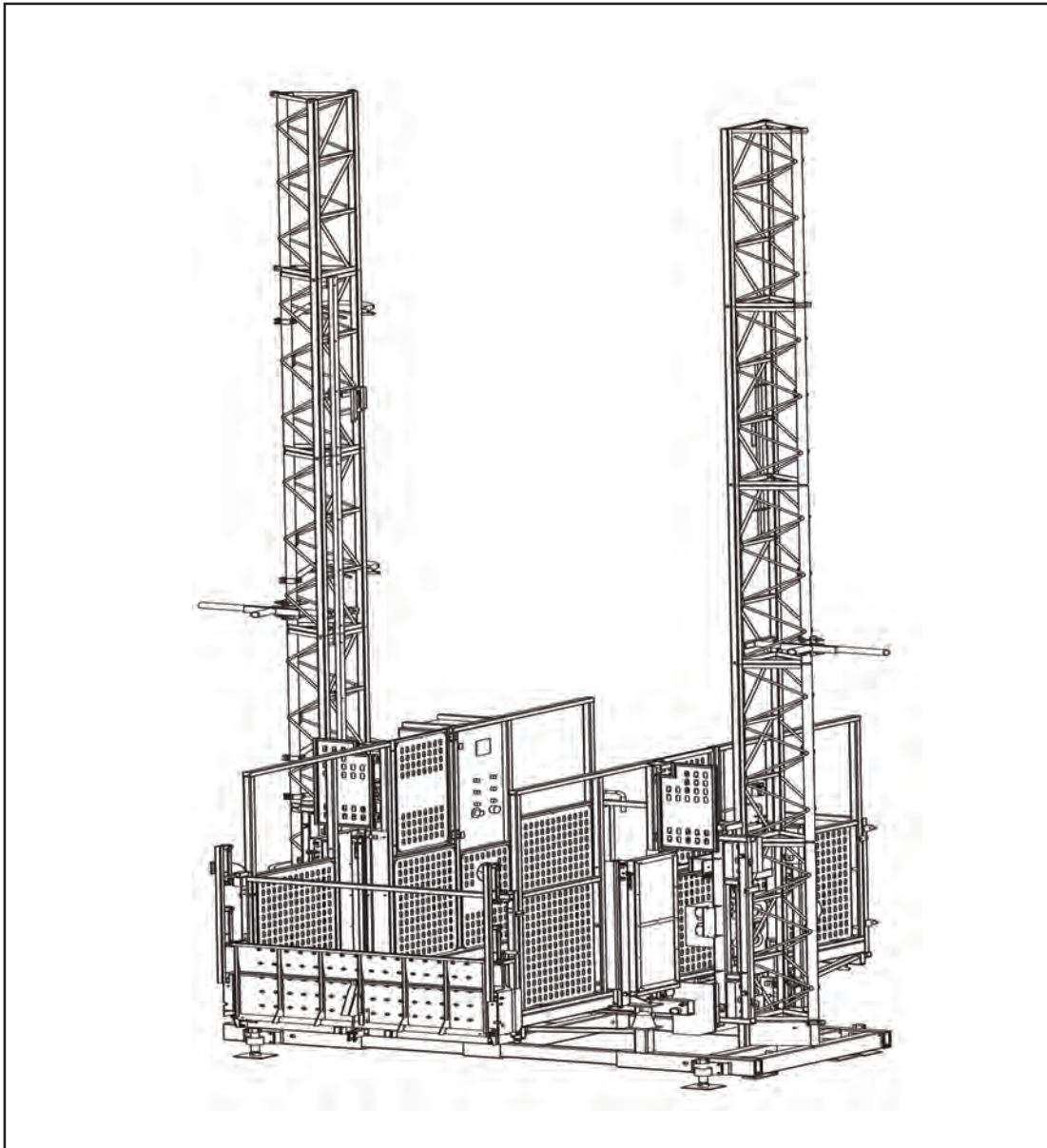


USER'S MANUAL TRANSPORT PLATFORM / MATERIAL HOIST HEK GTP Dual T 1500



This manual is assigned to:

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FOREWORD

The HEK GTP Dual T 1500 is a very compact transport platform which can also be used as a material hoist (optional).

The basic version of the machine can be used for the vertical transportation of both personnel and materials. By installing the conversion kit (optional) the machine can also be used as a material hoist.

This manual describes the installation, control and maintenance of the machine.

The height of the mast, which consists of separate elements, can easily be adjusted to suit the working level. The mast can be easily and safely assembled from the hoist.

The machine can only be used if anchored.

Considerable attention has been given to the safety aspects in the construction of the HEK GTP Dual T 1500, e.g. the rack-and-pinion drive unit is equipped with a motor brake and a fail safe brake, acting on both racks via a shaft.

The solid construction ensures that only minimum maintenance is required.

This instruction manual describes only the basic machine and the additional options in which it is supplied by HEK Manufacturing B.V..

**Read this manual carefully before using the machine.
Take all safety precautions mentioned in chapter 3 into account!**

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EC DECLARATION OF CONFORMITY

We, HEK MANUFACTURING B.V.
Westelbeersedijk 18
5091 SM Middelbeers
The Netherlands

hereby declare that, on the basis of its design and construction, the transport platform named below as well as the model brought into circulation by us conform to the Technische Überwachungsverein Hannover certificate issued with the number below.
Changes made to the machine without our consent invalidate this declaration.

Designation: Transport platform

Machinetype:

HEK GTP Dual T 1500

In accordance with: EN 12158-1
EN 1495
BGI 825

Number certificate: 78/220GS/YMA313909

Certified by: TUV HANNOVER/SACHSEN-ANHALT E.V.

Date / place: Middelbeers, The Netherlands, July 9th 2004



Authorised signature: E.M.A. van Hek
Chairman of the Board
HEK MANUFACTURING B.V.

MEANING OF THE SYMBOLS USED



WARNING
Failing to (exactly) comply with the working or operating instructions may lead to serious injury, fatal accident, severe mechanical damage or operating losses.



Danger: high voltage.



Danger of falling objects.



During use, no person may stand **under** the machine.

HEK GTP DUAL T 1500 APPLICATIONS

Machine used as	Transport platform	Material hoist (optional)*
Position selector switch in control box on platform	12 m/min - 3.2 Ft/min	12 m/min – 3.2 Ft/min
Position identification plate on platform	Transport platform	Material hoist
Transport of passengers	permitted as accompaniment of the load	forbidden
Transport of goods	permitted in combination with at least 2 passengers	permitted
Operation	from platform	from ground station via remote control
Control	dead man's control	automatic control
Landing barrier	mechanical interlocking+ electrically monitored	mechanical interlocking + electrically monitored
Max. wind force during use	7 Beaufort (15.6 m/s – 35 Mph)	8 Beaufort (20.2 m/s – 45 Mph)

* The basic version of the machine can be used for the vertical transportation of both personnel and materials. By installing the conversion kit (optional) the machine can also be used as a material hoist.

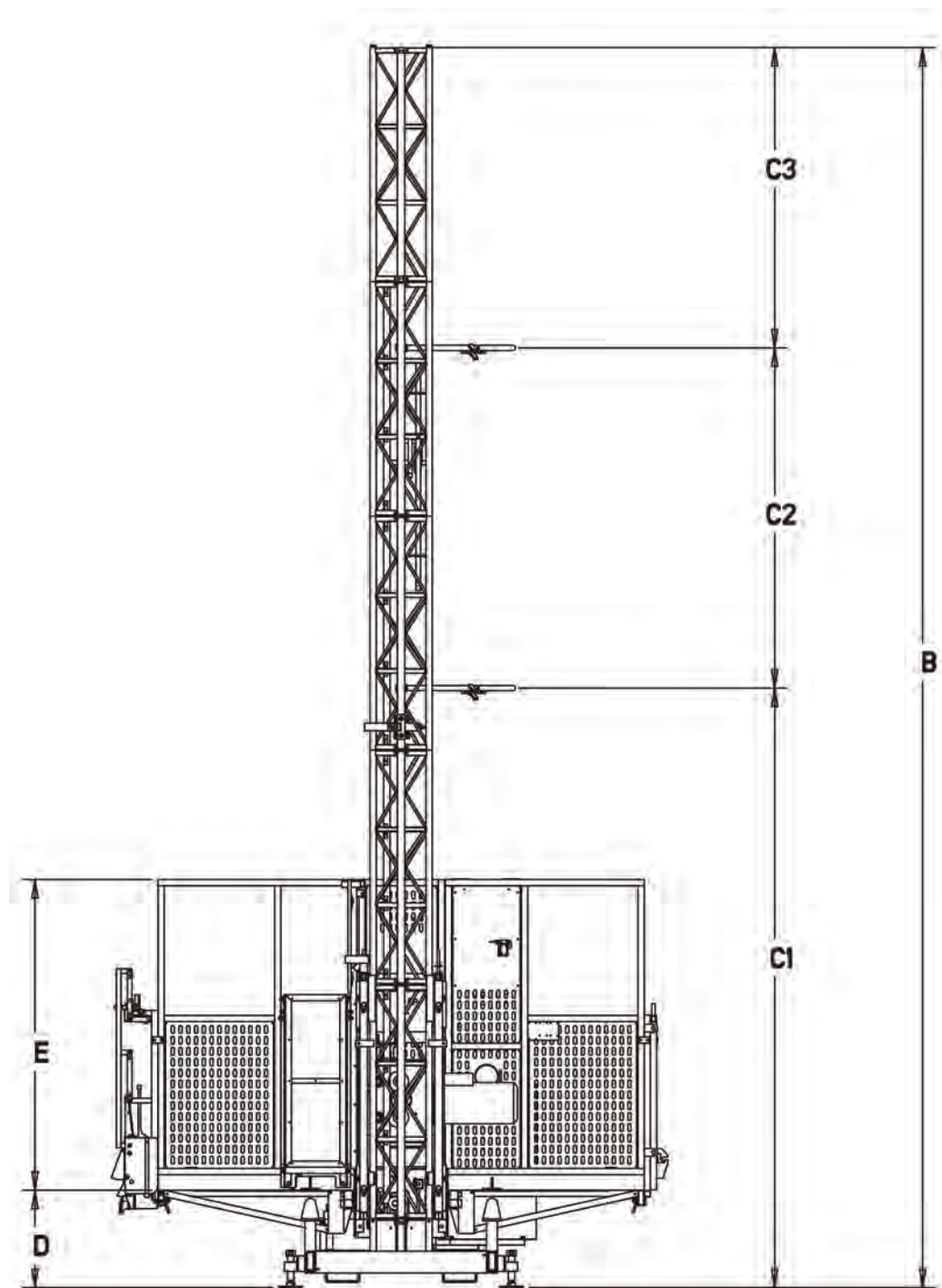


Fig.1-01 Dimensions HEK GTP Dual T 1500

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1. TECHNICAL DATA

Note:

The specifications below are based on standard applications of the HEK GTP Dual T 1500. Under certain circumstances, the actual specifications may be amended.

In such cases written permission of the manufacturer is obligatory.

1.1 General

Description	Fig. 1-01		
Machine set as		Transport platform	Material hoist (optional)
Min. / max. number of passengers		2 - 7	0
Lifting and lowering speed		12 m/min (32 Ft/min)	12 m/min (32 Ft/min)*
Max. wind force during use		15.6 m/s (35 Mph) (7 Beaufort)	20.2 m/s (45 Mph) (8 Beaufort)
Loading capacity		1,500 kg (3,306 Lb) (see section 1.5)	
Platform length		3,300 mm (30 inch)	
Platform width		1,400 mm (55 inch)	
Min. height platform fencing		1.1 m (43.3 inch)	
Anchoring distance	C2	6 – 8 m (236 – 315 inch)	
Max. mast height, free-standing	B	Not allowed	
Max. mast height, anchored	B	120 m (394 Ft)	
Max. mast height above last anchor	C3	3 m (118 inch)	
Mast type		DRK400 (see section 1.2)	
Distance between cable guides		6 m (236 inch)	
Height first anchor at ground frame	B	3 – 4 m (118 – 157 inch)	
Min. platform height		0.6 – 0,7 m (23 – 28 inch)	
Noise level		< 70 dB	
Basic machine weight (including 2 mast elements and 2 uppermost mast elements)		1,980 kg (4,365 Lb)	
Max. wind force during assembly		12.8 m/s (6 Beaufort)	

* The machine is provided with a 2.5 m (98 inch) stop after which the lowering speed becomes 12 m/min (32 Ft/min)

1.2 Mast element

1.3 Dimensions

Fig.1-02, Dimensions [mm]		
	MM	Inch
A	3270	93.3
B	3130	123
C	2200	86.6
D	2900	114
E	1690	66.5
F	1400	55
G	1570	61.8
H	3580	141

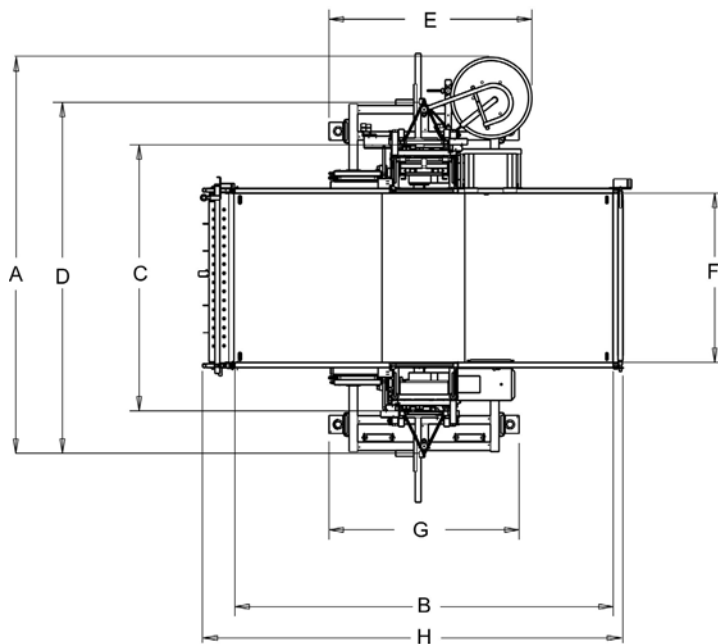


Fig. 1-02 Dimensions top

1.4 Electrical installation

HEK GTP Dual T 1500	230 VAC/60Hz
Number of motors	2
Nominal supply voltage	240 VAC
Supply voltage range	220 - 260 VAC
Supply voltage frequency	60 Hz
Power consumption based at	S3-40%
Connector on cable drum	CEE 5p - 32 A - 6h
Cable between building site cabinet and machine < 15 m (50 Ft)	5x0.015 inch ²
Cable between building site cabinet and machine 15 to 50 m (50 to 165 Ft)	5x0.023 inch ²
Machine cable in cable drum 0 to 120 m (0 to 395 Ft)	5x0.015 inch ²
Control voltage	Landing barrier 48 VAC
	Control cabinet 24 VAC
	Motor brakes 105 VDC
Used as GTP (basic version) & GTL (option)	
Speed	39 Ft/min
Control	Control box on platform
Nominal / starting current	27 A / 80 A
Building site fuse (slow)	32 A
Nominal power consumption	8 kVa
Recommended min. power generator capacity	35 kVa

1.5 Load of the machine



The load must be evenly distributed over the full platform area.(fig.1-03).

