Wir sind die Höhe.

Operating Manual

Steel frame Table form lift TL 1512

Translation of the German original

CE

Doc. No.: 213300043

Before starting any work, read the operating manual!

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Layout of these instructions

These assembly and operating instructions refer to...

Doc. no.:	**213300043**
Original from:	**May 05, 2010**
Version	**26082015**

... applies to:

Type	**Steel frame Table form lift**
Serial number:	**from 101**

1 Foreword

Dear customer,
These assembly and operating instructions 213300043 are intended to familiarise you with

- the mode of operation
- the assembly
- the operation
- the safety instructions and
- servicesmaintenance
- of the steel frame Table form lift TL 1512, herein after referred to as ‘Table lift’.

Before starting work read these operating instructions completely and observe the safety instructions to avoid damage to persons and property.

Safe working helps to avoid remaining risks.

Always keep this operating manual on the site of operation!
The manual must always be at hand and accessible!

Update:

Please visit our Website www.boecker-group.com regularly

Go to the “Support” section to find additional tips regarding the operation.

Contact:

For additional questions, please contact your dealership, the leasing company of the equipment or the manufacturer:

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1.1 Liability and warranty

Guarantee and liability claims for damage to people or property will be excluded if they can be traced back to one or more of the following causes:

- Failure to observe the safety instructions and guidelines with respect to transport, storage, assembly, start of operation, operation, maintenance and set-up and dismantling.
- Damage caused by incorrect transport.
- Incorrect assembly, start of operation, operation, maintenance or dismantling.
- Operating the Table lift with incorrectly installed or faulty safety devices or protective equipment.
- Unauthorised design changes to the Table lift
- Failure to observe the inspection and maintenance intervals.
- Insufficient monitoring of machine parts that are subject wear.
- Improperly carried out repairs.
- Damage caused by foreign objects and force majeure.

2 General safety instructions

2.1 For the operator

This operating manual must always be available at the site of operation. Reading and compliance by the loading platform operator and those persons charged with the assembly is mandatory.

- All safety instructions and hazard information for the Table lift must be kept in a legible condition and, if necessary, be replaced.
- Clarify the responsibilities for the assembly/dismantling, the operation and the maintenance of the Table lift.

2.1.1 Appoint a loading platform supervisor

We recommend to name the loading platform supervisor and define in writing his/her responsibilities such as:

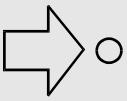
- supervision of the system
- transport of personnel
- reporting possible defects on the system. If the defects represent a danger, the system must be shut down immediately;
- stopping inappropriate behaviour by the operating personnel or by the user of the Table lift TL;
- intervening in the event of an emergency or a malfunction.

2.1.2 Qualification of the personnel

- If the Table lift is used in order to transport personnel, only a properly trained loading platform supervisor shall be permitted to proceed with this task from the loading platform.
- Train the personnel in the safe operation of the Table lift, in the national and local safety regulations and the regulations for accident prevention and in the regulations for occupational safety and environmental protection, e.g operating personnel must wear protective equipment (clothing).
- Loading, unloading and using the lift is permitted for all trained personnel who are authorised to be at the site of operation, if no other regulations state otherwise.
- Only qualified electricians shall be permitted to work on the electrical system.

2.1.3 Maintenance and repairs

- Ensure that the deadlines for the legally required inspections and the intervals for inspection and maintenance defined in the operating manual are adhered to (see Chapter 11 ‘Maintenance’).
- Only qualified technicians shall be permitted to proceed with the installation, maintenance and repairs.



NOTE!

This manual is not a repair manual

2.2 Explanation of signs/safety symbols

For better understanding and easy recognition safety instructions are marked with these pictograms.

In the text below we will introduce these pictograms and their meaning:

DANGER!

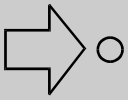
This sign indicates danger to life and limb.

It requires the adherence to safety measures to protect life and limb of the persons affected.

CAUTION!

This sign indicates risks that can cause significant damage to property.

Under all circumstances, the safety instructions must be followed.



NOTE!

This refers to important instruction steps. Non-compliance can lead to malfunctions during the operational sequences.

Tips and recommendations

NOTE!

...emphasises helpful tips and recommendations, and provides information about the efficient and smooth operation of the system.

In addition, we use pictogram in this manual that have been adapted to certain actions or a hazard situation.

Example:

DANGER!
Risk of falling from heights!

Never attempt to open the door to the loading platform or to the next building level while the lift is in motion.

2.3 Safetysigns on the Table lift

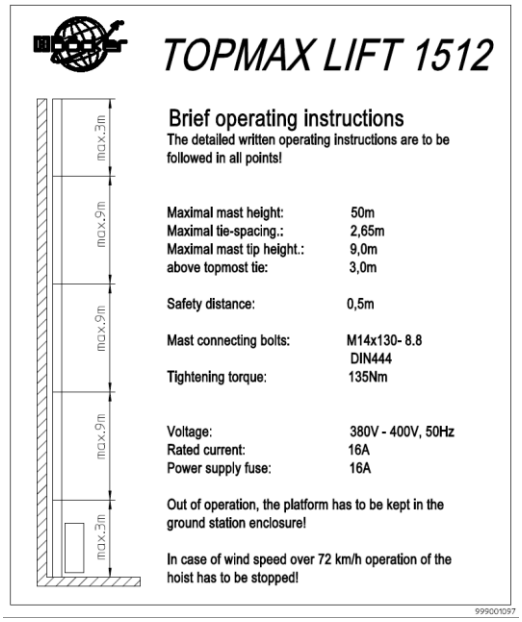


Fig. 1: Brief operating instructions

Brief operating instructions

This note can be found on the loading platform near the control panel

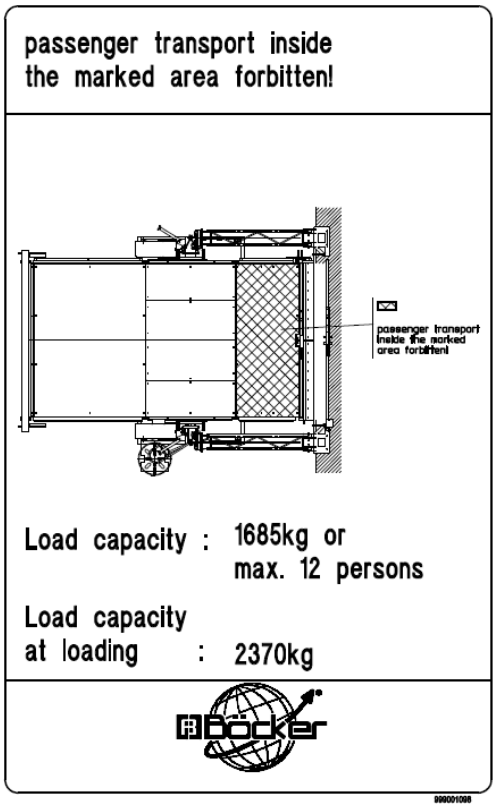


Fig. 2: Load capacity

Load capacity

This note can be found on the loading platform near the control panel

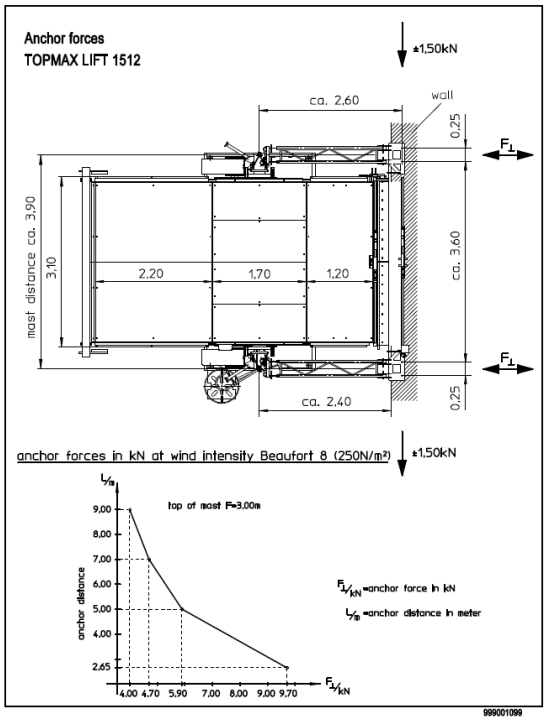


Fig. 3: Anchor forces

Anchor forces

This note can be found on the loading platform near the control panel

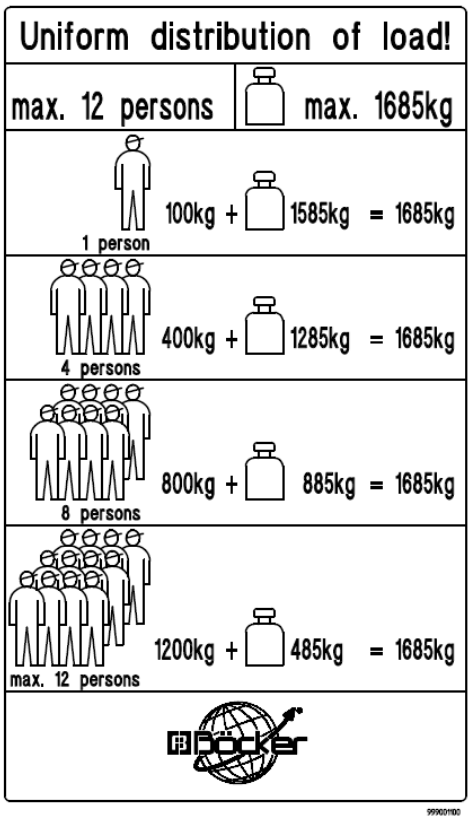


Fig. 4: Rated load capacity

Rated load capacity

This note can be found on the loading platform near the control panel

Typ	Topmax Lift 1512	Serial no.	103
Year of Constr.	06 / 2011	Current DC	400V / 50HZ
Lifting height	max. 50 m	Power input	11,4 A
speed	12 m/min	Weight base unit	1965 kg
payload	1685 kg	Power	2x5,5 kW

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Fig. 5: Example of a type plate

Type	SAFETY BRAKE XL	Serial-No.	
Year of Constr.		EU-No.	0036
Tripping speed	< 64 m/min		
Capacity max.	4670 kg		
Partnumber	AFV 511/AGB 192/1		

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Fig. 6: Example of a safety brake type plate

Rating plate

The type plate is on the drive unit and contains the following information:

- Type
- Manufacturing number
- Year of construction
- Alternating current
- max. lifting height in m
- Current consumption in A
- Rated speed in m/min
- Weight of the basic unit in kg
- Rated load in kg
- Output in kW

Safety brake XL

(AFV 511/AGB 192/1)

2.4 Intended use

The Table lift is a temporarily lifting system installed at construction sites. The system is compliant with the German BGV D7 § 2 (German Employer's Liability Insurance Association). Depending on the requirements, the lift can be operated in one of the two operating modes. The following applies to individual operating modes:

Transport of persons

- In this operating mode, the Table lift must be activated from the platform by a trained platform supervisor.
- In this operating mode, one or several loading locations are required.
- The hatched area must never be occupied by personnel.
- When transporting material and personnel at the same time, compliance with the load capacity of the platform is mandatory.
- Using the loading platform to proceed with installation tasks

Transport of material

- The explicit transport of material while controlling the loading platform from the ground station or a loading position.
- During this operating mode, loading position gates are mandatory at the transfer station.

Intended use also includes:

- The observance of all data and safety instructions in this manual.
- The adherence, on site, to all valid national operating regulations and the relevant regulations for accident prevention.
- The reporting of all defects that could have a negative effect on safety to the end-user and their immediate emergency repair.
- Compliance with the specified inspection and maintenance intervals. ([1])

[1] Information about the service life and the replacement of wear parts can be found in Chapter "Maintenance"

- Only specially trained and qualified personnel shall be permitted to work on the Table lift (this applies especially to assembly, maintenance and repair work). These persons are defined by the end-user.
- Only technical personnel trained and authorised by the manufacturer are permitted to proceed with repairs on the table the lift.

CAUTION!

All Table lift components are harmonised with each other.

Only use original spare parts when maintaining or repairing the Table lift.

By adhering to the intended use you protect the Table lift from damage. Any use above and beyond is no longer deemed to be intended.

2.5 Incorrect use

Using the Table lift for any other purposes than those defined above are forbidden. Never use the lift as a crane. During this kind of improper use of the Table lift the lift can topple causing serious injuries to persons, damage to the Table lift or the building.

The manufacturer cannot be held liable for injuries to persons or damage to property caused by the incorrect usage of the Table lift. This also applies if safety instructions in this manual are ignored or the safety regulations applicable at the construction site are disregarded.

2.6 Danger zones

A particularly dangerous place is the area under the loading platform. The area can be protected by installing an (optional) safety fence, at least 1.10 high (incl. a protective rail at knee height). This will prevent unauthorised access.

DANGER!

Risk of fatal injuries if entering the area underneath the loading platform.

It is forbidden to remain below the loading platform during operation. You can be crushed under the loading platform.

It is the responsibility of the loading platform supervisor to ensure that persons do not enter this zone during the operation and in particular prior to entering the ground station.

3 Design and function

3.1 Overview

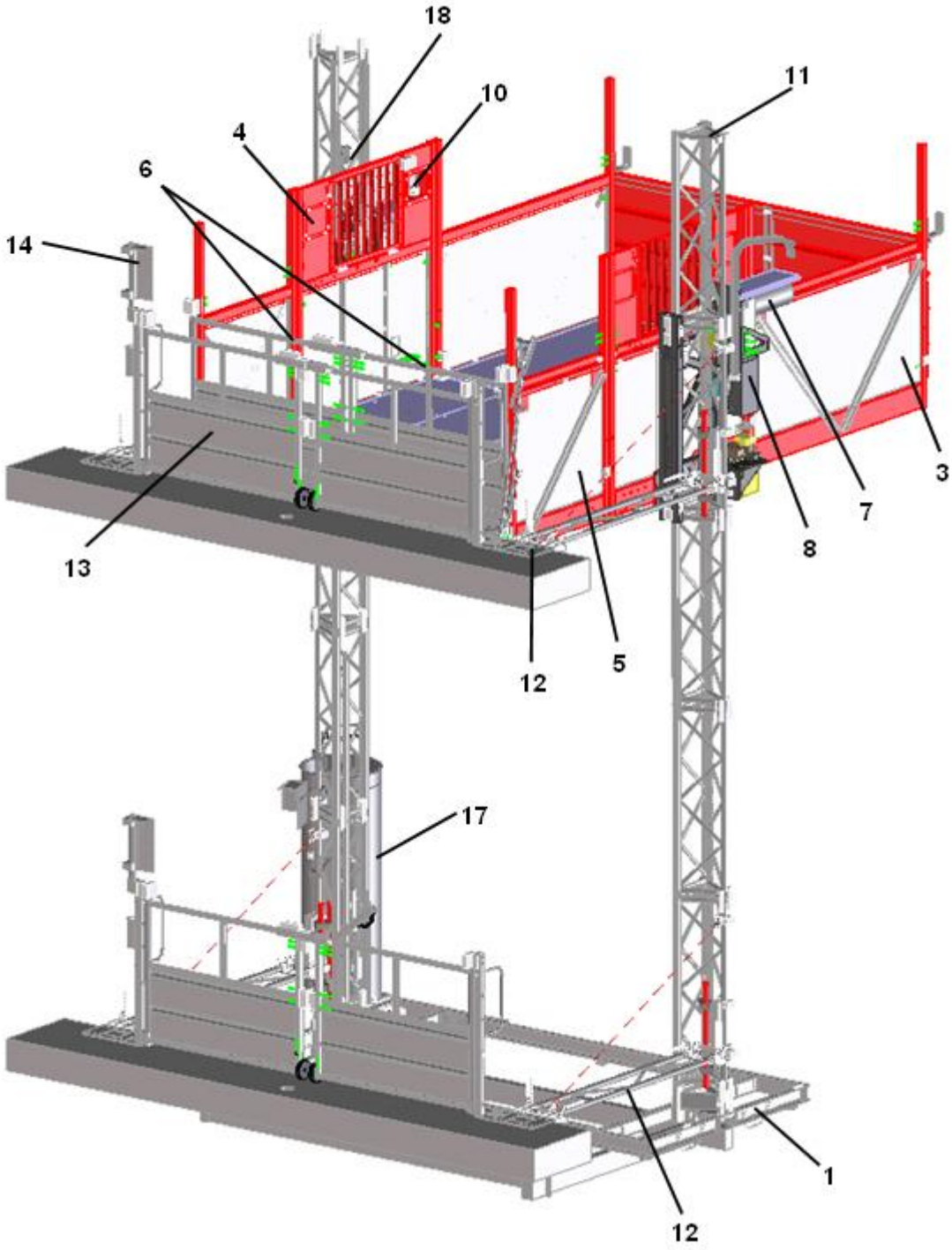


Fig. 7: Overall view

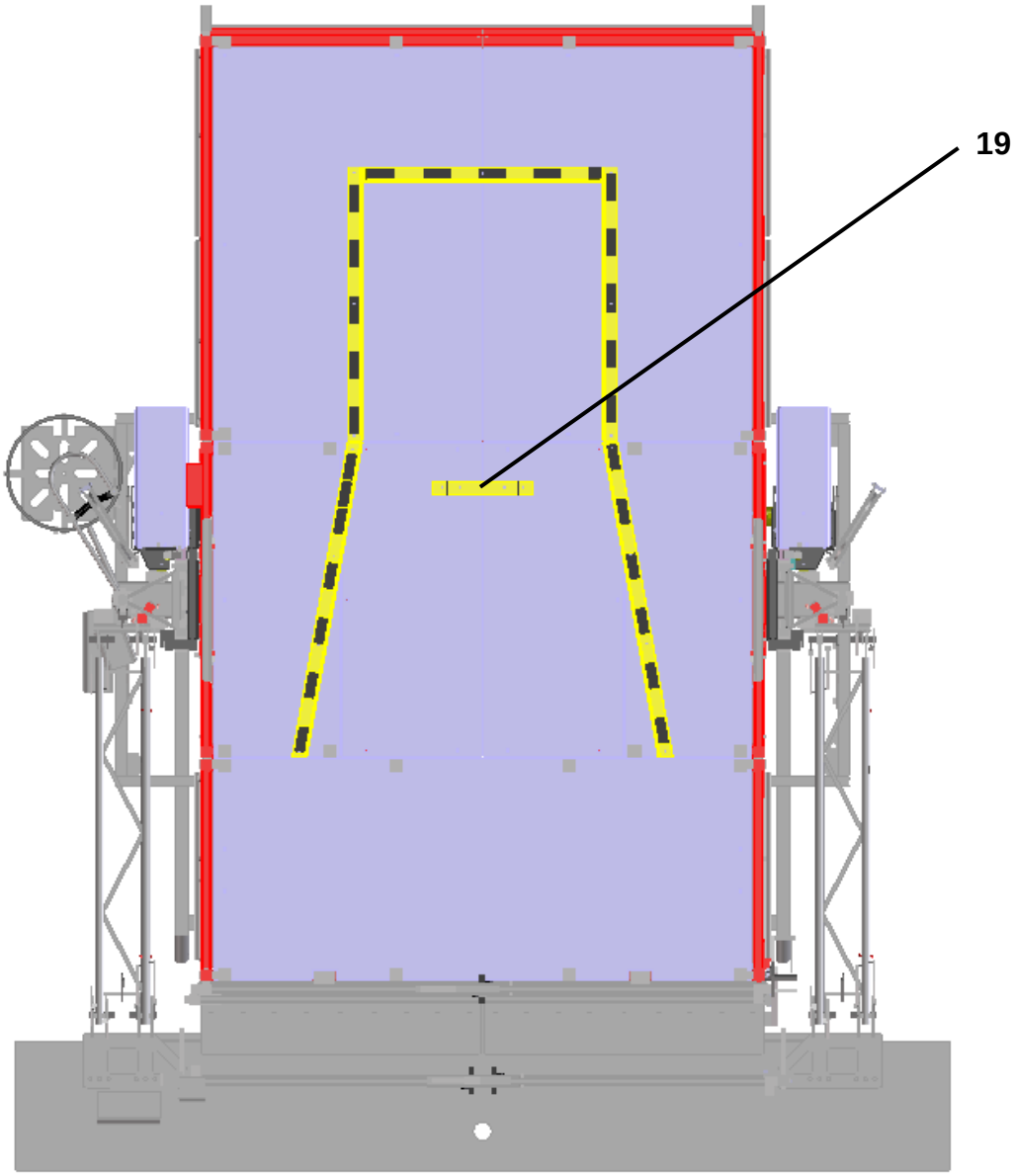


Fig. 8: Top view

3.2 Sub-assemblies of the Table lift TL 1512

Base frame

1. Base frame with buffer (not shown) and safety fence (optional)
2. Electrical cabinet on the base frame, next to the cable bin (not shown)

Loading platform

3. Standard platform (2.2 m)
4. Platform flange components, centre
5. Semi platform (1.2 m)
6. Pivoting gate (platform)
7. Trolley with drive unit
8. Safety brake
9. Electrical cabinet (not shown)
10. Loading platform control system

Mast

11. Mast components 1.50 m; with gear rack
12. Mast anchors (at least every 2.65 m, spacing not to exceed 9 m, depending on the installation method)

Loading points

13. Pivoting floor gates
14. incl. loading point control system

Ground station (not shown)

15. EMERGENCY OFF master switch
16. Pendant control station with pushbuttons

Cable duct

17. Cable bin
18. Cable duct

Hand pallet truck

19. Attachments for the hand pallet truck when transporting slab formwork

4 Technical data

4.1 Technical data TL 1512

Details	Value	Unit
Rated load capacity	1685	kg
or	max. 12	Persons
Weight when loading	max. 2370	kg
Weight during installation	max. 500	kg
Rated speed (with 1685 kg)	12	m/min
Creeping speed	6	m/min
Sound pressure level	<70	dB(A)

4.2 Electrical data TL 1512

Details	Value	Unit
Rated power	2 x 2.1/4.2	kW
Supply voltage (frequency)	380-400 50	V Hz
Control voltage	230	V AC
Connector plug	5x16	A(CCE)
max. Start-up current	90	A
Nominal current	16	A
Power supply fuses (Use construction site power distributor with specified FI safety switch)	16	A (slow-acting fuse)

Types of protection:

Electrical cabinet/switches and electrical components of the safety brake	IP 54
Movable control units	IP65
Motors	IP54

4.3 Mechanical data TL 1512

Details	Value	Unit
Maximum lifting height without mast anchorage	0	m
Maximum lifting height with mast anchorage	50	m
First anchor	≤ 3	m
Maximum permitted anchor spacing	9	m
max. Start-up current	90	A
Top of mast	3	m
Mast anchorage requirements and anchor forces that act on the anchor points depending on the wind directions:	Depending on the construction site	

4.4 Bolted mast connections TL 1512

Details	Value	Unit
Torque	135	Nm
Bolt diameter	M 14x130	
Bolt class	8.8	

4.5 Environmental conditions TL 1512

Details	Value	Unit
Maximum allowable wind speed		
During assembly/dismantling	45 (12.5)	80 km/h (m/s)
During operation	72 (20)	80 km/h (m/s)
When idle/not in operation	160 (44.4)	80 km/h (m/s)
Permissible ambient temperature for operation	- 15 to + 40	°C
Permissible storage temperature	- 25 to + 70	°C
Maximum humidity	85% relative humidity	

4.6 Weights

Details	Value	Unit
Basic unit TL 1512	2985	kg
Triangular grid mast 1.5 m	55	kg
Anchorage	25	kg

4.7 Safety devices

Type of safety devices	Location:
Emergency lowering device (manual venting)	Platform: Lever attached to the side of the motor
Safety brake:	Below the drive on the left-hand side.
EMERGENCY OFF button:	Loading platform and pendant control panel on cable bin
EMERGENCY OFF master switch:	Electrical cabinet on the base frame, next to the cable bin.
Door locking mechanisms:	
Entry + exit of loading platform	Mechanically locked Monitored electrically
Load position gates:	Mechanically locked Monitored electrically
Base enclosure gate (optional)	Mechanically locked Monitored electrically
Operating and limit stop switch applicable activation plate	On the drive trolley On the mast
Rescue control:	Inside the electrical cabinet of the loading platform
Excessive load detection:	On the drive Indicator light on the platform
Installation hatch limit switch	Behind both installation hatches of the platform (If the installation hatches are open, the operation is interrupted)

4.7.1 Emergency off button

CAUTION!

