Read and understand this manual before operating or servicing this equipment

TPL 2000/ 2000D/ 1800
Instruction manual

ORIGINAL INSTRUCTIONS

This manual is only applicable if the manufacturing number indicated in the following page corresponds to the manufacturing number stamped on the identification sign of the equipment. Where there is a conflict contact the manufacturer or its representative.

2021-03-24 **2031011201**

FOREWORD

This product is designed and manufactured to meet strict quality and safety standards. This manual is intended to provide a device and instructions to the operator and qualified service personnel so that they can safely control the situations, which can occur when the product is used, and can carry out the required service and maintenance on the product.

Potential risk for user or equipment are indicated in the following way in this book:

WARNING! ***Information with these symbols and headings indicates the possibility of personal injury.***

IMPORTANT: ***Information with these headings indicates the possibility of damage to the equipment.***

During use, no person may stand under the machine.

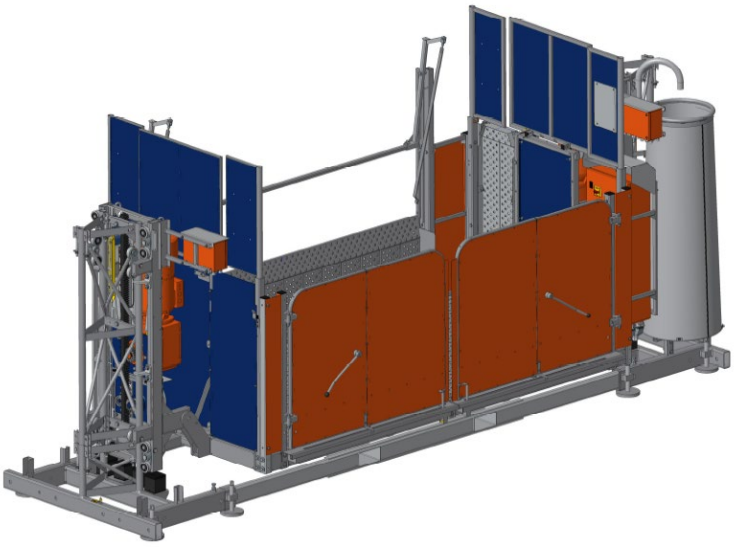
DANGER! ***High voltage.***

DANGER! ***Falling objects.***

WARNING! ***The equipment should not be operated if Instruction Manual is missing.***

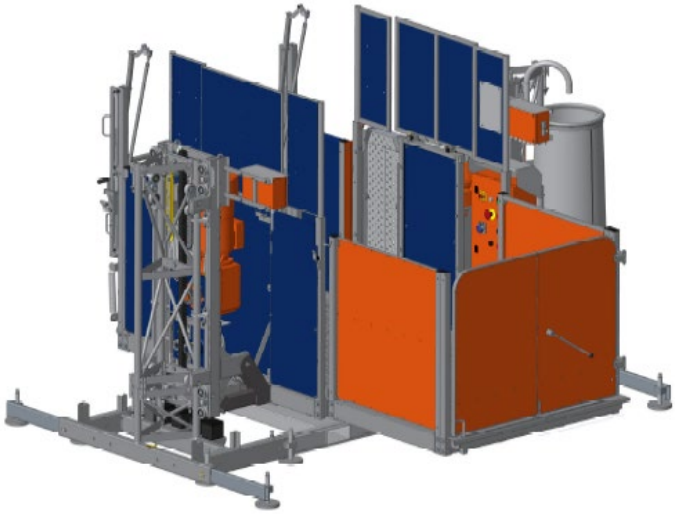
Misuse of this equipment could result in personal injury or property damage.

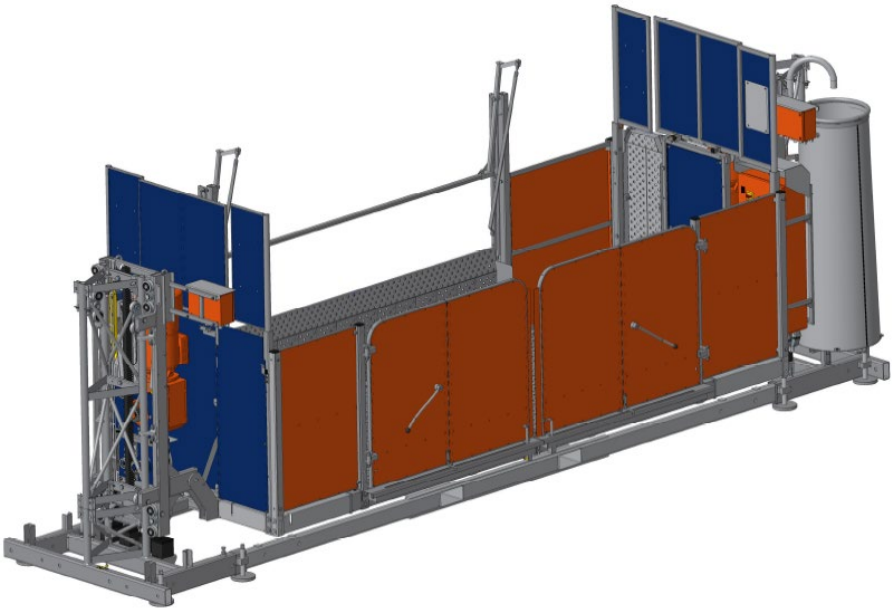
Photographs and drawing are illustrative only and do not necessarily show the design of the products on the market at any given point in time. The products mast be used in conformity with applicable practice and safety regulations. Specifications of the products and equipment presented herein are subject to change without notice.



TPL 2000

TPL 2000D





TPL 1800

Your machine has manufacturing number

Figures and photographs are for illustrational purpose only and do not necessarily have to meet the design of the product on the market at any time.

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INDEX

APPENDIX

A. USE AND STORAGE OF THE INSTRUCTION MANUAL

This instruction manual for the use and maintenance of the TPL 2000/ 2000D/ 1800 transport platform/material hoist is addressed to:

- User
- Owner
- Person responsible for the building site where the machine is used
- Personnel carrying out erection and dismantling
- Service personnel
- Operators
- Personnel moving the machine

The instruction manual must be read before moving, installing, using, carrying out maintenance or storing the machine; it is therefore necessary to keep it in a well protected place and make copies of it for everyday consultation.

Movement, installation, use, maintenance or storage of the machine can be dangerous if carried out without following the instructions indicated in this manual or without the due care and attention that these operations require.

Manufacturer shall not be liable for damage to the machine, people and objects caused by:

- Improper use of the machine
- Use of the machine by untrained personnel
- Total or partial non-observance of the instructions contained in this manual
- Use contrary to specific national regulations regarding safety at work
- Incorrect installation
- Faulty main supply
- Non-observance of the instructions regarding programmed maintenance operations
- Unauthorized alterations or interventions or additional parts
- Use of spare parts other than manufacturer’s genuine supply
- Disconnection of any protection systems by owner / user of the platform

This instructions manual reflects the actual technical level reached at the moment of supply of the machine and cannot be considered inadequate because it has been later updated on the basis of new experiences. We reserve the right to update production and manuals, on the basis of continuous improvement of the quality of our products, without being obliged to update previous production and manuals, except in exceptional circumstances.

B. OPERATING PERSONNEL REQUIREMENTS

B.1 User requirements

The information in this manual must be supplemented by good job management, safety control, and the application of sound principles of safety, training, inspection, erection, maintenance, application and operation consistent with all data available regarding the parameters of intended use and expected environment.

Since the user has direct control over the application and operation of Transport Platform/Material Hoist, conformance with good safety practices in this area is the responsibility of the user and his operating personnel including the operator. Decisions on the use and operation of the Transport Platform/Material Hoist must always be made with due consideration for the fact that the machine will be carrying personnel whose safety is dependent on those decisions.

B.1.1 MAINTENANCE TRAINING

The user shall train his maintenance personnel in inspection, erection and maintenance of the Transport Platform/Material Hoist in accordance with sections of this Instruction Manual and with the manufacturer's recommendations. Local regulation may require further or additional training.

B.1.2 OPERATOR TRAINING

Whenever a user directs or authorizes an individual to operate a Transport Platform/Material Hoist, he shall ensure that the individual has been trained in accordance with the manufacturer's operating and maintenance manual, and the user's work instructions and requirements listed in sections of this Instruction Manual before operating the Transport Platform/Material Hoist.

B.1.3 MODEL TRAINING

The user shall be responsible for the operator being trained on the model of the Transport Platform/Material Hoist that he will be operating. Such training shall be in an area free of obstructions, under the direction of a qualified person for a time sufficient to determine that the trainee displays proficiency in knowledge and actual operation of the Transport Platform/Material Hoist. Only properly trained and authorized personnel shall be permitted to operate the Transport Platform/Material Hoist and maybe covered by local regulation.

B.1.4 BEFORE OPERATION

Before authorizing an operator to operate a Transport Platform/Material Hoist, the user shall ensure that the operator has:

1. been instructed by a qualified person in the intended purpose and function of each control;
2. has read and understood the present manufacturer's operating instructions and user's safety rules, or been trained by a qualified person on the contents of the manufacturer's operating instructions and user's safety rules;
3. understood by reading or by having a qualified person explain all decals, warnings, and instructions displayed on the Transport Platform/Material Hoist;

4. determined that the purpose for which the Transport Platform/Material Hoist is to be used is within the scope of the intended applications defined by the manufacturer.

B.2. Operator requirements

The information in this Instruction Manual must be supplemented by good judgement, safety control, and caution in evaluating each situation.

Since the operator has the direct control of the Transport Platform/Material Hoist, conformance with good safety practices in this area is the responsibility of the operator. The Operator must take decisions on the use and operation of the Transport Platform/Material Hoist with due consideration for the fact that his own safety as well as the safety of other personnel on and around the platform is dependent on these decisions.

B.2.1 INSTRUCTION MANUAL

The operator shall be aware that the Instruction Manual is stored on the Transport Platform/Material Hoist and the location where it is stored. The operator shall be familiar with this and consult them when questions arise with respect to the Transport Platform/Material Hoist.

B.2.2 TRAINING

The operator shall have been trained either on the same model of a Transport Platform/Material Hoist or one having operating characteristics and controls consistent with the one to be used during actual work site operation. The operator trainee shall operate the Transport Platform/Material Hoist in an area free of obstructions under the direction of the qualified person for a time sufficient to determine that the trainee displays proficiency in knowledge and actual operation of the Transport Platform/Material Hoist. Only properly trained and authorized personnel shall be permitted to operate the Transport Platform/Material Hoist.

B.2.3 BEFORE OPERATION

Before being authorized to operate the Transport Platform/Material Hoist, the operator shall have:

a) been instructed by a qualified person in the intended purpose and function of each of the controls;

b) read and understood the manufacturer’s/owner’s operating instructions and safety rules, or been trained by a qualified person on the contents of the manufacturer’s/owner’s operating instructions and safety rules;

c) understood by reading or having a qualified person explain all decals, warning, and instructions displayed on the Transport Platform/Material Hoist.

C. TECHNICAL DATA

C.1. Mechanical data

TPL 2000			
Function mode		**Transport platform**	**Material Hoist**
General	Max passenger number	7	0
	Lifting speed	12 m/min	24 m/min
	Max wind speed in service	20 m/s	20 m/s
	Load capacity	2000 kg (see paragraph C.4.~~1~~)	
	Transport dimensions (length x width x height)	5200 x 1900 x 2400 mm	
	Base unit weight	2000 kg	
Baseframe	Baseframe dimensions (length x width)	5170 x 1480 mm	
Mast	Mast length	1508 mm	
	Mast weight	54 kg	
	Max Freestanding height	0 m	
	Max mast height with tied mast	100 m	
	Mast bolts	Eye bolt M16 cl.10.9 Tightening torque 80 Nm	
Tie In	Max. first tie height	6 m	
	Max tie distance	7.5 m	
	Max. overhang	4.5 m	
	Tie in weight	43 kg	
Cable guide	Cable guide distance	See chapter H.6	
	Cable guide weight	4 kg	
Dimension of platform loading side	Dimensions (length x width)		
	External dimensions	1600 x 3300 mm	
	Internal dimension	1500 x 3200 mm	
Base enclosure	Base enclosure height	1100 mm	

TPL 2000D			
Function mode		**Transport platform**	**Material Hoist**
General	Max passenger number	7	0
	Lifting speed	12 m/min	24 m/min
	Max wind speed in service	20 m/s	20 m/s
	Load capacity	2000 kg (see section C.4.1)	
	Transport dimensions (length x width x height)	3600 x 2350 x 2400 mm	
	Base unit weight	1900 kg	
Baseframe	Baseframe dimensions (length x width)	3530 x 2605 mm	
Mast	Mast length	1508 mm	
	Mast weight	54 kg	
	Max Freestanding height *	0 m	
	Max mast height with tied mast	100 m	
	Mast bolts	Eye bolt M16 cl.10.9 Tightening torque 80 Nm	
Tie In	Max. first tie height	6 m	
	Max tie distance	7.5 m	
	Max. overhang	4.5 m	
	Tie in weight	51 kg	
Cable guide	Cable guide distance	See chapter H.6	
	Cable guide weight	4 kg	
Dimension of platform loading side	Dimensions (length x width)		
	External dimensions	3200 x 1600 mm	
	Internal dimension	3200 x 1500 mm	
Base enclosure	Base enclosure height	1100 mm	

TPL 1800			
Function mode		**Transport platform**	**Material Hoist**
General	Max passenger number	7	0
	Lifting speed	12 m/min	24 m/min
	Max wind speed in service	20 m/s	20 m/s
	Load capacity	1800 kg (see section C.4.1)	
	Transport dimensions (length x width x height)	6400 x 1900 x 2400 mm	
	Base unit weight	2100 kg	
Baseframe	Baseframe dimensions (length x width)	6370 x 1480 mm	
Mast	Mast length	1508 mm	
	Mast weight	54 kg	
	Max Freestanding height *	0 m	
	Max mast height with tied mast	100 m	
	Mast bolts	Eye bolt M16 cl.10.9 Tightening torque 80 Nm	
Tie In	Max. first tie height	6 m	
	Max tie distance	7.5 m	
	Max. overhang	4.5 m	
	Tie in weight	43 kg	
Cable guide	Cable guide distance	See chapter H.6	
	Cable guide weight	4 kg	
Dimension of platform loading side	Dimensions (length x width)		
	External dimensions	1600 x 4500 mm	
	Internal dimension	1500 x 4400 mm	
Base enclosure	Base enclosure height	1100 mm	

C.2. Electrical data

TPL 2000/ 2000D/ 1800	
Motor number	2
Rated power (S3 40%)	3.8 / 7.6 kW
Rated current	15.4 / 30.4 A
Power consumption	10.8 / 21 kVA
Supply voltage	400 V
Phases	3+N+Pe
Supply frequency	50 Hz
Power supply fuses	32 A
Control voltage	230 V
Power and control cable	
Lifting height LH ≤ 70 m	Cable P/N 8900000080 (4G6+12x1) + Basket P/N 2036098200
Lifting height 70<LH≤ 100 m	Cable P/N 8900000856 (4G10+12x1,5) + Basket P/N 2031017000
Power cable from power line to the B-Panel - until 50 m	5G16 mm²

C.3. Environmental characteristics

TPL2000/ 2000D/ 1800		
Range of outdoor temperature during service *		-15°C/+40°C
Sound power level guaranteed (LwA)**	MH	95 dB
Sound pressure level at the work place (LpA)	TP	<70 dB
	MH	72 dB

* For utilization in temperatures other than indicated, contact Alimak or representative.
** Applicable only for Hoist Material function mode (MH).

C.4. Load capacity

C.4.1 LOAD TABLE FOR USE AS

TRANSPORT PLATFORM– TP

TPL 2000/ 2000D		
Passenger	**+**	**Load (kg)**
1 (min.)	+	1900
2	+	1800
3	+	1700
4	+	1600
5	+	1500
6	+	1400
7 (max.)	+	1300

TPL 1800		
Passenger	**+**	**Load (kg)**
1 (min.)	+	1700
2	+	1600
3	+	1500
4	+	1400
5	+	1300
6	+	1200
7 (max.)	+	1100

C.4.2 LOAD TABLE FOR USE AS

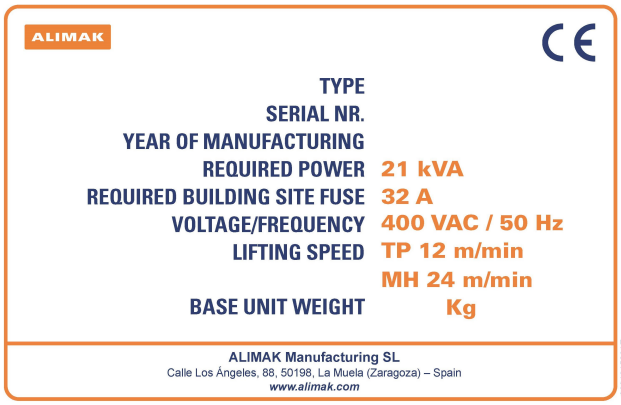
MATERIAL HOIST - MH

	TPL 2000/ 2000D	TPL 1800
Max Load (kg)	2000	1800
Passengers	Not permitted	Not permitted

No passengers allowed when used as material hoist

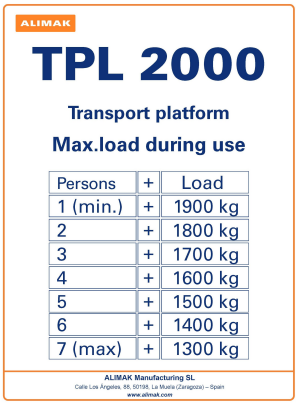
C.5. Signs on the machine

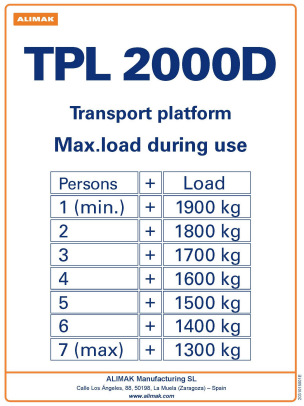
Technical data

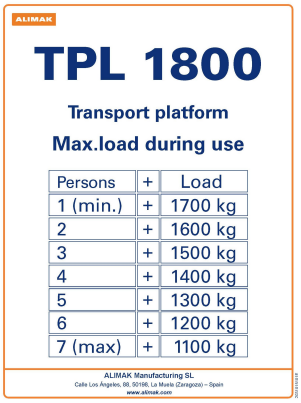


Serial number

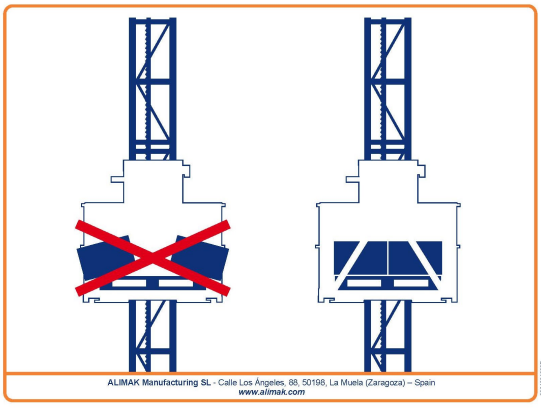
Load capacity

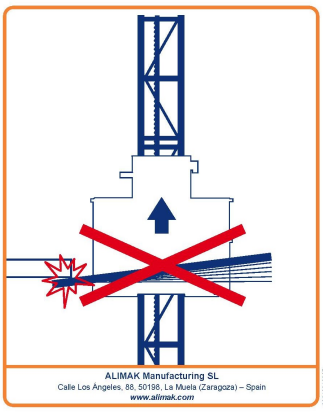




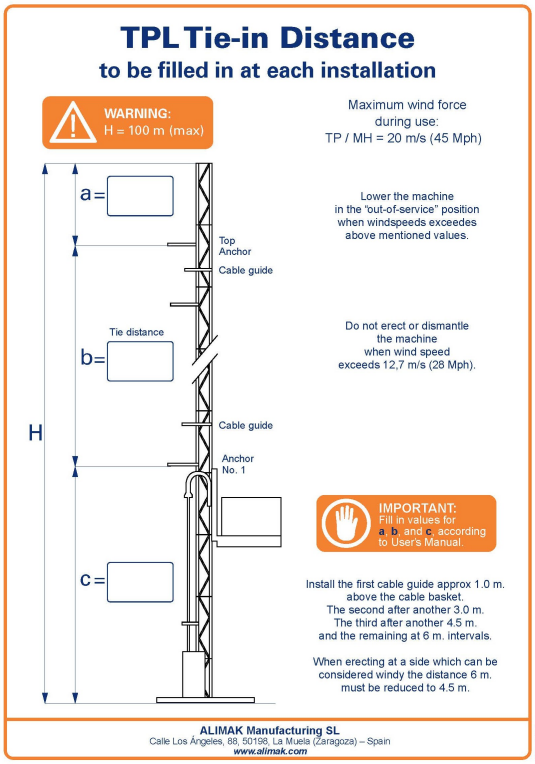


Sign correct load on platform

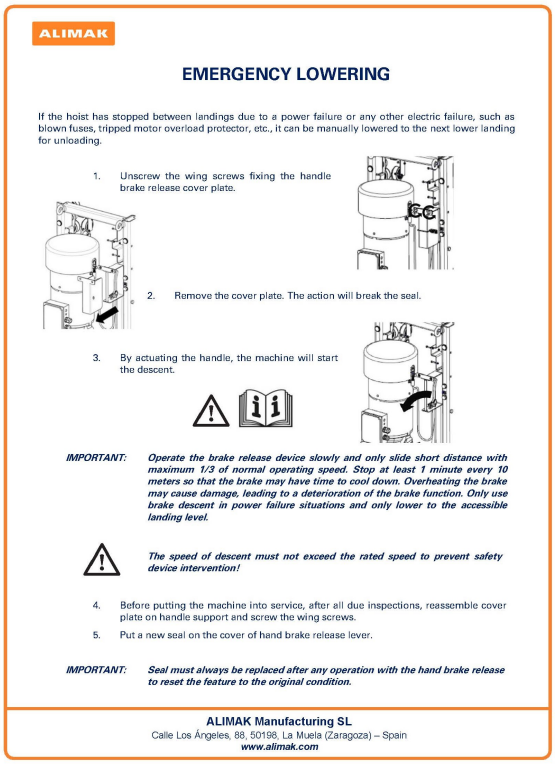




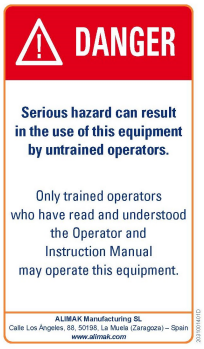
Tie in specifications



Emergency lowering



Sign warning/ danger

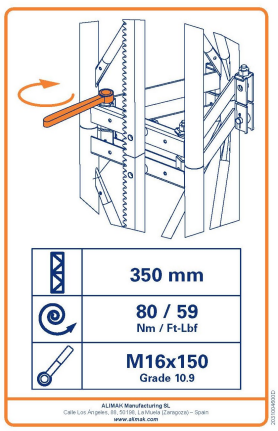


Unauthorized personnel

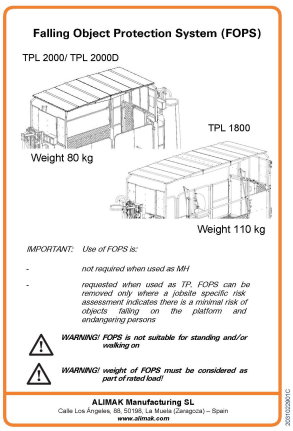
Danger persons under platform

Noise sign

Tightening torque mast bolts



FOPS sign



D. MACHINE DESCRIPTION

D.1. Intended use

TPL 2000/ 2000D/ 1800 is a machine for temporary installation in jobsite providing access to multiple landings level, the use of which is foreseen by trained people authorized to enter the jobsite and to operate with the machine itself. It can be used in two different application modes:

- Transport platform (transport of persons and goods)
- Material hoist (transport of material only)

The machine is available in three versions:

– TPL 2000: twin mast machine with longitudinal platform 3.2x1.5 m
– TPL 2000D: twin mast machine with transversal platform 1.5x3.2 m
– TPL 1800: twin mast machine with longitudinal platform 4.4x1.5 m

The electrical panel on board the machine features a two-position selector: ‘’MH’’ (material hoist) ‘’TP’’ (transport platform) thus making the dual application possible. Page D.2 provides a detailed view of the difference between the different applications of the machine.