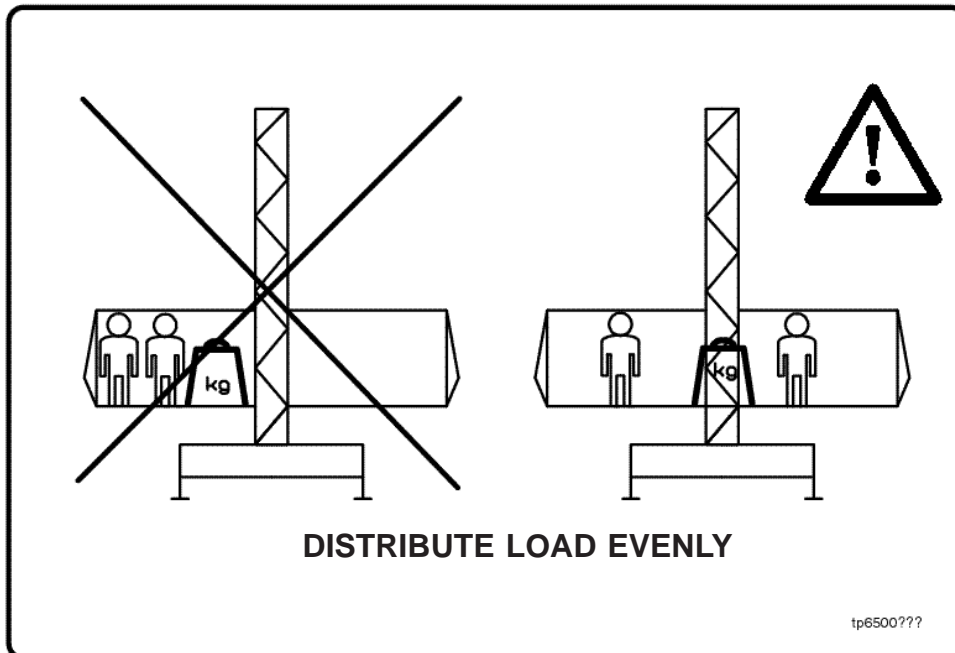


Fig. 1-03 Distribution of load

1.6 Load during use as transport platform

See the table for maximum load and maximum number of persons.



In the case that a roof (optional) is mounted, the maximum load is reduced with **150 kg**.

Passengers	+	Load (kg)
2 (min.)	+	1300
3	+	1200
4	+	1100
5	+	1000
6	+	900
7 (max.)	+	800

1.7 Load during use as material hoist

Max. load 1,500 kg.



In the case that a roof (optional) is mounted, the maximum load is reduced with **150 kg**.



Transport of passengers forbidden.

1.8 Anchoring forces

Torque scaffold couplings: 50 Nm - 36.9
Lbf-Ft

The anchoring forces depend on the area in which the machine is used. The anchoring forces for the different wind areas in Europe are described in the section 1.8.1 and 1.8.2. In figure 1-04 the wind areas in Europe are shown.

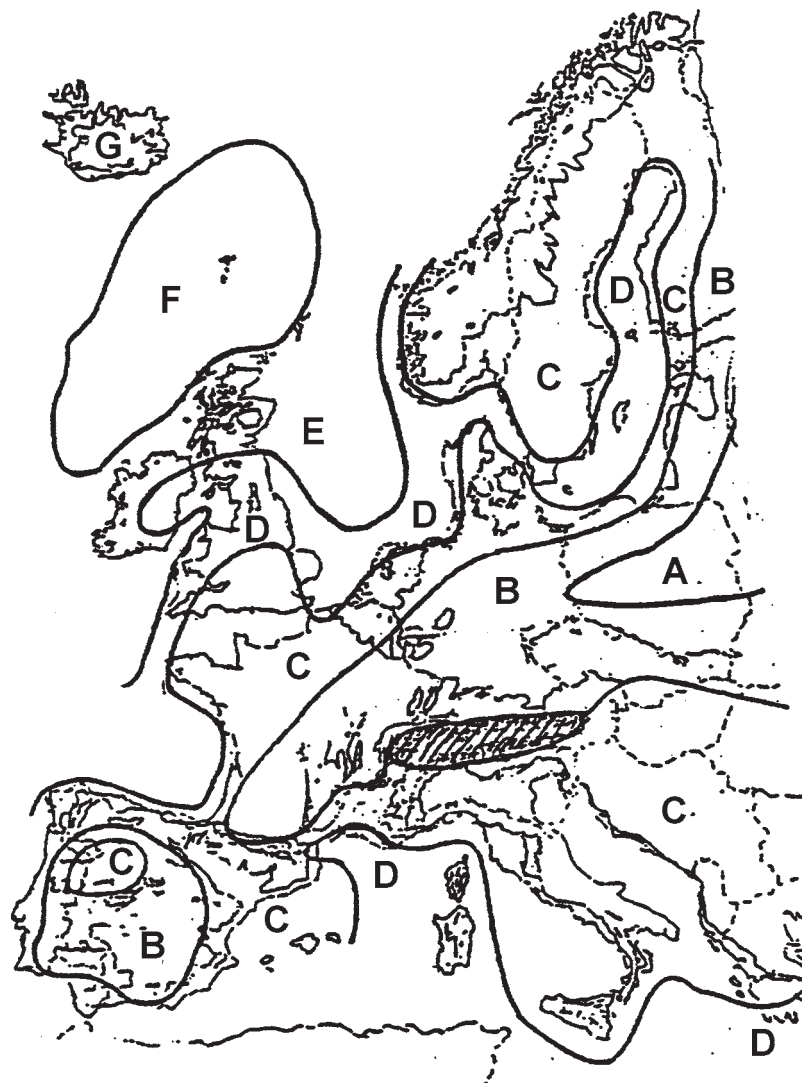


Fig. 1-04 Wind map of Europe

1.8.1 Anchoring

The anchoring forces should be adsorbed by the facade according to static rules.



If the machine is placed in front of a scaffold, the anchoring forces should be absorbed by the scaffold according to the static rules.

The anchoring forces in table 1 are applicable under the following conditions:

- $45^\circ \leq \alpha \leq 60^\circ$
- $x = 2.3 \text{ m (90.5 inch)}$ up to and including 3 m (118 inch)
- $x/y = 1 \text{ m (39 Inch)}$ up to and including 1.75 m (69 inch)

Example:

- $x = 2.5 \text{ m (98 inch)}$
- $y = 2.5 \text{ m (98 inch)}$
- wind region C

See table: - $F1 = 5.2 \text{ kN (1,169 Lbf)}$
 - $F2 = 3.6 \text{ kN (809 Lbf)}$

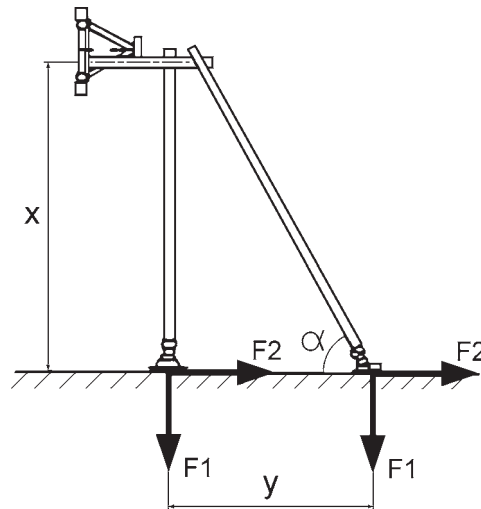


Fig.1-05 Anchoring

1.8.2 Anchoring forces

Table 1	Area A-C				Area D				Area E-G	
	F1		F2		F1		F2		F1	F2
	(kN)	(Lbf)	(kN)	(Lbf)	(kN)	(Lbf)	(kN)	(Lbf)	(kN) - (Lbs)	
$\alpha = 45^\circ$	5.2	1,169	3.6	809	6.8	1,528	4.6	1,034	Consult your dealer	
$46^\circ < \alpha < 60^\circ$	7.8	1,753	3.6	809	10.1	2,270	4.6	1,034		

2. COMPONENTS

2.1 General

The basic rack-and-pinion transport platform consists of the following elements (fig. 2-01):

- * 2 drive units (1)
- * masts (two off) (2)
- * platform with fence, loading ramp and landing barrier (3)
- * ground frame (4)
- * control system, consisting of a control box on the platform (5) and a ground station control box (optional)
- * roof (optional)
- * assembly platform (optional)

The drive unit, which is driven by two electric motors, is guided along a rack on the mast by means of two pinions per mast.

One shaft, running underneath the platform, attaches to both mast racks and guarantees that both drive units (1) run synchronously. Furthermore, the shaft is equipped with a fail safe brake. If the maximum speed of descent is exceeded, the fail safe brake will stop the machine.

The platform (3) can be equipped with a roof (optional) to protect the passengers and the material present on the platform against falling materials and the weather.

The ground frame (4) is equipped with admission points for loading the machine onto a truck or unloading it from a van by means of a forklift.

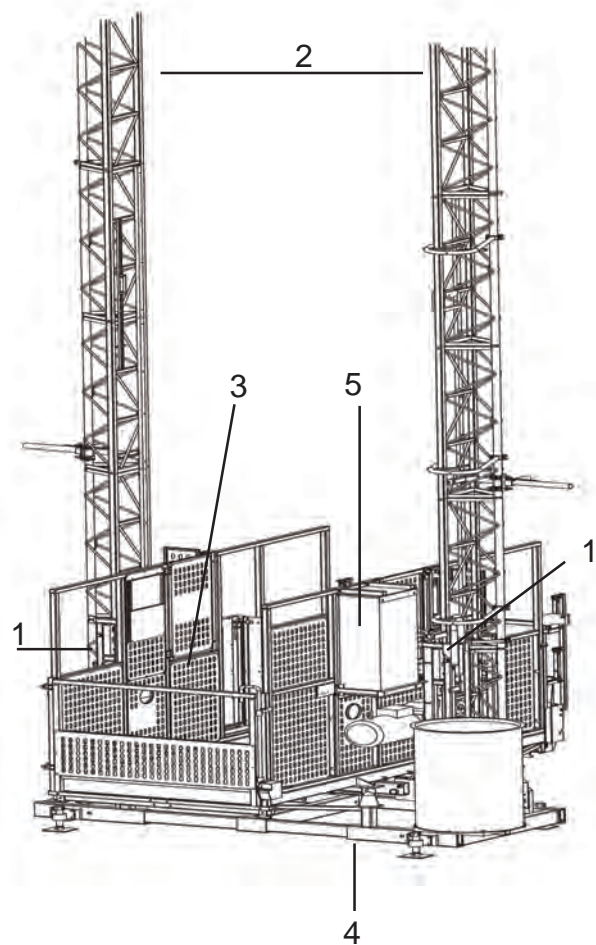


Fig.2-01 Basic machine HEK GTP Dual 1500

The platform is equipped with four shackles for lifting with a crane.

During the assembly and use of the machine the platform can only be controlled if the loading ramp is closed and secured.

The basic control unit (machine used as a transport platform) can be found on the platform itself. When the machine is used as a material hoist, it is controlled via the the control box on the ground station (optional).

All electrical connections, which must be disconnected for transport purposes, are being made by means of connectors.

The simple design ensures that only minimum maintenance is required.

The mast elements, the wheel set, the transport platform, the cable guides and various other components have been galvanised and thoroughly treated with an anti-corrosion material.

2.2 HEK GTP Dual T 1500 conversion kit for use as a material hoist (optional)

Use the optional conversion kit to convert the basic machine with dead man's control for the transportation of personnel and materials into a material hoist for the transportation of materials only.

2.3 Landing safeguards

The loading and unloading places near the scaffold or facade are equipped with landing safeguards to prevent persons and/or materials from falling (fig. 2-02 and fig. 2-03).

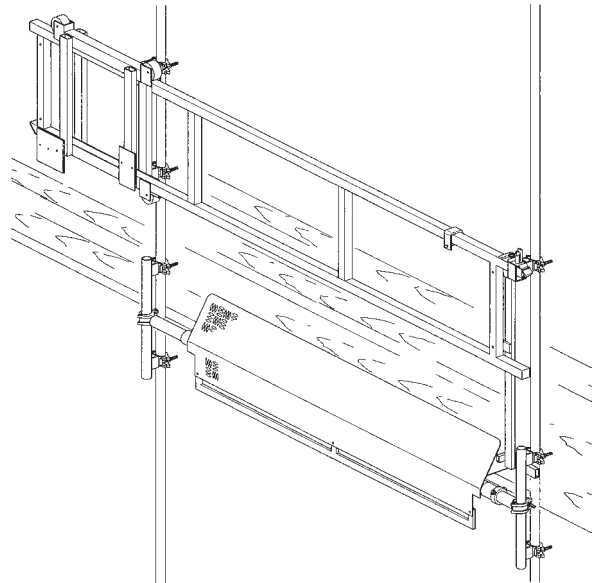


Fig.2-02 Landing safeguards

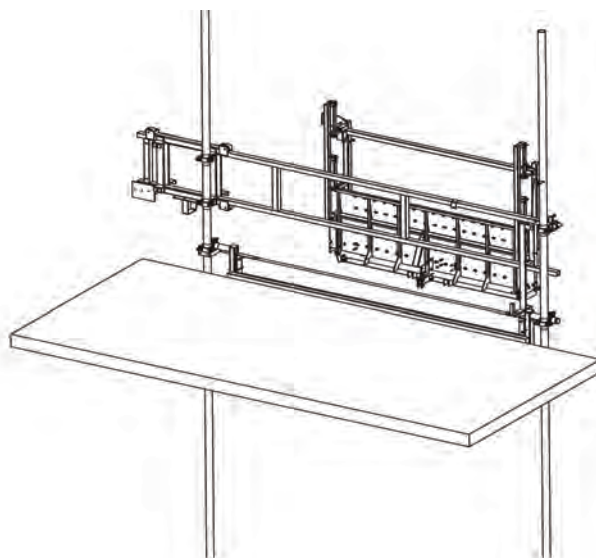


Fig.2-03 Landing safeguards

3. SAFETY

3.1 General



The machine may not be modified or adapted.



The surface on which the machine stands must be stable enough to support the weight of the machine, the masts and the load.



The mast must ALWAYS be properly anchored.



In case the fencing provides insufficient protection, suitable climbing material must be used during (dis)assembly at height above 2 metres.



It is prohibited to climb the roof.

3.2 Safety before use

- The machine must not be used without being adequately supported.
- The ground frame must be adequately supported.
- The working area around the hoist must be free of obstacles.
- The switchbox doors must be closed before use.
- Do not (dis)assemble the machine during winds of 12.5 m/s (28 Mph) or more (6 on the Beaufort scale).



The 'Emergency off'-button must be used before the assembly of a mast element or an anchor or during maintenance.

3.3 Safety during use



Transport platform: During winds above 15.6 m/s (35 Mph) (7 on the Beaufort scale), the hoist must be placed in the lowest position and must not be used.

Material hoist: During winds above 20.2 m/s (45 Mph) (8 on the Beaufort scale), the hoist must be placed in the lowest position and must not be used.



There must be no objects in the path of the cabin.



Whilst the hoist is in use, no one may be in the area **under** the cabin.



It is prohibited to climb the mast. Material and / or tools must never extend beyond the edges of the platform. Material which can roll must be properly secured. The load must not lean against the fencing.



The distance between the machine and high-voltage cables must be at least 10 metres (32 Ft).



When having to transport large materials and / or tools, please first contact your supplier because of the wind sensitivity.



In case of an imminent thunderstorm, the machine must be switched off in time due to the risk of a lightning strike. The power must be switched off and the power plug must be removed from the socket.