In an emergency, use the EMERGENCY OFF button to stop the loading platform.

When activating the EMERGENCY OFF button, it is locked and can only be unlocked after the malfunction is eliminated.

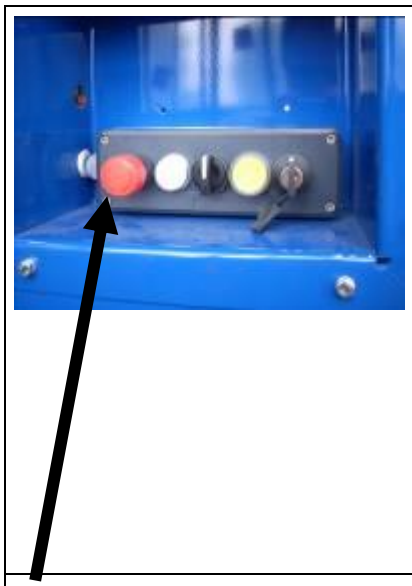
After the EMERGENCY OFF button is pressed, inform the owner or another responsible person and explain the emergency situation.

The Table lift is quipped with two EMERGENCY OFF buttons and one EMERGENCY OFF button at the ground station.

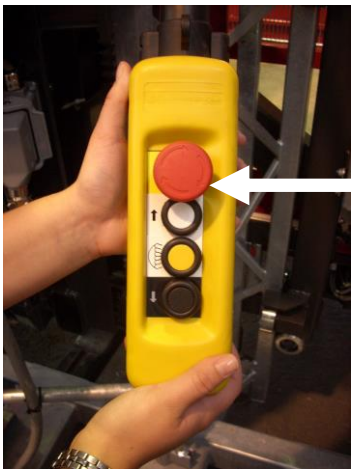
A) One EMERGENCY OFF button is located at the platform control panel

B) The second EMERGENCY OFF button can be found on the pendant control panel

C) The EMERGENCY OFF master switch is located at the electrical cabinet on the cable bin



A) EMERGENCY STOP button (load platform control)



B) EMERGENCY STOP button (ground station)

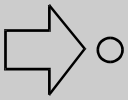
C) EMERGENCY OFF master switch:

Fig. 9: EMERGENCY STOP button and EMERGENCY STOP master switch

5 Table lift assembly

At least two persons must be present when assembling the Table lift.

5.1 Safety instructions for the assembly personnel



NOTE!

When assembling the Table lift, utmost care and caution is required. Compliance with the work sequence instructions and the relevant safety information is mandatory.

DANGER!

Working during high winds and rain can result in fatal injuries

If assembling the Table lift during high winds and/or gales, there is a danger of life-threatening injuries, e.g., falling from great heights.

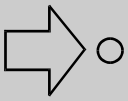
Ensure to observe the information provided in the Technical Data. Compliance with the legal rules and regulations pertaining to wind speeds during the assembly and operation of the Table lift TL is mandatory.

DANGER!

Risk of electrical shock!

Working on electrical devices carries the inherent risk of electric shock. If coming into contact with live components, there is an elevated risk of extremely dangerous shock current. Prior to starting any work on the electrical system of the Table lift, ensure that the power is disconnected and restart of the system is prevented.

Double check and ensure that the power has really been disconnected from the system.



NOTE!

While working on the system, wearing illegally specified personal protection equipment is mandatory.

5.2 Danger zones

A very dangerous zone is the area below the loading platform. Ensure all personnel remains outside of this area during the assembly work.

DANGER!

Do not enter the area below the loading platform. Remaining under the platform creates a life-threatening situation.

It is forbidden to remain below the loading platform during operation. If the platform crashes to the ground, this may cause crushing and/or life-threatening injuries. Ensure this area remains inaccessible by personnel during the operation.

CAUTION!

Permissible payload during assembly 500 kg.

5.3 Assembly tools

	Ring spanner or combination wrench
	Width across the flats 17, 19, 24
	Open ended spanner Width across the flats 17, 19, 24
	Hammer

See Chapter 14 - Screw tightening torque

5.4 Selection of location

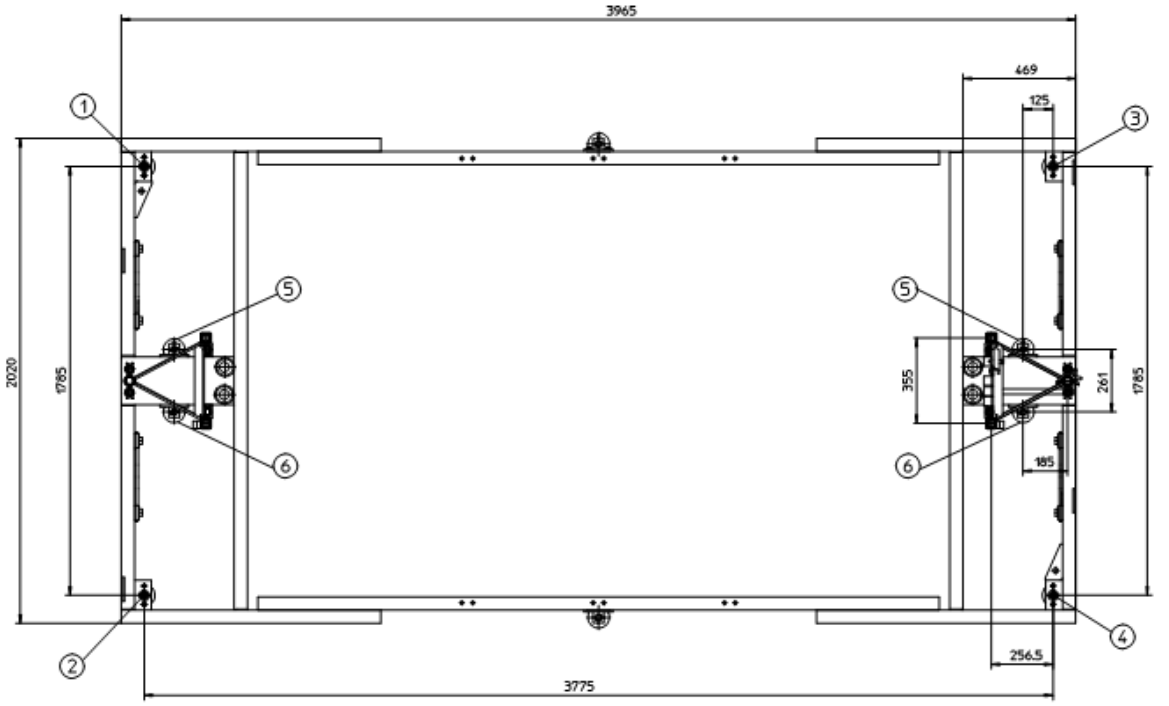
Prior to the assembly, technical personnel must inspect and select the location the relevant construction site.

5.4.1 Location requirements

- Always select a level location for the base frame.
- Check the load capacity of the location based on the information provided in these instructions *(see Chapter5.4.2 page 29**)***
- If the load capacity of the location is insufficient, it may be necessary to provide a concrete foundation.
- Ensure to connect the power for the assembly and future operation.

The required distances to the building and the applicable dimensions can be found in the illustration for anchor forces (*see Chapter 5.9* **-** Mast anchorage ***page 40 etc.)***

5.4.2 Support forces (in kN)



All dimensions in mm

Spindle / H	1	2	3	4	5	6
10	9	9	9	9	20	20
20	9	9	9	9	22	22
30	9	9	9	9	24	24
40	9	9	9	9	26	26
50	9	9	9	9	28	28

H = Assembly height in meter

5.5 Assembly of the base frame

Fig. 10: Basic unit with a transport traverse

1. Transporting the basic unit:

(max. number of masts: 2 per side)

Fig. 11: Basic unit with a transport traverse

Fig. 12: Spindles of a mast side

1. Attach the appropriate load cables to the mast component and use the transport vehicle to lift the basic unit.
2. Place the basic unit on level ground according to the assembly diagram.
3. There are several spindles with circular bases located in the base frame.

   In order to compensate for uneven ground, the spindles can be used to align and level the base unit.

NOTE!

The distance of the base frame from the ground must be at least 120 mm. This allows the use of the forklift for transporting purposes. (see Fig. 12: Spindles of a mast side)

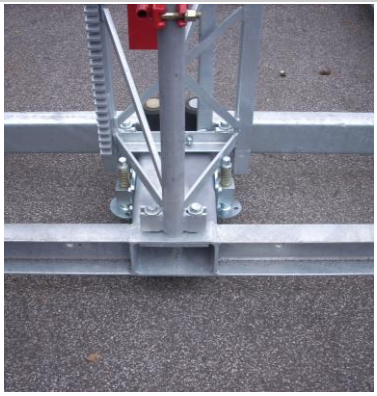


Fig. 13: Locking the mast spindles

4. After the alignment, the spindles and must be locked underneath the masts since the spindles carry the main load. Ensure the base frame is not lifted anymore. The other spindles of the base frame must not become loose again.

NOTE!

After the mast spindles have been locked, inspect all spindles again to ensure their proper fit.

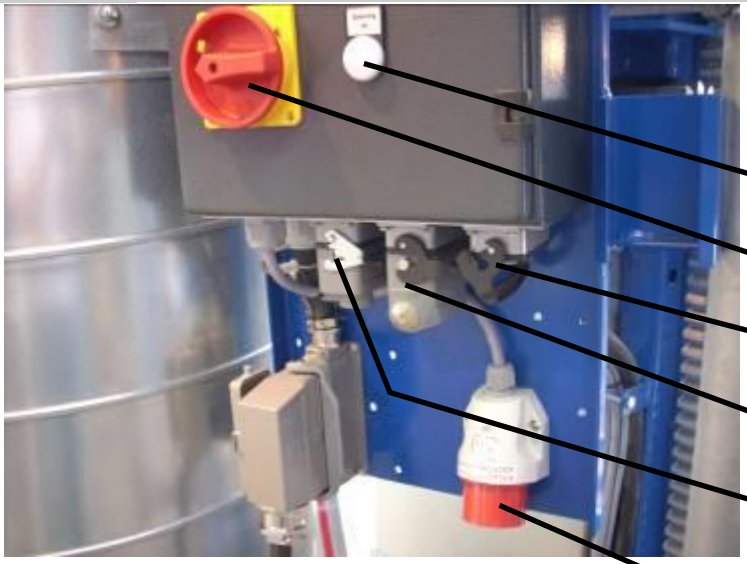


Fig. 14: Insert the CEE power plug into the CEE wall socket below the electrical cabinet.

5

Connect all power supply lines according to the information provided in the Technical Data.

Indicator light (1)

Emergency Off (2) master switch

Connection to the pendant control panel

Connection to loading point control

Connection to base enclosure

Power plug

(Use a 16 A CEE power plug)

→ see page 21 - Technical data

NOTE!

Once you have switched on the Emergency Off master switch (2), the indicator light (1) must be illuminated. If this is not the case, the rotational direction of the motor must be altered by changing the phases

The lift can only be operated if the indicator light is illuminated. ([2])

[2] If a malfunction occurs, referred to Chapter.:12 What to do when...

5.6 How to assemble the Table lift

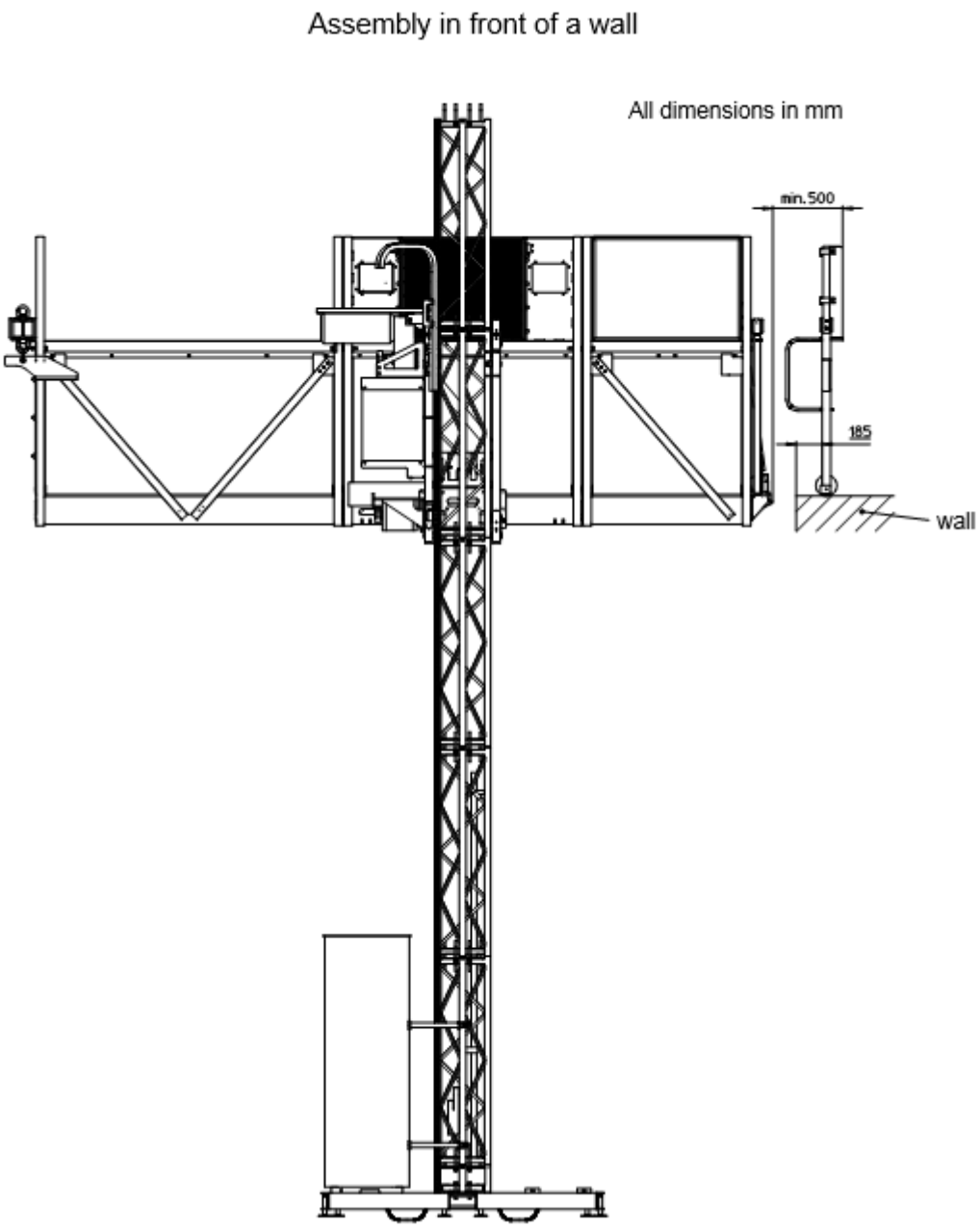


Fig. 15: How to assemble the Table lift in front of a wall

5.7 How to assemble the platforms

5.7.1 Using a forklift

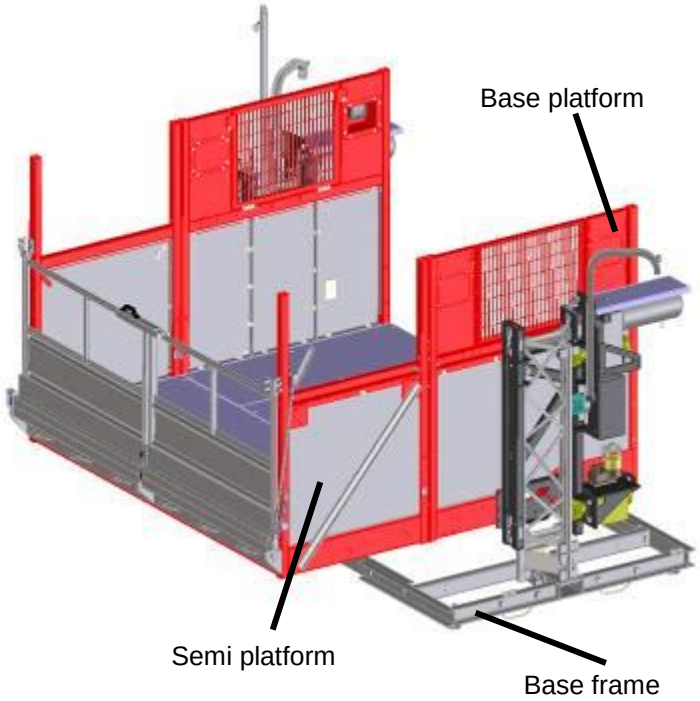


Fig. 16: Pre-assembled platform group

1. Attach the semi platform to the base frame. First, only tighten the bolts that are easily accessible.

Fig. 17: Pre-assembled platform group in front of building wall

2. Insert the forks of the transport vehicle into the open side of the pre-assembled platform group to the wall of the building. Use the engineering drawing to determine the distance to the building (see *Fig. 23* page 41)

Fig. 18: Position the standard loading platform

3. Use the forklift to place the standard loading plat form and use of the flanges to attach the platform group (only tighten bolts that are easily accessible)

Fig. 19: Align the platform group and tighten bolts.

4. Align the entire platform group and tighten bolts.

Fig. 20: Raise the Table lift.

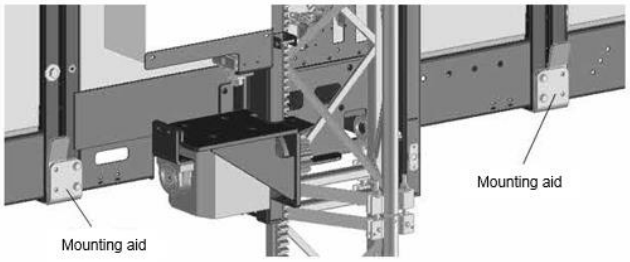
5. Raise the Table lift in order to gain access to previously inaccessible connections at the underside of the loading platform.

CAUTION!

Prior to tightening the bolts, the EMERGENCY OFF main switch must be activated (on the switch cabinet next to the ground station). The emergency switch can only be unlocked after all assembly work underneath the loading platform is completed!

5.7.2 Crane assembly

Pre-assembled mounting aids



During the assembly of the crane, work steps 1, 2 and 3 of the forklift assembly are omitted.

The platform is assembled completely. Subsequently, the crane is used to align and tighten all connections.

1. The base platform, semi platform and standard platform must be connected to each other (first, tighten only those bolts that are accessible)

   → Pre-assembled mounting aids used to attach the flange-mounted platforms

2. With the assistance of the crane and a transport traverse, the completely pre-assembled loading platform of the Table lift is placed into position and alignment.
3. Raise the Table lift in order to gain access to previously inaccessible connections at the underside of the loading platform. (see work sequence 5 – Forklift assembly)

CAUTION!

Prior to tightening the bolts, the EMERGENCY OFF main switch must be activated (on the switch cabinet next to the ground station). The emergency switch can only be unlocked after all assembly work underneath the loading platform is completed!

5.7.3 Safety instructions

DANGER!

Sudden start-ups of the Table lift bear the inherent danger of life-threatening injuries.

During assembly work outside of platform, in particular while working on the mast or the mast anchorage, there is an inherent risk of life-threatening injuries due to the sudden start-up or unforeseen movement of the Table lift.

When assembling the mast or working on the mast anchorage, ensure that the Emergency Off button at the platform control panel is always activated.

