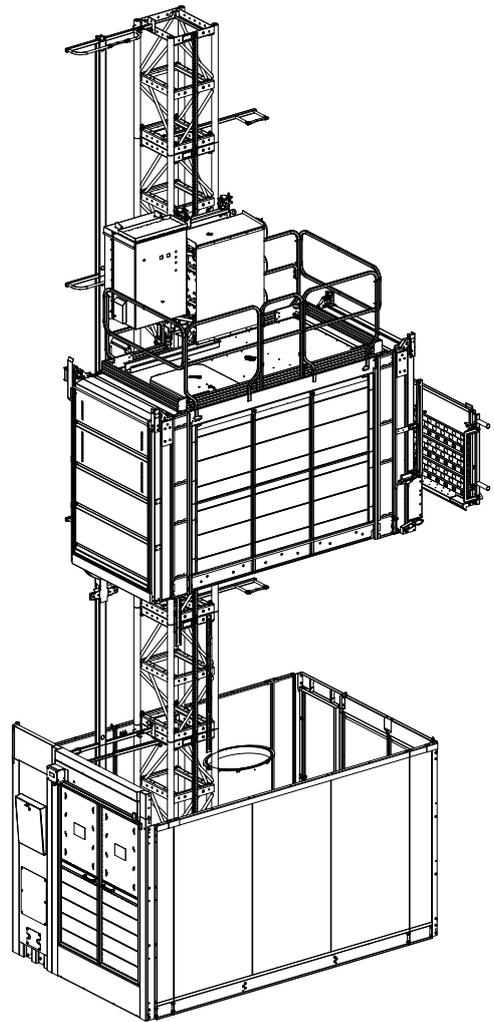


# SCANCLIMBER®

## SC Builders Hoist



**SC2032-65H / SC2532-65H / SC3232-65H**  
**SC2037-65H / SC2537-65H / SC3237-65H**  
**SC2042-65H / SC2542-65H**  
**SC2047-65H / SC2547-65H**

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## INSTRUCTION MANUAL

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Serial number: \_\_\_\_\_

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### SCANCLIMBER OY

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See a separate manual

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See a separate manual

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## 0. PREFACE

### SCANCLIMBER® SC Builder's Hoist

The purpose of this instruction manual is to give information on the hoist's characteristics and its proper use.

The manual contains useful instructions on the safe, proper and economical operation of the hoist. These instructions help avoid risks, cut down operating costs and increase the hoist's service life.

The instruction manual should always be available for those working with the hoist and it must not be removed from the hoist cage.

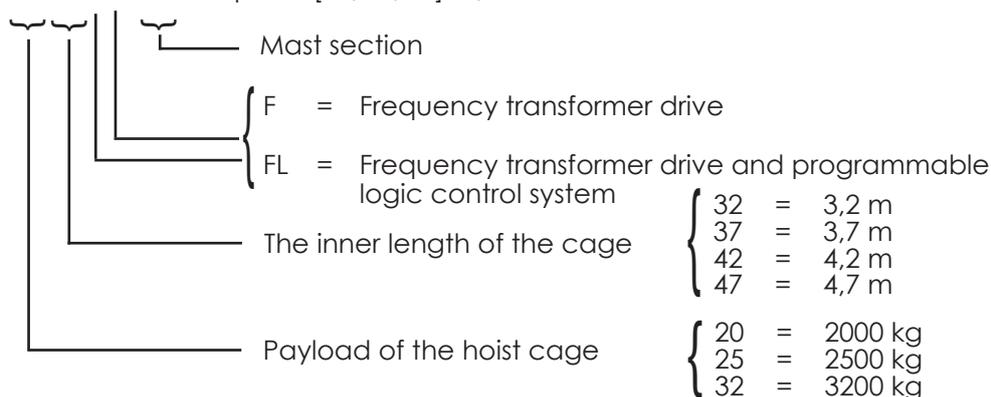
In addition to the requirements of this manual as well as those of the law and statutes, attention must be paid also to the national and the site's regulations on the safe and careful use of the hoist.

The manual covers the following hoists of the series **SCANCLIMBER**:

- SC2032-65H                      - SC2532-65H                      - SC3232-65H
- SC2037-65H                      - SC2537-65H                      - SC3237-65H
- SC2042-65H                      - SC2542-65H
- SC2047-65H                      - SC2547-65H

The identification on the hoist model includes the following information:

SCXXYYFL-65H- speed [36/54/90] m/min



In this document the following way is used to refer to hoists of various series:

1. If the model identification is not specifically mentioned the issue covers all the hoists of the SC series in the chapter
2. If the model identification consists of only numbers, e.g. SC2032-65H, the issue covers all the versions of SC2032-65H (SC2032F-65H, SC2032FL-65H)
3. If the model is identified e.g. SC2032F-65H and/or SC2032FL-65H the issue covers only this particular model

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## 1. GENERAL INFORMATION

### 1.1 Technical Data

#### 1.1.1 Capacity

Capacity	SC2032-65H SC2037-65H SC2042-65H SC2047-65H	SC2532-65H SC2537-65H SC2542-65H SC2547-65H	SC3232-65H SC3237-65H
<b>Payload (kg)</b>	2000kg or 24 pers. 2000kg or 25 pers. 2000kg or 25 pers. 2000kg or 25 pers.	2500kg or 24 pers 2500kg or 27 pers 2500kg or 31 pers 2500kg or 31 pers	3200kg or 24 pers 3200kg or 27 pers
<b>Speed (m/min)</b>	36 or 54 or 90		
<b>Max.lifting height, with anchored mast (m)</b>	200		
<b>Max. lifting height, free standing (m)</b>	12 m	-	
<b>Distance between anchors (m)</b>	15 m	max. 15 m depending on the type of anchoring	
<b>Free mast after topmost anchoring (m)</b>	13,5 m	max. 13.0 m depending on the type of anchoring	
<b>Maximum wind speed (m/s)</b> - during erection and dismantling - during operation - when the cage is in ground station	12,5 20,0 42,0		
<b>Operation temperature (C°)</b>	-25..+40		
<b>Noise level [dB(A)]</b>	<93		

## 1.1.2 Weights and Dimensions 3,2m / Single

Weights and dimensions / SINGLE	SC2032-65H	SC2532-65H	SC3232-65H
<b>Cage floor height from the ground with the hoist at the ground station, min. (mm)</b>	400	400	400
<b>Dimensions of the lifting cage</b> (internal)			
length (mm)	3200	3200	3200
width (mm)	1510	1510	1510
height (mm)	2040	2040	2040
cage weight (kg)	1585	1585	1585
<b>Dimensions of the cage door opening</b>			
width (mm)	1490	1490	1490
height (mm)	2000	2000	2000
<b>Dimensions of the mast section</b>			
square mast (mm)	726 (765)	726 (765)	726 (765)
	x726	x726	x726
height (mm)	1508	1508	1508
mounting bolts	M24x260-10.9	M24x260-10.9	M24x260-10.9
gear rack module (mm)	6	6	6
<b>Weight of the mast section with one gear rack (kg)</b>	138	138	138
<b>Dimensions of the ground station</b>			
length (mm)*	3886	3886	3886
width (mm)	2705	2705	2705
height (mm)	2915 (2595)	2915 (2595)	2915 (2595)
weight (kg)	1610	1610	1756
<b>Weight of the top drive unit</b>			
weight (kg)			
36 m/min	845	1140	1140
54 m/min	1140	1140	1200
90 m/min	1215	1215	1580

\* - add 80mm with hydraulic ramp

## 1.1.3 Weights and Dimensions 3,2m / Twin

Weights and dimensions / TWIN	<b>SC2032-65H</b>	<b>SC2532-65H</b>	<b>SC3232-65H</b>
<b>Cage floor height from the ground with the hoist at the ground station, min. (mm)</b>	400	400	400
<b>Dimensions of the lifting cage</b> (internal)			
length (mm)	3200	3200	3200
width (mm)	1510	1510	1510
height (mm)	2040	2040	2040
cage weight (kg)	1585	1585	1585
<b>Dimensions of the cage door opening</b>			
width (mm)	1490	1490	1490
height (mm)	2000	2000	2000
<b>Dimensions of the mast section</b>			
square mast (mm)	726 (765)	726 (765)	726 (765)
x726		x726	x726
height (mm)	1508	1508	1508
mounting bolts	M24x260-10.9	1508 M24x260-10.9	M24x260-10.9
gear rack module (mm)	6	6	6
<b>Weight of the mast section with one gear rack (kg)</b>	154	154	154
<b>Dimensions of the ground station</b>			
length (mm)*	3886	3886	3886
width (mm)	4480	4480	4480
height (mm)	2915 (2595)	2915 (2595)	2915 (2595)
weight (kg)	2095	2095	2095
<b>Weight of the top drive unit</b>			
weight (kg)			
36 m/min	845	1140	1140
54 m/min	1140	1140	1200
90 m/min	1215	1215	1580

\* - add 80mm with hydraulic ramp

## 1.1.4 Weights and Dimensions 3,7m / Single

Weights and dimensions / SINGLE	SC2037-65H	SC2537-65H	SC3237-65H
<b>Cage floor height from the ground with the hoist at the ground station, min. (mm)</b>	400	400	400
<b>Dimensions of the lifting cage</b> (internal)			
length (mm)	3700	3700	3700
width (mm)	1510	1510	1510
height (mm)	2040	2040	2040
cage weight (kg)	1758	1758	1758
<b>Dimensions of the cage door opening</b>			
width (mm)	1490	1490	1490
height (mm)	2000	2000	2000
<b>Dimensions of the mast section</b>			
square mast (mm)	726 (765)	726 (765)	726 (765)
	x726	x726	x726
height (mm)	1508	1508	1508
mounting bolts	M24x260-10.9	M24x260-10.9	M24x260-10.9
gear rack module (mm)	6	6	6
<b>Weight of the mast section with one gear rack (kg)</b>	138	138	138
<b>Dimensions of the ground station</b>			
length (mm)*	4387	4387	4387
width (mm)	2705	2705	2705
height (mm)	2915 (2595)	2915 (2595)	2915 (2595)
weight (kg)	1700	1700	1850
<b>Weight of the top drive unit</b>			
weight (kg)			
36 m/min	845	1140	1140
54 m/min	1140	1140	1200
90 m/min	1215	1215	1580

\* - add 80mm with hydraulic ramp

## 1.1.5 Weights and Dimensions 3,7m / Twin

Weights and dimensions / TWIN	SC2037-65H	SC2537-65H	SC3237-65H
<b>Cage floor height from the ground with the hoist at the ground station, min. (mm)</b>	400	400	400
<b>Dimensions of the lifting cage</b> (internal)			
length (mm)	3700	3700	3700
width (mm)	1510	1510	1510
height (mm)	2040	2040	2040
cage weight (kg)	1758	1758	1758
<b>Dimensions of the cage door opening</b>			
width (mm)	1490	1490	1490
height (mm)	2000	2000	2000
<b>Dimensions of the mast section</b>			
square mast (mm)	726 (765)	726 (765)	726 (765)
	x726	x726	x726
height (mm)	1508	1508	1508
mounting bolts	M24x260-10.9	M24x260-10.9	M24x260-10.9
gear rack module (mm)	6	6	6
<b>Weight of the mast section with one gear rack (kg)</b>	154	154	154
<b>Dimensions of the ground station</b>			
length (mm)*	4387	4387	4387
width (mm)	4480	4480	4480
height (mm)	2915 (2595)	2915 (2595)	2915 (2595)
weight (kg)	2230	2230	2230
<b>Weight of the top drive unit</b>			
weight (kg)			
36 m/min	845	1140	1140
54 m/min	1140	1140	1200
90 m/min	1215	1215	1580

\* - add 80mm with hydraulic ramp

## 1.1.6 Weights and Dimensions 4,2m / Single

Weights and dimensions / SINGLE	SC2042-65H	SC2542-65H
<b>Cage floor height from the ground with the hoist at the ground station, min. (mm)</b>	400	400
<b>Dimensions of the lifting cage</b> (internal) length (mm) width (mm) height (mm) cage weight (kg)	4200 1510 2040 1931	4200 1510 2040 1931
<b>Dimensions of the cage door opening</b> width (mm) height (mm)	1490 2000	1490 2000
<b>Dimensions of the mast section</b> square mast (mm) height (mm) mounting bolts gear rack module (mm)	726 (765) x726 1508 M24x260-10.9 6	726 (765) x726 1508 M24x260-10.9 6
<b>Weight of the mast section</b> with one gear rack (kg)	138	138
<b>Dimensions of the ground station</b> length (mm)* width (mm) height (mm) weight (kg)	4887 2705 2915 (2595) —	4887 2705 2915 (2595) —
<b>Weight of the top drive unit</b> weight (kg) 36 m/min 54 m/min 90 m/min	1170 1140 1215	1140 1200 1580

\* - add 80mm with hydraulic ramp

## 1.1.7 Weights and Dimensions 4,2m / Twin

Weights and dimensions / TWIN	SC2042-65H	SC2542-65H
<b>Cage floor height from the ground with the hoist at the ground station, min. (mm)</b>	400	400
<b>Dimensions of the lifting cage</b> (internal) length (mm) width (mm) height (mm) cage weight (kg)	4200 1510 2040 1931	4200 1510 2040 1931
<b>Dimensions of the cage door opening</b> width (mm) height (mm)	1490 2000	1490 2000
<b>Dimensions of the mast section</b> square mast (mm) height (mm) mounting bolts gear rack module (mm)	726 (765) x726 1508 M24x260-10.9 6	726 (765) x726 1508 M24x260-10.9 6
<b>Weight of the mast section</b> with one gear rack (kg)	154	154
<b>Dimensions of the ground station</b> length (mm)* width (mm) height (mm) weight (kg)	4887 4480 2915 (2595) —	4887 4480 2915 (2595) —
<b>Weight of the top drive unit</b> weight (kg) 36 m/min 54 m/min 90 m/min	1170 1140 1215	1140 1200 1580

\* - add 80mm with hydraulic ramp

## 1.1.8 Weights and Dimensions 4,7m / Single

Weights and dimensions / SINGLE	SC2047-65H	SC2547-65H
<b>Cage floor height from the ground with the hoist at the ground station, min. (mm)</b>	400	400
<b>Dimensions of the lifting cage</b> (internal) length (mm) width (mm) height (mm) cage weight (kg)	4700 1510 2040 2104	4700 1510 2040 2104
<b>Dimensions of the cage door opening</b> width (mm) height (mm)	1490 2000	1490 2000
<b>Dimensions of the mast section</b> square mast (mm)  height (mm) mounting bolts gear rack module (mm)	726 (765) x726 1508 M24x260-10.9 6	726 (765) x726 1508 M24x260-10.9 6
<b>Weight of the mast section</b> with one gear rack (kg)	138	138
<b>Dimensions of the ground station</b> length (mm)* width (mm) height (mm) weight (kg)	5387 2705 2915 (2595) —	5387 2705 2915 (2595) —
<b>Weight of the top drive unit</b> weight (kg) 36 m/min 54 m/min 90 m/min	 1170 1140 1215	 1140 1200 1580

\* - add 80mm with hydraulic ramp

## 1.1.9 Weights and Dimensions 4,7m / Twin

Weights and dimensions / TWIN	SC2047-65H	SC2547-65H
<b>Cage floor height from the ground with the hoist at the ground station, min. (mm)</b>	400	400
<b>Dimensions of the lifting cage</b> (internal) length (mm) width (mm) height (mm) cage weight (kg)	4700 1510 2040 2104	4700 1510 2040 2104
<b>Dimensions of the cage door opening</b> width (mm) height (mm)	1490 2000	1490 2000
<b>Dimensions of the mast section</b> square mast (mm) height (mm) mounting bolts gear rack module (mm)	726 (765) x726 1508 M24x260-10.9 6	726 (765) x726 1508 M24x260-10.9 6
<b>Weight of the mast section</b> with one gear rack (kg)	154	154
<b>Dimensions of the ground station</b> length (mm)* width (mm) height (mm) weight (kg)	5387 4480 2915 (2595) —	5387 4480 2915 (2595) —
<b>Weight of the top drive unit</b> weight (kg) 36 m/min 54 m/min 90 m/min	1170 1140 1215	1140 1200 1580

\* - add 80mm with hydraulic ramp

## 1.1.10 Electrical Equipment

Electrical data / cage	<b>SC2032-65H</b> <b>SC2037-65H</b>	<b>SC2532-65H</b> <b>SC2537-65H</b> <b>SC2042-65H</b> <b>SC2047-65H</b>	<b>SC3232-65H</b> <b>SC3237-65H</b> <b>SC2542-65H</b> <b>SC2547-65H</b>
Power - lifting motors (kW)			
36 m/min	2 x 7,5	3 x 5,5	3 x 9,2
54 m/min	3 x 7,5	3 x 7,5	3 x 11
90 m/min	3x15,0	3x15,0	3 x 18,5
Supply voltage/frequency (V/Hz)	400/50	400/50	400/50
Control voltage/frequency (V/Hz)	48/50, 24 DC	48/50, 24 DC	48/50, 24 DC
Max. starting current (A)			
36 m/min	100	120	200
54 m/min	150	150	230
90 m/min	300	300	370
Power consumption (kW)			
36 m/min	27	30	48,5
54 m/min	40	40	58
90 m/min	79	79	118
Size and type of the main fuse (A)			
36 m/min	63 / slow	63 / slow	125 / slow
54 m/min	100 / slow	100 / slow	125 / slow
90 m/min	160 / slow	160 / slow	200 / slow
Socket of hand tools, voltage/current (V/ A)	230/10	230/10	230/10

## 1.1.11 Safety Equipment

Safety equipment	SC2032-65H SC2037-65H	SC2532-65H SC2537-65H SC2042-65H SC2047-65H	SC3232-65H SC3237-65H SC2542-65H SC2547-65H
Mechanical safety brake (UC-5.0)	X	X	X
Emergency lowering system	X	X	X
Safety railing (1,10 m) and kick board on the roof	X	X	X
Final limit switch on the top and bottom ends of the mast	X	X	X
Functional limit switches on the top and bottomends of the mast	X	X	X
Emergency stop buttons at the ground station, in the cage and on the roof	X	X	X
Overload detection device	X	X	X
Residual current device	X	X	X
Landing door/gate closed, limit switch	X	X	X
Landing door locking device in closed position, limit switch	X	X	X
Cage door closed limit switches	X	X	X
Cage door locking device in closed position, limit switch	X	X	X
Service key switch on the roof	X	X	X
Roof hatch closed limit switch	X	X	X
Lockable service door at the ground station	X	X	X
Buffers at the ground station under the cage	X	X	X
Brakes - spring-loaded disc brake	X	X	X
Brake torque (Nm )			
- speed 36 m/min	2 x 110	3 x 80	3 x 110
- speed 54 m/min	3 x 110	3 x 110	3 x 110
- speed 90 m/min	3 x 150	3 x 150	3 x 250

## 1.1.12 Main components and dimensions

### CAGE

Cage

Weight:

SCXX32

1585 kg

SCXX37

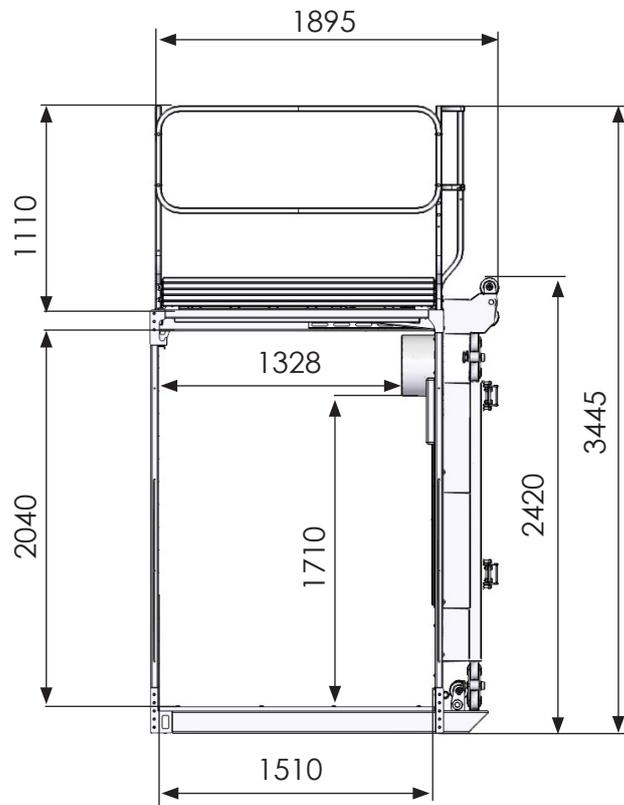
1758 kg

SCXX42

1931 kg

SCXX47

2104 kg



Cage

L

SCXX32

3011 mm

SCXX37

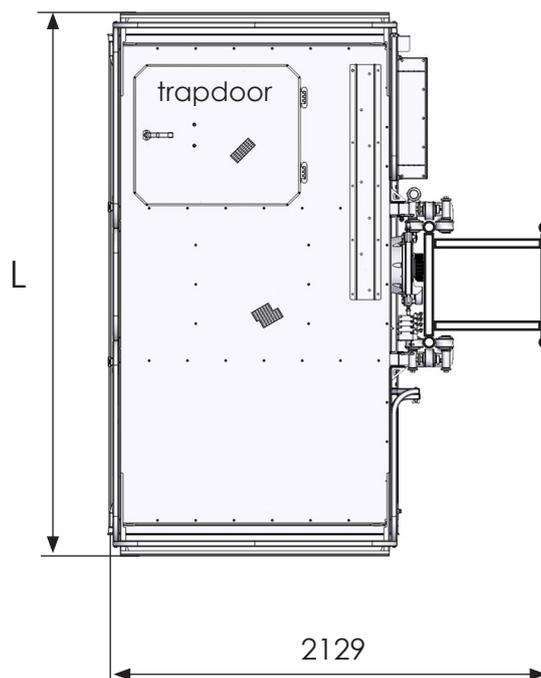
3511 mm

SCXX42

4011 mm

SCXX47

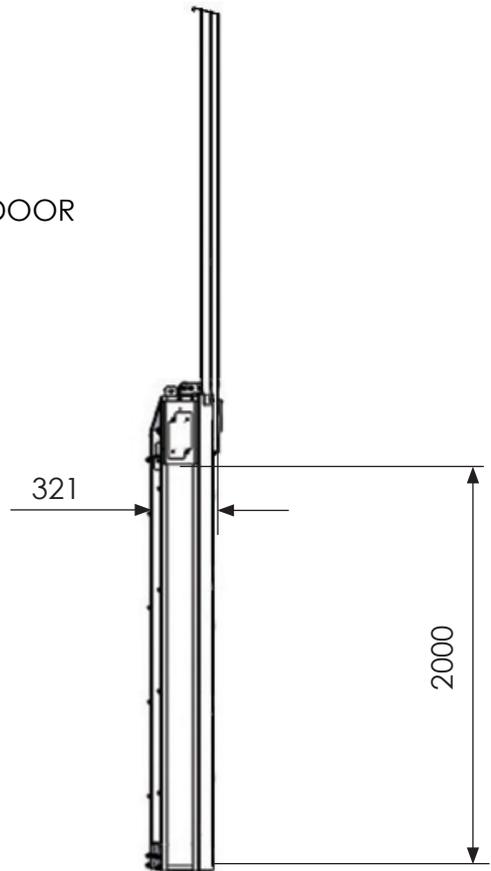
4511 mm



## DOORS

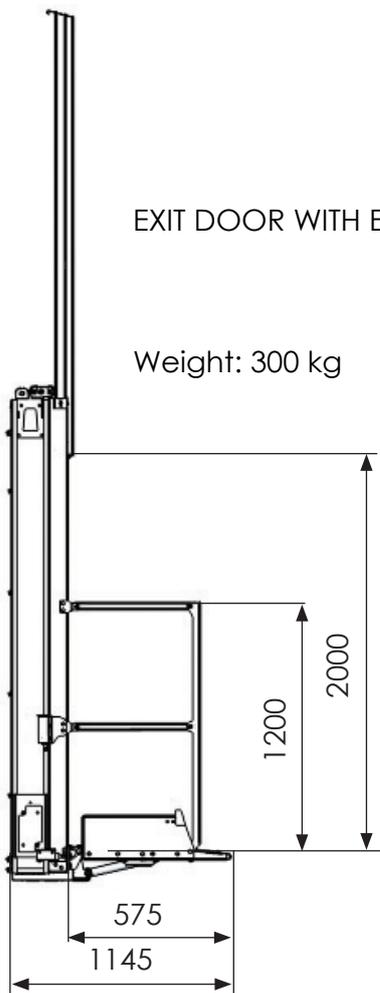
VERTICAL FULL HEIGHT ENTRANCE (EXIT) DOOR

Weight: 202 kg

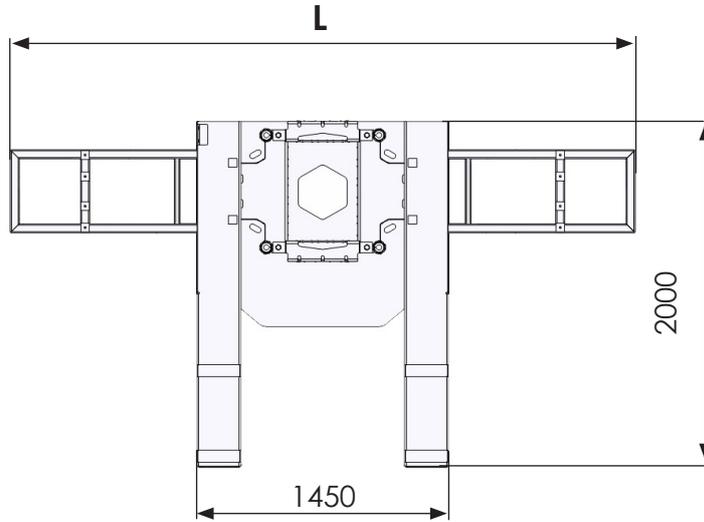


EXIT DOOR WITH ELECTRIC-HYDRAULIC OPERATED LOAD RAMP

Weight: 300 kg



## BASE FRAME



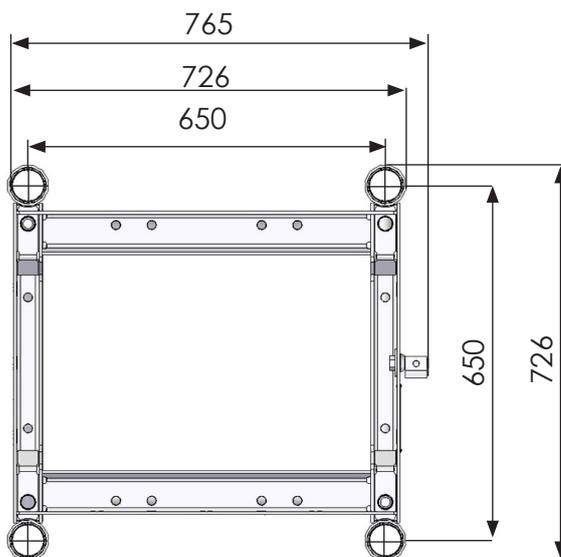
Cage length

L

SCXX32  
SCXX37  
SCXX42  
SCXX47

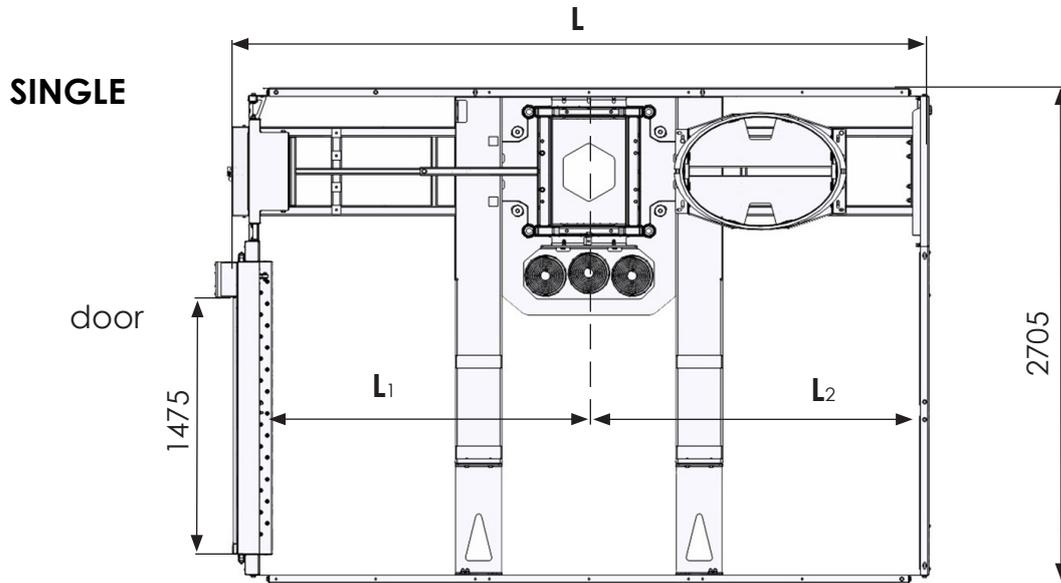
3598 mm  
4098 mm  
4598 mm  
5098 mm

## MAST SECTION

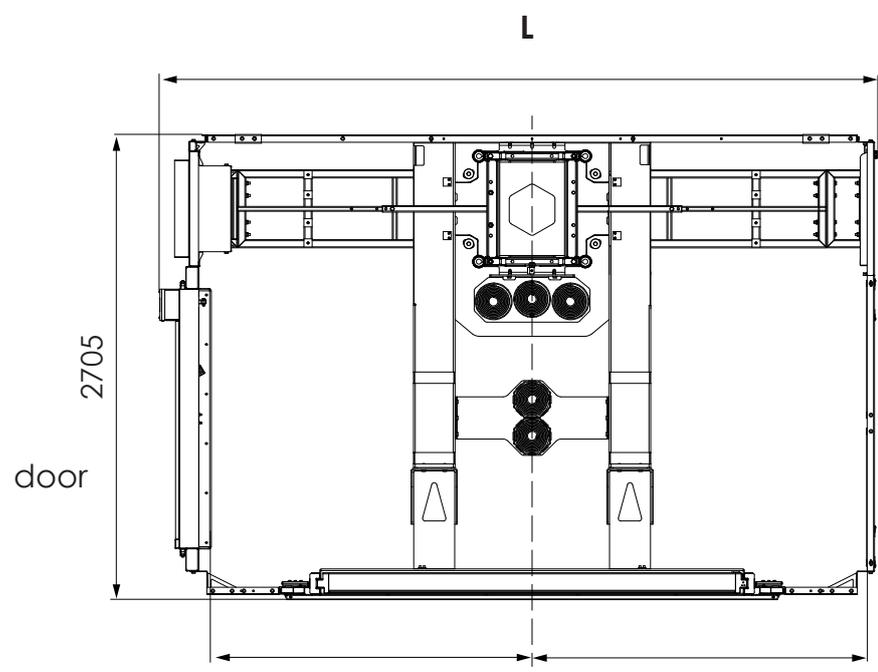


Height: 1508 mm  
Weight: 138 kg/ 154 kg (twin)

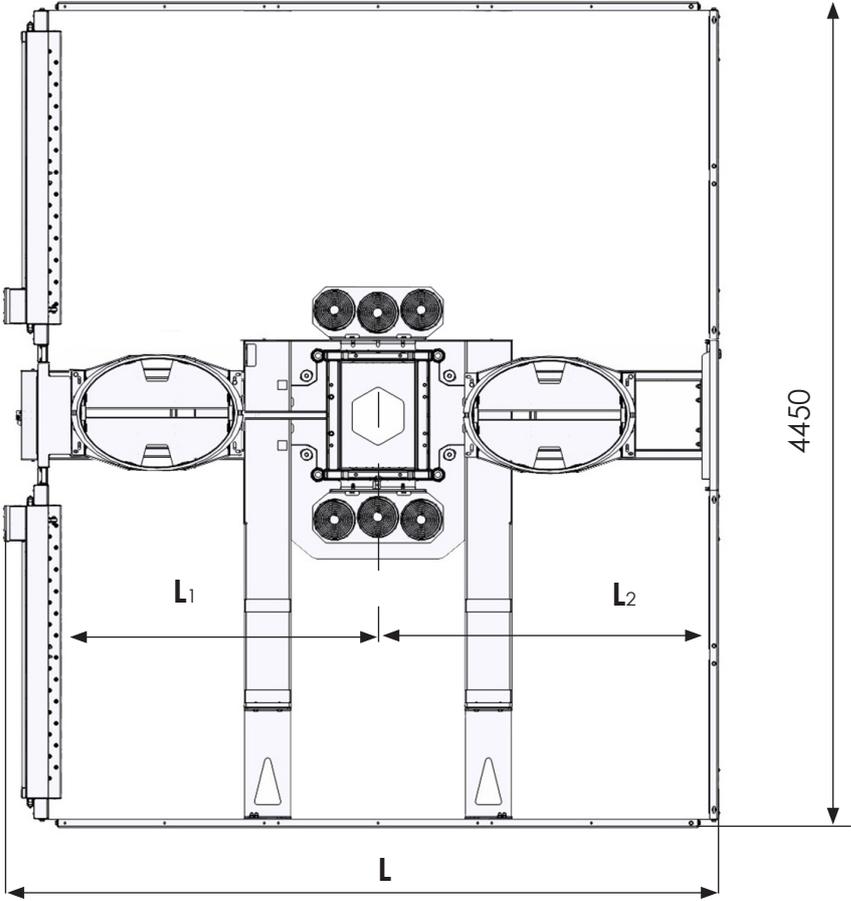
## GROUND ENCLOSURE FOR SINGLE AND TWIN CAGES



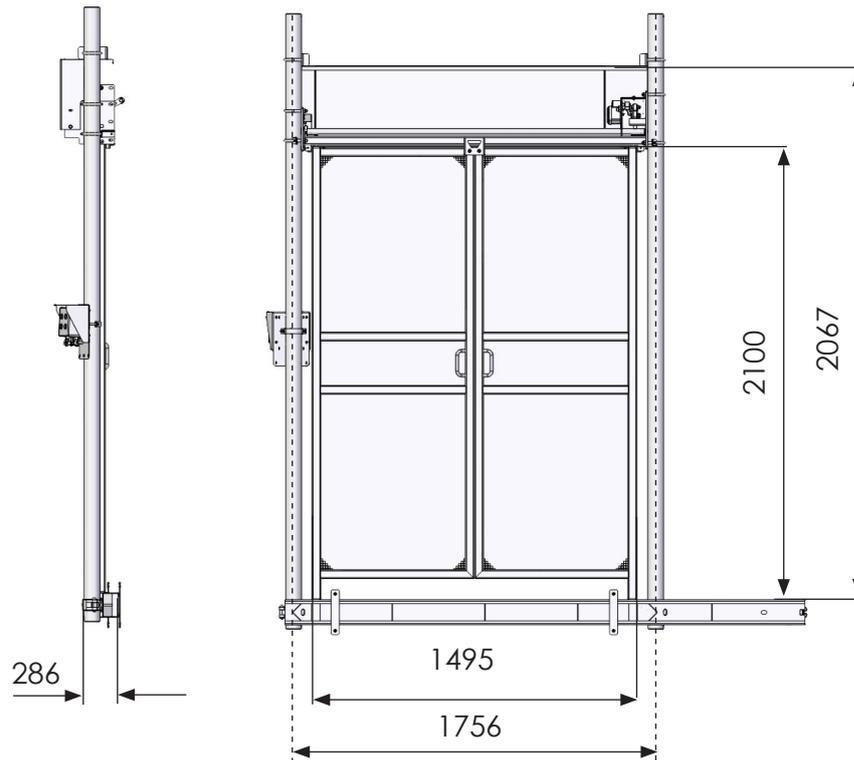
Hoist	L	L <sub>1</sub>	L <sub>2</sub>
SCXX32	3886 mm	1714 mm	1794mm
SCXX37	4387 mm	1991 mm	2044 mm
SCXX42	4887 mm	2241 mm	2284 mm
SCXX47	5387 mm	2491 mm	2544 mm