- If the material hoist is not used in daylight conditions, the appropriate area must be lit adequately so that the operator has good vision in all conditions. The luminosity near the control cabinet must be at least 50 lux.
- The machine may only be used for the purpose for which it was designed, that is, for the vertical transportation of material supervised by persons, not exceeding the maximum permitted weight of 1,500 kg (3,309 Lb).
- Place the load (material, personnel, etc.) evenly on the machine.
- Assembly, disassembly, operation of the machine should only be carried out by persons who are fully conversant with the contents of this instruction manual.
- Inspection and maintenance must be carried out as specified in this user's manual.
- During assembly and servicing, the hoist may not be used for any other purpose.
- Locally applicable working and safety regulations must always be adhered to.
- During normal use, the fencing must never be removed.
- The working area must be free of obstacles (building waste, dirt, snow, etc.).

3.3.1 Safety during use of the machine as transport platform



During winds above 15.7 m/s (35 Mph) (7 on the Beaufort scale), the platform must be placed in the lowest position and must not be used.

- The load (material, personnel, etc.) must be evenly distributed on the hoist.
- The hoist may only be used for the purpose for which it was designed, that is, for the vertical transportation of material supervised by persons, not exceeding the maximum permitted weight of 1,500 kg (3,309 Lb).
- See the diagram on page VII for a list of optional and / or required safety devices.

3.3.2 Safety during use of the machine as material hoist (optional)



No passengers allowed!



During winds above 20,2 m/s (45 Mph) (8 on the Beaufort scale), the hoist must be placed in the lowest position and must not be used.

- The load (material, etc.) must be evenly distributed on the hoist.
- The hoist may only be used for the purpose for which it was designed, that is, for the vertical transportation of material not exceeding the maximum permitted weight of 1,500 kg (3,309 Lb).
- See the diagram on page VII for a list of optional and / or required safety devices.

3.4 Safety after use

- Transport over public roads must only be undertaken using the transport vehicle intended for this purpose.
- The hoist must be placed at the lowest level and the main switch must be securely locked against unauthorised use.

3.5 Built-in and attached protective devices

This machine was constructed to offer the highest possible safety level, both during assembly and during use. Therefore, it is fitted with the following built-in and attached protective devices:

- Electrically protected mast guard: whenever the mast guard is open, the platform will be locked.
- 'Emergency off'-button on the control box. If this button is pressed, the hoist will be blocked.
- Mechanical protection of the safety barrier on the platform.
- Buffers which catch the platform in the case that the limit switches do not function.
- In the event of a power failure, the motor brakes will be automatically activated.
- Electrically protected mast lifting aid: whenever the lifting aid is raised, the platform will be locked.
- In the event of a power failure, it is possible to lower the hoist by releasing the motor brake.
- If the speed of descent is exceeded, the fail safe brake will be activated.
- If the end stop switch 'UP' does not function and the hoist keeps on ascending, the upper emergency limit switch 'UP' will be activated.
- If the end stop switch 'UP' and the proximity switch do not function and the top mast is missing, allowing the hoist to continue operating, the drive unit will remain attached by hooks to the uppermost mast element.
- If the end stop switch 'DOWN' does not function and the hoist keeps on descending, the lower emergency limit switch 'DOWN' will be activated and the machine will stop working.
- 2.5 metre (98 inch) stop: When descending the lift will stop at a height of 2.5 metres (98 inch), following which the lowering pushbutton has to be pressed for further operation. A warning signal will be given and the indication light will be flashing during 3 seconds. After these 3 seconds, the platform will descend and the indication light and the warning signal will keep working until the platform is down.
- Electrical protection of the loading ramp: whenever the loading ramp is open, the platform will be locked.
- Overload protection: if the machine is overloaded, further use will be blocked.

3.6 Personnel

Assembly, disassembly and operation of the hoist should only be carried out by persons who:

- are older than 18 years of age
- have been instructed on the assembly, disassembly and operation of the machine
- have been appointed by the employer exclusively for assembly, disassembly, operation and/or maintenance of the machine. The authority to operate the machine should be confirmed in writing.
- are aware of the applicable safety regulations and who are fully conversant with the contents of this instruction manual.
- Technical staff should be able to solve all problems occurring during assembly and disassembly of the machine.
- Operating staff should be fully conversant with the situations occurring during operation.
- If operating or technical staff observes defects or danger or does not agree with the applicable safety regulations, the owner and/or person in charge should be notified immediately.
- Repairs on the electrical systems must be carried out by qualified electricians only.
- All construction workers must wear protective clothing, like a safety helmet, safety shoes and suitable clothing.
- If the machine is handed over to a third party, the full name of the person(s) obtaining the machine must be recorded.

4. TRANSPORT



When transporting the hoist, no load should be present on the platform.



Check that both ground elements have been locked.



Pay special attention that the cable drum will not be damaged during the transport, because the cable drum protrudes the ground frame.

The limited dimensions of the basic machine make it possible to transport it with a regular truck.

During transport, ensure that all the security devices are properly fitted and that the machine is lowered onto the buffers.

For transportation dimensions, see section 1. Prior to transporting the hoist, disassemble it as described in section 8.

Prior to transporting, every additional mast element or security cable mounted to the machine must be removed and the spindles must be screwed in.

A crane or forklift can be used to load or unload the hoist.

The figures 4-01 and 4-02 show the hoist points:

Fig.4-01: Lifting points

Fig.4-02: Points of support for the forklift

Carefully put the machine into position in order to prevent damage.

Prior to transporting, thoroughly lash the machine to the loading platform of the truck.

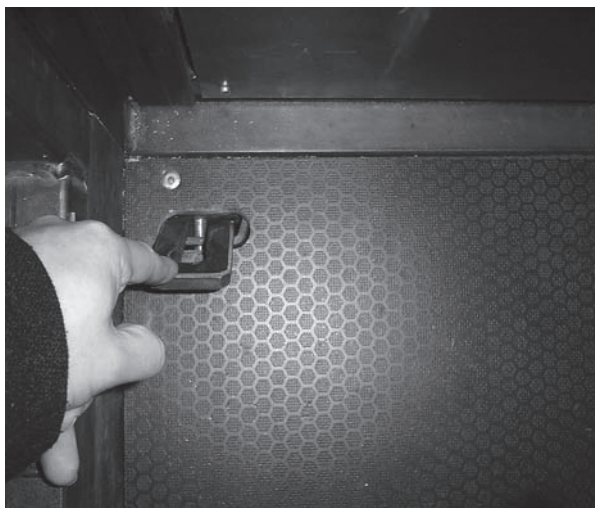


Fig.4-01 Hoist points

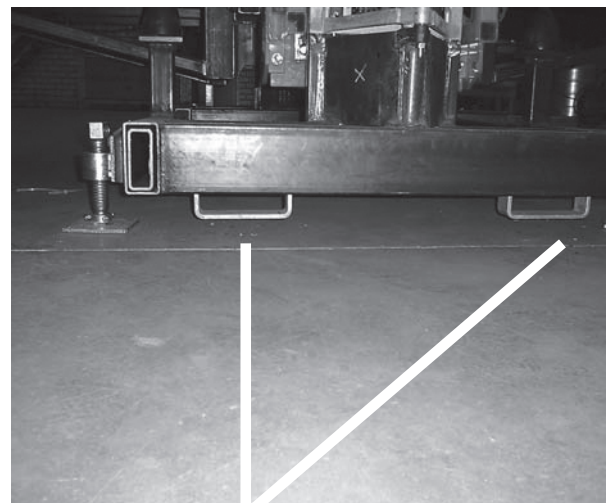


Fig.4-02 Points of support for the forklift

4.1 Transport on the building site



Make sure that trees, wires, etc., can not be damaged during transportation.



No persons or load are allowed on the platform during the transportation.

The platform with a maximum mast height of 3 m (118 inch), can be transported on a level, solid and horizontal surface.

First contact your manufacturer if the conditions are less favourable.

5. CONTROL UNITS

This section summarises the control units. The function of the control units is described in section 7.

5.1 Connector and main switch on cable drum

1. Building site power supply connector

The mains cable between the building site power cabinet and the machine must be connected to the connector (fig. 5-01, 1) on the cable drum. See chapter 1 for the cable and connector plug specifications. The machine cable leaving at the lower part of the cable drum must be connected to the remaining connector on the cable drum.

2. Main switch

The main switch (fig. 5-01, 2) can be found on the cable drum. This switch is used to enable the power supply.



Do not use this switch to stop the hoist. The main switch must be secured with a padlock to prevent unauthorised use of the hoist.

5.2 Ground station switchbox (optional)

Now the machine cable must be connected to the connector next to or below the ground station switchbox. The cable from the switchbox must be connected to the free connector on the cable drum.

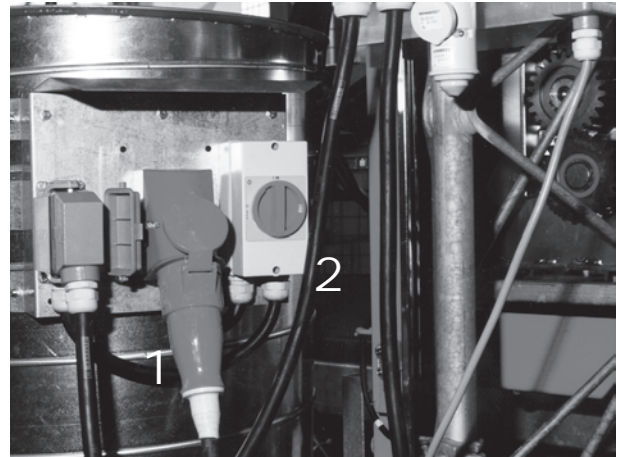


Fig.5-01 Connector and main switch on the cable drum of the HEK GTP Dual T 1500

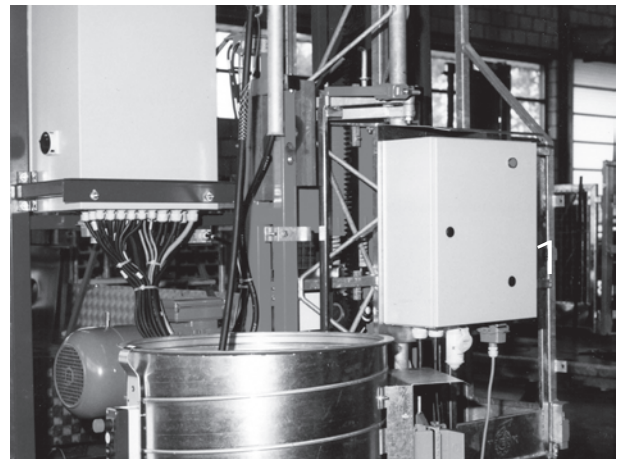


Fig.5-02 Ground station switchbox

1. Ground station safety circuit

(Green, closed circuit) This lamp illuminates as soon as the main switch is switched on, the emergency switch is in the 'normal' position and the safety circuit (landing barriers, etc.) is closed.

2. Lock control box

Locks the control box door.

3. Dummy plug or remote control

When using the machine as a material hoist, you can connect a remote control. For detailed information, see chapter 5.2.

4. Socket landing barrier

5.3 Using the machine as a material hoist (optional - only with the ground station switchbox installed)

Connect the remote control (fig.5-03, A) to the ground station switchbox (fig.5-03, B).

5.4 Selection of identification plate transport platform / material hoist

The machine can only be operated as a material hoist when the ground station switchbox (optional) has been installed.

The appropriate identification plate (fig. 5-04, transport platform = right / material hoist = left) can be shown by moving the catch.

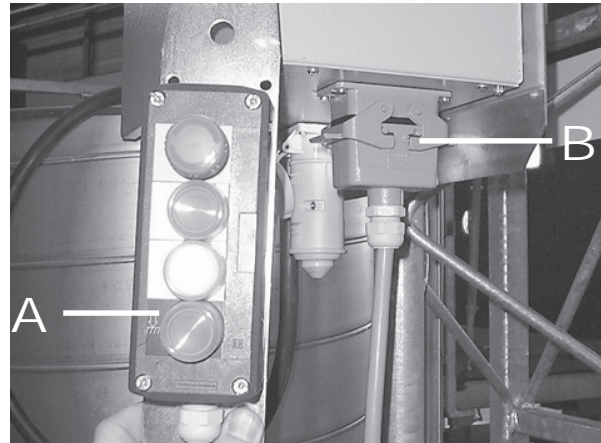


Fig.5-03 Using the machine as a material hoist

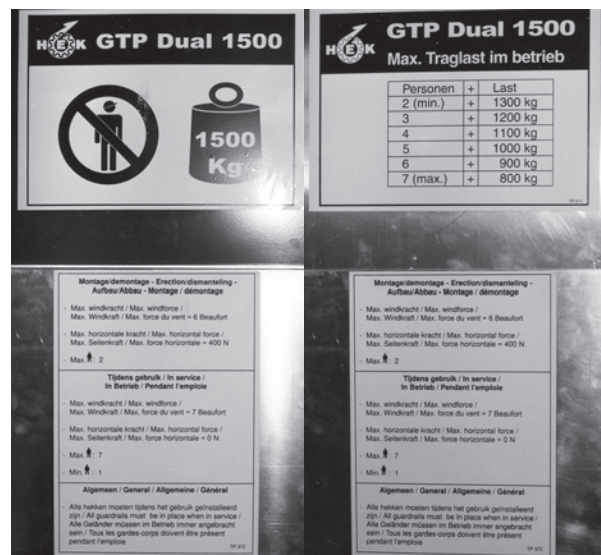


Fig.5-04 Identification plate transport platform / material hoist

5.5 Selector switch transport platform / material hoist

The machine can only be operated as a material hoist when the ground station switchbox (optional) has been installed.

This switch (fig. 5-05, A) is located in the control box on the platform. The machine functions as a transport platform or as a material hoist by moving the switch.

- Position 12 m/min: Material hoist (78 Ft/min) (No persons allowed)
- Position 12 m/min: Transport platform (39 Ft/min) (Persons allowed)

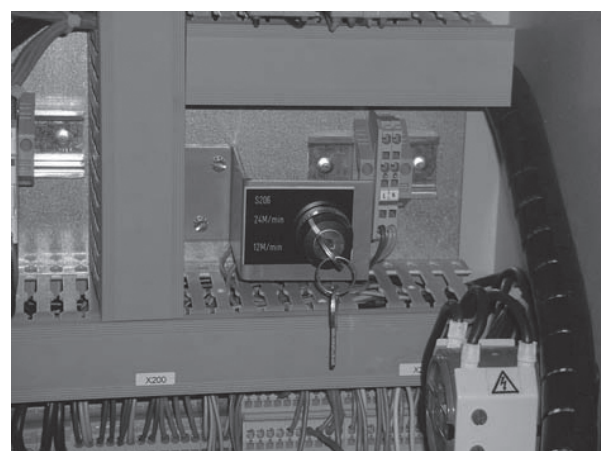


Fig.5-05 Selector switch transport platform / material hoist

5.6 Control box on platform

The control box (fig.5-06) contains the following control elements:

1. **Information display**
Occurring failures are displayed as codes on the display. See chapter 10.
2. **Platform security circuit (green)**
Illuminates as soon as the safety circuit is closed.
3. **Indicator lamp 'overload' (red)**
This indicator lamp lights whenever the machine is overloaded.
4. **Pushbutton 'up'***
5. **Pushbutton 'next landing'***
6. **Pushbutton 'down'***
7. **Key switch**
This switch enables the machine to be taken out of the buffers. The switch is also required to recover the platform when the fail safe brake has applied.