DANGER!

A worker falling off the platform or parts/tools dropping to the ground can cause life-threatening injuries.

Therefore, wearing personal protective equipment, in particular hard hats and safety belts during the assembly is mandatory.

CAUTION!

There is an inherent risk of injuries when raising the mast components, e.g., caused by slipping loads.

The mast components can weigh up to 55 kg and are very bulky. Therefore, at least two persons must be present during the mast assembly.

Tips and recommendations

Verify whether it is possible to pre-assemble the mast components

Depending on the local conditions, it may be possible to pre-assemble several mast components at the ground. Subsequently, a construction site crane or a truck-mounted crane may be used to lift and attach the components.

5.8 Mast erection

The basic unit of the Table lift is installed, the electrical supply lines are connected and working.

The key-operated switch on the control unit is in the pre-selection position “Off”(page 60)

Fig. 21: Installation hatch for the mast assembly

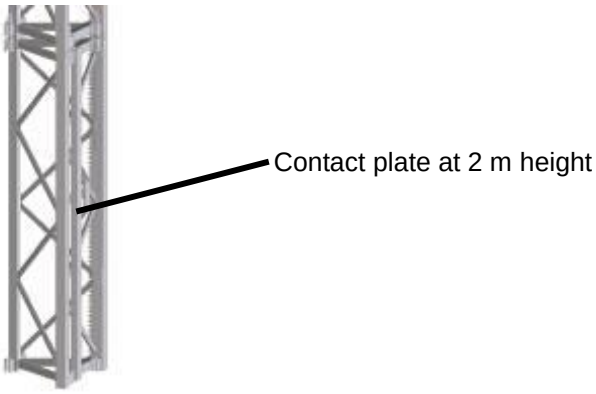
1. Press the **EMERGENCY OFF** button of the platform control panel
2. Open the installation hatch of the loading platform

NOTE!

The Table lift comes with a pre-assembled mast component. It contain s already the limit switch contact plate for the ground station.

Use a torque wrench (135 Nm)

Each mast component is assembled using **four** bolts **M14x130-8.8**, DIN 444. To do this, use a torque wrench and tighten each bolt applying a torque of 135 Nm.



3. Position the mast components on each side and use the torque wrench to tighten the four bolts. Subsequently, installed the contact plate at a height of 2 m.

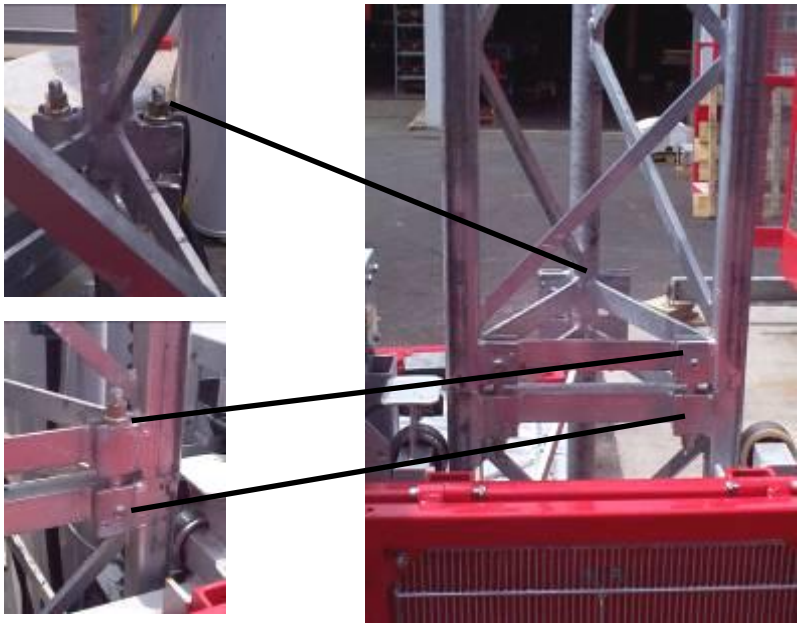


Fig. 22: Threaded mast connections

4. Close the installation hatches again. Subsequently, the limit switches behind the hatches will enable the Table lift to continue its travel.

5. Place the next mast components onto the platform.

NOTE!
Ensure to observe the permissible load capacity of the Table lift → Chapter 4 - Technical data

6. Unlock the platform's **Emergency Off button** and travel to the applicable assembly height.
7. Press the **EMERGENCY OFF button** again.
8. Assemble the next mast component.

STOP

DANGER!

Without the mast anchorage, the structural safety of the Table lift cannot be guaranteed. There is a risk that the lift may collapse.

Set the first mast anchors at a height of ≤ 3.0 m. Subsequently, the anchors must be installed every 9 m at the building. Without anchorage, the assembly and later operation is not permitted.

5.9 Mast anchorage

5.9.1 Observe anchor forces

Depending on the configuration the lift and anchor types used at the specific construction site, the anchor forces can vary considerably and must be verified for each Table lift system.

The information pertaining to the anchor forces can be found on the following pages (page 41)

DANGER!

Selecting incorrect anchorage can lead to the collapse of the lift.

The calculated anchor forces must be verified at the construction site and confirmed in writing.

Without the approval of the anchor forces provided by the customer, proceeding with the assembly is prohibited.

Anchor forces

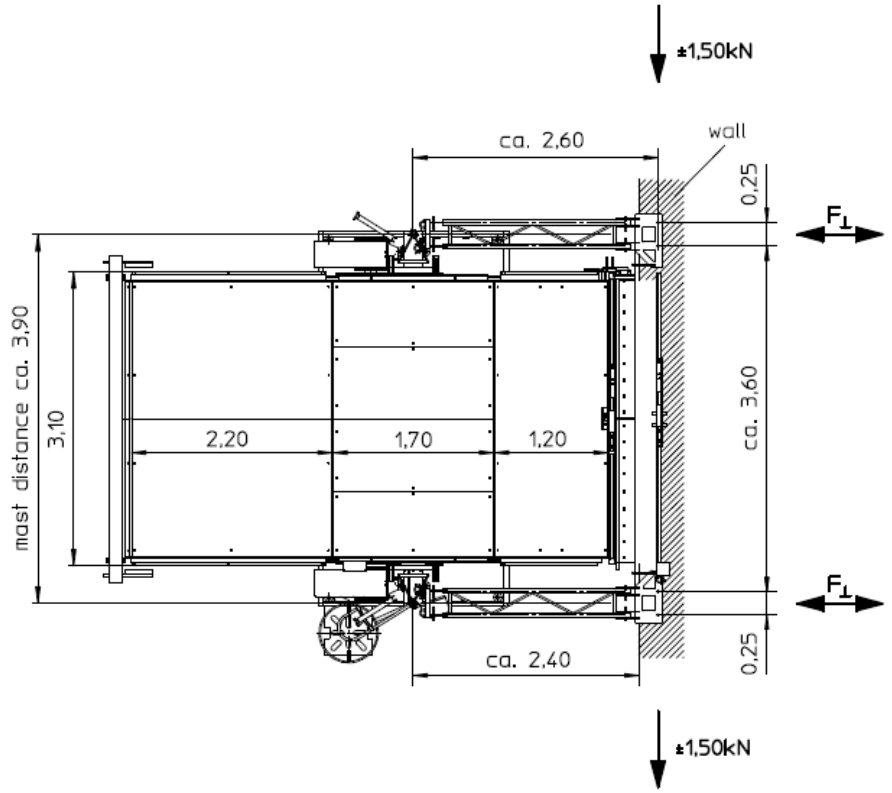
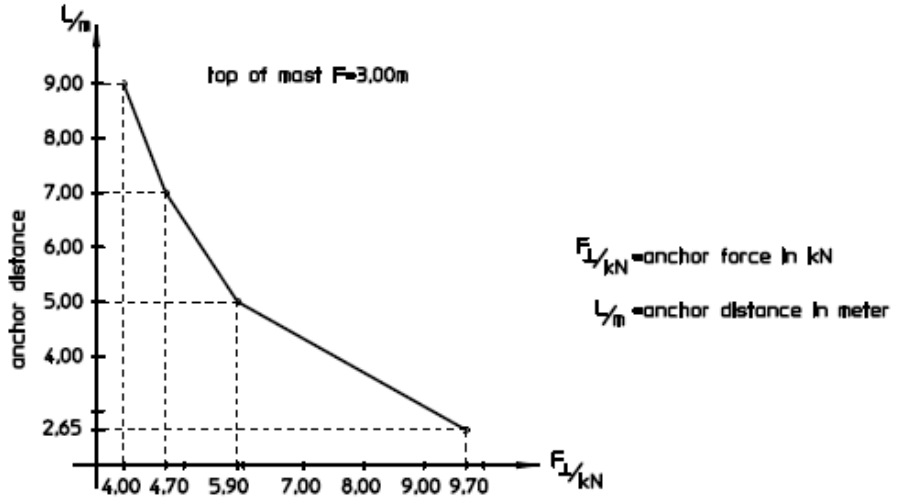


Fig. 23: Anchor forces when anchoring in front of the building wall

anchor forces in kN at wind intensity Beaufort 8 (250N/m²)



CAUTION!

The spacing of the mast anchors between the mast and the building m u s t not exceed a distance of 9 m.

NOTE!

Ensure the masts are perpendicular to the building wall. The edge of the platform must be parallel to the building.

If necessary, use a chain hoist to install the mast perpendicular to the building. Subsequently, anchor the mast in the ground.

5.9.2 Mast anchor set, incl. support for floor gate

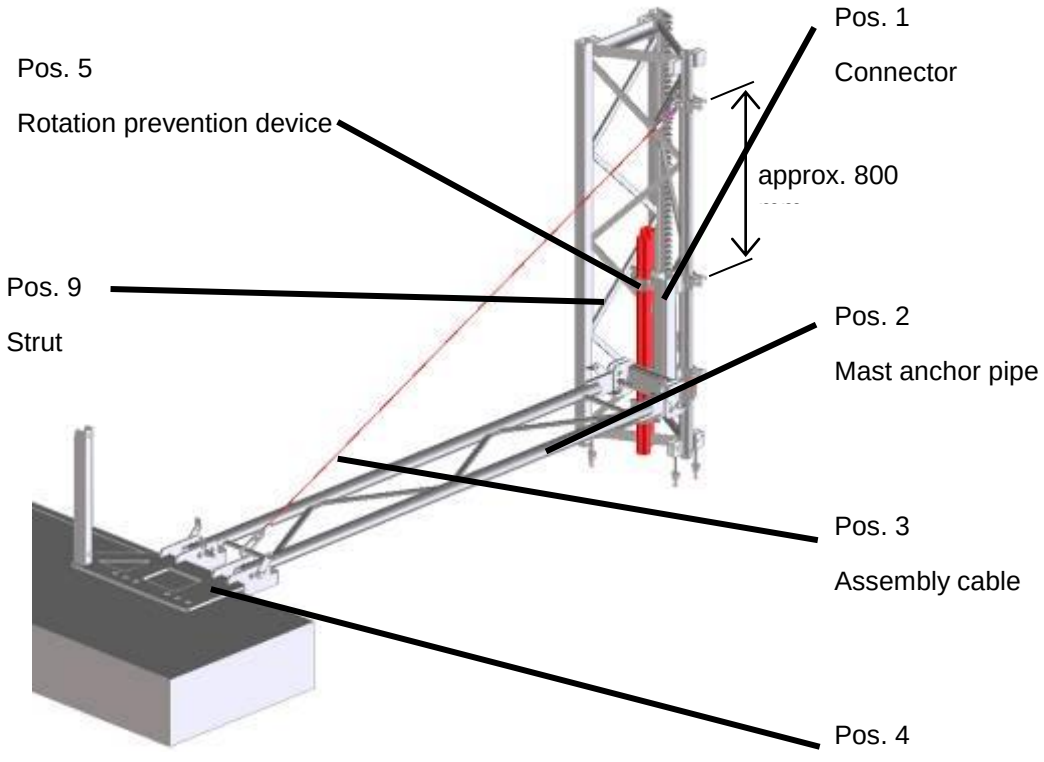
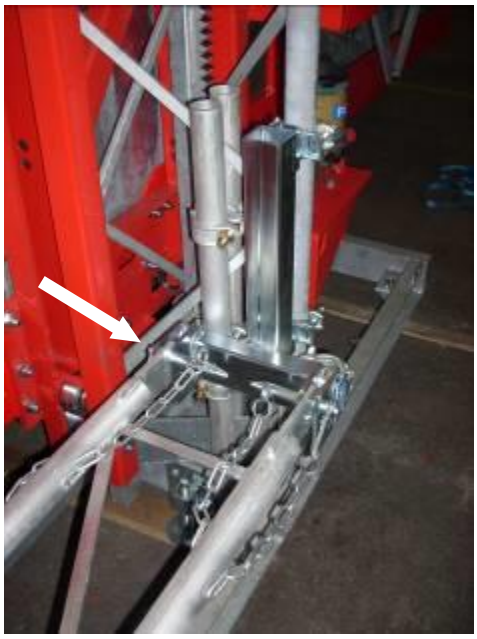


Fig. 24: Mast anchorage

Fig. 25: Mast anchorage for left- or right-hand side mast



Insert the pin in the direction of the arrow

Fig. 26: Mast anchor pipe pinned to connector

1. Align the anchor plate (4) and connector (1) (ensure they are parallel to the platform)
2. At the height of the first floor, attach the connector (1) to the mast.
3. Pin the mast anchor pipe (2) to the connector (1) (rotate 1 and 2 to the outside; this allows you to insert the inside pin) → see *Fig. 26*
4. Attach the assembly cable (3) approx. 800 mm above the connector (1). Now, use a snap hook to connect it to the mast anchor pipe (2).
5. Pin the mast anchor pipe (2) in the pockets of the anchor plate (4)
6. Use the connector (1) to align the mast anchor pipe (2) horizontally. (if necessary, loosen 1 and 3 and shift vertically)
7. Drill into the anchor plate (4) and use two anchor bolts to attach the plate.
8. Use a rotary joint to connect the rotation prevention device (5) to the mast and connector (1). Both pipes must clamp at least two mast struts (9).

In order to attach the anchor plate we recommend the anchor type below:

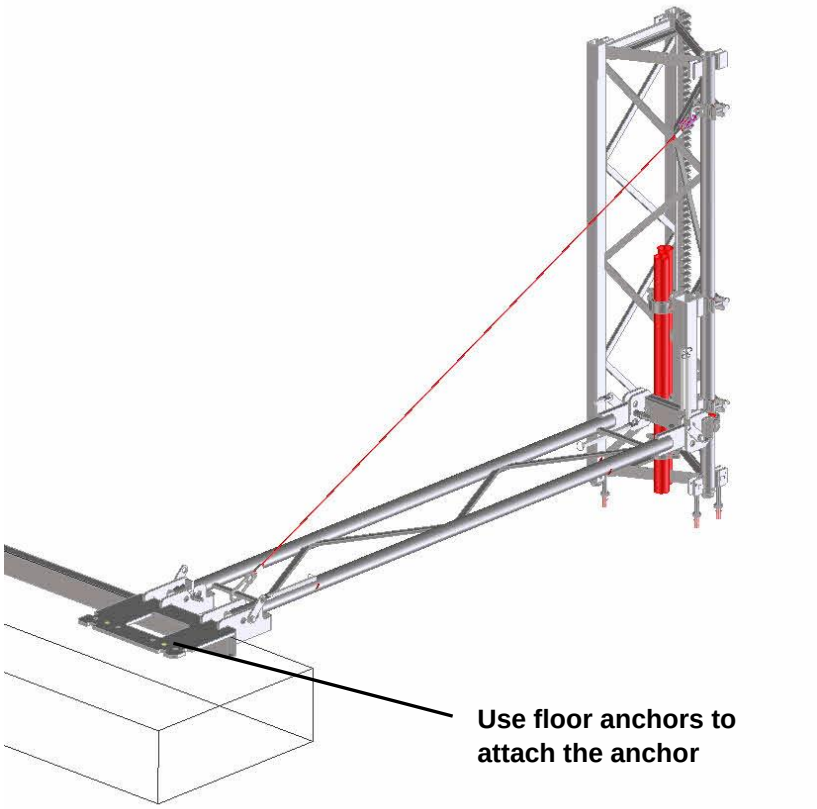
Fischer mounting system – Anchor bolt FAZ II 12/30 GS

article number: 96340

5.9.2.1 Mast anchorage - other variants

split anchor plates/floor gate support

Mast anchor without floor gate support



In order to attach the anchor plate we recommend the anchor type below:

Fischer mounting system – Anchor bolt FAZ II 12/30 GS

Article number: 96340

NOTE!

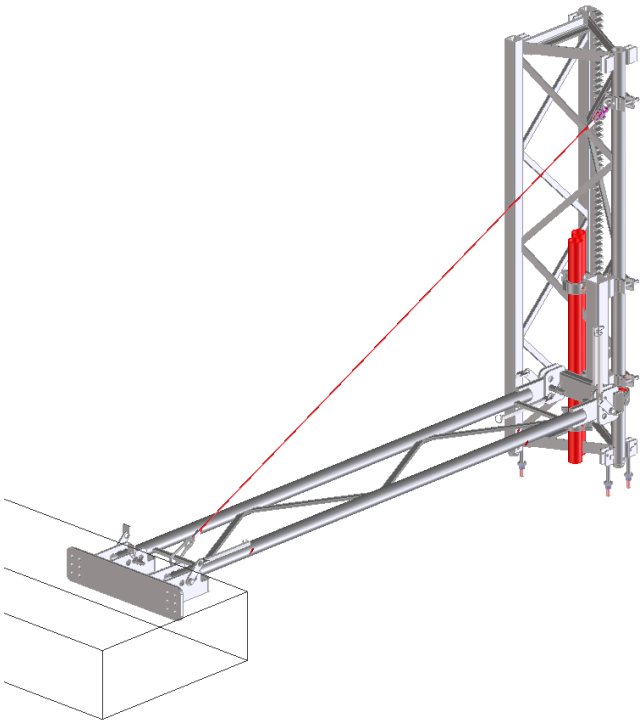
The supports for the floor gate are included in this mast anchor set.

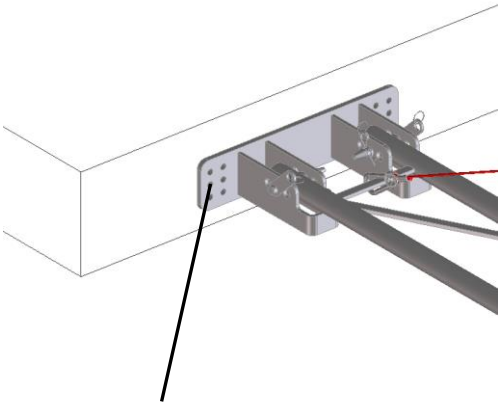
CAUTION!

When installing the floor gates, compliance with the dimensions shown in **Fig. 15** is mandatory!

For the assembly of the floor gate see **Chapter 5.16 page 54.**

Mast anchor in front of wall (without floor gate support)





Use floor anchors to attach the anchor

In order to attach the anchor plate we recommend the anchor type below:

Fischer mounting system – Anchor bolt FAZ II 12/30 GS

Article number: 96340

NOTE!

The supports for the floor gate are included in this mast anchor set.

CAUTION!

When installing the floor gates, compliance with the dimensions shown in **Fig. 15** is mandatory!

For the assembly of the floor gate see **Chapter 5.16 page 54.**

5.10 Installation of the cable guides

In order to ensure that the trailing cable can be safely moved without getting caught, cable guides must be installed at the operating side of the mast.

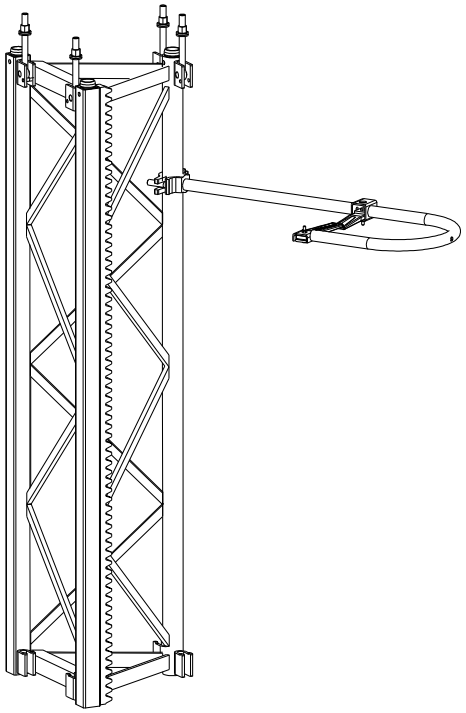


Fig. 27: Installed cable guide

1. Attach the first cable guide **1 m** from the top edge of the cable bin.
2. Attach the second cable guide at **3 m** and all following cable guides at **6 m** spacings.
3. Use the welded-on frame clamps to fasten the cable guides to the mast.

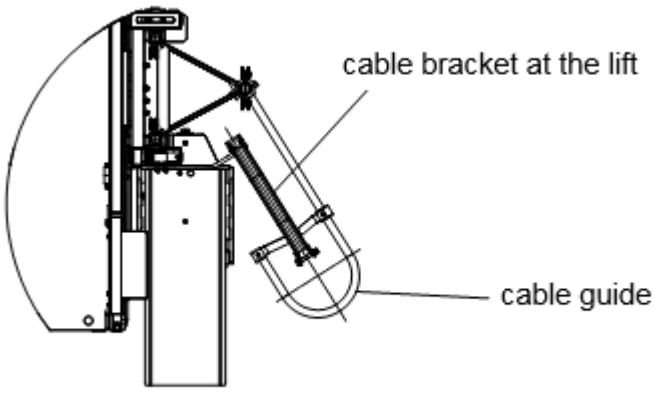


Fig. 28: Installed cable guide

CAUTION!

Ensure that the trailing cable or the cable bracket at the lift moves through the centre of the cable guide.