**TWIN**

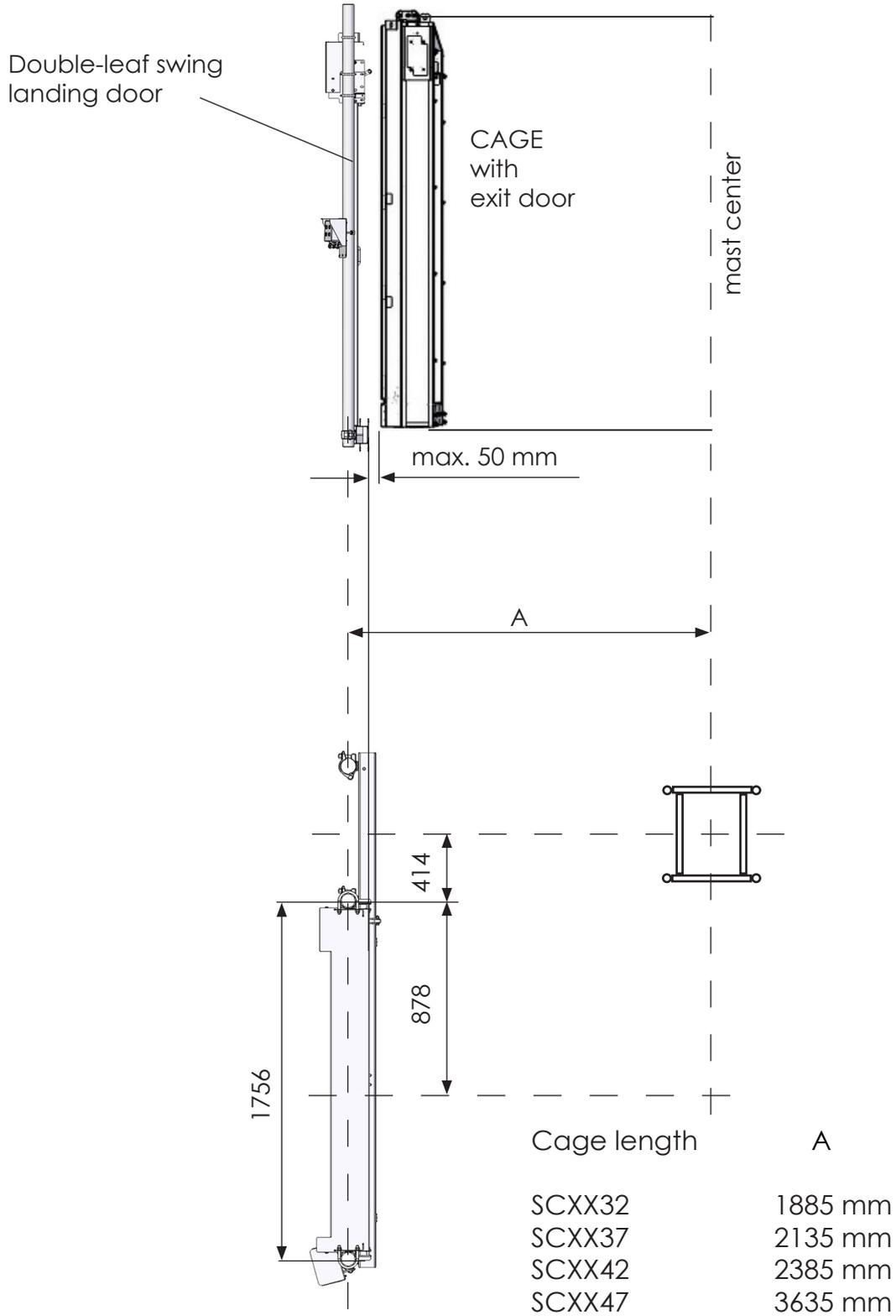


## DOUBLE-LEAF SWING LANDING DOOR with pipeline

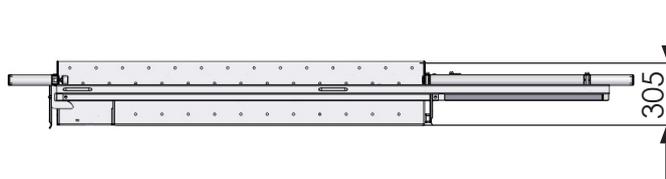
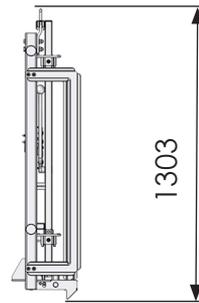
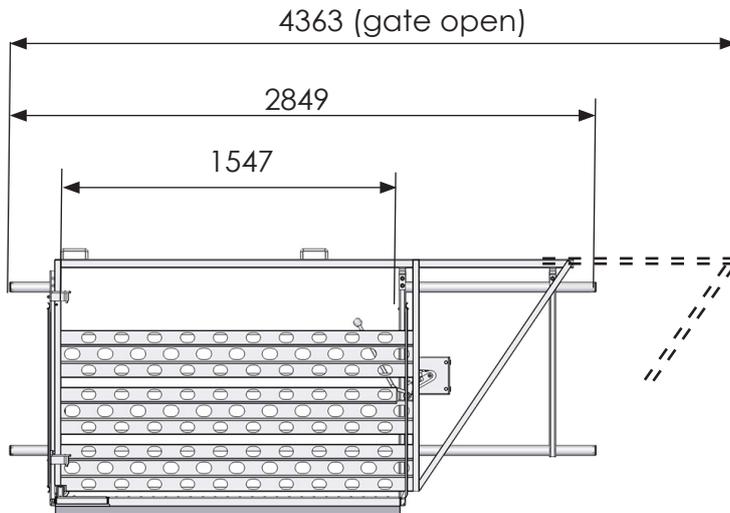
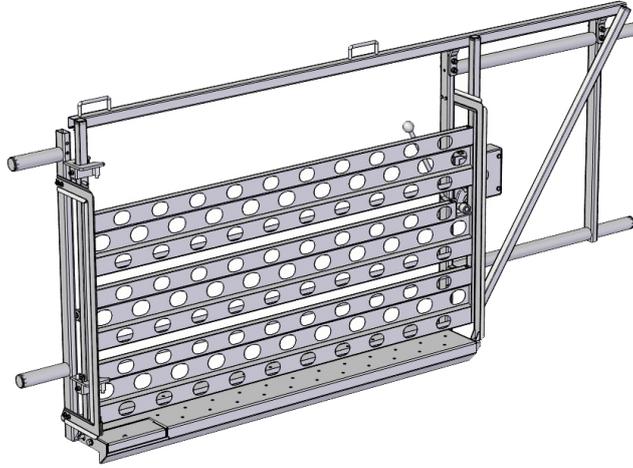


Weight: 98 kg

## LOCATION OF LANDING DOOR

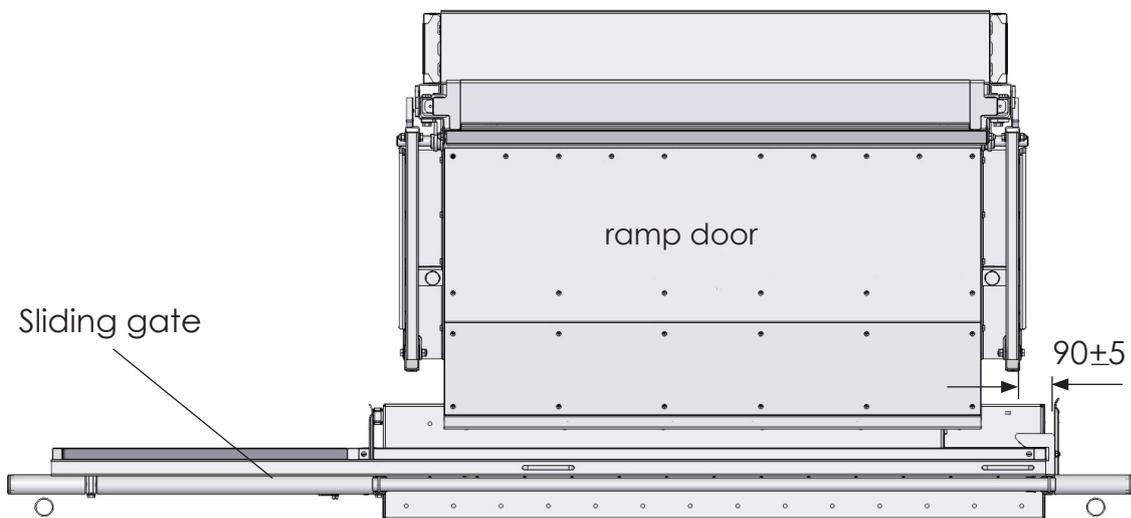
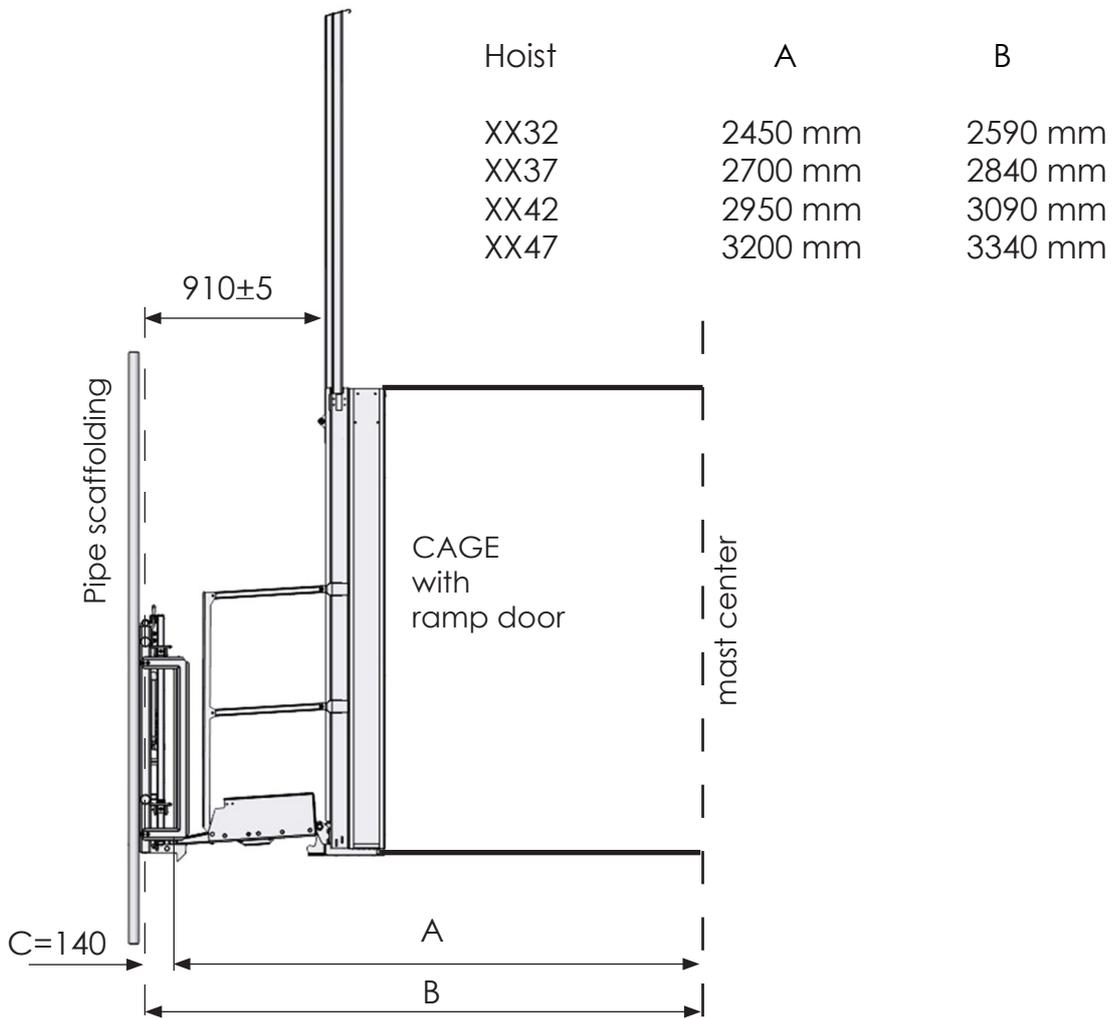


## HORIZONTAL SLIDING LANDING GATE



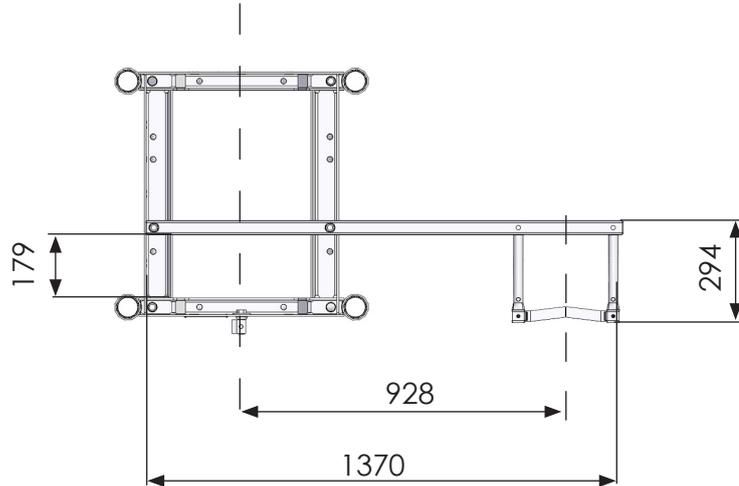
Weight: 78 kg

## LOCATION OF SLIDING GATE



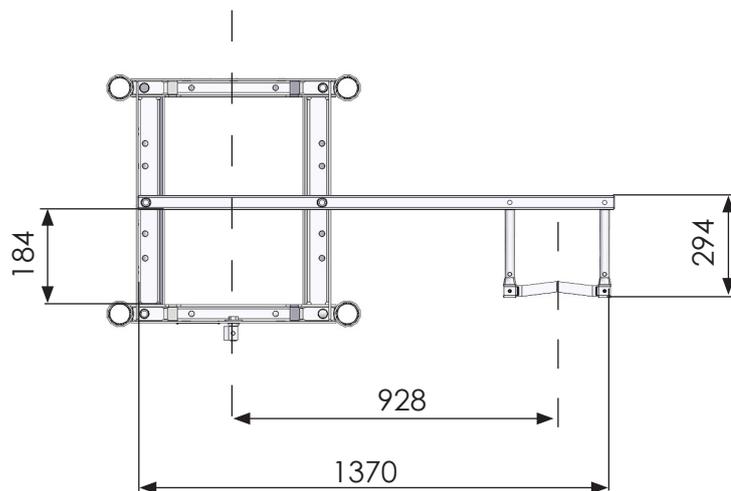
## CABLE GUIDE

Weight: 6,6 kg



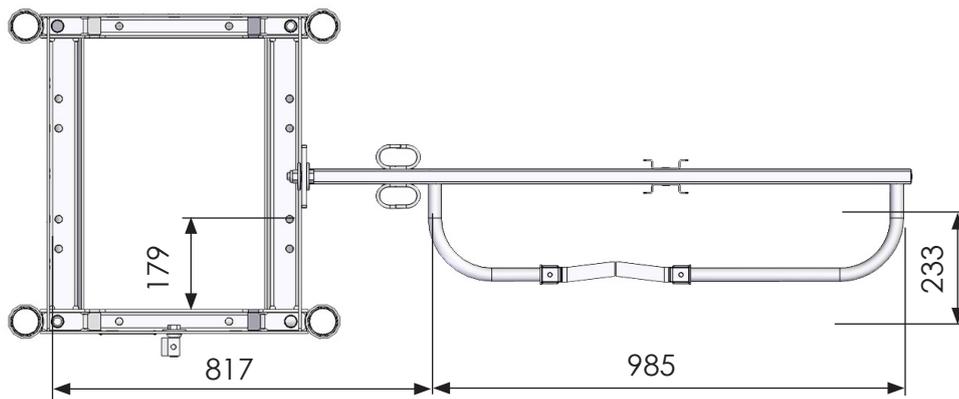
## CABLE GUIDE (High speed hoist 90m/min)

Weight: 6,6 kg



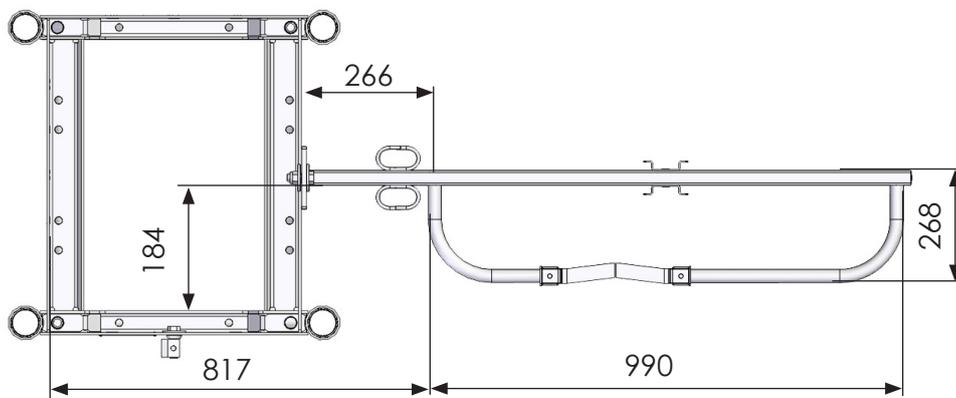
## CABLE GUIDES FOR TROLLEY

Single weight: 7,9 kg



## CABLE GUIDES FOR TROLLEY (High speed hoist 90m/min)

Single weight: 7,9 kg



## 1.2 Warranty terms

The seller warrants new **SCANCLIMBER** hoists is supplied free from defects in material and workmanship.

The warranty is valid for twelve (12) months from the date of delivery.

The warranty of the equipment and parts manufactured by subcontractors is limited to the warranty of their respective manufactures.

The warranty does not cover:

1. damage or loss caused by transportation
2. damage or loss caused by misconduct, misapplication or accident
3. damage or loss caused by negligence of instructions, service, maintenance or storage
4. normal deterioration of the equipment and damage resulting from wearing parts: material like rubber tyres, electrical equipment etc.
5. damage or loss caused by maintenance or repairs performed by a nonauthorized service personnel
6. damage or loss caused by purchaser's acts or omissions causing alternations to the quality or structure of mast climber
7. any such indirect damage or loss as loss of profit and downtime cost etc.

No claim will be accepted if non-original parts, not approved of by the seller, have been used.

Warranty claims should be done in writing describing the damage as completely as possible and sent to the address below within fourteen (14) days from the date of disclosure of the damage.

address:

**SCANCLIMBER OY**

- Turkkirata 26 • FI-33960 PIRKKALA, FINLAND •
- Tel. +358 10 680 7000 • Fax +358 10 680 7033 • [www.scanclimber.com](http://www.scanclimber.com)

The warranty liability is limited, at the sellers discretion to

1. replacing the damaged part or
2. repairing the damaged part by the seller or by a subcontractor or
3. granting a price reduction

The warranty of replaced or repaired part expires at the expiration time of the warranty of the mast climber.

The purchaser is obliged to send the damaged part to the seller for inspection by a request. Replaced or refunded parts become the property of the seller.



## 2. SAFETY INSTRUCTIONS

2.1	General Information .....	3
2.2	Before the Operation .....	4
2.3	Operation .....	5
2.4	Mounting and Dismounting .....	6
2.5	Service and Maintenance .....	7
2.6	Instruction and Warning Decals.....	8



## 2. SAFETY INSTRUCTIONS

### 2.1 General Information

#### Safety Instructions and Symbols

In this instruction manual the following note is used to emphasize the importance of the matter.



**Special information, instructions and warnings to avoid personal injuries or material damages.**

The hoist is designed and manufactured in accordance with the existing standards and safety regulations. Nevertheless, the operator or third parties may be injured or killed, or the hoist may be damaged or cause other material damage, if the hoist is used carelessly or against the instructions.

It is allowed to use the hoist only according to the instructions and with the hoist in perfect technical condition. Also the operator must be informed about the risks involved in the operation of the hoist. The defects and faults weakening the safety should immediately be repaired.

The builder's hoist is meant for transportation of persons and materials only inside the hoisting cage. As an exception are permitted the hoist's mounting, dismounting and maintenance work which are allowed to be carried out only by persons well familiar with the hoist and trained for these tasks.

The proper use of the hoist requires good knowledge and understanding of the operation and maintenance instructions as well as the strict following of these instructions.

## 2.2 Before the Operation

Read the instructions and warning signs thoroughly before operating the hoist.

Only an inspected hoist which is in perfect condition is allowed to be adopted to use.

The hoist must be checked once a day before the beginning of the shift in order to make sure there are no defects. The possible defects must immediately be reported to the person in charge of the hoist's operation, the site's foreman or other person in charge of the occupational safety. If necessary, the hoist must be withdrawn from use until the fault or the defect is repaired.

Always before the operation of the hoist make sure that no-one's safety is at risk!

The operation of the hoist is allowed only when every protection and safety equipment is installed and in perfect condition.

All operations and working methods against the instructions and involving a risk of accident are strictly forbidden!

Take care of your personal safety! Use the helmet and protection shoes!

See that the hoist is sufficiently illuminated when working with it. See that all passages and landings are sufficiently illuminated.

Tools and other movables should be kept in their proper places.

The passages must be kept free! The steps, railings, bridges and ladders are to be kept clean of dirt, snow and ice!

## 2.3 Operation

The persons working with the hoist must be trained to use it.

The transportation of load or persons on the roof of the hoisting cage is forbidden! It is also forbidden to let the burden hang from the cage.

The hoist must not be overloaded. Remember the maximum load of the cage in kilos or the maximum number of persons permitted in the cage.

Should malfunction occur the hoist must immediately be stopped and withdrawn

from the use until the fault or defect is repaired. The malfunction must immediately be reported to the person in charge of the hoist's operation, the site's foreman or other person in charge of the occupational safety.

When the wind velocity is over 20 m/s the hoist's operation must be stopped and the hoist driven to the ground station.

After finishing the work with the hoist it must be locked against undue and unauthorized use.

## 2.4 Mounting and Dismounting

During the mounting and dismounting operations the working site must be secured and protected with a fence and warning signs.

During the mounting and dismounting the wind velocity should not exceed 12,5 m/s.

For the mounting and dismounting operations carried out high up use a proper personnel lifting device especially designed for this purpose or equipment otherwise safe and suitable for this task. The hoist parts must not be used as ascending supports.

Carefully follow the instructions on foundation and supporting of the hoist given in the installation instructions.

Separate parts and larger structural elements must be fastened to the cage during the work. Make sure that they do not cause any danger. Use only appropriate loading device and load fastening device which are in good condition.

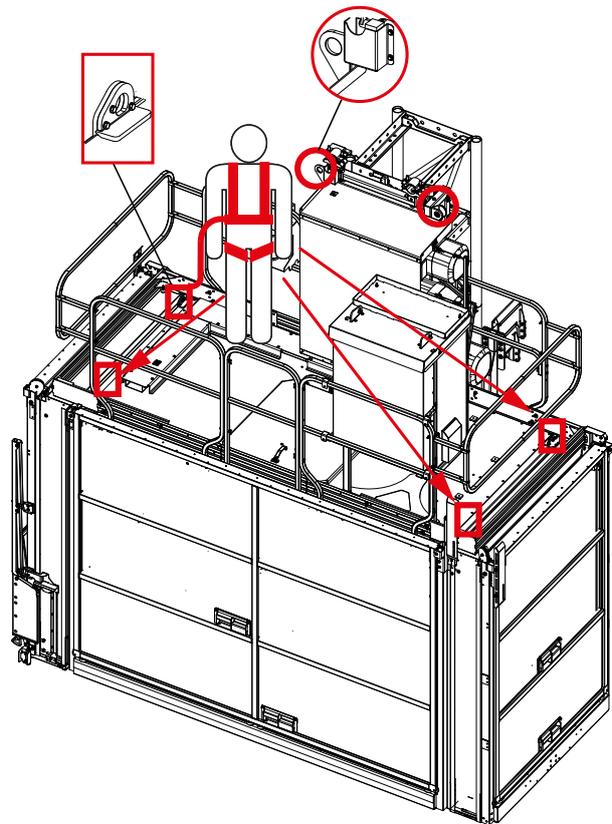
If the surface of wind exposed area is increased e.g when mounting a billboard to hoist cage, the wind load has to be taken into consideration.

Wind speed may increase near surrounding of tall buildings.

The electrical installations are allowed to be carried out only by qualified electricians.

The hoist shall be protected against lightning.

Always use safety harness during the mounting and dismounting operations. There is always the risk of falling down. The brackets for lifting the drive unit and hoist cage are also suitable for safety harness fixing. These brackets are shown in the picture below.



**Entanglement danger when using the brackets in the drive unit and driving the hoist.**



**Thread the harness rope through the railing when using the brackets outside the railings.**



When working on the cage roof and while the hoist is moving do not hang down or lean out beyond the railings. Especially during the upward movement there is a great risk of collision or squeezing against the cage and/or the landing structures.



Carry out one working phase at a time carefully and always finish it before starting the next phase or having a break.



## 2.5 Service and Maintenance

Keep the instruction and warning signs and stickers undamaged and readable. If necessary change them!

Only qualified persons well familiar with the hoist are allowed to carry out service and maintenance operations.

Secure and protect the service area with fences and warning signs when necessary for the occupational safety.

It is not permitted to change the hoist's constructions, to add any supplements or make other rearrangements without the permission of the manufacturer or the importer. This concerns both the design and the installation of the safety equipment as well as the welding of the constructions including repair welding.

All spare parts must be of equal quality with the original spare parts and approved by the manufacturer or the importer of the hoist. The user is obliged to check the quality of the spare part prior to its installation.

If during the service or repair operations any device or its part connected to the safety system is removed, it must be reinstalled and tested immediately after finishing the service and repair operations!

Operations connected with the electrical equipment are allowed to carry out only by qualified professionals in electricity well familiar with the equipment's operation.

Prior to electrical or other service operations shut off the voltage and secure the de-energization by locking the main switch. Put out a warning sign telling that the hoist is under repair.

Follow the service instructions and service intervals given in the hoist's instruction manual.

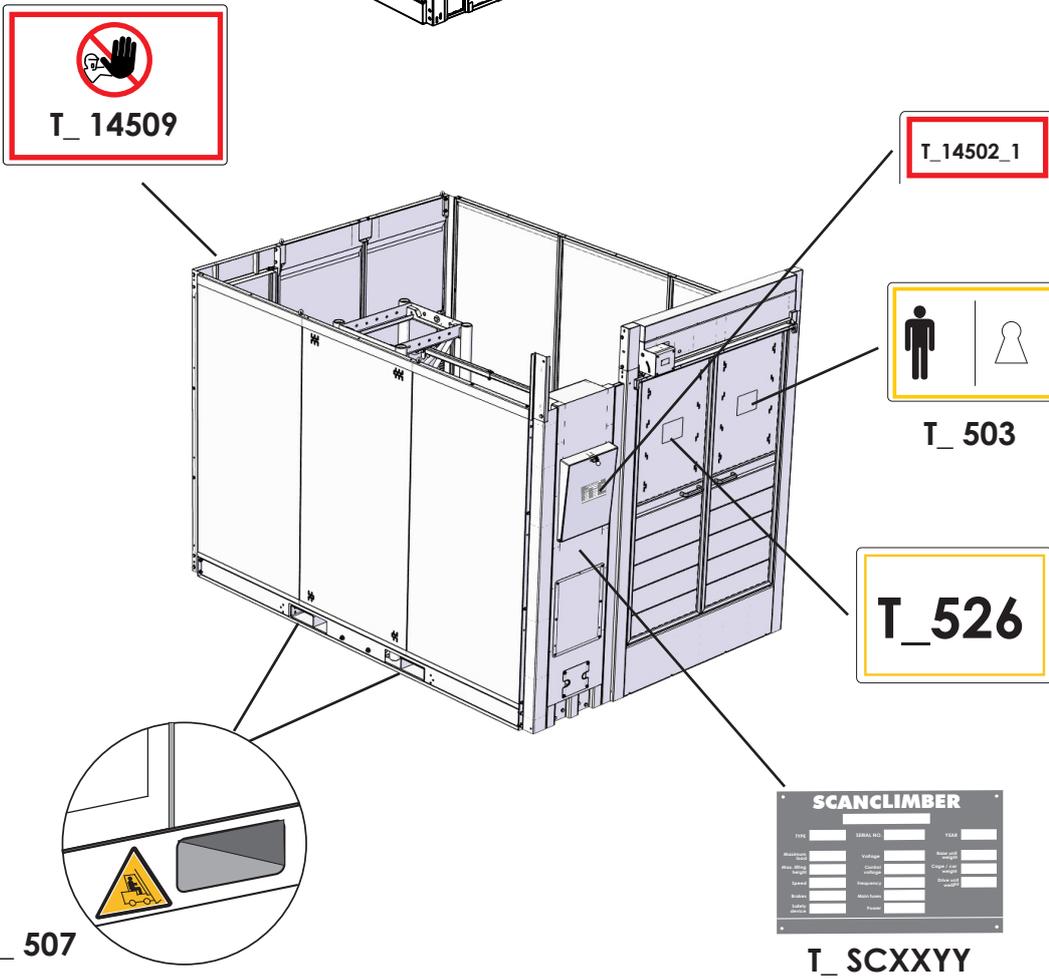
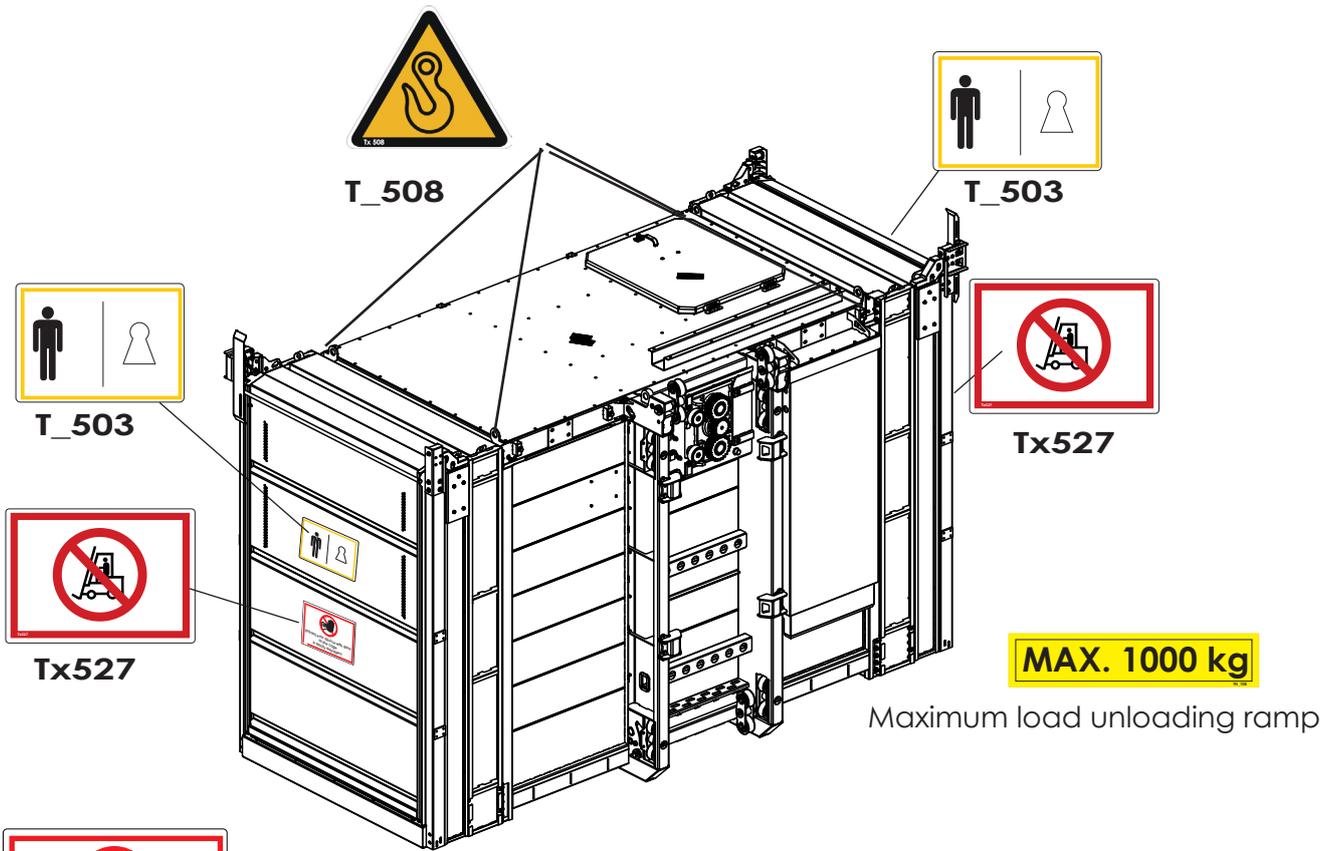
The hoist is to be inspected in the intervals prescribed by the law and local regulations. Keep records on the inspections.

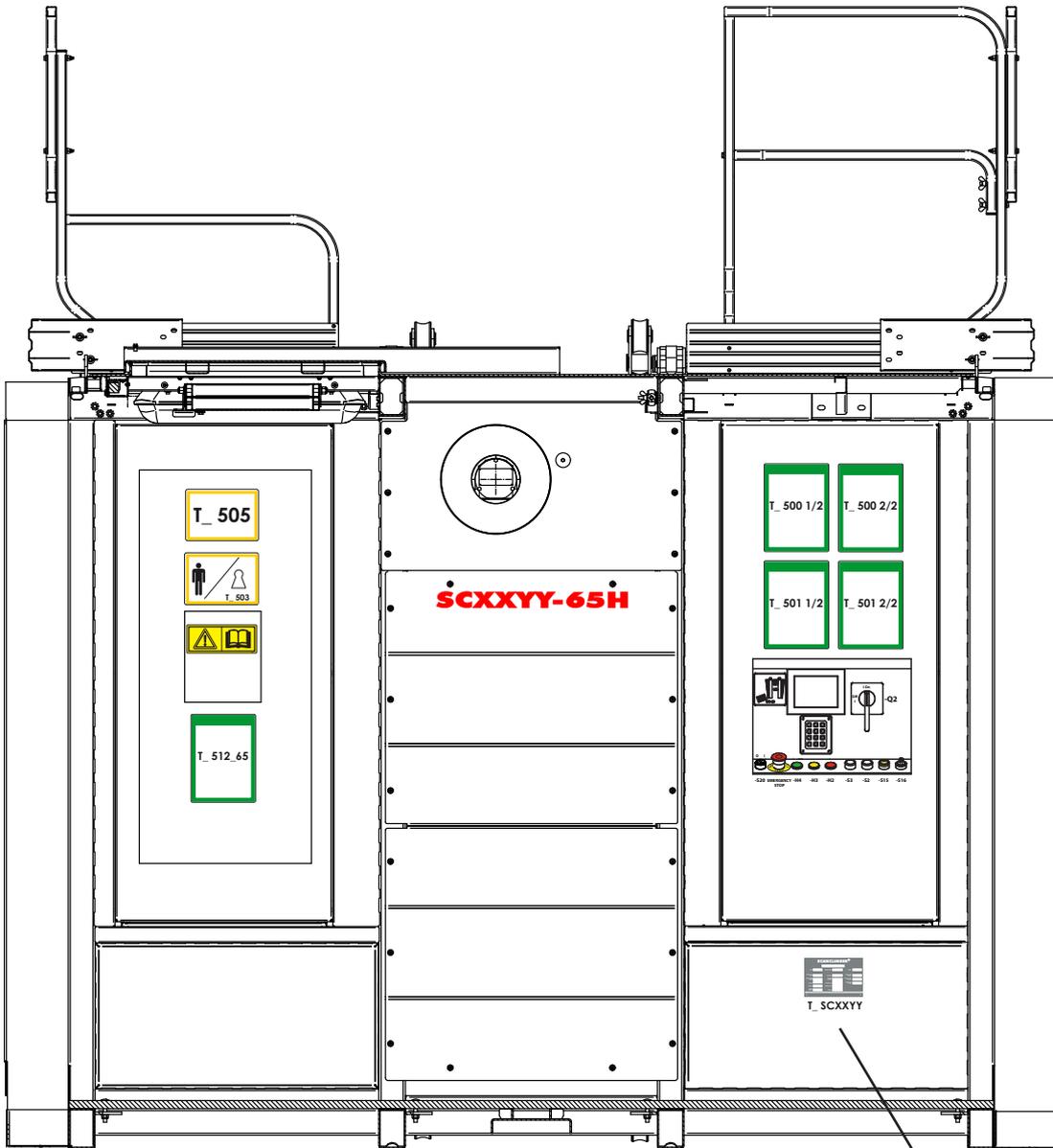
## 2.6 Instruction and Warning Decals

The number of decals in the table below are related to single cage hoists. If it is question about double cage hoists, the decal numbers in table are multiplied with two.

Code	Description	pcs / hoist	SC2032-65H SC2037-65H SC2042-65H SC2047-65H		SC2532-65H SC2537-65H SC2542-65H SC2547-65H		SC3232-65H SC3237-65H	
			F	FL	F	FL	F	FL
T_500 1/2	Safety instructions	1	X	X	X	X	X	X
T_500 2/2	Safety instructions	1	X	X	X	X	X	X
T_501 1/2	User instructions	1		X		X		X
T_501 2/2	User instructions	1		X		X		X
T_15501 1/2	User instructions	1	X		X		X	X
T_15501 2/2	User instructions	1	X		X		X	X
T_526	Attention	2	X	X	X	X	X	X
Tx527	Fork lift	2	X	X	X	X	X	X

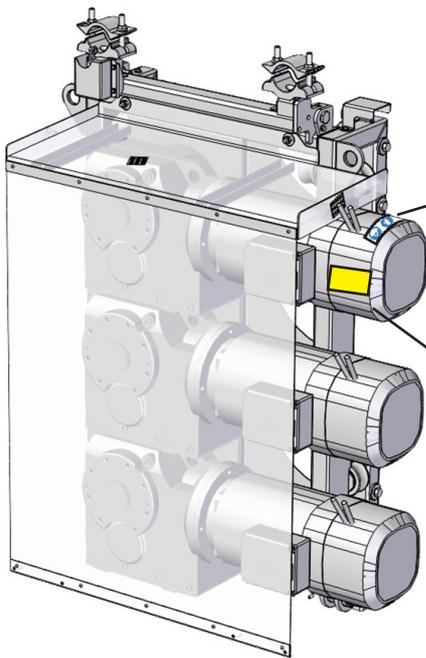
Code	Description	pcs / hoist	SC2032-65H SC2037-65H SC2042-65H SC2047-65H		SC2532-65H SC2537-65H SC2542-65H SC2547-65H		SC3232-65H SC3237-65H	
			F	FL	F	FL	F	FL
T_14503	Loads	4	X	X				X
T_11503	Loads	4			X	X		
T_08503	Loads	4					X	
Tx503 .../....	Loads	4	x	x	x	x	x	X
T_504	Read instructions	1	X	X	X	X	X	X
T_505	Max wind Speed	1	X	X	X	X	X	X
Tx506	Roof warnings	1	X	X	X	X	X	X
Tx507	Fork lift	2	X	X	X	X	X	X
Tx508	Hook	4	X	X	X	X	X	X
T_510 PG104112	Mast compatibility	1 / mast section	X	X	X	X	X	X
T_SCXXYY	Machine plate	2	X	X	X	X	X	X
T_512_65	Assembly instructions	1	X	X	X	X	X	X





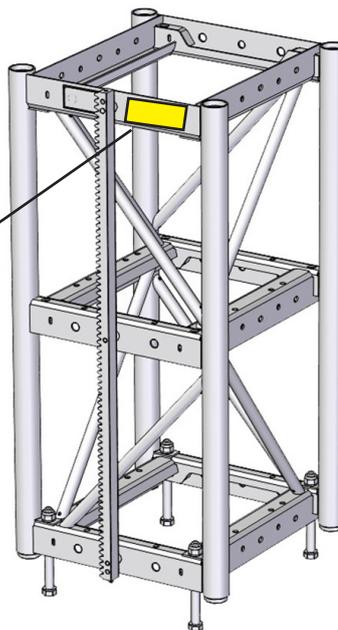
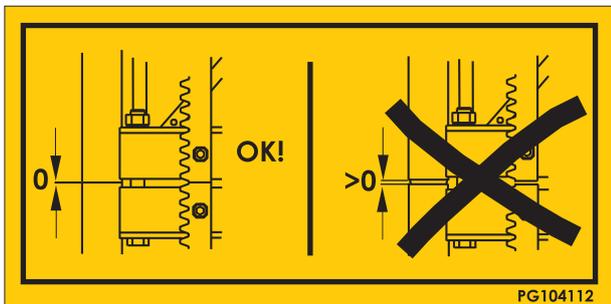
Instruction and warning  
decals in the cage

SCANCLIMBER®		CE
TYPE	SERIAL NO.	YEAR
Maximum load	Voltage	Base unit weight
Max. lifting height	Control voltage	Cage / car weight
Speed	Frequency	Drive unit weight
Brakes	Main fuses	
Safety device	Power	
<small>SCANCLIMBER OY Turkkila 24 FI-33760 PIIRKKALA, FINLAND                      * To SCXXYY-65                      www.scanclimber.com</small>		



**WARNING**  
Emergency lowering  
by competent  
persons only

Ta525

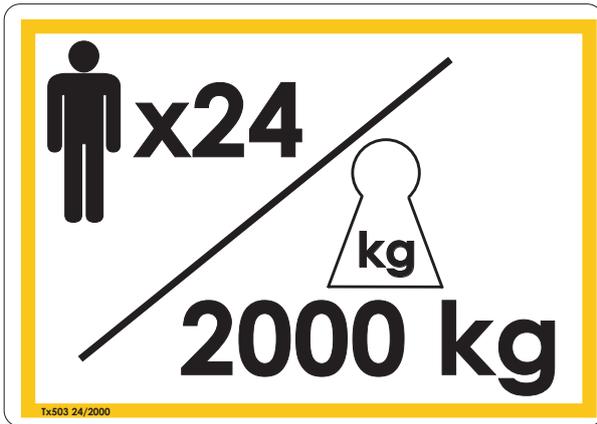


**MAX. 1000 kg**

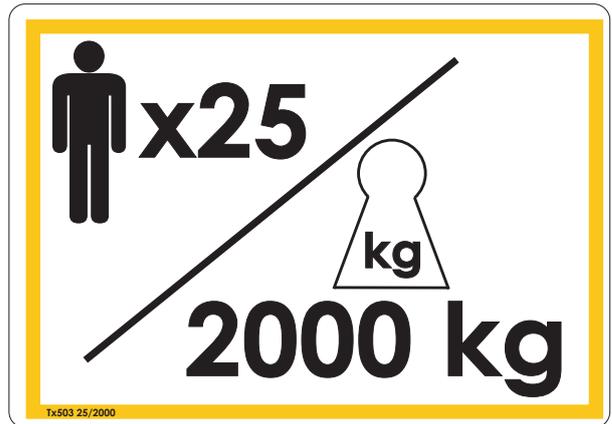
TH\_10E

# SCANCLIMBER®

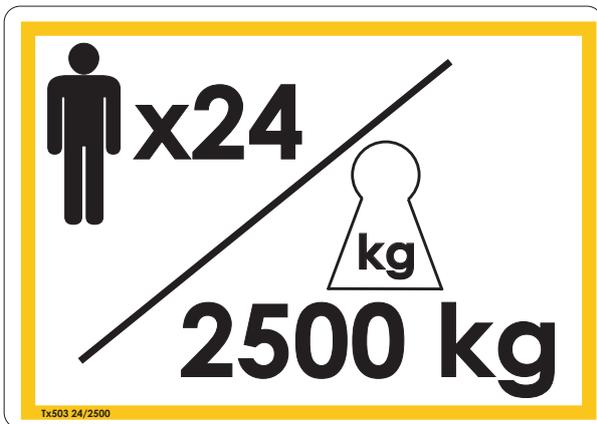
Loading stickers Tx503 .../.....