During normal use, the key must be removed.

8. **'Emergency stop' pushbutton**
When pressing this button, the machine is blocked.

When the 'Emergency stop' pushbutton is pressed, it remains in the depressed position. It can be released by rotating it.

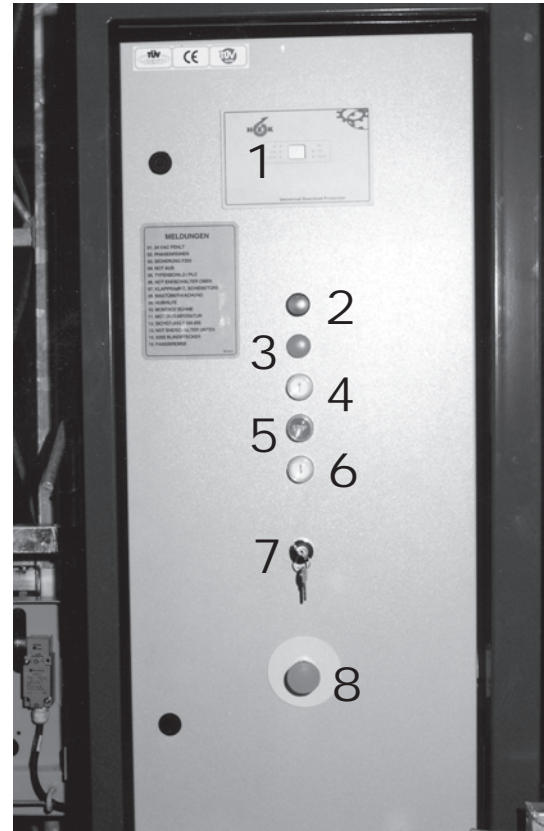


Fig.5-06 Platform control box

9. **Lock control box**
The control box is secured with the lock.

* These functions are only available in the transport platform mode.



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6. ASSEMBLY AND ANCHORING

This section describes the assembly and anchoring of the machine.



If assembly work must be interrupted, this must be done in such a way that, when the work is restarted it is clear what stage has been reached when work was stopped.

For this reason always complete each section of the assembly, for example, assemble, collect or secure all the components for a connection, complete a bedding or completely assemble an anchor before stopping work.



During the assembly of the mast no more than 2 persons are allowed on the transport platform and the total load (including passengers) should not exceed 650 kg (1,433 Lb).

The loading of the machine must be planned so that when the final section of the mast above the last anchor has been assembled (the maximum distance between anchors), the material load on the platform is at its minimum.



The assembly must always be followed by a test run, as described in section 7.3. Until the test has been performed, the machine may not be used for any other purpose than transporting its own mast elements and anchoring parts.



The maximum nett load of the hoist is 120 kg (265 Lb). Only mechanics are allowed to guide the load.

6.1 Preparation for assembly



Ensure that the site meets the national requirements and that permission has been obtained from the relevant authorities for the assembly

- Ensure that a suitable power supply, good lighting, lifting equipment and tools are available.
- Ensure that the building site is easily accessible for the trucks that will deliver the machine.
- Prepare the site with suitable ground support and anchoring facilities.
- Ensure that the position where the machine will be placed has good drainage.
- Plan the positioning of the machine as close as possible to the building, so the mast can be anchored with standard material.
- The components of the machine should be placed as close as possible to the place where it will be assembled.
- The building site power supply connection must be placed as close to the machine as possible in order to reduce the voltage drop to a minimum. When the voltage drop is too high, the machine will not work.

6.2 Ground support

The ground support and the ground should always meet the following requirements:

- The ground must be level and have sufficient carrying capacity.
- The weight must be distributed evenly over the largest possible base.
- The ground must be able to resist a min. load of 2 kg/cm^2 (28 Lbf-Inch^2). If this minimal requirement cannot be met, measures should be taken to improve the ground.
- The ground support must be able to resist a pressure of min. 20 kg/cm^2 (280 Lbf - Inch^2).
- The minimum ground support dimensions are:
 A = $600 \times 600 \text{ mm}$ ($23 \times 23 \text{ Inch}$)
 B = $350 \times 600 \text{ mm}$ ($14 \times 23 \text{ inch}$)
 C = $600 \times 600 \text{ mm}$ ($23 \times 23 \text{ inch}$)
- The ground support must be level and loaded centrally (fig. 6-01).
- The ground support should be durable in order to be able to carry load without being plastically deformed.
- When assembling on a concrete foundation or solidified road surface, always support with wood in order to prevent the machine from slipping away.

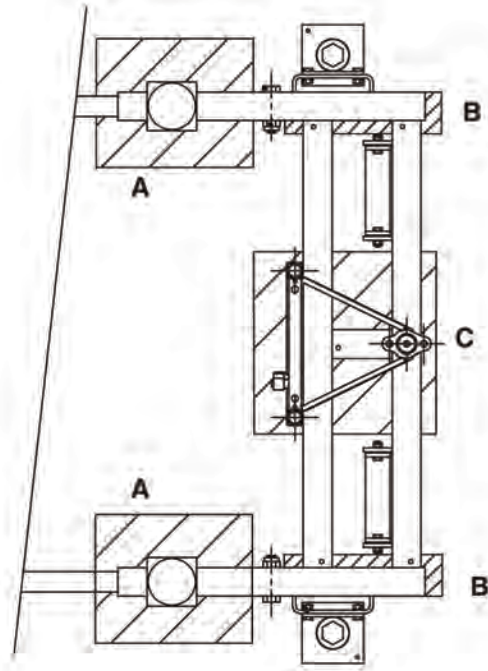


Fig.6-01 Positioning the ground support

6.3 Distance to building



A fixed fence (height 1.10 m - 43 inch) can be placed at each side of the GTP Dual T 1500 for additional protection.

See fig.6-02 for positioning the transport platform.

- A. Landing barrier
- B. Side barrier
- C. Scaffold section 2.5 m (98 inch) or landing
- D. Loading platform
- E. Transport platform
- F. Mounting bar for barrier B and vertical frame, both on one axis
- G. > 0.5 m (20 inch)
- H. Min. overlap of folding barrier 0.10 m (4 inch).

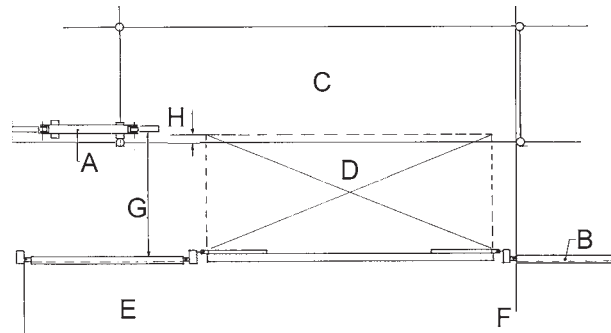


Fig.6-02 Distance to building



The loading platforms must always support the full length on the story and/or ground floor.

6.4 Assembling the transport platform

1. Place the machine parallel to the building, as described in section 6.3 and level the platform.
2. Install the ground support (see section 6.2 for detailed information) underneath the machine. Lower the machine.
3. Check if the mast is placed upright and if the entire machine is levelled. If not, the ground support must be corrected. Measure at both sides of the mast using a spirit level of at least 1 m (3.3 Ft).
4. Immediately turn up the screw spindles (fig.6-03, A) evenly until they no longer have a load bearing function.
5. Check if the lower striker plate (fig.6-04) is mounted in the correct position. If not, this striker plate should be installed.
6. Extend the 2.5 m (98 inch) stop rail completely (fig.6.05,A). The rail is mounted in the lower section of the left mast.

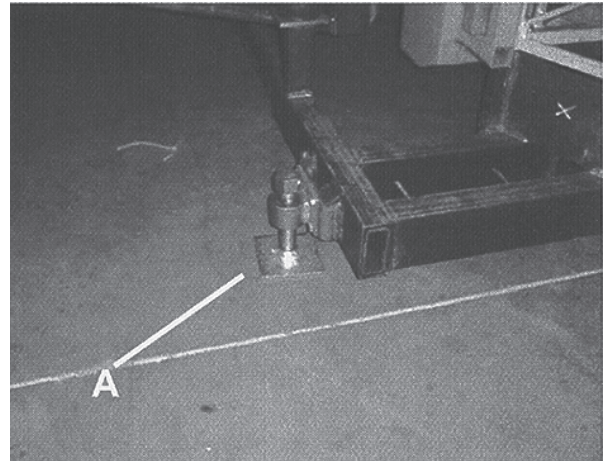


Fig.6-03 Screw spindles

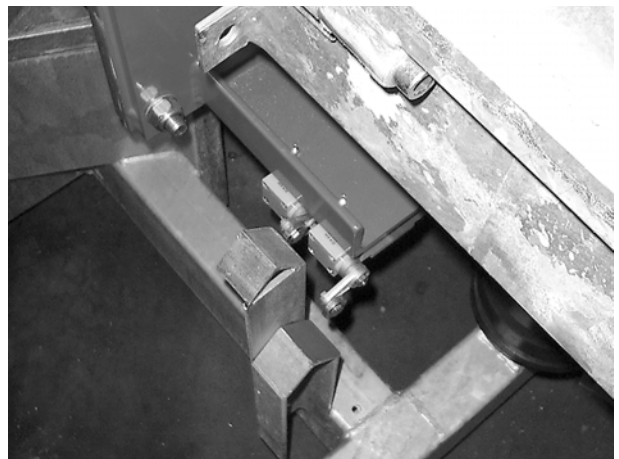


Fig.6-04 Lower striker plate

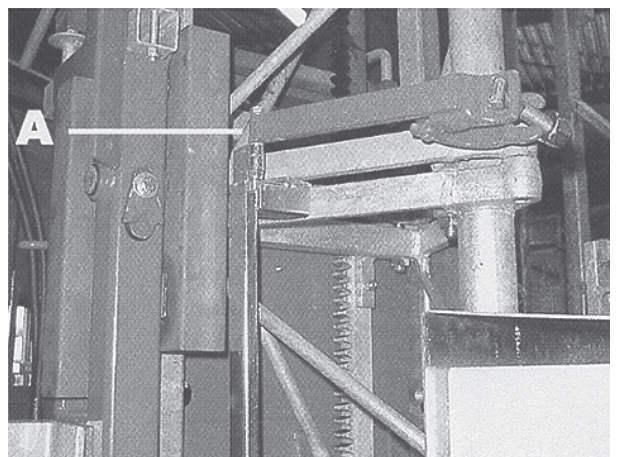


Fig.6-05 2.5 meter stop

6.5 Assembling the mast



If work has to be stopped, always complete the phase being worked on. Tighten all the bolts used for the last attachment and switch off and secure the main switch so that the machine cannot be operated.



As the assembly proceeds, position the anchor tubes, anchors and cable guides as described in section 6.6.



Ensure the building site power supply meets the power supply of the machine.



The masts must always be assembled upright.



At winds higher than 12.5 m/s (28 Mph) (6 on the Beaufort scale), the machine must not be assembled.



While assembling a mast element, the emergency stop pushbutton should be depressed.

1. Switch the key switch of the platform control box in position 'transport platform'. See section 7.4.
2. Connect the machine to the building site power supply connection. Ensure that the security circuit of both the ground station and the platform has been closed and that the phase sequence is correct. See section 5.7.



Make sure that the cable is undamaged and completely unwound.

3. When the machine is delivered, the platform is often still on the buffers. To remove the platform from the buffer, see section 7.12.
4. Check if the proximity switch is correctly working.
5. Raise the platform approximately 0.5 m (1.65 Ft). Lower the platform. The operation of the lower limit switch can be checked this way.

In addition, the motor control can be turned off by using the emergency stop button.

6. Open the mast protection (fig.6-06, A).

Open the door of the assembly platform by lifting it and tilting it backwards (fig.6-060, 6-061 and 6-062). When the door has been opened, the platform is blocked.

Secure the first mast element with 4 bolts, self-locking nuts and U-rings . If no hoist is available, the mast elements must be positioned by two persons from the platform. Tighten the bolts to the prescribed torque using a torque wrench (see section 1.2).

If a hoist is available at the work site, the mast can be assembled quicker. Four mast elements can be mounted on the ground and set in place with the hoist.

7. Mount the first anchor. See section 6.6.



Ensure that the other anchors are installed at the required distances. See section 1.

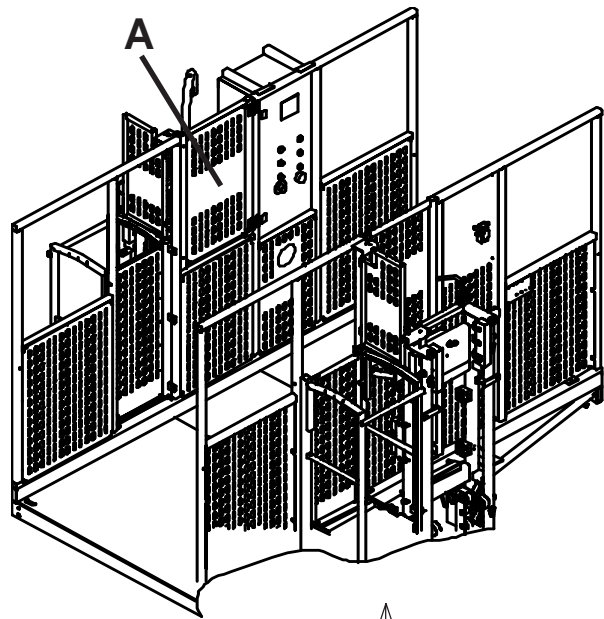


Fig. 6-060 Mast protection

Fig. 6-061 Lifting assembly platform

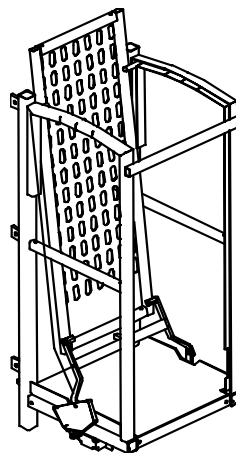


Fig. 6-062 Tilting assembly platform backwards

8. Close the mast protection (fig.6-06, A). AND the assembly platform (fig.6-060, 6-061 and 6-062). Raise the platform to the top of the mast element and repeat the procedure until new mast elements must be loaded.

Plan this procedure so that, when an anchor must be put in position, the load of material and mast elements is at a minimum.

9. Repeat these steps until the mast has reached the required height. The last mast element to be mounted is the top mast (fig.6-07).

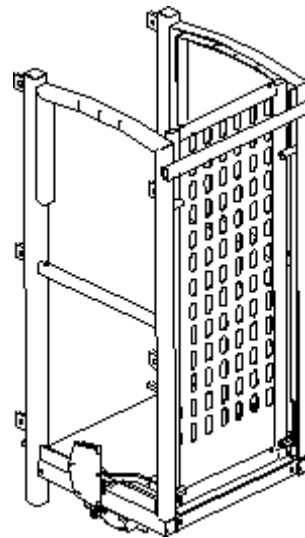


Fig. 6-063 Platform locks



The maximal permissible mast height should not be exceeded (see section 1).

10. Mount the red striker plate (UPPERMOST and top mast emergency stop) to the mast side (fig.6-08, A).



Make sure that the mast is not assembled beyond the uppermost anchor (max. 3 m - 10 Ft).