(See *Fig. 28*)

5.11 Inserting the bin cable

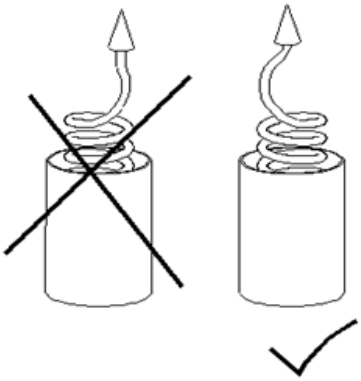


Fig. 29: Inserting the bin cable

1. Always insert the bin cable in a clockwise motion; otherwise kinks will form and the cable may be damaged.

5.12 Installation of the Table lift's switch cabinet

CAUTION!

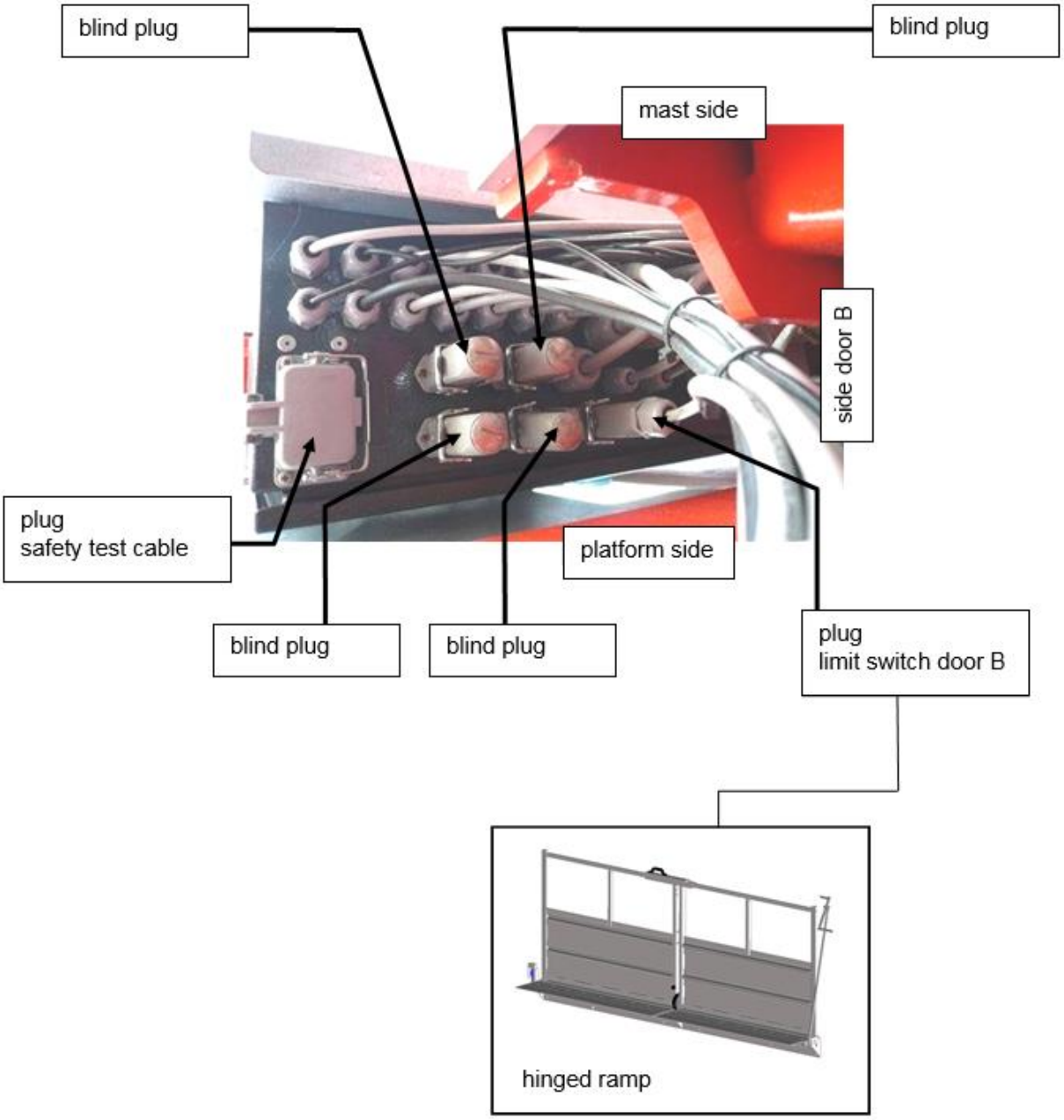
Ensure to inspect the plug connections of the switch cabinet after each structural change of the Table lift. If necessary, corrections must be made.

The switch cabinet shown in **Fig. 30** is located behind the cover plate of the platform

Fig. 30: Switch cabinet

Illustration of the assignment of the fold-down ramp monitoring

Fig. 31: Bottom view of switch cabinet



5.13 Installation of the floor limit switch and the mast limit switch

Fig. 32: Installation of the upper limit switch plate

1. Install the upper limit switch plate > 1.58 m below the top of the mast.

Fig. 33: Installation of the floor limit switch rail

2. The floor limit switch rail must be attached to the mast below each floor.

Fig. 34: Installation of the floor limit switch plate

3. Use the limit switch plate to set the proper height of the floor. The limit switch plate can be moved freely inside the rail.

CAUTION!

Adjust the plate to ensure that the ramp of the lift always sits horizontal on the building's edge.

(see ***Fig. 35: Ramp support area on the*** *building*, page 50)

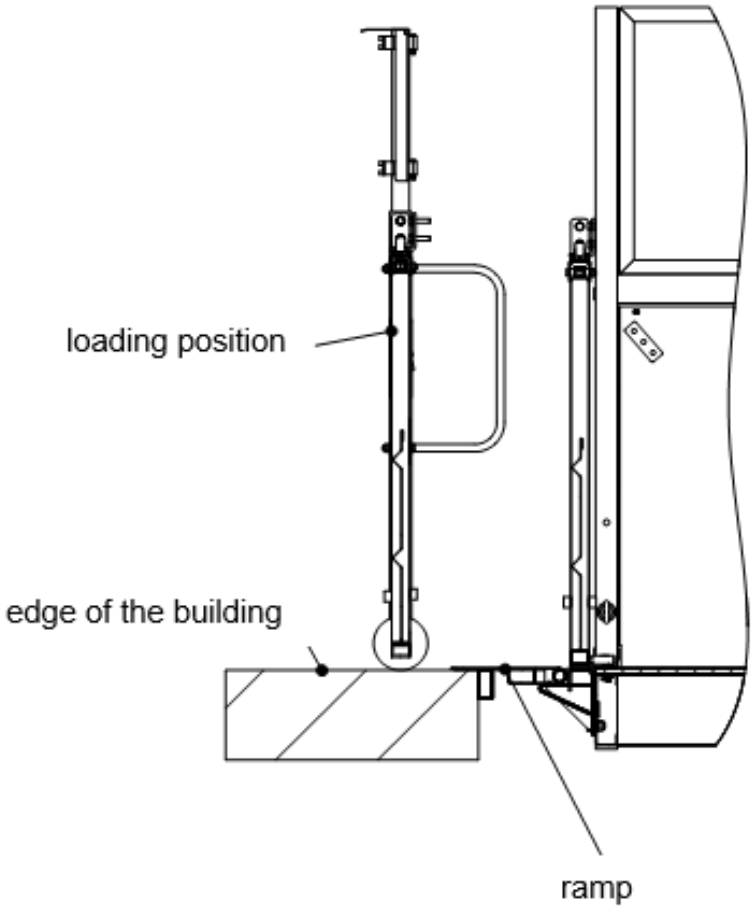


Fig. 35: Ramp support area on the building

CAUTION!

The ramp of the lift must always sit horizontally on the edge of the building!

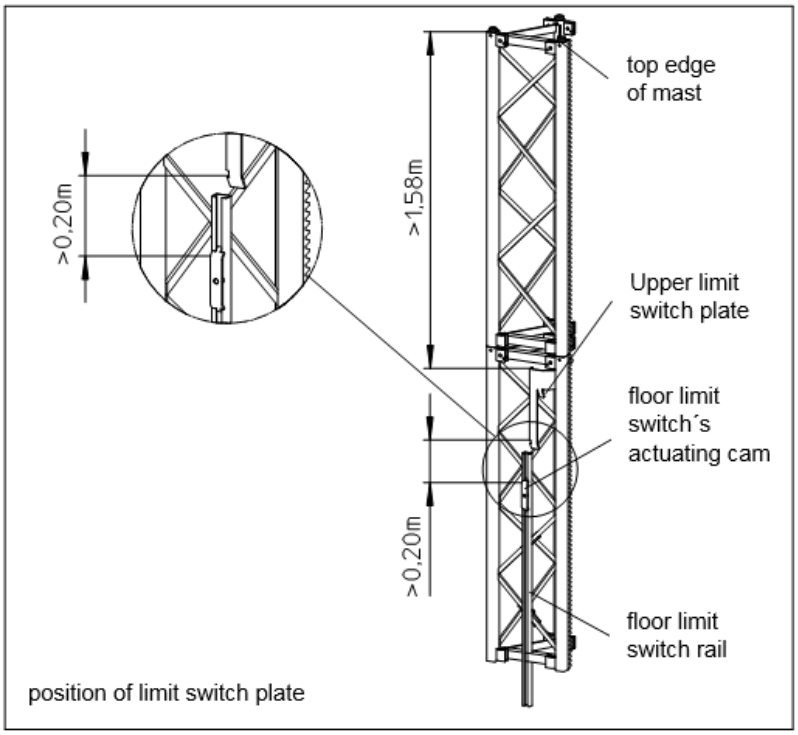
(see ***Fig. 35: Ramp support area on the*** *building*, page 50)

CAUTION!

The max. permitted horizontal force during loading with the pallet truck **EJB 213 EHW table** incl. slap framework is 1.0 kN.

All pertinent information about the lift truck can be found 17.1 on page 113

CAUTION!
All dimensions must be maintained



0000391640

Install the upper limit switch plate > 1.58 m below the top of the mast.

Distance of the floor limit switch's actuating cam to the upper limit switch plate > 0.20 m

5.14 Testing the safety brake

Fig. 36: Connecting the safety test cable

After the installation has reached a height of 6 - 8 m, the safety brake must be tested. In order to do this, proceed as described below:

- Insert the safety test cable into the 6-pin socket (see arrow) on the electrical cabinet that travels along (1)
- Activate the UP button and move the loading platform to a height of 6 m above the ground.
- Hold the pushbutton in your hand and step away from the lift.
- Press the pushbutton on the safety test cable.
- The lift drops in free fall and is stopped by the safety brake after 1.5 m

CAUTION!

If the safety brake has not been activated after about 2.5 m, release the pushbutton. Now, the motor brake will stop the platform.

Should this happen, a service technician must be contacted immediately.

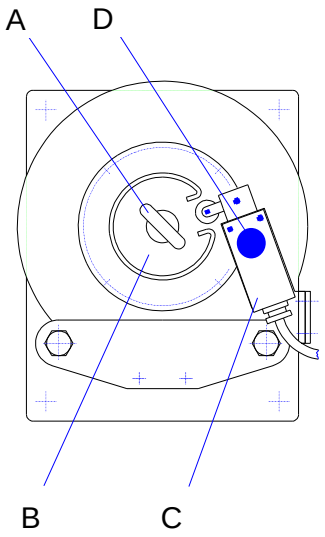


Fig. 37: Safety brake

After the safety brake has been triggered, the up and down movement of the lift is blocked electrically. Therefore, the safety brake must be released as explained below:

- Loosen the lifting eye nut (A) on the safety brake and turn the contact plate (B) so that the limit switch (C) is in the recess.
- Tighten the ring eye nut (A) again.
- Release the reset switch (D) by pulling it out.
- Activate the UP button and raise the loading platform

Remove the safety test cable.

5.15 Installation of the base enclosure (optional)

Secure the lower hazard zone by installing an enclosure, 1.10 m high.

The clearance between the enclosure and any moving parts of the lift must be at least 0.5 m.

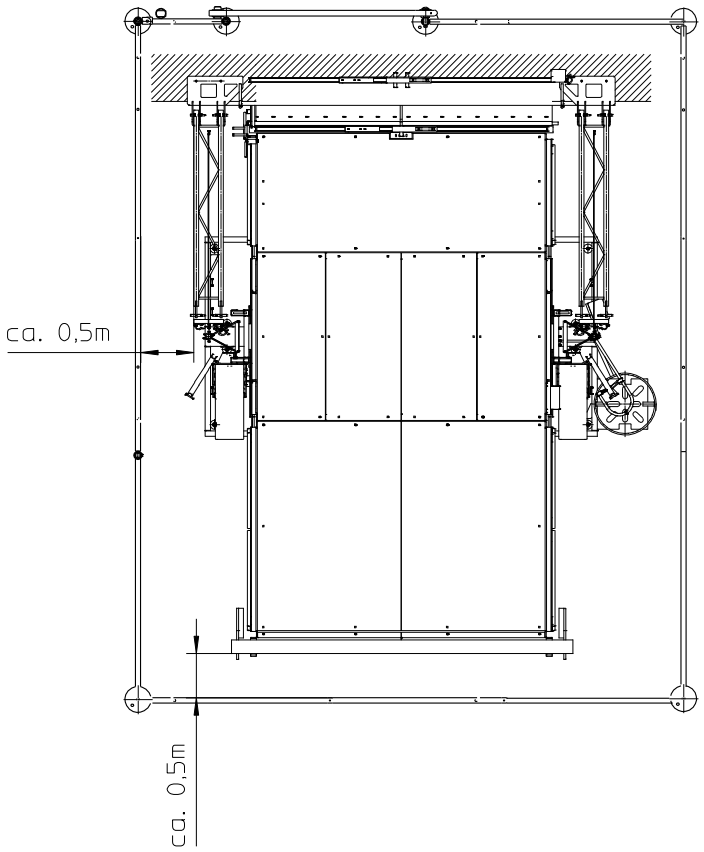


Fig. 38: Base enclosure

5.16 Installation of the loading point gates

CAUTION!

A landing gate must be installed at each loading point (access point) which must be secured compliant with EN 12158-1. Only those loading point gates approved by the manufacturer are permitted.

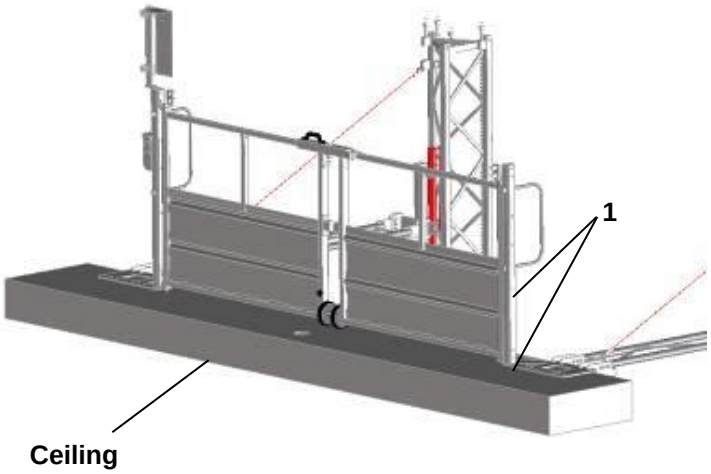
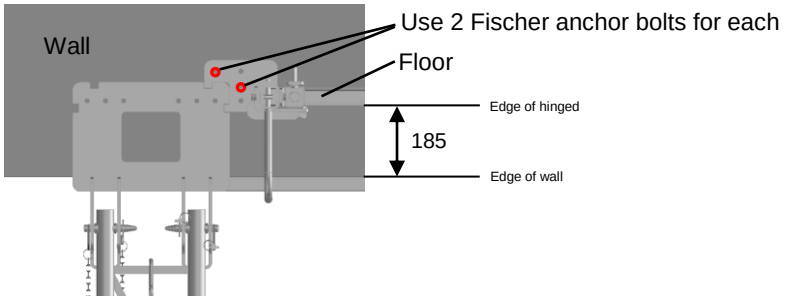


Fig. 39: Mount hinged floor gate to the floor of the applicable storey (variant 1)

The following applies:

2133000018 - mast anchor with floor gate support

The pivoting floor gate is placed onto the post of the mast anchor attachment support (already installed) and subsequently bolted onto the support (see 1)



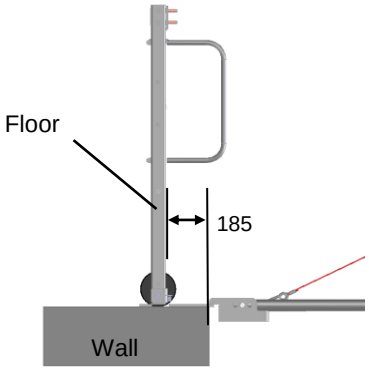


Fig. 40: Mount pivoting floor gate to floor of the relevant storey (variant 2)

The following applies:

213300001 - Mast anchor without support for hinged floor gate

Position floor gate according to specifications (detailed information can be found on Fig. 15 page 33)

Use Fischer anchor bolts to attach the anchor plate of the floor gate.

In order to attach the anchor plate we recommend the anchor type below:

Fischer mounting systems – Anchor bolt FAZ II 12/30 GS

Article number: 96340

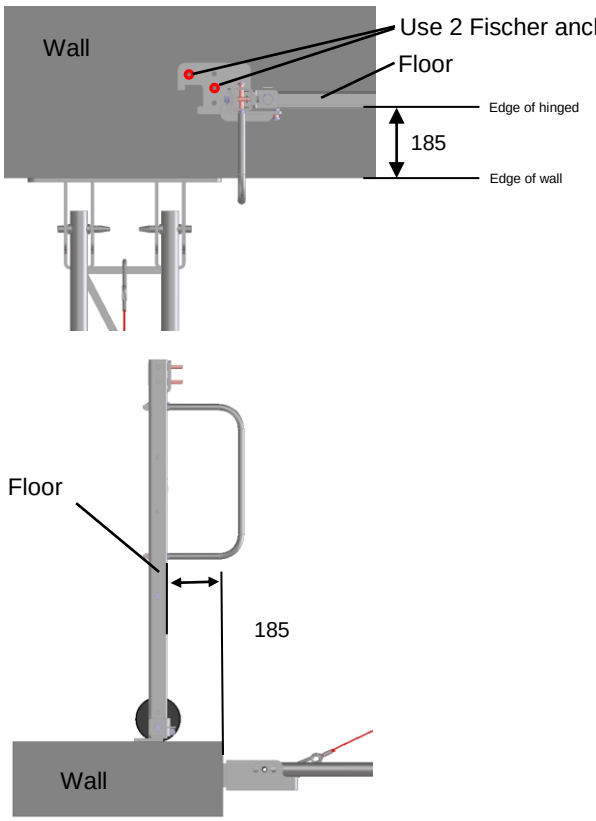


Fig. 41: Mount hinged floor gate to the floor of the applicable storey (variant 3)

The following applies:

213300006 - Mast anchor in front of building wall without support for floor gate.

Position floor gate according to specifications (detailed information can be found on Fig. 15 page 33)

Use Fischer anchor bolts to attach the anchor plate of the floor gate.

In order to attach the anchor plate we recommend the anchor type below:

Fischer mounting systems –
Anchor bolt FAZ II 12/30 GS

Article number: 96340

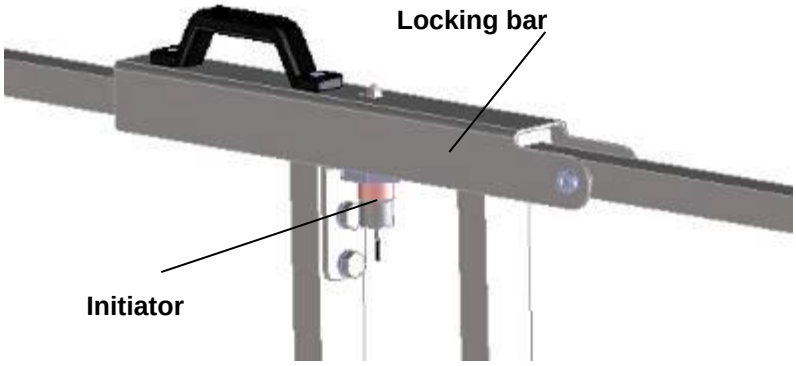


Fig. 42: Locking mechanism of pivoting floor gate

The locking bar is used to bolt the pivoting floor gate and the indicator monitors the pivoting floor gate.

NOTE!

It the lighting conditions at the construction site are poor, ensure the areas of the loading positions and the floor gates are always well lit.