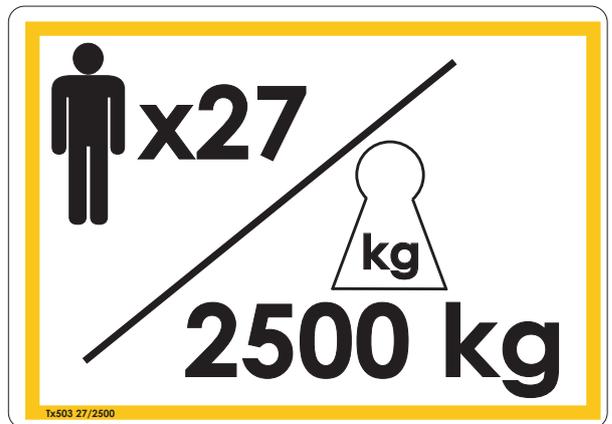
Tx503 SC2032-65H



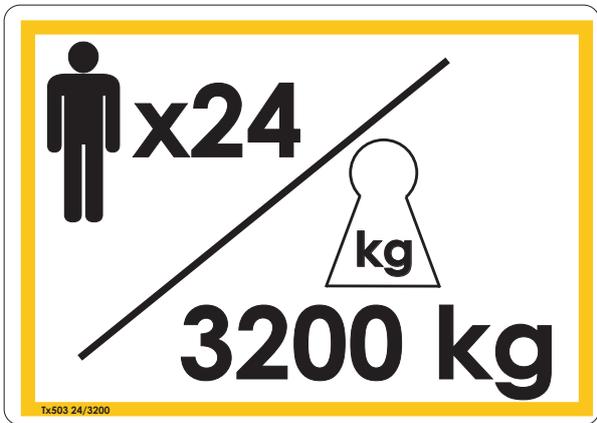
Tx503 SC2037-65H / SC2042-65H / SC204765H



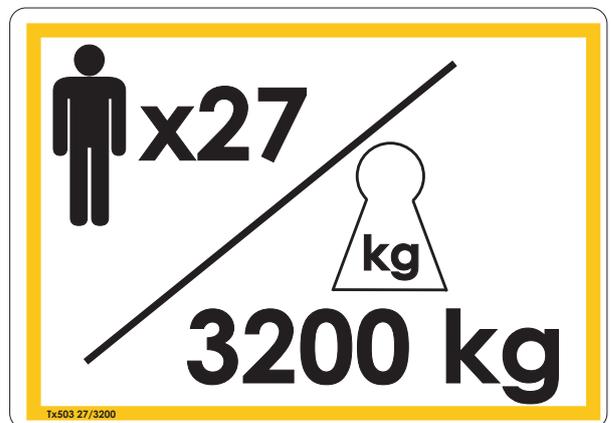
Tx503 SC2532-65H



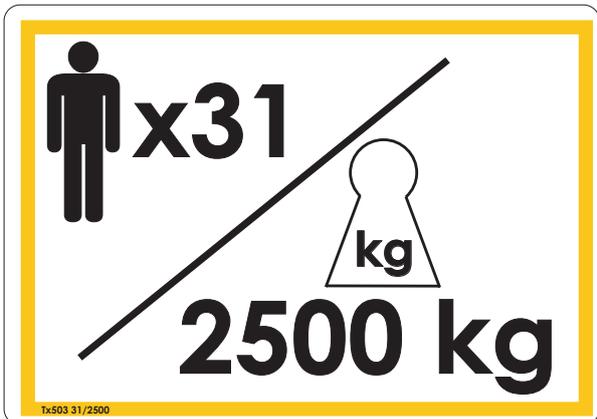
Tx503 SC2537-65H



Tx503 SC3232-65H



Tx503 SC3237-65H



Tx503 SC2542-65H / SC2547-65H

# SAFETY INSTRUCTIONS

Prior to daily use of this hoist the following safety procedures shall be performed carefully

## FUNCTIONAL TESTING

- CAGE DOOR CAN BE OPENED ONLY WHEN CAGE FLOOR IS AT LANDING LEVEL
- IT SHALL NOT BE POSSIBLE TO START AND KEEP IN MOTION THE CAGE UNLESS ALL CAGE DOORS ARE IN CLOSE POSITION. DOORS ARE TESTED ONE BY ONE
- IT SHALL NOT BE POSSIBLE TO START AND KEEP IN MOTION THE CAGE UNLESS ALL LANDING GATES/DOORS ARE IN CLOSE POSITION. GATES/DOORS ARE TESTED ONE BY ONE.
- IF GATE IS OPENED WHILE CAGE IS MOVING, IT MUST STOP IMMEDIATELY. LANDING DOOR SHALL NOT BE POSSIBLE TO OPEN IF CAGE IS NOT AT LANDING LEVEL.
- EMERGENCY STOP MUST STOP MOVEMENT OF THE CAGE IMMEDIATELY

**ATTENTION! MAKE SURE TO CHECK ONLY ONE SWITCH/FUNCTION AT A TIME**

- CAGE MUST STOP EXACTLY TO THE LANDINGS
- MOTOR BRAKES SHALL BE TESTED ONE BY ONE
- INTERCOM/SIGNAL DEVICE

Ta 500 SH 1/2

# SAFETY INSTRUCTIONS

Prior to daily use of this hoist the following safety procedures shall be performed carefully

## CHECK LIST

- FOUNDATION
- FASTENING BOLTS OF MAST ELEMENTS
- FASTENING BOLTS OF RACKS
- FASTENING BOLTS OF WALL TIES
  - IN FASADE, IN MAST, IN VERTICAL PIPES
- FASTENING BOLTS OF PIPE SUPPORTS
- FASTENING BOLTS OF ALUMINIUM RAIL SUPPORTS
- FASTENING BOLTS OF LANDING BARS
- FASTENING BOLTS OF LANDING GATES/DOORS
- MOVEMENT AND TOLERANCES OF GUIDING ROLLERS
- WIRE ROPES OF VERTICALLY LIFTED CAGE DOORS
- LUBRICATION OF RACK
- POSSIBLE OIL LEAKS OF GEAR BOXES
- CABLE GUIDES AND SPRING PLATES OF CABLE GUIDES
- HOIST CABLES, POSSIBLE WEAR AND TEAR
  - OPERATION OF HOIST CABLES AND CABLE TROLLEY
- CAMS OF LIMIT SWITCHES
- LANDING FLOORS, BRIDGES, RAILINGS, SAFETY ASPECTS
- WARNING SIGNS ARE READABLE

Ta 500 2/2

# INSTRUCTIONS FOR USE

## PUT INTO SERVICE

- CHECK, THAT THE **HOIST WAY IS FREE**
- SWITCH ON THE **MAIN SWITCH (F1)** IN THE GROUND STATION CONTROL BOX TO POSITION "1"
- SWITCH ON THE **MAIN SWITCH (Q2)** IN THE HOIST CAGE CONTROL PANEL TO POSITION "1"
- HOIST POWER SUPPLY IS IN ORDER WHEN THE GREEN PILOT LAMP **(H1) "POWER SUPPLY"** IN THE DOOR OF CONTROL BOX OF GROUND STATION IS ON.
- THERE IS SAFETY CIRCUIT BROKEN WHEN RED PILOT LAMP **(H2) "SAFETY CIRCUIT"** IN THE CAGE CONTROL PANEL IS ON. WHEN SAFETY CIRCUIT IS BROKEN, IT IS NOT POSSIBLE TO THE HOIST. SEE ERROR CODE FROM DISPLAY.
- THERE IS AN OVERLOAD IN CAGE WHEN YELLOW PILOT LAMP **(H3)"OVERLOAD"** IN THE CAGE CONTROL PANEL IS ON. REMOVE OVERLOAD.
- HOIST IS READY TO RUN WHEN THE GREEN PILOT LAMP **(H4)"READY"** IN THE CAGE CONTROL PANEL IS ON.

## START AND STOP

CLOSE DOORS (GROUND STATION DOOR OR LANDING GATE/DOOR AND CAGE DOOR).

### A) AUTO - MODE

- SELECT CONTROL MODE WITH SWITCH **(S20) "CONTROL MODE"**. TURN SWITCH TO POSITION 1 - **"AUTOMATIC"**.
- ENTER LANDING NUMBER FROM KEYBOARD WHERE YOU WANT TO GO. FOR EXAMPLE, IF YOU WANT TO GO TO FIFTH FLOOR, PRESS KEY "5" AND CONFIRM WITH KEY "#"=>HOIST STARTS, AND STOPS AUTOMATICALLY ON FIFTH FLOOR.

### B) MANUAL - MODE

- SELECT CONTROL MODE WITH SWITCH **(S20) "CONTROL MODE"**. TURN SWITCH TO POSITION 0 - **"MANUAL"**.
- PUSH THE BUTTON **(S2)"UP"** IN CAGE CONTROL PANEL. CAGE MOVES UPWARDS AS LONG AS BUTTON IS PUSHED AND STOPS WHEN BUTTON IS RELEASED.
- PUSH THE BUTTON **(S3) "DOWN"** IN CAGE CONTROL PANEL. CAGE MOVES DOWNWARDS AS LONG AS BUTTON IS PUSHED AND STOPS WHEN BUTTON IS RELEASED.
- WHEN IN DANGER, PUSH THE **"EMERGENCY STOP"** - BUTTON **(S1,S21)** DOWN AND THE HOIST STOPS **IMMEDIATELY**. THE BUTTON IS MECHANICALLY LOCKED TO IST LOWER POSITION AND HAS TO TURNED CLOCKWISE AND/OR PULLED OUTWARDS BEFORE IT IS RELEASED AGAIN.

Ta 501 SH 1/2

DECAL SCXXYYFL

## INSTRUCTIONS FOR USE

**ATTENTION! THE HOIST WILL NOT MOVE IF ANY OF THE LANDING GATES/ DOORS OR CAGE DOORS IS OPEN. THE HOIST WILL NOT MOVE EITHER IF THE ROOF HATCH IS OPEN NOR WHEN THERE IS OVERLOAD IN CAGE.**

### CONCLUDING THE WORK

- RUN THE HOIST TO THE GROUND STATION.
- CLOSE DOOR (GROUND STATION DOOR AND CAGE DOOR)
- TURN THE **MAIN SWITCH (F1)** IN THE GROUND STATION CONTROL BOX TO POSITION "0". WHEN NECESSARY USE SEPARATE LOCK TO LOCK THIS SWITCH TO PREVENT ILLICIT USE.

**ATTENTION! IN WEATHER CONDITIONS, WHERE THE TEMPERATURE GETS CLOSE TO ZERO OR UNDER IT AND THE RELATIVE HUMIDITY IN THE AIR IS HIGH, IT CAN BE NECESSARY TO LEAVE THE MAIN SWITCH (F1) TO THE POSITION "1" IN ORDER TO KEEP THE HEATING ON AND PREVENT WATER FROM CONDENSING IN THE EL-BOX.**

### ACTION DURING POWER CUT

- IF THE POWER SUPPLY IS CUT AND HOIST WILL STOP, **CALL HELP** BY GIVING AN EMERGENCY SIGNAL. PUSH THE PUSH BUTTON (**S15**) "ALARM SIGNAL" OR USE THE PHONE.

**ATTENTION! DO NOT GET OUT WITHOUT SUPERVISION, AND DO NOT CLIMB ACROSS SCAFFOLDING OR ACROSS THE MAST BECAUSE OF THE DANGER OF FALLING DOWN!**

- IF THE POWER CUT LAST FOR A LONG TIME, THE HOIST CAN BE LOWERED TO THE NEXT LANDING LEVEL BY OPENING MOTOR BRAKES MANUALLY. PRESS BOTH LEVERS SLIGHTLY BACKWARDS, TOWARDS THE MOTOR END. THE BRAKES ARE LOOSENED AND THE HOIST MOVES SLOWLY DOWNWARDS.

**ATTENTION! DO NOT LOWER THE HOIST TOO FAST, AS THE SAFETY BRAKE MIGHT THEN ENGAGE AND STOP THE HOIST ENTIRELY.**

- AFTER REACHING THE NEXT PLATFORM, OPEN THE CAGE DOOR AT THE LANDING SIDE MANUALLY WITH "TRIANGLE KEY".

**ATTENTION! IF CAGE HAS BEEN LOWERED MANUALLY DURING POWER CUT, HOIST MUST BE SWITCHED TO MANUAL-MODE AND DRIVE IT MANUALLY INTO ITS LOWEST POSITION IN GROUND STATION BEFORE HOIST IS TAKEN INTO USE IN AUTOMATIC CONTROL MODE.**

### SAFETY BRAKE

- ONCE THE SAFETY BRAKE HAS ENGAGED, IT IS NO LONGER POSSIBLE TO RUN THE HOIST.
- **CALL HELP** BY GIVING AN EMERGENCY SIGNAL. PUSH THE PUSH BUTTON (**S15**).
- THE PERSON RESPONSIBLE FOR MAINTENANCE OF HOIST MUST BE INFORMED

**ATTENTION! WHEN THE SAFETY BRAKE HAS ENGAGED, THE REASON FOR THIS HAS TO BE CLARIFIED CAREFULLY AND THE POSSIBLE DEFECT HAS TO BE FIXED BEFORE THE HOIST IS TAKEN INTO USE!**

Tα 501 SH 2/2

## DECAL SCXXYYF

# USER INSTRUCTIONS

## PUT INTO SERVICE

- CHECK, THAT **THE HOIST** WAY IS **FREE**
- SWITCH ON THE **MAIN SWITCH (Q1)** IN THE BASE FRAME CONTROL BOX TO POSITION "1"
- SWITCH ON THE **MAIN SWITCH (Q2)** IN THE HOIST CAGE CONTROL PANEL TO POSITION "1"
- HOIST POWER SUPPLY IS IN ORDER WHEN THE GREEN PILOT LAMP **(H1) "POWER SUPPLY"** IN THE DOOR OF THE CONTROL BOX OF BASE FRAME IS ON
- THERE IS SAFETY CIRCUIT BROKEN WHEN YELLOW PILOT LAMP **(H2) "SAFETY CIRCUIT"** IN THE HOIST CAGE CONTROL PANEL IS ON. CORRESPONDING LAMP EXISTS ALSO AT EVERY LANDING LEVEL. WHEN SAFETY CIRCUIT IS BROKEN, IT IS NOT POSSIBLE TO RUN THE HOIST.
- THERE IS AN OVERLOAD IN HOIST WHEN RED PILOT LAMP **(H3) "OVERLOAD"** IN THE HOIST CONTROL PANEL IS ON. REMOVE OVERLOAD.
- THE HOIST IS READY TO RUN WHEN THE GREEN PILOT LAMP **(H4) "READY"** IN THE HOIST CAGE CONTROL PANEL IS ON.
- THERE ARE PILOT LAMPS AND A LIST OF THE MOST COMMON FAULT SITUATIONS IN THE HOIST CAGE CONTROL PANEL.

## START AND STOP

- CLOSE DOORS (BASE FRAME DOOR OR LANDING GATE/DOOR AND HOIST CAGE DOORS)
- PUSH THE BUTTON **(S2, S22, S22.n) "UP"** IN ANY OF CONTROL PANEL PLACES. HOIST STARTS TO MOVE UPWARDS.
- PUSH THE BUTTON **(S2, S22, S22.n) "DOWN"** IN ANY OF CONTROL PANEL PLACES. HOIST STARTS TO MOVE DOWNWARDS.
- THE HOIST IS STOPPED WITH PUSH BUTTON **(S4, S24, S24n) "STOP NEXT LANDING"** PRESS BUTTON IN ANY OF THE HOIST CONTROL PLACES AND HOIST STOPS TO THE NEXT LANDING IN RUNNING DIRECTION.
- WHEN IN DANGER, PUSH THE **"EMERGENCY STOP"** - BUTTON **(S1, S21)** DOWN AND THE HOIST STOPS **IMMEDIATELY**. THE BUTTON IS MACHANICALLY LOCKED TO IST LOWER POSITION AND HAS TO BE TURNED CLOCKWISE AND/OR PULLED OUTWARDS BEFORE IT IS RELEASED AGAIN.
- AT LANDING LEVEL THE PUSH BUTTON **(S24.N) "STOP"** WILL STOP THE HOIST IMMEDIATELY WHEN PUSHED. NOTE! IT IS NOT AN EMERGENCY STOP.
- PUSH BUTTONS S1, S2, S3, S4 IN THE HOIST CAGE, PUSH BUTTONS S21, S23, S24 IN THE BASE FRAME CONTROL PANEL, PUSH BUTTONS S21.n, S22.n, S23.n, S24.n AT LANDING LEVELS.

Ta 15501 1/2

DECAL SCXXYYF

## USER INSTRUCTIONS

**ATTENTION! THE HOIST WILL NOT MOVE IF ANY OF THE LANDING GATES/ DOORS OR CAGE DOORS IS OPEN. THE HOIST WILL NOT MOVE EITHER IF THE ROOF HATCH IS OPEN OR WHEN THERE IS OVERLOAD IN CAGE.**

### CONCLUDING THE WORK

- RUN THE HOIST TO THE GROUND STATION.
- CLOSE DOOR (BASE FRAME DOOR AND HOIST DOOR)
- TURN THE **MAIN SWITCH (Q1)** IN THE BASE FRAME CONTROL BOX TO POSITION "0". WHEN NECESSARY USE SEPARATE LOCK TO LOCK THIS SWITCH TO PREVENT ILLICIT USE.

**ATTENTION! IN WEATHER CONDITIONS, WHERE THE TEMPERATURE GETS CLOSE TO ZERO OR UNDER IT AND THE RELATIVE HUMIDITY IN THE AIR IS HIGH, IT CAN BE NECESSARY TO KEEP THE HEATING ON AND PREVENT WATER FROM CONDENSING IN THE EL-BOX.**

### ACTION DURING POWER CUT

- IF THE POWER SUPPLY IS CUT AND HOIST WILL STOP, **CALL HELP** BY GIVING AN EMERGENCY SIGNAL. PUSH THE PUSH BUTTON **(S15)" ALARM SIGNAL"** OR USE THE PHONE.

**ATTENTION! DO NOT GET OUT WITHOUT SUPERVISION, AND DO NOT CLIMB ACROSS SCAFFOLDING OR ACROSS THE MAST BECAUSE OF THE DANGER OF FALLING DOWN!**

- IF THE POWER CUT LAST FOR A LONG TIME, THE HOIST CAN BE LOWERED TO THE NEXT LANDING LEVEL BY OPENING MOTOR BRAKES MANUALLY. PRESS BOTH LEVERS SLIGHTLY BACKWARDS, TOWARDS THE MOTOR END. THE BRAKES ARE LOOSENED AND THE HOIST MOVES SLOWLY DOWNWARDS.

**ATTENTION! DO NOT LOWER THE HOIST TOO FAST, AS THE SAFETY BRAKE MIGHT THEN ENGAGE AND STOP THE HOIST ENTIRELY.**

- AFTER REACHING THE NEXT PLATFORM, OPEN THE HOIST DOOR AT THE LANDING SIDE MANUALLY WITH "TRIANGLE KEY"

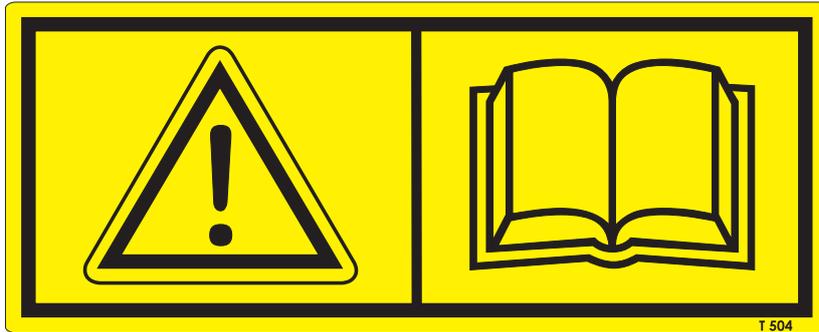
### SAFETY BRAKE

- ONCE THE SAFETY BRAKE HAS ENGAGED, IT IS NO LONGER POSSIBLE TO RUN THE HOIST.
- **CALL HELP** BY GIVING AN EMERGENCY SIGNAL. PUSH THE PUSH BUTTON **(S15)**
- THE PERSON RESPONSIBLE FOR MAINTENANCE OF HOIST MUST BE INFORMED.

**ATTENTION! WHEN THE SAFETY BRAKE HAS ENGAGED, THE REASON FOR THIS HAS TO BE CLARIFIED CAREFULLY AND THE POSSIBLE DEFECT HAS TO BE FIXED BEFORE THE HOIST IS TAKEN INTO USE!**

Ta 15501 2/2





**HOIST MUST NOT BE OPERATED WHEN  
WIND SPEED EXCEEDS**

**20 m/s**

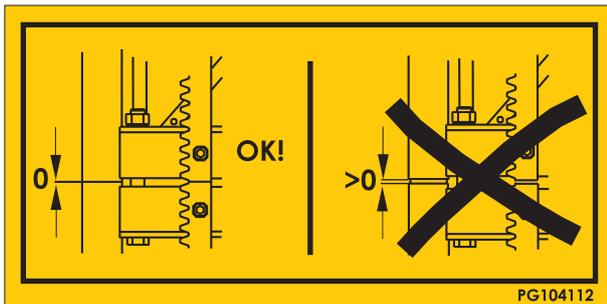
Operation temperature (C°) -25.....+40  
After exceptional weather conditions, hoist must be inspected by an authorised expert before taking into use.  
In weather conditions where icing appears, hoist must be taken at the ground level after completion of work. Ice must be removed from the mast and cable(s) before taking the hoist into use.

Ta 505



**ATTENTION**  
**DO NOT OPEN**  
**THE DOORS BEFORE**  
**THE HOIST HAS**  
**STOPPED!**

Ta526



**ATTENTION !**

**Open two locking screws**  
**before reset of safety brake**

**Locking screws class 5.8**

**Lubrication every 120 hours**  
**of work**

grease  
nipple



UCS-01E\_120h

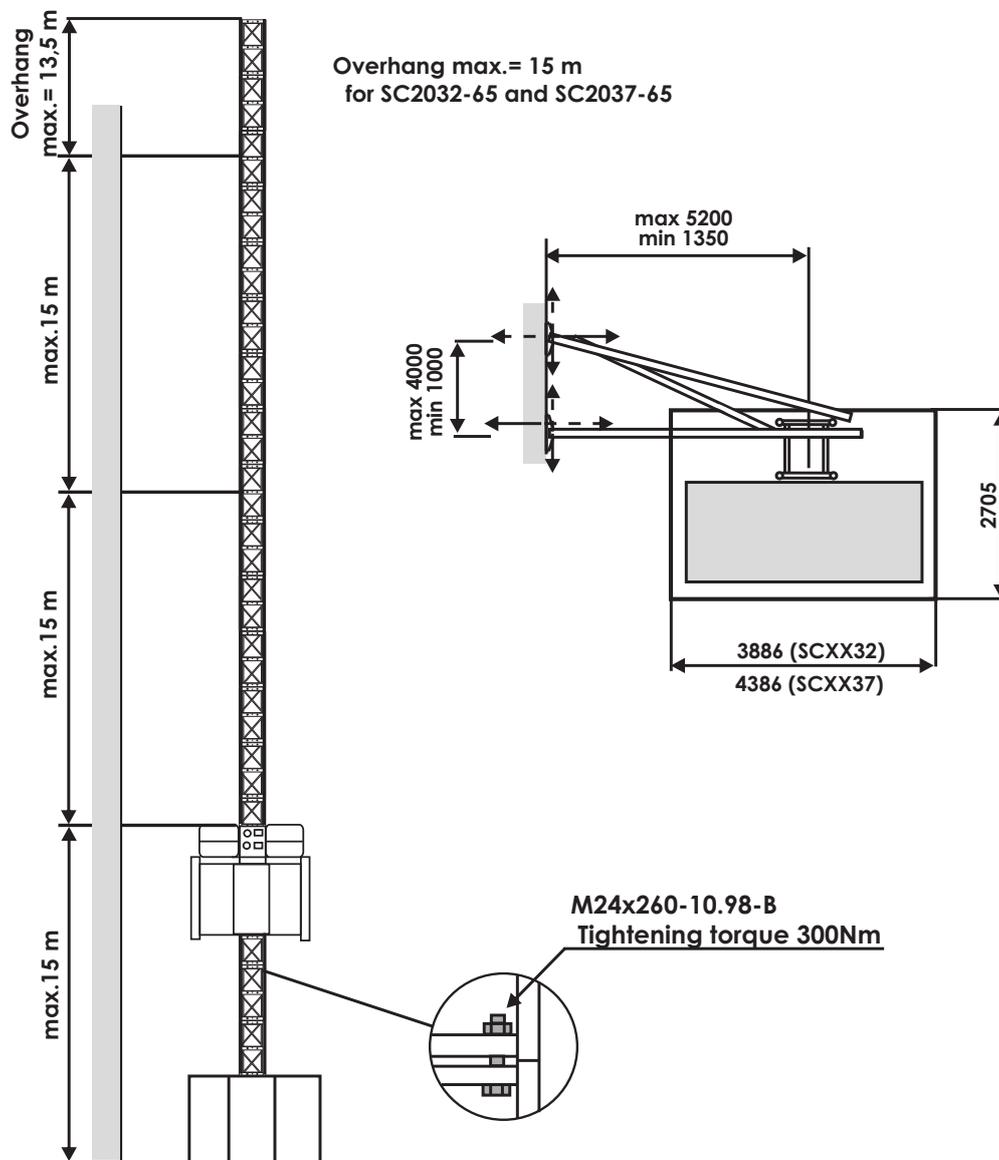
**SIDE DOOR OPENING**  
**IS PERMITTED ONLY**  
**WHEN THE HOIST CAGE IS**  
**IN THE GROUND STATION**

Ta522

## Standard anchoring

### ASSEMBLY INSTRUCTION SCANCLIMBER SCXX32(37)-65

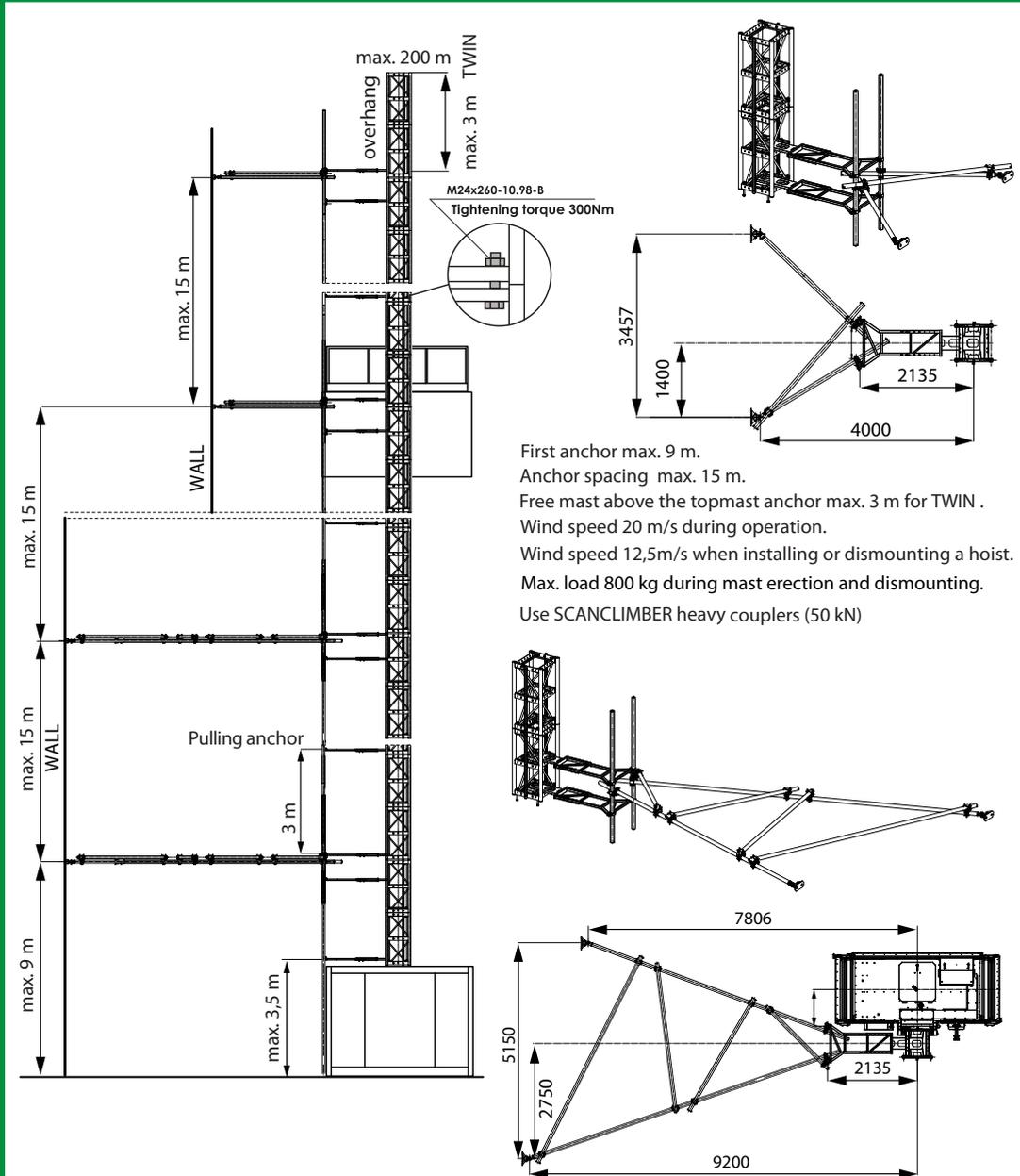
MAX. WIND SPEED 12,5 M/S DURING ERECTION  
MAX. LOAD 800KG DURING ERECTION  
READ INSTRUCTION MANUAL ERECTION  
INSTRUCTIONS  
SEE THE INSTRUCTION MANUAL FOR ANCHOR  
FORCES



Ta512-65

## Anchoring - special version

### ANCHORING SC-H65H



First anchor max. 9 m.  
 Anchor spacing max. 15 m.  
 Free mast above the topmast anchor max. 3 m for TWIN .  
 Wind speed 20 m/s during operation.  
 Wind speed 12,5m/s when installing or dismantling a hoist.  
 Max. load 800 kg during mast erection and dismantling.  
 Use SCANCLIMBER heavy couplers (50 kN)

Ta512\_65H\_KALUSTO

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## 3. OPERATING INSTRUCTIONS

### 3.1 Prior to the Use

Prior to the daily use of the hoist it must be checked both visually and functionally. This inspection does not replace the scheduled maintenance and is to be carried out separately by the person in charge of the hoist's operation.

Should during the daily inspection be discovered for instance loose screw connections or other defects they must be immediately repaired before putting the hoist in use.

#### 3.1.1 Check List

1. The hoist's driveway must be free of any obstacles. No material or objects must protrude from the landings to the hoist's driveway.
2. Check the hoist's foundation. If the hoist is mounted on ground foundation check that the ground has not sunk under the hoist.
3. Check the bolt joints of the mast sections.
4. Check the fastening of the gear racks.
5. Check the bolt joints of the anchorage and the ties to the building, pipeline and mast.
6. Check the support of the pipeline.
7. Check the landing ties.
8. Check the clearances of the hoist guide rollers.
9. Check the functioning of the hoist doors.
10. Check the condition of the pinions on the mast side on the ground platform.
11. Check that there are no oil leaks in the gearboxes.
12. Lubrication of the gear rack.
13. Check the cable guides installed on the mast. The cable may slip out of the faulty guide, get caught in the guide or be squeezed between the hoist guide rollers and damage.
14. The cable should move freely and be uncoiled without obstacles.
15. Check the fastening of the limit switches and limit cams as well as the functioning of the limit switches.
16. Check that the passages, railings, etc. on the landings are in condition according to the regulations.
17. The warning and instruction signs should at all times be well readable. Damaged signs must be replaced with new ones.

### 3.1.2 Functional Testing

The hoist door can be opened only when the cage is on a landing.

The hoist must not start if any of the hoist door is open. The doors are tested one by one by opening each door at a time and at the same time giving the hoist a command to start. At that time the hoist must not move.

The hoist must not start off if even one of the landing gates or doors is open. The doors and gates are tested one by one by opening each one of them at a time and at the same time giving the hoist a command to start. At that time the hoist must not move.

If the landing gate is opened while the hoist is moving the hoist should immediately stop. The landing door should not be able to open if the hoist is not standing on the landing.

The emergency stop buttons are tested one by one. The hoist should stop immediately when the emergency stop button is pushed.

The landing calls are tested on each landing at a time.



**Every limit switch and gate must be tested one by one. The defects and faults discovered must be repaired immediately and prior to the use of the hoist.**

During the hoist's test run check that the hoist is stopped exactly on the landing. The hoist load may cause some variation in the hoist's stopping places.

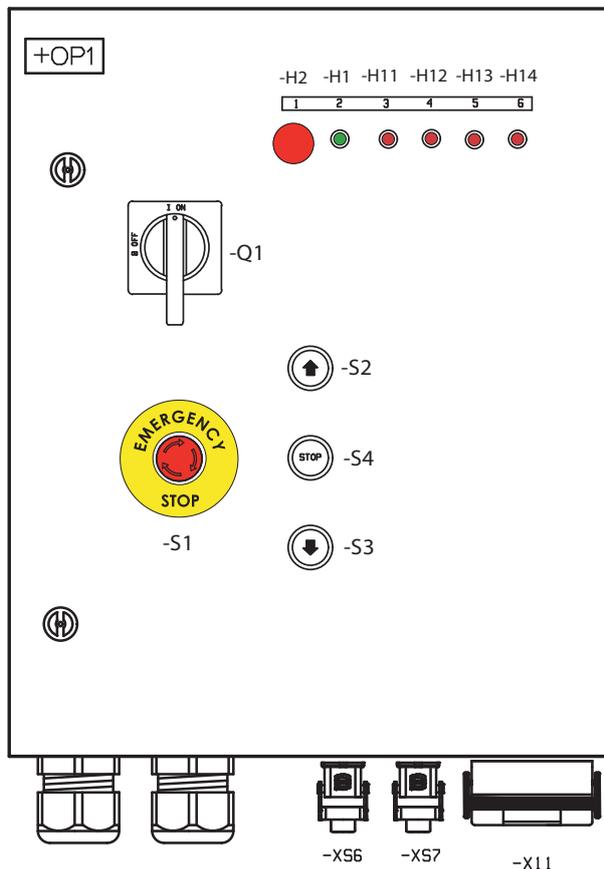
The testing of the engine brakes. Push the brake's release levers one by one towards the engine end on the ventilator side. The cage must not descend when one brake is released.

Test the hoist's signalling devices and the possible hoist intercommunication.

## 3.2 The Hoist's Start-up

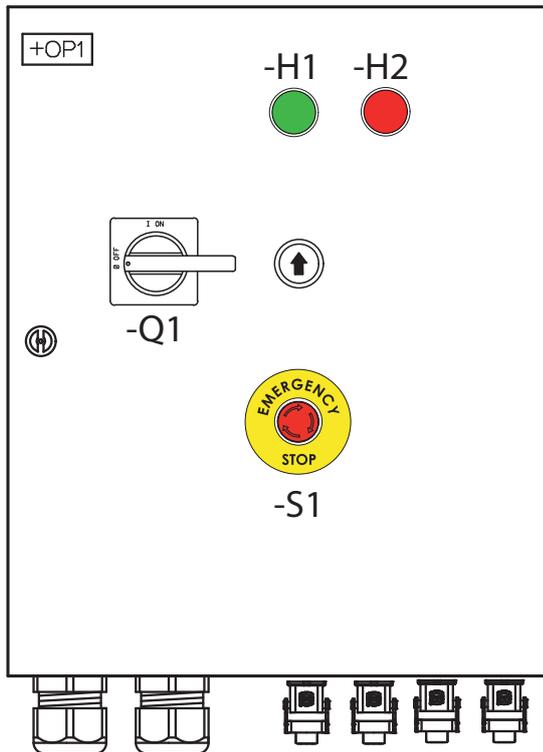
The start-up of the hoist with a relay control system is carried out as follows:

1. Switch **the main switch (Q1)** in the ground station control box to position "1".
2. Check that the ground station **emergency stop button (S1)** is released. If it is not, turn the button clockwise and at the same time pull it outwards.
3. Switch **the main switch (Q2)** on the hoist control panel to position "1".
4. The power supply is in order, when the **"Power supply" pilot lamp (H1)** on the ground station control box door is switched on.
5. The hoist is ready for use, when the green **pilot lamp (H4) "Ready for use"** on the hoist control panel is switched on.
6. The hoist is **overloaded**, when the red **pilot lamp (H3)** on the hoist control panel is switched on. Remove the overload.
7. The hoist's safety circuit is disconnected, when the yellow **pilot lamp (H2) "Safety circuit disconnected"** on the hoist control panel is switched on. This pilot lamp is also found in the ground station control box and in the call boxes on the landings. When the safety circuit is disconnected the hoist cannot operate.