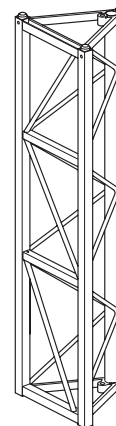


Fig.6-07 Top mast element

11. At construction sites where danger exists of people moving in the machine range, the entire machine must be protected with a fence.
12. Close the barrier of the mounting platform and lock it with a bolt. This is also the position of the fence during machine operation.

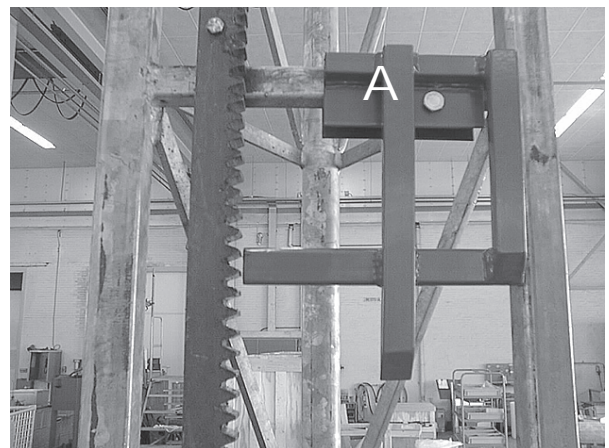


Fig. 6-08 Uppermost emergency stop

13. The assembly is now completed. It should be tested by carrying out a test ride as described in section 7.2 & 7.3. In addition, a drop test should be performed. See section 9.4.
14. Switch the machine key switch to the required position, either material hoist or transport platform. See section 7.4.
15. The entrance and loading places of the building or scaffold have to be secured by landing barriers. See section 6.10.
16. If used as a material hoist:
The machine can be protected by a fence to prevent people from walking underneath it.
17. If used as a material hoist:
See section 7.4 for selecting the machine mode.
18. The assembly is now completed. It should be tested, as described in section 7.2 & 7.3. In addition, a drop test should be performed. See sections 9.4.1 and 9.4.2.

6.6 Anchoring the masts



If work has to be stopped, always complete a certain mounting phase. Tighten all the bolts used for the last attachment and make sure that the main switch is turned off and is locked, so that the machine cannot be operated.



The load of the machine should be such that it is the minimum load allowed when it reaches the maximum height above the last anchor (max. anchoring distance).



The facade must be able to resist the anchoring forces (see section 1.6). These forces should be approved by the owner or the person responsible for the building. When anchoring the machine to a scaffold, this must be discussed with the scaffold builder and be carried out according to static rules.



Before work on anchoring is started, use a spirit level to recheck if the concerning mast really is upright. Repeat this procedure with every anchoring.



When mounting an anchor, the emergency stop should be operated.



The anchoring should be mounted to the building only.

1. Check if the mast is vertical using a spirit level of at least 1 m (3.3 Ft). Repeat this procedure for each anchoring.
2. The mast should be anchored with the anchoring distances from the table in section 1.1.
3. Fasten the anchors:
 - The anchors have to be fitted with bolt joints, nut / bolt joints and washers.
If required, other approved fixing materials and materials adapted to the anchoring forces can be used; however, first consult your dealer.
 - Cast anchors have to be installed before the transport platform is built, in order to allow the concrete to cure. The concrete used must comply with the regulations.
 - If chemical anchors or expansion bolts are used, they have to be approved and able to absorb the forces measured.
 - Ask your supplier for specifications of these bolts.
Approval for use must be requested from the local authorities.

An anchoring consists of a mast adapter, scaffolding tubes, wall plates, standard joints, universal joints, screw bolt joints. The scaffolding tubes are available in various sizes.



The masts must be equally anchored on both sides.

4. Fasten the mast adapter (fig.6-09, 2) on the mast (fig.6-09, 1).
5. Mount the wall plates (fig. 6-09, 4) to the facade.
First drill the necessary holes for the wall plates in the façade.
6. Fasten the horizontal anchor tubes (fig. 6-09, 3) between the mast adapters and wall plates.
7. Level the masts with the adjusting device and make sure that they are parallel to the building.
8. Tighten the horizontal anchor tube joints to the required torque.

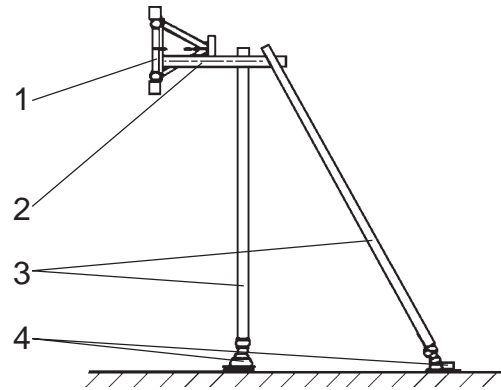


Fig. 6-09 Anchoring to the façade

6.7 Lightning protection

1. The mast has to be grounded to the lightning conductor or another grounded point with a 25 mm² (0.039 Inch²) cable (fig. 6-10). A grounding point can often be found at the building site assembly. Consult the expert at the construction site for the grounding point. A 25 m (82 Ft) (cable with a 25 mm² (0.039 Inch²) diameter) is included as a standard accessory.

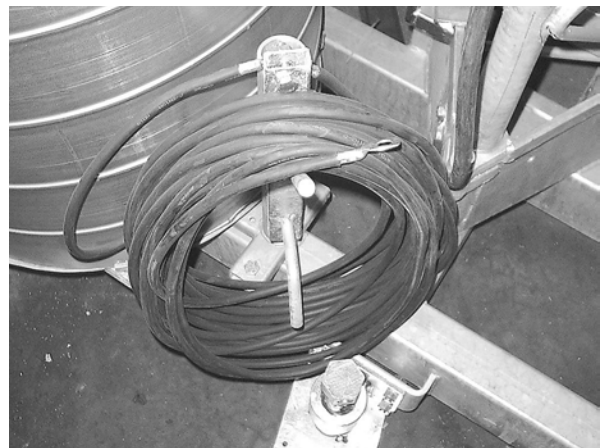


Fig. 6-10 Lightning protection

6.8 Landing barriers

The loading and unloading places of a building or scaffold have to be protected by landing barriers.

- 1 Install the landing barrier (fig. 6-11, A or C) and kick plate (fig. 6-11, B or fig. 6-11, D) at the correct position for the loading and unloading place at the façade or scaffold

2. Mount the rail (fig. 6-12, A) with the landing striker plate (fig. 6-12, B) for the landing stop at the required height in the mast

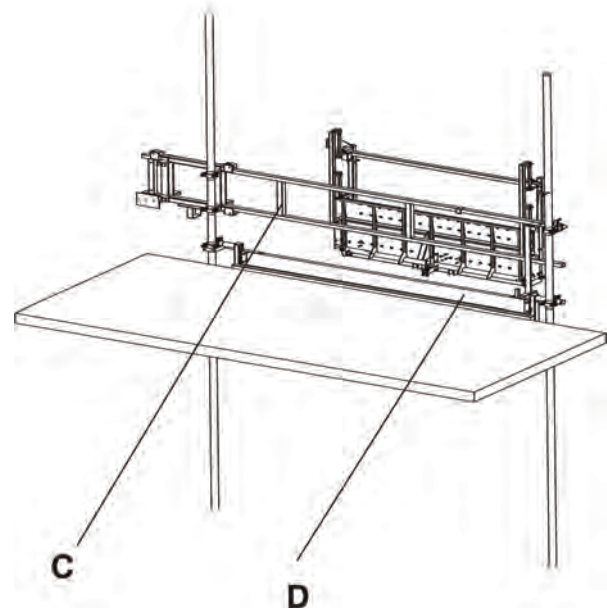
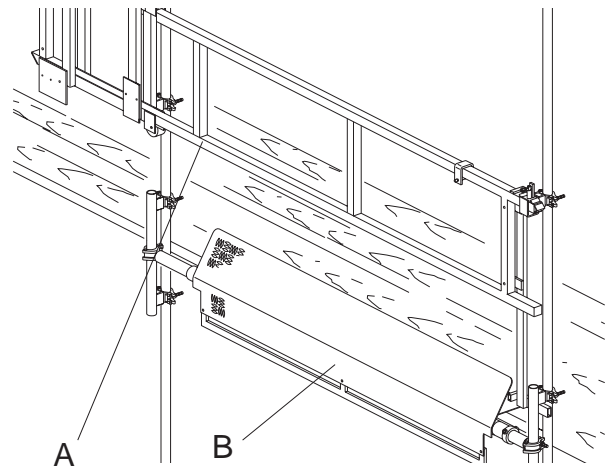


Fig. 6-11 Platform barrier

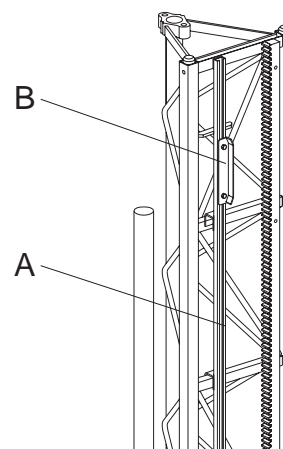


Fig. 6-12 Platform striker plate

7. OPERATION

7.1 General



During use of the machine, nobody is allowed under the platform.



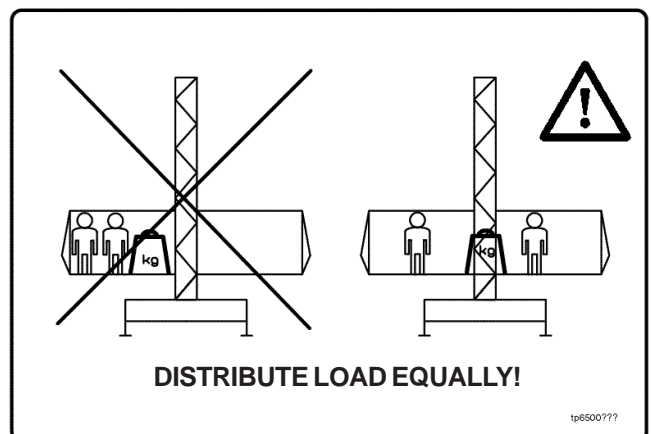
It is not allowed to have loads protruding over the edge of the platform. Moveable loads should be secured. The platform fencing must not support the loads in any way.



The maximum reactive force (caused, for example, by tools) of the platform with regard to the façade should not exceed 400 N (90 Lbf). When ending or interrupting the work, the main switch should be locked with a padlock.



When ending or interrupting the work and when leaving the building site, the main switch must be locked with a padlock.



7.2 Preparation for daily use

1. Remove the padlock from the main switch and put the main switch to the position '1'.
2. Check the security circuit of the ground station. The green indicator lamp 'operative' (fig.7-01, A) on the control box should be illuminated.
3. Check the phase sequence.
4. Select either the transport platform mode or material hoist mode (optional). For detailed information, see section 7.4.
5. Close the sliding door, the loading ramp and the platform barriers in order to close the security circuit.
6. Visually inspect the machine from the platform.
Inspect the following:
 - anchoring and cable guides
 - presence of safety devices
 - mast element joints
 - upright position of masts and level position of platform
 - any loose parts
 - correct functioning of end switches (lower, upper, emergency lower, emergency upper)
 - absence of obstacles in platform track
 - functioning of motor brakes
7. Visually inspect the machine from the ground:
 - condition of the site and ground support
 - electrical connections (cables and voltage)
 - presence and functioning of the safety devices
 - safety aspects
 - oil leakage from motor carriage

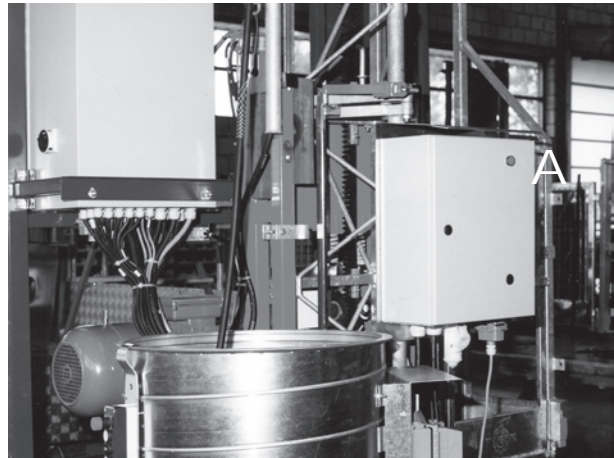


Fig.7-01 Control box

7.3 Periodic check

Carry out a test ride with the platform and proceed as described in appendix 1.

The checks mentioned in the appendix should be carried out whenever the machine has been erected, at least once a year during normal use.



The checklist does NOT replace the maintenance instructions to be found in the operator's manual.

7.4 Converting the machine

The machine can easily be converted from a transport platform (with passenger transport) into a hoist (no passenger transport allowed) and vice versa.



Only a qualified person is allowed to convert the machine.

- Switch the key switch at the inside of the switch box on the platform in the required position and close the switch box. See fig.7-02, A.
 - Position 12 m/min (39 Ft/min):
Material hoist
(no persons allowed)
 - Position 12 m/min (39 Ft/min):
Transport platform (persons allowed)
- Put the identification plate (fig.7-03) in the correct position (A = material hoist / B = transport platform).

The position of the identification plate is electrically monitored. When the position of the identification plate does not correspond with the position of the key switch, the machine cannot be put into operation.



When the machine is in the material hoist mode, electrically secured landing barriers should be used.

- Control in
 - material hoist mode
Connect the remote control (fig.7-04, A) to the ground station control box (fig.7-04, B).
 - transport platform mode
Use the dummy connector (fig. 7-04,B).

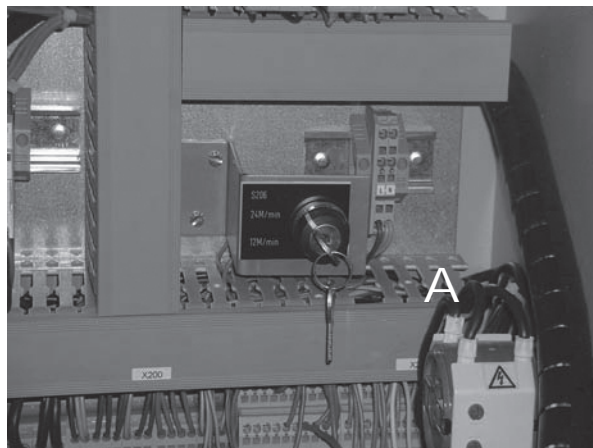


Fig.7-02 Key switch

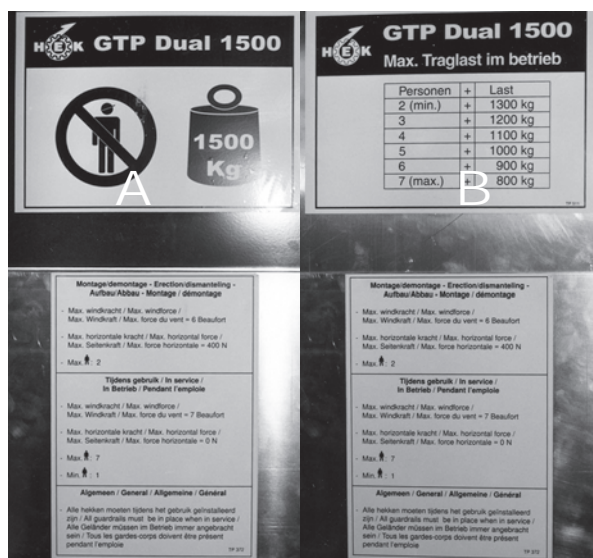


Fig.7-03 Identification plate transport platform / material hoist

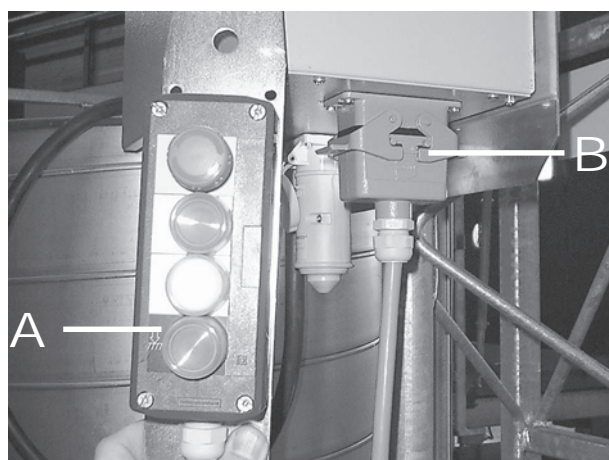


Fig. 7-04 Controlling the machine in material hoist mode

7.5 Operating the machine from the platform (transport platform - GTP mode)



The machine is only to be operated by qualified persons.