This manual describes the installation, control and maintenance of machine model TPL 2000/ 2000D /1800.
Special attention has been devoted to safety features in the design and construction of this machine.

The material hoist / transport platform must only be operated exclusively by authorised and trained personnel

The machine, its mechanical parts and the electrical components are dimensioned and designed to ensure compliance with the various operating conditions present on construction sites.
The necessary documents, including the instruction handbook, electrical diagrams and replacement parts, are supplied together with the material hoist.

D.2. TPL 2000/ 2000D/ 1800 Applications

TPL 2000/ 2000D/ 1800 used as	Transport Platform	Material hoist
Position of selector switch	TP - Transport Platform	MH - Material Hoist
Passengers transport	Permitted	Prohibited
Materials transport	Permitted	Permitted
Operation	From electrical panel on platform	From electrical panel at ground level or from building landings
Control	“Hold to run” control	Automatic control
Landing gates	Automatic mechanical locking with mechanical interlock + electrical monitoring	Automatic mechanical locking with mechanical interlock
Base frame enclosure*	Requested, with electrical control on gate**	Requested, but electrical gate control is not necessary**
FOPS (Falling Object Protection)	Requested***	Not Requested
Maximum wind speed during use	20 m/s	20 m/s

* Sensor under platform as alternative only on request. Contact Alimak.

** Base enclosure requirements shall fulfil EN12158-1 for Material Hoist and EN16719 for Transport Platform.

*** FOPS can be removed only where a jobsite specific risk assessment indicates there is a minimal risk of objects falling on the platform and endangering persons.

D.3. Reference standards

TPL 2000/ 2000D/ 1800 used as Transport Platform (TP):

- Compliance with the requirements of Machinery Directive 2006/42/EC
- Compliance with the technical requirements of standard EN16719:2018

TPL 2000/ 2000D/ 1800 used as Material Hoist (MH):

- Compliance with the requirements of Machinery Directive 2006/42/EC
- Compliance with the technical requirements of standard EN12158-1:2010

D.4. General Description

The machine is a typical twin mast configuration: platform is connected to 2 drive unit opposing that simultaneously move the platform along 2 masts, one for each drive unit.

On the end of the **baseframe** (1 fig.D.01) the first two **masts** and the cable basket are assembled by screws (respectively 2 and 4 fig.D.01).

The **drive unit** (3 fig.D.01) runs on the mast via a series of tandem roller mounted on rotating carriages to distribute pressure uniformly and minimise wear on mast pipes.

Machinery is moved by a **rack and pinion** system. The rack is situated on the mast section, the pinion is connected to a **self-braking helical bevel gearmotor**, which is connected to the drive unit.

The **safety device** (fig.D.07) is mounted to the drive unit; this device trips automatically if the pre-set descent speed value is exceeded, thereby blocking the electrical and mechanical functions of the machine.
When this occurs, the safety device must be reset as described in chapter "K'' heading "K.5.4'' of this instruction handbook, before the machine can be returned to operation.

The **platform** (5 fig.D.01) is secured to the drive unit by means of two adapter frames and fixed by pins (2 fig. D11).

Back rails, with the mast protection (6 fig.D.01), **side rails** (7 fig.D.01), **electrically interlocked ramp and access door** (8 and 9 fig.D.01) equipped with a specific locking system, constitute the safety protection around the machine.

The **electrical system** is composed of the main panel in the platform (10 fig.D.01), the base panel, which is secured by means of a clamp to the rear mast pipe (12 fig.D.01) and two junction box (11. Fig.D 01) connected to each drive unit.
The push button box for operation of the machine from the ground when it is used as a material hoist, is connected directly to the base panel.
When it is used as a transport platform the machine can be controlled only from inside the platform by means of the buttons on the main panel.

In its standard configuration the machine is equipped with an unloading ramp h=600 + bar and an entrance bi-foldable gate.
The ramp and the bi-foldable gate are equipped with safety limit switches so that the machine cannot move until both ramps are correctly closed.
Other types of ramps and doors are available as options, as described below.

The maximum dimensions of the machine are such that it can be loaded on a normal lorry or configured for transport on container.

Fig.D.01 Base unit TPL 2000D

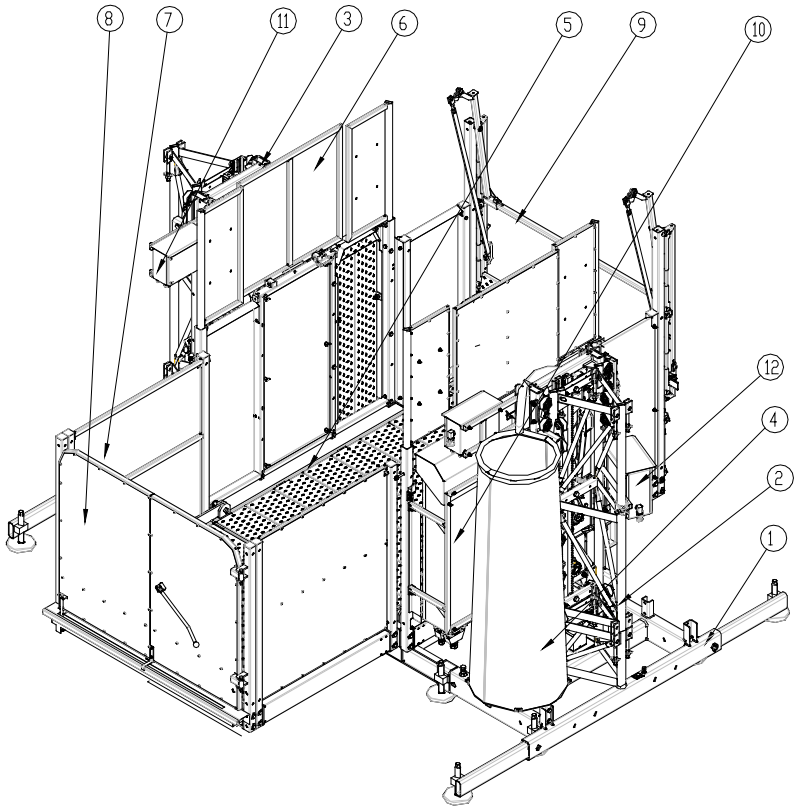
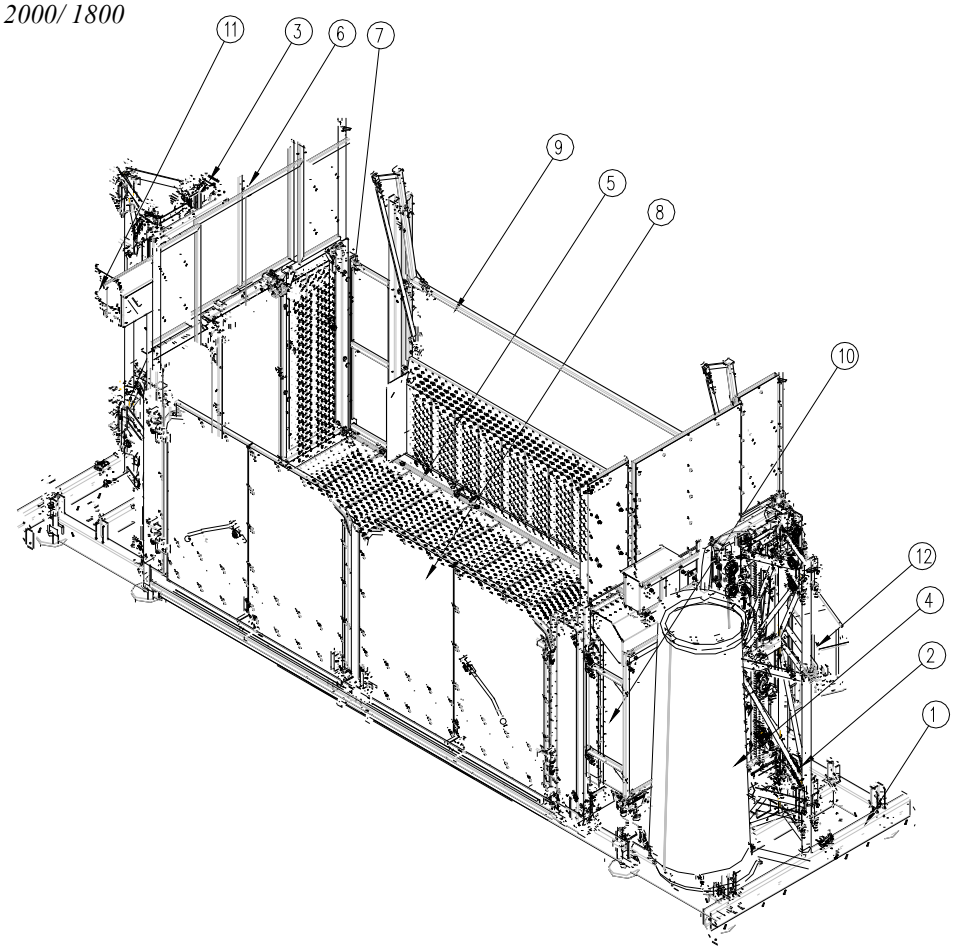


Fig.D.02 Base unit TPL 2000/ 1800



D.5. Parts

D.5.1. BASEFRAME

The base frame is composed of three tubular and telescopic structural elements, to which the ground levelling screw jacks are attached.
The first mast section, the cable basket and four safety buffers are secured to the base frame by means of screws.
On the frame, two support points for fork lift equipment are provided.
The baseframe and levelling screw jacks are hot dip galvanized.

1. Baseframe
2. Mast
3. Locking pin
4. Base frame levelling jacks
5. Cable basket
6. Fork lift points
7. Extensions (only for TPL 2000D)

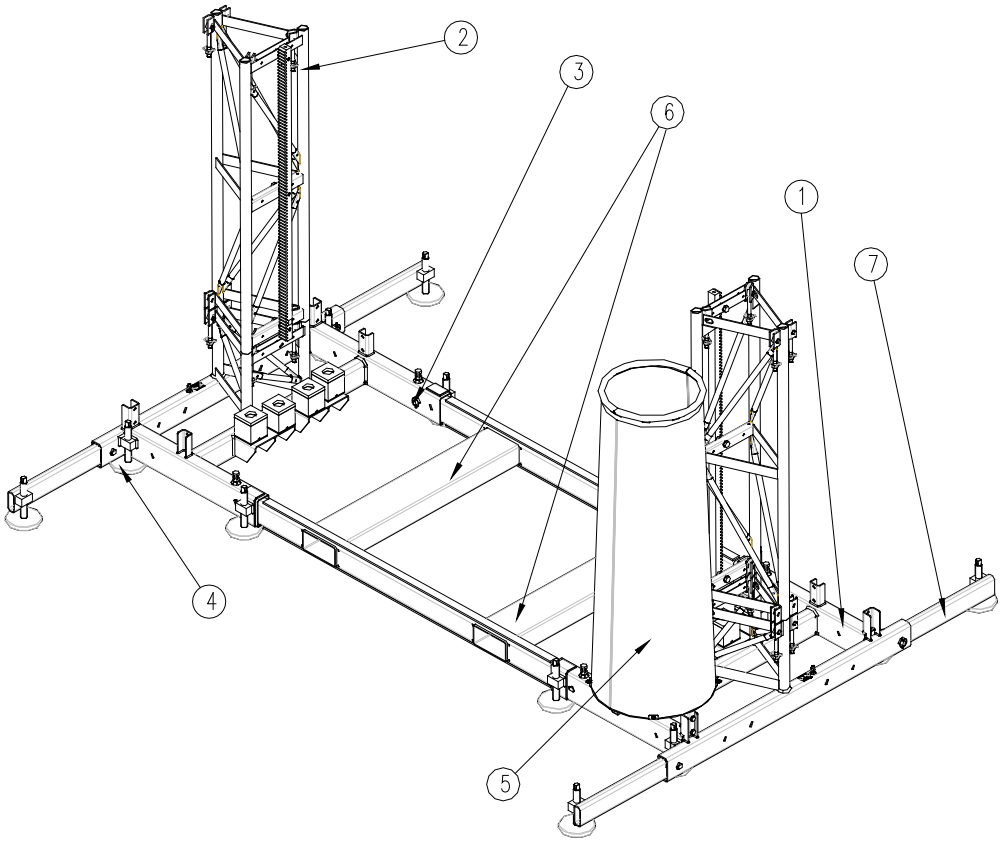


Fig.D.03 Base frame

IMPORTANT: ***Cable basket provided as standard is suitable for lifting height till 70 m. In case of installation for lifting height above 70 m to 100 m (max lifting height) an optional basket and related cable must be used (see table at C.2. and D.6.5).***

D.5.2. MAST

The length of the mast section is 1508 mm and they are joined together by means of four captive eye bolts.
Each mast section is equipped with a bolt-on modulus 5 rack section.
The entire mast is hot dip galvanized with the exception of the rack.
The mast is designed so that limit cams for up/down stop, overrun, landing stop and 2 m stop, can be fitted by means of screws.

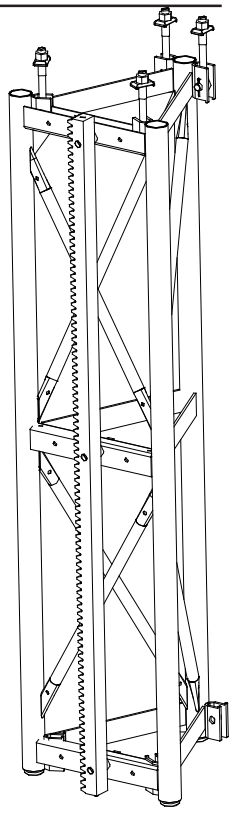
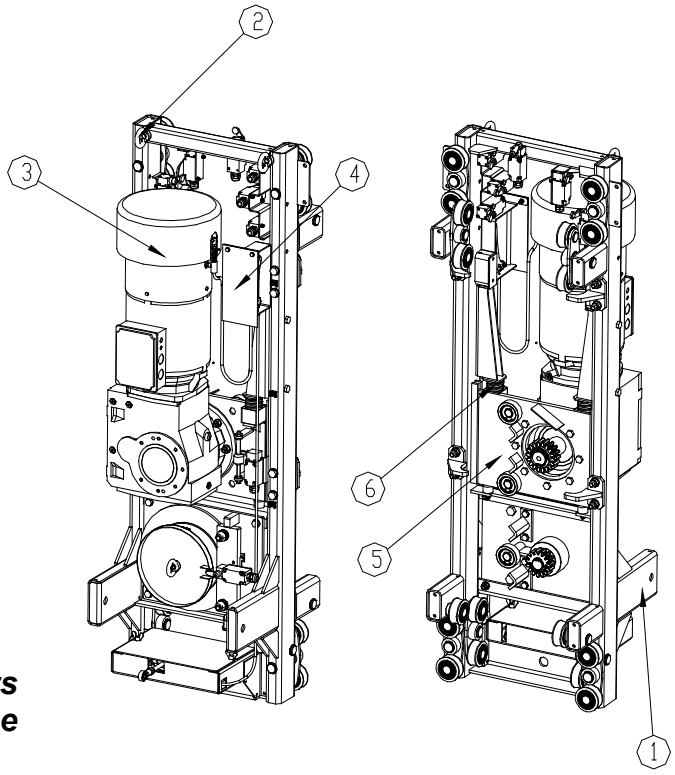


Fig.D.04 Mast

D.5.3. DRIVE UNIT

The hoisting unit is composed of tubular structural elements, to which the travel rollers are attached. A two-speed gearmotor, the overload system, the safety device and the levelling system are installed in the centre of the hoisting unit.

1. Drive unit frame
2. Lifting eyes
3. Electric motor
4. Brake release lever
5. Motor plate
6. Overload system spring



WARNING!

The eyebolts on the drive unit are usable for lifting the drive unit only, for fixing the support of the erection crane or for attachment of safety belts for the operator during the assembly

WARNING! Do not use eyebolts for lifting the base unit complete!

Fig.D.05 Drive unit

D.5.4 LEVELLING SYSTEM

The levelling system consists of a **bar** (1 fig.D.06) which is secured to the **adapter** (2 fig.D.06) and to the levelling set which is located in the lower part of the drive unit. The inclination of the adapter determines the displacement forward and back of the bar, which in turn determines the rotation of the levelling plate (7 fig.D.06). This actuates the cams, one of which (8 fig.D.06) acts on the **limit switch** (3 fig.D.06) which controls the motor of the drive unit ensuring the horizontal levelling of the platform. The other cam (9 fig.D.06) acts on a **mechanical actuator** (4 fig.D.06), which through a **flexible cable** (5 fig.D.06), acts on the manual release in case of no levelling. The **manual brake release** lever (6 fig.D.06), makes possible the platform descent to the accessible landing level in emergency situations, for example in the absence of current.

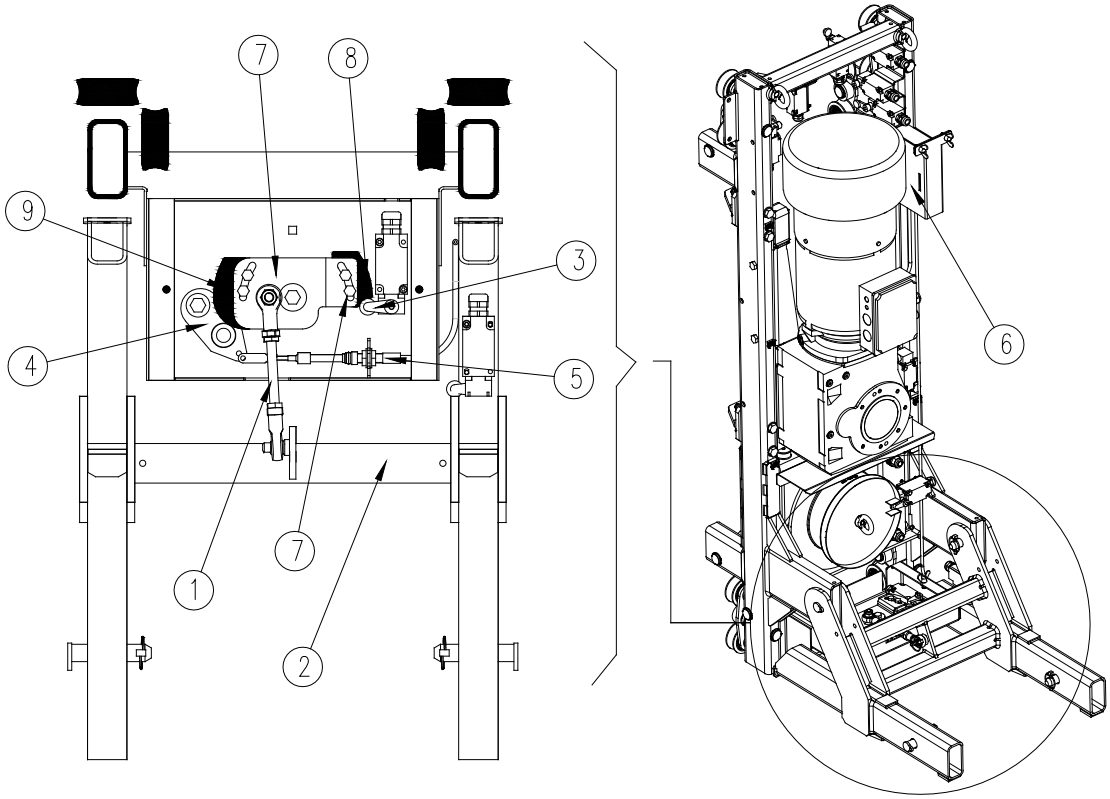


Fig.D.06 Levelling system

D.5.5 OVERSPEED SAFETY DEVICE

The safety device is a platform arrester that blocks the machine mechanically and electrically when the descent speed exceeds a certain pre-set value.

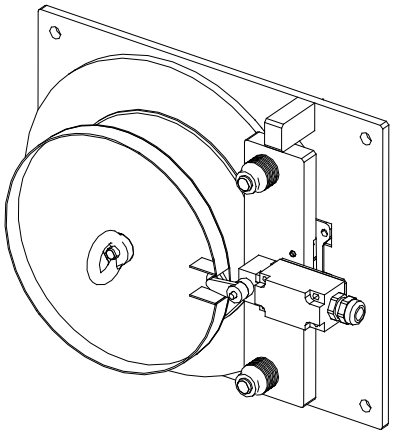


Fig.D.07 Safety device

D.5.6 PLATFORM

The platform is entirely hot dip galvanized and features a profiled and perforated sheet metal structure that provides both a loading frame and a rigid and non-slip floor. Three types of platform are available.

1. Transversal platform 1.5x3.2 m
   This platform can be folded for easy transport on a truck, fully assembled with railings and ramps entrance / exit (see chapt. F).

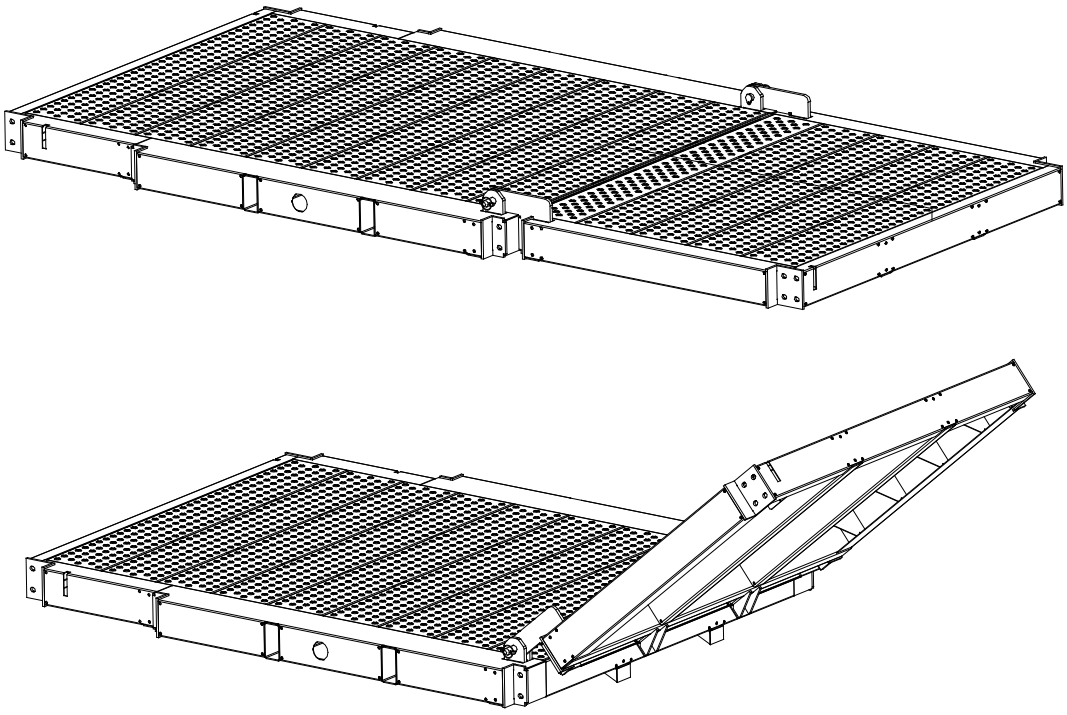


Fig.D.08 Platform TPL 2000D

2. Longitudinal platform 3.2x1.5 m

   This platform is formed from a single section.