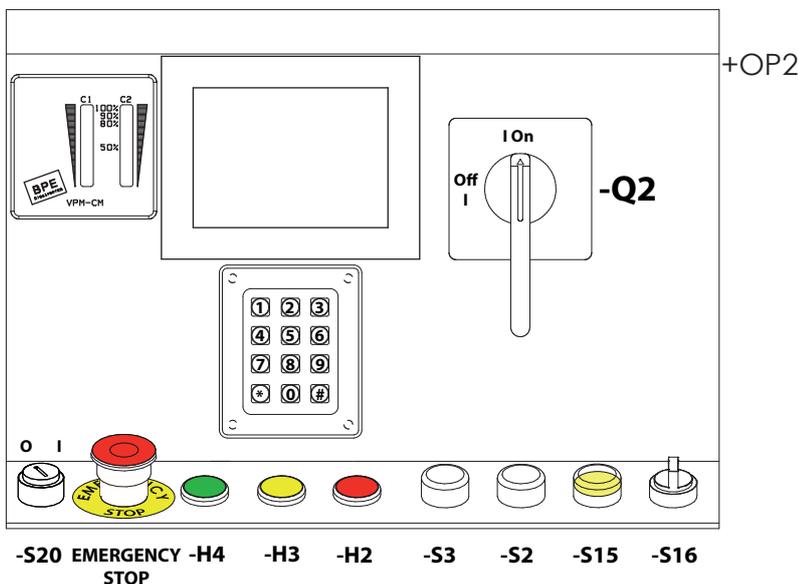


The start-up of the hoist with a **PLC ver. 1** system is carried out as follows:

1. Switch **the main switch (Q1)** in the ground station control box to position "1".
2. Check that the ground station **emergency stop button (S1)** is released. If it is not, turn the button clockwise and at the same time pull it outwards.

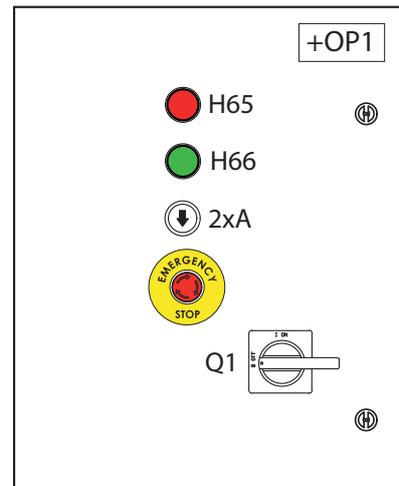


3. Switch **the main switch (Q2)** on the hoist control panel to position "1".
4. The power supply is in order, when the **"Power supply" pilot lamp (H1)** on the ground station control box door is switched on.
5. The hoist is ready for use, when the green **pilot lamp (H4) "Ready for use"** on the hoist control panel +OP2 is switched on.
6. The hoist is **overloaded**, when the yellow **pilot lamp (H3)** on the hoist control panel +OP2 is switched on. Remove the overload.
7. The hoist's safety circuit is disconnected, when the red **pilot lamp (H2) "Safety circuit disconnected"** on the hoist control panel +OP2 is switched on. When the safety circuit is disconnected the hoist cannot operate.

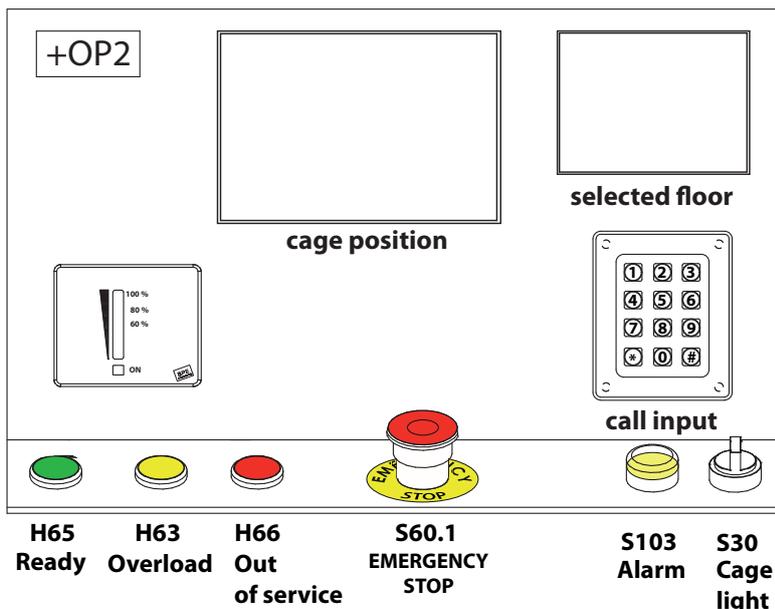


The start-up of the hoist with a **PLC ver. 2** system is carried out as follows:

1. Switch **the main switch (Q1)** in the ground station control box to position "1".
2. Check that the ground station **emergency stop button (S1)** is released. If it is not, turn the button clockwise and at the same time pull it outwards.
3. The hoist is ready for use, when the green **pilot lamps (H65) "Normal operation"** on the ground station control box +OP1 and **(H65) "Ready"** on the hoist control panel +OP2 is switched on.
4. The hoist is **overloaded**, when the yellow **pilot lamp (H63)** on the hoist control panel +OP2 is switched on. Remove the overload.
5. The hoist's safety circuit is disconnected, when the red **pilot lamp (H66) "Out of service"** on the ground station control box +OP1 and **(H66) "Out of service"** on the hoist control panel +OP2 is switched on. When the safety circuit is disconnected the hoist cannot operate.



Q1 - Main switch  
 H65 - Normal operation  
 H66 - Out of service  
 2xA - Call on  
 STOP - Emergency stop



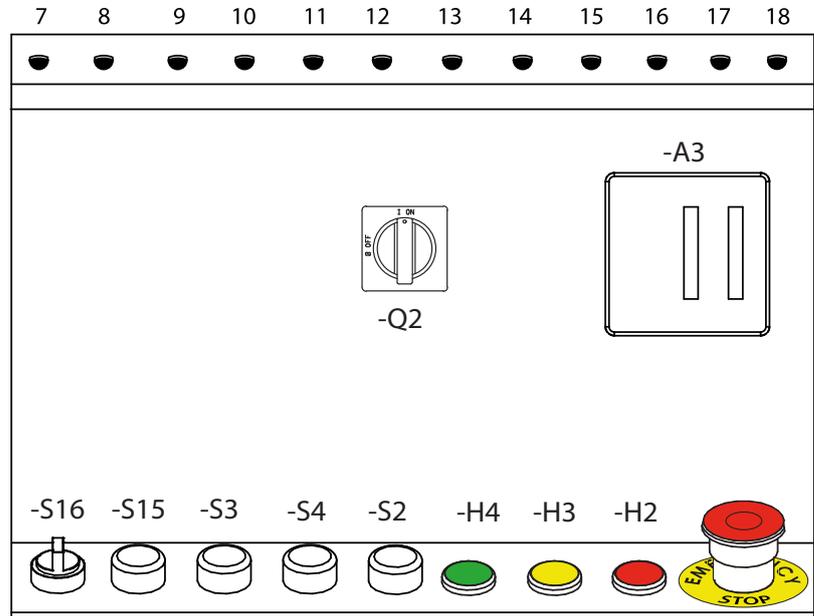
Remote control box  
 - use for service drive  
 (located inside the  
 +OP2 BOX)

## 3.3 Start and Stop of the Hoist

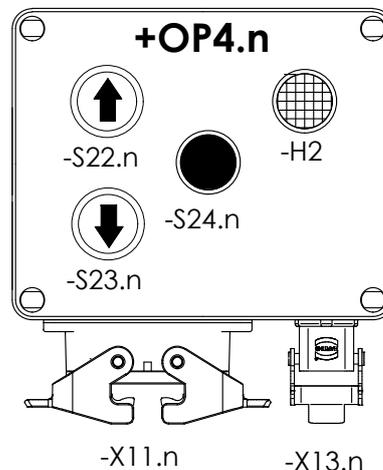
### 3.3.1 Relay Control

1. Close the door / the gate at the ground station / on the landing and the hoist door.
2. Push the button “Up” (S2, S22, S22.n), the hoist starts moving upwards.
3. Push the button “Down” (S3, S23, S23.n), the hoist starts moving downwards.
4. By pushing the buttons “Stop next landing” (S4, S24, S24.n) the hoist is stopped on the next landing in the direction of its motion. The hoist stops on the top and bottom landings automatically.
5. **In case of emergency** hit the “Emergency stop” button (S1, S21) down, and the hoist stops immediately. The button locks to its down position. The button is released by turning it clockwise and/or pulling outwards.
6. On the landing the red button (S21.n) stops the hoist immediately, but it is not an emergency stop button and does not lock when pushed.

(The buttons S1, S2, S3, S4 are situated in the case, the buttons S21, S22, S23, S24 at the ground station and the buttons S22.n, S23.n, S24.n, S21.n on the landings)



The hoist does not move if any of the landing gates or doors is open. The hoist does not move if the roof hatch is open or if the hoist is overloaded.

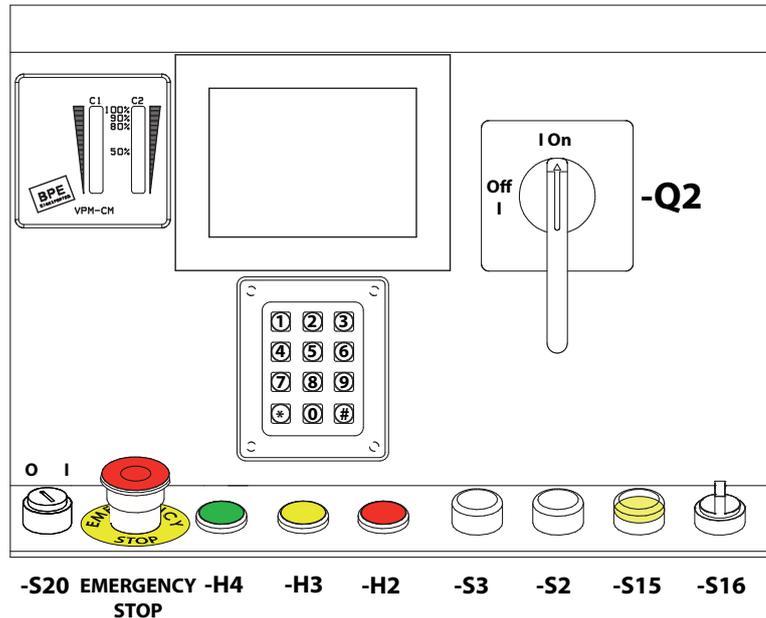


## 3.3.2 PLC (Programmable Logic Control) - ver. 1

Close the door/the gate at the ground station or on the landing and the hoist door.

### 3.3.2.1 Automatic Control

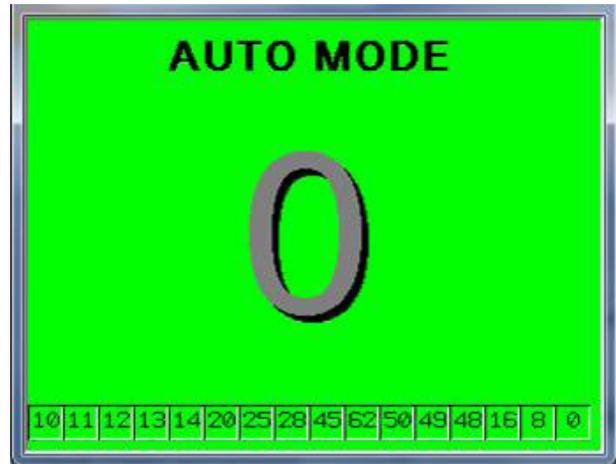
1. Choose with the switch (S20) "Mode selection" on the cage control panel position "1" – Automatic control.
2. Use the keyboard to select the desired floor, for instance if you wish to get to the fifth floor **push the digit key 5** and **confirm by pushing the key #** => the hoist starts moving and stops automatically on the fifth floor.



While travelling up the PLC sorts landings into sequential order of low to high, then low again for landings already passed and stops according to this order.

Below are two exceptions to this:

1. When floor 0 is pressed while going up, the lift will reverse direction after serving the highest floor in the list at that point. Any further higher floors than those already entered, which are entered while still travelling up will not be served until the hoist goes down to floor 0 then recommences serving floors as it travels up again.
2. While travelling past a floor, if that floor is entered just as the hoist is approaching that floor, but has insufficient distance to stop, the hoist will continue to its current active floor, then reverse direction to go back to that floor, then continue serving the current list of programmed floors in the original direction. If this operation is not desired, then operators need to refrain from entering a floor number just as that floor is being approached.

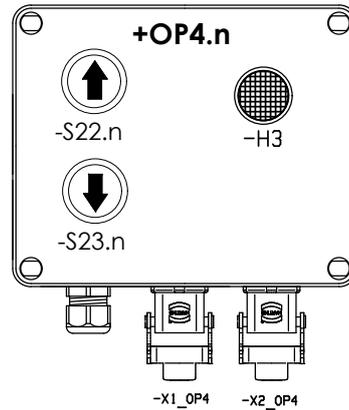


Main screen. On the bottom bar appears remember stops.



**PLC PROCESSOR REMEMBER ONLY 16 CALLS.**

**17th CALL WILL BE SKIPPED.**



+OP4 Landing control box  
- use for landing control

### 3.3.2.2 Manual control for PLC ver.1

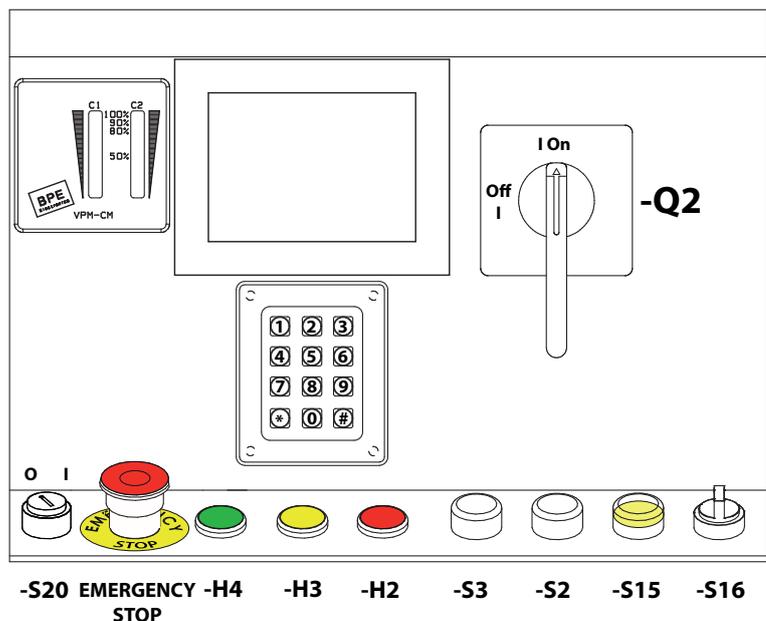
1. Choose with the switch (S20) “ **Mode selection**” inside the cage box to position “**0**” – **Manual control**.
2. Use the **push button** (S2) “**Up**” on the cage control panel to go up and correspondingly the push button (S3) “**Down**” to go down. The hoist will move as long as the button is pushed and stops immediately when the button is released.



The hoist does not move if any of the landing gates or doors is open. The hoist does not move either if the roof hatch is open or if the hoist is overloaded.

With manual control from the hoist the hoist moves in lowered speed.

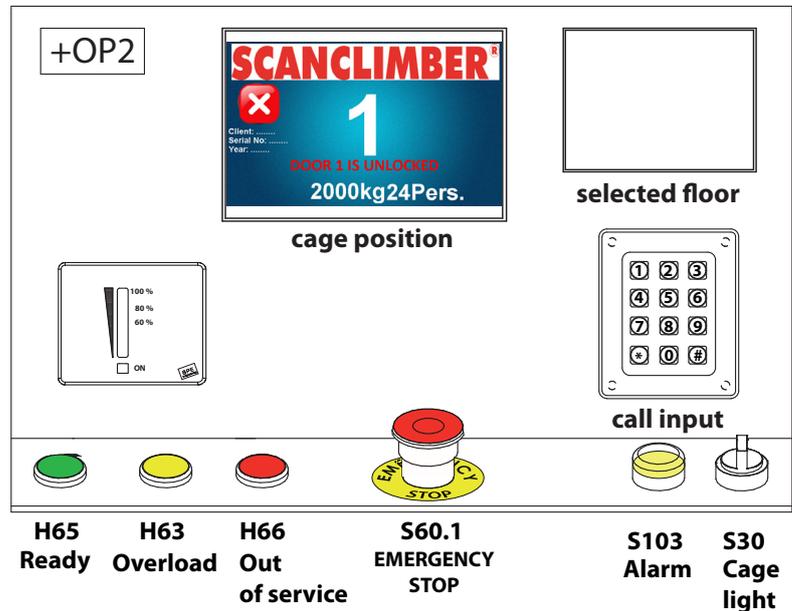
3. **In case of emergency** hit the button (S1 or S21) “**Emergency stop**” down, and the hoist stops immediately. The button locks to its down position. The button is released by turning it clockwise and/or pulling outwards.



## 3.3.3 PLC (Programmable Logic Control) ver. 2

Close the door/the gate at the ground station or on the landing and the hoist door.

1. Use the keyboard to select the desired floor, for instance if you wish to get to the fifth floor push the digit key 5 and confirm by pushing the key # => the hoist starts moving and stops automatically on the fifth floor.



While travelling up the PLC sorts landings into sequential order of low to high, then low again for landings already passed and stops according to this order.



An example of fault shown on the display

## 3.4 Closing the Operation

Drive **the hoist to the ground station**.

**Close** the hoist and the ground station **doors**.

Switch **the main switch (Q1)** in the ground station control box **to position "0"**. If necessary **lock** the disconnecting switch with a separate lock.



+OP4 Landing control box  
- use for landing control (PLC ver.2)

## 3.5 Erection, Maintenance or Inspection Operations

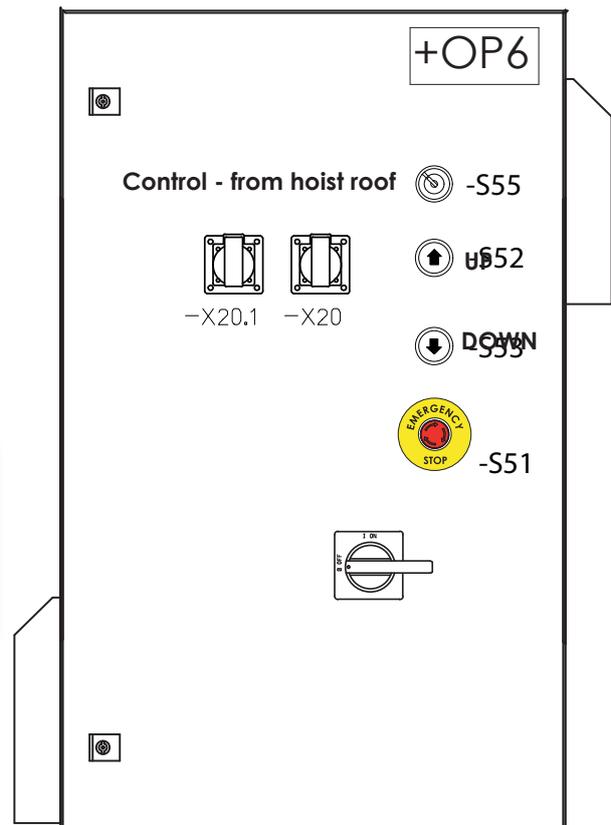
When carrying out erection, maintenance or inspection operations the hoist is controlled with the push button box on the cage roof.

1. Switch the key switch on the hoist roof "**Hoist roof control**" to position "1".
2. The hoist moves only by pushing the buttons on the roof "**Upwards**" and "**Downwards**". The hoist stops immediately, when the button is released. The selection of the "Hoist roof control" excludes functions from any other locations for control.



The hoist with a PLC control system moves in a lowered speed when controlled manually from the hoist roof.

3. In case of emergency hit the button "**Emergency stop**" down, and the hoist stops immediately. The button locks to its down position. The button is released by turning it clockwise and/or pulling outwards.
4. When the hoist is stopped for erection, maintenance or inspection operations, the **emergency stop** button on the roof must be pushed down for this period of time.
5. After finishing the work switch the key switch on the hoist roof "**Hoist roof control**" back to position "0" and take the key from the switch.



Picture 3.5. Control panel +OP6 on the cage roof

## 3.6 Evacuation people from the cage

### 3.6.1 Evacuation people from the cage - when the system not response- PLC ver.2

If the power supply is correct but the system is not working. Eg when the cage is between landings.

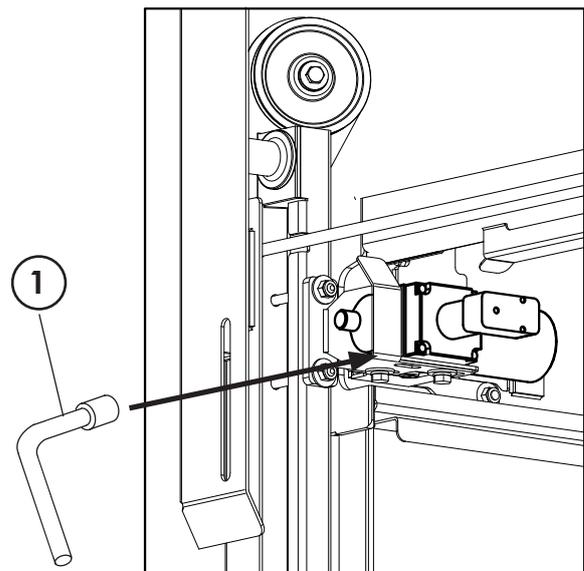
Call for help by pushing the button (S103) or use the hoist phone (option).

Connect test box +OP3 to socket XP1.1 inside the ground station box +OP1 Turn switch "Recall drive/Inspection" to position 1 and push the button "Up" (S61A) and next push the button "Down" (S61B). and try to drive. If is not possible swich on S80 - Emergency release (S82 - test brake have to be off)

After press button S81A until you reach next landing/floor.



To evacuation people from the cage - when the system not response we need help other person which connect test box+OP3 to socket XP1.1 inside the ground station box +OP1 and drive the cage to the landing.



Picture 3.6 Cage door opening



**THIS CONCERNS HOISTS WITH A PLC CONTROL.** IN CASE THE HOIST HAS DURING THE POWER CUT BEEN DESCENDED BY RELEASING THE BRAKES MANUALLY, THE CAGE MUST AFTER THE RESTORATION OF THE POWER BE DRIVEN MANUALLY TO THE GROUND STATION BEFORE SWITCHING TO THE AUTOMATIC CONTROL.

## 3.6.2 Evacuation during Power Cut

If the power supply is disrupted and the hoist stops **call for help** by pushing the button (S103) or use the hoist phone. Contact the person in charge of the hoist's service.

In case the power cut lasts long, the hoist can be descended to the next landing by releasing the engine brakes manually. Push the brake levers lightly backwards towards the end of the engine. The brakes are released and the hoist starts moving downwards.

The door on the landing side is opened manually with an emergency key (1) - picture 3.6, and the exit from the hoist is safe. The emergency key is located in the cage.



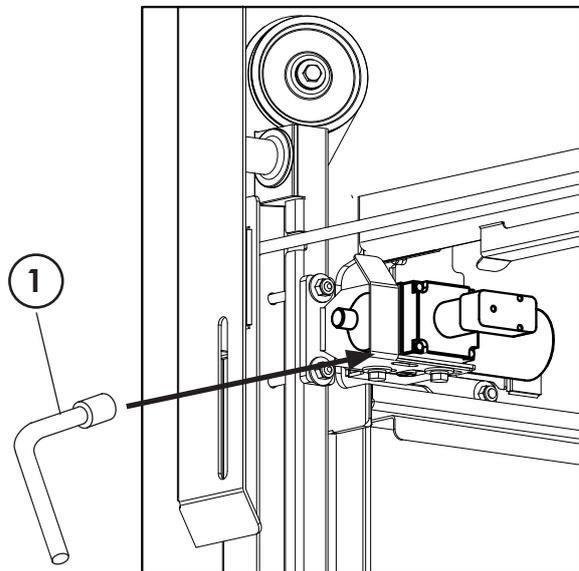
**THIS CONCERNS HOISTS WITH A PLC CONTROL.** IN CASE THE HOIST HAS DURING THE POWER CUT BEEN DESCENDED BY RELEASING THE BRAKES MANUALLY, THE CAGE MUST AFTER THE RESTORATION OF THE POWER BE DRIVEN MANUALLY TO THE GROUND STATION BEFORE SWITCHING TO THE AUTOMATIC CONTROL.



**Do not get out of the hoist without supervision. Do not climb the scaffolding or the mast! You could fall down!**



**Do not descend the hoist too fast, because in such case the safety brake may stop the hoist.**



Picture 3.6 Cage door opening

## 3.7 Safety Brake

### 3.7.1 Safety Brake for hoist with: relay and PLC ver.1

1. After the safety brake has switched on the hoist stops and it is impossible to operate it.

The safety brake is allowed to be bypassed only by a person well familiar with the hoist's operation. Before the bypass of the safety brake **make sure** of the **reason** for the brake operating. Switch the key switch (S19) inside the cage box +OP2 to position "I", "Bypass of the safety brake" and simultaneously push the button (S2) "Up". The hoist is stopped on the next landing. For more information, see chapter 4.4 Safety Brake.
2. **Call for help** by pushing the "Sound signal" button (S15) or use the hoist phone.
3. Contact the person in charge of the hoist's maintenance.



**When the safety brake has operated, the reason for this must always be thoroughly cleared up, and the possible fault repaired prior to restarting the hoist.**



**The limit switch of the safety brake is allowed to be bypassed only by a person well familiar with the hoist's operation and in charge of its maintenance and installation.**



**After the bypass of the safety brake do not forget to take the key off the switch. The key must not be kept in the control panel, but in possession of the site's supervision or the person in charge of the hoist's maintenance.**

## 3.7.2 Safety Brake for hoist with: PLC ver.2

1. After the safety brake has switched on the hoist stops and it is impossible to operate it.
2. **Call for help** by pushing the button (S103) or use the hoist phone.
3. Contact the person in charge of the hoist's maintenance.

The safety brake is allowed to be bypassed only by a person well familiar with the hoist's operation. Before the bypass of the safety brake **make sure** of the **reason** for the brake operating. Connect test box+OP3 to socket XP1.1 inside the ground station box +OP1 Turn switch "Inspection" to position 1 and push the button "Up" (S61A) and next push the button "Down" (S61B). For more information, see chapter 4.4 Safety Brake.



- S80 - Emergency release
- S82 - test brake
- S81A - brake release
- S61A - UP
- S61B - Down
- S60 - Recall drive



**When the safety brake has operated, the reason for this must always be thoroughly cleared up, and the possible fault repaired prior to restarting the hoist.**



**The limit switch of the safety brake is allowed to be bypassed only by a person well familiar with the hoist's operation and in charge of its maintenance and installation.**



**After the bypass of the safety brake do not forget to take the key off the switch. The key must not be kept in the control panel, but in possession of the site's supervision or the person in charge of the hoist's maintenance.**

## 3.8 Safety Limit - for Relay and PLC ver. 1

When the hoist reaches the safety limit (S18), the control circuit is disconnected and it is impossible to operate the hoist.

### 3.8.1 The Bottom Safety limit

Possible reasons for the hoist reaching the bottom safety limit:

- The hoist has been descended manually by releasing the brakes, for instance during transportation.
- The hoist has been overloaded and because of this the braking distance became longer than normally and the hoist reached the safety limit.
- The brakes of the lifting motors are not correctly adjusted or for instance one of the brakes does not work. That is why the braking distance becomes longer than normally and the hoist reaches the safety limit.
- The cams of the bottom limit and the safety limit at the lower end of the mast are not correctly adjusted in relation to each other. The distance between these limits is shorter than the braking distance with full load.
- Lower terminal limit switch is not working and only the final limit switch stops the downward movement.

#### 3.8.1.1 Bottom Safety Limit Reset

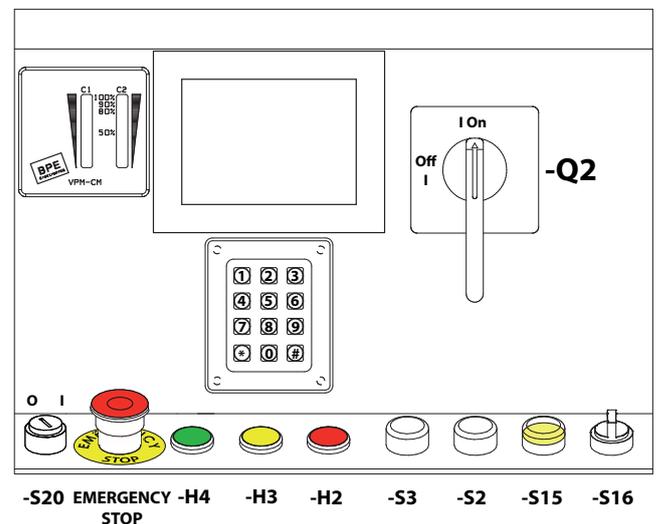
Turn the bypass switch (S19) inside the cage box to position "II".

When working with PLC controlled hoist, turn additionally key switch (S20) "Mode selection" on the cage con-

trol panel to position "0" Manual control.

Keep the bypass switch in position "II" and simultaneously push the button (S2) "Up". The hoist starts to move upwards and is lifted from the safety limit. Move the hoist only to its normal range of operation and stop the hoist.

Return the key switch (S19) to its normal position "0" and remove the key from the switch. When working with PLC-controlled hoist, return the key switch (S20) to position "1" Automatic control.



## 3.8.2 The Top Safety Limit

Possible reasons for the hoist reaching the top safety limit:

- The cams of the top limit and the safety limit at the upper end of the mast are not correctly adjusted in relation to each other. The distance between these limits is shorter than the braking distance required for the hoist.
- The brakes of the lifting engines are not correctly adjusted or for instance one of the brakes does not work. That is why the braking distance becomes longer than normally and the hoist reaches the safety limit.
- Frequency inverter fault - does not react on PLC signals
- The mast's top limit switch is not working and only the safety limit stops the upward movement.

### 3.8.2.1 Top Safety Limit Reset

Lower the hoist from the top safety limit by releasing the engine brakes manually. Open the engine brakes by pushing carefully lever simultaneously towards the end of the engines on the ventilator's side. See that the speed does not become too fast. In too fast speed the safety brake stops the hoist. **DO NOT USE** the bypass switch (S19) at the top safety limit.



**When the hoist has reached the safety limit, the reason for this must always be thoroughly cleared up, and the possible fault repaired prior to restarting the hoist.**



**The safety limit is allowed to be bypassed only by a person well familiar with the hoist's operation and in charge of its maintenance and installation.**



**After the bypass of the safety limit do not forget to take the key off the switch. The key must not be kept in the hoist control panel, but in possession of the site's supervision or the person in charge of the hoist's maintenance.**

## 3.9 Safety Limit - for PLC ver. 2

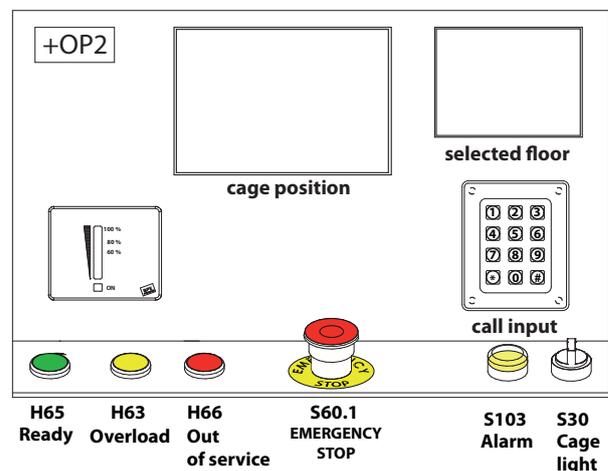
When the hoist reaches the safety limit (S18), the control circuit is disconnected and it is impossible to operate the hoist.

### 3.9.1 The Bottom Safety limit

Possible reasons for the hoist reaching the bottom safety limit:

- The hoist has been descended manually by releasing the brakes, for instance during transportation.
- The hoist has been overloaded and because of this the braking distance became longer than normally and the hoist reached the safety limit.
- The brakes of the lifting motors are not correctly adjusted or for instance one of the brakes does not work. That is why the braking distance becomes longer than normally and the hoist reaches the safety limit.
- The cams of the bottom limit and the safety limit at the lower end of the mast are not correctly adjusted in relation to each other. The distance between these limits is shorter than the braking distance with full load.
- Lower terminal limit switch is not working and only the final limit switch stops the downward movement.

Switch "inspection" to position "0". Disconnect test box and connect bridge plug.



#### 3.9.1.1 Bottom Safety Limit Reset

Connect test box to socket XP1.1 inside the ground station box +OP1. Switch "inspection" to position 1 and push the button "Up" (S68A) The hoist starts to move upwards and is lifted from the safety limit. Move the hoist only to its normal range of operation and stop the hoist.

## 3.9.2 The Top Safety Limit

Possible reasons for the hoist reaching the top safety limit:

- The cams of the top limit and the safety limit at the upper end of the mast are not correctly adjusted in relation to each other. The distance between these limits is shorter than the braking distance required for the hoist.
- The brakes of the lifting engines are not correctly adjusted or for instance one of the brakes does not work. That is why the braking distance becomes longer than normally and the hoist reaches the safety limit.
- Frequency inverter fault - does not react on PLC signals
- The mast's top limit switch is not working and only the safety limit stops the upward movement.

### 3.9.2.1 Top Safety Limit Reset

Lower the hoist from the top safety limit by releasing the engine brakes manually. Open the engine brakes by pushing carefully lever simultaneously towards the end of the engines on the ventilator's side. See that the speed does not become too fast. In too fast speed the safety brake stops the hoist. **DO NOT USE** the test box at the top safety limit.



**When the hoist has reached the safety limit, the reason for this must always be thoroughly cleared up, and the possible fault repaired prior to restarting the hoist.**



**The safety limit is allowed to be bypassed only by a person well familiar with the hoist's operation and in charge of its maintenance and installation.**



**After the bypass of the safety limit do not forget to take the key off the switch. The key must not be kept in the hoist-control panel, but in possession of the site's supervision or the person in charge of the hoist's maintenance.**

## 3.10 Hydraulic Ramp

The hoist can be equipped with an optional hydraulic ramp. When using a ramp it is not necessary to build a pipeline, that saves time and material expense when erecting the hoist. See chapter 6 The erection of the Hoist for the installation instructions.

The access ramp is equipped with safety railings opening up to both sides when the ramp is lowered.

The ramp position is controlled by limit switches.

### Opening

1. The cage stops at the required landing automatically. The hydraulic ramp lowers automatically after the cage has stopped. When the ramp is in the lower position the cage door locking is released.
2. Push the sliding door up to open position.



**Attention! When getting off the hoist open the landing gate prior to closing the cage door.**

### Closing

1. Close the cage sliding door by pulling it to the closed position.
2. The hydraulic ramp is lifted automatically when the hoist gets the command to drive. The cage door locking locks the door. The hydraulic ramp closure is secured with the limit switch prior to the hoist movement.

## 3.9.2 Opening the Hydraulic Ramp Manually

### Opening the Hydraulic Ramp Manually: relay and PLC ver.1

The hydraulic ramp door can be opened manually with the key switch S8 in the control cabinet +OP2 during the erection, dismounting and maintenance work.

If the hoist is equipped with the PLC control system and the automatic drive to landings, the hoist control must be switched to manual drive with the switch S20 on the control panel prior to using the hydraulic ramp manually.

If the hoist is equipped with the relay control system and the Stop next landing-control, the hoist control must be switched to manual drive with the key switch S55 on the cage roof control box prior to using the hydraulic ramp manually.

The ramp is lowered manually by turning the key S8 to position 1. The sliding door locking is released when the ramp is open.

The ramp is closed manually by turning the key switch S8 to position 0. The sliding door is locked automatically when the ramp is closed.

The cage sliding door locking can be opened with an emergency key.



**Attention! The ramp door is allowed to be opened manually only by a person with appropriate qualifications and in charge of the hoist use.**



**Attention! Prior to driving the ramp to open position make sure that it can be done safely. There must not be any obstacles under the ramp.**

## 3.9.3 Opening the Hydraulic Ramp Manually

### Opening the Hydraulic Ramp Manually: PLC ver.2

The hydraulic ramp door can be opened manually with the key switch S515 in the control cabinet +OP2 during the erection, dismounting and maintenance work.

If the hoist is equipped with the relay control system and the Stop next landing-control, the hoist control must be switched to manual drive with the key switch S55 on the cage roof control box prior to using the hydraulic ramp manually.

The ramp is lowered manually by pushing the button "Ramp Open Manual" S517. The sliding door locking is released when the ramp is open.

The ramp is closed manually by pushing the button "Ramp Close Manual" S516. The sliding door is locked automatically when the ramp is closed.

The cage sliding door locking can be opened with an emergency key.



**Attention! The ramp door is allowed to be opened manually only by a person with appropriate qualifications and in charge of the hoist use.**



**Attention! Prior to driving the ramp to open position make sure that it can be done safely. There must not be any obstacles under the ramp.**

## 3.9.4 The Hydraulic Ramp Emergency Use

During power cuts or in other emergency situations the hydraulic ramp can be opened without power. The cage door locking is released by an emergency key and the sliding door is lifted to the open position. The hydraulic ramp is then pushed open to the lower position for instance with foot. When pressing the ramp the release valve of the hydraulic system is opened and enables the ramp opening.



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## 4. TROUBLE SHOOTING - When the Hoist does not move

### 4.1 General Information

The series SC builder's hoists are equipped with fault diagnostics or a status display system, which in most of the cases can tell why the hoist is not able to move.

### 4.2 Errors - Trouble Shooting

#### 4.2.1 "Visible Error"

The so called "visible error" is an issue discoverable with the naked eye and not necessarily an error at all, but usually a condition caused by the operator's functions. Such issues can be for instance the following:

- The hoist door is open.
- The landing door gate is open.
- The main switch is not switched on.
- The emergency stop button is pushed.
- etc.

#### 4.2.2 "Invisible Error"

The so called "invisible error" is usually not discoverable with the naked eye, at least not without opening the electric cabinets. Often to locate the error a professional electrician and measuring equipment are required. Such errors can be for instance the following:

- A fuse automat or a circuit breaker has switched off as a consequence of overload or short circuit.

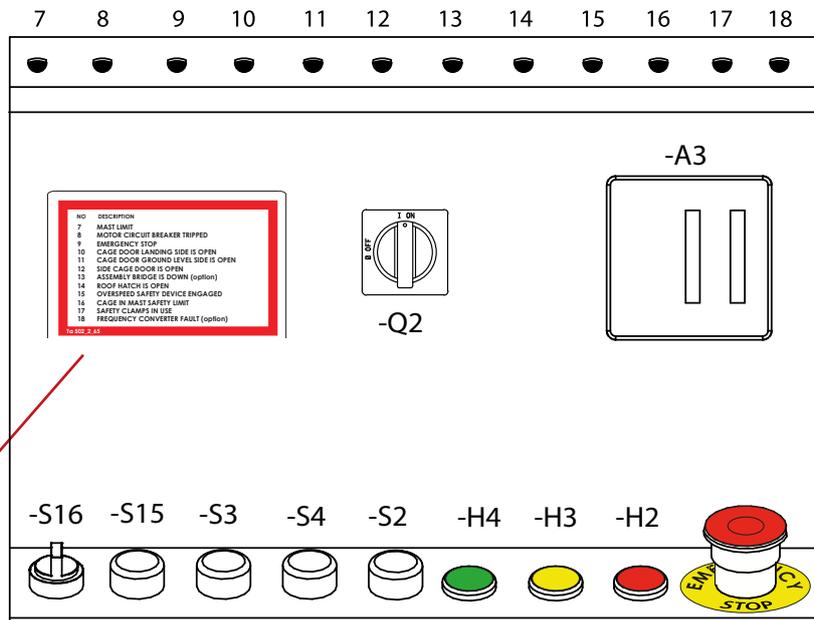


**The electrical installations are allowed to be carried out only by qualified professionals in electricity.**

## 4.3 Relay Control

The hoists with relay control system are equipped with a status display with pilot lamps showing the state of limit switches and emergency stop buttons etc.

