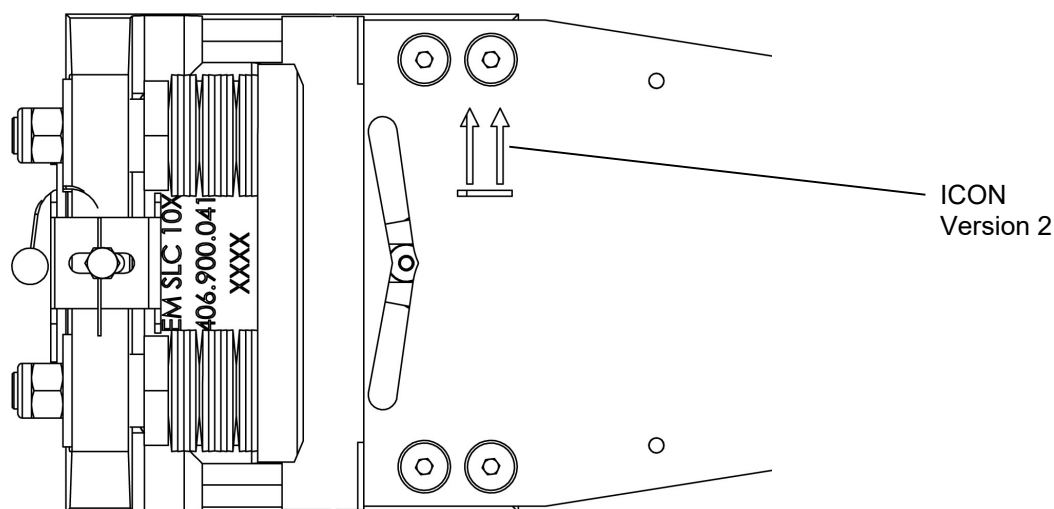
Correct position of the safety gear

During assembly the safety gear on the car take care for the correct position of the safety gear.

Please notice the advice on the type plate of the safety gear.

Version 1: The adjustment screw M 16 has to be at the bottom.

Version 2: The housing is marked with the following icon ↑↑ as well as the word „UP“. Both marks are written on the same side of the safety gear that has to be mounted upwards



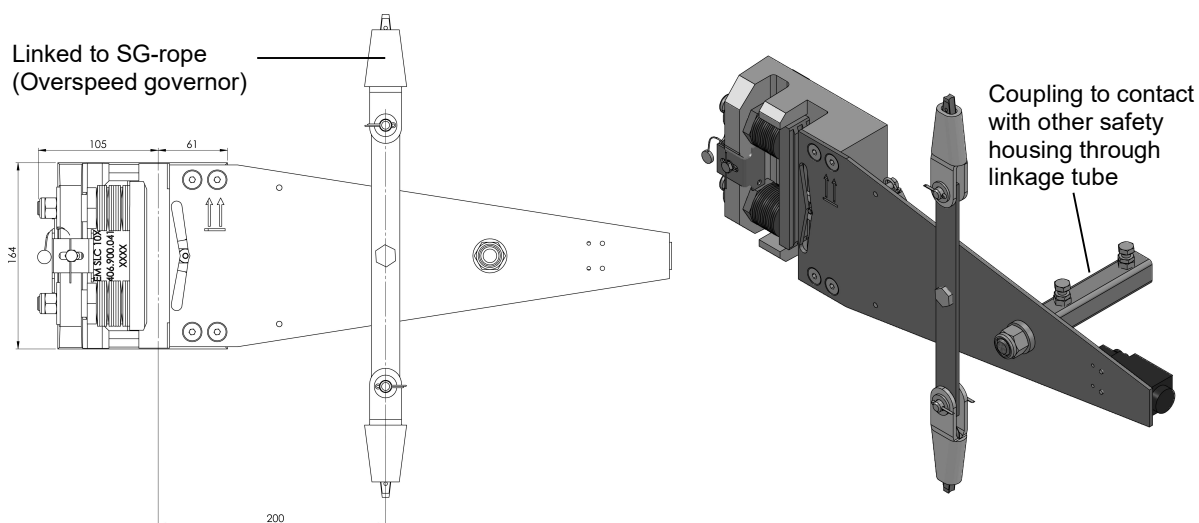
WARNING

Incorrect installation of the braking device causes a functional disorder of the safety gear.

Linkage of the braking units

Both safety gear units are linked with an actuating shaft.

The actuating shaft is fixed to the lever of the safety gear with attachment screws or spring type straight pins. The actuating shaft is connected by mean of two square-type tubes □ 20x20 mm.



7. Commissioning

7.1 Functional check



WARNING

Before commissioning the safety gear

- ❖ make sure that the overspeed governor works correctly, that the safety gear is attached to the overspeed governor and that the produced tractive force is two times the force required for engaging the safety gear.
- ❖ the guide rail must be cleaned of dirt. Most suitable for cleaning is cold solvent.