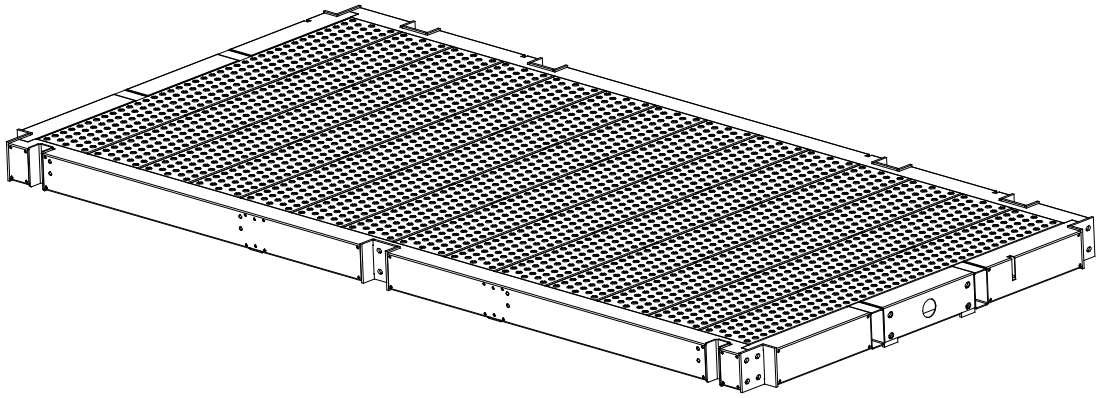


Fig.D.09 Platform TPL 2000

3. Longitudinal platform 4.4x1.5 m

   This platform is formed by assembling the longitudinal platform from 3.2x1.5 with two appendices of 0.6 m per side.

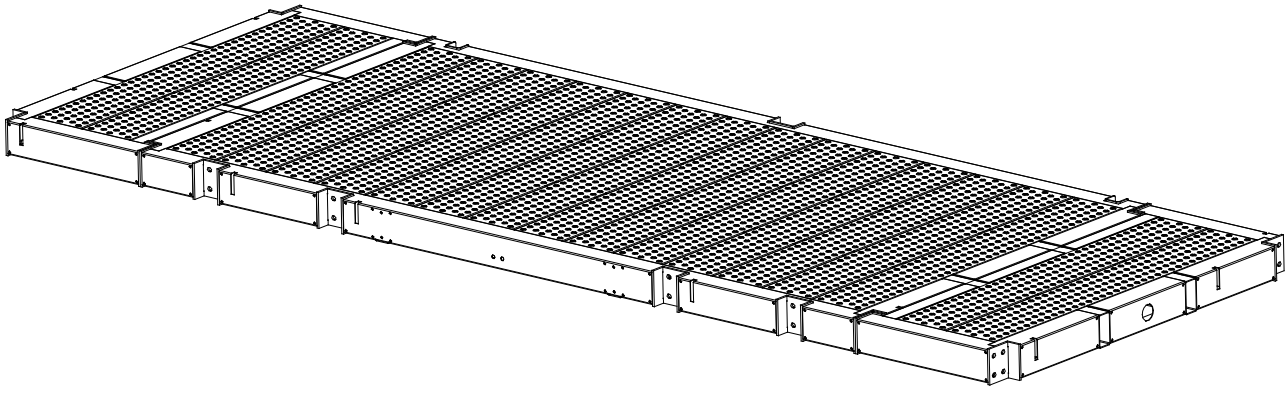


Fig.D.10 Platform TPL 1800

The platforms are jointed to the drive unit by an adapter with pins.

1 Adaptor
2 Pin
3 Split pin

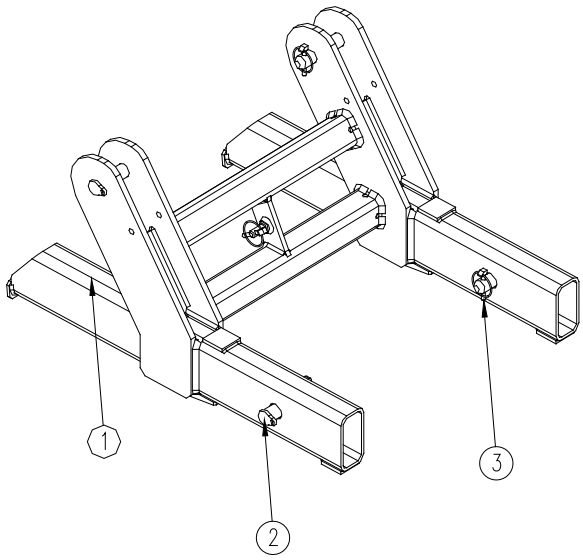


Fig.D.11 Adaptor

D.5.7 FOLDING ENTRANCE DOOR

The folding entrance door can be either single (on TPL 2000D) or double (on TPL 2000/ 1800) and located on entrance side of the platform.
The double folding entrance door can be in two widths, ranging from 3.0 m to 4.5 m.

1 Bi-Folding door
2 Opening/closing mechanism

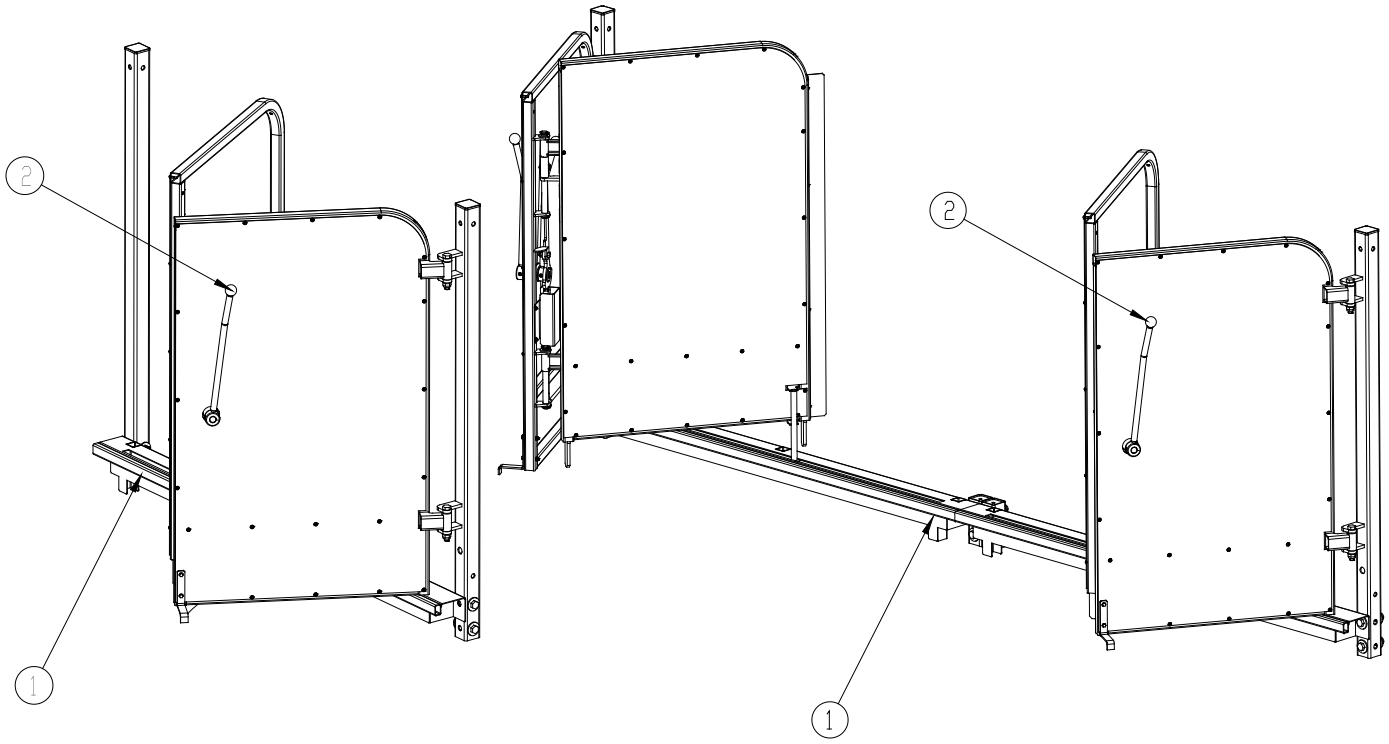


Fig.D.12 Folding entrance door single and double

D.5.8 ENTRANCE FLAP DOOR

Entrance flap door can be only single and located on entrance side of platform. It can be opened by 180° to get all the useful opening of the platform. It can be chosen either with the left or right opening.

1 Flap door
2 Locking mechanism
3 Limit switch

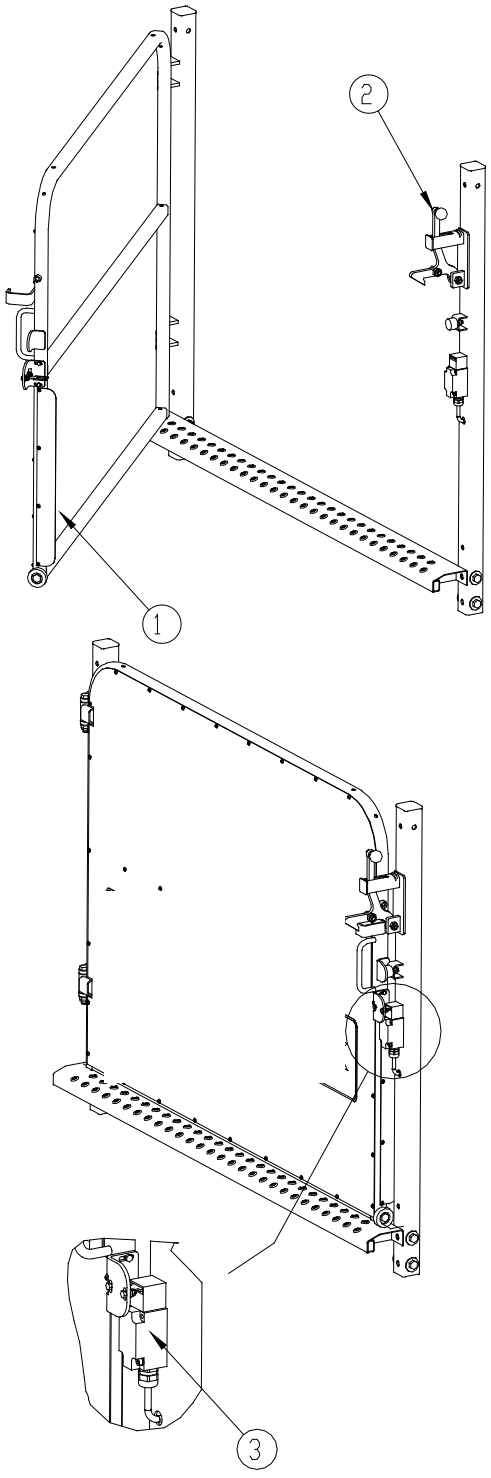


Fig.D.13 Entrance flap door

D.5.9 UNLOADING RAMP h=600 WITH VERTICAL BAR

The unloading ramp is equipped with side protection and a system with vertical opening safety bar.

The non-slip profiled steel sheet structure is hot dip galvanized.

1. Unloading ramp
2. Safety bar
3. Side protection
4. Locking mechanism
5. Spring

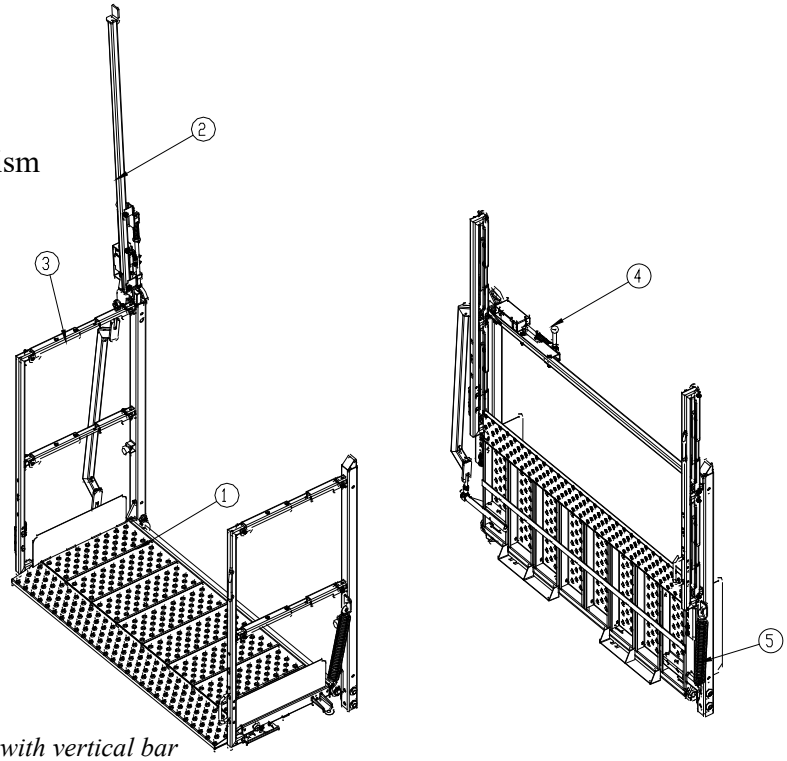


Fig.D.14 Exit ramp h=600, with vertical bar

D.5.10 UNLOADING RAMP h=600 WITH HORIZONTAL BAR

The unloading ramp is equipped with side protection and a system with horizontal opening safety bar.

The non-slip profiled steel sheet structure is hot dip galvanized.

The unloading ramp with horizontal bar can be in two widths, ranging from 1.5 m to 2.5 m.

1 Unloading ramp
2 Safety bar
3 Side guard rail
4 Locking mechanism
5 Spring

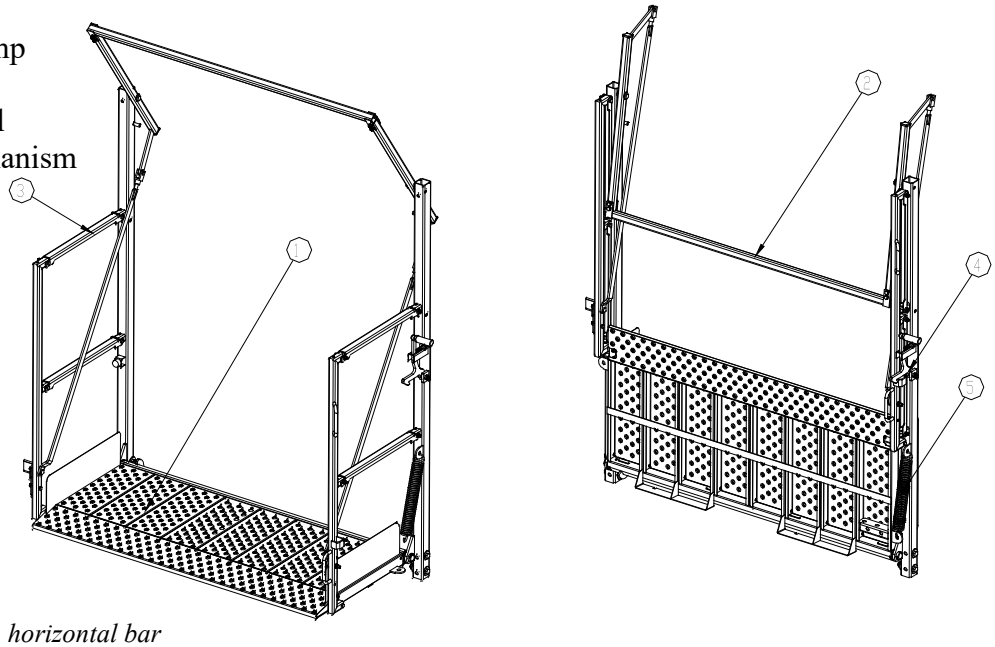


Fig.D.15 Unloading ramp h=600 with horizontal bar

D.5.11 ERECTION RAMP

The erection ramp is specifically designed to facilitate safe assembly of the ties; the ramp is reversible, so it can be mounted on the right or left of the mast.
This ramp is equipped with a guard rail protection, but during the access to it is mandatory the use of the safety belt by the operator, which is hung on the appropriate slot (4-D.16), or alternatively, the eyebolt on the upper cross pipe of the drive unit (2-D.05).

WARNING! ***Always use the safety harness when using the erection ramp – attach the harness to the sheet metal structure by means of the specific slot (4 fig.D.16).***

Limit switch is provided such that the machine cannot be operated with open ramp.

1. Ramp rail
2. Floor panel
3. Steel cable
4. Hooking plate

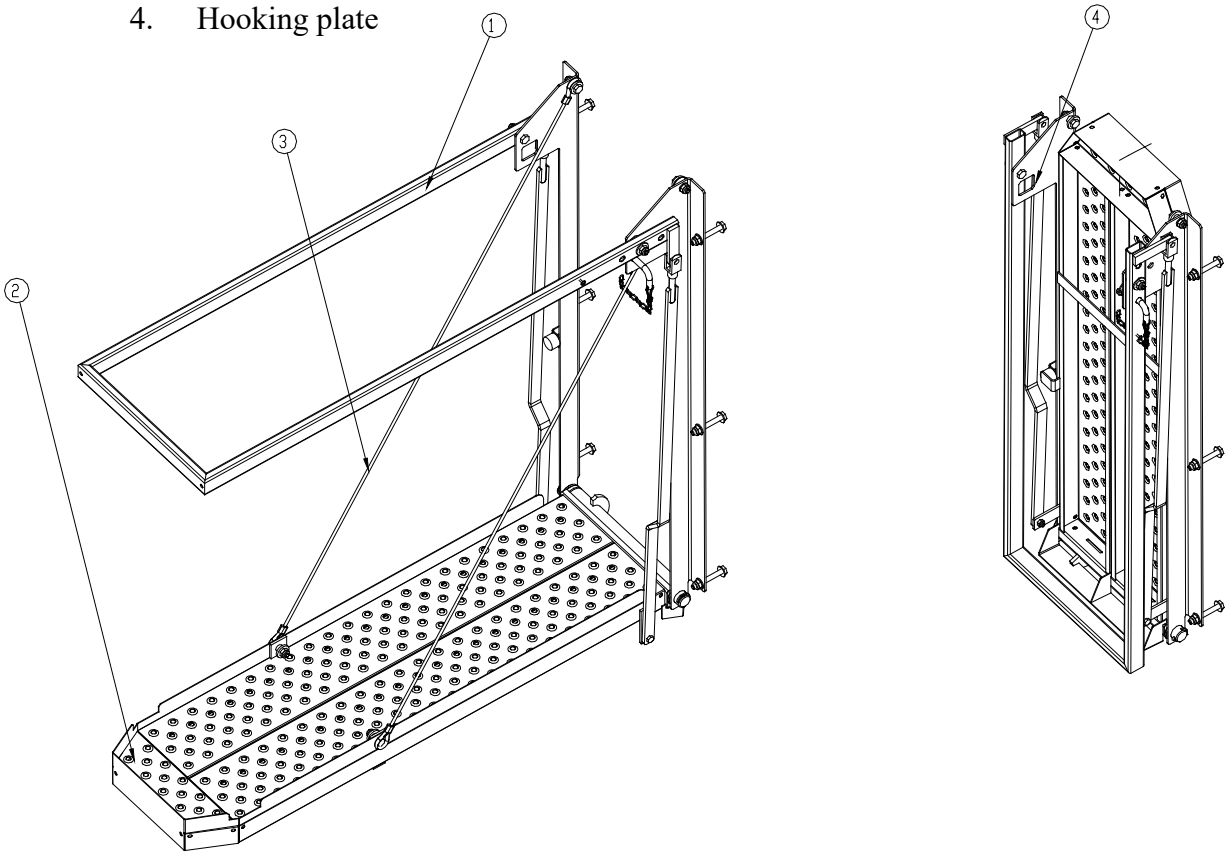


Fig. D.16 Erection ramp

Max permissible load on the erection ramp
1 person + personal tools = 120 kg

D.5.12 2 m STOP CAM PLATE

The 2 m stop cam plate is composed of two identical rails that are mounted to the mast end-to-end in such a way as to obtain effective length of approximately 2.3 m.
When the machine reaches the 2 m stop cam during its downward run, it stops.
The next downward movement command restarts the machine, accompanied by an audible descent warning signal.
If the machine is used as a **materials hoist (MH)**, from this point onward the machine can be controlled only from the ground using the push button box connected to the base panel and having a "hold to run" control: with this control type, the UP or DOWN buttons must be kept pressed in order to move the machine.
If the machine is used as a **transport platform (TP)**, it can be operated only from the platform by means of the UP or DOWN buttons, having a hold to run control feature, located on the main panel.

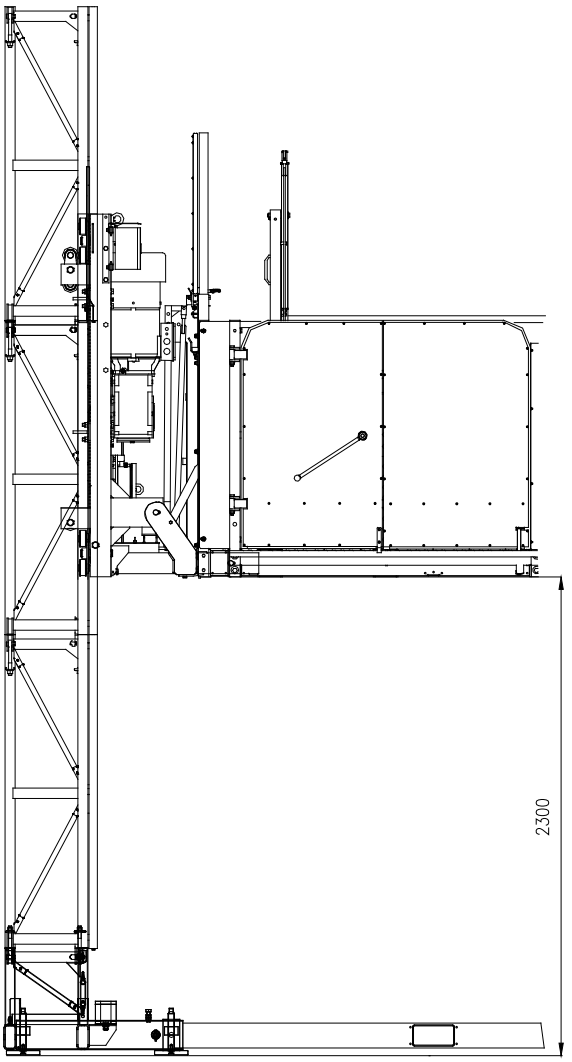


Fig.D.17 2 m stop cam

IMPORTANT: ***Machine used as material hoist: as long as the cage is on the 2 m stop cam plate, it cannot be operated from the landing call buttons until the cage has been moved beyond the stop cam plate by means of the ground controls or the cage controls. Only the emergency stop pushbutton and the various safety switches remain operational (limit switch on doors at operational floor).***

D.5.13 BASEFRAME ENCLOSURE

For ground level protection of the area of machine movement, a base enclosure is supplied to be installed around the machine on the ground. The enclosure is composed of guard rails of various lengths and a gate, all of which are 1.1 m in height.
The gate is provided with an electro mechanical safety device to prevent movement of the platform when the gate is not closed and locked.
A limit switch to be connected to the base panel prevents the machine from starting if the gate is not closed, and it stops the machine if the gate is opened.
This feature is not mandatory for **material hoist** applications.
However, in both cases the 2 m stop cam plate must be used.