There are eleven red LED pilot lamps on the cage control panel. Their meanings are listed below (decal Ta 14502\_2).



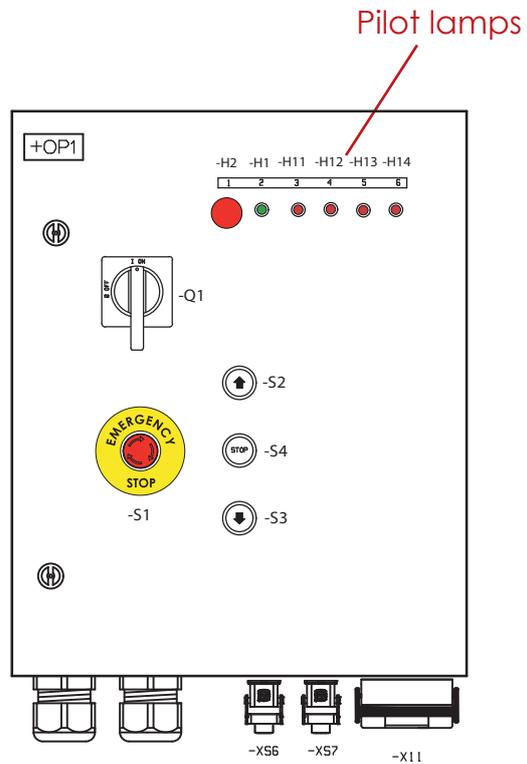
NO	DESCRIPTION
7	MAST LIMIT
8	MOTOR CIRCUIT BREAKER TRIPPED
9	EMERGENCY STOP
10	CAGE DOOR LANDING SIDE IS OPEN
11	CAGE DOOR GROUND LEVEL SIDE IS OPEN
12	SIDE CAGE DOOR IS OPEN
13	ASSEMBLY BRIDGE IS DOWN (option)
14	ROOF HATCH IS OPEN
15	OVERSPEED SAFETY DEVICE ENGAGED
16	CAGE IN MAST SAFETY LIMIT
17	SAFETY CLAMPS IN USE
18	FREQUENCY CONVERTER FAULT (option)

Ta 502\_2\_65

In addition there are three pilot lamps on the cage control panel to show the state of the hoist.

1. The green pilot lamp (H4) "Ready for use" is switched on when the hoist is in working condition and starts moving when operated. In this case no other pilot lamp is switched on.
2. The red pilot lamp (H3) "Overload" is switched on when the hoist is loaded with a burden bigger than the nominal load or the number of persons is exceeded. Reduce the overload until the overload pilot lamp is switched off and the ready for use lamp is switched on.
3. The yellow pilot lamp (H2) "Safety circuit broken" is switched on when for example the hoist door is open and thus the control system's safety circuit disconnected. The hoist must not move when operated. The more specific reason for the safety circuit being broken is shown on the status display, where a red pilot lamp is switched on by the cause. Remove the cause, for instance by closing the door. The yellow pilot lamp of the safety circuit is switched off and the ready for use pilot lamp is switched on. The yellow pilot lamp of the safety circuit is also found at the ground station and on every landing with a call box.

In addition there are one green and five red LED pilot lamps in the ground station control centre. Their meanings are listed below (Ta14502).



NO	DESCRIPTION
1	POWER SUPPLY
2	SAFETY CIRCUIT NOT IN ORDER
3	EMERGENCY STOP
4	
5	GROUND STATION DOOR IS OPEN
6	GROUND STATION DOOR LOCKING IS OPEN

Ta 14502\_1

#### 4.4.3 The most common reasons for the Hoist not moving:

#### 4.4.4 Other Possible Reasons

## 4.4 PLC (Programmable Logic Control) ver. 1

The hoists with a PLC control system are equipped with a programmable fault diagnostics and a display unit, on which the fault codes are shown.

In case of a failure, that is mainly when one tries to operate the hoist, but it does not move, a fault code and meaning is shown on the display unit. The meaning can be checked on the list below.

### ALARM

F6: EMERGENCY STOP GROUND LEVEL  
F10: EMERGENCY STOP ROOF  
F19: SAFETY CLAMPS IN USE  
F20: ROOF CONTROL

### CODE ALARM

F01.... ROOF HATCH IS OPEN  
F02.... MOTOR CIRCUIT BREAKER TRIPPED  
F03.... FREQUENCY CONVERTER FAULT  
F04.... LANDING GATE IS OPEN, FLOOR NUMBER X  
F05.... CAGE IN MAST SAFETY LIMIT  
F06.... EMERGENCY STOP GROUND LEVEL  
F07.... GROUND LEVEL DOOR IS OPEN  
F08.... LANDING STOP SENSOR FAULT  
F09.... EMERGENCY STOP CAGE  
F10.... EMERGENCY STOP ROOF  
F11.... CAGE DOOR LANDING SIDE IS OPEN  
F12.... CAGE DOOR GROUND LEVEL SIDE IS OPEN  
F13.... CAGE DOOR LOCKING FAULT  
F14.... SAFETY BRAKE ENGAGED  
F15.... CAGE IN UPPER MAST LIMIT  
F16.... MAST OVERRUN PROTECTION  
F17.... DROP TEST REMOTE CONTROLLER CONNECTED  
F18.... POWER SUPPLY FAILED  
F19.... SAFETY CLAMPS IN USE  
F20.... ROOF CONTROL  
F21.... MANUAL CONTROL  
F22.... PULSE COUNTING FAULT  
F23.... LANDINGS: BUS FAULT  
F24.... CAGE / GROUND UNIT: BUS FAULT  
F25.... OPPOSITE RUN DIRECTION  
F26.... CAGE SIDE DOOR IS OPEN  
F27.... HYDRAULIC RAMP: MOTOR CIRCUIT  
BREAKER TRIPPED  
F28.... HYDRAULIC RAMP IS NOT CLOSED  
F29.... SLOW DOWN SENSOR FAULT  
F30.... CONTROL FROM CAGE ONLY  
F31.... SPEED FAULT  
F32.... GROUND STATION OR LANDING DOOR IS OPEN

Ta 502 SH

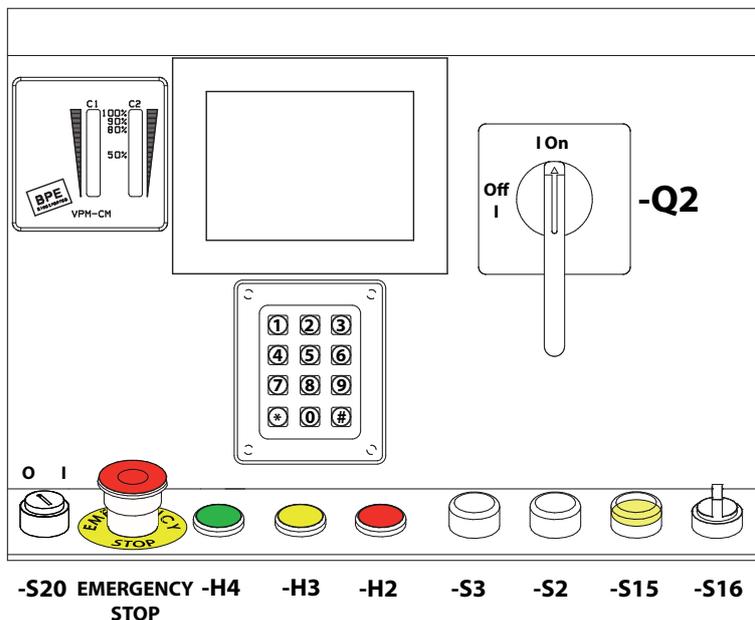
In case of F31 "SPEED FAULT" occur slide down to the nearest landing level gently manually realising motor brakes and immediately call to person responsible for service.



**Reset the error F31 can be done only by authorized and trained person. See chapter 6.8.6**

In addition there are three pilot lamps on the cage control panel to show the state of the hoist.

1. The green pilot lamp (H4) "Ready for use" is switched on when the hoist is in working condition and starts moving when operated. In this case no other pilot lamp is switched on.
2. The yellow pilot lamp (H3) "Overload" is switched on when the hoist is loaded with a burden bigger than the nominal load or the number of persons is exceeded. Reduce the overload until the overload pilot lamp is switched off and the ready for use lamp is switched on.
3. The red pilot lamp (H2) "Safety circuit broken" is switched on when for example the hoist door is open and thus the control system's safety circuit disconnected. The hoist must not move when operated. The more specific reason for the safety circuit being broken is shown on the fault diagnostics display. Remove the cause, for instance by closing the door. The red pilot lamp of the safety circuit is switched off and the ready for use pilot lamp is switched on. The red pilot lamp of the safety circuit is also found at the ground station and on every landing.



## 4.4.1 The Supply Voltage

If the hoist control system seems dead check the hoist's supply voltage.

- Check that the main switch (Q1) on the ground station electric cabinet door is switched on to position 1.
  - Check the hoist's supply voltage by taking a look at whether the pilot lamp (H1) on the ground station electric cabinet door is switched on. The lamp itself may also be faulty.
  - Check that the switch F1.1 in the ground station control centre is switched on.
  - Check that the residual current breaker F2 in the ground station control centre is switched on.
  - Check that the main switch (Q2) on the cage control panel is switched on to position 1.
- Check that the possible cable plugs supplying the hoist are properly connected.
  - Check that the switch gear on the site's switchboard or other switchboard is switched on.



**All electrical installations are allowed to be carried out only by a qualified professional in electricity.**

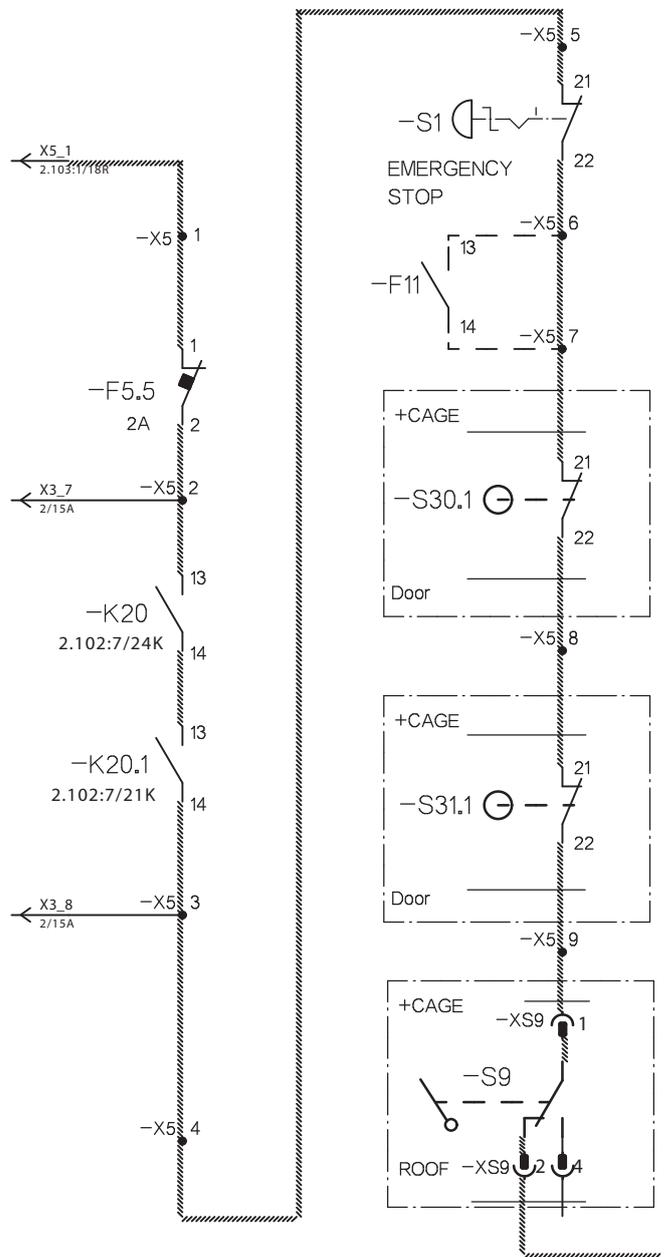


**The main switch in the electric cabinet must be switched to position 0 prior to opening the cabinet.**

## 4.4.2 The Safety Circuit

The hoist's safety circuit consists of forced limit switches, emergency stop buttons etc. which in series form the control circuit. This circuit controls the safety relay and two series-connected main contactors, through which the voltage is supplied to the engines. So if for instance the emergency stop button is pushed down the safety circuit is disconnected. In this case also the voltage supply for the engines is disconnected and the hoist cage stops its movement or does not start if it is standing at the moment. When the safety circuit is connected, the pilot lamp (H2) in the cage is switched on.

Part of the safety circuit is shown in the picture beside. The complete safety circuit can be found in electrical diagrams.



## 4.4.3 The most common reasons for the Hoist not moving:

1. Is the main switch (Q1) in the ground station electric box switched on?
2. Is the main switch (Q2) in the hoist electric cabinet switched on?
3. Is the emergency stop button pushed down in the cage, at the ground station or on the roof?
4. Is the pilot lamp (H1) "Supply voltage" on the ground station electric cabinet door switched on? In case the pilot lamp is not switched on, check that all three phases in the centre/cable supplying the hoist exist. Check that the lamp is not faulty.
5. Is the supply phase sequence correct? When the phase sequence is correct and all the phases exist, the pilot led of the phase guard relay (F3) in the ground station electric cabinet is switched on.
6. Are all the landing gates / - doors on the floors as well as the doors at the ground station closed? When the safety circuit is in order, the green pilot lamp (H4) on the hoist control panel is switched on.
7. Has the hoist reached the top or bottom limit of the mast? The mast bottom limit (S13); the mast top limit (S14). When the hoist has reached the upper or lower limit of the mast, it can be operated only in the opposite direction.
8. Has the hoist reached the safety limit (S18)? When the hoist has reached the safety limit, it does not move at all.
9. Has any of the limit switches stuck mechanically without returning to its normal position?
10. In case the hoist when operated from the cage does not move or does not answer the calls from landings, check whether the selected control mode is "Erection/inspection operation" (S55) and the select switch on the hoist roof is in position 1. In normal use the switch should be in position 0.
11. Has the motor circuit breaker (F4.1, F4.2 or F4.3) switched off?
12. Has a fuse automat in the ground station control centre switched off?
13. Has a fuse automat in the cage control centre switched off?
14. Has a fuse automat in the cage roof control centre switched off?
15. Is any connector not properly connected, has for instance a screw connection become loose or a connection lead damaged?
16. SLOW DOWN SENSOR does not work:
  - adjustment needed
  - sensor failed
  - slow down sensor zone not properly set
17. SPEED FAULT - frequency inverter (freezed) does not react on slow down sensor.

## 4.4.4 Other Possible Reasons

For discovering these reasons the electric cabinet must be opened by a professional electrician.

### The Ground Station Control Box:

- The fuse automat (F5, F6, F4, F4.1) has switched off.
- The fault current switch (F2) has switched off.
- The phase sequence control relay (F3) has switched off. One of the phases is missing, the phase sequence is not correct.

### The Hoist's Frequency Converter Box (optional equipment):

- The motor circuit breaker (F4.1, F4.2, F4.3). The adjusted value of the circuit breaker/the nominal current of the motor, Motor phase failure, - connection error, - short circuit, - ground fault, - overloading.
- The fuse automat (F5, F5.1, F5.3 F7, F10, F10.1, F11) has switched off.
- The frequency converter failure. Check the error code on the frequency converter control panel.

### The Cage Control Box:

- The fuse automat (F5.4, F5.6, F6, F6.1, F6.2, F6.3, F6.4, F6.5, F8 F9, F13) has switched off.



**Do not change the frequency converter parameters on your own initiative. As a result you may cause serious malfunction!**

## 4.5 PLC (Programmable Logic Control) - ver. 2

The hoists with a PLC control system are equipped with a programmable fault diagnostics and a display unit, on which the faults are shown.

In case of a failure, that is mainly when one tries to operate the hoist, but it does not move, a fault is shown on the display unit.



The list of faults and information on the display in the cage:

### List of the faults on the display PLC ver. 2

- CABINE DOOR 1 IS OPEN
- OVERLOAD
- HATCH IS OPEN
- EMERGENCY STOP CABINE
- FREQUENCY CONVERTER FAULT
- MOTOR/BREAKER CIRCUIT BREAK
- GROUND LEVE/ LANDING DOOR OPEN
- LANDING STOP SENSOR FAULT
- CABINE DOOR 2 IS OPEN
- OUT OF ORDER
- RAMP IS OPEN
- CAGE DOOR IS OPEN
- POWER SUPPLY FAILED
- HYDRAULIC RAMP FAULT
- DOOR OPENING
- DOOR CLOSING
- ROOF CONTROL
- MANUAL CONTROL
- PULSE COUNTING FAULT
- CAGE IN UPPER MAST LIMIT
- EMERGENCY STOP ROOF
- ROOF HATCH IS OPEN
- CAGE IN MAST SAFETY LIMIT
- SAFTY BREAKE ENGAGED
- EMERGENCY STOP GROUND LEVEL
- DOOR 1 IS UNLOCKED
- DOOR 2 IS UNLOCKED
- DOOR 3 IS UNLOCKED

In addition there are three pilot lamps on the cage control panel to show the state of the hoist.

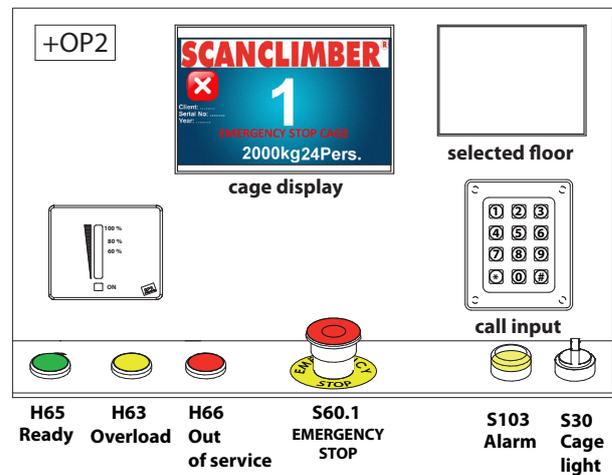
1. The green pilot lamp (H65) "Ready" is switched on when the hoist is in working condition and starts moving when operated. In this case no other pilot lamp is switched on.
2. The yellow pilot lamp (H63) "Overload" is switched on when the hoist is loaded with a burden bigger than the nominal load or the number of persons is exceeded. Reduce the overload until the overload pilot lamp is switched off and the ready for use lamp is switched on.
3. The red pilot lamp (H66) "Out of service" is switched on when for example the hoist door is open and thus the control system's safety circuit disconnected. The hoist must not move when operated. The more specific reason for the safety circuit being broken is shown on the fault diagnostics display. Remove the cause, for instance by closing the door. The red pilot lamp of the safety circuit is switched off and the ready for use pilot lamp is switched on. The red pilot lamp of the safety circuit is also found at the ground station and on every landing.

## What to do when only H66 is on

- check information on TFT (cage display) in OP2 control box.
- check the emergency stop, OP1 and OP2, OP6.
- reset the system / shout off Q1 for 1 min. Next shout on again.

## What to do when H66 and H65 is on

- check landing gate / cage door



The most common reasons why the hoist not moving you can find in next chapter. Also the list of faults on the display in the cage. All possible reasons can be divided into two categories: frequency converter faults and hoist controller faults. Controller fault can be found in HPG60 device in menu C3 Fault Log. Frequency converter fault will also be signalled in HPG60 but full error will be display on frequency converter front panel in OP6.

## 4.5.1 The Supply Voltage

If the hoist control system seems dead check the hoist's supply voltage.

- Check that the main switch (Q1) in the ground station electric control box is switched on to position 1.
- Check that the residual current breaker FI05 in the ground station control centre is switched on.
- Check that the main switch (Q2) on the roof control box is switched on to position 1.
- Check that the possible cable plugs supplying the hoist are properly connected.
- Check that the switch gear on the site's switchboard or other switchboard is switched on.



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## 4.5.2 The Safety Circuit

The hoist's safety circuit consists of forced limit switches, emergency stop buttons etc. which in series form the control circuit. This circuit controls the safety relay and two series-connected main contactors, through which the voltage is supplied to the engines. So if for instance the emergency stop button is pushed down the safety circuit is disconnected. In this case also the voltage supply for the engines is disconnected and the hoist cage stops its movement or does not start if it is standing at the moment. When the safety circuit is connected, the pilot lamp (H66) in the cage is switched on.

The complete safety circuit can be found in electrical diagrams.

## 4.5.3 The most common reasons for the Hoist not moving:

1. Is the main switch (Q1) in the ground station electric box switched on?  
"Erection/inspection operation" (S55) and the select switch on the hoist roof is in position 1. In normal use the switch should be in position 0.
2. Is the main switch (Q2) on the cage roof switched on?
3. Is the emergency stop button pushed down in the cage, at the ground station or on the roof?
4. Is the supply phase sequence correct? When the phase sequence is correct and all the phases exist, the pilot led of the phase guard relay (PU60) in the ground station electric control box is switched on.
5. Are all the landing gates / - doors on the floors as well as the doors at the ground station closed? When the safety circuit is in order, the green pilot lamp (H65) on the hoist control panel is switched on.
6. Has the hoist reached the top or bottom limit of the mast? The mast bottom limit (S13); the mast top limit (S14). When the hoist has reached the upper or lower limit of the mast, it can be operated only in the opposite direction.
7. Has the hoist reached the safety limit (S18)? When the hoist has reached the safety limit, it does not move at all.
8. Has any of the limit switches stuck mechanically without returning to its normal position?
9. In case the hoist when operated from the cage does not move or does not answer the calls from landings, check whether the selected control mode is
10. Has the motor circuit breaker (F4.1, F4.2 or F4.3) switched off?
11. Has a fuse automat in the ground station control centre switched off?
12. Has a fuse automat in the cage control centre switched off?
13. Has a fuse automat in the cage roof control centre switched off?
14. Is any connector not properly connected, has for instance a screw connection become loose or a connection lead damaged?
15. Check motor protection (4.1, 4.2, Q13) and brake fuses F7 and F4.3.
16. Make sure that the ramp function correctly. Does the ramp close / lower properly.

## 4.5.4 Other Possible Reasons

For discovering these reasons the electric cabinet must be opened by a professional electrician.

### The Ground Station Control Box:

- The fuse automat (F1, F5, F6, F7) has switched off.
- The fault current switch (FI01, FI05) has switched off.
- The phase sequence control relay (PU60) has switched off. One of the phases is missing, the phase sequence is not correct.

### The Hoist's Frequency Converter Box (optional equipment):

- The motor circuit breaker (F4.1, F4.2, F4.3). The adjusted value of the circuit breaker/the nominal current of the motor, Motor phase failure, - connection error, - short circuit, - ground fault, - overloading.
- The fuse automat ( F7, F10, F10.1, F11) has switched off.
- The frequency converter failure. Check the error code on the frequency converter control panel.

### The Cage Control Box:

- The fuse automat (F14, F15, F16, F31, F32, F33) has switched off.



**Do not change the frequency converter parameters on your own initiative. As a result you may cause serious malfunction!**

## 4.5.5 Most common fault code description and what to do

In the table below you can find the most common fault which can occur and what to do and what to do in that case.

Code No.	Error entry	Description	Solution / what to do
F00	Phase Emergency Unit	The power line for the emergency power supply is missing	Either circuit breaker F5 is activated or L2 of the main power connection is missing
F02	Security Circuit U1	Safety Circuit power is missing	Either circuit breaker F7 is activated or L3 of the main power connection is missing.
F03	Security Circuit U2	The emergency stop in ground station (OP1) has been activated and thus the safety circuit was opened	Has to be turned clockwise and/or pulled outwards before it is released
F04	Security Circuit U3	The shaft door has been opened or the contact of the control strain weight was activated, which opens the safety circuit	Check connection between X1.2:1 and X1.2:1A in OP1.
F05	Security Circuit U4	The maintenance door has been opened or the contact of the rope loose switch was activated, which opens the safety circuit.	Check connection between X1.2:A and X1.2:1B in OP4.
F09	Security Circuit U8	The safety limit switch S18 has been activated or the contact of the speed limiter has been activated, which opens the safety circuit	See chapter 3.8 Safety Limit or 5.4 The Safety Brak
F10	Security Circuit U9	The roof hatch was open or Emergency stop in cage has been activated or safety beam was used or emergency stop in OP6 has been activated or mast sensor was been activated or assembly bridge (option) was open ?	Close roof hatch; pull off Emergency stop button in OP2 or/ and OP6 (just like in F03); check assembly bridge position
F11	Security Circuit U10	One of the landing doors has been opened during the travel, which opens the safety circuit	Close all landing doors
F12	Security Circuit U11	One of the cabin doors has been opened during travel and opened safety circuit	Close all cabin doors

Code No.	Error entry	Description	Solution / what to do
F13	Security Circuit U12	One locking device contact has been opened during travel and opened the safety circuit or ramp is open	Check all locking devices and/or pins; check ramp
F14	Voltage 24V ZR	The ZKR's +24V DC power supply is in overload conditions, resp. shorted in the system	Check the output load: ZB1, ZB2
F16	Voltage 24V FKR	The ZKR's +24V DC power supply is in overload conditions, resp. shorted in the system.	Check the output load: FE1, FE2, FE3, IC0, IC1, IC3, IC4, ID3, ID4, ID5, IE5
F19	Zone Switch	No signal from the zone sensor on the landings.	Check the position of the cam on the landing
F41	Regulation Fault	The regulation (inverter) has a problem	Check the inverter (in OP6) front panel for more information
F43	Temperature Switch Cabinet 1	The Box OP1 temperature is too cold -> limit 1 (B600 Switch Cabinet T-Min)	Check heaters
F44	Temperature Switch Cabinet 2	The switch cabinet temperature is too hot -> limit 2 (B600 Switch Cabinet T-Max)	Check heaters
F45	Motor Temperature	The PTC of the engine has activated. Reaction according configuration.	Check if motor isn't too hot or cold
F46	Journey Time Start	The configured delay(B600- Start Time Monitor) for the Start Time Monitor has elapsed. After a configured number of trials, the installation is locked.	Check locking door or check ramp close or check mount and connection encoder; check the breaks
F47	Journey Time Travel	The configured delay(B600- Journey Time Monitor) for the Journey Time Monitor has elapsed. Reaction according configuration.	Check mount and connection encoder
F48	Journey Time Deceleration	The configured delay(B600- Deceleration Time Monitor) for the Deceleration Time Monitor has elapsed. Reaction according configuration.	Check mount and connection encoder or the cam on the landing

Code No.	Error entry	Description	Solution / what to do
F49	Journey Time Stop	The configured delay(B600- Stop Time Monitor) for the Stop Time Monitor has elapsed. Reaction according configuration.	Check mount and connection encoder or the cam on the landing
F50	Contactor Monitoring Start	The set time(B600- Contactor Monitor) for monitoring the contactor monitoring has been exceeded.	Check contactors for brakes +OP6-K6 and +OP6-K6.1; check that the ramp dose not close too long; check that the safety contactors +OP6-K1.1 and +OP6-K1.2 have been activated
F53	Contactor Stop	The monitor for the main and brake relay has been activated. Reaction according configuration(B600- Monitor Reaction).	Check contactors for brakes +OP6-K6 and +OP6-K6.1; check that the safety contactors +OP6-K1.1 and +OP6-K1.2 have been activated
F55	Contactor Travel	The monitor for the main and brake relay has been activated. Reaction according configuration.	Check contactors for brakes +OP6-K6 and +OP6-K6.1; check that the safety contactors +OP6-K1.1 and +OP6-K1.2 have been activated
F56	Phase Change	Phase sequence is wrong or phase failure detection	Check relay phase control PU60 and if the direction of rotation of the field is not correct replace L1 and L2 and measure the voltages between X1.1:L1 - X1.1:L2 and X1.1:L3
F61	Door Close	The door could not be closed within the configured time(B10-. Door Close Timeout)	Check that the door is closed or check that the door lock is well adjusted
F65	Push-Button Landing Call Up	Tracer landing call up wedges	Check Push-buttons landing call UP on the OP4
F66	Push-Button Landing Call Down	Tracer landing call down wedges	Check Push-buttons landing call Down on the OP4
F68	Photocell Blocked	It takes place an entry if the light barrier is operated longer than 45 seconds in the Stop and/ or in normal operation.	Setup parameter B12- photocell-monitor to off
F77	Hydraulic Fault	Hydraulic ramp was not closed automatically	Press and release emergency button in OP2 then start travel to next landing again; check hydraulic system for leaks

Code No.	Error entry	Description	Solution / what to do
F80	Communication I/O CPU	The central unit and logic unit is internally disturbed.	Ask customer service-reasonable.
F81	Communication I/O FKR	Communication to the cabin controller is disturbed.	That is 15 pole. Is D-Subkabel plugged correctly or damage?
F83	DSC Change Puls	The encoder pulses of the shaft encoder must be exchanged.	Check encoder connection (FKR input 91 and 92)
F84	DSC No Pulses	From the pulse generator of the digital pit copying no impulses come. Are the giver and impulses entry correct?	Check encoder connection
F90	Watchdog-Reset	Internal reset – damage in the hardware	Ask customer service-reasonable.
F91	Reset-Groupbus	Internal reset by error on the group bus	Ask customer service-reasonable.

## 4.5.6 Frequency converter and hoist controller fault

More complicated faults can be divided into two categories: frequency converter faults and hoist controller faults. Controller fault can be found in HPG60 device in menu C3 Fault Log. Frequency converter fault will also be signalled in HPG60 but full error will be display on Frequency converter front panel in OP6.



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### 4.5.6.1 Hoist controller fault

Hoist controller fault can be found in HPG60 device in menu C3 Fault Log.



**HPG60 device can be operated only by qualified professionals in electricity.**

#### C3 FAULT LOG

Error memory is accommodated in sub-menu C3 in C 31. Error memory possesses a depth of 200 possible error registrations. The most current entry always stands on position one and shifts all following entries on a deeper position. After return the highest error position, the error memory can be cleared by menu C30. Error memory is stored in Akku RAM of the clock component and is secured against power failure.

In the table below you can find full list of faults which can occur in emergency situation.

Code-No.	Error entry	Description
<b>F00</b>	<b>Phase Emergency Unit</b>	The power line for the cabin light resp. the emergency power supply is missing. Either circuit breaker F5 is activated or L2 of the main power connection is missing.
<b>F02</b>	<b>Security Circuit U1</b>	Safety Circuit power is missing. Either circuit breaker F7 is activated or L1 of the main power connection is missing.
<b>F03</b>	<b>Security Circuit U2</b>	The emergency stop has been activated and thus the safety circuit was opened.
<b>F04</b>	<b>Security Circuit U3</b>	The shaft door has been opened or the contact of the control strain weight was activated, which opens the safety circuit.
<b>F05</b>	<b>Security Circuit U4</b>	The maintenance door has been opened or the contact of the rope loose switch was activated, which opens the safety circuit.
<b>F06</b>	<b>Security Circuit U5</b>	The contact of the speed limiter has been activated, which opens the safety circuit.
<b>F07</b>	<b>Security Circuit U6</b>	The emergency stop switch Top or Bottom has been activated, which opens the safety circuit.
<b>F08</b>	<b>Security Circuit U7</b>	One of the buffer contacts has been activated and opened the safety circuit.
<b>F09</b>	<b>Security Circuit U8</b>	The catch contact on the cabin has been activated, which opens the safety circuit.
<b>F10</b>	<b>Security Circuit U9</b>	The contact of the rope loose contact cabin, the hatchway contact or the emergency stop cabin has been activated and opened the safety circuit.
<b>F11</b>	<b>Security Circuit U10</b>	One of the shaft doors has been opened during travel, which opens the safety circuit.
<b>F12</b>	<b>Security Circuit U11</b>	One of the cabin doors has been opened during the travel, which opens the safety loop.
<b>F13</b>	<b>Security Circuit U12</b>	One locking device contact has opened during travel and opened the safety circuit.
<b>F14</b>	<b>Voltage 24V ZR</b>	The ZKR's +24V DC power supply is in overload conditions, resp. shorted in the system.
<b>F16</b>	<b>Voltage 24V FKR</b>	The FKR's +24V DC power supply is in overload conditions, resp. shorted in the system.
<b>F18</b>	<b>Carlight defect</b>	The carlight in the cabin is out of order
<b>F20</b>	<b>Correction switch Top and Bottom activated - locking</b>	Both pre-end switches are activated. Either one of both switches is defect or one is mounted incorrectly. The installation is locked.
<b>F21</b>	<b>Correction switch Up defect</b>	The top pre-end-switch S13A is not switching, although the car has reached the top floor.
<b>F22</b>	<b>Correction switch Down defect</b>	The bottom pre-end-switch S13B is not switching, although the car has reached the lowest floor.
<b>F23</b>	<b>Correction switch Up and Down defect</b>	The top pre-end-switch S13A and the bottom pre-end-switch S13B are not switching, although the car is driven to both end floors.
<b>F24</b>	<b>2. Correction switch Up and Down aktive-Blockade</b>	Both second pre-end switches are activated. Either one of both switches is defect or one is mounted incorrectly. The installation is locked.
<b>F25</b>	<b>2. Correction switch Up and Down defect</b>	The second top pre-end-switch S15A is not switching, although the car has reached the top floor.
<b>F26</b>	<b>2.Pre-end switch Down defect</b>	The second bottom pre-end-switch S15B is not switching, although the car has reached the lowest floor.
<b>F27</b>	<b>2. Correction switch Down and Up defect</b>	The second bottom pre-end-switch S15A is not switching, although the car has reached the highest floor.
<b>F30</b>	<b>UCM Error Block Valve</b>	Error Message of Bucher ivalve or Oildynamic NGV-A3
<b>F31</b>	<b>UCM - KW</b>	When leaving the inner zone with open door> A3 case -> blocking the system.
<b>F32</b>	<b>UCM - Monitoring</b>	When leaving the inner zone with open door> A3 case -> blocking the system.
<b>F33</b>	<b>UCM – SL-Sink Protection</b>	When leaving the inner zone with open door> A3 case speed

		limiter -> blocking the system.
F36	Releveling distance	With the releveling the releveling area was left.
F37	Releveling- time	With the releveling the maximum releveling time was exceeded.
F38	Releveling Attempts	With the releveling the maximum number of attempts was exceeded.
F39	Quick Start	This message is entered, if the Quick Launch the feedback E524 is not right. Only fault entry, no interruption of movement. The journey starts in case of error without quick start.
F41	Regulation Fault	The regulation ( inverter) has a problem
F42	Battery monitor	The Battery of EOS or other external Units is too low
F43	Temperature Switch cabinet 1	The switchcabinet temperature is too cold -> limit 1
F44	Temperature Switch cabinet 2	The switchcabinet temperature is too hot -> limit 2
F45	Motor temperature	The PTC of the engine has activated. Reaction according configuration.
F46	Journey Time Start	The configured delay for the Start Time Monitor has elapsed. After a configured number of trials, the installation is locked.
F47	Journey Time Travel	The configured delay for the Journey Time Monitor has elapsed. Reaction according configuration.
F48	Journey Time Deceleration	The configured delay for the Deceleration Time Monitor has elapsed. Reaction according configuration.
F49	Journey Time Stop	The configured delay for the Stop Time Monitor has elapsed. Reaction according configuration.
F51	Brake opening monitor	There is no expected signal levels at the monitoring braking inputs of the control DAVID-613
F52	Brake shoe monitor	The monitor for the brake wear has been activated. Reaction according configuration.
F53	Contactors Stop	The monitor for the main and brake relay has been activated. Reaction according configuration.
F54	Brake opening synchronization	The monitoring of the braking elements has been activated. One of the monitor inputs is out of order or it is slower than the other (s) channel. Please check it.
F55	Contactors Travel	The monitor for the main and brake relay has been activated. Reaction according configuration.
F56	Phase Change	The ranking of the phases U,V,W is wrong
F57	Brake & Bolt Voltage	The voltage monitor of the brake & bolt has send an error
F58	Low Pressure	The pressure of the hydraulic is too low
F59	Rope Stretching	Error message load measurement-systemes about an uneven stretching of a rope.
F60	A3 - Case	The car has left the floor with the door open and the lift was blocked. (Even in Simulation!) <b>Three different ways to Reset of the error "F60 A3-Case":</b> 1.) In the menu C0 Controller Reset 2.) Simultaneously press the three buttons maintenance call top-down call on the central unit ZR. 3.) De-energizing the FKR in the inspection box.
F61	Door Close	The door could not be closed within the configured time.
F62	Separation Door	The door could not be opened within the configured time.
F63	Flap Apron	The folding apron does not drive although the lowest Stop became to leave.
F65	Push-Button landing call up	Tracer landing call up wedges
F66	Push-Button landing call down	Tracer landing call down wedges
F67	Push-Button Door open	It takes place an entry if the tracer is operated longer than 45 seconds in the stop and/ or in normal operation.
F68	Photocell blocked	It takes place an entry if the light barrier is operated longer than 45 seconds in the Stop and/ or in normal operation.