1. Check whether the correct identification plate is shown and the key switch is in the position 12 m/s (39 Ft/min) (see paragraph 7.4). If not and the information display shows an error 04, correct it.

The machine can also be operated in GTP mode without ground station control box (optional). For that purpose, you must connect the machine as described in paragraph 5.1.

2. Check whether the machine is connected to the mains. Check the position of the main switch on the cable drum (fig. 7-05, A) and ensure that the green indicator lamp on the platform control box (fig. 7-06, A - security circuit closed) is lit. If not, check whether the emergency stop button (fig. 7-06, B) on the platform control box has been pressed, a landing barrier has not been closed correctly or the dummy plug (for use in combination with the ground station control box) has been installed.



When the machine is not used, lock the main switch.

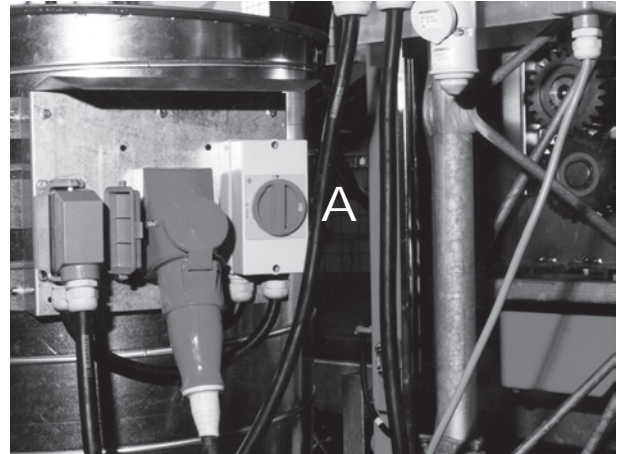


Fig.7-05 Main switch on cable drum

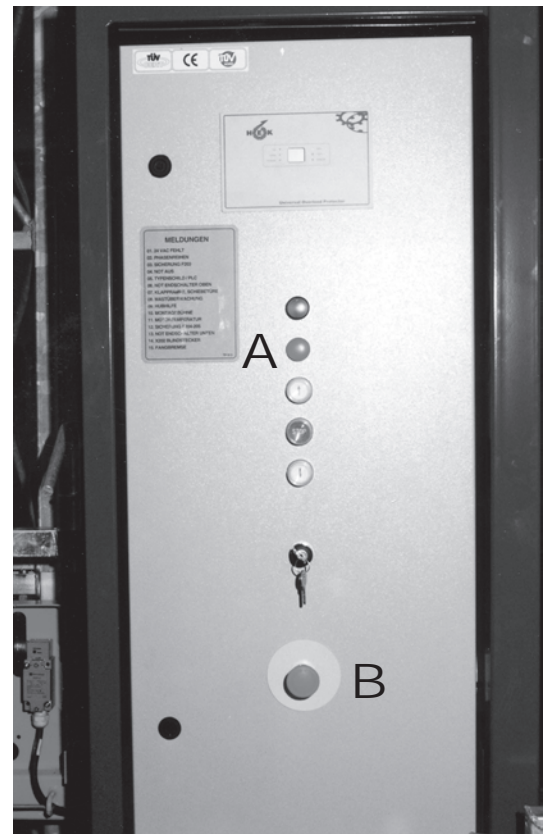


Fig.7-06 Platform control box

3. Proceed as follows to operate the machine:

UP (fig. 7-07, A)

If this button is pressed, the transport platform will go up. As soon as the button is released, the transport platform will stop (dead man's operation).

DOWN (fig. 7-07, C)

If this button is pressed, the transport platform will go down. As soon as the button is released, the transport platform will stop (dead man's operation). The machine is fitted with a 2.5 m (98 inch) stop. This means that while descending, the platform will stop at a 2.5 m (98 inch) height. Release the button and press it again as soon as the green indicator light is lit. A warning signal will then sound and the platform will descend further.

NEXT LANDING (fig. 7-07, B)

If the UP or DOWN button and subsequently the LANDING button is pressed, the platform will stop at the next landing. This button should only be pressed briefly.

EMERGENCY STOP (fig. 7-07, D)

When pressing this button, the machine is blocked.

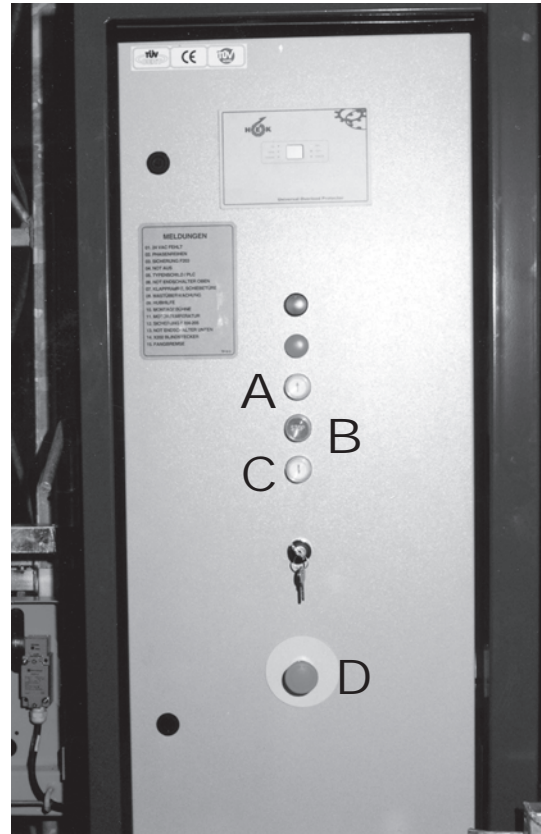


Fig.7-07 Plattform control box

7.6 Operating the loading platform (material hoist - GTL mode)



Only a qualified person is allowed to operate the machine.

1. Check whether the correct identification plate is shown and the key switch is in the position 24 m/s (78 Ft/min) (see paragraph 7.4). If not and the information display shows error code 04, correct it.

The machine can only be operated in GTL mode with the ground station control box (optional) installed. Connect the machine as described in paragraph 5.1.

2. Check whether the machine is connected to the mains. Check the position of the main switch on the cable drum (fig. 7-08, A) and ensure that the green indicator lamp on the ground station control box (optional) is lit. If not, check whether the emergency stop button on the platform control box has been pressed, a landing barrier has not been closed correctly or the dummy plug instead of the remote control (fig. 7-09) has been installed.



When the machine is not used, lock the main switch.

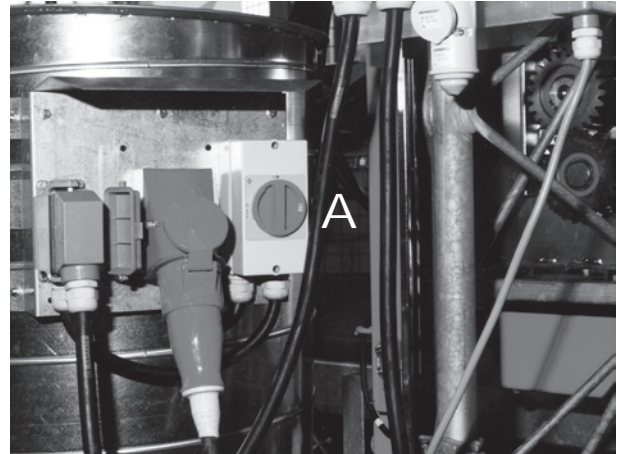


Fig.7-08 Main switch on cable drum

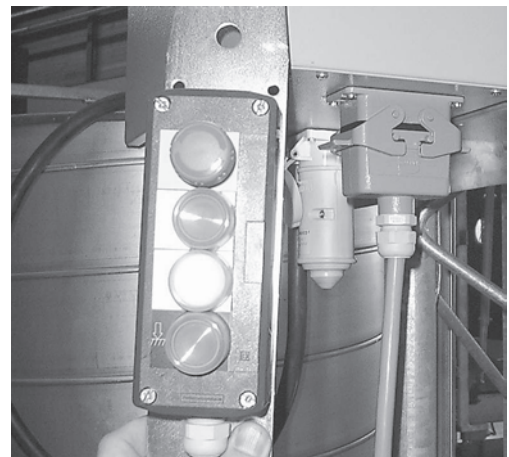


Fig.7-09 Remote control

3. Proceed as follows to operate the machine:

EMERGENCY OFF (fig. 7-10, A)

When pressing this button, the machine is blocked. When the 'Emergency stop' pushbutton is pressed, it remains in the depressed position. It can be released by rotating it.

UP (fig. 7-10, B)

If this button is pressed, the platform will ascend.

This button should only be pressed briefly (automatic control).

NEXT LANDING (fig. 7-10, C)

If the UP or DOWN button and subsequently the LANDING button is pressed, the platform will stop at the next landing. This button should only be pressed briefly.

DOWN (fig. 7-10, D)

If this button is pressed, the platform will descend.

This button should only be pressed briefly (automatic control).

The machine is fitted with a 2.5 m (98 inch) stop. This means that while descending, the platform will stop at a 2.5 m (98 inch) height. Press the DOWN button again. A warning signal will then sound and a warning lamp will flash. The platform will descend further.

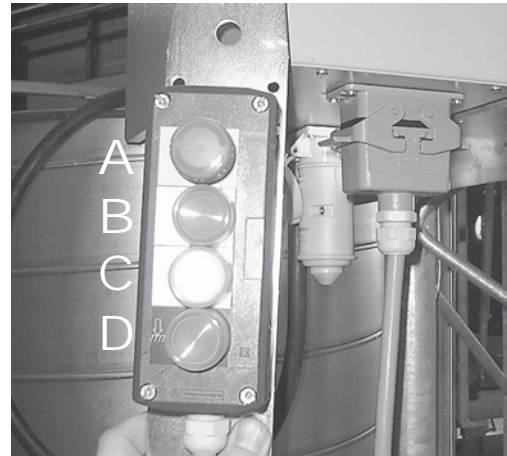


Fig.7-10 Remote control

7.7 Transferring to scaffold or platform

When approaching a place for transferring, pay attention to the following.

Opening:

- Bring the transport platform to the required height.
- Lower the transfer plate (see section 7.9). The sliding door (fig. 7-1, 1) will be unlocked mechanically when the transfer plate (fig.7-11/12, 2) is pushed down by the loading platform.
- Open the landing barrier (fig.7-11, 3)
- Open the sliding door (fig. 7-11/12, 1)
- You can transfer safely.

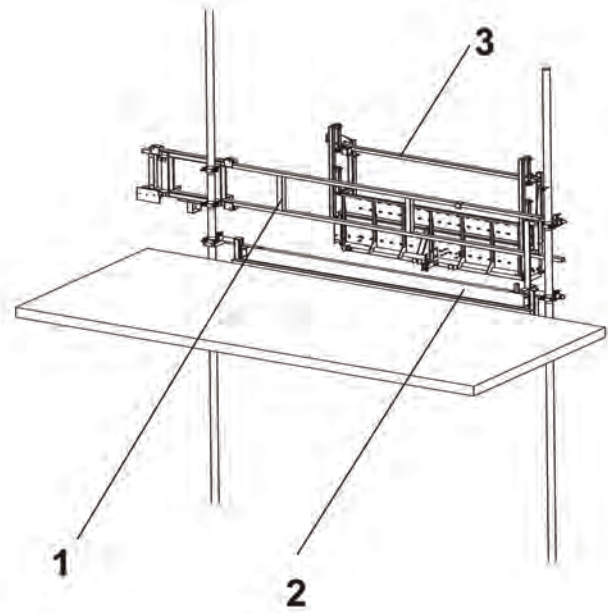


Fig. 7-11 Transfer plate

Closing:

- Close the sliding door (fig. 7-11/12, 1) to prevent the transfer plate from being locked mechanically in the open position.
- Close the landing barrier (fig.7-11, 3)
- Close the transfer plate (see section 7.9).
- The limit switches are released and the safety circuit is closed. The transport platform can be moved up or down.

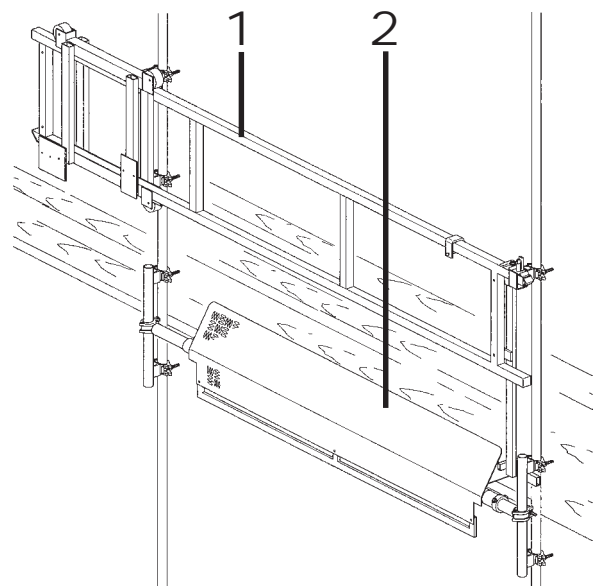


Fig.7-12 Landing barrier

7.9 Transfer plate operation

Opening:

- Push the sliding lock backwards to unlock the transfer plate (fig.7-13-3, A).
- Lower the transfer plate.
- Raise the landing barrier (fig. 7-13-4, A) and secure it.

Closing:

- Close the sliding door.
- Lower the landing barrier.
- Raise the transfer plate.
- The sliding door is locked automatically.