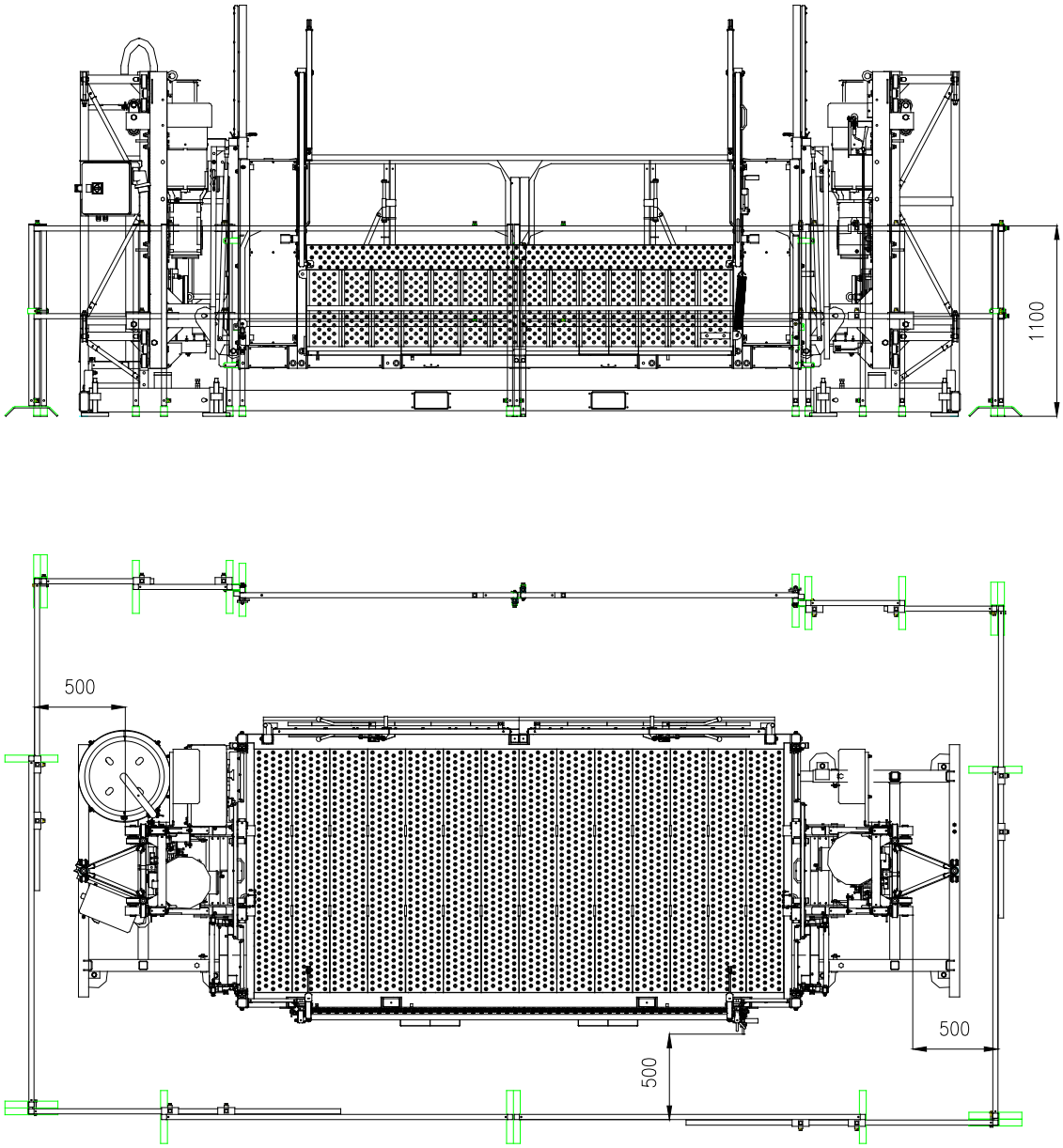


Fig.D.18 Base frame enclosure

D.5.14 MAST TIE-IN

Tie-in system constitutes the structure to fix in height the mast structure to the support structure. Standard tie-in structure is made of the following parts:

1 Mast
2 Tie Frame (Standard)
3 Wall tie
4 Swivel clamp
5 Wall fixing plates

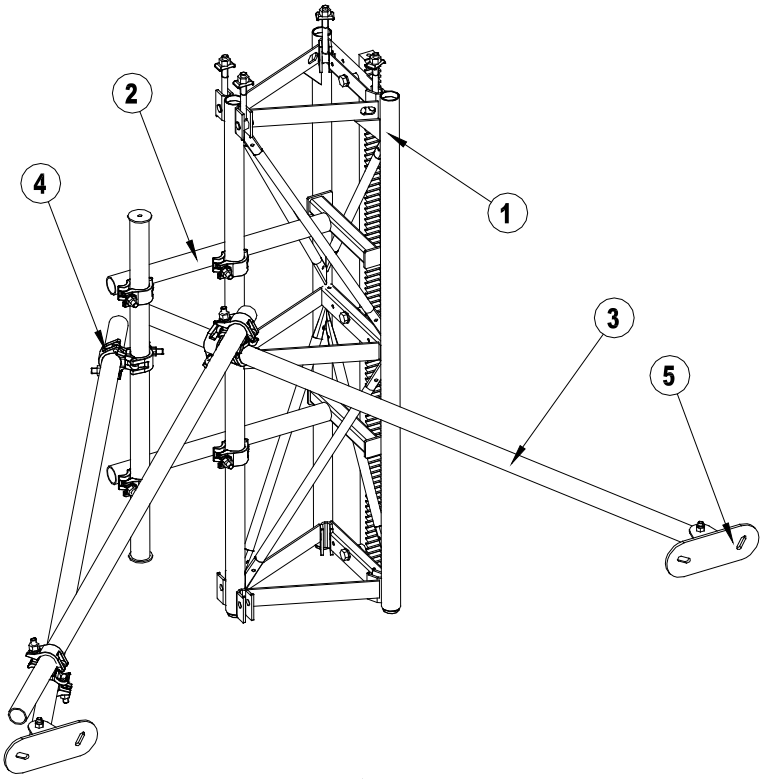


Fig.D.19a Mast tie-in with standard tie frame

An alternative back tie frame is available and used when the support structure stands on the back of mast, as shown below.

1 Mast
2 Back Tie Frame
3 Wall tie
4 Swivel clamp
5 Wall fixing plates

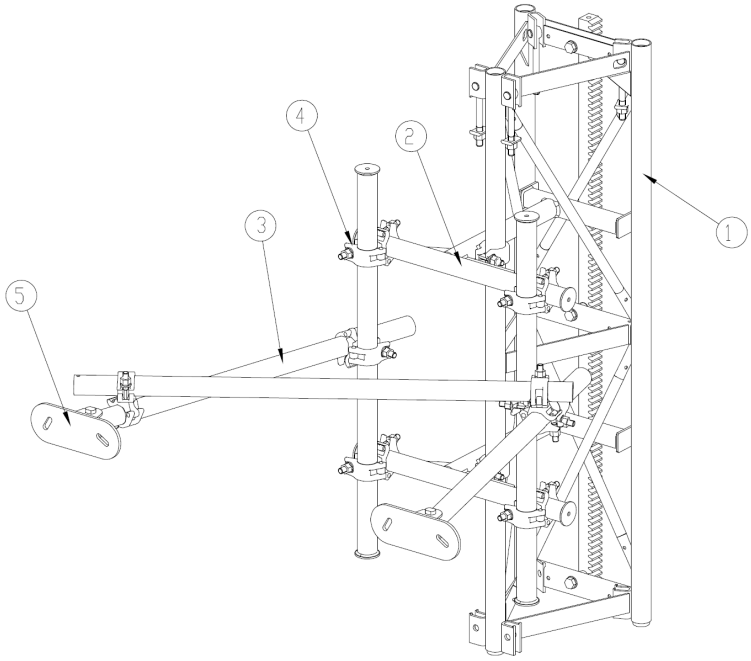


Fig.D.19b Mast tie-in with back tie frame

For specifications of the tie-in refer to chapter ‘’H’’

D.5.15 CABLE GUIDE

The U-shaped cable guides with rubber springs are attached to the mast for the entire height with the function of maintaining the correct position of the electrical cable between the basket and the highest landing.

1. Mast
2. Cable guide

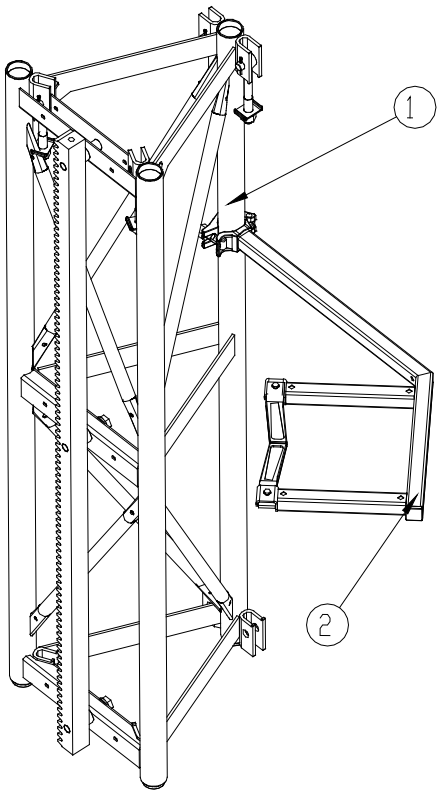


Fig.D.20 Cable guide

D.5.16 LANDING GATES

The machine is equipped with low high landing door h=1.1 m.
Two types available, sliding gate and bi-folding gate.
The sliding gates are available in two opening widths, 1.5 and 3 m. The gate 1.5 m is completely reversible and can be opened to the right and to the left.
The gate opening with 3 m is composed of two parts sliding from 1.5 m (with an opening to the right and the other on the left).
The bi-folding gate is available only with 1.5 m width, but it can be reversible (left or right).
The gates are provided with mechanical interlock which stops the opening of the gate itself if the platform and related landing equipment is not in the correct landing position.
A landing call box, allowing the machine to be called from any floor, can be mounted to each landing gate frame.
This function is valid only when the machine is used as a material hoist, i.e. with the platform panel selector set to "**MH**".
When the machine is used as a transport platform, selector set to **"TP"** position, calls from landings are automatically disabled.

1. Gate interlock pillar
2. Unloading ramp interlock
3. Sliding Gate
4. Roller carriage
5. Gate stop

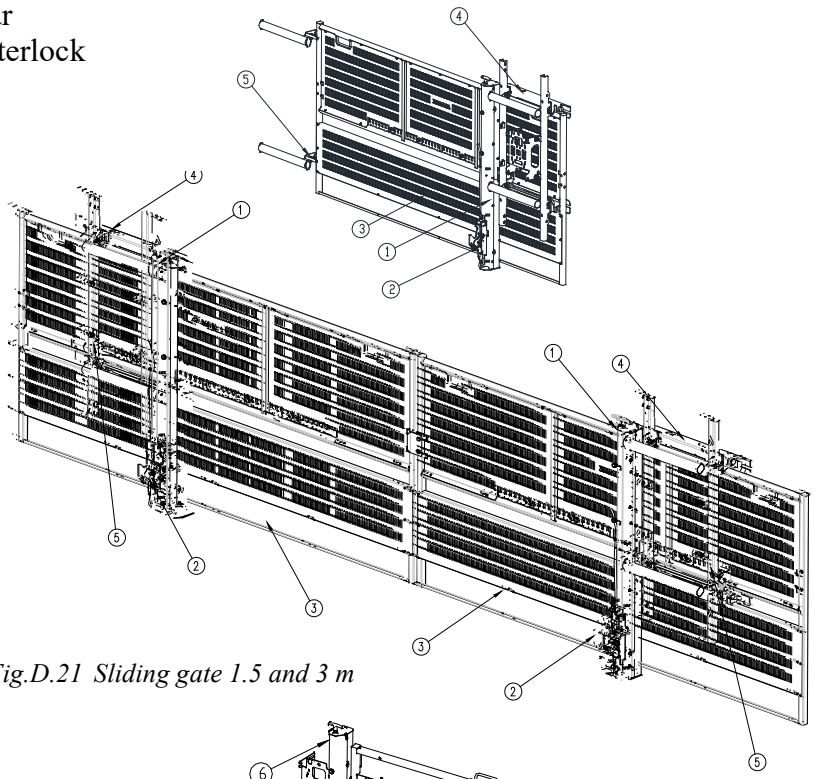


Fig.D.21 Sliding gate 1.5 and 3 m

6. Gate interlock pillar
7. Unloading ramp interlock
8. Bi-folding gate
9. Hinge pillar

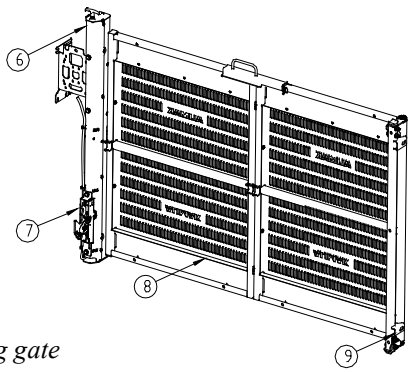


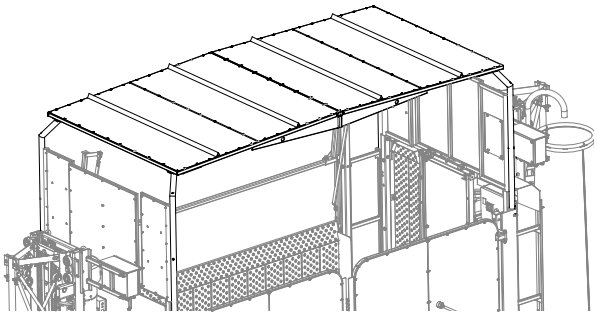
Fig.D.22 Bi-folding gate

D.5.17 Falling Object Protection System (FOPS)

The platform is equipped with a FOPS that protects persons on the platform against falling object and weather conditions. FOPS pillars are fixed on the railing and the cover is made by a pre-galvanized sheet metal screwed on a pipe frame. FOPS can be easily dismantled in order to occupy a minimum space.

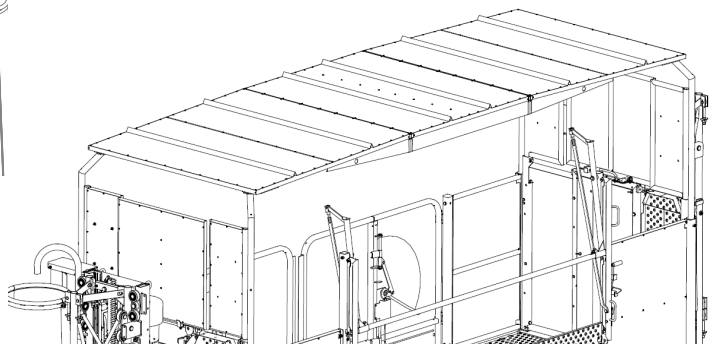
WARNING! FOPS is not suitable for standing and/or walking on

TPL 2000/ TPL 2000D



(Weight 70 kg)

TPL 1800



(Weight 90 kg)

Fig. D 23 FOPS

IMPORTANT: Use of FOPS is:

- ***not requested when used as MH***
- ***requested when used as TP. FOPS can be removed only where a jobsite specific risk assessment indicates there is a minimal risk of objects falling on the platform and endangering persons***

WARNING! Weight of FOPS must be considered as part of rated load!

D.5.18 ELECTRICAL EQUIPMENT

The electrical equipment is designed and built to withstand the most demanding operating conditions on construction sites.
The components are all in compliance with national and international standards.
Required documents, such as wiring and diagrams are included with the delivery.

D.6. Optional accessories

WARNING! ***weight of installed accessories must be considered as part of rated load!***

D.6.1 ERECTION CRANE

To ease handling of mast section during erection and disassembly, an erection crane is available.
The erection crane can be fixed on the top of the drive unit by specific support there is also a limit switch that monitors position of erection crane.
Limit switch must be connected to the junction box on drive unit (shown by arrows in the below picture).

(Weight 40 Kg).

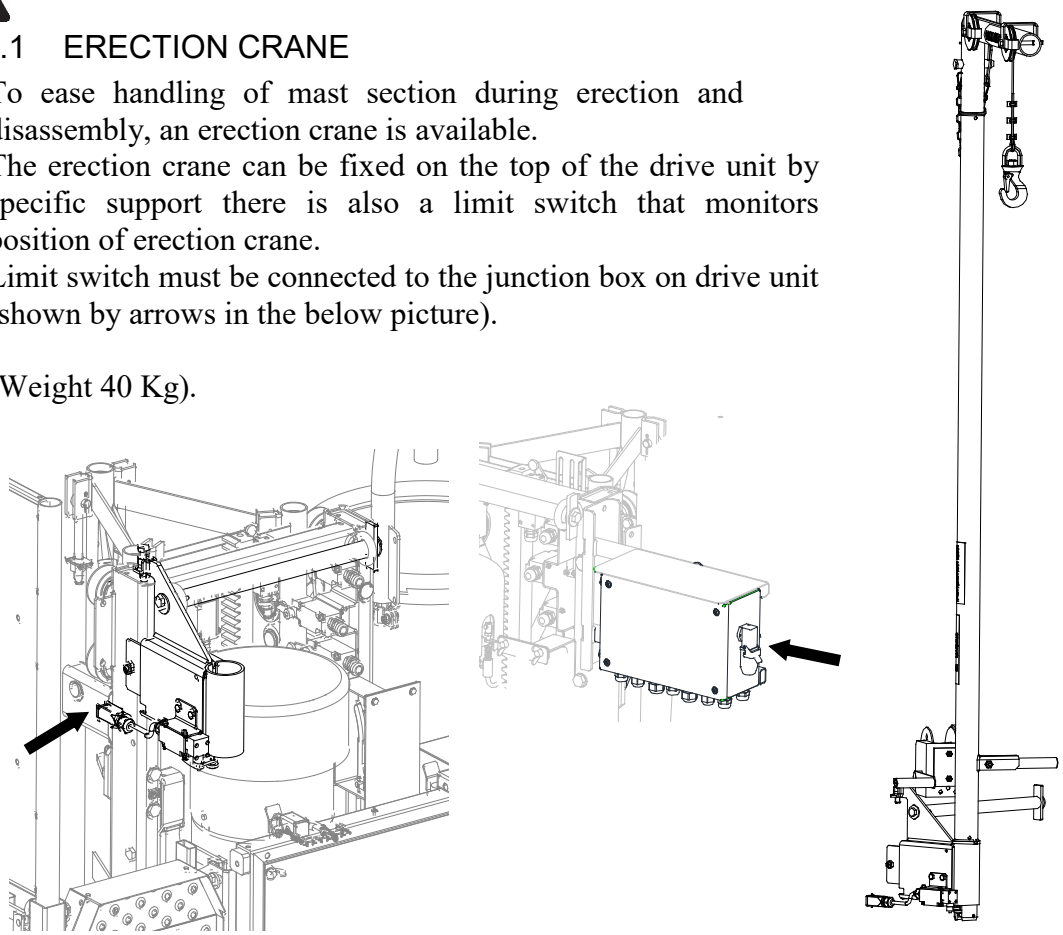


Fig.D 24 Erection crane and support

D.6.2 LADDER FOR MAST ERECTION

To facilitate the assembly of the mast, and a ladder to be mounted in place of the central panel of the mast protection is available as an option.
The lower part of the ladder is removable from the closed position (by lifting it along its seat) and must be placed on the floor of the platform.
(Weight 12 Kg).

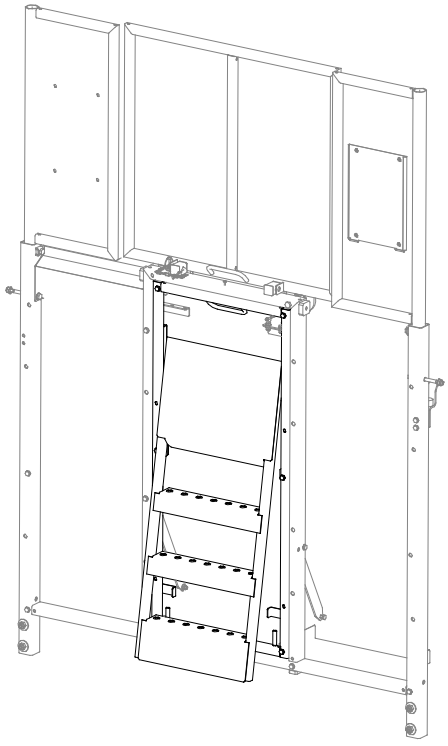


Fig.D 25 Ladder

D.6.3 LIFTING EQUIPMENT

The platform can be equipped with a lifting equipment, to facilitate the movement and the loading / unloading of the assembled base unit. The frames at the ends of the hook are fixed on the masts and the machine can be lifted by the slots placed on the junction bar.

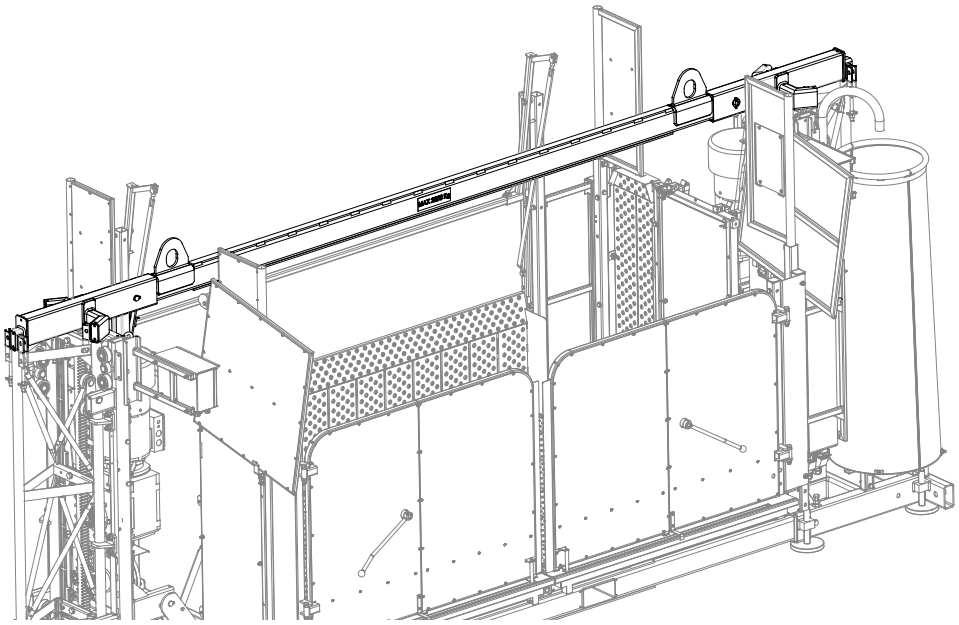
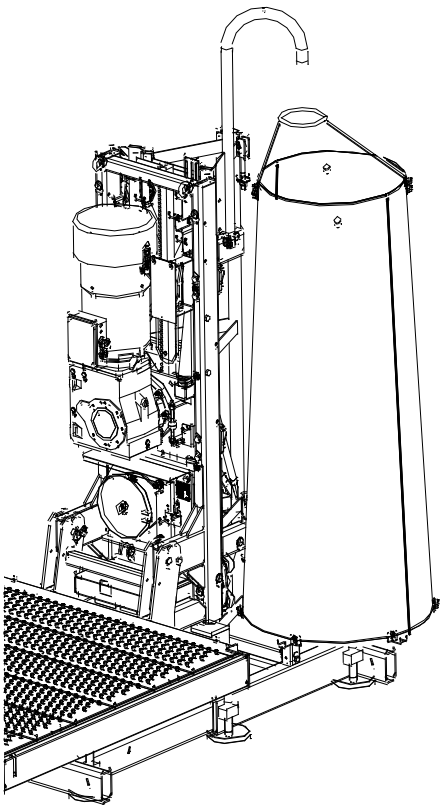


Fig.D 26 Lifting equipment

D.6.4. CABLE BASKET FOR LIFTING HEIGHT > 70 m



When lifting height is more than 70 m, an optional bigger cable basket must be used, in conjunction of specific power cable (see table at C.2).