F69	<b>Revers Contact blocked</b>	It takes place an entry if the contact is operated longer than 45 seconds in the Stop and/or in normal operation
F70	<b>Blocked – Endswitch</b>	The hydraulic elevator is driven into the top end-switch. After leaving the top-end-switch the elevator has lowered and blocked in the lowest Stop.
F71	<b>Blocked Journey time</b>	The hydraulic elevator lowered after the occurrence of a run time error
F72	<b>Blocked- TV60-1</b>	Two inputs channels of the TV60-1 are monitored for synchronization.
F73	<b>Blocked- TV60-2</b>	Two inputs channels of the TV60-2 are monitored for synchronization.
F78	<b>DSC 2. Pre-switch Bottom</b>	The digital shaft copying started that the counted impulse conditions do not agree with the impulse conditions at the pre-end switcher down. A correction was implemented.
F79	<b>DSC 2. Pre-switch Top</b>	The digital shaft copying started that the counted impulse conditions do not agree with the impulse conditions at the pre-end switcher up. A correction was implemented.
F80	<b>Communication I/O CPU</b>	The central unit and logic unit is internally disturbed. Ask customer service- reasonable.
F81	<b>Communication I/O FKR</b>	Communication to the car controller is disturbed. That is 15 pole. D-Subkabel correctly put or damages?
F82	<b>Communication I/O ITR 1</b>	Communication to the car calling controller 1 is disturbed. Is the hanging cable correctly put or for veins damaged?
F82A	<b>Communication I/O ITR 2</b>	Communication to the car calling controller 2 is disturbed. Is the hanging cable put or for veins damages?
F83	<b>DSC Change Puls</b>	The encoder pulses of the shaft encoder must be exchanged. ( Input 81 and 82)
F84	<b>DSC No pulses</b>	From the pulse generator of the digital pit copying no impulses come. Are the giver and impuls entry correct?
F85	<b>DSC Floornumber</b>	The floor number determined by the learning trip does not agree with the registered. Examine please entry in the software and zone switch for switching gap and function.
F86	<b>Correction ZONE</b>	Correction trip released by counter deviation the zone.
F87	<b>Correction Pre-Switch Down</b>	Correction trip released by counter deviation Pre-end-switch down
F88	<b>Correction Pre-Switch Top</b>	There is a difference between the counter of the digital shaft-copy and the position of the Pre-switch top. The counter was corrigitate.
F90	<b>Watchdog-Reset</b>	Internal reset – damage in the hardware
F91	<b>Reset-Groupbus</b>	Interner Reset durch Fehler auf dem Gruppenbus
F92	<b>Security circuit</b>	The security circuit has send an error. A cause a missing or retarded zone.
F93	<b>Liftbus Communication</b>	On the Liftbus ( communication regulation STG) an error was send.
F94	<b>Test Safety Photocell</b>	An error was announced of the safety Photocell which was determined with the self check.
F95	<b>Interrupt Safety Photocell</b>	An error was announced of the safety Photocell which was determined during the travel.
F97	<b>Zone Switches</b>	The Contacts of the Zone switches have a lot of switching acts
F98	<b>Prelevel-Switch-UP</b>	The Contact of the Prelevel-switch UP has a lot of switching acts.
F99	<b>Prelevel-Switch-DOWN</b>	The Contact of the Prelevel-switch Down has a lot of switching acts
F101	<b>IPM -Overcurrent</b>	<ul style="list-style-type: none"> <li>- Error message caused through wrong motor datas (<b>Nominalspeed</b> – Motor datas )!</li> <li>- Error message caused through wrong motor datas (<b>Nominalcurrent</b> – Motor datas )!</li> <li>- Old machines: Please switch off the <b>possition regulator!</b> Or change the settings !</li> <li>- Gearless: Is the motorwire correctly installed ( U – V – W ) ?</li> <li>- Overcurrent because there is a shortcut in the motorwire ?</li> <li>- Is the encoder wire right connected? Perhaps you must change the channels A and B ?</li> <li>- Is the car easily running ? Have the fixing shoes enough oil ? Is the half-load OK ?</li> </ul>

<b>F102</b>	<p><b>Overcurrent U - Overcurrent because there are wrong motor datas or oscillations of the car</b></p> <ul style="list-style-type: none"> <li>- Error message caused through wrong motor datas (<b>Nominalspeed</b> – Motor datas )!</li> <li>- Error message caused through wrong motor datas (<b>Nominalcurrent</b> – Motor datas )!</li> <li>- Old machines: Please switch off the <b>position regulator!</b> Or change the settings !</li> <li>- Gearless: Is the motorwire correctly installed ( U – V – W ) ?</li> <li>- Overcurrent because there is a shortcut in the motorwire ?</li> <li>- Is the encoder wire right connected? Perhaps you must change the channels A and B ?</li> </ul> <p>- Is the car easily running ? Have the fixing shoes enough oil ? Is the half-load OK ?</p>
<b>F103</b>	<p><b>Overcurrent V - Overcurrent because there are wrong motor datas or oscillations of the car –</b></p> <ul style="list-style-type: none"> <li>- Error message caused through wrong motor datas (<b>Nominalspeed</b> – Motor datas )!</li> <li>- Error message caused through wrong motor datas (<b>Nominalcurrent</b> – Motor datas )!</li> <li>- Old machines: Please switch off the <b>position regulator!</b> Or change the settings !</li> <li>- Gearless: Is the motorwire correctly installed ( U – V – W ) ?</li> <li>- Overcurrent because there is a shortcut in the motorwire ?</li> <li>- Is the encoder wire right connected? Perhaps you must change the channels A and B ?</li> </ul> <p>- Is the car easily running ? Have the fixing shoes enough oil ? Is the half-load OK ?</p>
<b>F104</b>	<p><b>Overcurrent W - Overcurrent because there are wrong motor datas or oscillations of the car</b></p> <ul style="list-style-type: none"> <li>- Error message caused through wrong motor datas (<b>Nominalspeed</b> – Motor datas )!</li> <li>- Error message caused through wrong motor datas (<b>Nominalcurrent</b> – Motor datas )!</li> <li>- Old machines: Please switch off the <b>position regulator!</b> Or change the settings !</li> <li>- Gearless: Is the motorwire correctly installed ( U – V – W ) ?</li> <li>- Overcurrent because there is a shortcut in the motorwire ?</li> <li>- Is the encoder wire right connected? Perhaps you must change the channels A and B ?</li> </ul> <p>- Is the car easily running ? Have the fixing shoes enough oil ? Is the half-load OK ?</p>
<b>F105</b>	<p><b>Dissipator Temperature: Temperature Dissipator too high –</b></p> <ul style="list-style-type: none"> <li>- The Inverter is overloaded or the controller casing is too hot. Is the power class of the inverter in according to the motor ?</li> <li>- Has the controller cabinet an air ventilation? Is above the inverter casing enough air room?</li> <li>- Ate the fans of the inverter OK?</li> </ul> <p>- Are there any dirt on the pcb-board or in the heatsink ?</p>
<b>F106</b>	<p><b>DC-Overvoltage:</b></p> <ul style="list-style-type: none"> <li>- There is no brake resistor connected or the type is wrong -&gt; Please measure the Ohm-value!</li> <li>- Main supply voltage too high -&gt; Please check it – you must have a voltage of 400V AC!</li> <li>- There are voltage peaks on the main supply ?</li> </ul> <p>- Is the frequency inverter connected with the earth ?</p>
<b>F107</b>	<p><b>DC-Undervoltage:</b>–The supply voltage is too low or the maincontactor is switched off during the travel:</p> <ul style="list-style-type: none"> <li>- The DC voltage is too low -&gt; Please control the supply voltage !</li> <li>- The maincontactors are switched off during the travel -&gt; A phase of the supply voltage is missing !</li> </ul> <p>- The power class of the inverter is too low for the motor !</p>
<b>F108</b>	<p><b>Main Contactor-Start:</b></p> <ul style="list-style-type: none"> <li>- At the start, the maincontactors do not switch ON -&gt; The power supply is too low ?</li> <li>- At the start, the maincontactors do not switch ON -&gt; The safety circuit is interrupted (Doorcontacts)</li> </ul> <p>- At the start, the maincontactors do not switch ON -&gt; The Fuse is switched OFF ?</p>
<b>F109</b>	<p><b>Main-Contactor-Travel:</b></p> <ul style="list-style-type: none"> <li>- During the travel, the maincontactors switch OFF -&gt; The power supply is too low ?</li> <li>- During the travel, the maincontactors switch OFF -&gt; The safety circuit is interrupted (Doorcontacts)</li> </ul> <p>During the travel, the maincontactors switch OFF -&gt; The Fuse is switched OFF ?</p>
<b>F110</b>	<p><b>No Release:</b></p> <ul style="list-style-type: none"> <li>- Drive direction UP or DOWN is missing at the end of the travel <ul style="list-style-type: none"> <li>o Controller: Delay for switch off the direction!</li> </ul> </li> <li>- Drive direction UP or DOWN is missing at the end of the travel <ul style="list-style-type: none"> <li>o Safety circuit, check the door mangement !</li> </ul> </li> <li>- Drive direction UP or DOWN is missing at the end of the travel</li> </ul> <p>-&gt; Delay time for switching off the contactors to 1500 ms.</p>

<b>F112</b>	<p><b>Wrong Direction</b></p> <ul style="list-style-type: none"> <li>- Please change the encoder channels A/B, because the machine rotates in the wrong direction!</li> <li>- Perhaps it is the wrong type of encoder? -&gt; <b>Menu A4 Motor/Gearbox -&gt; Encodersystem</b></li> <li>- The number of pulses are wrong? -&gt; <b>Menu A4 Motor/Gearbox -&gt; Encoder Pulses</b></li> <li>- The encoderwire is out of order or too long (&gt;30m)! -&gt; Please increase the encoder voltage !</li> <li>- The encoder-shield is not connected on both sides -&gt; Change it immediately!</li> <li>- The encoderwire is parallel to the motorwire -&gt; Change it immediately!</li> </ul> <p>- The encoder coupling or the encoder is not mechanical fixed with the Motorwave -&gt; Please check it!</p>
<b>F113</b>	<p><b>Speed Variance</b></p> <ul style="list-style-type: none"> <li>- The motor works, but the encoder is out of order or wrong connected. -&gt; Control the pining!</li> <li>- Perhaps it is the wrong type of encoder? -&gt; <b>Menu A4 Motor/Gearbox -&gt; Encodersystem</b></li> <li>- The number of pulses are wrong? -&gt; <b>Menu A4 Motor/Gearbox -&gt; Encoder Pulses</b></li> <li>- The encoderwire is out of order or too long (&gt;30m)! -&gt; Please increase the encoder voltage !</li> <li>- The encoder-shield is not connected on both sides -&gt; Change it immediately!</li> <li>- The encoderwire is parallel to the motorwire -&gt; Change it immediately!</li> <li>- The motor and his metal socket is grounded very bad -&gt; Change it immediately!</li> <li>- The frequency inverter is not connected with the earth -&gt; Change it immediately!</li> <li>- The motorwire-shield is not connected on both sides -&gt; Change it immediately!</li> <li>- The brakeresistorwire-shield is not connected on both sides -&gt; Change it immediately!</li> <li>- The encoder coupling or the encoder is not mechanical fixed with the Motorwave -&gt; Please check it!</li> <li>- The frequency inverter has a current limit (full power) -&gt; Power class too low</li> </ul> <p>- Is the car easily running ? Have the fixing shoes enough oil ? Is the half-load OK ?</p>
<b>F114</b>	<p><b>No Encoder Pulse</b></p> <ul style="list-style-type: none"> <li>- The motor works, but the encoder is out of order or wrong connected. -&gt; Control the pining!</li> <li>- Perhaps it is the wrong type of encoder? -&gt; <b>Menu A4 Motor/Gearbox -&gt; Encodersystem</b></li> <li>- The number of pulses are wrong? -&gt; <b>Menu A4 Motor/Gearbox -&gt; Encoder Pulses</b></li> <li>- The encoderwire is out of order or too long (&gt;30m)! -&gt; Please increase the encoder voltage !</li> <li>- The encoder-shield is not connected on both sides -&gt; Change it immediately!</li> <li>- The encoderwire is parallel to the motorwire -&gt; Change it immediately!</li> <li>- The motor and his metal socket is grounded very bad -&gt; Change it immediately!</li> <li>- The frequency inverter is not connected with the earth -&gt; Change it immediately!</li> <li>- The motorwire-shield is not connected on both sides -&gt; Change it immediately!</li> <li>- The brakeresistorwire-shield is not connected on both sides -&gt; Change it immediately!!</li> </ul> <p>- The encoder coupling or the encoder is not mechanical fixed with the Motorwave -&gt; Please check it</p>
<b>F115</b>	<p><b>DC Precharge:</b></p> <ul style="list-style-type: none"> <li>- After switch ON the inverter, the DC-voltage is too low -&gt; Earth connection of the brake resistor wire</li> <li>- After switch ON the inverter, the DC-voltage is too low -&gt; Earth connection of the brake resistor wire</li> </ul> <p>- After switch ON the inverter, the DC-voltage is too low -&gt; The little two fuses into the inverter are out of order !</p>
<b>F116</b>	<p><b>Release Change during the travel – Lift controller error</b></p> <p>- Error of the lift controller or wrong settings in the parameter of the controller / inverter!</p>
<b>F117</b>	<p><b>Liftbus communication during the travel is out of:</b></p> <ul style="list-style-type: none"> <li>- Wrong Liftbus parameter !</li> </ul> <p>- Wrong Liftbuscable or the shield not connected</p>
<b>F118</b>	<p><b>SSI-Communication:</b></p> <ul style="list-style-type: none"> <li>- Is there really <b>SSI-encoder connected?</b> -&gt; <b>Menu A4 Motor/Gearbox -&gt; Encodersystem</b></li> <li>- The encoder is out of order, e.g. after the test of the safetygear ?</li> <li>- The encoder is wrong connected -&gt; Please check the pining -&gt; Do you use the right adapter ?</li> <li>- The encoderwire is out of order or too long (&gt;30m)! -&gt; Please increase the encoder voltage !</li> <li>- The encoderwire is parallel to the motorwire -&gt; Change it immediately!</li> </ul> <p>- The encoder coupling or the encoder is not mechanical fixed with the Motorwave -&gt; Please check it!</p>
<b>F119</b>	<p><b>EnDat-Communication:</b></p> <ul style="list-style-type: none"> <li>- Is there really <b>EnDat-encoder connected?</b> -&gt; <b>Menu A4 Motor/Gearbox -&gt; Encodersystem</b></li> <li>- The encoder is out of order, e.g. after the test of the safetygear ?</li> <li>- The encoder is wrong connected -&gt; Please check the pining -&gt; Do you use the right adapter ?</li> <li>- The encoderwire is out of order or too long (&gt;30m)! -&gt; Please increase the encoder voltage !</li> <li>- The encoderwire is parallel to the motorwire -&gt; Change it immediately!</li> </ul> <p>The encoder coupling or the encoder is not mechanical fixed with the Motorwave -&gt; Please check it!</p>

<b>F120</b>	<b>Hiperface Communication:</b> <ul style="list-style-type: none"> <li>- Is there really <b>Hiperface-encoder connected?</b> -&gt; <b>Menu A4 Motor/Gearbox-&gt; Encodersystem</b></li> <li>- The encoder is out of order, e.g. after the test of the safetygear ?</li> <li>- The encoder is wrong connected -&gt; Please check the pinning -&gt; Do you use the right adapter ?</li> <li>- The encoderwire is out of order or too long ( &gt;30m) ! -&gt; Please increase the encoder voltage !</li> <li>- The encoderwire is parallel to the motorwire -&gt; Change it immediatly!</li> </ul> <p>- The encoder coupling or the encoder is not mechanical fixed with the Motorwave -&gt; Please check it!</p>
<b>F121</b>	<b>Sin/Cos Communication:</b> <ul style="list-style-type: none"> <li>- Is there really <b>Sin/Cos-encoder connected?</b> -&gt; <b>Menu A4 Motor/Gearbox -&gt; Encodersystem</b></li> <li>- The encoder is out of order, e.g. after the test of the safetygear ?</li> <li>- The encoder is wrong connected -&gt; Please check the pinning -&gt; Do you use the right adapter ?</li> <li>- The encoderwire is out of order or too long ( &gt;30m) ! -&gt; Please increase the encoder voltage !</li> <li>- The encoderwire is parallel to the motorwire -&gt; Change it immediatly!</li> </ul> <p>- The encoder coupling or the encoder is not mechanical fixed with the Motorwave -&gt; Please check it!</p>
<b>F122</b>	<b>Angle Variance:</b> <ul style="list-style-type: none"> <li>- The number of pulses are wrong -&gt; Please change the setting</li> <li>- The encoder channels are out of order -&gt; Please change the encoder ! ?</li> </ul> <p>- The encoder is wrong connected -&gt; Please check the pinning -&gt; Do you use the right adapter ?</p>
<b>F123</b>	<b>Encoder Voltage-too low:</b> <ul style="list-style-type: none"> <li>- Short cut at the encoder terminal -&gt; Please check the pinning -&gt; Do you use the right adapter ?</li> <li>- The encoder is out of order, e.g. after the test of the safetygear ?</li> <li>- The encoder is wrong connected -&gt; Please check the pinning -&gt; Do you use the right adapter ?</li> <li>- The encoderwire is out of order or too long ( &gt;30m) ! -&gt; Please increase the encoder voltage !</li> </ul> <p>- Is the right type of <b>encoder connected?</b> -&gt; <b>Menu A4 Motor/Gearbox -&gt; Encodersystem</b></p>
<b>F124</b>	<b>Motor Temperature-too high:</b> <ul style="list-style-type: none"> <li>- The temperature of the area is too high</li> <li>- The motor is overloaded</li> </ul> <p>- The motor fan is out of order</p>
<b>F125</b>	<b>Command Voltage-too low: Short cut at the 24V-Terminal, 24V-Terminal is overloaded:</b> <ul style="list-style-type: none"> <li>- Short cut at the output terminal +24V -&gt; Please check soon as possible !</li> </ul> <p>- The output channel +24V is overloaded -&gt; please use an external power supply !</p>
<b>F126</b>	<b>24V Output Driver</b> <ul style="list-style-type: none"> <li>- Short cut at the output terminal -&gt; Please check the pinning</li> </ul> <p>The output channels EA1 to EA8 are overloaded -&gt; Perhaps the is a short cut or the current is too high -&gt; Please check it, perhaps you must use external relays!</p>
<b>F127</b>	<b>Relay Monitor-1:</b> <p>Internal Relay-1 is out of order or the open-contact is clewing -&gt; The switching load is too big (Inductive)! Please use a contactor to switch big loads, like the brake-magnet!</p>
<b>F128</b>	<b>Relay Monitor -2:</b> <p>Internal Relay-2 is out of order or the open-contact is clewing -&gt; The switching load is too big (Inductive)! Please use a contactor to switch big loads, like the brake-magnet!</p>
<b>F129</b>	<b>Relay Monitor -3:</b> <p>Internal Relay-3 is out of order or the open-contact is clewing -&gt; The switching load is too big (Inductive)! Please use a contactor to switch big loads, like the brake-magnet!</p>
<b>F130</b>	<b>Monitor Brake-1:</b> <ul style="list-style-type: none"> <li>- Brake-circuit-1 do not open / close during the travel -&gt; Are the settings OK? Do you have opener or closer-contacts? 0V (NPN-Thyssen ) or +24V (z.B. Ziehl-Abegg,...)</li> <li>- Do have connected the brakewires rightly?</li> <li>- Do you have observed, if the brakes open ? -&gt; Brakewires ?</li> </ul> <p>- Are the brake-contacts OK ? -&gt; If you have any douts, make a measurement !</p>
<b>F131</b>	<b>Monitor Brake-2:</b> <ul style="list-style-type: none"> <li>- Brake-circuit-2 do not open / close during the travel -&gt; Are the settings OK? Do you have opener or closer-contacts? 0V (NPN-Thyssen ) or +24V (z.B. Ziehl-Abegg,...)</li> <li>- Do have connected the brakewires rightly?</li> <li>- Do you have observed, if the brakes open ? -&gt; Brakewires ?</li> </ul> <p>Are the brake-contacts OK ? -&gt; If you have any douts, make a measurement !</p>
<b>F132</b>	<b>Monitor Brake-3:</b> <ul style="list-style-type: none"> <li>- Brake-circuit-3 do not open / close during the travel -&gt; Are the settings OK? Do you have opener or closer-contacts? 0V (NPN-Thyssen ) or +24V (z.B. Ziehl-Abegg,...)</li> <li>- Do have connected the brakewires rightly?</li> <li>- Do you have observed, if the brakes open ? -&gt; Brakewires ?</li> </ul> <p>- Are the brake-contacts OK ? -&gt; If you have any douts, make a measurement !</p>

<b>F133</b>	<b>Monitor Brake-4:</b> <ul style="list-style-type: none"> <li>- Brake-circuit-4 do not open / close during the travel -&gt; Are the settings OK? Do you have opener or closer-contacts? 0V (NPN-Thyssen ) or +24V (z.B. Ziehl-Abegg,..)</li> <li>- Do have connected the brakewires rightly?</li> <li>- Do you have observed, if the brakes open ? -&gt; Brakewires ?</li> </ul> - Are the brake-contacts OK ? -> If you have any doubts, make a measurement !
<b>F134</b>	<b>Monitor Main Contactor:</b> <ul style="list-style-type: none"> <li>- One of the main contactor can not be switched ON -&gt; Please control the contactors!</li> <li>- Please check the opener-contacts, clean it or change it!</li> </ul> - Are the opener-contacts for 24V DC ? -> Please look at the data sheet!
<b>F135</b>	<b>ADC1-Zero-Offset:</b> <ul style="list-style-type: none"> <li>- The currentsensor-U is out of order. It is an internal Error. Please contact our Hotline.</li> </ul>
<b>F136</b>	<b>ADC2-Zero-Offset:</b> <ul style="list-style-type: none"> <li>- The currentsensor-V is out of order. It is an internal Error. Please contact our Hotline.</li> </ul>
<b>F137</b>	<b>ADC1-Offset:</b> <ul style="list-style-type: none"> <li>- The AD-Changer-V is out of order. It is an internal Error. Please contact our Hotline.</li> </ul>
<b>F138</b>	<b>ADC2-Offset:</b> <ul style="list-style-type: none"> <li>- The AD-Changer-U is out of order. It is an internal Error. Please contact our Hotline.</li> </ul>
<b>F139</b>	<b>Eart Fault:</b> <ul style="list-style-type: none"> <li>- The motor ist out of order, please measure each coil of the motor and compare it!</li> <li>- Please check, if the motorwire or resistorwire have any connection to earth!</li> </ul>
<b>F140</b>	<b>IPM-Error: or Supply voltage to low:</b> <ul style="list-style-type: none"> <li>- Overtemperature in the IGBT-Chip -&gt; Are there any dirt on the pcb-board or in the heatsink ?</li> <li>- The voltage of board is too low! -&gt; Is the main supply voltage OK ?</li> </ul>
<b>F141</b>	<b>Position Regulation:</b> <ul style="list-style-type: none"> <li>- The difference at the start handling is too high, wrong Parameter ( <b>Nominalspeed</b> -&gt; motor-datas,..)!</li> <li>- The motor works, but the encoder is out of order or wrong connected. -&gt; Control the pining!</li> <li>- Perhaps it is the wrong type of encoder? -&gt; <b>Menu A4 Motor/Gearbox -&gt; Encodersystem</b></li> <li>- The number of pulses are wrong? -&gt; <b>Menu A4 Motor/Gearbox -&gt; Encoder Pulses</b></li> <li>- The encoderwire is out of order or too long ( &gt;30m) ! -&gt; Please increase the encoder voltage !</li> <li>- The encoderwire is parallel to the motorwire -&gt; Change it immediately!</li> <li>- The encoder-shield is not connected on both sides -&gt; Change it immediately!</li> </ul> Old machines: Please switch off the <b>position regulator!</b> Or change the settings!
<b>F142</b>	<b>NTC-Dissipator ::</b> <ul style="list-style-type: none"> <li>- The Temperature sensor deliver the wrong value: Please check the connection!</li> <li>- The Temperature sensor is out of order. Please contact our Hotline.</li> </ul>
<b>F143</b>	<b>DC Battery Voltage:</b> At the evaquation-travel with battery, the voltage of the battery was too low. Please check the battery voltage!
<b>F144</b>	<b>Watchdog-Reset</b> There is an internal Reset by the Watchdog. Please contact our Hotline.
<b>F145</b>	<b>Monitor Brake wear-1:</b> The input channel for the Brake wear monitor is active.You need a new brake shoe or brake is not exactly adjust!
<b>F146</b>	<b>Monitor Brake wear-2:</b> The input channel for the Brake wear monitor is active.You need a new brake shoe or brake is not exactly adjust!
<b>F147</b>	<b>Monitor Brake wear-3:</b> The input channel for the Brake wear monitor is active.You need a new brake shoe or brake is not exactly adjust!
<b>F148</b>	<b>Monitor Brake wear-4:</b> The input channel for the Brake wear monitor is active.You need a new brake shoe or brake is not exactly adjust!
<b>F149</b>	<b>Offset measure Pole Number:</b> There is a difference between the parameter motor type and the actual type!
<b>F150</b>	<b>Offset measur Brake:</b> During the offset measure, the motor do not rotate – please check the brake, because it is not open!
<b>F151</b>	<b>Offset measure Invalid :</b> The measured offset angle is not valid – check electric wiring and make the offset measure a second time!
<b>F152</b>	<b>Brake Resistor:</b> There is a short cut at the brake resistor!

<b>F153</b>	<b>Hydraulic – Pressure Sensor:</b> The input channel for Pressure Sensor is low. Please check the wire to the Pressure Sensor.
<b>F154</b>	<b>Hydraulic – Turbine:</b> The input channel for Turbine is low. Please check the wire to the Turbine.
<b>F155</b>	<b>Hydraulic – Low Pressure:</b> If the low Pressure-Function is activate, there is an error. The pressure is too low, because there is a problem in the hydraulic system or the limit-setting of the parameter is too high.
<b>F201</b>	<b>Mains Frequency:</b> <ul style="list-style-type: none"> <li>- The softstart unit can not synchronizice with the power supply !</li> <li>- Wrong Power frequency? -&gt; Has the power supply a frequency of 50 Herz ?</li> <li>- If there is a power supply with 60 Hz Netz – Please chang the parameter B6 to 60 Hz !</li> </ul>
<b>F202</b>	<b>Phase Failure:</b> <ul style="list-style-type: none"> <li>- There are not all three phases at the power input !</li> <li>- One phase is missing ! -&gt; Please check voltage and current !</li> </ul>
<b>F203</b>	<b>Phase Sequence:</b> <ul style="list-style-type: none"> <li>- The phase sequence at the power input is wrong !</li> <li>- Right: L1 – L2 – L3 Wrong: L2 – L3 – L1 or..L3 – L1 – L2</li> </ul>
<b>F204</b>	<b>Phase Rotation:</b> <ul style="list-style-type: none"> <li>- The phase rotation at the power input is no right-rotation-field!</li> <li>Right: L1 – L2 – L3 Wrong: L2 – L1 – L3 or.. -&gt; Please check it and make a right rotation field !</li> </ul>
<b>F205</b>	<b>Dissipator Temperature too High:</b> <ul style="list-style-type: none"> <li>- The softstart is overloaded, is the power class of the unit ok?</li> <li>- The Temperature sensor deliever the wrong value: Please check the connection!</li> </ul> The Temperature sensor is out of order. Please contact our Hotline.
<b>F206</b>	<b>Motor Temperature - Motor and oil too hot:</b> <ul style="list-style-type: none"> <li>- The temperature of the area is too high !</li> <li>- The motor is overloaded !</li> <li>- The number of travels is too high ? -&gt; Do you need an oil-cooling?</li> </ul>
<b>F207</b>	<b>Relay-1 Contactor:</b> Internal Relay-1 is out of order or the open-contact is clewing -> The switching load is too big (Inductive)! Please use a contactor to switch big loads, like the valve-magnet!
<b>F208</b>	<b>Relay-2 Contactor:</b> Internal Relay-2 is out of order or the open-contact is clewing -> The switching load is too big (Inductive)! Please use a contactor to switch big loads, like the valve-magnet!
<b>F209</b>	<b>Main Contactor Monitoring:</b> <ul style="list-style-type: none"> <li>- One of the main contactor can not be switched ON -&gt; Please control the contactors!</li> <li>- Please check the opener-contacts, clean it or change it!</li> <li>- Are the opener-contacts for 24V DC ? -&gt; Please look at the data sheet!</li> </ul>
<b>F210</b>	<b>Liftbus Communication is interrupted:</b> <ul style="list-style-type: none"> <li>- Wrong Liftbus parameter ! - Wrong Liftbuscable or the shield not connected!</li> </ul>
<b>F240</b>	<b>Fan Monitoring Controller-Cabinet</b> The fan of the controller-cabinet is out of order. Please check the Fuse, Wiring & the Fan.
<b>F241</b>	<b>Carlight Monitoring</b> One of the lights of the carlights is out of order. Please check the Fuse, Wiring & Light
<b>F243</b>	<b>Monitoring Doorstep Heating – 1</b> The heating of the shaft-doorstep is out of order. Please check the Fuse, Wiring & the Heating
<b>F244</b>	<b>Monitoring Doorstep Heating – 2</b> The heating of the shaft-doorstep is out of order. Please check the Fuse, Wiring & the Heating
<b>F245</b>	<b>Monitoring Doorstep Heating – 3</b> The heating of the shaft-doorstep is out of order. Please check the Fuse, Wiring & the Heating
<b>F246</b>	<b>Monitoring Doorstep Heating – 4</b> The heating of the shaft-doorstep is out of order. Please check the Fuse, Wiring & the Heating
<b>F247</b>	<b>Carfan Monitoring</b> The fan of the car is out of order. Please check the Fuse, Wiring & the Fan.
<b>F248</b>	<b>Electric Socket Monitoring</b> The electric socket in the pit is out of order. Please check the Fuse, Wiring & the socket.

## 4.5.6.2 Frequency converter fault

When a fault is detected by the frequency converter control electronics, the drive is stopped and the symbol F together with the ordinal number of the fault, the fault code and a short fault description appear on the +OP2 control box display. Frequency converter fault will also be signalled in HPG60 but full error will be display on Frequency converter front panel in OP6. The fault can be reset with the Reset button on the control keypad or via the I/O terminal. The faults are stored in the Fault History menu, which can be browsed. The different fault codes you will find in the table below.



*Frequency converter display and keypad push buttons (inside control box +OP6).*

### Button descriptions

-  = This button is used to reset active faults
-  = This button is used to switch between two latest displays. May be useful when you want to see how the changed new value influences some other value.
-  = The Enter button serves for:
  - 1) confirmation of selections
  - 2) fault history reset (2...3 seconds)
-  = Browser button up  
Browse the main menu and the pages of different submenus.  
Edit values.
-  = Browser button down  
Browse the main menu and the pages of different submenus.  
Edit values.
-  = Menu button left  
Move backward in menu.  
Move cursor left (in parameter menu).  
Exit edit mode.  
Hold down for 3 seconds to return to main menu.
-  = Menu button right  
Move forward in menu.  
Move cursor right (in parameter menu).  
Enter edit mode.
-  = Start button.  
Pressing this button starts the motor if the keypad is the active control place.
-  = Stop button.  
Pressing this button stops the motor (unless disabled by parameter R3.4/R3.6).

The alphanumeric control keypad features 9 push-buttons that are used for control of the frequency converter (and motor), parameter setting and value monitoring.

The fault codes and their possible causes are presented in the table below.

Fault code	Fault	Possible cause
1	Overcurrent	Frequency converter has detected too high a current ( $>4 \cdot I_n$ ) in the motor cable: <ul style="list-style-type: none"> <li>- sudden heavy load increase</li> <li>- short circuit in motor cables</li> <li>- unsuitable motor</li> </ul>
2	Overvoltage	The DC-link voltage has exceeded the limits defined in Table 4-1. <ul style="list-style-type: none"> <li>- too short a deceleration time</li> <li>- high overvoltage spikes in utility</li> </ul>
3	Earth fault	Current measurement has detected that the sum of motor phase current is not zero. insulation failure in cables or motor
5	Charging switch	The charging switch is open, when the START command has been given. <ul style="list-style-type: none"> <li>- faulty operation</li> <li>- component failure</li> </ul>
6	Emergency stop	Stop signal has been given from the option board.
7	Saturation trip	Defective component
8	Unknown fault	The frequency converter troubleshooting system is unable to locate the fault.
9	Undervoltage	DC-link voltage is under the voltage limits defined in Table 4-2 of the Vacon NX User's Manual. Most probable causes: <ul style="list-style-type: none"> <li>- too low a supply voltage</li> <li>- frequency converter internal fault</li> </ul>
10	Input line supervision	Input line phase is missing.
11	Output phase supervision	Current measurement has detected that there is no current in one motor phase.
12	Brake chopper supervision	<ul style="list-style-type: none"> <li>- no brake resistor installed</li> <li>- brake resistor is broken</li> <li>- brake chopper failure</li> </ul>
13	Frequency converter under-temperature	Heatsink temperature is under $-10^{\circ}\text{C}$
14	Frequency converter overtemperature	Heatsink temperature is over $90^{\circ}\text{C}$ .  Overtemperature warning is issued when the heatsink temperature exceeds $85^{\circ}\text{C}$ .
15	Motor stalled	Motor stall protection has tripped.
16	Motor overtemperature	Motor overheating has been detected by frequency converter motor temperature model. Motor is overloaded.
17	Motor underload	Motor underload protection has tripped.

<b>22</b>	EEPROM	- parameter save fault
<b>23</b>	checksum fault	- faulty operation - component failure
<b>24</b>	Changed data warning	Changes may have occurred in the different counter data due to mains interruption
<b>25</b>	Microprocessor watchdog fault	- faulty operation - component failure
<b>29</b>	Thermistor fault	Thermistor is broken.
<b>37</b>	Device change	Option board changed. Different power rating of drive.
<b>38</b>	Device added	Option board added. Drive of different power rating added.
<b>39</b>	Device removed	Option board removed. Drive removed.
<b>40</b>	Device unknown	Unknown option board or drive.
<b>41</b>	IGBT temperature	
<b>43</b>	Encoder fault	Note the exceptional Fault data record. See Param. 7.3.4.3. Additional codes: 1 = Encoder 1 channel A is missing, wrong connection or broken cable 2 = Encoder 1 channel B is missing, wrong connection or broken cable 3 = Both Encoder 1 channels are missing, wrong connection or broken cable 4 = Encoder reversed, channels swapped
<b>50</b>	Analogue input $I_{in}$ < 4mA (selected signal range 4 to 20 mA)	Current at the analogue input is < 4mA. - control cable is broken or loose - signal source has failed
<b>51</b>	External fault	Digital input fault.
<b>52</b>	Keypad communication fault	The connection between the control keypad and the frequency converter is broken.
<b>53</b>	Fieldbus communication fault	The connection from the fieldbus to the frequency converter is broken.
<b>54</b>	SPI communication fault	The connection between the component board and the control board is broken.
<b>55</b>	External brake control	Fault is activated by the mechanical brake control logic. Check parameters and external brake device. See <a href="#">parameter 2.8.4.1</a>
<b>56</b>	Shaft speed	Fault is activated if calculated speed is different compared to actual speed. See <a href="#">parameter 2.8.4.2</a> .
<b>57</b>	Torque supervision	Actual torque above torque limits. See <a href="#">parameter 2.8.4.6</a>
<b>58</b>	Minimum current	Motor current is less than set limit <a href="#">parameter 2.8.4.8</a>
<b>59</b>	Direction request	Digital inputs DIN1 and DIN2 are ON at the same time. See <a href="#">parameter 2.8.4.7</a> .
<b>60</b>	Evacuation	Fault is generated during the evacuation process.
<b>61</b>	Zero speed time	Zero current measured later than 2 seconds from start command. See <a href="#">parameter 2.8.4.9</a> .
<b>62</b>	Evacuation Voltage	Evacuation active and voltage has exceeded the limit value. Evacuation supply voltage 230VAC $\pm 10\%$
<b>63</b>	Identification	Motor is not connected to the frequency converter. Wrong motor data is given.

## 5. SERVICE AND MAINTENANCE

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## 5. SERVICE AND MAINTENANCE

### 5.1 Inspections

The purpose of the inspections and maintenance work is first of all to secure the safe use of the equipment. The purpose of regular maintenance is also to guarantee the reliable use of the equipment and thus prevent failures..

**Read carefully chapter 2 SAFETY INSTRUCTIONS in this Instruction Manual before starting the service or maintenance operations.**

#### 5.1.1 Daily Inspections

Prior to the daily use of the hoist it must be checked both visually and functionally. The most important daily check points are presented in chapters 3.1.1 Check List and 3.1.2 Functional Testing.



**The service and maintenance work on the hoist is allowed to be carried out only by professionals qualified to these tasks.**



**Always when the cage is operated from the cage roof due to inspection or maintenance operations, the selection of the control location must be switched to the cage roof control with the key switch (S55). Thus the hoist can be operated only with the buttons on the cage roof.**



**When working on the cage roof and while the hoist is moving do not hang down or lean out beyond the railings. Especially during the upward movement there is a great risk of collision or squeezing against the cage and the landing constructions.**

## 5.2 Maintenance and lubrication



Always prior to the service and repair work the hoist must be withdrawn from the use. Switch off the disconnecting switch in the ground station control center and lock it.



In case there are more than one person working on the hoist, always be aware what your fellow worker is doing.



In case the service work is done underneath the hoist cage, fix the safety clamps on top of the drive unit and switch off the disconnecting switch before going under the cage.

The maintenance and lubrication intervals are defined for the use of the hoist in one working shift. Should the hoist be used in more than one shift, these intervals have to be made correspondingly shorter.

Measure - servis and maintenance		40 servis hours	160 servis hours	Method
1.	Check and clean work area around hoist.	x		Visual
2.	Ground station and cage damage.	x		Visual
3.	Check and clean area inside the ground station/cage and on the roof			Visual
4.	That the ground has not sunk and that the mast is vertical		x	Visual
5.	Check mast prolongation. Fastening and condition of mast sections and racks. Check of the fastening bolts in the mast sections. If you suspect looseness tighten them.		x	Visual Test
6.	Check the mast anchoring. All the fastening screws in every anchoring section should be tightened. Wall ties and cuplers screw.		x	Visual Tighening
7.	Visual check of the mast pipes (check wear, cracks, scratches, corrosion). If longitudinal grooves or excessive wear is discovered adjust the guide roller. Check the condition of the pinion and the counter roller. Adjust.		x	According to chapter 6.17 Erection
8.	That the guide rollers are in proper places, condision, clearances, wear, fixingg and tightening. Check the bearings in the guide rollers.		x	Visual and test Adjust or replace. According to chapter 6.17 Erection
9.	Ground station and cage doors function		x	Test
10.	Power cable and control cable damages/ twisting. Check the cable by its full length (for fractures, curling). The coiling of the cable into the basket.	x		Visual
11.	Check bumpers		x	Visual
12.	Check safety circuit - function of all limit switches and that the cage does not start moving if any of the cage or landing gates/doors is open or If the emergency stop button is pushed down	x		Test
13.	Check the operation of the control device, the alarm signal, lighting and emergency stops	x		Test
14.	Check the cage doors. Are the cable wires in good condition and greased? Do the doors move smoothly? Does the door locking work properly? Are the limit switches adjusted?	x		Test Grease
15.	Warning/instruction plates positioned and readable	x		Visual
16.	Instruction manual in the box	x		Visual
17.	Check the cable quide fixings and cable guide rubber		x	Visual Tighening

18.	Check the control system fault		x	Test
19.	That the motor, gearbox and it's base plate bolts are tight and that there are no oil leaks in the gear box.		x	Visual Tightening
20.	Check lubrication and maintenance point (mast rack, drive pinions, safety device pinion)		x	Visual, Grease See chapter 5.3.2
21.	Check oil level of the motor and gearbox. There are no oil leaks? Oil leaks immediately reported. Determine the cause of an oil leak. If necessary add the oil or completely change.			see separate manual
22.	Check the fastenings of the safety brake.	x		Tightening
23.	Lubricate the safety brake sliding bearings and the pinion bearings.		x	Lubricate Grease
24.	Check the operating the cable trolley and fastening of aluminium rails		x	Test
25.	That the hoist's control buttons work on the ground station/ cage/landings		x	Test
26.	That the brakes work properly and that the safety brake is in working order		x	Test
27.	Check the condition /wear of the rack and pinion.		x	Measure See chapter 5.4.6
28.	Check the condition of the gear - rack toothing.		x	Visual, Measure See chapter 5.4.4
29.	Clean the cable basket		x	Visual
30.	Check the mounting and operation of all mechanical and electric locks (landings, ground station, cage)		x	Test
31.	That the doors and landing gates/ramp/doors open and close properly and the landings are in good condition		x	Test, Grease
32.	Check cams		x	Visual
32.	Check the brakes for electric motors (adjust the gap of disk brake). One brake should stop the cage in full load.		x	Measure See chapter 5.4.1
33.	Check the fastening and condition of hydraulic hoses.		x	Visual Tightening

## 5.2.1 Transmission

- Check the transmission oil level regularly.
- The lubricant is changed at intervals of 10.000 service hours or minimum at intervals of two years.
- When changing the oil first clean the transmission carefully.
- The lubricant is selected according to the manufacturer's maintenance instructions, taking into account the conditions, in which the hoist is used.