5.16.1 Cable routing at the loading point gates

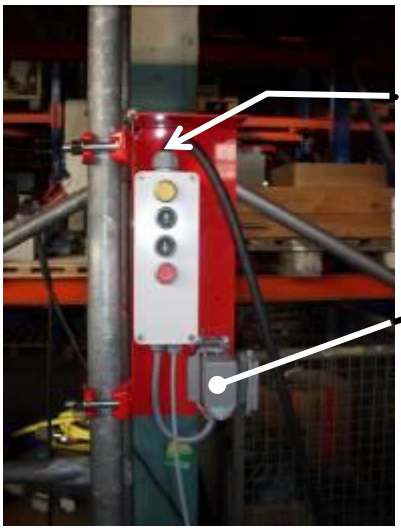
1

Cable routing at the pivoting gate (platform)

3

Cable routing at the first loading point

2



4

Blind plug,
if there are no
further floors

Cable routing at the last loading point

6 Buttons of the Table lift

The Table lift can be operated from several locations:

- form the pendant control station at the ground station (during material transport from the outside of the lift)
- from the platform control (during mast assembly or during the transport of persons from the inside of the lift) (only by technical personnel)
- From the loading positions

The available buttons are explained in the text below:

6.1 Ground station, next to the cable bin

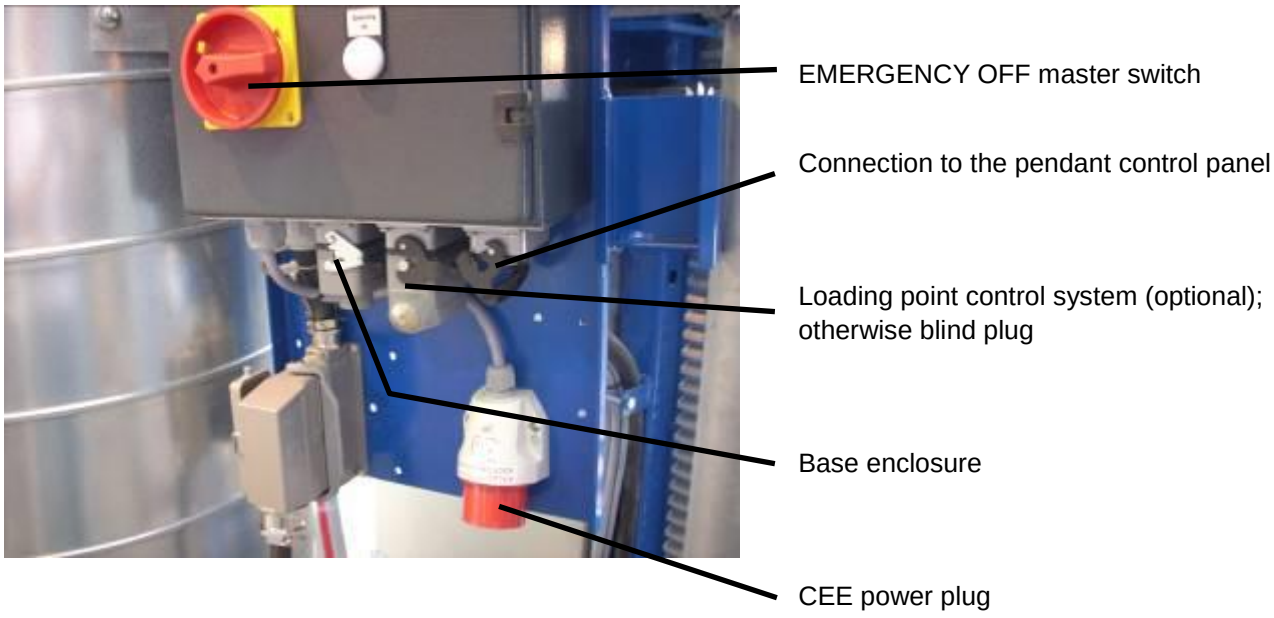


Fig. 43: CEE ground station with EMERGENCY OFF master switch, connector for pendant control panel and plug for loading position control

The EMERGENCY OFF button can be used to turn the respective Table lift TL on and off. Use the pendant control panel to activate the platform from the ground station.

Secure the lift to prevent accidental restart

The EMERGENCY OFF switch is a rotary switch and can be activated and locked as shown inFig. 44

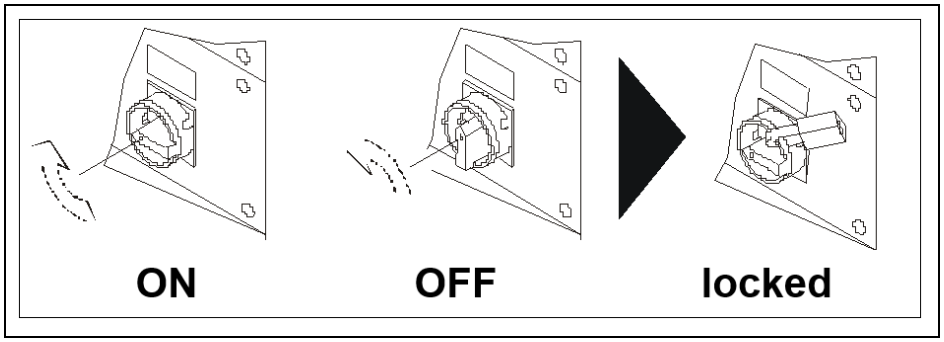


Fig. 44: Activation of the EMERGENCY OFF main switch

6.1.1 Pendant control panel at the ground station

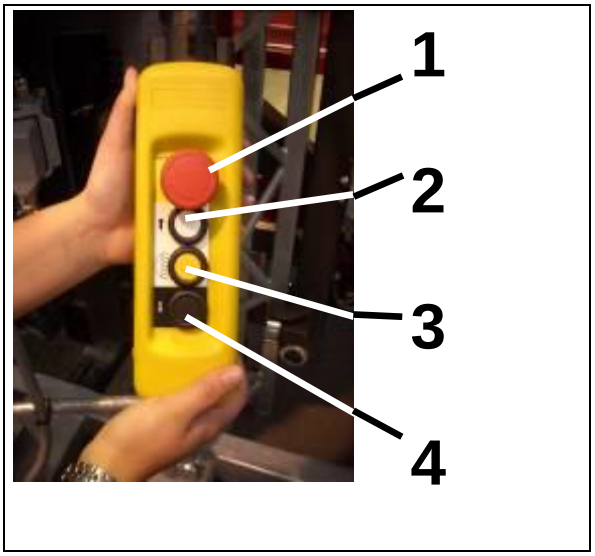


Fig. 45: Pendant control panel at the ground station.

How to operate the pendant control panel

The pendant control panel can be used to activated the lift if the key-operated switch of the platform control is in the following positions:

1 → “Outside”	The operation of the lift from the inside is not possible.
3 → “Automatic”	The lift can be operated from the outside only if the lift was not activated from the inside previously.

Position Fig. 45	Designation	Function
1	EMERGENCY-OFF	Stopping the lift in an emergency situation
2	UP	The platform move up (Activation is possible in switch positions 1 + 3)
3	Stop - at next floor	The platform stops at the next floor
4	DOWN	The platform moves down.

6.2 Loading platform control system

During the assembly of the mast and in order to transport personnel, the Table lift is activated from the platform.

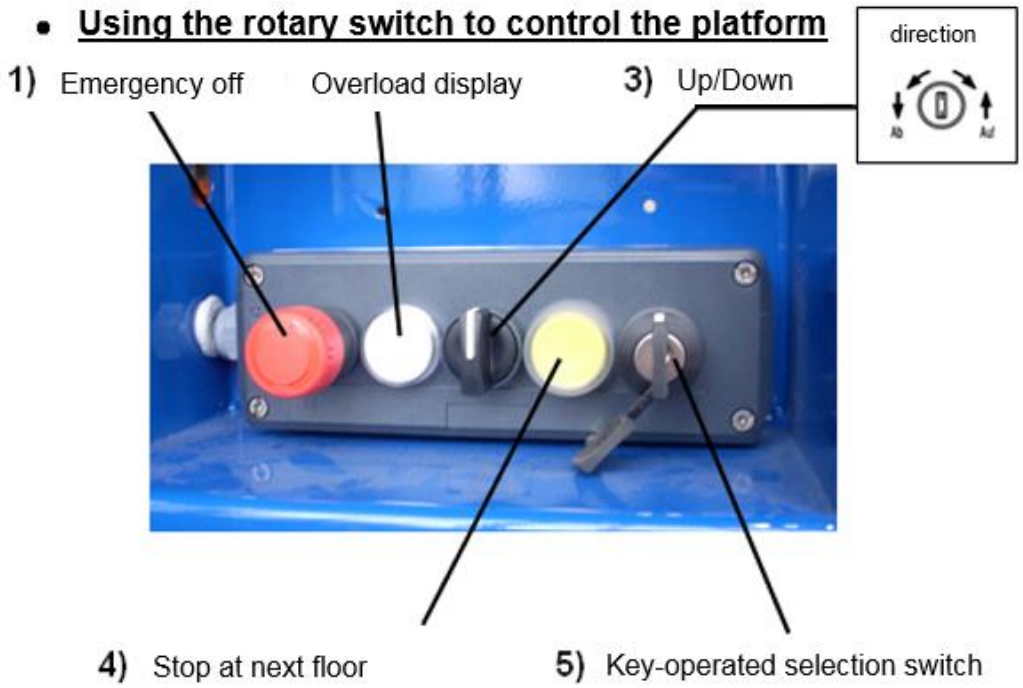


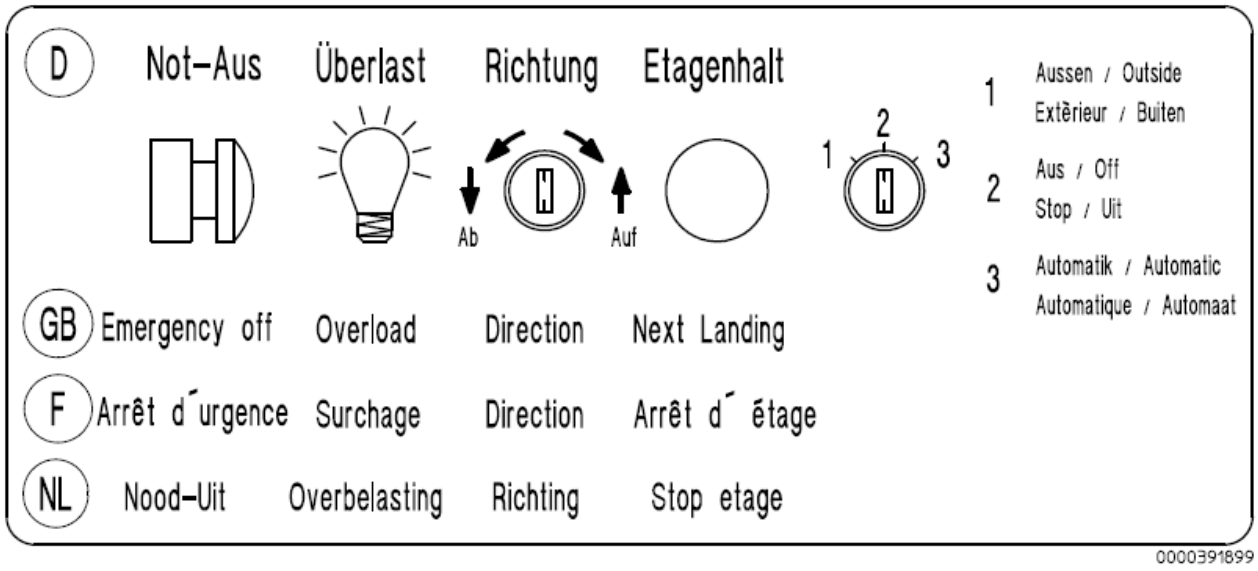
Fig. 46: Using the rotary switch to control the platform

Operating buttons of the platform control system

Position Fig. 46	Designation	Function
1	EMERGENCY-OFF	Stopping the lift in an emergency situation
2	Overload display	An excessive payload triggers the indicator light
3	UP/DOWN	The platforms moves up/down (activation possible in switch position 3)
4	Stop - at next floor	The platforms stops at the next floor (activation possible in switch position 3)
5	Key-operated selection switch	See switch position in table

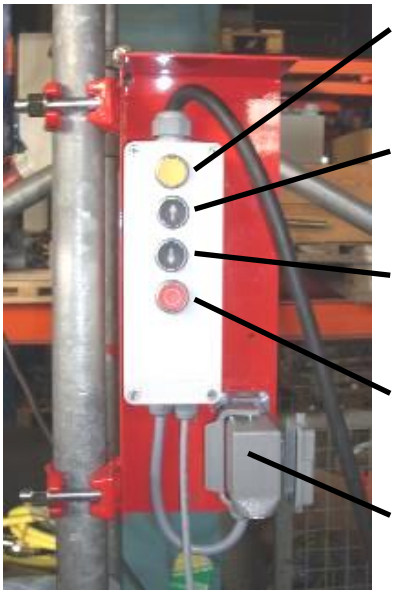
Switch position	Designation	Function
1	Outside	Activation of the lift only possible from the outside
2	OFF	Lift activation not possible
3	Automatic mode	Activation of the lift possible from the inside and outside. In this instance, the operation from the **inside** always takes **precedence**

The key-operated switch can be remove in any position



Platform control label 0000391899

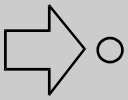
6.3 Loading point control system



1 = Stop at next floor
2 = UP
3 = DOWN
4 = Stop button
5 = Connection for next loading position

Fig. 47: Loading point control system

Position Fig. 47	Designation	Function
1	Stop - at next floor	The platform stops at the next floor
2	UP	The platform move up Activation is possible only in switch positions 1 + 3 The following applies to position 3: Precedence for control from the inside of the platform
3	DOWN	The platform moves down. Activation is possible only in switch positions 1 + 3 The following applies to position 3: Precedence for control from the inside of the platform Lift cannot be moved into the 2-meter zone
4	Stop button	Stopping the lift in an emergency situation
5	Plug connection	Connection option for the next loading point control



NOTE!

Button (1) “Stop at next floor” is active while material and personnel are transported.

From the load position control stations, the platform can only be moved to the 2-meter zone. After reaching this height, the platform can only be activated from the pendant control station at the ground.

6.4 Diagnosis system (Art. No. 2160000004)

NOTE!

All illustrated malfunction refer to a machine with integrated diagnosis system

1. Error message and troubleshooting

US = User

LO = Lift operator

TE = Technician

Malfunction, CODE*	Error message	Possible cause	Troubleshooting:	Repair by
NO1	“Floor” safety circuit	a) The Emergency Off button was activated b) The Emergency Off button on one of the loading point control system was activated c) The electrically monitored enclosure door is open d) The blind plug for the socket is missing e) The blind plug of the safety chain is missing f) The “floor”safety circuit is interrupted	a) Unlock button a) Unlock button c) Close electrically control enclosure door d) Plug in the blind plug for the ‘Operation’ socket e) Plug in the blind plug for the safety chain f) Check all connections if necessary repair broken wire of trailing cable	a) US a) US c) US c) US e) US f) TE
NO2	Excessive load	a) Lift capacity exceeded b) If using a 2-mast system, load measuring unit may be canted	a) Remove payload from lift b) Vent system manually	a) US b) LO
NO3	Safety brake	a) Do not reset the switch of the safety brake after safety test b) Safety brake was triggered during normal operation	a) Reset safety brake switch b) Inspect drive system + safety brake	a) LO b) TE

Malfunction , CODE*	Error message	Possible cause	Troubleshooting:	Repair by
NO4	Emergency limit switch	a) Lift is too low in the bottom emergency limit switch zone a) Lift is too high in the upper emergency limit switch zone	b) Return lift from recovery mode to entry level height. → Troubleshoot - is brake worn? - is operating limit switch faulty? b) Use the manual emergency down function to bring lift back into its normal drive position → Troubleshoot - is brake worn out? - is operating limit switch faulty?	a) LO b) TE b) LO b) TE
NO5	Entry door ‘A’	a) Door is not properly closed b) Connector of door ‘A’ not plugged in c) Door ‘A’ not installed – blind plug not inserted d) Door ‘A’ limit switch faulty	a) Close door ‘A’ properly b) Plug in connector of door ‘A’ c) Door ‘A’ not installed – insert blind plug d) Replace door ‘A’ limit switch	a) US a) US c) US d) TE
NO6	Entry door ‘B’	a) Door ‘B’ is not properly closed b) Connector of door ‘B’ not plugged in c) Door ‘B’ not installed – blind plug not inserted d) Door ‘B’ limit switch faulty	a) Close door ‘A’ properly b) Plug in connector of door ‘A’ c) Door ‘A’ not installed – insert blind plug d) Replace door ‘A’ limit switch	a) US a) US c) US d) TE

Malfunction, CODE*	Error message	Possible cause	Troubleshooting:	Repair by
NO7	Side door ‘C’	a) Door ‘C’ is not properly closed b) Connector of door ‘C’ not plugged in c) Door ‘C’ not installed – blind plug not inserted d) Door ‘C’ limit switch faulty	a) Close door ‘C’ properly b) Plug in connector of door ‘C’ c) Door ‘C’ not installed – insert blind plug d) Replace door ‘C’ limit switch	a) US a) US c) US d) TE
NO8	Door lock	a) pivoting door support leg 1 or 2 jammed and is not locked b) pivoting door support leg 1 or 2 not inserted c) pivoting door support leg 1 or 2 not installed - blind plug not inserted d) Limit switch for pivoting door support leg 1 or 2 faulty	a) Ensure pivoting door support leg 1 or 2 operates smoothly b) Insert connector for pivoting door support leg 1 or 2 is inserted c) Pivoting door support leg 1 or 2 not installed - insert blind plug d) Replace limit switch for pivoting door support leg 1 or 2	a) US a) US c) US d) TE
NO9	M overheated	a) Motor – motors overheated	a) Use manual venting system to lower lift. After the motor has cooled off, the drive may continue if necessary check if power supply is too low→	a) LO
NO10	Installation hatch	a) Installation hatches/mounting aids are not locked properly b) Limit switches of installation hatches/mounting aids faulty	a) Lock installation hatches/mounting aids b) Replace limit switches of installation hatches/mounting aids	a) US b) TE

Malfunction , CODE*	Error message	Possible cause	Troubleshooting:	Repair by
NO11	Ini. Mast	a) Lift raised too high! Lift outside of its normal travel zone b) Installation of mast detection initiator incorrect c) Mast detection indicator faulty	a) Move lift down and install limit switch plate in mast b) Adjust mast detection indicator (max. 10 mm space to gear rack) c) Replace mast detection indicator	b) TE b) TE a) TE
NO12	No lubrication available	a) Grease pump empty	b) Add lubricant according to maintenance instructions	a) LO
NO13	EMERG OFF cab.	a) The Emergency Off button ‘Cabin’ was activated	a) Unlock the Emergency Off button ‘Cabin’	a) US
Operating mode	INFORMATION Slow 12-M	The lift was switch to the “slow” operating mode The max. transport speed is 12 m/min.	Use the operating unit to change the parameters and switch to 24 m!	FM:

2. Reading the software version

If a malfunction cannot be detected, the SW version is displayed at the bottom of the display.

The format of the SW reads as follows: 301 XXXXX

3. Reading the operating hour counter (as of SW version 30135081)

The operating hours (lift travel hours) are shown when the hoist is within the operating limit switch range at the ground station and the button "Hold Next Floor" (Inside Control) + button "Down" (Inside Control) are actuated. The display is shown after approx. 3 seconds.

4. Slow/fast switch-over (12M/24M) (as of SW version 30135081)

The keyboard display (ID. No: 517281 + 517292) can be used to initiate the switch-over.

From main window → “OK” button → System display switch-over from slow/fast use arrow key (P4). → ESC = back to main window

In order to check the change-over (lift set to operation limit switch), activate the “Stop next floor” button. At a slow speed, “Operating mode 12M” is displayed

7 Initial start up of the Table lift

7.1 General safety instructions regarding the initial start-up

DANGER!

Improper operation may lead to life-threatening injuries

A rack and pinion lift develops great forces when travelling up **as well as down**. In correct operation can endanger human life and cause severe damage to property. In order to operate the Table lift safely, it is mandatory to comply with this operating manual and the instructions given by the owner or platform operator.

Risk of fatal injuries if entering the area underneath the loading platform.

This area is protected by a 1.10 m high enclosure. Remaining underneath the platform is prohibited. You can be crushed under the loading platform.

Ensure this area remains inaccessible by personnel during the operation.

Exceeding the load capacity may lead to life-threatening injuries

Never exceed the maximum permissible payload for the Table lift If exceeding the load capacity of the lift and its brakes its safe operation is no longer given.

DANGER!

Life-threatening injuries when exceeding the maximum permissible wind velocity.

If the maximum permissible wind velocity (20 m/s), wind force 8**, is exceeded, the Table lift must not be started or continued to be operated.**

7.2 Protective measures in the event of high wind speeds

1. All personnel must leave the lift immediately.
2. Lower the platform to the ground station.
3. Switch the Table lift off and secure the switch to prevent accidental restart.
4. Disconnect the power supply to the lift.
5. Leave the area of the lift and stay out of harm's way.
6. Only restart the lift if the wind speed remains in the permissible range over a longer period of time.

7.3 Switching on the Table lift

7.3.1 Safety precaution prior to switching the lift on

Before switching the lift on, ensure the lift is in flawless condition.

Prior to switching the lift on, check

- the lift for external damage
- the integrity of the power supply line
- the mast to ensure its path is unobstructed, e.g., check for
  - protruding building parts
  - foreign objects on the mast
  - obstacles below the platform

DANGER!

Life-threatening injuries may occur if lift is damages. Do not attempt to operate the lift if damage has occurred!

If damage on the lift is detected or obstacles are blocking its travel path, immediately contact the responsible department or supervisor. Subsequently, the responsible department or supervisor will initiate the appropriate action to repair the damage or remove the obstacle.

Within the danger zone of the machine there is the inherent risk of life-threatening injuries.

Prior to switching the lift on, ensure all personnel has left the danger zone or is not placed in harm's way by the lift.

7.3.2 Switching on the Table lift

1. Open the pad lock on the EMERGENCY OFF master switch *(if available).*
2. Unlock the external EMERGENCY OFF button *(if previously activated).*
3. Turn on the EMERGENCY OFF master switch.
4. The lift is now ready for operation.

CAUTION!

Malfunctions during the switch-on procedure

The indicator light at the ground station displays the correct power supply. If the light is off, th supply voltage may not be connected or the rotating field is incorrect. Report and correct the malfunction, if possible.

The Table lift must be restarted only after the fault has been repaired.

8 How to operate the Table lift

8.1 Safety instructions for the operation of the Table lift

8.1.1 Safety instructions for the platform operator

- Prior to starting work on the lift, proceed with a safety check of the Table lift.
- Use an empty platform to run a test drive and check whether the lift's travel path is unobstructed. Test the safety functions of the platform.
- Is your view from the platform unobstructed and can you clearly see the area below the platform?

DANGER!

Risk of crushing injuries

While approaching ground station observe the area underneath the platform and ensure all personnel remains outside this area.