IMPORTANT: ***use of improper cable and cable basket for the installed mast height can result in incorrect functioning and damage to the equipment.***

D.7. Final commissioning test and verification

The equipment is fully checked according to the Machinery Directive's requirements before delivery, to confirm operation and safety.

- Machinery is dynamically tested with rated load and additional 10% overload.
- Machinery is statically tested with rated load and additional 25% overload.
- Safety devices are dynamically tested to trip with rated load within overspeed situation.

E. SAFETY INSTRUCTIONS

The machine must not be modified or adapted except in the ways described in this handbook.

The surface on which the material hoist rests must be able to support the weight of the machine, the mast, and the payload.

The mast must ALWAYS be correctly tied to the building.

The machine must be earthed in order to discharge on the ground any lightning. For risk evaluation, by the job site manager, refer to EN60235.

If the machine is not used in daylight conditions, the appropriate area must be lit adequately so that the operator has good vision in all conditions of the landings and the lifting height.

It is prohibited to climb on the mast.

E.1. Machine used as <u>MATERIAL HOIST</u>

E.1.1. SAFETY PROCEDURES PRIOR TO USE

- Make sure the base levelling screw jacks are resting on a suitably resistant surface.
- The area around the machine must be free of obstacles.
- The machine must be tied at the specified distances according the instruction in this manual.
- The electrical panel door must be closed before the machine can be used.
- Only during erection/dismantle are service engineers allowed to travel on the platform.

With wind speed in excess of 12.5 m/s, erection and dismantling operations must be suspended.

E.1.2. SAFETY PROCEDURES DURING USE

It is strictly prohibited to transport persons in normal use!

With wind speed more than 20 m/s, the machine must be in its rest position on the base frame buffers and must not be used.

Make sure there are no obstacles along the travel path of the material hoist.

When the machine is in use, no persons are allowed to remain beneath it.

Materials and/or tools must never protrude beyond the edges of the platform. Material that may become dislodged must be properly secured. The load must not rest on the guard rails.

The emergency pushbutton must be pressed during erection of the mast, during installation of the mast ties and during maintenance.

- In the case of low light conditions, the work area must be illuminated adequately so that the operator has a clear view in all situations. A minimum illuminance of 50 lux shall be provided at the controls.
- The machine must be used exclusively for its intended purpose.
- Operations such as erection and dismantling of the machine must be carried out exclusively by authorised personnel who are informed of the contents of the instruction handbook.
- Checking and maintenance operations must be carried out as described in this handbook.
- The professional skill and sense of responsibility of operators and technical personnel contribute to ensuring the machine is used efficiently and safely.
- Always work in compliance with workplace regulations concerning operating practices and safety.
- Technical personnel must always be in a position from where they can act efficiently in response to any situations that may arise during erection and dismantling procedures.
- The operator must be comfortable with all the situations that may arise during normal operating conditions.
- If the technician or operator notices that the machine is malfunctioning, if they notice a potential hazard, or that the work performed is not in compliance with statutory safety regulations, they must alert the manufacturer or the construction site foreman.
- Any local requirement for daily checks, weekly inspections to thorough examinations must be complied with.

E.1.3. SAFETY PROCEDURES TO OBSERVE AFTER USE

When work is suspended or terminated, the main power switch must be set to ''0'' and locked out with a normal padlock.

E.2. Machine used as <u>TRANSPORT PLATFORM</u> (Hoist).

E.2.1. SAFETY PROCEDURES PRIOR TO USE

- Make sure the base levelling screw jacks are resting on a suitably resistant surface.
- The area around the machine must be free of obstacles.
- The machine must be tied at the specified distances according the instruction in this manual.
- The electrical panel door must be closed before the machine can be used.

With wind speed in excess of 12.5 m/s, erection and dismantling operations must be suspended.

E.2.2. SAFETY PROCEDURES DURING USE

With wind speed more than 20 m/s, the machine must be in its rest position on the base frame buffers and it must not be used.

Make sure there are no obstacles along the travel path of the material hoist.

When the machine is in use, no persons are allowed to remain beneath it.

Materials and/or tools must never protrude beyond the edges of the platform. Material that may become dislodged must be properly secured. The load must not rest on or above the guard rails.

The emergency pushbutton must be pressed during erection of the mast, during installation of the mast ties and during maintenance.

- The transport of persons is only permitted in accordance with the table given in chapter C.
- In the case of low light conditions, the work area must be illuminated adequately so that the operator has a clear view in all situations. A minimum illuminance of 50 lux shall be provided at the controls.
- The machine must be used exclusively for its intended purpose.
- Operations such as erection and dismantling of the machine must be carried out exclusively by authorised personnel who are informed of the contents of the instruction handbook.
- Checking and maintenance operations must be carried out as described in this handbook.
- The professional skill and sense of responsibility of operators and technical personnel contribute to ensuring the machine is used efficiently and safely.
- Always work in compliance with workplace regulations concerning operating practices and safety.
- Technical personnel must always be in a position from where they can act efficiently in response to any situations that may arise during erection and dismantling procedures.
- The operator must be comfortable with all the situations that may arise during normal operating conditions.
- If the technician or operator notices that the machine is malfunctioning, if they notice a potential hazard, or that the work performed is not in compliance with statutory safety regulations, they must alert the manufacturer or the construction site foreman.
- Any local requirement for daily checks, weekly inspections to thorough examinations must be complied with.

E.2.3. SAFETY PROCEDURES TO OBSERVE AFTER USE (IRRESPECTIVE OF THE APPLICATION TYPE)

When work is suspended or terminated, the main power switch must be set to ''0'' and locked out with a normal padlock.

E.3. Personnel

Erection, dismantling and maintenance of the machine must be performed exclusively by personnel who:

- fulfil any local regulations or guidance for such users.
- Are at least 18 years of age.
- Are trained in the erection, dismantling and operation of the machine.
- Are specifically assigned by the employer exclusively for erection, dismantling, operation and/or maintenance of the machine. Authority to work with the machine must be confirmed in writing.
- Are conversant with the applicable safety regulations, which must be in full agreement with the contents of this instruction handbook.
- The technician must be able to solve all the problems that may occur during erection and dismantling of the machine.
- The machine user must be able to deal with the various situations that arise during operation of the machine.
- If the user or technician notices defects or hazards or disagreement with the applicable safety regulations, he must inform the owner and/or the person in charge of this situation immediately.
- Repairs of electrical systems must be carried out exclusively by licensed electricians.
- All persons working on the machine must wear protective apparel, including safety helmet, safety shoes and suitable clothing.
- If the machine is transferred to third parties, the full name of the consignee of the machine must be duly recorded.

F. TRANSPORTING THE MACHINE

The material hoist can be transported on the public highway on a standard lorry.

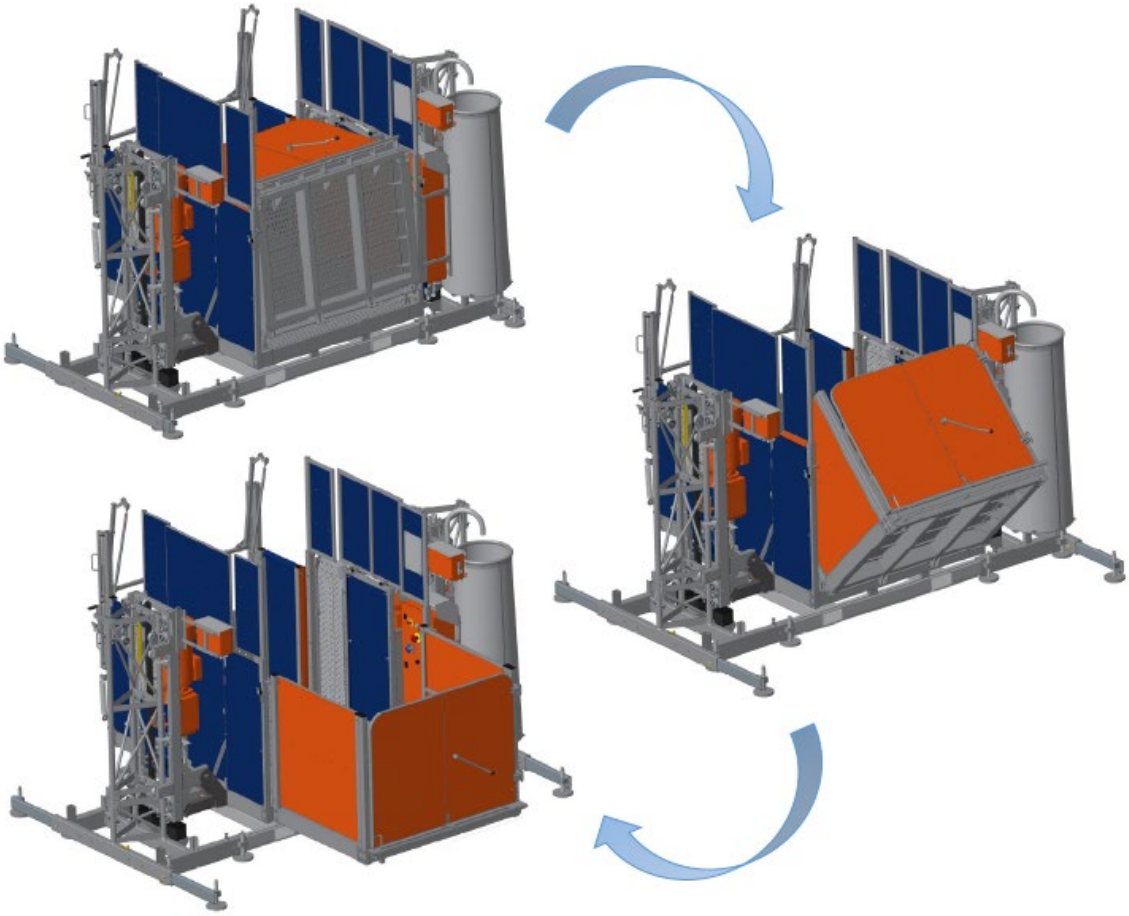
F.1. Transport to and from the construction site

Make sure the machine ramps are securely closed.

F.1.1 – Transport TPL 2000D

Additional components, such as the landing stop cam plate, landing call boxes, etc., can be stowed in the platform.

- Before transporting the machine, it must be dismantled as described in chapter “J”.
- To load the machine or unload it in the construction site use a truck mounted crane or a fork-lift. For lifting operation by fork-lift, the suitable lifting point may be used (see D.5.1).
- Before carrying out the transport of this configuration, make sure that there are no objects inside the platform. Lift the hinged part of the appendix on the entrance side and rotate it toward the inside of the platform, until the railings touch the floor. This allows to reduce the overall width and be contained in the cargo compartment of a standard truck.



- During transportation, make sure that all safety devices are in the correct position.
- Also, make sure the machine is arranged in a secure manner on the lorry load bed.

Weight of Base Unit TPL 2000D:
1900 kg

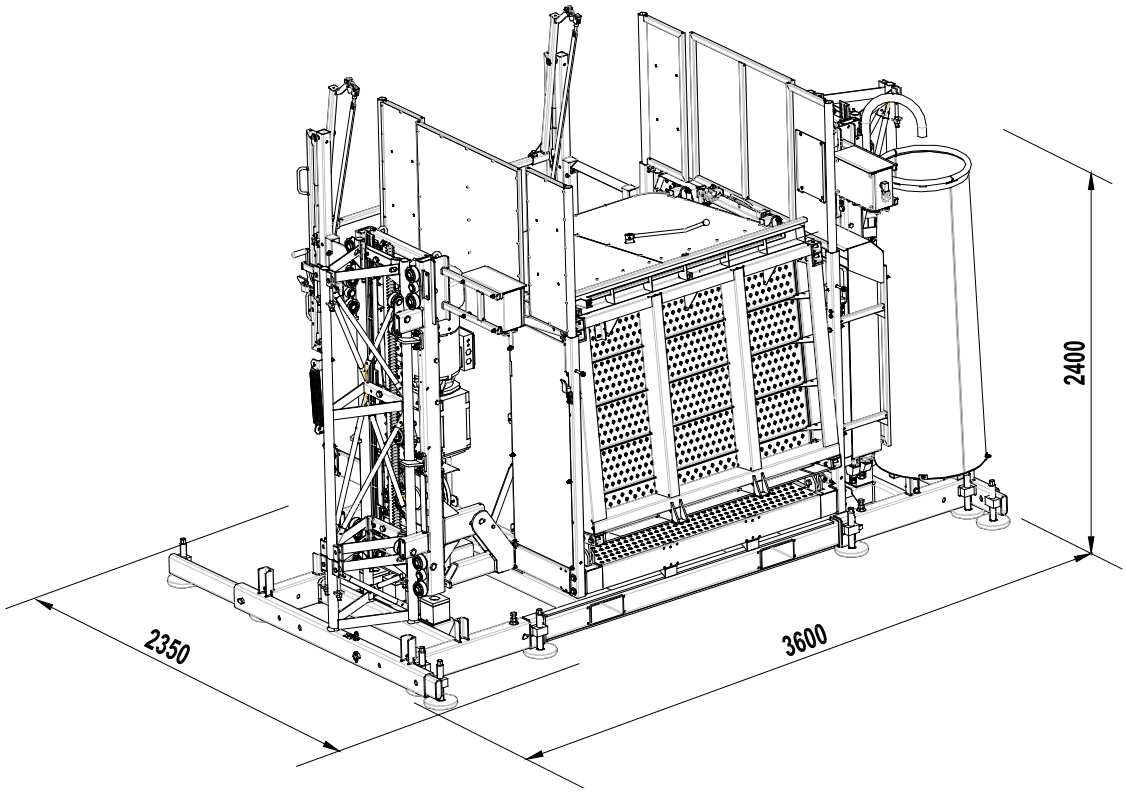


Fig.F.01 Dimensions TPL 2000D

F.1.2 – Transport TPL 2000 and 1800

Additional components, such as the landing stop cam plate, landing call boxes, etc., can be stowed in the platform.

- Before transporting the machine, it must be dismantled as described in chapter “J”.
- To load the machine or unload it in the construction site use a truck mounted crane or a fork-lift. For lifting operation by fork-lift, the suitable lifting point may be used (see D.5.1).
- During transportation, make sure that all safety devices are in the correct position.
- Also, make sure the machine is arranged in a secure manner on the lorry load bed.

Weight of Base Unit TPL 2000:
2000 kg

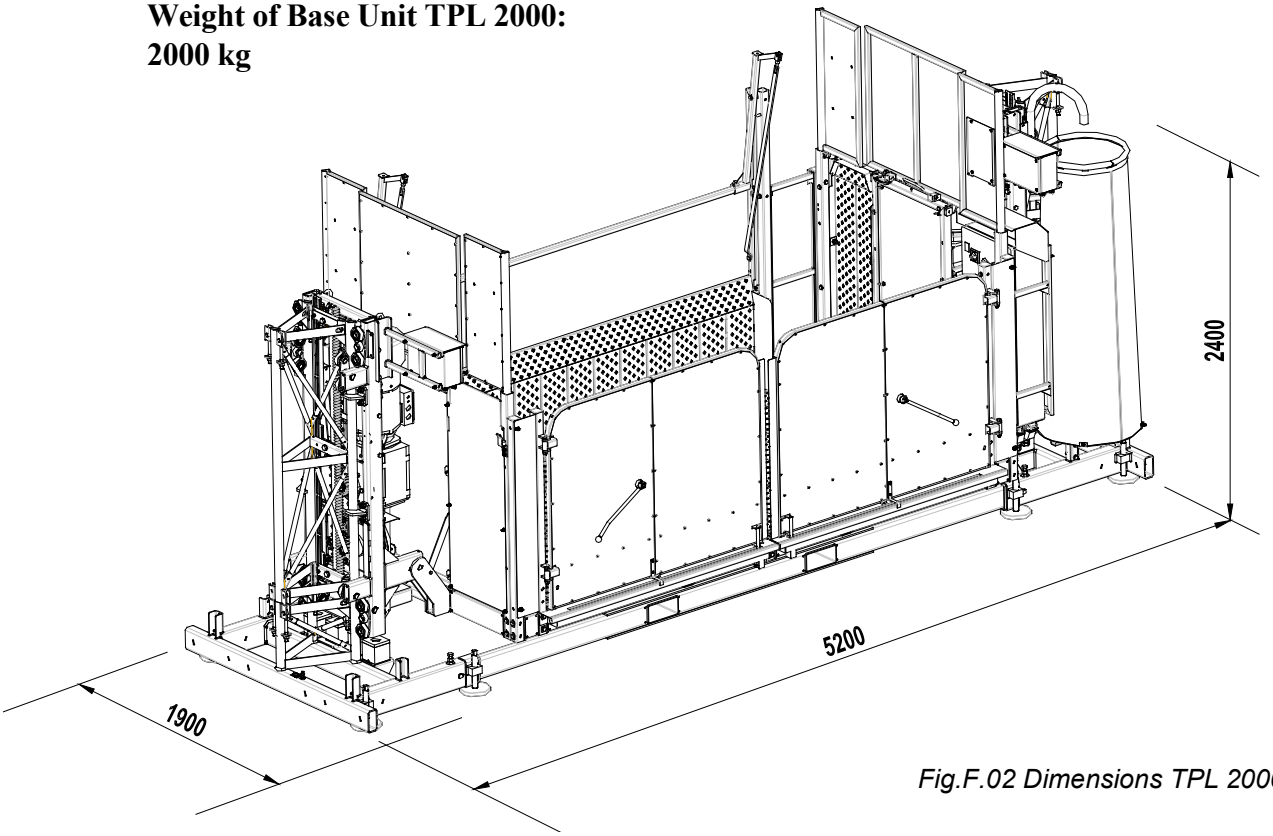


Fig.F.02 Dimensions TPL 2000

Weight of Base Unit TPL 1800:
2100 kg

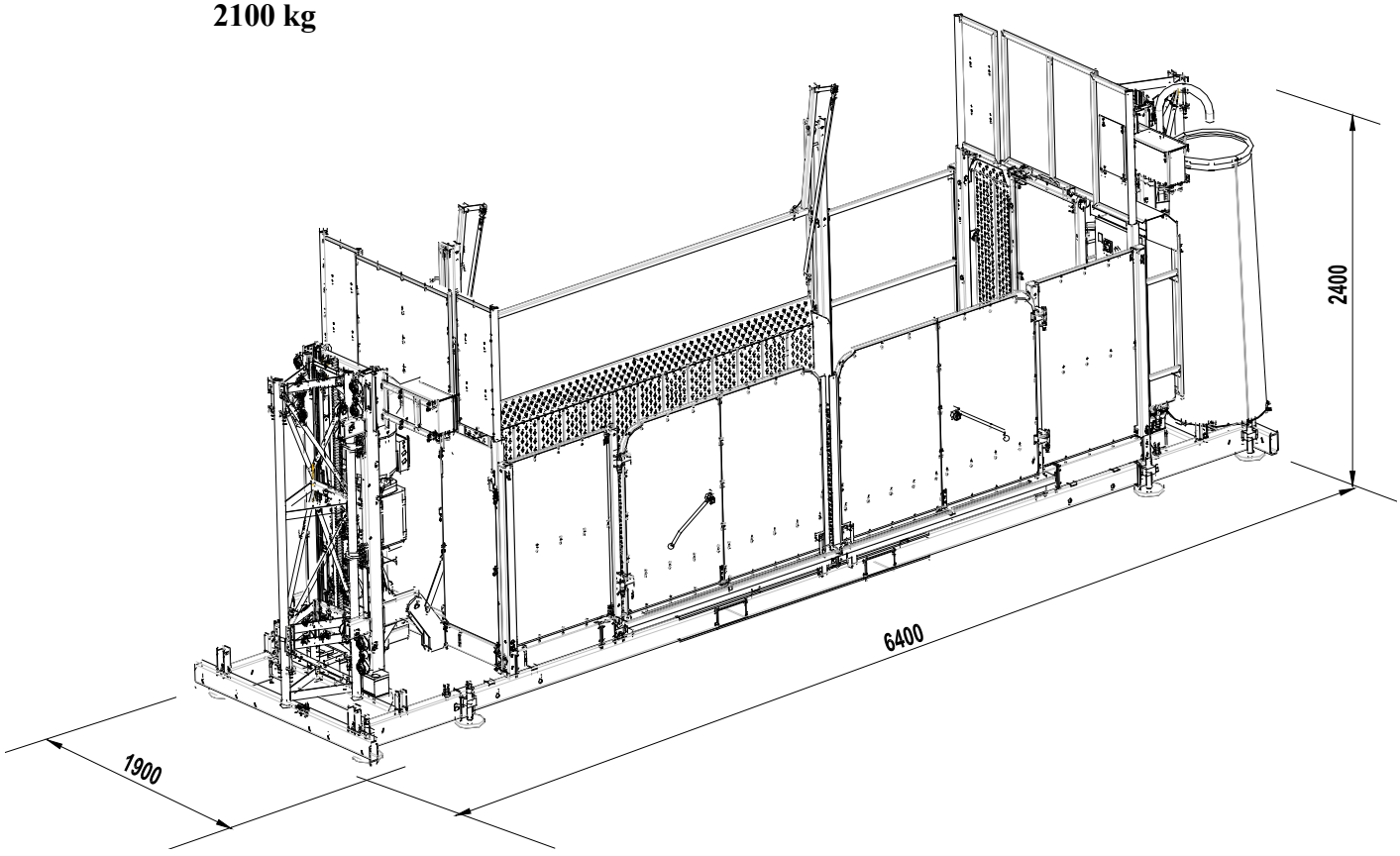


Fig.F.03 Dimensions TPL 1800

G. CONTROL AND SAFETY DEVICES

G.1. Base frame electrical panel

The base frame electrical panel is mounted to the rear of the machine by means of a bracket equipped with a clamp that grips the mast rear pipe.