Check the lubricant volume in the transmission according to the transmission manufacturer's maintenance instructions.

It is recommended to use synthetic oil. For example: Mobil SHC 220, Shell Omala 220HD, Petro-Canada Super Gear 220.

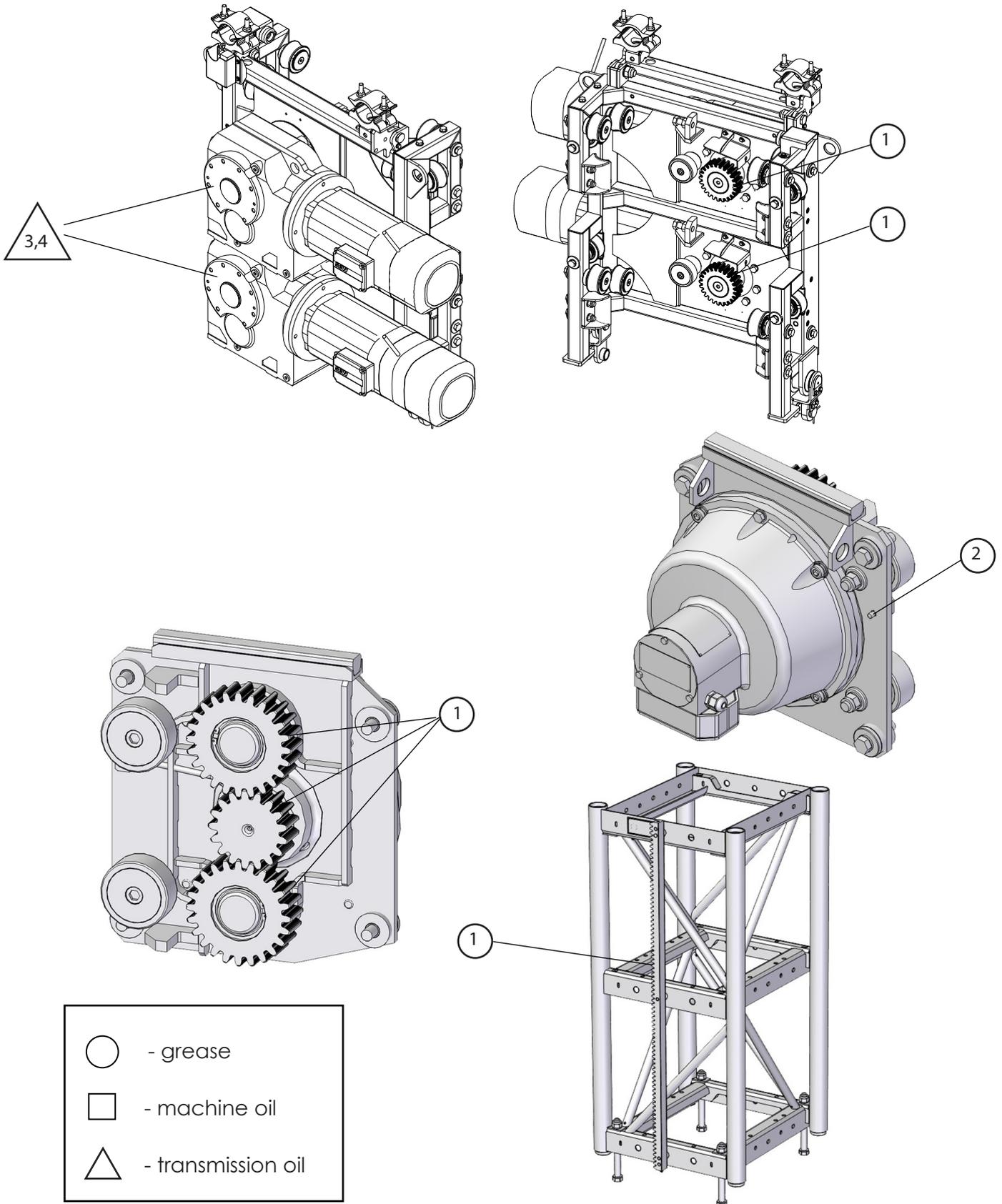


**Do not mix synthetic and mineral oil based lubricants.**



**If the machine is being used more frequently, or if operation is not interrupted during several shifts the tooth rack will have to be lubricated more often according to that more intensive use.**

## 5.2.2 Inspection, Maintenance and Lubrication Points



Lubrication interval	Point in the chart	Quantity	Lubrication point	Lubrication measure	Lubricant
When necessary	1	1	racks, pinions of the safety brake and the lifting motor	see lubrication pump manual	grease
120 h	2	1	safety brake bearing	see UC-5.0 sticker	grease
120 h	3	1	lifting motor gearbox	check the oil level (see manufacturer manual)	oil
	4	1	lifting motor gearbox	change the oil (see manufacturer manual)	oil

## 5.3 Adjustments

Brake motor, safety brake, pinions, guide rollers.

### 5.3.1 Motor Brake

In order to achieve sufficient braking torque for the brake, it is important, that the brake clearance is correctly adjusted and that the brake disc cover is in perfect condition.

If the air slot is too big adjust the brake. In case the air slot is too big the brake does not stop the hoist properly and as a result the braking distance becomes long or in the worst case the brake does not work at all.

The nominal brake air slot is 0,4 mm. The brake must be adjusted if the air slot exceeds 1,1mm

The brake is adjusted as follows:

- Unscrew the fastening screws.
- Adjust the adjusting screws, every one of them evenly.
- Tighten the fastening screws.
- Measure the air slot with a clearance gauge

The friction disc must be replaced, when



**Lower the cage to ground station and lower manually on the buffer springs before brake service**

its thicker than 10 mm, which is the minimum permissible thickness for a friction disc

The friction disk is adjusted as follows:

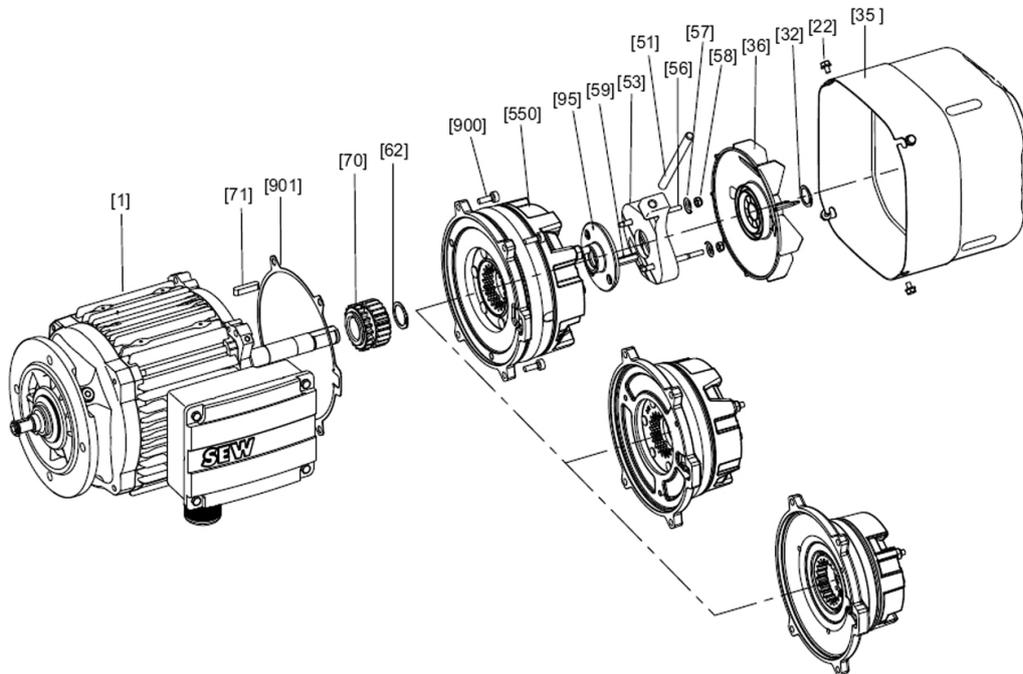
- Unscrew the fastening screws.
- Pull the brake backwards and replace the friction disc.
- Fasten the brake with the fastening screws.
- Adjust the air slot as described above.

During the inspection clean the brake from braking dust. If there is a sealing tape around the brake remove it and blow the dust away. Use a breathing mask when cleaning the brakes.



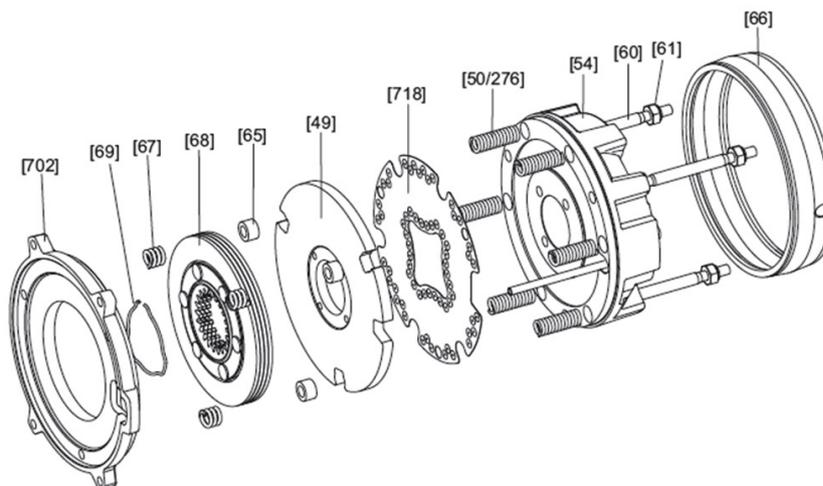
**See also additional "Operating and maintenance instruction" producer supplement. Detailed description the brake motor.**

## 7.6.2 DR.90-DR.132 brakemotor – basic structure



- |                                |                          |                           |
|--------------------------------|--------------------------|---------------------------|
| [1] Motor with brake endshield | [53] Releasing lever     | [70] Carrier              |
| [22] Hex head screw            | [56] Stud                | [71] Key                  |
| [32] Circlip                   | [57] Conical coil spring | [95] Sealing ring         |
| [35] Fan guard                 | [58] Setting nut         | [550] Pre-assembled brake |
| [36] Fan                       | [59] Parallel pin        | [900] Screw               |
| [51] Hand lever                | [62] Circlip             | [901] Sealing             |

## 7.6.6 BE1-BE11 brake (DR.90-DR.160) – basic structure



- |                            |                            |                           |
|----------------------------|----------------------------|---------------------------|
| [49] Pressure plate        | [65] Pressure ring         | [276] Brake spring (blue) |
| [50] Brake spring (normal) | [66] Rubber sealing collar | [702] Friction disk       |
| [54] Magnet, complete      | [67] Counter spring        | [718] Dampening plate     |
| [60] Stud 3x               | [68] Brake disk            |                           |
| [61] Hex nut               | [69] Circular spring       |                           |

## 5.3.2 The Safety Brake

### 5.3.2.1 The Operation of the Safety Brake

Do never open the safety brake or otherwise try to impact its operation. In case the safety brake has been arbitrarily tampered will all warranty claims lapse. The faulty safety brake must always immediately be replaced with a new one. The function of the new safety brake must be tested prior to putting the hoist in use.

The safety brake is to be sent to the manufacturer for measuring the release speed and adjustments. The safety brake undergoes also the inspection of bearings, spring set, wear of the brake surfaces, micro switch as well as the possible damages in the cover.



**Remove the faulty safety brake and replace it with a new one.**



**Send the faulty safety brake to the manufacturer for repair.**



**THE SAFETY BRAKE MUST BE REPLACED AT INTERVALS OF FOUR YEARS .**

## 5.3.2.2 Adjusting the Safety Brake Pinions

The safety brake pinions are not directly adjustable, the tooth contact between the pinions and the gear rack is adjusted with the help of the counter roller placed on the opposite side of the gear rack. As the hoist cage moves guided by the guide rollers, the tooth contact is to be checked if the guide rollers of the lifting mechanism have been adjusted.

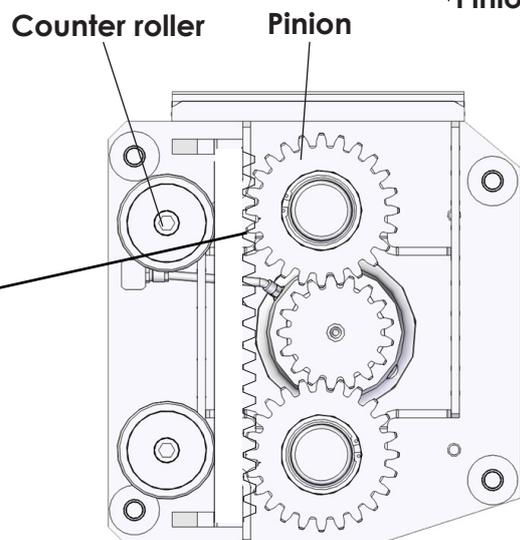
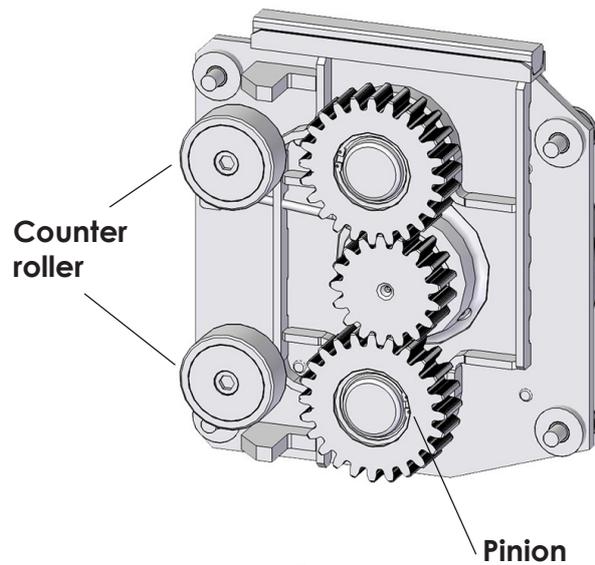
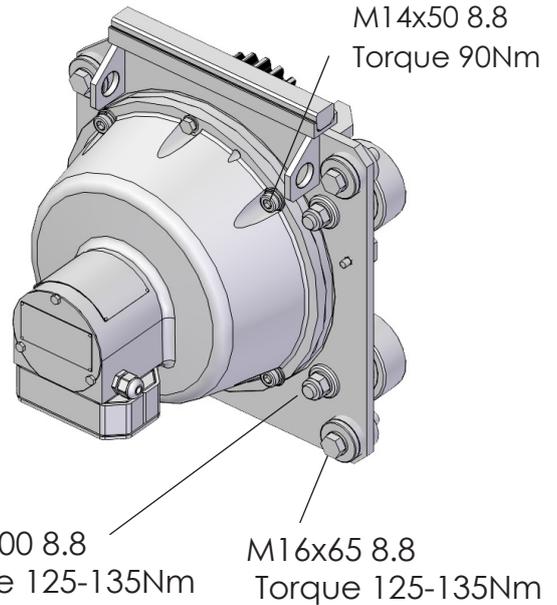
On the counter roller axle there is an eccentric, and by rotating it one can adjust the tooth contact.

Firstly, loosen the four screws with which the safety brake is fastened to the hoist cage.

Check that the pinion teeth are right-angled between the two gear rack teeth.

Tighten the counter roller by adjusting the eccentric so that the counter roller lies lightly against the gear rack and that the groove distance between the top of the pinion and the gear rack teeth is 1,0..1,2 mm.

Tighten the safety brake fastening screws.



## 5.3.3 The Guide Rollers

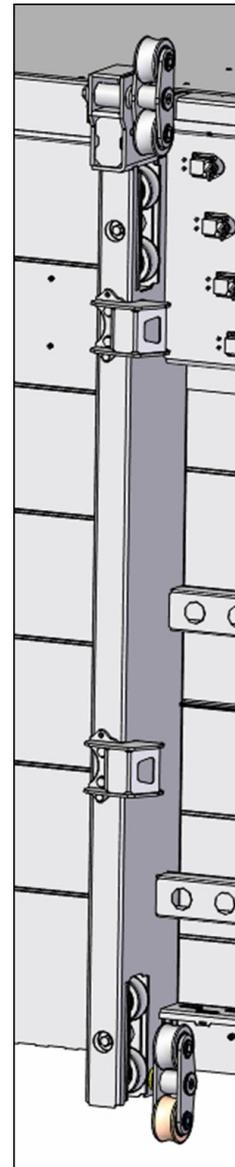
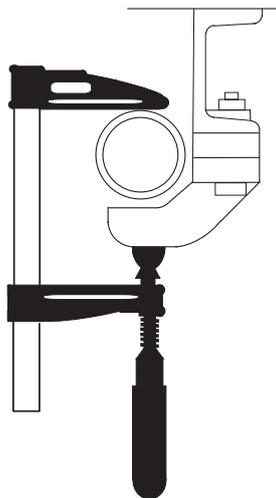
### 5.3.3.1 Replacing the Guide Rollers



**In case service work is done underneath the hoist cage, fix the safety clamps on top of the drive unit and switch off the disconnecting switch before going under the cage.**

Support the hoist cage safely from underneath and secure to both of the mast pipes using for example big clamps or other wedges so that the cage cannot move after the guide rollers have been removed. Loosen the tightening of the guide rollers and turn the eccentric so that there is a sufficient clearance between the mast and the guide rollers. Remove the guide roller. Install a new guide roller. However, do not tighten the axle fastening screw fully as yet. Now turn the eccentric with a spanner so that the guide roller lies lightly against the mast pipe. Remove the clamps or wedges securing the cage and tighten the guide roller axle's fastening screw properly.

The lower guide rollers are replaced in the same way as the upper ones. Secure that the cage stays in place and remove the cage load for example with clamps. Remove the old guide rollers and install the new ones. Adjust the guide rollers lightly against the mast with the eccentric placed on the guide roller axle so that the clamps used for supporting the cage can be removed.



The replacement of the guide rollers of both the hoist cage and the lifting mechanism is carried out according to the same principle.

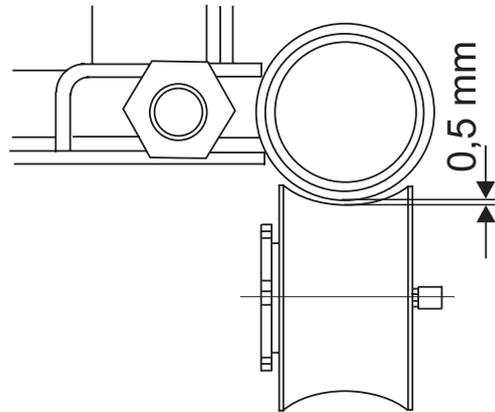
### 5.3.3.2 The Guide Roller Clearance

The guide roller clearance should be 0,5 mm on both sides as shown in the picture. A quick adjustment is possible also so that the clearance of the guide roller on one side is shut and the guide roller on the opposite side adjusted to the distance of 1 mm.

After adjusting the guide rollers check also the contact of the gear rack and the pinion.

Tightening torques:

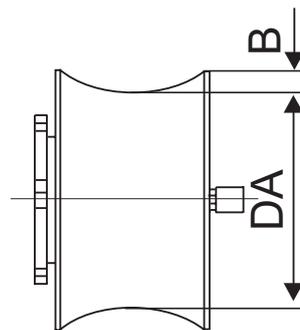
- The guide roller axles fastening screw                      200 Nm
- The eccentric fastening screw                      300 Nm



### 5.4.3.3 The Guide Roller Dimensions

The maximum permissible wear is shown in the table below. If the roller diameter is too small replace the roller.

Dimensions	New roller	Worn roller
DA	90 mm	min. 86 mm
B	5,5 mm	min. 5 mm

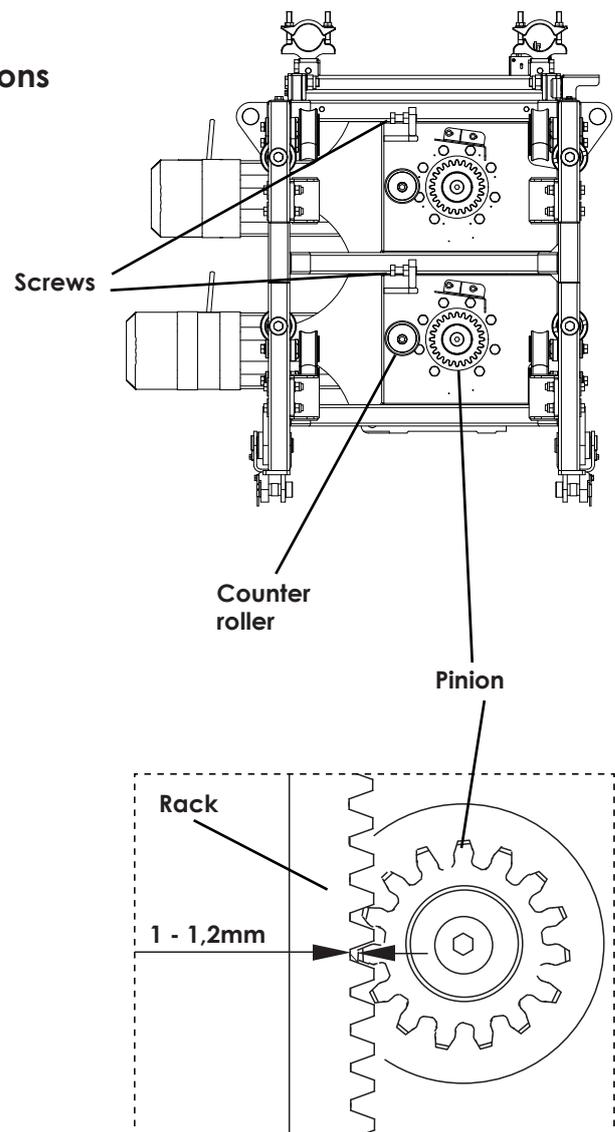


## 5.3.4 Adjusting the Lifting Mechanism Pinions

The power transmission pinions are not directly adjustable, the tooth contact between the pinions and the gear rack is adjusted with the help of the special screws placed on drive plate. Using screws set the pinion to gear rack teeth for require distance (1-1,2mm).

As the hoist cage as well as the lifting mechanism move guided by the guide rollers, the tooth contact is to be checked if the guide rollers have been adjusted. Check that the pinion teeth are right-angled between the two gear rack teeth.

Tighten the counter roller by adjusting the eccentric so that the counter roller lies lightly against the gear rack and that the groove distance between the top of the pinion and the gear rack teeth is 1..1,2mm. See the picture.

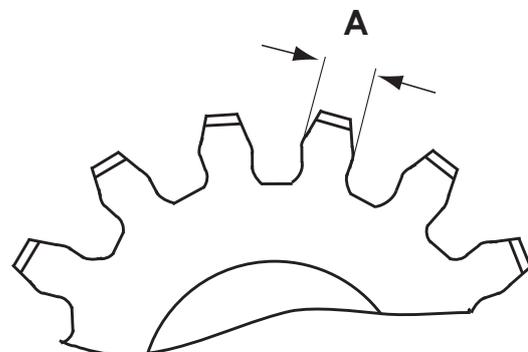


## 5.3.5 The Pinions

The pinion shall be checked regularly. Inspect the pinions visually for abnormal wear.

Measure pinion teeth:

If the measurement A is less than 8,2 mm, replace pinion.



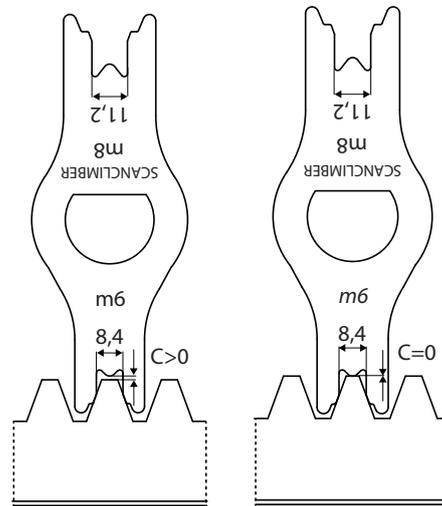
New tooth A= mm

Worn tooth A < 8,2 mm

## 5.3.6 The Mast Section and the Gear Rack

Scanclimber has a special tool PG170354 for rack checking. In the picture you can see rack tooth measurement. There shall be a clearance  $C$  between the rack tooth and the tool. If  $C = 0$  replace rack.

Rack measurement tool PG170354



Rack tool measurement

## 5.4 The Safety Brake

The safety brake is a type tested safety device approved by the authorities which is an important part of every personnel hoist.



**Using the hoist without a tested safety brake or with a faulty safety brake is strictly forbidden.**



**The arbitrary repair of the safety brake is forbidden.**



**Remove the faulty safety brake and replace it with a new one. Send the faulty safety brake to the manufacturer for repair.**



**THE SAFETY BRAKE MUST BE REPLACED AT INTERVALS OF FOUR YEARS .**



**Do not change settings of safety device limit switch.**

### 5.4.1 When the Safety Brake has engaged

When the safety brake has engaged it is impossible to operate the hoist. When the safety brake operates, the limit switch (S10) inside it disconnects the safety circuit.



**When the safety brake has operated, the reason for this must always be thoroughly cleared, and the possible fault repaired prior to restarting the hoist.**

When the safety brake has engaged, always contact the person in charge of the hoist's maintenance.



**The limit switch of the safety brake is allowed to be bypassed only by a person well familiar with the hoist's operation and in charge of its maintenance and installation.**

If it is certain that for instance in the mechanic structure of the hoist (geared motor, brake, pinions, cage guide rollers) there are no such damages which would prevent or endanger the hoist's operation, the safety brake limit switch can be temporarily bypassed.



**After the bypass of the safety brake do not forget to take the key off the switch. The key must not be kept in the hoist cage, but in possession of the site's supervision or the person in charge of the hoist's maintenance.**

To get the people out of the hoist cage, switch the key switch (S19) on the cage control panel to position "I", "Bypass of the safety brake". Drive the hoist to the next landing up and make an exit.

Prior to safety brake disengagement the reason for the safety brake engagement must be cleared up. Check the following points:

- The functioning of the motor brakes, both mechanical and electrical.
- The condition of the geared motors, the flanged joint of the gear and the motor as well as the wedge placed on the motor shaft.
- The condition of the guide rollers and the counter rollers.
- The condition of the pinions and gear racks in the drive.
- The adjustment and functioning of the safety brake limit switch. If the safety brake has operated and the limit switch is working correctly the cage must not move when operated.

In case the safety brake engagement was caused by a fault in the load bearing structure, for instance the pinion, gear box or lifting motor the safety brake must not be released before the fault is repaired.

The use of the hoist prior to releasing of the safety brake is forbidden.

See chapter 5.4.3 Adjusting the Safety Brake.

## 5.4.2 Testing the Safety Brake

### 5.4.2.1 General information

The safety brake must be tested with the hoist's nominal load prior to the first adoption of the hoist and after that regularly in accordance with the maintenance and scheduled inspections instructions.



**Only a professionally qualified person is allowed to carry out the safety brake test.**



**Staying in the cage or on the cage roof during the test is strictly forbidden.**



**Using the hoist without a correctly tested safety brake is forbidden.**



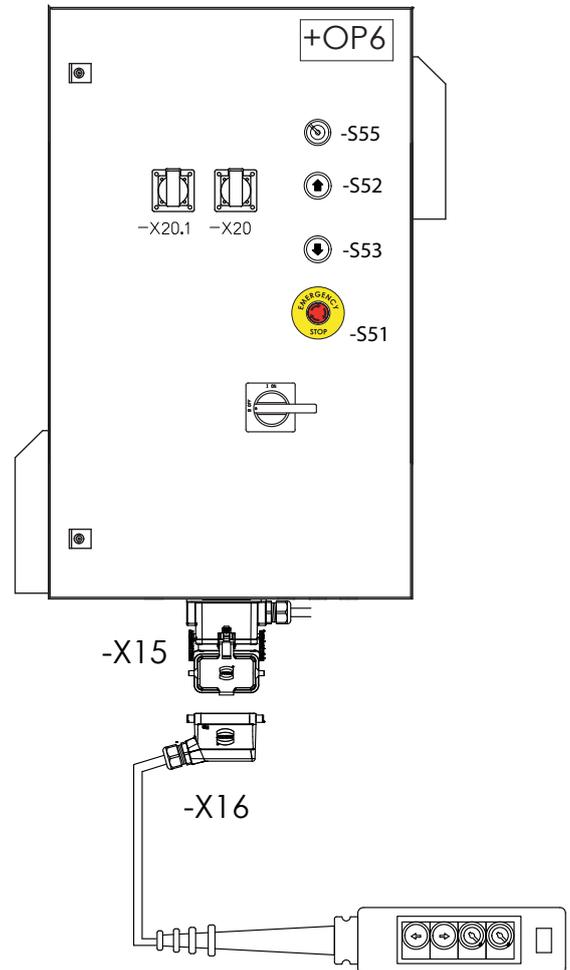
**Using the hoist without a safety brake or with a faulty safety brake is strictly forbidden!**



**Make sure that the motor brakes work properly before testing the safety brake.**

## 5.4.2.2 Testing the Safety Brake- relay and PLC control ver. 1

- Connect the safety brake test remote control to the multi-pole connector (X15) placed on the box +OP6 of the cage roof. The remote control cable is led down over the safety railing surrounding the hoist.
- In case the hoist is equipped with a logic control system turn the key switch (S20) on the cage control panel to position "0-Manual control".
- Close the cage doors and the roof hatch.
- Drive the hoist up using the remote control button to appr. 5 meters.
- Turn the remote control key switch (S60), "Brake release", and keep it in this position, the motor brakes are released.
- The cage now falls freely, until it reaches the limit speed of about 1,2m/s and the safety brake stops the cage.



**In case the safety brake does not stop the cage, when it has been falling down for about 2m it must be stopped by turning back the remote control key switch (S60), "Brake release".**



## The Correct Function of the Safety Brake

The safety brake is working correctly and stops the falling movement of the cage. Simultaneously the safety brake limit switch disconnects the electric safety circuit of the hoist.

- Turn the remote control key switch (S61), "Safety brake bypass", the safety brake limit switch (S10) is bypassed and the hoist can be operated with the remote control.
- Drive the cage with the remote control button (S62) upwards for about 1 meter so that the safety brake centrifugal clutch is detached from the brake cone and the safety brake is released.
- Drive the cage with the remote control

button (S63) down to the ground station and disconnect the remote control from the connector (X15).

- Switch the disconnecting switch (F1) in the ground station control box to position "0".
- Adjust the safety brake according to the instructions given in point 5.4.4 Adjusting the Safety Brake.
- After finishing the work switch the disconnecting switch (Q1) in the ground station control box back to position "1".
- Concerning the hoists with logic control turn the key switch (S20) to position "1-Auto".

## The Incorrect Function of the Safety Brake

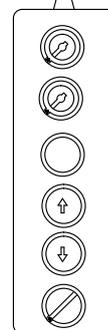
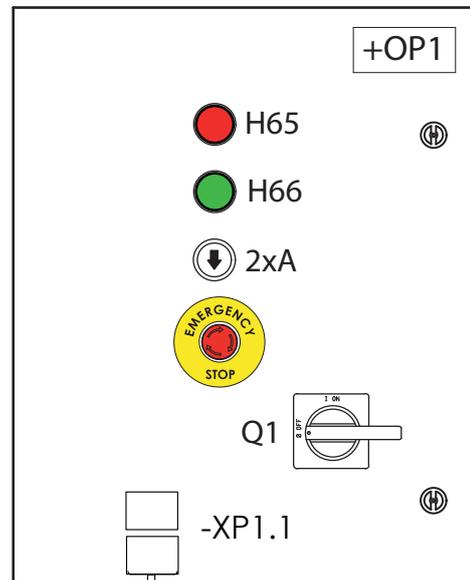
The safety brake does not stop the falling movement of the cage. The movement was stopped with the key switch (S61), and the motor brakes stopped the cage.

- Drive the cage with the remote control button to the ground station.
- Switch the "Disconnecting switch" F1 in the ground station control box to position "0".
- Remove the safety brake and send it to the manufacturer for repair.
- Install a new safety brake and repeat the test.

## 5.4.2.3 Testing the Safety Brake - PLC control ver. 2

- Connect the safety brake test remote control to the multi-pole connector (XP1.1) placed in the box +OP1 of the ground station
- Drive the hoist up using the remote control button to appr. 5 meters.
- Turn the remote control key switches (S80), "Emergency release" and (S82) "Test brake", and push button ( S81A) "Brake Release" and keep it in this position, the motor brakes are released.
- The cage now falls freely, until it reaches the limit speed of about 1,2 m/s and the safety brake stops the cage.

 **In case the safety brake does not stop the cage, when it has been falling down for about 2m it must be stopped by push off the remote control button (S81A), "Brake release".**



- S80 - Emergency release
- S82 - test brake
- S81A - brake release
- S61A - UP
- S61B - Down
- S60 - Recall drive

## The Correct Function of the Safety Brake

The safety brake is working correctly and stops the falling movement of the cage. Simultaneously the safety brake limit switch disconnects the electric safety circuit of the hoist.

- Turn off the remote control key switches (S80), "Emergency release" and (S82) "Test brake".
- Drive the cage with the remote control button (S61A) upwards for about 1 meter so that the safety brake centrifugal clutch is detached from the brake cone and the safety brake is released.
- Drive the cage with the remote control button (S61B) down to the ground station and disconnect the remote control from the connector (XP1.1).
- Switch the disconnecting switch (Q1) in the ground station control box to position "0".
- Adjust the safety brake according to the instructions given in point 5.4.4 Adjusting the Safety Brake.
- After finishing the work switch the disconnecting switch (Q1) in the ground station control box back to position "1".



- S80 - Emergency release
- S82 - test brake
- S81A - brake release
- S61A - UP
- S61B - Down
- S60 - Recall drive

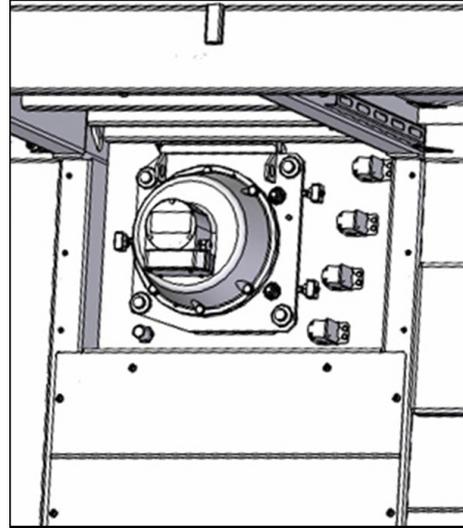
## The Incorrect Function of the Safety Brake

The safety brake does not stop the falling movement of the cage. The movement was stopped with the key switch (S81A), and the motor brakes stopped the cage.

- Drive the cage with the remote control button to the ground station.
- Switch the "Disconnecting switch" Q1 in the ground station control box to position "0".
- Remove the safety brake and send it to the manufacturer for repair.
- Install a new safety brake and repeat the test.

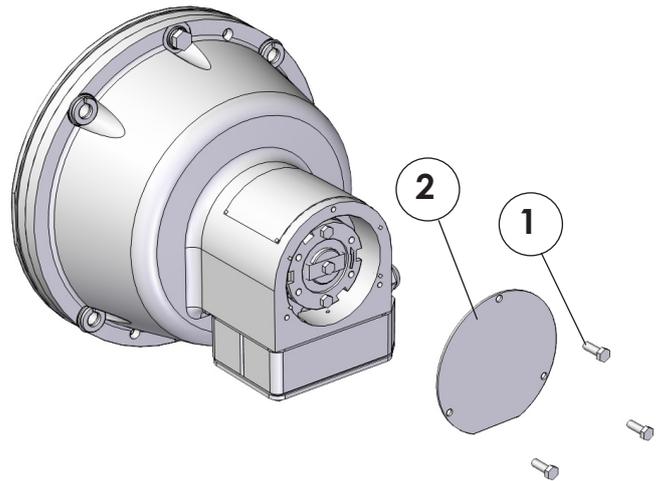
## 5.4.3 Releasing the Safety Brake

When the safety brake has engaged as a result of the testing or other reason, it has to be released prior to the next use of the hoist. The safety brake is released in the following way:



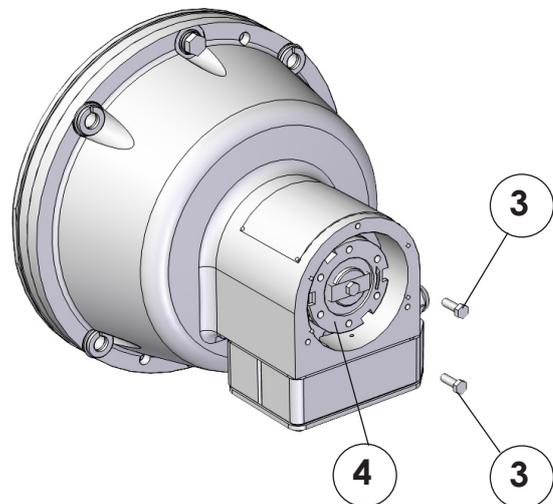
Location of safety brake in the hoist cage.

1. Switch the disconnecting switch (F1) at the ground station to position 0.

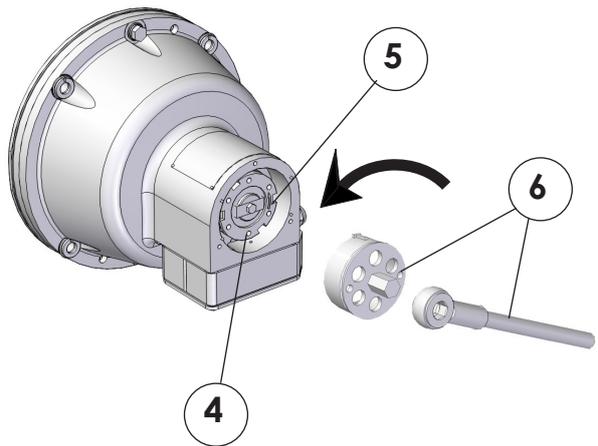


2. Unscrew the three screws (1) fastening the back plate (2) of the safety brake.

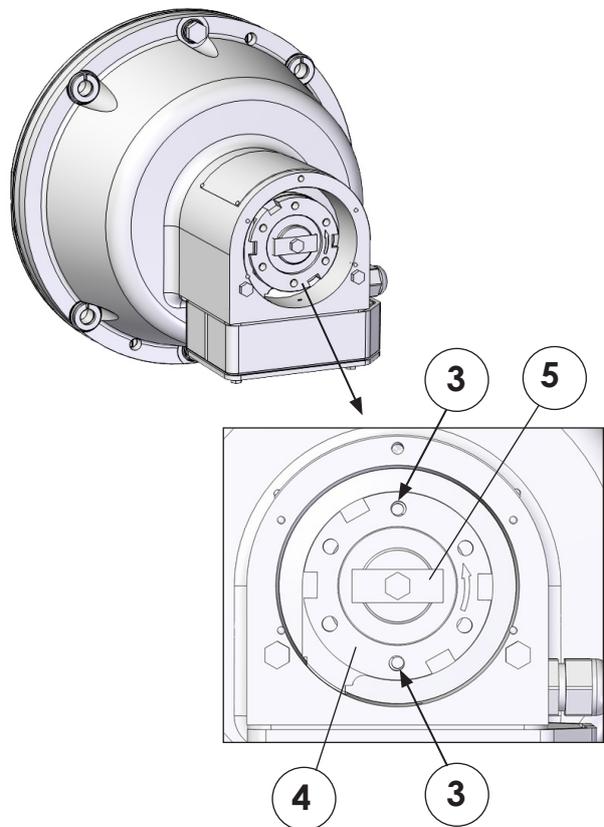
3. Open the two screws (3) of the bronze nut (4) with 10 mm wrench.