Storing materials or objects underneath the platform is prohibited.

Ensure the unauthorised use of the lift is prevented.

8.1.2 Safety instructions during loading and unloading

DANGER!

Life-threatening injuries may occur if the load capacity of the platform is exceeded.

Never exceed the maximum permissible payload for the Table lift If exceeding the load capacity of the lift and its brakes its safe operation is no longer given.

If the permissible payload is exceeded, the indicator light on the platform control system is illuminated and the platform is prevented from further operation. The platform cannot leave the respective loading position.

Risk of injury due to slipping loads!

Secure all materials or tools being transported so that they cannot slip and slide uncontrollably during transport.

8.1.3 Safety instructions for personnel travelling on the platform

DANGER!

Improper behavior may cause life-threatening injuries

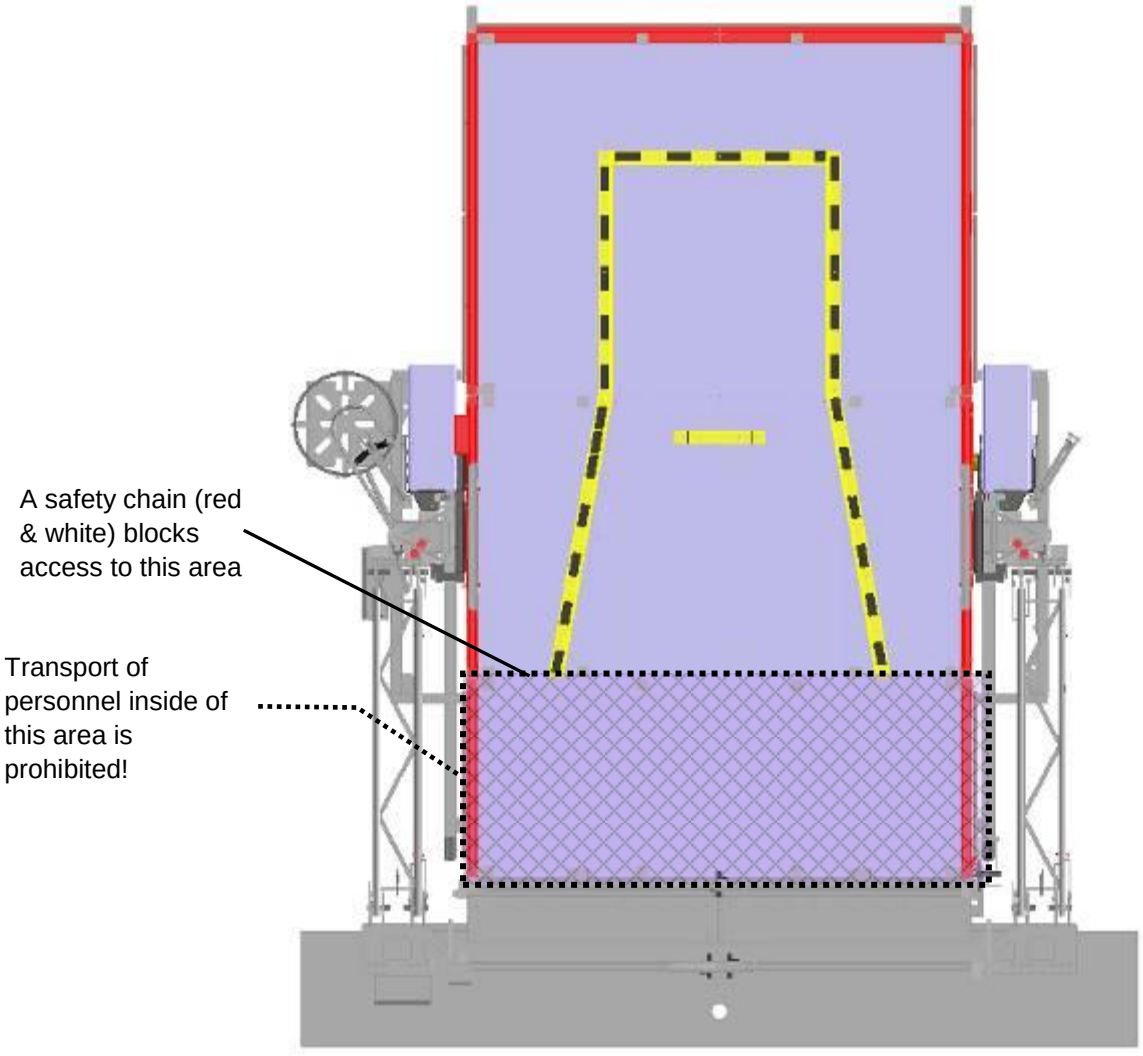
- Compliance with the instructions by the platform supervisor are mandatory.
- While travelling on the lift, do not lean over platform gates.
- While travelling on the lift, do not climb over material carried along.
- Always use the handles and activator believers according to their intended use.

8.2 Transport of personnel

During the operating mode "Person transport", the platform must only be operated from the platform by an operator who is named by the owner and authorised.

The hatched area **must never** be occupied by personnel.

Red & white safety chain is used to block/prevent access to this area.



NOTE!

The platform is operated in inching mode; this means, if the rotary switch is turned to the right or left, the platform travels in the applicable direction. If the operating button is released, the platform stops.

1. Only open the loading location gate, hinged ramp or platform gate if the platform has come to a complete halt.
2. Step onto the platform and close the ramp and the gate completely.
3. Turn the rotary switch into the applicable direction **right/left** and hold it there; now the platform travels in the appropriate direction.
4. **Stop - at next floor** — Before reaching target floor, briefly press this button during the travel.

   See Fig. 46 *No. 4 page 60*
5. The platform stops automatically at the next floor.
6. As soon as the platform stops, open the hinged ramp, then the loading position gate and finally the platform gate.

CAUTION!

A hinged locking bar is used to close the loading position gate mechanically.

Open the loading ramp and ensure it rest completely on the edge of the building. Next, the loading position gate can be opened.

7. Step on or off the platform.
8. Close the platform gate then the loading position gate. Subsequently, close the hinged ramp. This will allow the platform to continue its travel.

8.2.1 Entering the ground station (2-m area)

Important note for the platform operator

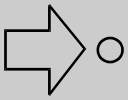
CAUTION!

When approaching the ground station, the platform stops 2 m above the ground; a signal is sounded, lasting approx. 3 seconds.

During this time, all travel is stopped.

- Prior to continuing the downward motion, ensure all personnel remains outside of this area underneath the platform.
- Only continue if you are sure there is no personnel underneath the platform.
- After approx. 3 seconds the platform is lowered at reduced speed into the ground station.

8.2.2 Automatic change-over from personnel to material transport



NOTE!

If you wish to change subsequently into the material transport mode, you must enter the applicable drive direction by activating the UP/DOWN button at the ground station or the loading position after the platform gate has been unlocked. The lift will change automatically to the material transport mode.

CAUTION!

Objects dropping from the platform are an inherent risk of personal injuries.

8.3 Transport of material

Set switch position to “Außen” (Outside), remove key

During this operating mode the transport of personnel is prohibited. A pendant control panel is used to operate the platform from the ground station or from the load position control, if available.

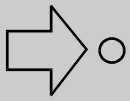
1. As soon as the platform comes to a complete halt, open the loading position gate ad the platform gate.
2. Load the platform.

CAUTION!

Poorly secured material is inherently dangerous and can cause personal injuries.

Secure the material properly and prevent slipping and sliding. Avoid parts protruding over the edge of the platform.

3. Close and lock platform and loading position gates.
4. Activate the applicable travel direction **(UP/DOWN)** on the pedant control panel or on the loading point control system.



NOTE!

While in the 2 m area, **only the pendant control panel** in the ground station can be used to operate the platform. Chapter 6.1.1 page 59)

As soon as the platform has left the 2 m area of the ground station, and after pressing the applicable travel direction button, the control system of the Table lift is locked.

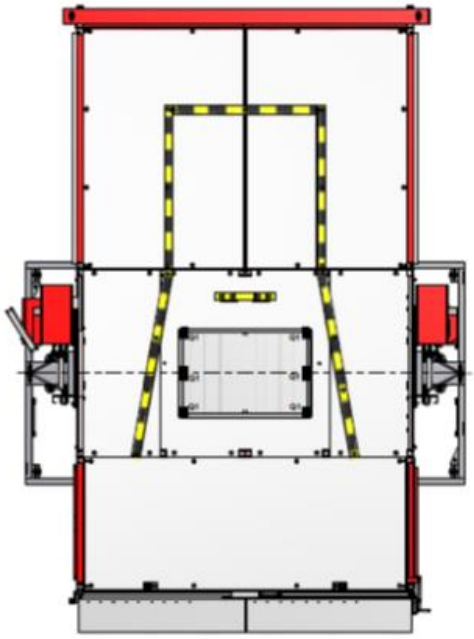
Stop - at next floor — Before reaching target floor, briefly press this button during the travel.

(see Chapter 59 page)

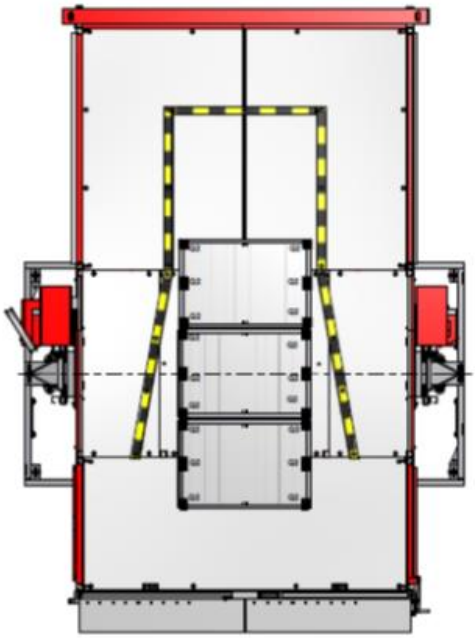
5. The platform stops automatically at the next floor.
6. First, open the hinged ramp of the platform, then the loading position gate and finally the platform gate.
7. Load or unload the platform.
8. First, close the platform gate, then the loading position gate and finally the hinged ramp.

8.3.1 Illustration of loading points

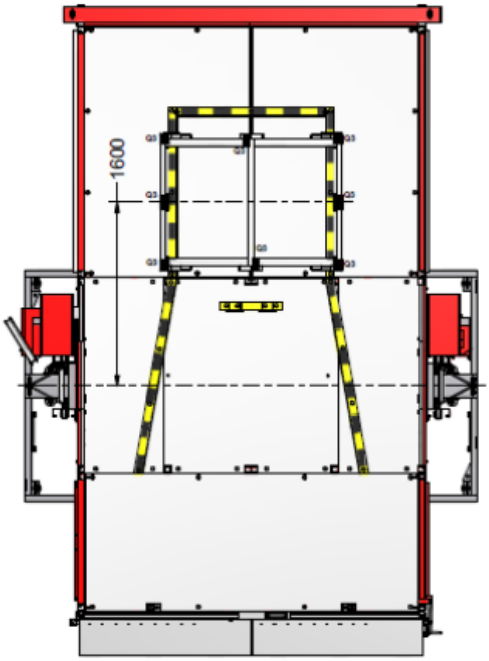
TOPMAX lift
with 1x euro pallet cage (548480)



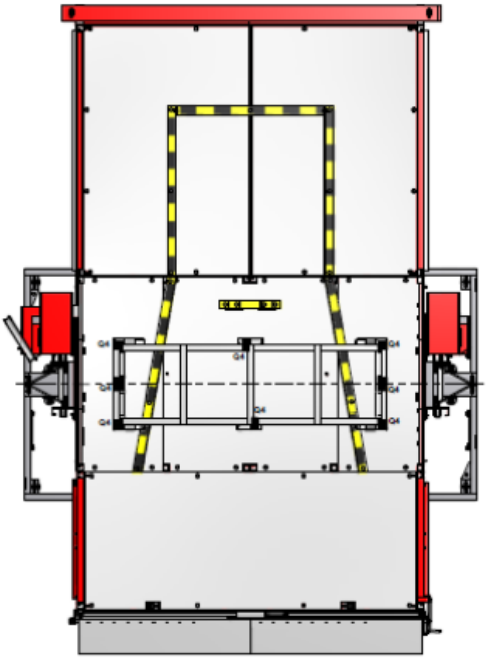
TOPMAX lift
with 3x euro pallet cage (548480)



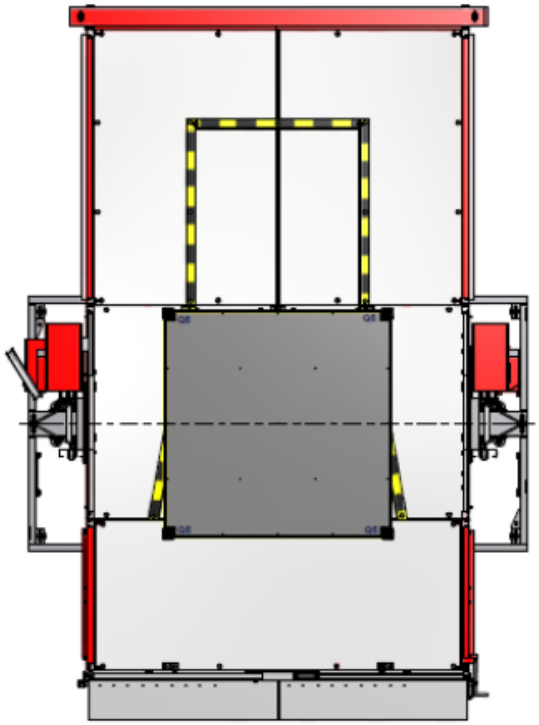
TOPMAX lift
with 1x euro stacking frame 160/80 (566494)



TOPMAX lift
with 1x euro stacking frame 240/80 (566509)



TOPMAX lift
with 7x TOPEC 180x180 packed with TOPEC stacking angles



TOPMAX lift
with 2x euro stacking frame 120/80 (553689)

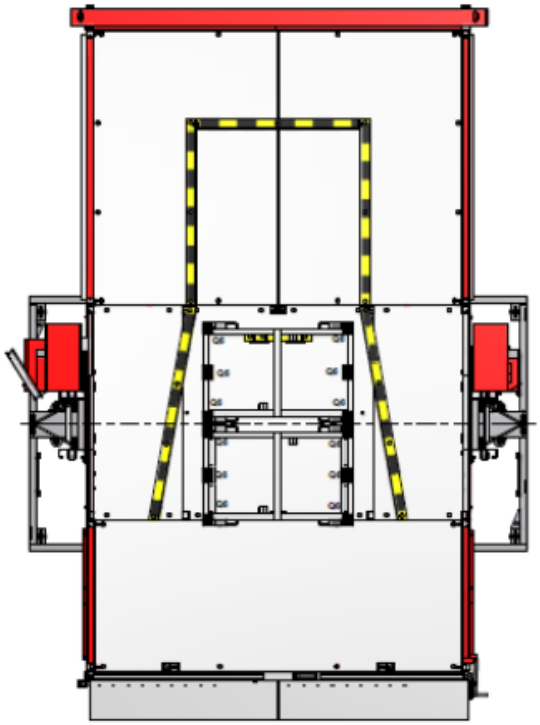


Illustration of loading points			
loading point	load (kg)	quantity pallet cage/stacking frame	size pallet cage/stacking frame
Q1	200	1	120x80
Q2	67	3	120x80
Q3	150	1	120x160
Q4	150	1	240x80
Q5	80	1	180x180
Q6	100	2	120x80

8.3.2 Transporting the slap frameworks

Move the slap framework to the specified mechanical stop (see Fig. 48) and secure it to prevent slipping.

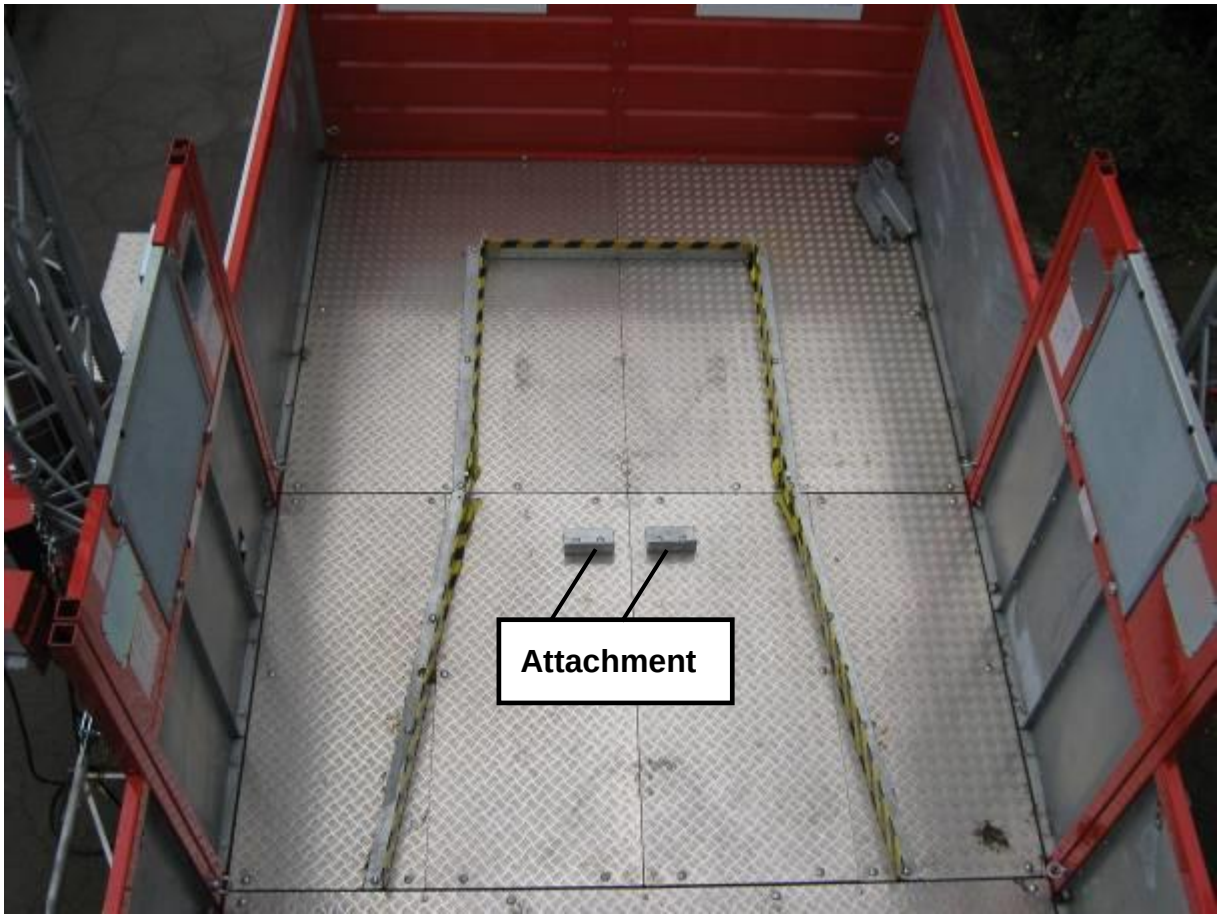


Fig. 48: Attachments on platform (top view)

CAUTION!

Only use the specified lift truck **EJB 213 EHW-table** to transport the slap frameworks.

All pertinent information about the lift truck can be found 17.1 on page 113

CAUTION!

The max. permitted horizontal force during loading with the pallet truck **EJB 213 EHW table** incl. slap framework is 1.0 kN.

8.3.3 Please note! Entering the ground station (2-m area)

CAUTION!

When approaching the ground station, the platform stops 2 m above the ground.

Subsequently, the material can only be transported in dead man's mode via the pendant control panel at the ground station. (see Chapter Fig. 45, 59, page)

- Prior to continuing the downward motion, ensure all personnel remains outside of this area underneath the platform.
- Only continue if you are sure there is no personnel underneath the platform.
- After 3 seconds the platform can continue to travel into the ground station.

Travel can only continue in dead man's mode.

8.3.4 Switch to personnel transport.

Switching to personnel transport after the platform has stopped

- If the platform stops at a floor or at the ground station after a material transport, the platform must be entered and the load position gate, the hinged ramp and the platform gate must be closed and locked.
- Subsequently, the platform control system can be used to operate the platform.
- As soon as pressing a button of the platform control system, the platform is automatically placed in personnel transport mode and can only be controlled in dead man's mode from the platform.

Changing to transport of personnel while material is being transported

- As soon as pressing a button of the platform control system while the platform is in motion, the control system switches immediately to personnel transport mode.
- At this time, it is only possible to move the platform in the dead man's mode.

8.4 How to operate the door locking mechanism – Platform gate system

Regardless what operating mode the platform is in, all locking systems are effective in the same way.

8.4.1 Opening the loading ramp

If the loading ramp must be opened, the transport platform must have come to complete halt on one of the loading positions. Now, the ramp lever can be moved and in the locking mechanism can be opened.

Any movement is blocked until the locking mechanism is in place again.