1. Electrical socket
2. Cable gland for connection of the operating cable
3. Base enclosure limit switch connector
4. Base enclosure connector blank plug
5. Connector for landing equipment
6. Landing equipment connector blank plug
7. Control push button
8. Base panel
9. Electrical panel lock
10. Main power switch

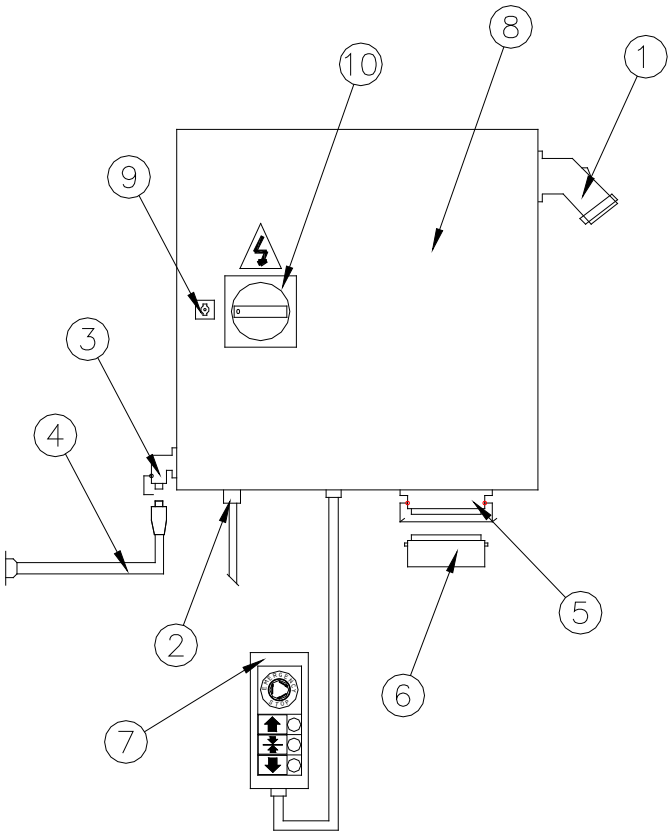


Fig.G.01 Base frame electrical panel

G.2. Push button control box

When the machine is used as a **material hoist** it is controlled by the control push button box, which is connected directly to the base electrical panel, by means of the four push buttons described below:

1. Emergency stop pushbutton
2. UP button
3. Landing stop button
4. DOWN button

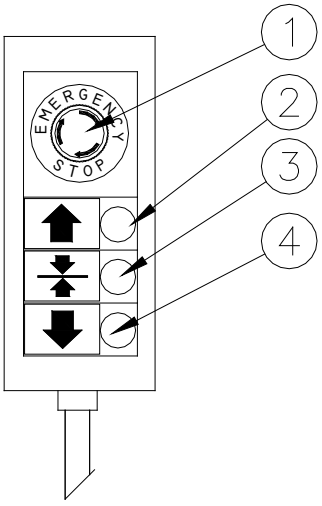


Fig.G.02 Push button control box

Once the emergency push button has been pressed it will remain locked in the pressed position. To reset the pushbutton twist the button head slightly.
This procedure is applicable to the base frame electrical panel and to the control panel.

G.3. Platform main electrical panel

1. Selector: MH (material hoist), TP (transport platform) and by-pass
2. Emergency stop push button
3. Overload indicator lamp (red)
4. Safety circuit OK indicator lamp (green)
5. UP pushbutton
6. DOWN pushbutton
7. Stop Next Landing pushbutton
8. Main power switch
9. 220V power tools connection socket
10. Electrical panel door rapid lock
11. Alarm siren
12. Power feeding input connector
13. Connector for drop test control box (internal)
14. Stop right drive unit
15. Stop left drive unit
16. Power connector left drive unit (X7)
17. Power connector right drive unit (X8)
18. Control connector left drive unit (X5)
19. Control connector right drive unit (X6)

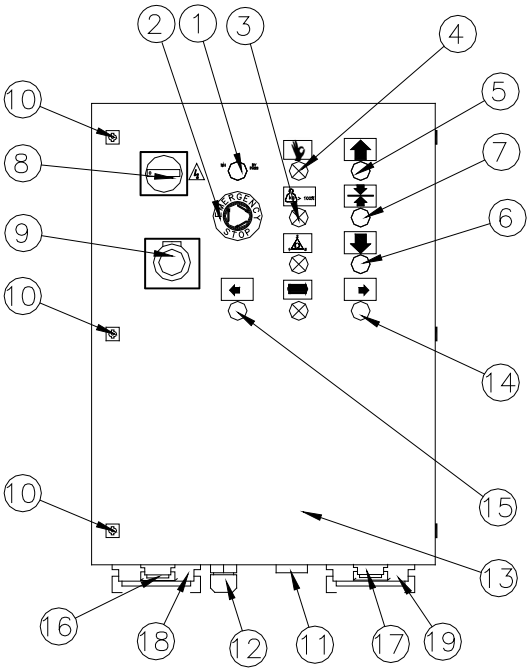
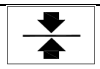
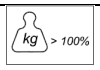
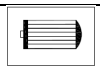
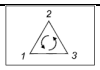


Fig.G.03 Platform electrical panel

Note: The main power switch, on both the base electrical panel and on the platform panel, can be locked out with a normal padlock in order to prevent unauthorized use of the machine.

Detail of meaning for pictograms on Electrical Panel

	***UP***
	***STOP NEXT LANDING***
	***DOWN***
	***SAFETY CIRCUIT LINE OK***
	***OVERLOAD***
	***FAULT MOTOR***
	***PHASE SEQUENCE ERROR***
	***STOP DRIVE UNIT RIGHT***
	***STOP DRIVE UNIT LEFT***

G.4. Drive unit limit switches

1. 2 m stop limit switch
2. UP limit switch
3. DOWN limit switch
4. UP/DOWN overrun limit switch
5. Landing stop limit switch
6. Overload limit switch
7. Mast detection limit switch
8. Safety device trip limit switch
9. Overrun levelling limit switch
10. Levelling limit switch

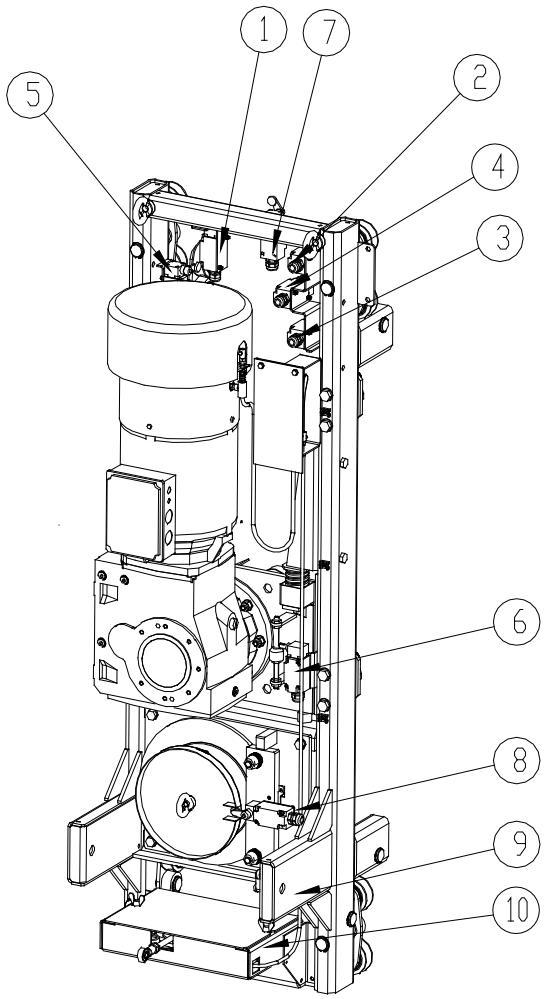


Fig.G.04 Drive unit limit switches

G.5. Safety device

When the machine down speed exceeds a pre-set value, the safety device trips and stops the machine mechanically and electrically.
Before resuming operation, perform a complete check-up of the machine in order to find the reason for operation of the safety device. At this point, reset the safety device (procedure described in chapter "K" heading K.5.4 of this handbook).

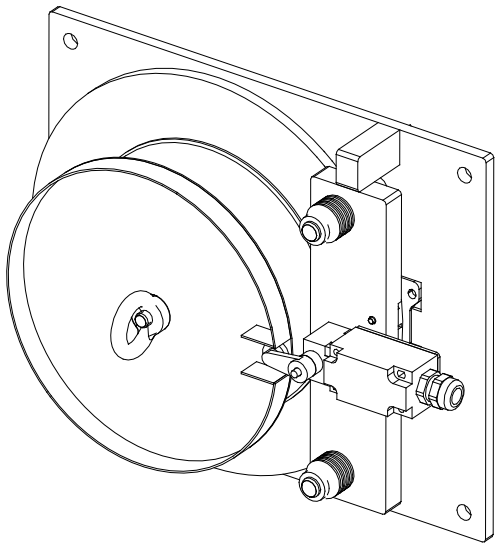


Fig.G.05 Safety device limit switch

G.6. Overload detection

If the machine is overloaded, the excess weight compresses the motor plate springs causing the attached cam to operate a limit switch that disconnects the power supply to the machine thereby immobilising it.
A red led on the main panel illuminates to signal this fault.
The machine will not restart until the excess load is removed and the red LED on the panel switches off.

G.7. 2 m stop cam plate

During its downwards run the machine stops at a height of 2 m from the ground. To continue the downwards run release and press again the relative push button and keep it pressed (see also chapter I).

1. 2 m stop limit switch
2. 2 m stop cam

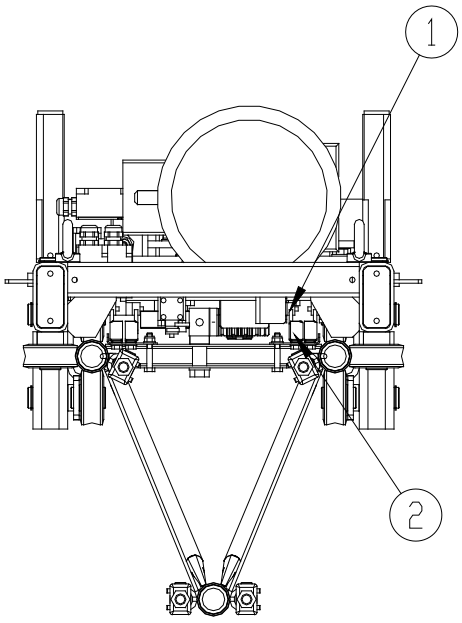


Fig.G.06 2 m stop cam plate

G.8. Overrun limit switch

If the downwards limit switch fails to trip and the machine continues its run, it is stopped by tripping of the overrun limit switch, which constitutes an additional protection.
If the levelling limit switch fails to trip and the machine keeps on inclining, it will be stopped by tripping of the overrun levelling limit switch.

G.9. Landing call units (functional only when the machine is in its material hoist configuration)

Each landing can be equipped with a call unit, from which the material hoist can be controlled to call it to the landing in question.
Each landing call unit is equipped with a specific protective enclosure.

1. UP push button
2. Stop Next Landing push button
3. DOWN push button
4. Emergency stop push button
5. Connector for landing equipment
6. Connector for landing limit switch
7. Connection cable for further landing call units

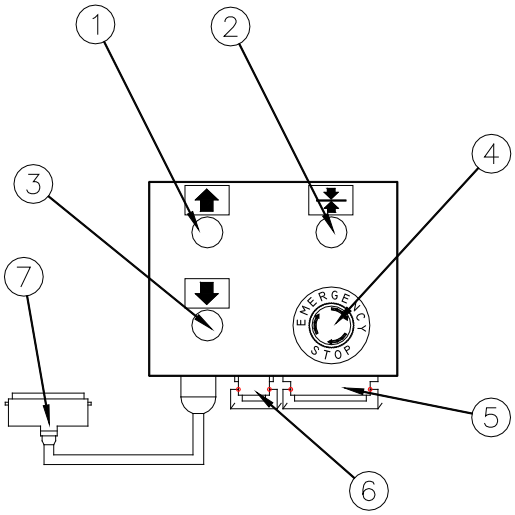


Fig.G.07 Landing call unit

H. INSTALLING THE BASE UNIT AND MAST

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 had been reached when work was stopped. For this reason, always complete a part of the assembly, before stopping work.

During the assembly of the mast no more than 2 persons are allowed on the machine and the maximum lifting capacity (including passengers) should not be exceeded.
The loading of the machine must be planned so that when the final section of the mast above the last tie has been assembled, the material load on the platform has to be at its minimum, and it is not permitted to add more mast sections over the maximum height allowed.

The assembly must always be followed by a test run.
Until the test has been performed, the machine may not be used for any other purpose than transporting its own mast sections and a tie parts, in inspection mode (TP mode). Local regulation may require test or examination before being put into service.

H.1. Preparation for assembly

Ensure that the site where the machine has to be placed conforms to the national safety regulations and that permission has been obtained from the local authorities to assemble the platform.

1. Ensure that a suitable electrical power supply, good lighting, lifting equipment and tools are available.
2. Ensure that the building site is easily accessible to the vehicle which will deliver the machine.
3. Prepare the site ground where the baseframe will be placed and analyse where to carry out the ties in safe way.
4. Ensure that the machine site has good drainage.
5. Plan the location of the machine so that where the mast needs to be tied, it can be tied possibly with the standard material.
6. The components of the machine should be placed as close as possible to the place where it will be assembled.
7. The building site power supply connection must be placed as close to the machine as possible so as reduce the voltage drop to a minimum. When the voltage drop is too high, the machine will not work.
8. The building site power supply connection has to comply with the legal requirements.
9. Ensure that the base unit is equipped with the power cable + cable basket suitable for the planned lifting height (see table C.2).

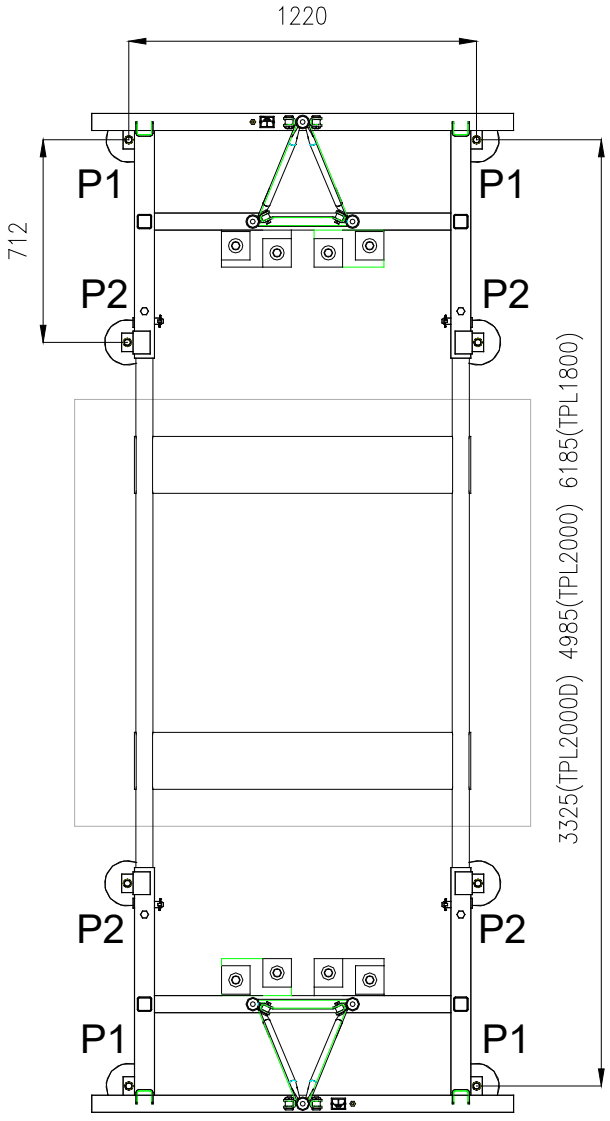
H.2. Base unit assembly

H.2.1. PLATFORM ASSEMBLY

WARNING! ***Before installation, foundation loads of the machine must be determined. The ground on which the baseframe stands must be capable to support the weight of installation.***

The following table shows the foundation loads (including dynamic effects) of complete installation with loaded machine and relative point load on single screw jack for different mast height. For intermediate height please refer to the next superior.

Foundation load, machine loaded		Load on screw jack (kg)	
Mast height (m)	Total load on foundation (kg)	P1	P2
1.5	4720	520	660
3	4820	530	670
7.5	5170	570	720
13.5	5620	700	700
19.5	6070	760	760
25.5	6380	800	800
31.5	6830	850	850
37.5	7290	1090	730
43.5	7740	1160	770
49.5	8190	1230	820
55.5	8340	1250	830
61.5	9140	1370	910
67.5	9650	1450	970
73.5	10150	1520	1020
79.5	10460	1570	1050
85.5	10910	1640	1090
91.5	11260	1690	1130
97.5	11510	1730	1150
100.5	12160	1820	1220



Note: The base frame and its 8 screw jacks are designed to support up to 100.5 m mast height with rated load. Within such mast height it is not needed to support the baseframe under the mast!

For higher installations please contact Alimak representative.

10. Place the machine in the desired position. Pay attention to the distance between the scaffolding and/or the building and the machine ***(minimum distance 500 mm, unless special protections are not assembled between the machine and the scaffolding, under supervision of the building site responsible)*** and check that the hoistway is free of obstacle.

    In case the machine is transported with base unit fully assembled, go directly to point 43.

    In case the machine is transported with base unit not assembled, go directly to point 11.

11. Place the base unit, composed of baseframe, base mast and drive unit, near the desired position.

12. Pull out the lateral extensions (1-fig.H.01) from the baseframe (only for TPL 2000D).

13. Engage the junction frame between two base unit (2-fig.H.01) and lock it by means of pins (3-fig.H.01).

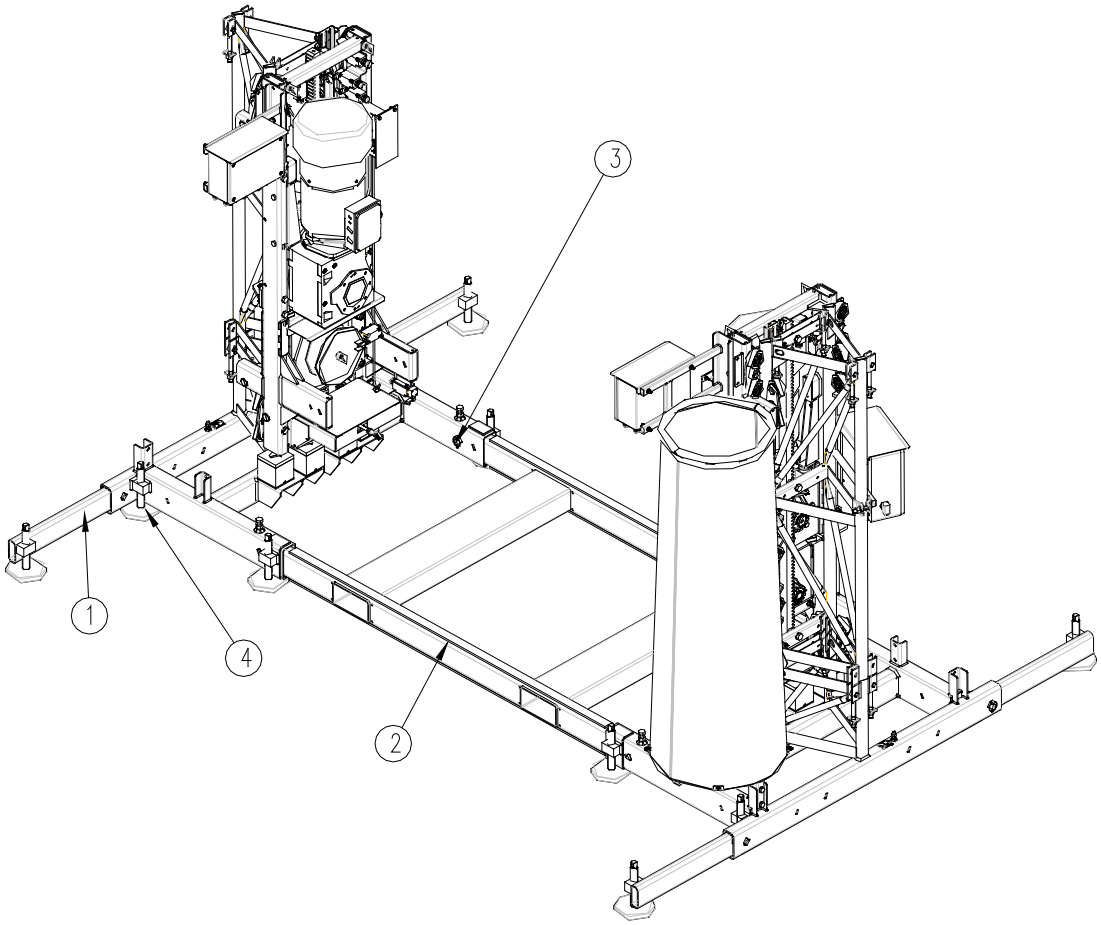
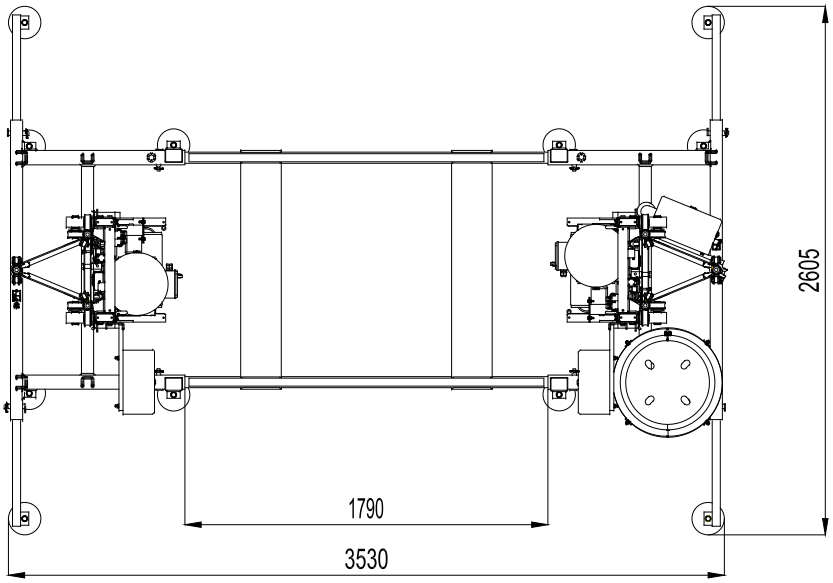


Fig.H.01 Baseframe

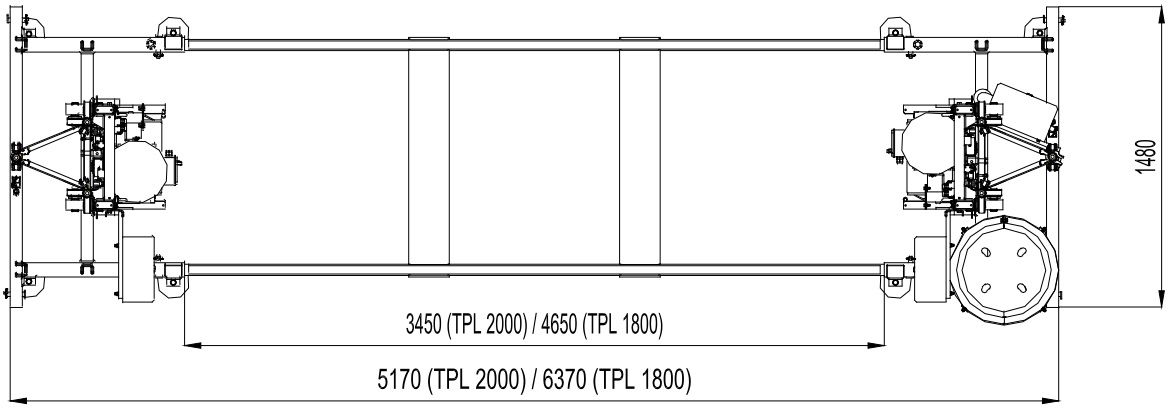
Junction frame between the two base units is common for the TPL 2000 and TPL 1800. Fix junction frame to the base units by means of pins into the interior holes, near the centre of the frame for the TPL 2000 and outer holes for the TPL 1800.