4. Rotate the bronze nut (4) counter clockwise (unscrew) until it rests against the top plate(5). Do not bend the plate. Use the special key(6).

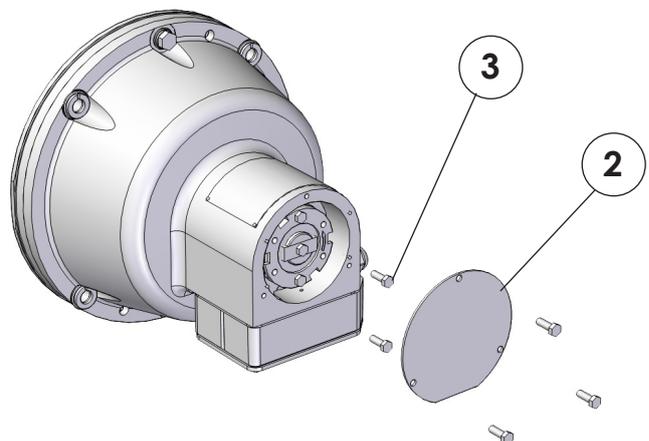


5. Rotate the bronze nut (4) by hand to align the two screw (3).



6. Install the two screws (3).

7. Mount the cover (2)



## 5.5 Automatic greasing of the gear rack

Scanclimber hoists can be equipped with an optional automatic rack lubrication system. The automatic lubrication system consists of a grease pump, a control unit, a grease pipe.

The pump feeds the lubricant through the pipe to the pinion, which spreads the grease to the rack during the hoist's movement. The pump is run by the control unit so that it feeds the lubricant to the rack and pinion within adjusted intervals.

## 5.6 Overload system

Scanclimber hoists are equipped with an electronic overload system that detects the possible overload and cuts off the safety circuit if the hoist is overloaded. The system consists of a display inside the hoist's cage, load sensors on the lifting unit and a circuit board in the electric box.

### Display

The display on the hoist control board shows the actual hoist load.



**Overload system display**

### Calibration

The overload system can be calibrated either with a calibration load or automatically without loading the hoist. The automatic calibration is possible if the system is calibrated earlier with a calibration load.

The system is calibrated with the calibration switches on the calibration system circuit board.

### Calibration With Load

The system is first calibrated without load and then with full load.

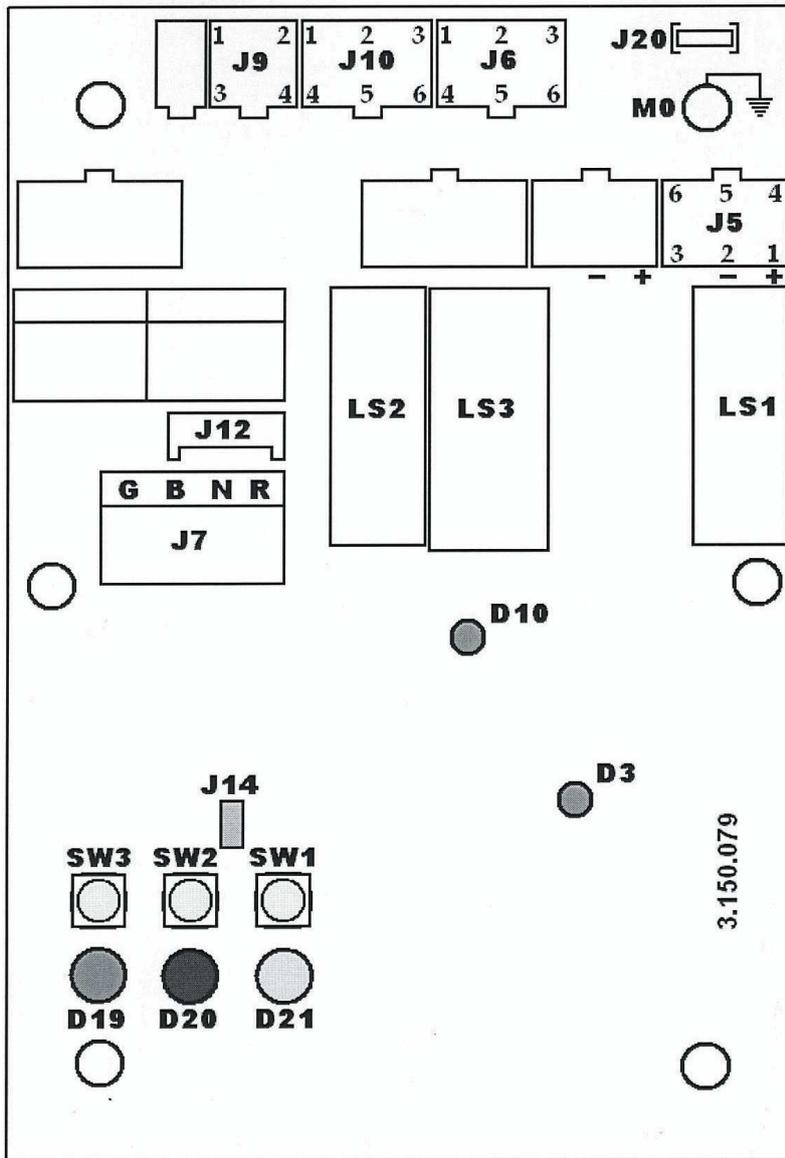
- Find the circuit board in the electric box.
- Push button SW1. Red LED D20 and yellow LED D21 start to blink.
- Push button SW2. Red LED D20 stays on.
- Load the cage with maximum load.
- Push button SW3. The green LED D19 is on for a short time.
- Push button SW1. The yellow LED D21 turns off. The red LED D20 stays on.

- Push button SW3. The green LED D19 is on for a short time.
- Push button SW1 to stop calibration. The yellow LED D21 turns off. The red LED D20 stays on.
- Remove the load from the cage. The red LED D20 turns off.
- Load the cage again to its maximum load. Check that the red LED D20 is on and the hoist safety circuit is disconnected.

### Automatic Calibration

The overload system can be calibrated automatically only if the system is calibrated with load earlier.

- Find the circuit board in the electric box.
- Push button SW2. The red LED stays on for a short time.
- Load the cage to its maximum load and check that the red LED D20 is on and the hoist safety circuit is disconnected.



### Push buttons

SW1	Calibration push button
SW2	Calibration push button
SW3	Calibration push button

### Terminal blocks

J5	Power supply and safety output
J6	Digital outputs
J7	Transducer input
J9	Digital inputs
J10	Digital inputs
J12	RS-232 serial port
J14	Setting jumper
J20	Ground connection

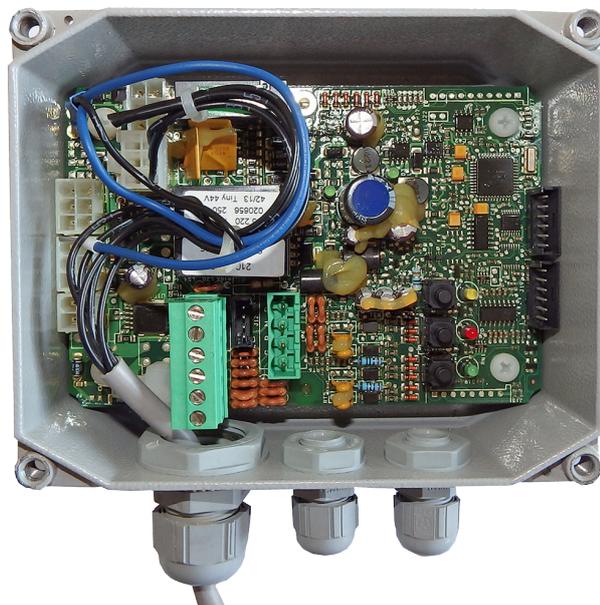
### LEDs

D3	Green. Main board power supply
D10	Green. Transducer power supply
D19	Green. Calibration and transducers errors
D20	Red. Calibration and alarm condition
D21	Yellow. Calibration and Category errors

### Relays

LS1	Relay n. 1
LS2	Relay n. 2
LS3	Double relay n. 1 and 2

Overload system circuit board -  
inside electric box P2

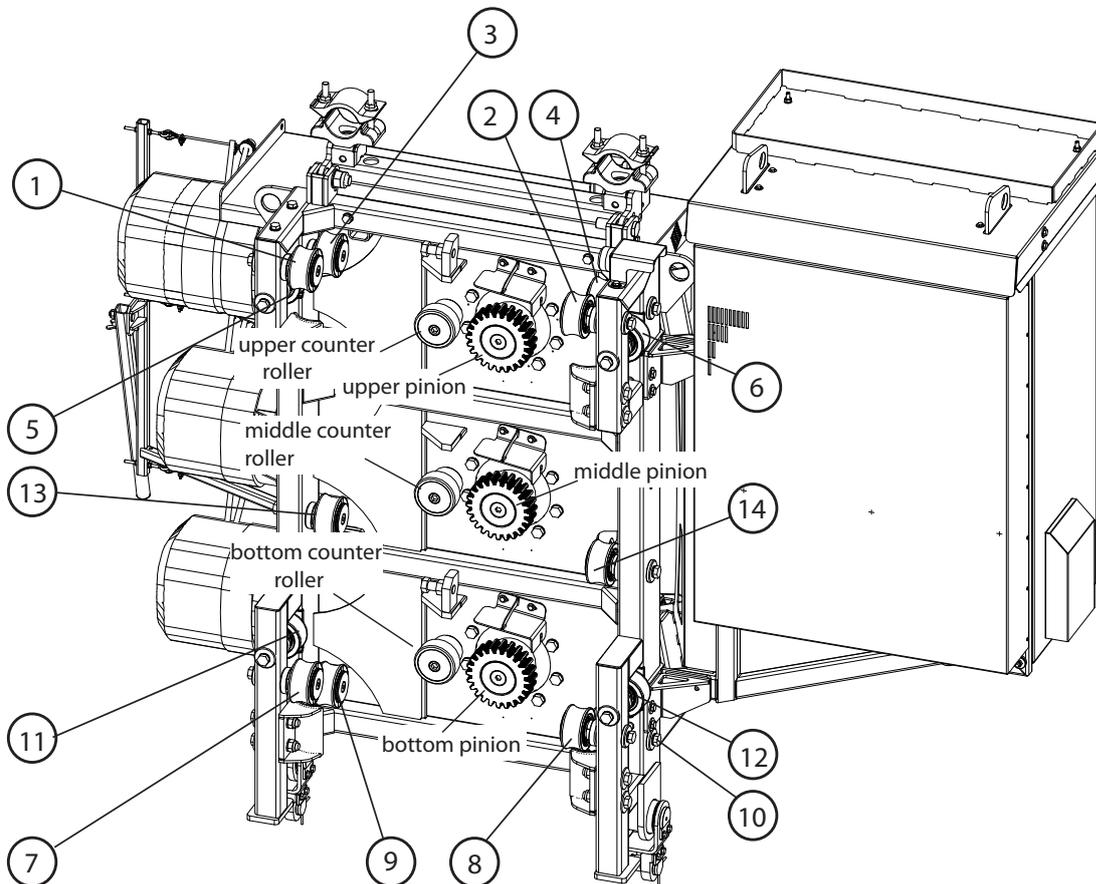


## 5.7 Drive unit and cage adjustment

Adjustment process of SCXXYY-65 (drive unit with cage connected underneath) should be divided into stages:

1. Drive unit adjustment
2. Complete cage adjustment.

### 5.7.1. Drive unit adjustment



Tightening torque 240 - 255 Nm for pinions screw M20  
use LOCTITE 2701

Evenly put the pressure on the mast pipe by the roller (Pic. 1), upper left and right (1 and 2) until the upper pinion is aligned to 0 with the rack, is acceptable to have a pinion 2mm moved in relation to the rack (under condition that it concern both pinions)



Picture 1

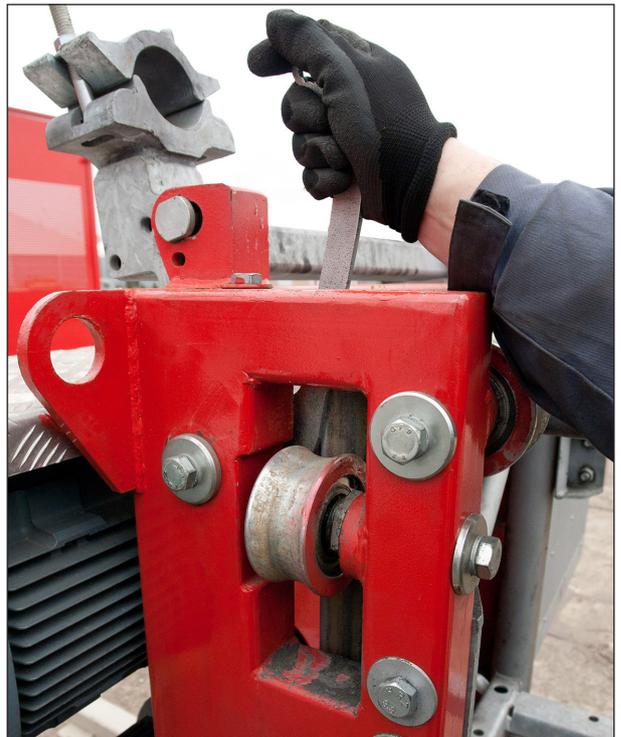
Evenly put the pressure on the mast pipe by the lower rollers (9 and 10) until the lower pinion is aligned to 0 with the upper pinion,

Location of the center pinion is not adjustable. It is result of regulation upper and bottom pinion.



Picture 2

Move the rollers (3, 4, 7, 8, 13,14) toward the mast pipes leaving 1mm distance between pipe and roller (Picture 3a,3b,3c).



Picture 3a



Picture 3b



Picture 3c

Set the correct mesh of rack and pinion tooth of 0.45 - 0.50 mm : at first release the fixing screw of counter roller (Pic. 4), then push the rack using screws M20, placed on the drive unit plate (Picture 5), as long as the proper mesh of rack and pinion tooth will be achieved (Pic.6).

Refers to the upper and lower wheels.



Picture 4



Picture 5



Picture 6

Then one should push the counter roller (Pic. 7), which are embedded eccentrically in the drive unit plate, to the rack and lock them in the correct position (no detectable backlash) tightening the screws (Picture 8). Refers to the upper and lower wheels.

Mesh of rack and center pinion is not adjustable. Move the middle counter roller from rack leaving 0,45-0,50mm distance between rack and roller.



Picture 7

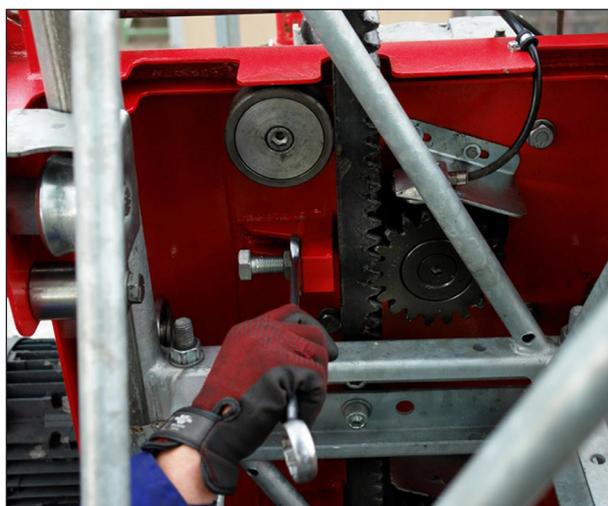
Tightening torque 150 - 160 Nm  
for screw M16  
use LOCTITE 243



Picture 8

Unscrew the auxiliary screws M20 and counter them by nut, within the minimum distance between the rack and screw end of 2 mm (Pic. 9).

Tightening torque 150 - 160 Nm  
for screw M20



Picture 9

Side rollers (6 and 12) engage the mast sections without clearance (Pic.10).

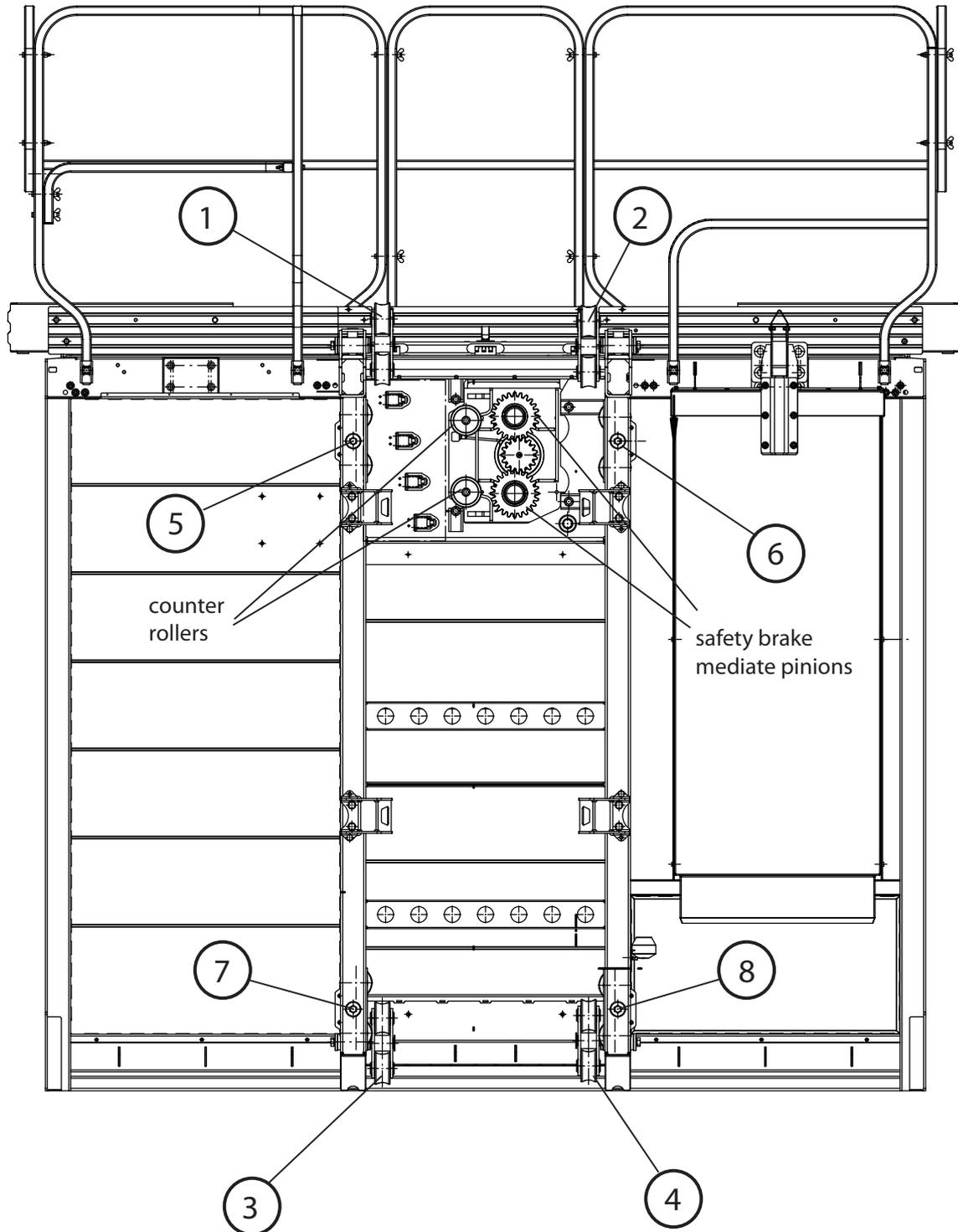
Tightening torque 125 - 135 Nm  
for screw M16  
use LOCTITE 243



**Picture 10**

Move the roller (5 and 11) to the mast section keeping the clearance 1 mm

## 5.7.2. Complete cage adjustment

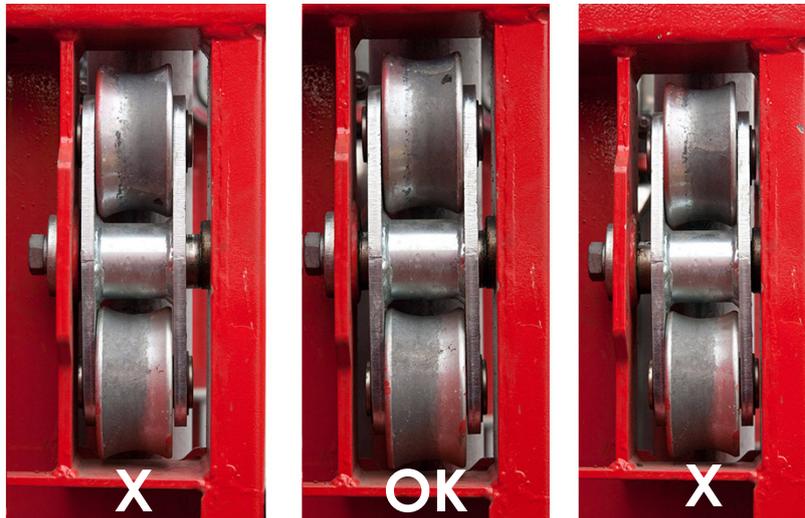


In the beginning evenly put the pressure on the mast pipe by the bogie rollers (1 and 2) until the safety brake pinion is aligned to 0 with the rack (Picture 11), paying attention to the side bogie rollers (5 and 6) to provide them possibility to move to the extreme positions of the axle (each side Pic.12)

Tightening torque 150 - 160 Nm  
for screw M16

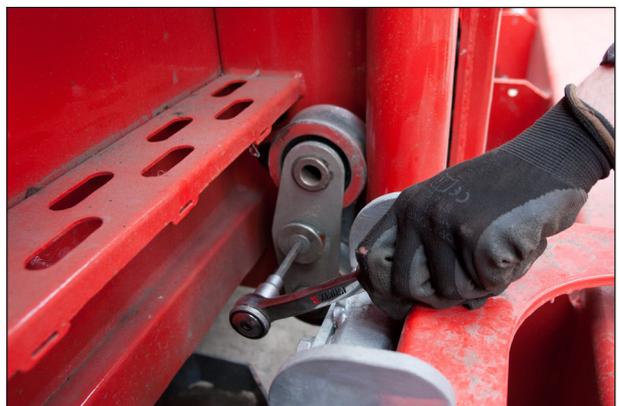


Picture 11



Picture 12

Evenly put the pressure on the mast pipe by the bogie rollers (3 and 4) until the side bogie rollers (7 and 8) get the middle of their axle, it means that they have possibility to move to the extreme positions of the axle (each side Pic.12 and 13)

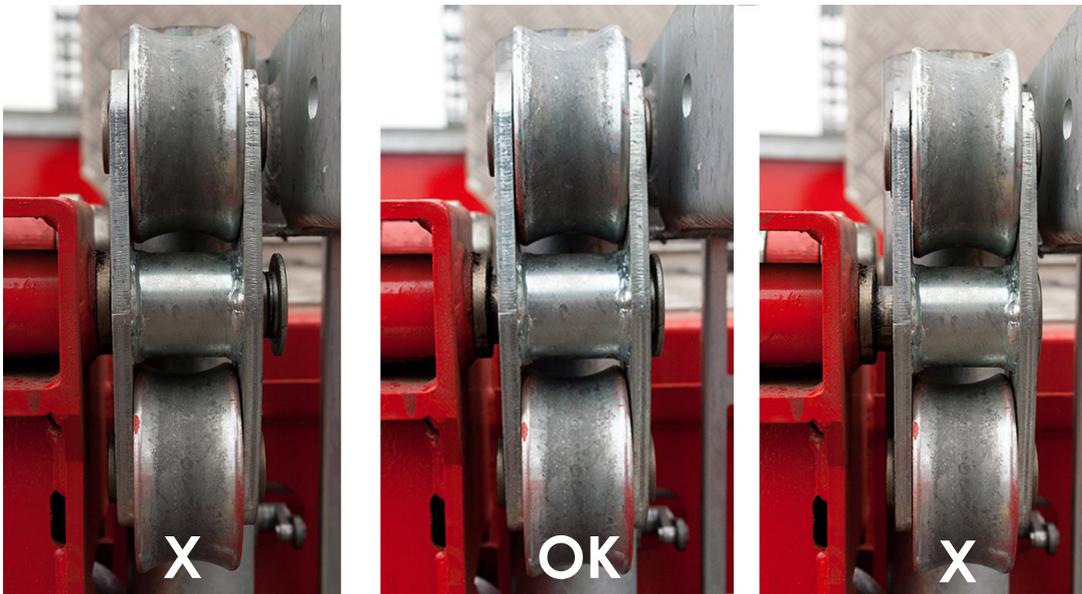


Picture 13

Put the pressure on the mast pipe by the side bogie rollers (5 or 6 depends to which side we have to move the cage) until the bogie rollers (1 and 2) get the middle of their axle, it means that they have possibility to move to the extreme positions of the axle (each side Pic.15)



Picture 14



Picture 15

Put the pressure on the mast pipe by the side bogie rollers (7 or 8 depends to which side we have to move the cage) until the bogie rollers (3 and 4) get the middle of their axle, it means that they have possibility to move to the extreme positions of the axle (each side).

After such adjustment should be carried out to check horizontal gap between sill of the cage and sill of the ground station. In the case of uneven gap using bogie rollers 1,3 and 2,4 set the gap even (always try to split this regulations evenly for left and right bogie rollers otherwise side roller horizontal movement can be reduced to 0, which is not acceptable).

In case of excessive tilt sill of the cage relative to the ground station sill adjust the position of bogie rollers 1,2 and 3,4 to set the sill of the cage parallel to the sill of the ground station (always try to split this regulations evenly for upper and lower bogie rollers otherwise side roller horizontal movement can be reduced to 0, which is not acceptable)

The final task in the cage adjustment is to set correct mesh between the safety brake pinion tooth and rack **0.45 - 0.50 mm** : at first release the 4 fixing screw of the safety brake plate in the cage (Pic.16), then release fixing screw of the counter roller, then move the pinion towards the rack using special screws M16, placed on the safety brake plate (inside the cage) (Pic.17), as long as the proper mesh of pinion tooth will be achieved (Pic.18)

Then one should push the counter roller, which are embedded eccentrically in the safety brake plate, to the rack and lock them in the correct position (no detectable backlash) tightening the screws (Pic. 18)

Tightening torque 125 - 135 Nm  
for screw M16  
use LOCTITE 243



Picture 16



Picture 17



Picture 18

Tighten 4 fixing screws M16 of the safety brake.

Unscrew the 3 auxiliary screws M16 and counter them by nut, within the minimum distance between the edge of the safety brake plate and screw end of 1mm (Pic.17).

Tightening torque 100 - 108 Nm for screw M16

### 5.7.3 Standard tightening torques

Information refers to bolts in strength class 8.8

No	Bolt or nut type	Torque (Nm)
1.	M8	21
2.	M10	42
3.	M12	72
4.	M14	112
5.	M16	154
6.	M18	235
7.	M20	300

### 5.7.4 Bolt and nut tightening torques - drive, cage, mast section

#### Bolt and nut tightening torques - DRIVE

Nr	Bolt or nut type	Description and use	Torque (Nm)
1.	M12 with LOCTITE 2701	Roller	70 - 75
2.	M16 with LOCTITE 243	Roller	125 - 135
3.	M16 -10.9 with LOCTITE 243	Counter roller	150 - 160
4.	M20 x 45 10.9 with LOCTITE 2701	Pinions	240 - 255
5.	M16 with LOCTITE 243	Gear box fastening	125 - 135

**Bolt and nut tightening torques - CAGE**

Nr	Bolt or nut type	Description and use	Torque (Nm)
1.	M12 10.9 with LOCTITE 2701	Boogie Rollers	80 - 86
2.	M16 10.9	Boogie Rollers	150 - 160
3.	M16 with LOCTITE 243	Counter roller - safety brake	125 - 135
4.	M14	Safety brake to plate	100
5.	M16 with LOCTITE 243	Safety brake plate fastening	100

**Bolt and nut tightening torques - MAST SECTION**

Nr	Bolt or nut type	Description and use	Torque (Nm)
1.	M16 with LOCTITE 2701	Rack	168-174
2.	M24	Mast section bolts	300



**INSPECTION FORMS**

**Erection form ..... 3**  
**Daily inspection form..... 4**  
**Monthly inspection form ..... 5**  
**Semiannual inspection form ..... 7**

# SC HOIST INSPECTION FORMS

# SC HOIST INSPECTION FORMS

## THE BUILDER'S MATERIAL AND PERSONNEL HOIST ERECTION INSPECTION FORM

<b>Job site address:</b>	<b>Inspector:</b>
<b>Hoist number:</b>	<b>Site engineer:</b>
<b>Hoist model:</b>	<b>Inspection date:</b>
<b>Other participants of the inspection:</b>	
<b>Persons trained to carry out weekly maintenance inspections:</b>	

INSPECTION OBJECT	IN ORDER	TO BE REPAIRED	UNNECESSARY	REMARKS	REPAIR DATE
Foundation					
Mast sections					
Mast section bolts					
Racks and pinions					
Wall ties					
Guiding rollers					
Safety fences					
Cage and doors					
Roof gate and railings					
Counter weight and ropes					
Landings and gates/doors					
Control devices					
Main switches					
Control switches					
Limit switches					
Emergency stops					
Safety brake					
Overload device					
Safety brake test					
Electric motors					
Gear boxes and hydraulic cylinders					
Brakes and lowering levers					
Power cable					
Control cable					
Contactors and relays					
Horn and illumination					
Main power switch					
Signs and markings					
Hoist surroundings					

Inspector signature \_\_\_\_\_

# SC HOIST INSPECTION FORMS

## DAILY INSPECTION FORM (by user)

WORK SITE: \_\_\_\_\_  
 TYPE OF MACHINE: \_\_\_\_\_ SERIAL NO. \_\_\_\_\_  
 PERSON IN CHARGE: \_\_\_\_\_ TEL.: \_\_\_\_\_

**NOTE!**

- FILL UP AND SIGN THIS FORM BEFORE YOU START WORKING WITH THE UNIT
- MARK WITH CROSS THE CHECKINGS CARRIED OUT
- WRITE POSSIBLE REMARKS IN THE LAST COLUMN

**V** = VISUAL INSPECTION  
**T** = TEST

CHECK POINT											
YEAR _____ WEEK NO. _____			MON	TUE	WED	THU	FRI	SAT	SUN	NOTE	
1.	Work area around hoist	V									
2.	Ground station and cage damage	V									
3.	Mast prolongation	V									
4.	Anchoring	V									
5.	There is nothing on the cage road	V									
6.	Ground station and cage doors function	T									
7.	Power cable and control cable damages/ twisting	V									
8.	Function of the emergency stop	T									
9.	Function of the limit swiches (ground station, cage)	T									
10.	Horn and light in the cage	T									
11.	Warning/instruction plates positioned	V									
12.	Instruction manual in the box	V									

DATE: \_\_\_\_\_

\_\_\_\_\_  
 INSPECTOR

# SC HOIST INSPECTION FORMS

## MONTHLY INSPECTION FORM

WORK SITE: \_\_\_\_\_

TYPE OF MACHINE: \_\_\_\_\_ SERIAL NO. \_\_\_\_\_

PERSON IN CHARGE: \_\_\_\_\_ TEL.: \_\_\_\_\_

**NOTE!**

- FILL UP AND SIGN THIS FORM BEFORE YOU START WORKING WITH THE UNIT
- MARK WITH CROSS THE CHECKINGS CARRIED OUT
- WRITE POSSIBLE REMARKS IN THE LAST COLUMN

CHECK POINT			
	YEAR _____	WEEK NO. _____	NOTE
1.	Work area around hoist		V
2.	Ground station and cage damage		V
3.	That the ground has not sunk and that the mast is vertical		V
4.	Fastening and condition of mast sections, racks and wall ties and cuplers screw		V/T
5.	That the guide rollers are in proper places ,condision and wear, fixing and tightening		V/T
6.	Ground station and cage doors function		T
7.	Power cable and control cable damages/ twisting		V
8.	Check bumpers		V
9.	Check safety circuit - function of all limit switches and that the cage does not start moving if any of the cage or landing gates/ doors is open or If the emergency stop button is pushed down		T
10.	Check the operation of the control device, the alarm signal, lighting and emergency stops		T
11.	Warning/instruction plates positioned and readable		V
12.	Instruction manual in the box		V
13.	Check the cable guide fixings and cable guide rubber		V/T
14.	Check the control system fault		T
15.	That the motor, gearbox and it's base plate bolts are tight and that there are no oil leaks in the gear box. Check oil level of the gearbox.		V/T
16.	Check the operating the cable trolley and fastening of aluminium rails		V/T
17.	That the hoist's control buttons work on the ground station/ cage/landings		T
18.	That the brakes work properly and that the safety brake is in working order (visually)		V/T
19.	Controlling wear rack and pinion		V
20.	Clean the cable basket		V
21.	Check the mounting and operation of all mechanical and electric locks (landings, ground station, cage		V/T

## SC HOIST INSPECTION FORMS

<b>22.</b>	That the doors and landing gates/ramp/doors open and close properly and the landings are in good condition	<b>V/T</b>	
<b>23.</b>	Check cams	<b>V</b>	
<b>24.</b>	Check lubrication and maintenance point (see chapter 5.3.2 in manual)	<b>V</b>	
<b>25.</b>	Clean area inside the ground station/cage and on the roof	<b>V</b>	
<b>26.</b>	Check the brakes for electric motors (adjust the gap of disk brake)	<b>V/T</b>	

DATE: \_\_\_\_\_

\_\_\_\_\_  
INSPECTOR

# SC HOIST INSPECTION FORMS

## SEMIANNUAL INSPECTION FORM

= MONTHLY INSPECTION FORM + FORM BELOW

WORK SITE: \_\_\_\_\_

TYPE OF MACHINE: \_\_\_\_\_ SERIAL NO. \_\_\_\_\_

PERSON IN CHARGE: \_\_\_\_\_ TEL.: \_\_\_\_\_

### NOTE!

- FILL UP AND SIGN THIS FORM BEFORE YOU START WORKING WITH THE UNIT
- MARK WITH CROSS THE CHECKINGS CARRIED OUT
- WRITE POSSIBLE REMARKS IN THE LAST COLUMN

CHECK POINT			
	YEAR _____	WEEK NO. _____	NOTE
1.	Perform a visual inspection of welds - all construction	V	
2.	Verify the overload system	T	
3.	Visually inspect the cleanliness of electric boxes and cage control boxes and verify the presence of electric schematics	V	
4.	Safety device test	T	
5.	Check if there are implemented changes in the electric boxes by user (wiring, bridges etc.)	V	

DATE: \_\_\_\_\_

\_\_\_\_\_  
INSPECTOR

# SC HOIST INSPECTION FORMS

Measure - servis and maintenance		40 servis hours	160 servis hours	Method
1.	Check and clean work area around hoist.	x		Visual
2.	Ground station and cage damage.	x		Visual
3.	Check and clean area inside the ground station/cage and on the roof			Visual
4.	That the ground has not sunk and that the mast is vertical		x	Visual
5.	Check mast prolongation. Fastening and condition of mast sections and racks. Check of the fastening bolts in the mast sections. If you suspect looseness tighten them.		x	Visual Test
6.	Check the mast anchoring. All the fastening screws in every anchoring section should be tightened. Wall ties and cuplers screw.		x	Visual Tighening
7.	Visual check of the mast pipes (check wear, cracks, scratches, corrosion). If longitudinal grooves or excessive wear is discovered adjust the guide roller. Check the condition of the pinion and the counter roller. Adjust.		x	According to chapter 6.17 Erection
8.	That the guide rollers are in proper places, condision, clearances, wear, fixingg and tightening. Check the bearings in the guide rollers.		x	Visual and test Adjust or replace. According to chapter 6.17 Erection
9.	Ground station and cage doors function		x	Test
10.	Power cable and control cable damages/ twisting. Check the cable by its full length (for fractures, curling). The coiling of the cable into the basket.	x		Visual
11.	Check bumpers		x	Visual
12.	Check safety circuit - function of all limit switches and that the cage does not start moving if any of the cage or landing gates/doors is open or If the emergency stop button is pushed down	x		Test
13.	Check the operation of the control device, the alarm signal, lighting and emergency stops	x		Test
14.	Check the cage doors. Are the cable wires in good condition and greased? Do the doors move smoothly? Does the door locking work properly? Are the limit switches adjusted?	x		Test Grease
15.	Warning/instruction plates positioned and readable	x		Visual
16.	Instruction manual in the box	x		Visual
17.	Check the cable guide fixings and cable guide rubber		x	Visual Tighening

## SC HOIST INSPECTION FORMS

18.	Check the control system fault		x	Test
19.	That the motor, gearbox and it's base plate bolts are tight and that there are no oil leaks in the gear box.		x	Visual Tightening
20.	Check lubrication and maintenance point (mast rack, drive pinions, safety device pinion)		x	Visual, Grease See chapter 5.3.2
21.	Check oil level of the motor and gearbox. There are no oil leaks? Oil leaks immediately reported. Determine the cause of an oil leak. If necessary add the oil or completely change.			see separate manual
22.	Check the fastenings of the safety brake.	x		Tightening
23.	Lubricate the safety brake sliding bearings and the pinion bearings.		x	Lubricate Grease
24.	Check the operating the cable trolley and fastening of aluminium rails		x	Test
25.	That the hoist's control buttons work on the ground station/ cage/landings		x	Test
26.	That the brakes work properly and that the safety brake is in working order		x	Test
27.	Check the condition /wear of the rack and pinion.		x	Measure See chapter 5.4.6
28.	Check the condition of the gear - rack toothing.		x	Visual, Measure See chapter 5.4.4
29.	Clean the cable basket		x	Visual
30.	Check the mounting and operation of all mechanical and electric locks (landings, ground station, cage)		x	Test
31.	That the doors and landing gates/ramp/doors open and close properly and the landings are in good condition		x	Test, Grese
32.	Check cams		x	Visual
32.	Check the brakes for electric motors (adjust the gap of disk brake). One brake should stop the cage in full load.		x	Measure See chapter 5.4.1
33.	Check the fastening and condition of hydraulic hoses.		x	Visual Tightening



**If the machine is being used more frequently, or if operation is not interrupted during several shifts the tooth rack will have to be lubricated more often according to that more intensive use.**

# SC HOIST INSPECTION FORMS