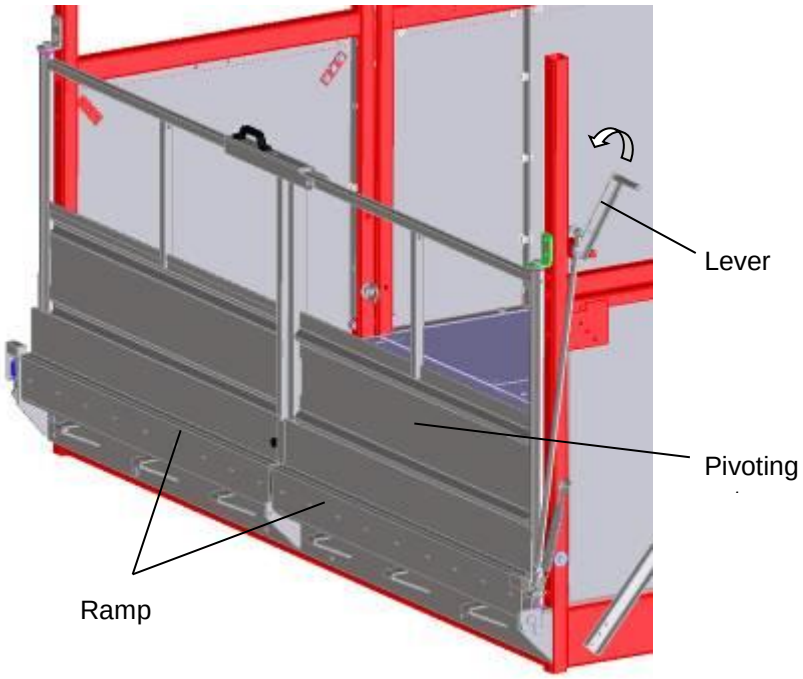


Fig. 49: Opening the loading ramp

Fig. 50: Loading ramp open

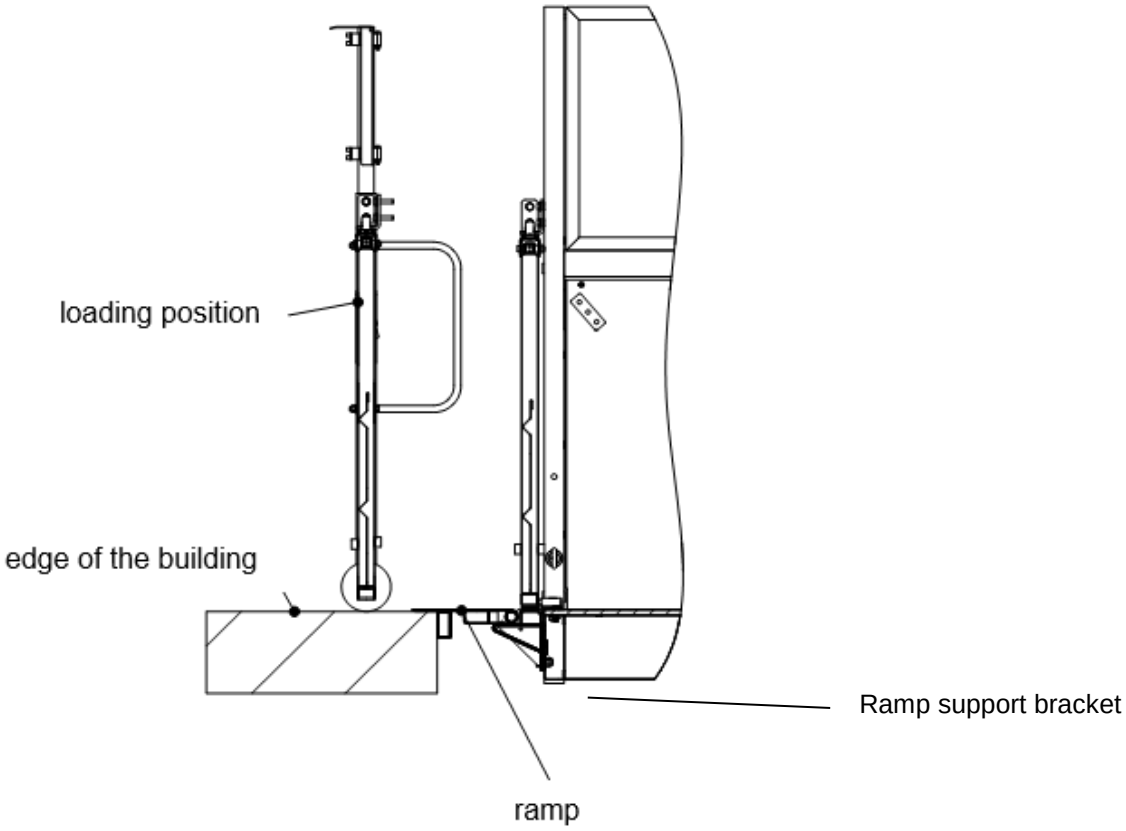


Fig. *51: Ramp support area on the building*

CAUTION!

Fold down the ramp (must be folded down until it contacts the ramp support bracket)

CAUTION!

The ramp of the lift must always sit horizontally on the edge of the building!

(see *Fig. 51* , page 83)

CAUTION!

The max. permitted horizontal force during loading with the pallet truck **EJB 213 EHW Tisch** incl. slap framework is 1.0 kN.

All pertinent information about the lift truck can be found 17.1 on page 113

8.4.2 Door locking mechanism of the pivoting gate

In order to open the pivoting gate, the following conditions must be met:

- The pivoting gate can only be opened if the loading ramp is open.

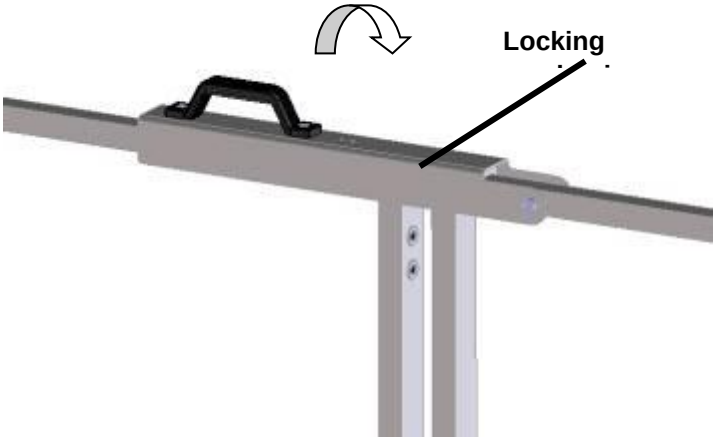


Fig. 52: Door locking mechanism of the pivoting gate

9 Shutting down the Table lift

1. Lower the platform to the ground station.
2. Completely close the platform gate and the loading position gate
3. Switch off the EMERGENCY OFF main switch and secure the switch to prevent from unauthorised restart.

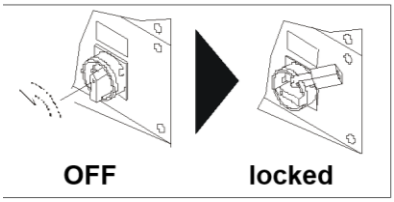


Fig. 53: Switching off and locking the Emergency Off main switch.

4. Finally, disconnect the power supply and ensure accidental reconnection is prevented.

10 How to act in the event of emergencies

In this chapter we describe how to act in the event of emergencies or other exceptional situations.

NOTE!

If you have any further questions, please contact the manufacturer.

Böcker Maschinenwerke GmbH
Lippestr. 69-73
59368 Werne, Germany
Tel.: +49 (0) 2389 7989-0
Fax: +49 (0) 2389 7989-9000
email: info@boecker-group.com
Internet: www.boecker-group.com

The text below describes the individual actions to take and options available.

10.1 Important note

Important information for the owner

STOP

DANGER!

Only a trained technician shall be permitted to proceed with the repair of malfunctions. Only a safety officer shall be permitted to carry out rescue operations.

Instruct all persons on site that compliance with the owner's instructions is mandatory.

Safety instructions for the platform operator

DANGER!

The Table lift offers you various possibilities for reacting to emergencies.

Please be aware that this manual can only give you suggestions for the correct technical procedure in emergency situations. Any solutions above and beyond this and for every imaginable emergency situation cannot be part of this manual.

First of all try to assess the respective emergency situation and the potential danger from it. Stay calm. Do not create a panic situation among other persons on the platform. After this, try to restore the normal operational mode of the Table lift.

If this is not possible, attempt to establish contact with persons outside of the platform in order to prepare for a safe rescue of the trapped persons.

10.1.1 Emergency Off button

DANGER!

In an emergency, use the EMERGENCY OFF button to stop the loading platform.

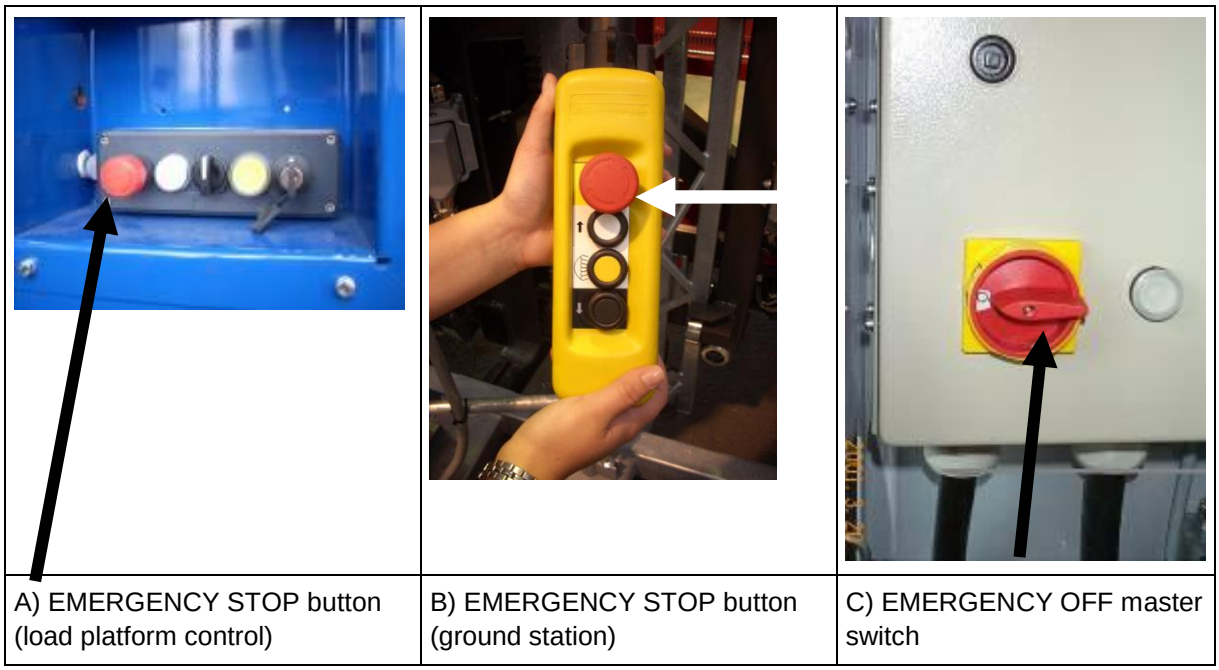
When activating the EMERGENCY OFF button, it is locked and can only be unlocked after the malfunction is eliminated. After the EMERGENCY OFF button is pressed, inform the owner or another responsible person and explain the emergency situation.

The Table lift is quipped with two EMERGENCY OFF buttons and one EMERGENCY OFF button at the ground station.

A) One EMERGENCY OFF button is located at the platform control panel

B) The second EMERGENCY OFF button can be found on the pendant control panel

C) The EMERGENCY OFF master switch is located at the electrical cabinet next to the cable bin



A) EMERGENCY STOP button (load platform control)	B) EMERGENCY STOP button (ground station)	C) EMERGENCY OFF master switch

Fig. 54: EMERGENCY STOP button and EMERGENCY STOP master switch

10.2 Activation of the safety devices

10.2.1 Important instructions for the platform operator

Due to a technical problem or as a result of an emergency, the control system may render the Table lift inoperable and stops while in person transporting mode and while personnel is occupying the platform.

In such instances, and depending on the technical problem, there are two options to move the Table lift to the next floor/loading position and to rescue the occupants.

DANGER!

If a technical breakdown occurs, there is an inherent risk of life-threatening injuries.

First, check the cause of the breakdown, then attempt to contact a person on the outside. Only proceed with the rescue of the personnel and emergency mode after a technical inspection and following the approval by the safety officer named by the owner.

Potential emergencies and control options

Technical emergency	Effects	Possible emergency operation per:
The Table lift contacted the emergency limit switch of the ground station.	The Table lift stops. Floor control system, pendant control panel and platform control system are working anymore.	Rescue control (only in upward motion) **Only by technical personnel**
Excessive load detection is triggered.	The Table lift stops and the overload display is illuminated. Floor control system, pendant control panel and platform control system are working anymore.	Remove payload

Technical emergency	Effects	Possible emergency operation per:
The cable break limit switch (optional) shuts off while the table is in upward motion. It is possible that the trailing cable become entangled during the movement and the limit switch stopped the lift's travel.	Travel cannot continue. While the lift travels up, the trailing cable may break. Floor control system, pendant control panel and platform control system are working anymore.	Rescue control (only in downward motion) **Only by technical personnel**
The safety brake has triggered.	Travel is made impossible. Floor control system, pendant control panel and platform control system are working anymore.	**Only by technical personnel**

DANGER!

After a technical breakdown or emergency, there is an inherent risk of life-threatening injuries if travelling is continued immediately thereafter. If a technical breakdown/emergency occurred, immediate maintenance is required and, if necessary, technical personnel must proceed with applicable repairs.

The above-described methods during an emergency operation refer only to the safe rescue of personnel. Thereafter, it is not permitted to continue travelling as normal.

Report the malfunction to your safety officer and secure the Table lift to prevent unauthorised operation until all maintenance and repair tasks are completed.

10.2.2 Rescue control (only by technical personnel)

The rescue control system is one option to operate the Table lift briefly after a malfunction and to move the platform to next loading position.

NOTE!

The rescue control system allows only to move the Table lift upward.

Dead man's operating mode

this means, the platform moves as long as the control button is pressed. If the button is released, the lift stops.

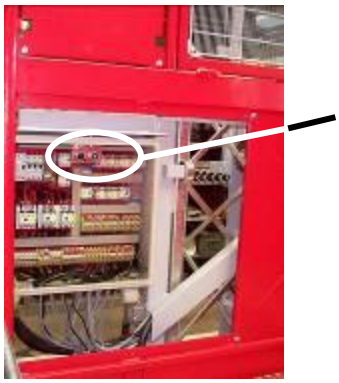


Fig. 55: Opening the platform electrical cabinet

1. Remove the platform cover in front of the electrical cabinet and open the electrical cabinet. The electrical cabinet is located on the right-hand side below the platform wall.

DANGER!

Risk of electrical shock!

After opening the electrical cabinet, there is access to live components. Therefore, do not reach inside the electrical cabinet and do not touch live components. Risk of electrical shock that can be fatal.

Fig. 56: Rescue control system inside the electrical cabinet of the platform

2. Turn the operating mode selection switch from the normal position to the rescue position.
3. Press the control button on the right-hand side of the rotary switch. As long as the button is pressed, the platform move up.
4. As soon as the loading position is reached, release the pushbutton.
5. Turn the operating mode selection switch back to its the normal position.
6. Close the electrical cabinet and replace the cover.

10.2.3 Using manual venting to lower the platform (only by technical personnel)

If the lift control system of the Table lift is inactive due to an electrical malfunction, the control system cannot be used to lower the platform.

In this case, use the manual venting function to lower the platform.

STOP

DANGER!

Following an incorrect procedure may result in fatal injuries

Only properly trained personnel shall be permitted to use the manual venting function. Therefore, the platform operator must be trained on how to operate the down movement device.

Fig. 57: Venting the motor

1. Switch the Table lift off and secure the switch to prevent accidental restart.

2. Place on person on the right-hand side and one person on the left-hand side of the platform. Carefully press the manual venting lever of the drive until the platform is slowly put in motion.

CAUTION!

Always vent slowly and only until the next lower floor is reached.

CAUTION!

Hot surfaces can cause injuries

When lowering the platform from great heights, the drive and the brakes become extremely hot. Never touch the motor. When lowering from great heights, stop after several meters and let the brake and the drive cool down.

3. Before reaching the ground station stop the platform briefly, then approach the ground station slowly.

DANGER!

A defective system is inherently dangerous and operating it can lead to life-threatening injuries

The Table lift must be restarted only after the fault has been repaired.

CAUTION!

When applying manual venting, the brakes are subject to enormous wear.

Before proceeding, the motor brake must be inspected (see Chapter 11 - Maintenance and care)

10.2.4 Rescuing personnel

If the platform stops during its drive and cannot be restarted, all personnel occupying the platform must be rescued.

DANGER!

During the rescue attempt, the approaching platform can cause fatal injuries.

Switch the Table lift off and secure the switch to prevent accidental restart. By doing this, an inadvertent movement of the platform is prevented during the rescue.

During the rescue there is a great risk of falling for all rescuers

During the rescue operation, all rescue personnel must be protected to prevent falling (e.g., using safety belts).

Ensure there is a safe crossing between platform and loading position.

Use a safety belt to secure the person that must be rescued.

10.2.4.1 Escape route

CAUTION!

Attempt to create a safe crossing between the platform gate and the building as an escape route and to rescue the trapped person(s).

10.2.4.2 Rescue operation

1. Contact the person(s) on the platform and consider appropriate additional actions.
2. Go to the floor at which the platform is located.
3. Ensure to protect yourself to prevent falling before proceeding with any rescue action.
4. Ensure there is a safe crossing between platform and the building.
5. Before a rescued person attempts to step onto the crossing, ensure he wears an appropriate safety harness to prevent him from falling.
6. Guide each person individually from the platform and away from the location.

10.3 Disassembling the lift

The lift is disassembled in the reverse order of the assembly procedure

CAUTION!

Only properly trained personnel shall be permitted to proceed with the disassembly.

11 Maintenance and care

NOTE!

The owner is responsible to have only knowledgeable and trained technicians to proceed with the maintenance. Otherwise, all warranties shall be deemed null and void.

11.1 Maintenance safety instructions

DANGER!

Improper maintenance or incorrect repair can lead to fatal injuries

Only properly trained technical personnel or the customer service of the manufacturer shall be permitted to proceed with maintenance and repair tasks.

Ensure to complete the specified maintenance and inspection tasks according to schedule

DANGER!

Starting the lift without authorisation can lead to life-threatening injuries

Therefore, during all services on the Table lift ensure that

- the lift is secured to prevent accidental re-start.
- the EMERGENCY OFF main switch is shut off and the key is removed.
- a warning sign is installed, preventing the re-start.
- during services the area underneath the platform is secured to prevent accidental lowering of the platform. It is advised to use a wooden wedge or similar locking device.

DANGER!

There is an inherent risk of fatal injuries when replacing larger sub-assemblies

When replacing larger sub-assemblies, use hoisting equipment to attach and secure them. Improperly secured components can drop to the ground and cause life-threatening injuries or damage to property.

Check that loosened bolt connections are tight. (see Chapter14 - Screw tightening torque)

DANGER!

If using incorrect replacement parts there is a risk of fatal injuries

Use only original spare parts from the manufacturer

Use only original spare parts from the manufacturer; only those are designed to withstand the operational loads.

If using third-party, non-approved spare parts, the manufacturer cannot be held liable for subsequent damage.

11.2 After the maintenance/repair

CAUTION!

After each rebuild and after each maintenance task, the function of the safety equipment must be inspected:

A safety test must be completed near the ground.

11.3 Maintenance plan

In the following section the maintenance tasks necessary for an optimal and trouble free operation are described.

If an increase in wear and tear is detected during the regular inspections the maintenance intervals should be shortened according to the actual signs of wear.

For queries on maintenance work and intervals contact the manufacturer, see page 2 for the service address.

NOTE!

The information below refers to the daily use during a single work shift. If using the system continuously or during several shifts, the maintenance intervals are considerably shorter. Please contact the manufacturer, see page 2.