TPL 2000D has a dedicated junction frame.

See dimensions as follows.



Baseframe TPL 2000D

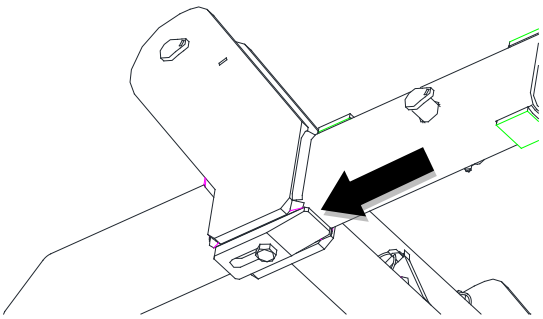


Baseframe TPL 2000 / 1800

14. Before level the machine with screw jacks (4-fig.H.01), unscrew the bolts that fasten the junction frame. Check, with a spirit level with a minimum length of one meter, that the baseframe is levelled. Then retighten the bolts.

15. Fix the adapter to the platform by means of pins (1-fig.H.02).

Adapters with mechanical stop are equipped with two wedges on the bottom side. They are used to close the gap between adaptor inner and platform outer pipes. Loosen the fixing screws and move the wedges in the opposite direction of the platform before inserting the adapter into the pipes.



Then assemble all to the two drive units by means of pins (2-fig.H.02).

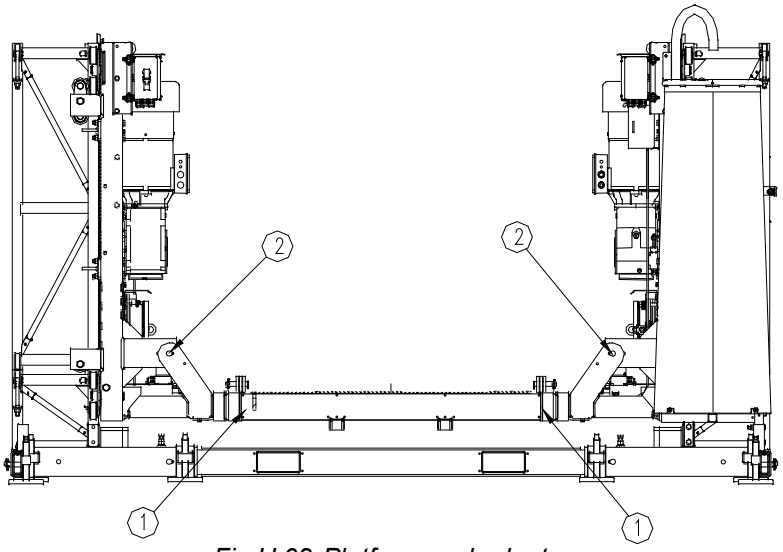
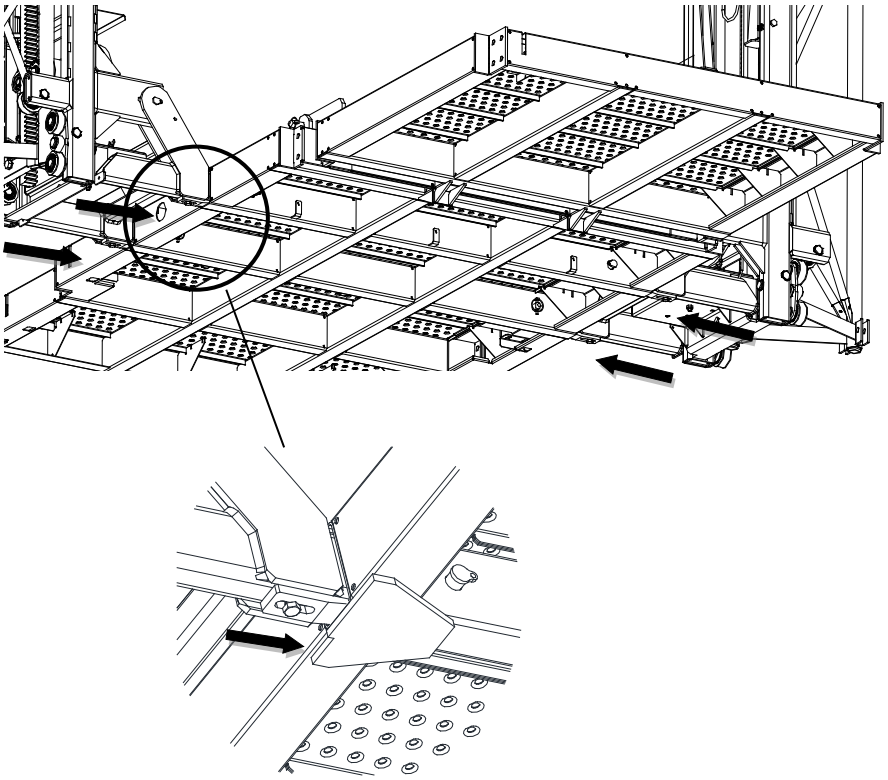


Fig.H.02 Platform and adapters

Move the wedges into the platform pipes until the clearance between the adapters and the pipes is eliminated. Ensure that the levelling of the platform is correct before tightening the screws of the wedges on each adapter.



16. Place mast railings (1-fig.H.03) in front of the drive units on the machine platform and secure it with the provided bolts (2-fig.H.03). On TPL 2000D near mast railing (1 fig.H.03), must be assembled side railings on platform appendix (3 fig.H.03) and shorter side railings (4 fig.H.03) on the other side.

TPL 2000/ 1800

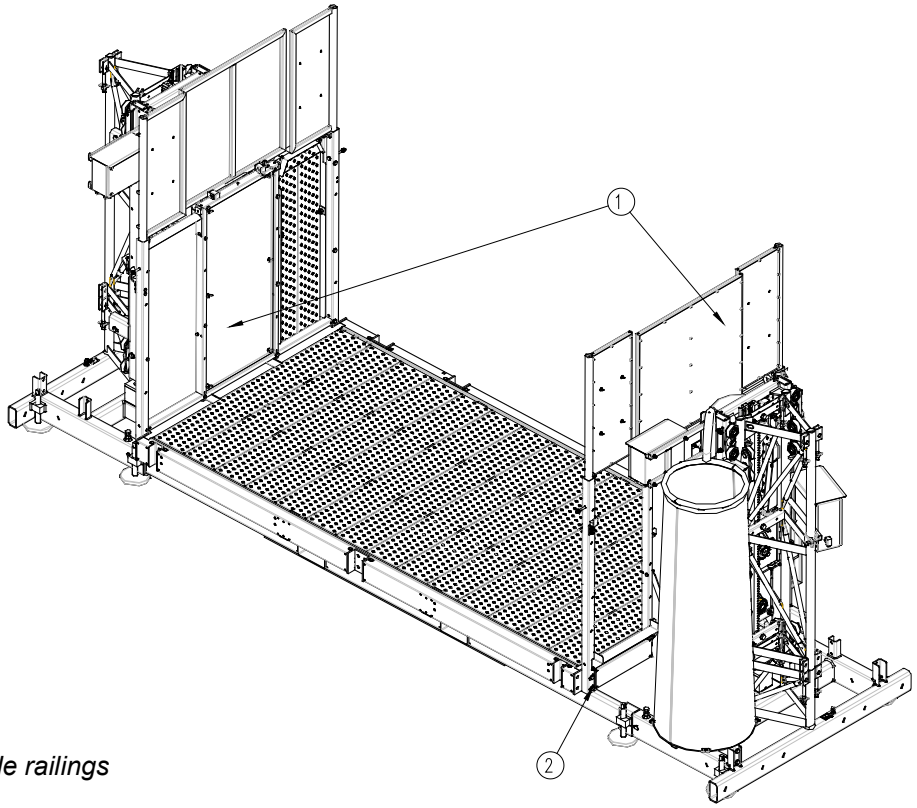
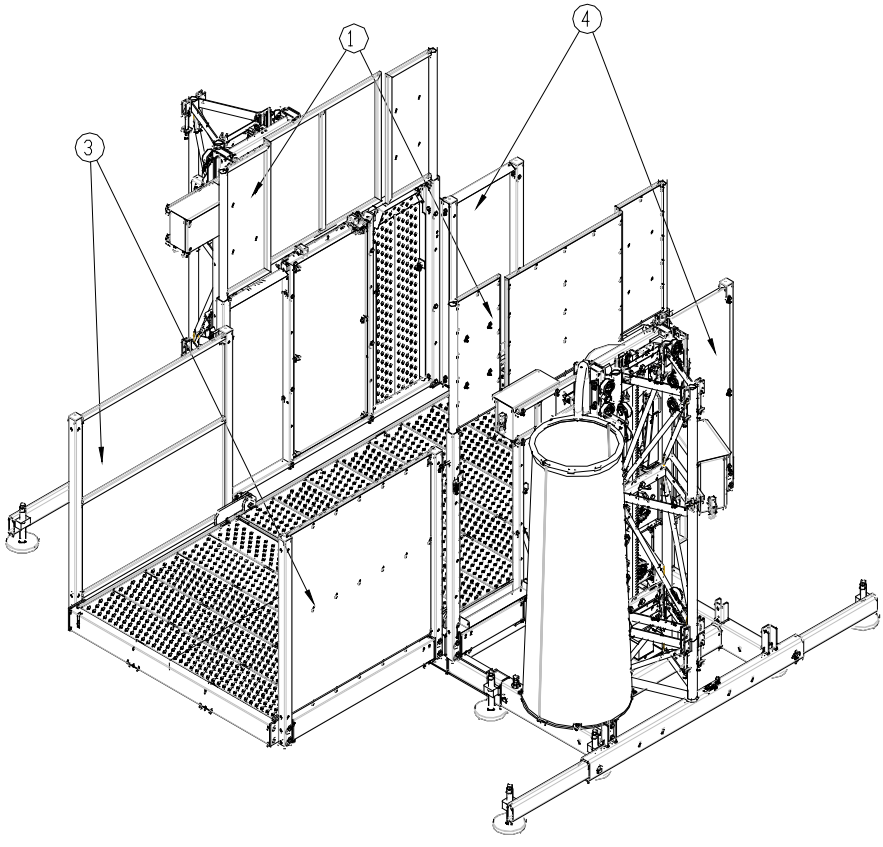
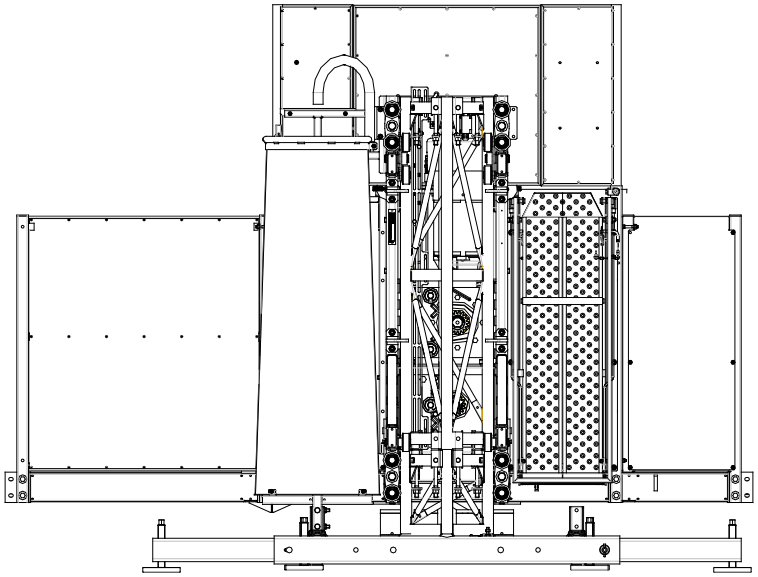


Fig.H.03 Mast and side railings

TPL 2000D

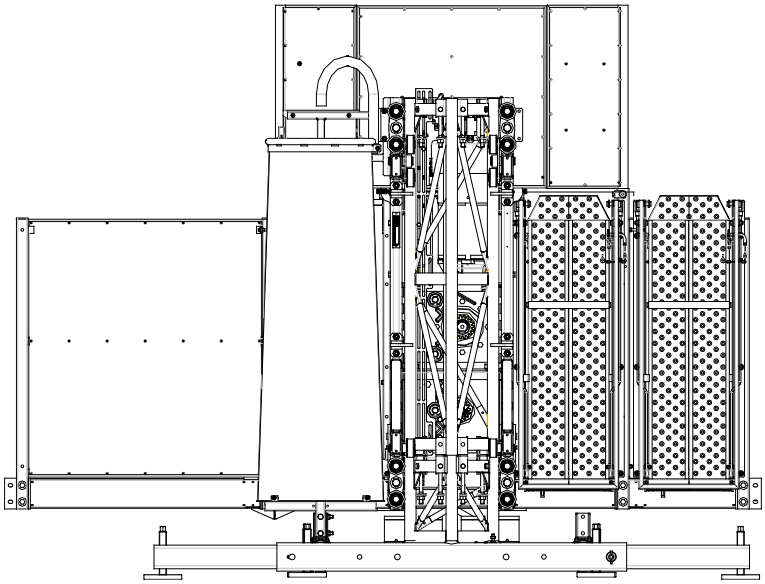


On **TPL 2000D** the erection ramp is provided as standard in each delivery, mounted on the mast guard (suitable for mast assembly).
Interchangeability is shown. Erection ramp can be placed in left side platform rail, while an optional panel can be put in place of ramp.
Remember to move the limit switch under the platform together with erection ramp!



TPL 2000D standard (right assembling) machine with erection ramp on mast guard

Erection ramp is also in the list of optional, can be ordered separately. Additional ramp can be placed in the side panel, to aid tie-in installation.



TPL 2000D with erection ramp on mast railing and side railing

17. Assemble the main panel (fixed on its support frame and cover roof, 1-fig.H.04) to the mast railing outside of the platform. The main panel must be fixed in the base unit where there is the presence of the cable basket.

18. Connect the power and control cables from drive unit junction box (2-fig.H.04), to the main panel on the mast protection, by means X8 (6-pin) and X6 (24 pin) connectors for the right drive unit and X7 (6-pin) and X5 (24-pin) connectors for the left-drive unit.

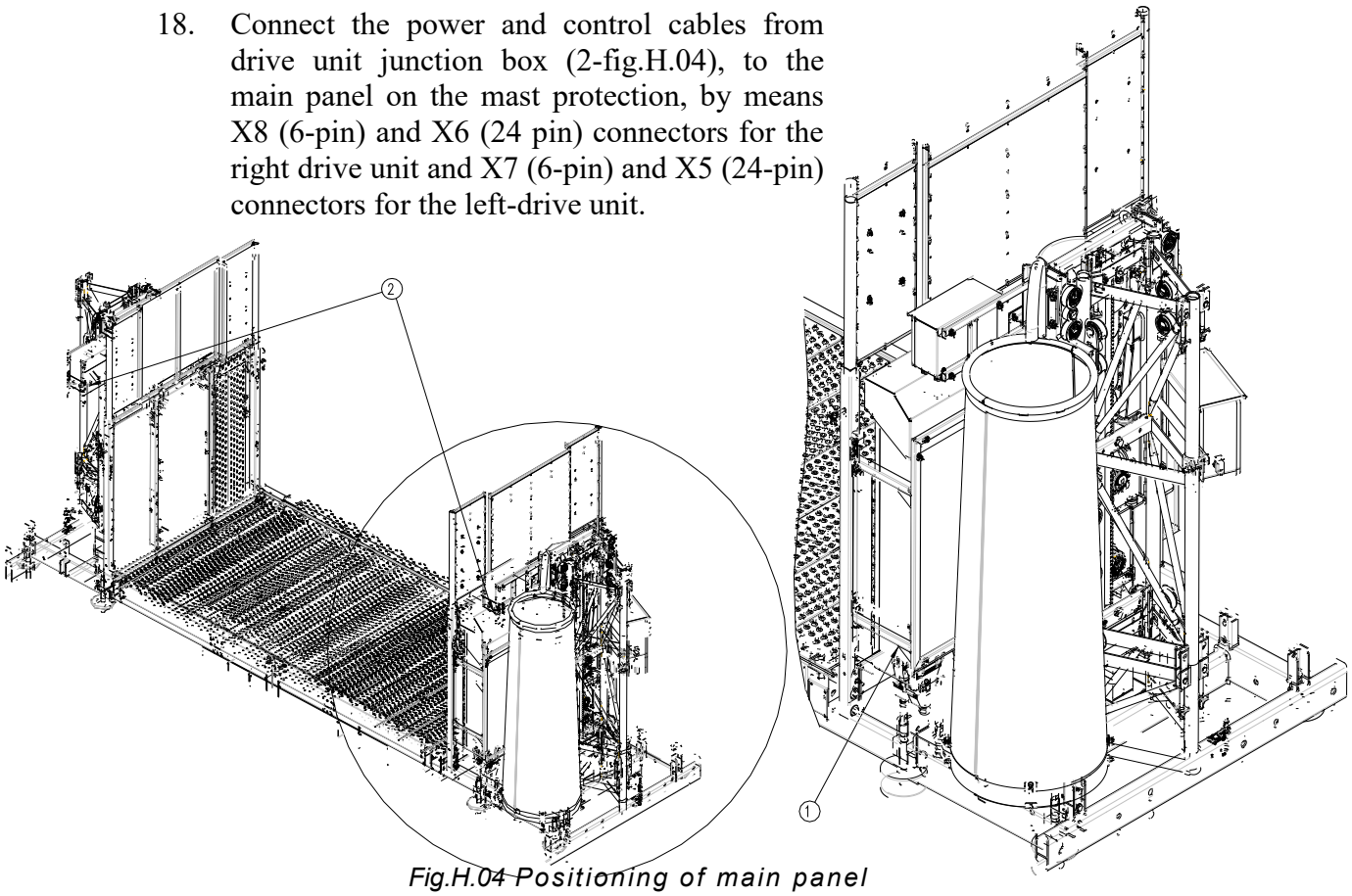


Fig.H.04 Positioning of main panel

19. Connect the other end of the hybrid cable positioned into the cable drum to the main panel on the mast protection, according to the wiring diagram.

WARNING! ***Assembling instructions from point 17 to point 18 must be carried out by trained and authorized personnel.***

20. Assembling of the entrance gates / exit ramps on platforms.

    Assemble to the platform the entrance foldable gates and exit ramps for the chosen configuration, by means of provided bolts. The various possible options for type and position are described in the following figures H.05, H.06 and H.07.

    After the assembling of the exit ramps, make sure that the limit switch under the platform is positioned in front of the exit ramp cam. Positioning of limit switch depends on the size and position on platform of the exit ramp chosen.

21. Electrical connection of the entrance foldable gates.

    After assembling the entrance foldable gates, connect the cables to the junction box on drive units, according to the wiring diagram.

22. Assemble side railings where foreseen and depending on the configuration of the machine and choice of ramps/gates (only for TPL 2000 and 1800).

The following figures show the different options depending on the configuration.

TPL 2000D

Exit ramp type A 1.5 m Exit ramp type B 1.5 m Flap door 1.5 m Single foldable gate 1.5 m