Before commissioning the lift car

- ❖ the lift car must be braked statically:
by turning the actuating shaft until both safety gear rollers contact the guide rail as well as letting the car down slowly. It has to be checked if both safety gear rollers move to their working position.
- ❖ the lift car must be braked with low speed.
It has to be checked if both safety gear rollers move to their working position.

For checking the braking force it is possible to trip the safety gear with rated speed or overspeed.

By pulling out from braking position the lever of the safety gear roller turns back into neutral position.



WARNING

The safety gear may be operated only in combination with an overspeed governor.

7.2 Commissioning at the lift

Braking the car in down direction with 125% of payload decelerations of the car must be between 0,2g and 1g (9,81m/s²).

7.3 Acceptance test or commissioning of the lift



IMPORTANT

Engagement test downwards

Tests before commissioning the lift according to EN81-20:2014-11, chapter 6.3 (EN81-1/2:1998+A3:2009, Annexe D) resp. periodic tests according to EN81-20:2014-11, Annexe C (EN81-1/2:1998+A3:2009, Annexe E).



IMPORTANT

Engagement test upwards

The test in up direction is executed with empty lift car without mechanical or electrical braking of the drive unit.

When the braking is tripped the electrical drive system has to be switched off. When the safety gear is engaged in up direction the electrical drive can draw the lift car further up. This is even possible at standstill.

Therefore refrain a further retightening after braking.

7.4 Check after braking

After every braking the safety gear has to be rechecked by a qualified person.

There is to be checked visually whether any changes or dirtying at the braking elements has occurred.

The following points are to be rechecked:

- ❖ excessive wear of the brake shoes
- ❖ deformations
- ❖ smooth running

The rubbed-off particles have to be removed and the braking marks grinded down.

Braking again on a re-grinded braking track is not causing an essential change of the braking force.



DANGER

For guide rail lubrication only oil products approved in the type examination certificate shall be used.

Use machine oil of viscosity class ISO 68-150 without extreme pressure additive. See mineral oils without additive (for example lubricant C according to DIN 51517, Part 1.)


Oils for hydraulic aggregates, gears and motors are not suitable for this use.

8. Content of QR-Code

Description	Data field	Type	Length (symbol)	Safety components from other suppliers
1	Product name	CHAR	40	Product name of safety gear
2	Release	NUM	2	
3	Revision	NUM	2	
4	Identification number	CHAR	35	SL product number
5	Serial number	CHAR	18	
6	Batch number	CHAR	10	Only when serial number is not available
7	Manufacturer name	CHAR	30	Name of manufacturer
8	Manufacturer postal code	CHAR	10	Postal code of manufacturer
9	Manufacturer town	CHAR	30	Town of manufacturer
10	Manufacturer country code	CHAR	5	Two-character country code according to ISO 3166-1
11	Importer name	CHAR	30	Name of importer
12	Importer postal code	CHAR	10	Postal code of importer
13	Importer town	CHAR	30	Town of importer
14	Importer country code	CHAR	5	Two-character country code according to ISO 3166-1

Notice: Data fields without values are marked with "---". If numbers 2 and 3 (approval and revision) are not necessary, fields remain empty.

Example of QR-code for SG2D-1 safety gear from SLC:

Description	Data field	Text in QR-code	Sample QR-code
1	Product name	SG2D-1	Product Traceability 
2	Release		
3	Revision		
4	Identification number	50100505	
5	Serial number	16/7292	
6	Batch number	---	
7	Manufacturer name	Sautter Lift Components	
8	Manufacturer postal code	70806	
9	Manufacturer town	Kornwestheim	
10	Manufacturer country code	DE	
11	Importer name	SLS Sassi Lift Systems	
12	Importer postal code	CM7 2QJ	
13	Importer town	Braintree	
14	Importer country code	GB	

9. Maintenance

Upon maintenance the safety gear shall be checked for:

- ❖ smooth operation
- ❖ synchronous operation of the two units
- ❖ wear
- ❖ rust
- ❖ dirt
- ❖ sealing

If, after a couple of braking tests, the braking rollers or the safety gear base show signs of wear they are to be replaced by qualified persons.

Material numbers:

Brake shoes 106.930.292 resp. 106.930.294

Safety gear roller 106.920.120

Roller guide 106.930.280 and 106.930.281

10. Transport

Any work upon transport, storage, installation and commissioning as well as (if any) demounting and disposal of a safety gear is to be carried out by qualified persons only.

They shall be responsible for proper assembly, transport and installation, and for putting the safety gear into operational condition. If this is not ensured, the manufacturer shall not be held liable for any damages that might occur.

Upon transport the safety gear must be protected against:

- ❖ humidity
- ❖ shock
- ❖ dirt
- ❖ falling-down, etc.

11. Annexe

- ❖ EU type-examination certificate EU-SG 710/1
- ❖ Certificate of conformity
- ❖



IMPORTANT

Find more certificates of conformity in additional languages on our homepage:
<http://www.slc-liftco.com/en/12/downloads.html>.