Interval	Description	Task	Comment	To be performed by
weekly	Instruction and load sticker	Visual inspection whether mounted and legible		Operator
	EMERGENCY OFF button on platform, ground station	Function check	The lift must be completely inoperable if the EMERGENCY OFF button is pressed.	Operator
	Limit switch on platform gate, ramps	Function check	The lift must not start to move if the doors, ramps are open	Operator
	Trailing cable	Use talcum powder to coat the cable.	Check for damage.	Operator
	FI circuit breaker	Trigger and check function		Customer service technician
	Grease pump	Add lubricant	Adhesive lubricant OKS495, from OKS	Customer service technician
	Load position gates	Inspect locking devices	The lift must not start to move if the loading position doors are open	Operator

Interval	Description	Task	Comment	To be performed by
	Emergency limits switch top/bottom	Check function		Customer service technician
every 3 months	Emergency limits switch top/bottom	Check function		Customer service technician
	Inductive limit switch on end of mast	Check function		Customer service technician
	Limit switch cable break	Check function		Customer service technician
	Gear rack	Check wear on gear rack	Check wear with the help of a gear rack gauge. Tolerances can be found in the illustration below.	Customer service technician
	Inspect cable trolley (if installed)	Visual inspection; check support rollers or pulleys for wear		Operator
	Track rollers	Visual inspection; check track rollers on the mast for wear.	The track rollers must carry the load across the entire width of the mast pipe	Customer service technician
every 6 months	Bolts of the mast connection	Check, tighten if necessary.	Torque to approx. 135 Nm, torque spanner required.	Customer service technician
	Flange screws platform/running frame	Check, tighten if necessary.	Inspect after each rebuild and tighten, if necessary	
	Anchorage	Check, tighten if necessary.		Customer service technician
	Motor brakes ZFB 62 So	see Chapter 11.3.1 - Maintenance and care of the motor brakes (ZFB 62 So)		Customer service technician

Interval	Description	Task	Comment	To be performed by
	Safety brake	Conduct a brake test	After the safety brake was triggered, the respective mast area and the relevant mast screws must be inspected for external damage. If necessary replace the respective parts.	Customer service technician
every 3 years	Transmission oil of the drive motor	Replace	Types of oil/quality Gearbox oil Mobilgear 630, made by ESSO	Customer service technician
every 5 years	Replace safety brake	Completely replace the safety brake with a works tested safety brake.		Customer service technician
	Gearbox oil for drive motor	Replace	Types of oil/quality Gearbox oil Mobilgear 630, made by ESSO	Customer service technician

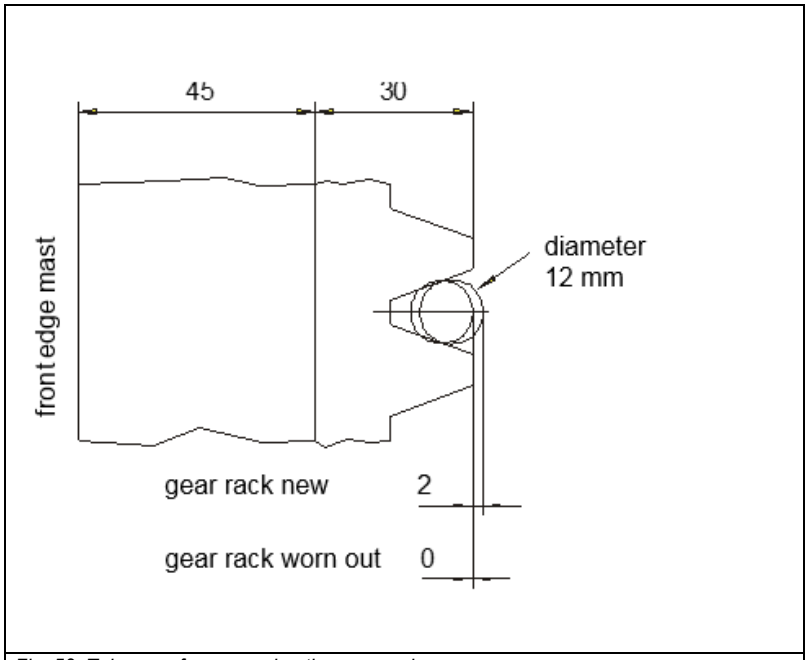


Fig. 58: Tolerance for measuring the gear rack

11.3.1 Maintenance and care of the motor brakes (ZFB 62 So)

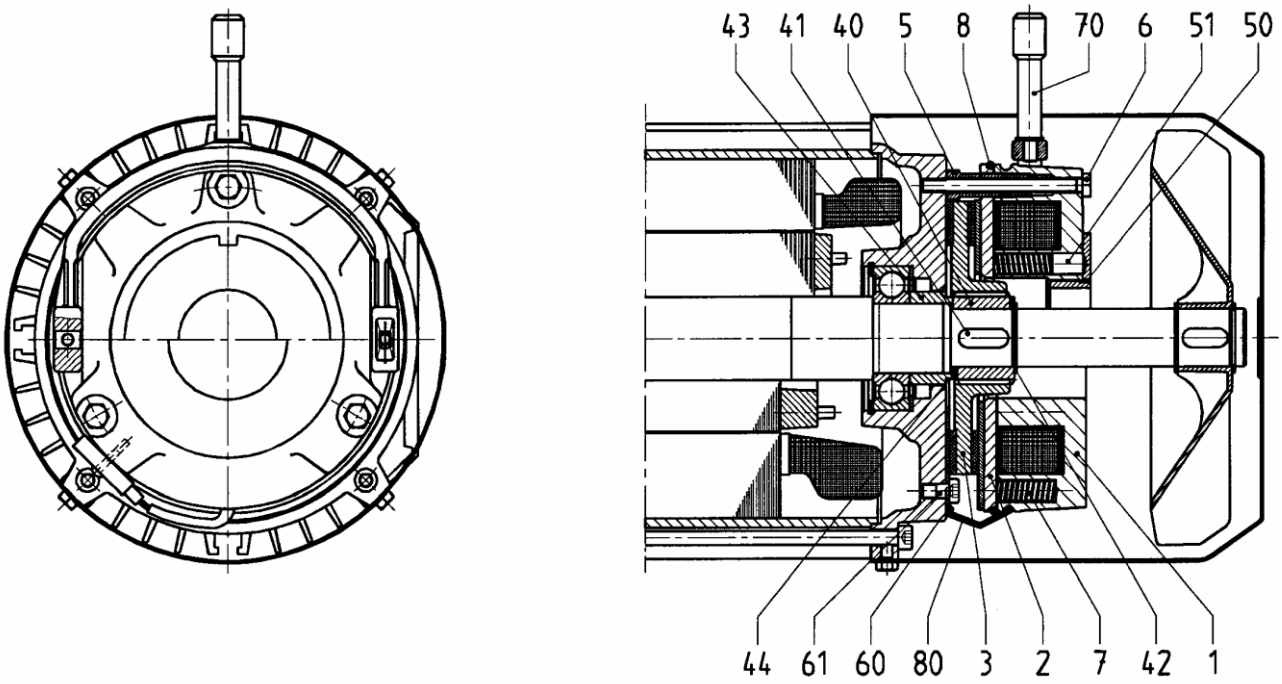


Fig. 59: ZFB brake

Overall size			ZFB 60
Working air gap	S_A	mm	0.4
Max. air gap	$S_{A\ max.}$	mm	1
Stroke limitation	y	mm	1
Minimum thickness of the brake disc	S_{min}	mm	11.5

Fig. 60: Working air gap table

Overall size			ZFB 60
Bolt torque	Nm	mm	25

Fig. 61: Torque table

11.3.1.1 Re-adjusting the brakes

CAUTION!

When working on the brakes, the power must be disconnected and accidental re-start must be prevented.

When working on the brake motor, the cool air ducts must be kept clean and monitor the air gap.

The service life of the brake depends on the applicable friction forces and the number of switches made.

The working air gap "S_A"

- increased depending on the wear
- depends on the size of the brake (see page 100 , *Fig. 60*).
- While in braking position, measure the anchor plate (Pos. 3) and the magnet body (Pos. 2).

The brake must be adjusted if

- the wear of the brake lining has increased so that the maximum possible working air gape sAmax (see page 100 , *Fig. 60*) is reached. Otherwise, a safe bleeding of the brakes is not guaranteed,
- an available stroke limitation is effective.

CAUTION!

This is recognised if the brake force diminishes and the brake distance increases.

CAUTION!

Replace the brake disc if the thickness drops below the specified allowance.

CAUTION!

The working air gap must be identical on the 3 hollow screws Therefore, all 3 hollow screws must be inspected.

Only a customer service technician shall be permitted to adjust the brake.

12 What to do if ...

Tips and important information about malfunctions and events that may occur during the initial start-up of the operation.

Only a qualified electrician shall be permitted to proceed with tasks on electrical systems and operating equipment. Compliance with electrical engineering rules and regulations is mandatory. Prior to troubleshoot, all loads must be secured or removed from the platform.

Description of malfunction	Cause of the malfunction	Actions taken
The lift cannot be switched on.	Power not available. (indicator light)	Ensure the supply voltage is 400 V/50 Hz and the fuse for the Table lift is 16 A (delay-action fuse)
	The emergency off switch is actuated	Pull out the red EMERGENCY OFF button at the ground station.
	Blind plug not inserted	Insert blind plug (*see 6.1 page 57)*
	electrically secured pivoting gate not closed	Close the pivoting gate of the platform enclosure. Check plug (*see 6.1 page 57)*
	Loading position gate monitoring - one gate is not closed	Close loading position gate - check safety circuit
The motor hums but does not start.	The brake rectifier is defect.	The brake rectifier uses 400 V alternating voltage and uses approx. 200 V direct current voltage to activate the brake. The brake rectifier is located in the accompanying electrical cabinet.
At a rated load of 1685 kg, the lift does not start.	The supply voltage is not constant.	The supply line is too long. The maximum length of the line is 40 m 4 x 10 mm²
In spite of the UP button being pressed, the load slides downwards.	The supply voltage is not constant.	Check the supply voltage. While the lift starts up, the supply voltage must not drop below 360 V.
Despite the low load, the motor quickly becomes very hot.	The supply voltage or the supply line is not OK.	Check. See above.
	The power-on time of the Table lift is to high.	The maximum power-on time of the Table lift is 60%.

Description of malfunction	Cause of the malfunction	Actions taken
The lift does not move when the ”UP” button is pressed.	Operational limit switch TOP is defect or has become maladjusted.	Check the limit switch. Replace if necessary.
	The cable to the operational limit switch TOP is damaged.	Have the cable inspected by an electrician.
	The maximum load capacity was exceeded.	The overload indicator is illuminated, the payload must be reduced.
Platform gate/loading position gate cannot be opened	The operation limit switch plate is not installed at its proper height	Correct the position of the operation limit switch plate.
The lift heats up during operation and switches off.	The motor thermal contact has triggered.	Let the motor cool down. Check the voltage and the supply line. Reduce the load if necessary. After the motor has cooled down it can be put back into use.

13 Beaufort scale

Description acc. to Beaufort	Speed m/s / km/h	Effects inland
0 No wind	0-0.2 / <1	Smoke rises vertically
1 Light draught	0.3-1.4 / 1-5	Smoke drift indicates wind direction
2 Light breeze	1.5-3.4 / 6-12	Wind felt on exposed skin. Leaves rustle and wind vanes begin to move.
3 Gentle breeze Light wind	3.5-5.4 / 13-19	Leaves and smaller twigs in constant motion.
4 Moderate breeze Moderate wind	5.5-7.4 / 20-27	Twigs and small branches begin to move, dust and loose paper raised.
5 Fresh breeze Light wind	7.5-10.4 / 28-37	Small trees begin to sway
6 Strong wind	10.5-13.4 / 38-48	Whistling heard in overhead power lines, large branches in motion, umbrella use becomes difficult
7 High wind	13,5-17,4 / 49-62	Effort needed to walk against the wind, whole trees in motion.
8 Gale	17.5-20.4 / 63-73	Twigs broken from trees. Walking is seriously impeded
9 Severe gale	20.5-24.4 / 74-87	Minor structural damage to houses and roofs.
10 Storm	24.5-28,4 / 88-102	Trees are uprooted, considerable structural damage to houses.
11 Violent storm	28.5-32.4 / 103-117	Widespread damage.
12 Hurricane	from 32.5 / 118	Wide spread devastation

14 Screw tightening torque

CAUTION!

- **Self locking nuts, cotter pins, and clamping pins must be replaced after each removal.**
- **Always use a torque wrench when checking the torque of threaded components.**

Standard metric threads

Torque in Nm

(applicable to galvanized or slightly oiled screws/bolts).

Diameter	Strength category		
	8.8	10.9	12.9
M8	23.1	34	39.7
M10	46	68	80
M12	80	117	137
M14	127	186	218
M16	194	285	333
M20	392	558	653
M24	675	961	1125

Source: Roloff/Matek maschine elements 11th edition

15 Test inspection for expert checks

The inspection depends on the national regulations

In Germany the inspection duties for the end-user/user are defined in the *Betriebssicherheitsverordnung* (Regulation for operational safety)

Test results based on the German Betriebssicherheitsverordnung

On _____the Table lift, manufacturing number _____ was subject to a visual inspection and function test. No defects/the following defects were found

_____

_____

_____

The initial start-up causes concerns/no concerns The inspection must be repeated/not repeated

_____	_____	_____
City, Date	Signature Expert	Signature Manager

Name of expert _____
Address: _____
Job description _____
Employed by: _____

Repeat inspection
On _____the Table lift, manufacturing number _____ was subject to
_____

a repeated inspection. The objections raised during the inspection, dated

_____
were corrected/not corrected.

_____	_____	_____
City, Date	Signature Expert	Signature Manager

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Job description _____
Employed by: _____

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a repeated inspection. The objections raised during the inspection, dated

_____
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_____	_____	_____
City, Date	Signature Expert	Signature Manager

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City, Date	Signature Expert	Signature Manager

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Address: _____
Job description _____
Employed by: _____

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On _____the Table lift, manufacturing number _____ was subject to
_____

a repeated inspection. The objections raised during the inspection, dated

_____
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_____	_____	_____
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City, Date	Signature Expert	Signature Manager

Name of expert _____
Address: _____
Job description _____
Employed by: _____

Repeat inspection
On _____the Table lift, manufacturing number _____ was subject to
_____

a repeated inspection. The objections raised during the inspection, dated

_____
were corrected/not corrected.

_____	_____	_____
City, Date	Signature Expert	Signature Manager

16 List of installation places of manufacturing number . . . . . .

1. Layout **Date from : . . 20 . to : . . 20 . .**

Place of operation **:** . . . . . .

. . . . . .

. . . . . .

. .

Product description : . . . . . .

Name of owner : . . . . . .

. . . . . .

. .

_____

2. Layout **Date from : . . 20 . to : . . 20 . .**

Place of operation **:** . . . . . .

. . . . . .

. . . . . .

. .

Product description**:** . . . . . .

Name of owner : . . . . . .

. . . . . .

..

_____

3. Layout **Date from : . . 20 . to : . . 20 . .**

Place of operation **:** . . . . . .

. . . . . .

. . . . . .

. .

Product description : . . . . . .

Name of owner : . . . . . .

. . . . . .

.

4. Layout **Date from : . . 20 . to : . . 20 . .**

Place of operation **:** . . . . . .

. . . . . .

. . . . . .

. .

Product description: . . . . . .

Name of owner : . . . . . .

. . . . . .

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_____

5. Layout **Date from : . . 20 . to : . . 20 . .**

Place of operation **:** . . . . . .

. . . . . .

. . . . . .

. .

Product description: . . . . . .

Name of owner : . . . . . .

. . . . . .

. .

_____

6. Layout **Date from : . . 20 . to : . . 20 . .**

Place of operation : . . . . . .

. . . . . .

. . . . . .

. .

Product description: . . . . . .

Name of owner: . . . . . .

. . . . . .

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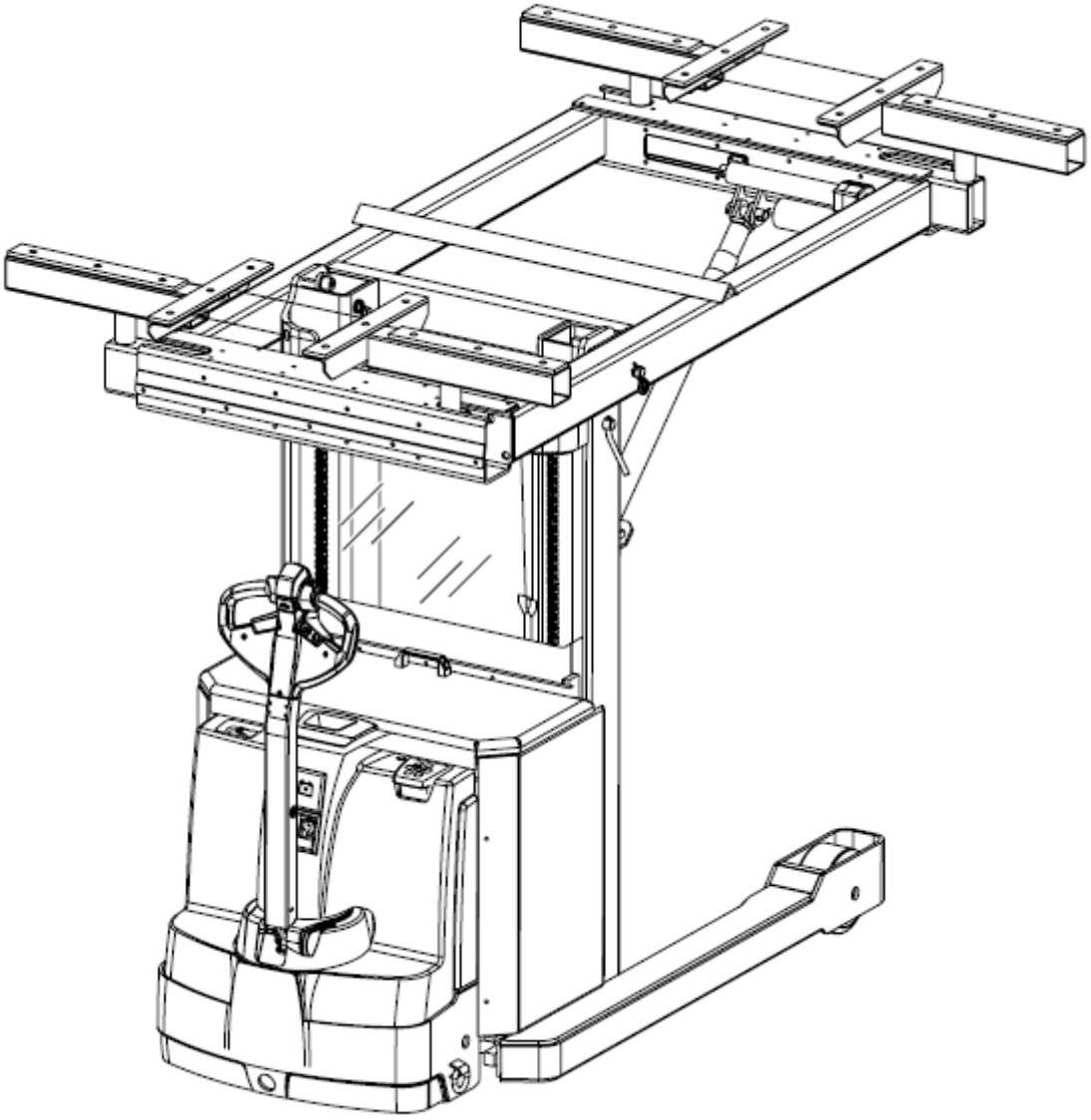
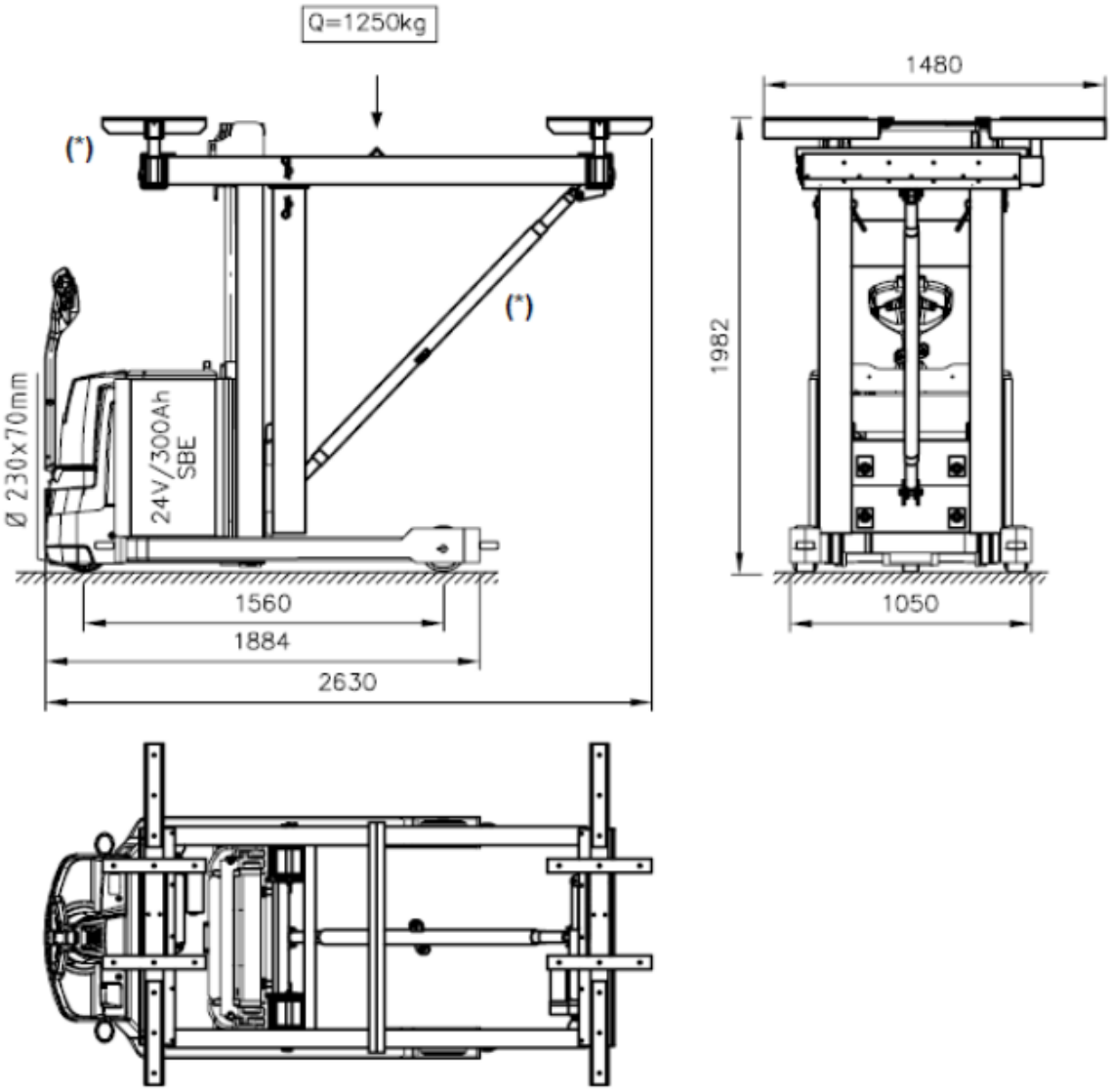
17 Appendix

17.1 Lift truck data sheet

EJB 213 EHW Table





*second lift table position h3 + 900 mm
(replace normal by extended centering bar)

Technical data of standard model

Technical data according to VDI 2198. Subject to technical change without notice

Performance data of standard vehicles

	Description	EJB 213	
Q	Nominal load capacity	1250	kg
c	Distance of center of gravity for standard fork length	450	mm
	Speed with nominal load/without load*	3.7	km/h
	Speed with raised table (h3 = 1150 mm)	2.4 *	km/h

Dimensions of standard vehicles

	Description	EJB 213	
h1	Height	1970	mm
h2	Fee lift	100	mm
h3	Lift	2650	mm
h4	Extended height of mast	5350	mm
h14	Height of drawbar in driving position min.max.	768/1298	mm
y	Wheelbase	1560	mm
l1	Overall length	2630	mm
b1	Vehicle width	1,480	mm
	Width of drive component	724	mm
b5	Outer dimension of wheel bar	1050	mm