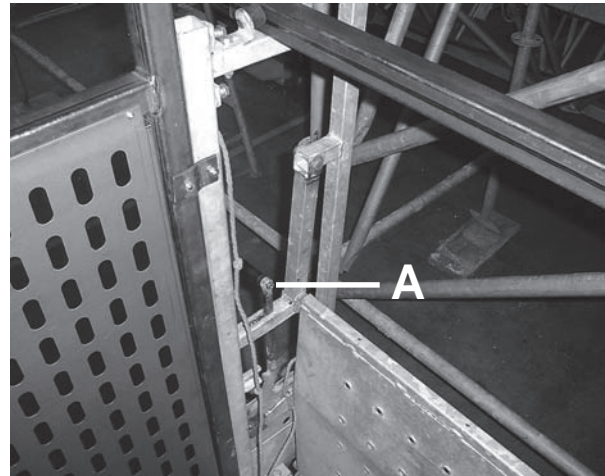


Fig. 7-13-3 Opening the transfer plate

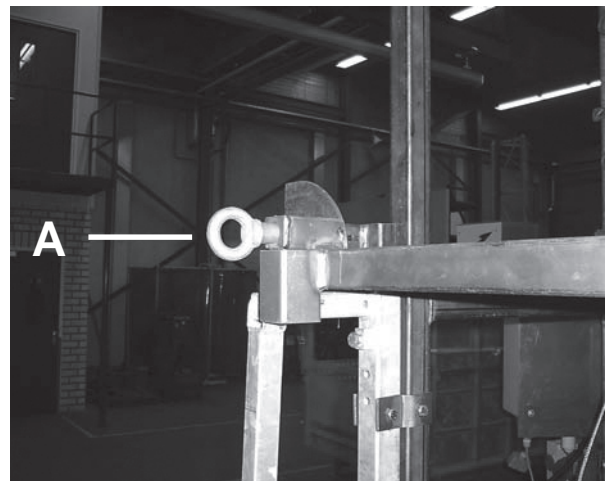


Fig. 7-13-4 Raising

7.10 Operation in an emergency situation

In an emergency situation, for example in the event of a power failure, the platform can always be lowered.

- Try to correct the error by using the malfunction analysis, section 10. If the error cannot be corrected, it is possible to make an emergency descent to the next landing in the following manner:
 1. A lever (fig. 7-14, 1) on the motor can be used to release the motor brake.
 2. When this lever is operated, the platform will descend. The levers must be operated simultaneously by two persons who can communicate with each other.



The rate of descent may not exceed the rate of descent during normal use. If the rate of descent is too high, the fail safe brake will be activated. After descending 5 m (16 Ft), stop the platform for 2 minutes, since otherwise the brake discs may become too hot and therefore endangering the efficiency.

3. A connection shaft between the masts prevents the platform from tilting. However, the machine control system may detect an overload situation, because when lifting a motor brake, the full load shifts to the other motor, resulting in an overload situation. By lifting the brake of the loaded motor only slightly till both motors are loaded equally again, you can prevent the system from detecting an overload situation.

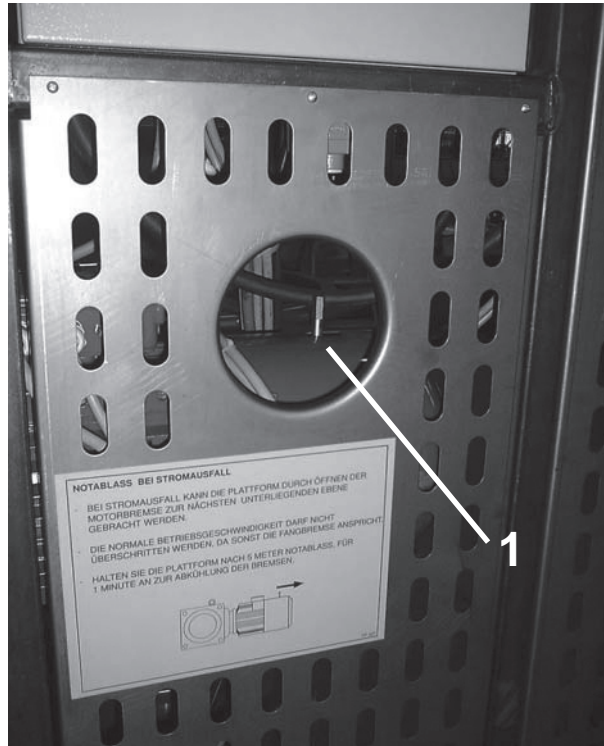


Fig.7-14 Motor brake release lever

7.11 Fail safe brake

When the maximum speed is exceeded, the fail safe brake stops the platform.



When the fail safe brake has been activated, the cause of the failure should be investigated first. Any failure should be repaired before the fail safe brake may be set back to 'reset'. If the cause of the failure is not clear, please contact our service department.

See section 9.4 for resetting the fail safe brake.

7.12 Overload protection

The transport platform is provided with an overload protection measuring the static load of the platform.

In case of overload of the platform, the overload protection will be activated. A red indicator lamp (fig.7-15, A) will light on the platform switchbox and an acoustic warning signal will sound. The machine can no longer be operated. To cancel this situation, part of the load should be removed from the machine.



Fig.7-15 Overload indicator light

7.12 Raising the transport platform from the buffers

1. Turn the key switch (fig.7-16, C) into the position 'SERVICE I'.
2. Press the button 'UP' (fig.7-16, B).

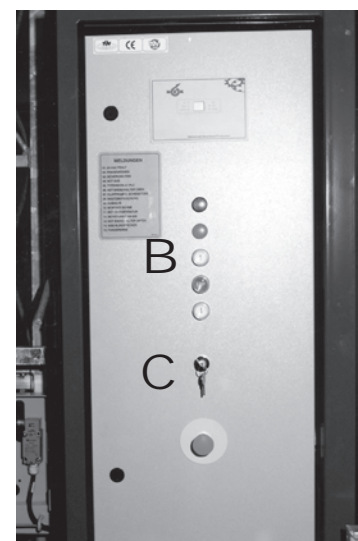


Fig.7-16 Raising the machine from the buffers



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8. DISASSEMBLY AND TRANSPORT



Make sure that the maximum load for the building situation is not exceeded.



At winds higher than 12.5 m/s (28 Mph) (6 on the Beaufort scale), the machine must not be disassembled.



Never remove an intermediate anchor.



Never remove the uppermost anchor unless the mast is disassembled above the anchor and the platform is not loaded.

1. Check all connections, safety devices, switches and safety measures.
Note possible malfunctions.
2. The assembly platform can be used during the disassembly.
3. Set the key switch on the switchbox in the position 'transport platform'. See section 7.4.

4. Open the mast protection (fig. 8-01, A) with a 13 mm wrench. The mast elements can easily be disassembled by means of the lifting aid.
5. Disassemble the mast elements above the uppermost anchors using a crane or the aid of two persons. Before removing the uppermost anchor, transport all the material already removed to the ground level in order to lower the weight of the platform.
6. Disassemble the uppermost anchor.
7. At the same time the masts are being disassembled, remove the anchors of the disassembled masts. The activities on the façade can still be performed during the disassembly.
8. If a crane is present on the building site, the mast can be disassembled more quickly. In this event, four mast elements can be removed at the same time and lowered to the ground for further disassembly.
10. Repeat this procedure until the mast has been disassembled completely and the platform is in the lowest position.
10. Switch the main switch in position '0'.
11. Disconnect the power supply cable.
12. Carefully store all cables.
13. Allow the transport platform to sink onto the buffers by releasing the motor brake.



Fig.8-01 Mast protection

9. MAINTENANCE

9.1 General

The simple and robust construction of the machine allows maintenance to be limited to a minimum. Responsible use of the machine, regular inspection and checks on proper functioning and regular cleaning will result in a minimum of necessary maintenance. This guarantees a long working life for the hoist.




The maintenance of the hoist should only be performed by qualified mechanics, preferably from the manufacturer or the dealer.

All parts should comply with the technical specifications of HEK Manufacturing B.V.! Only use original parts from HEK Manufacturing B.V.!



Before starting maintenance activities:

- Switch off the main switch. The main switch should be locked with a padlock. (After switching off the main switch, parts marked with  may still be live).
- Disconnect the plug from the power supply.
- Lower the hoist onto the support.
- During work under the cabin, lock the platform mechanically.

9.2 Maintenance intervals

The following maintenance activities are necessary:

A. Daily maintenance

Daily maintenance is described in section 7.2.

B. Weekly maintenance

- Carry out all the activities listed under 'Daily maintenance'.
- Grease the rack-and-pinion drive. If the rack and pinion are seriously contaminated with sand or grit, it will be necessary to clean them.

Grease specification:

- HEK rack- and-pinion grease;
- SHELL Rhodina 2.
- Check the condition of the guide blocks to the left and to the right (fig.9-01, A) and lubricate the blocks.
- Clean the hoist and the drive unit. In particular pay attention to crustation on the cooling ribs of the motor.
- Check the racks and pinions (pitting).



If the hoist is used intensively, grease racks and pinions more frequently.

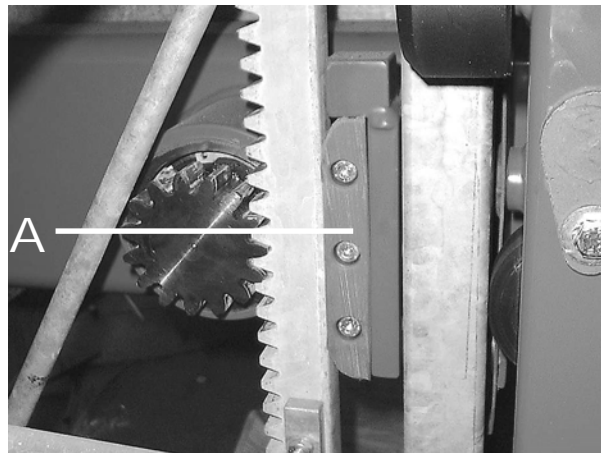


Fig. 9-01 Guide blocks, left-hand side

C. Monthly maintenance

- Carry out all the activities listed under 'A'.
- Inspect the rollers and guides (visual inspection of security devices, seals and bearings).
- Check that all mast bolts are present and tightened with the correct torque (use a torque wrench).
- Check that all other bolts are present and tightened.
- Check all locking devices and hinges.
- Check all mast anchors, tighten loose parts, if necessary.
- Grease the spindle legs, if mounted, and the axle stubs of the wheel carrier.
- Check the operation of the limit switches.
- Check the oil level in the drive unit reduction gearbox.

If necessary top up with the same type of oil, viscosity class PGLP ISO VG 460.

D. Quarterly maintenance

- Carry out the maintenance listed under 'B'.
- Check the motor brake (see section 9.3.3).
- Check the clearance in the bearing rollers and guides.
- Check the rack-and-pinion drive (visually).
- Perform a drop test.

E. Annual maintenance

- Carry out the activities listed under 'C'.
- Inspect for rust, damage to the paint and the condition of welds.
- Check the fastening bolts of the rack-and-pinion drive.
- Check if the lower mast bolts on the ground frame are not subject to corrosion. Replace the bolts if necessary and tighten the new bolts with 110 Nm (81 Lbf-Ft)
- The machine should be inspected every year by a qualified person.

F. Triennial maintenance

- Carry out the activities listed under 'D'.
- Change the oil in the drive unit reduction gearbox.
Grease specification motor, viscosity class PGLP ISO VG 460.

G. Maintenance during storage of the machine

- Inspect the complete machine.
- Inspect all vital components and replace any components which might have become damaged.
- Grease the rack-and-pinion drive.
- Inspect the mast elements (including the racks) and check that all removable connections are in good condition.
- Inspect the lower mast bolts for corrosion and replace them if necessary.
- Cover the basic machine with a tarpaulin; in any event, cover the switch boxes and the limit switches.
- The machine must not stand on the support during storage over a long period.
- For storage over a long period, consult your dealer.

H. Fail safe brake revision

The fail safe brake should be inspected by HEK Manufacturing BV every 10 years after the date of the first drop test. The initial date of this test is indicated on the identification plate. Please refer to your HEK dealer for inspection of the fail safe brake.

9.3 Motor brake

9.3.1 General

The motor contains an electromagnetically operated spring actuated brake (fig. 9-02). The design of this brake is based on the 'normally on' principle. That is to say, in case of switching off or power failure, the brake will be activated and the motor shaft will be subject to braking ($n = 0$ rev/min).

The braking moment depends on friction between several plates and the brake can only be used in 'dry' (ungreased) conditions.

9.3.2 Operation

The brake mechanism contains a metal rotor (A) with friction material on both sides.

Four compression springs (C) in the stator exert an axial pressure on the anchor plate (E). This anchor plate presses against the rotor. The rotor is mounted on the shaft in such a way that it can slide in an axial direction over the shaft. Because the anchor plate presses against the rotor, the rotor is pressed against the friction plate (G). The friction between the friction material on both sides of the rotor, the anchor plate and the friction plate provide the necessary braking action.

A braking coil (H) is fitted in the stator. This coil generates a strong magnetic field when a (direct) current passes through it. In order to release the brake, a direct current must be made to flow through the braking coil. The magnetic field generated by the braking coil 'pulls' the anchor against the stator and thus releases the brake.

The motor brake can also be released with the manual release lever. If the lever is moved in the direction of the arrow (on the fan cover), the anchor plate is moved by two ball-ended bolts against the action of the spring and pulled against the stator, thus releasing the brake.

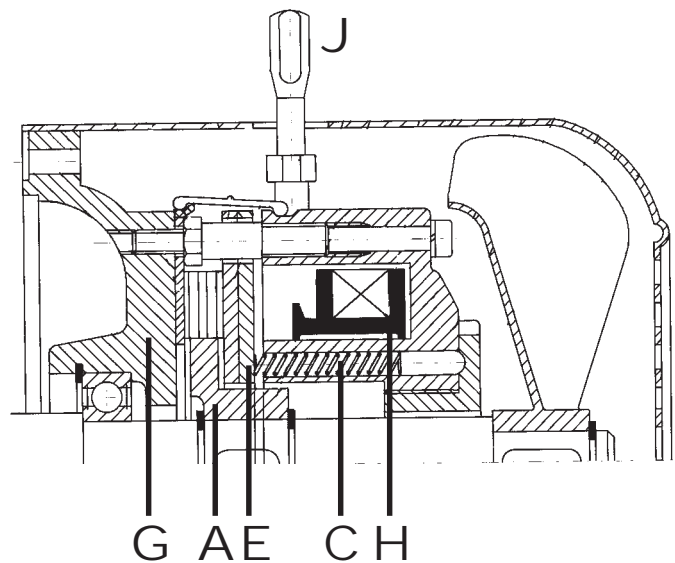


Fig.9-02 Fail safe brake, functioning

9.3.3 Maintenance

In normal use the motor brake is more or less maintenance free. It is only after frequent raising and lowering of the hoist that it may be necessary to adjust the air gap between the anchor disk and the stator and, if necessary, to replace the rotor.

To check the condition of the brake, the width of the air gap 'a' and the thickness 'x' of the friction material on the rotor must be measured (fig. 9-03).

The air gap 'a' is adjusted by the manufacturer to 0.4 mm (0.016 inch) and may never be wider than 1.0 mm (0.039 inch). The total thickness of the rotor (including the friction material) must not be less than 11.5 mm (0.45 inch).

Proceed as follows:

1. Switch off the power supply to the hoist with the main switch and lock this with a padlock.
2. Remove the brake release (J) with the aid of a wrench.
3. Remove the fan cover from the motor.
4. Remove the rubber seal and use a feeler gauge to measure the width of the rotor 'x'. Replace the rotor if the thickness is less than 11.5 mm (0.45 inch). The adjusting ring of the brake should be as far as possible in the stator after having been mounted again.
5. Use a feeler gauge to measure the width of the air gap 'a' near to the three hollow setscrews.

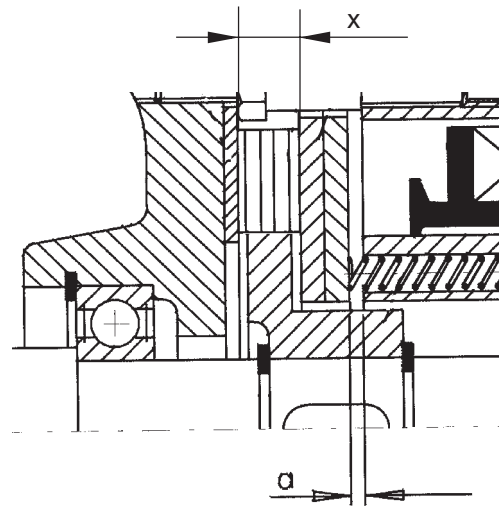


Fig.9-03 Motor brake, air gap

6. Proceed as follows to adjust the width of the air gap 'a' (also see fig. 9-02 and fig. 9-03):

- Use a wrench to turn the three hollow setscrews further into the stator. Ensure that all three screws are equally turned into the stator.
- Use a feeler gauge to measure the air gap 'a' near to the screws and tighten the screws, if required, to obtain an air gap at every bolt of 0.4 mm (0.16 inch).
- Tighten the three locking bolts.
- Check the setting and repeat if necessary.



The manual release lever mechanism is NOT to be readjusted after setting the air gap in order to guarantee the correct functioning of the brake.

7. Mount the rubber seal, the fan cover and the manual release lever.

9.4 Fail safe brake

If the rate of descent is exceeded, the platform will be stopped by the fail safe brake mechanism (fig.9-04), the machine will be shut down and held in position.



Whenever the fail safe brake has been activated, the origin of the fault must first be determined. The fault must first be corrected before the fail safe brake may be returned to its normal position. In the event of uncertainty, the service organisation must be informed.



The fail safe brake should be set by an expert.

Ask your dealer for information about the load situation and the applicable legal regulations in your country.



The fail safe brake is set to the maximum speed by the manufacturer. This setting must never be changed.

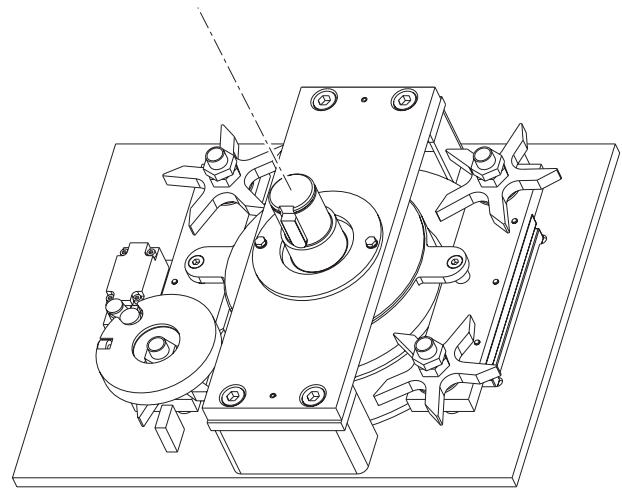


Fig.9-04 Fail safe brake

9.4.1 Drop test

The functioning of the fail safe brake must be checked regularly. Use the special remote control for this purpose.



No persons are allowed on or under the platform during the drop test.



The fail safe brake can only be tested when the machine is in the transport platform mode.

Check the operation of the fail safe brake as follows:

1. Check that the machine is in the GTL mode.
2. Put the switch on the panel door in position SERVICE I (drop test).
3. Remove the dummy plug and connect the remote control (fig.9-05, B) to the fail safe brake socket (fig.9-05, A).
4. Put the switch (fig. 9-06, 1) in position 'I' and press the button 'UP' (fig. 9-06, 3) to send the machine to a height of 5 m (16 Ft).
5. Put the switch (fig. 9-06, 1) in position 'II'. (drop test).
6. Press the drop test button (fig. 9-06, 2). The brakes are now released and the platform starts descending too fast. After approximately 2 - 3 m (1.6 - 3.2 Ft) the machine should stop.

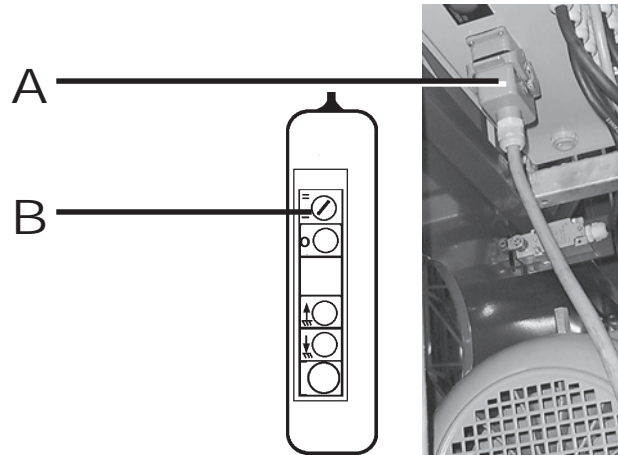


Fig.9-05 Fail safe brake remote control

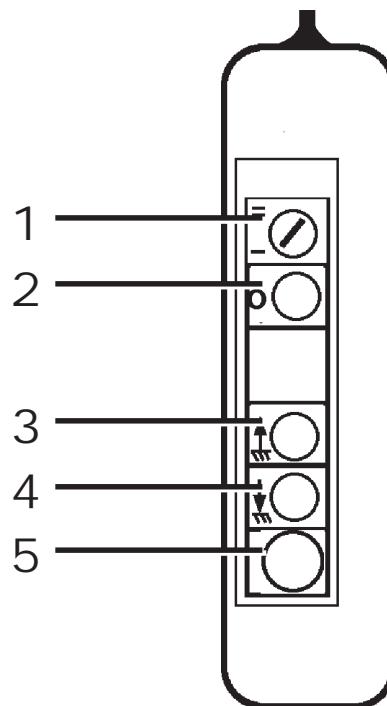


Fig.9-06 Fail safe brake remote control



If the fail safe brake does not function within 2-3 m (6.5 - 9.8Ft), immediately release the drop test button (fig. 9-06, 2). Please contact the service organisation.

The remote control also contains an emergency stop button (fig. 9-06, 5).

7. Reset the fail safe brake after the drop test. See section 9.4.2.

9.4.2 Returning the fail safe brake to its original position

1. Put the switch (fig.9-06, 1) in position 'I'. Press the button 'UP' on the remote control to raise the transport platform with 1 meter (3.2 Ft). Then lower the platform to the ideal working height for resetting the fail safe brake.



Always lock the machine before starting to work on the under the platform.

2. Turn the 4 star wheels (fig.9-08, B) counterclockwise, against the nut. Remove the notches if necessary (fig.9-08, A).



Mount the notches (fig.9-08, A), if removed before. The notches are very essential components for the correct functioning of the fail safe brake.

3. Put the disc (fig.9-08, C) in into its starting position.
4. Lower the platform till it reaches the lowest working position.
5. Put the switch on the panel door in position 'NORMAL'

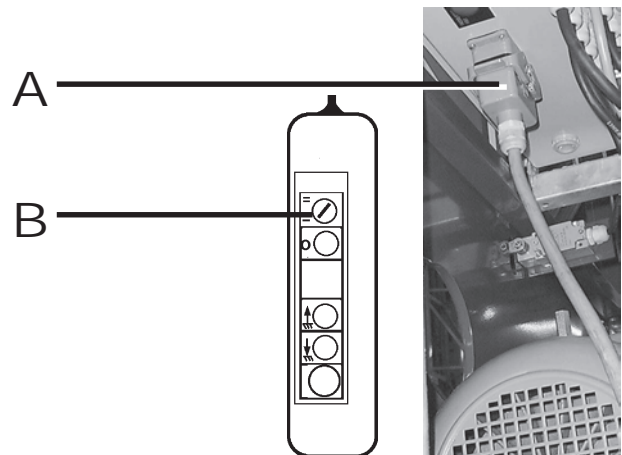


Fig.9-07 Fail safe brake remote control

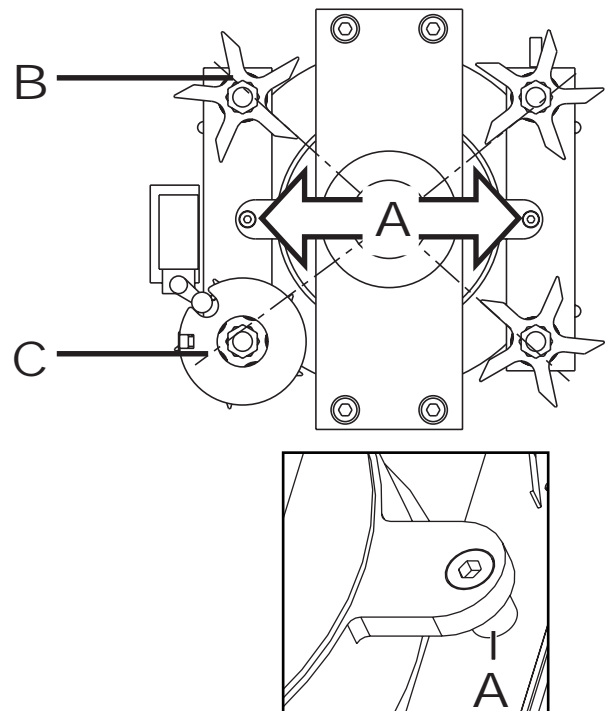


Fig.9-08 Fail safe brake

6. Remove the remote control of the fail safe brake.
7. Insert the dummy plug into the connector.

9.5 Fail safe brake activated - platform raised



Have the machine checked by an expert.

The descending speed at which the fail safe brake is activated, has been adjusted in the factory. However, it is possible that the fail safe brake is activated without any noticeable reason, e.g. due to a combination of lowering / shaking of the machine. In this case, please contact the customer service department.

If there is no risk for damage or personal injuries, you may reset the fail safe brake to lower the platform. Proceed as follows:

1. Check the machine is in the GTP mode.
2. Turn the reset key to the right and hold the key in that position.
3. Press the button 'UP' .
4. When moving upwards during 2 sec, the fail safe brake is released.
6. Travel to a safe position and reset the fail safe brake, see 9.4.2. Test it before starting work.

9.6 Testing the overload protection

Proceed as follows to check the overload protection.

The machine should be on ground level or on the landing.

1. Load the platform with 1,500 kg (3,300 Lb). The red indicator lamp (fig. 9-09, 1) on the transport platform should not illuminate.
2. Load the platform with 1,650 kg (3,637 Lb). The indicator lamp should illuminate.

Please contact your dealer if the indicator lamp does not illuminate.



Fig.9-09 Overload protection



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10. MALFUNCTION TABLE

The control box on the platform has an 'info display'.

The malfunctions are displayed on the display as codes. A listing of the codes has been attached to the control box in order to be to quickly troubleshoot the machine.

The table below shows the procedures in case of a malfunction.

Before contacting a service mechanic, always check the following aspects first:

Is the power supply on the construction site correct?

Does the power supply cable have the correct diameter and length? (Tip: a cable with a diameter that is too small or cables that are too long may result in loss of power = loss of capacity.)

Is the cable undamaged?

Has the cable been connected properly?

Code	Description	Solution
01	Brake safety and/or 24 VAC not present	F205 activated, reset F205 into ON-mode.
02	Phase control relay	1) Change the phase connections by replacing Q201 (I => II of II => I) 2) Check phases
03	Emergency stop	Emergency stop button pressed. Reset the button
04	Type plate / key switch	Type plate and key switch set incorrectly. Key switch or type plate must be set in correct position.
05	Mast detection	Mast is not detected. Mast protection is open or removed. Close or place back mast protection.
06	Upper emergency limit switch	Platform sent up too far. Lower the platform.
07	Loading door(s) not closed	Close loading door(s).
08	Mounting platform	Mounting platform lowered. Raise the mounting platform.
09	Lifting aid	Lifting aid within mast range. Tilt the lifting aid back into its initial position.
10	Motor temperature	Motor overloaded. Let the motor cool down by not using the machine for some time and have machine checked by qualified engineer.
11	Lower emergency limit switch	Platform lowered too far. Contact a qualified technician to raise the platform out of the buffers and have brakes checked.
12	Dummy plug	Dummy plug not connected at the lower part of the platform control box.
13	Over load	Remove the load partially till allowed load is present.
14	Fail safe brake	Fail safe brake activated. . Contact a qualified technician to check and solve the problem.
15	Mast detection	No machine detection possible. Lower the platform.
When one of above problems occur frequently or repeat themselves regularly or occur soon after solving the problem, ALWAYS have the machine checked by a qualified technician.		

Message	Problem	Solution
No message on display (UOP) No message shown	F201 (primary fuse of transformer T201) switched off.	Reset F201.
	No power supply present	Machine switched on? (platform panel / cable drum). Cable connected properly and undamaged? (platform panel / ground panel / cable drum) Power supply at construction site o.k.?
Display OK (00), Signal lamp 'safe' is lit	One or both motors try to control the machine, but they do not succeed (humming).	Check / replace brake rectifier. Check / adjust brake.
	Power of working platform not sufficient Platform moves very slowly or not at all or moves downwards while it should move upwards.	Check supply cable (diameter and length).
	Braking distance too long	Check / adjust brake.
	Machine does not respond in GTL mode.	Check if cables between ground panel and platform panel have been connected properly. Check if the sender / receiver and the aid relay in ground panel and platform panel operate properly.
Other malfunctions		Contact the service department.

In all cases not indicated in the tables, please contact the service department of your HEK dealer.

11. ENVIRONMENTALLY FRIENDLY DISPOSAL

General

After a number of years of reliable service, the life of every machine inevitably comes to an end. The hoist must then be disposed of in the environmentally friendliest manner possible.

Amongst others, disposal options are:

- Part exchange for a new hoist
- Disposal by a recycling facility
- Destruction

Discarding the machine

- Drain the oil out of the reduction gearbox and dispose the oil via an authorised facility.
- Remove all usable parts.
- Dispose of the remainder via a waste disposal facility.



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APPENDIX 1. REGULAR CHECKS

The checks in this appendix have to be performed after every installation or at least once a year when the machine is in use. Carry out the checks as described in section 9.2.

This check list is NO substitute for the maintenance instructions in the manual.

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	Data	Comments
Owner		
Check date		
Checked by		
Machine type		
Machine number		
Year of construction		
Mast height		
Number of anchors		
Power supply cable type		
Options		
Wiring diagram #		
Manual #		



Part	Check for	OK	not OK	Comments
Platform				
Identification plates	Readability			
Floor	Overall condition			
Fencing	Damage, fastening			
Mast protection	Fastening			
Motor reductor	Fastening, leakage			
Pinion	Wear, engagement in rack			
Rollers	Wear			
Brakes	Air gap size			
Sliding door	Damage, interlocking, functioning			
Loading ramp	Damage, interlocking, functioning			
Cable support arm	Damage			

Part	Check for	OK	not OK	Comments
Electrical system				
Machine cable	Damage, cable path			
Cable drum	Damage, dirt			
Switch box	Fastening, damage			
Main switch	Functioning			
Key switch	Functioning			
UP button	Functioning			
DOWN button	Functioning			
LANDING button	Functioning			
Emergency stop button	Functioning			
2.5 m stop + buzzer	Functioning			
Limit switch DOWN	Functioning, corrosion			
Emergency limit switch DOWN	Functioning, corrosion			
Limit switch UP	Functioning, corrosion			
Emergency limit switch UP	Functioning, corrosion			
Proximity switch	Functioning			
Door switch	Functioning, corrosion			
Loading ramp switch	Functioning, corrosion			
Mast protection switch	Functioning, corrosion			
Indicator lamps	Functioning			
Safety circuit	Functioning			
Overload protection	Functioning			
Miscellaneous				
Fail safe brake	Functioning (perform drop test)			
Emergency descent	Functioning			

Signature of the technician(s):.....