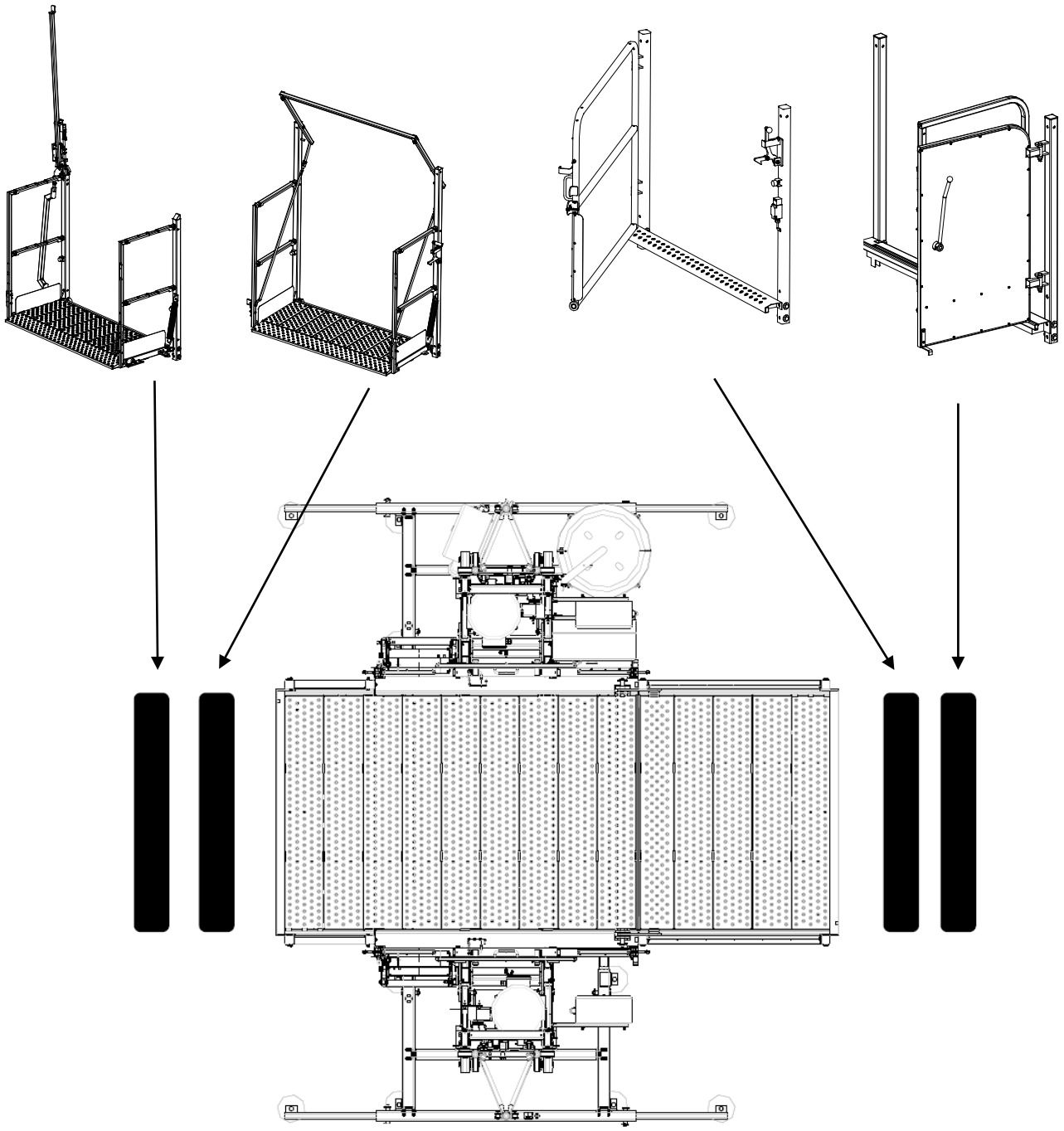


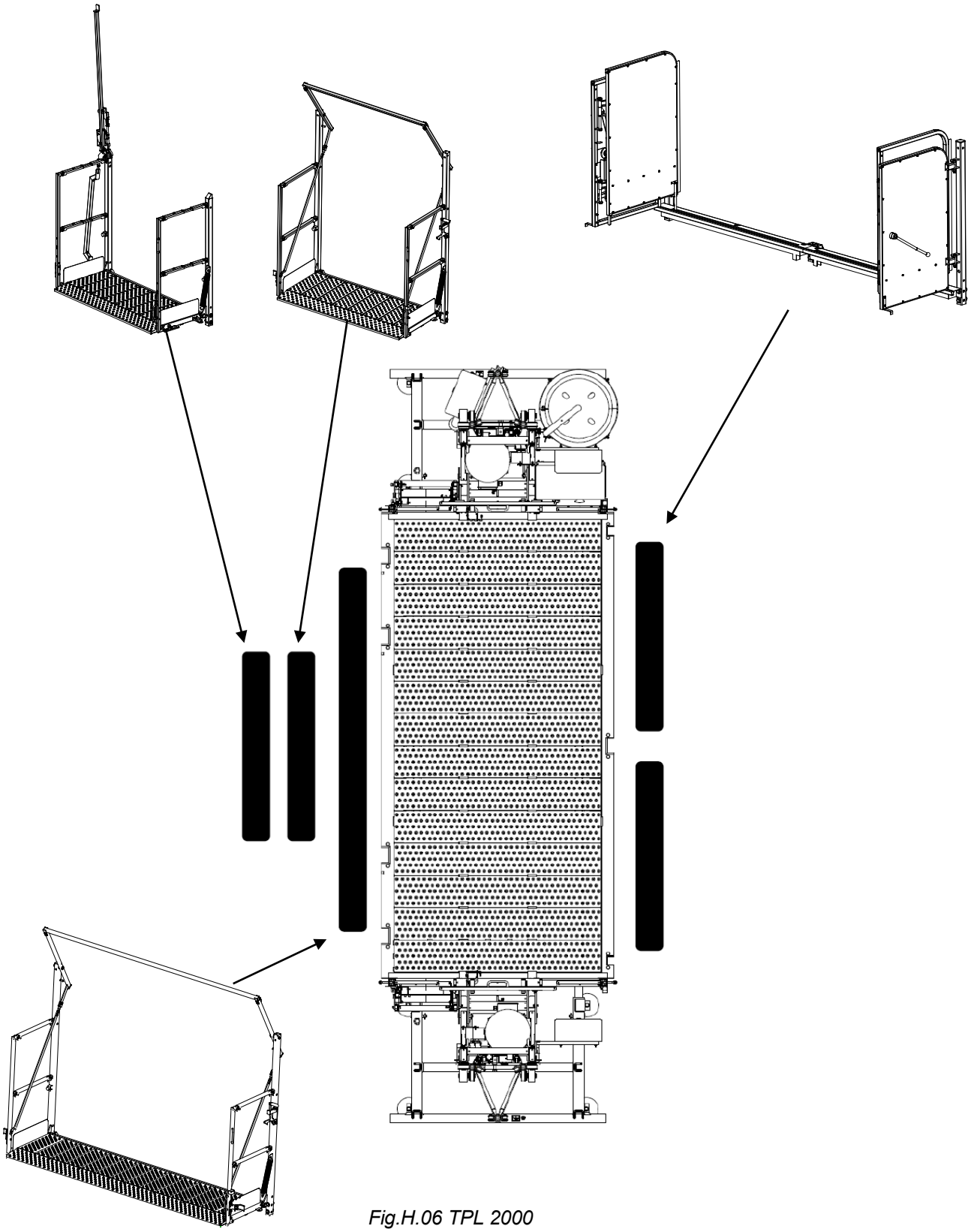
Fig.H.05 TPL 2000D

TPL 2000

Exit ramp type A 1.5 m

Exit ramp type B 1.5 m

Double foldable gate 3.0 m



Exit ramp type B 2.6 m

Fig.H.06 TPL 2000

TPL 1800

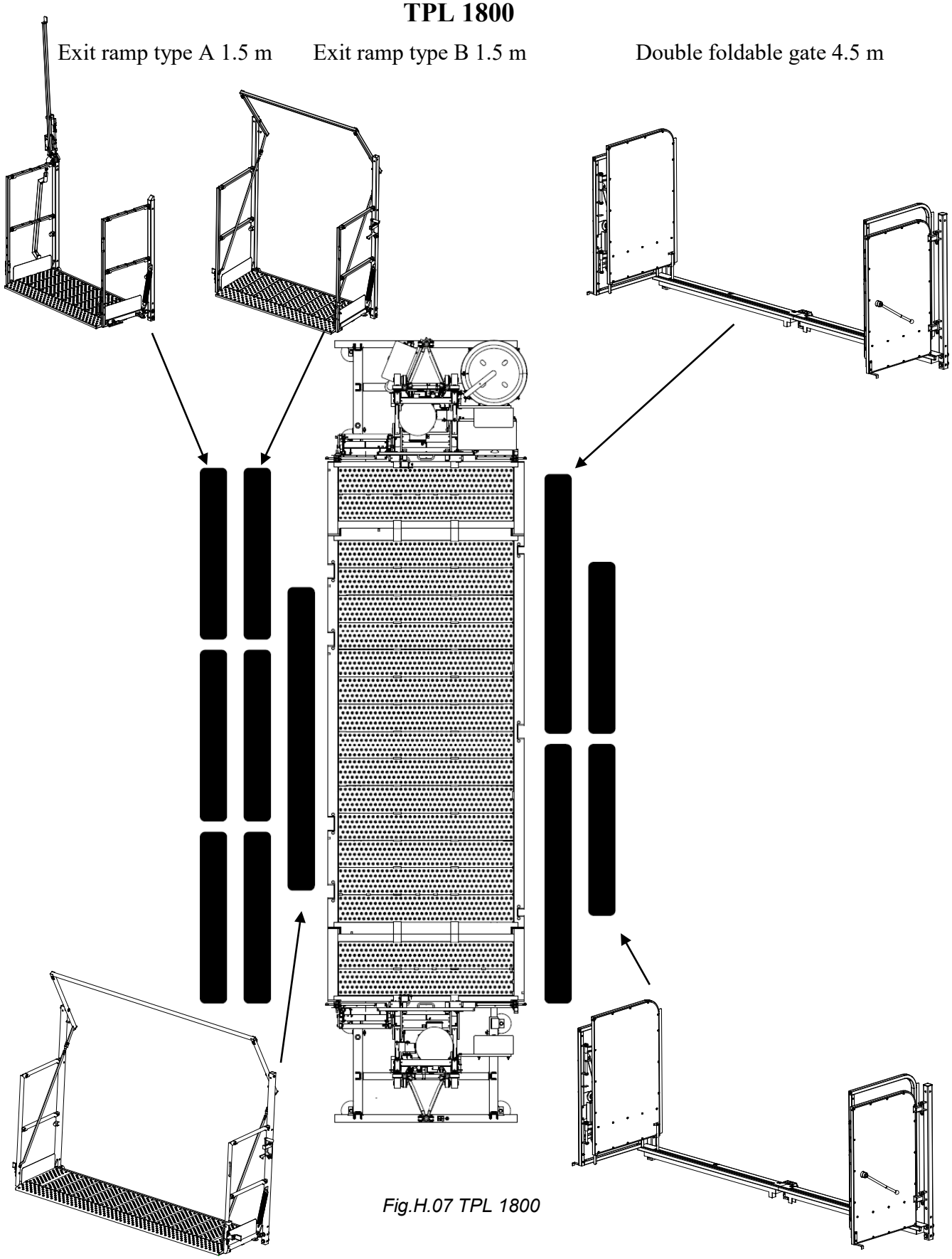


Fig.H.07 TPL 1800

H.2.2 PLATFORM LEVELLING SYSTEM

TPL twin is equipped with 2 types of levelling controls:

– electrical, for the control of the platform levelling during normal service conditions in both directions.

– mechanical, for the control of the platform levelling during the descent in emergency conditions, with manual release of the brakes

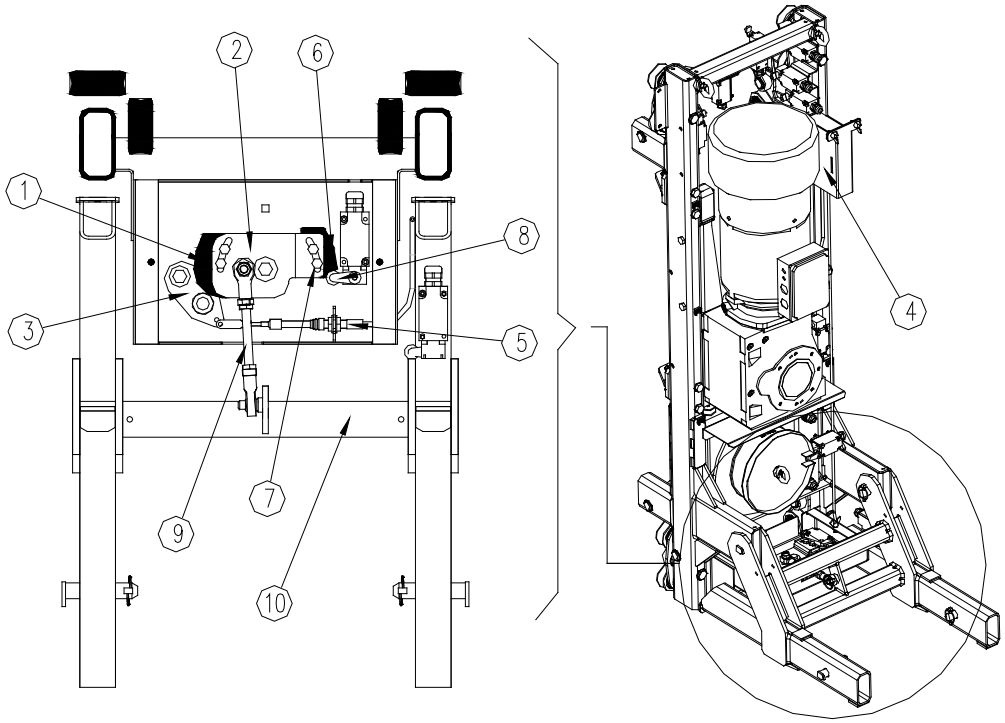


Fig.H.08 Levelling

Adjustment of the mechanical levelling system

23. Make sure that both of the levelling bar (9-fig.H.08) are connected to the adapters (10-fig.H.08). Place a spirit level in the middle of the platform. Using manual levelling buttons located on the main panel, bring the platform to a horizontal position.

24. Adjust the position of the mechanical levelling cam (1-fig.H.08) using the screws (2-fig.H.08), so that the gap between it and the release lever (3-fig.H.08) is about 2 mm when the brake release handle (4-fig.H.08) is completely pulled and the engine brake released.

    With brake release handle released, if the gap is too small it is not possible to release the brake.

    The same adjustment must be carried out also for the other drive unit.

WARNING! ***The procedure from point 23 to point 24 shall be carried out with the drive units on the baseframe buffers.***

Functional test of the mechanical levelling control system.

25. Raise the machine approximately 2 m from the ground and then put the main switch to position “0”.
26. Check with a spirit level that the platform is perfectly levelled.
27. Mark the position of one drive unit on the mast pipe. Under this sign make new signs in correspondence with the maximum height difference between the two drive units, according to the following table.
28. Release with much attention and care the brake of the drive unit by the handle until the connection cable to the cam of the levelling system (5-fig.H.08) do not result in the opposite movement (the hand is forced to release the handle) and the brake is closed again.
29. Check by means of the signs on the mast pipe that the maximum height difference between the drive units (fig. H.09) is respected.
30. Repeat the test for the other drive unit.

IMPORTANT: ***Immediately stop the test if the platform exceeds the value of maximum inclination. Repeat the procedure from point 24 and test again.***

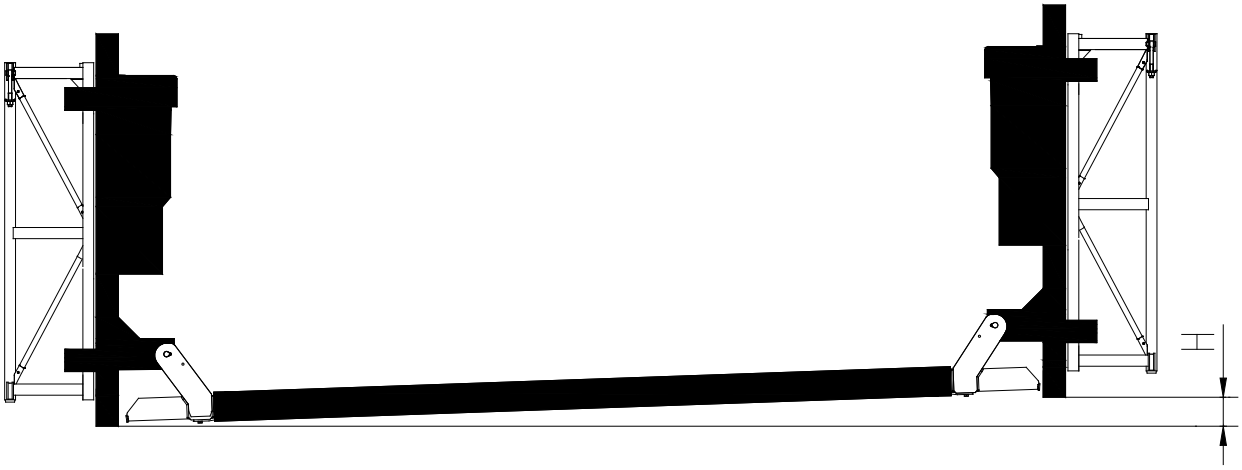


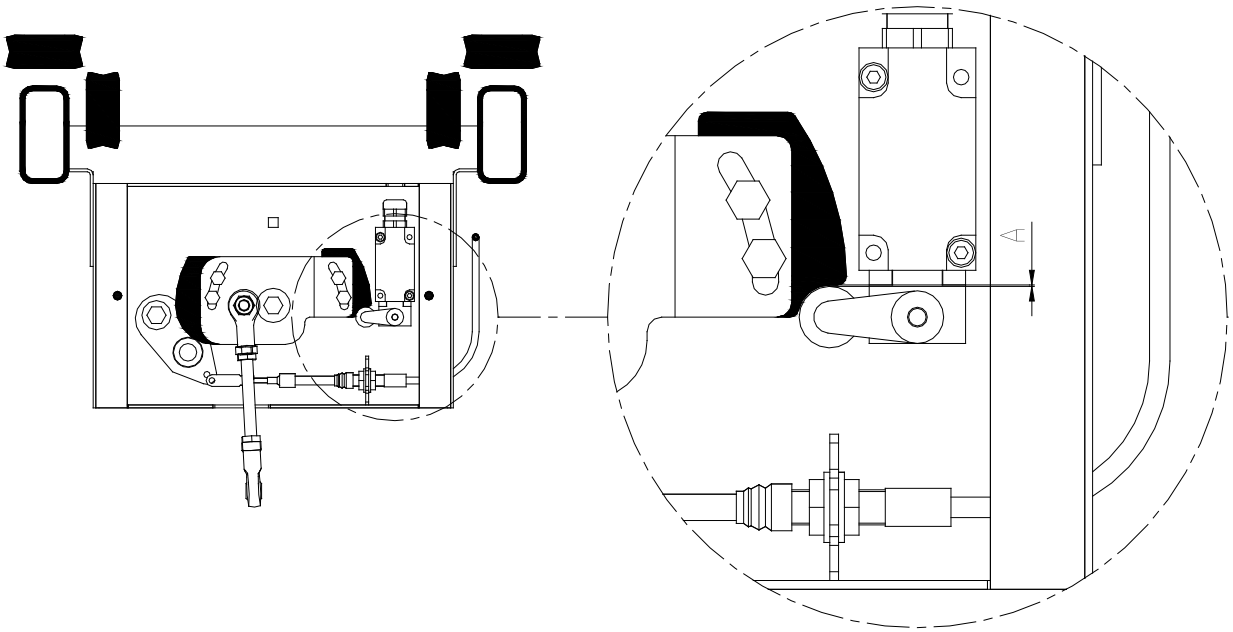
Fig.H.09 Platform inclination

Machine Configuration	Max height difference allowed H (mm)	Max inclination allowed handle brake release
TPL 2000D	145	4°
TPL 2000	260	4°
TPL 1800	345	4°

Adjustment of the electrical levelling system

31. Place a spirit level in the middle of the platform. Using manual levelling buttons located on the main panel, move the platform in a horizontal position.

32. Approach the electrical levelling cam (6-fig.H.08) using the screws (7-fig.H.08) to the head of limit switch (8-fig.H.08) so that the distance A has, depending of machine configuration and type of functionality, the values of following table.



	TPL 2000		TPL 1800		TPL 2000D	
	TP	MH	TP	MH	TP	MH
A (mm)	0	0	0	0	0	10

Functional test of the electrical levelling control system

33. Move the machine and check that the maximum height difference between the drive units (fig. H.09) does not exceed the values on the following table.

34. If the measure is not respected, repeat the procedure from point 31 (adjusting the distance between the cam and the head of limit switch) and test again.

Machine configuration	Max height difference allowed H (mm) TP	Max height difference allowed H (mm) MH
TPL 2000D	70	110
TPL 2000	130	130
TPL 1800	175	175

Final electrical and mechanical levelling control system

TPL 2000 is equipped with 2 final levelling limiters both electrical and mechanical:

- A final limit switch is activated cutting the power if the electrical levelling range is service is exceeded.
- An ultimate mechanical inclination limiter, acting when the platform levelling is exceeding 5° and limiting the inclination to 6°.

Adjustment of the final electrical system

35. Place a spirit level in the middle of the platform. Using manual levelling buttons located on the main panel, move the platform in a horizontal position.
36. Approach the levelling final limit switch head (1-fig.H.10) using the screws (2-fig.H.10) to the adapter plate (3-fig.H.10).

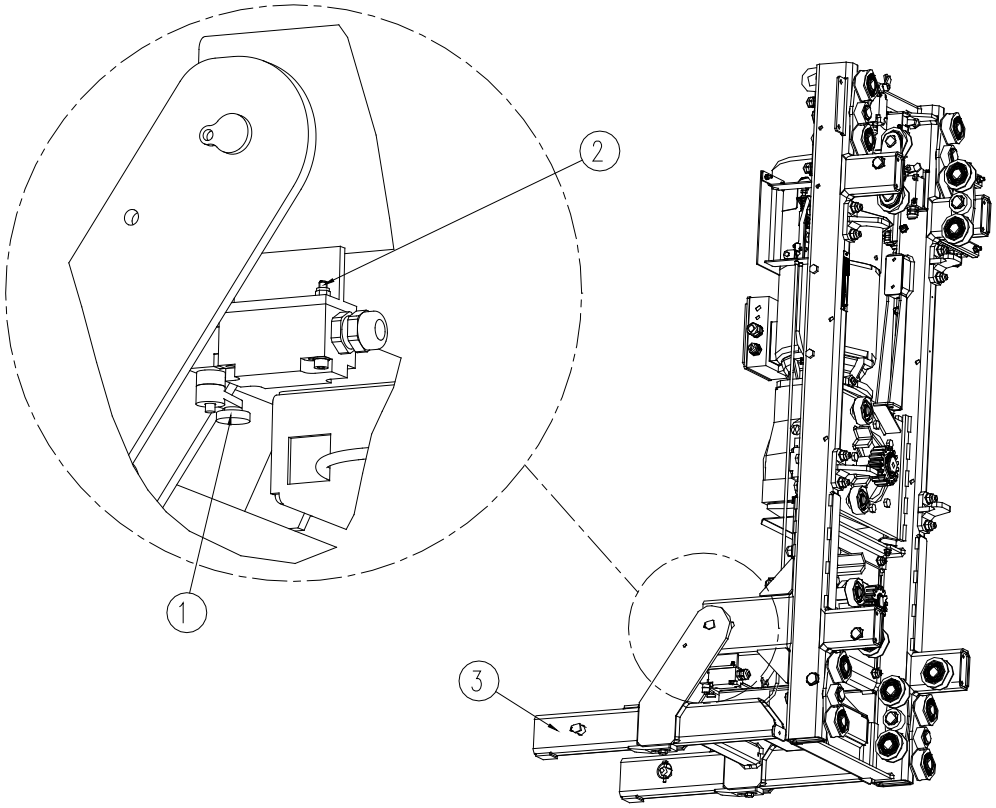


Fig.H.10 Final electric tilt

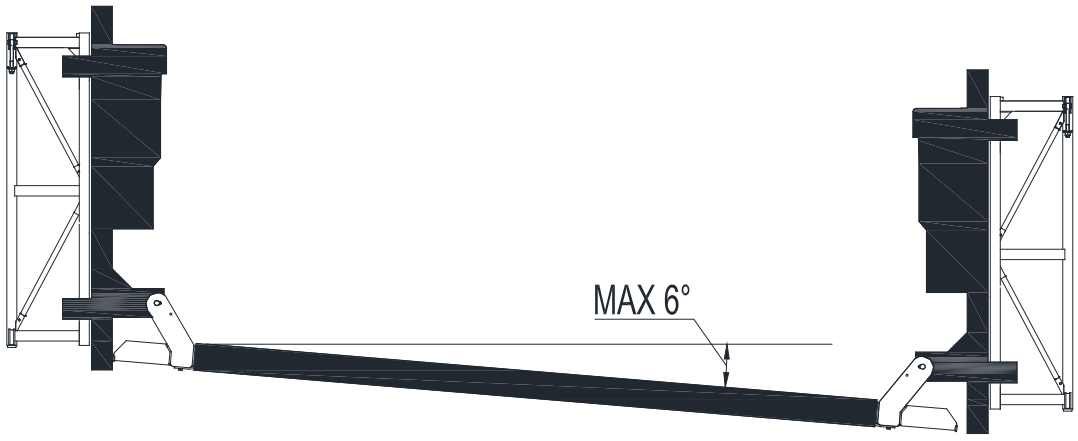
Functional test of the final electrical system

37. Raise the machine approximately 2 m from the ground.
38. Check with a spirit level that the platform is perfectly levelled.
39. Mark the position of one drive unit on the mast pipe. Under this sign make new signs in correspondence with the maximum height difference between the two drive units, according to the following table.
40. Release with much attention and care the brake of the drive unit by the handle until the final limit switch will be activated by the adapter, turning off the green light on platform electric panel (safety line).
41. If the measure is not respected, repeat the procedure from point 35 (adjusting the distance between final limit switch and adapter plate) and test again.

Machine configuration	Max height difference allowed H (mm)	Max. inclination allowed final electrical system
TPL 2000D	145	4°
TPL 2000	260	4°
TPL 1800	345	4°

Final mechanical levelling limiter

When all limits of other levelling system are, for any reason, exceeded, the adapter, by design, is limiting mechanically the inclination of platform to a max of 6°.



H.2.3 ADJUSTMENT OF LOWER CAMS

42. Check the correct assembly of the lower normal cam (1-fig.H.11) and lower final cam (2-fig.H.11) positioned on the right side of the mast. Cams must be installed on both mast of the machine. These are preliminary adjustments after installation must be re-adjusted.

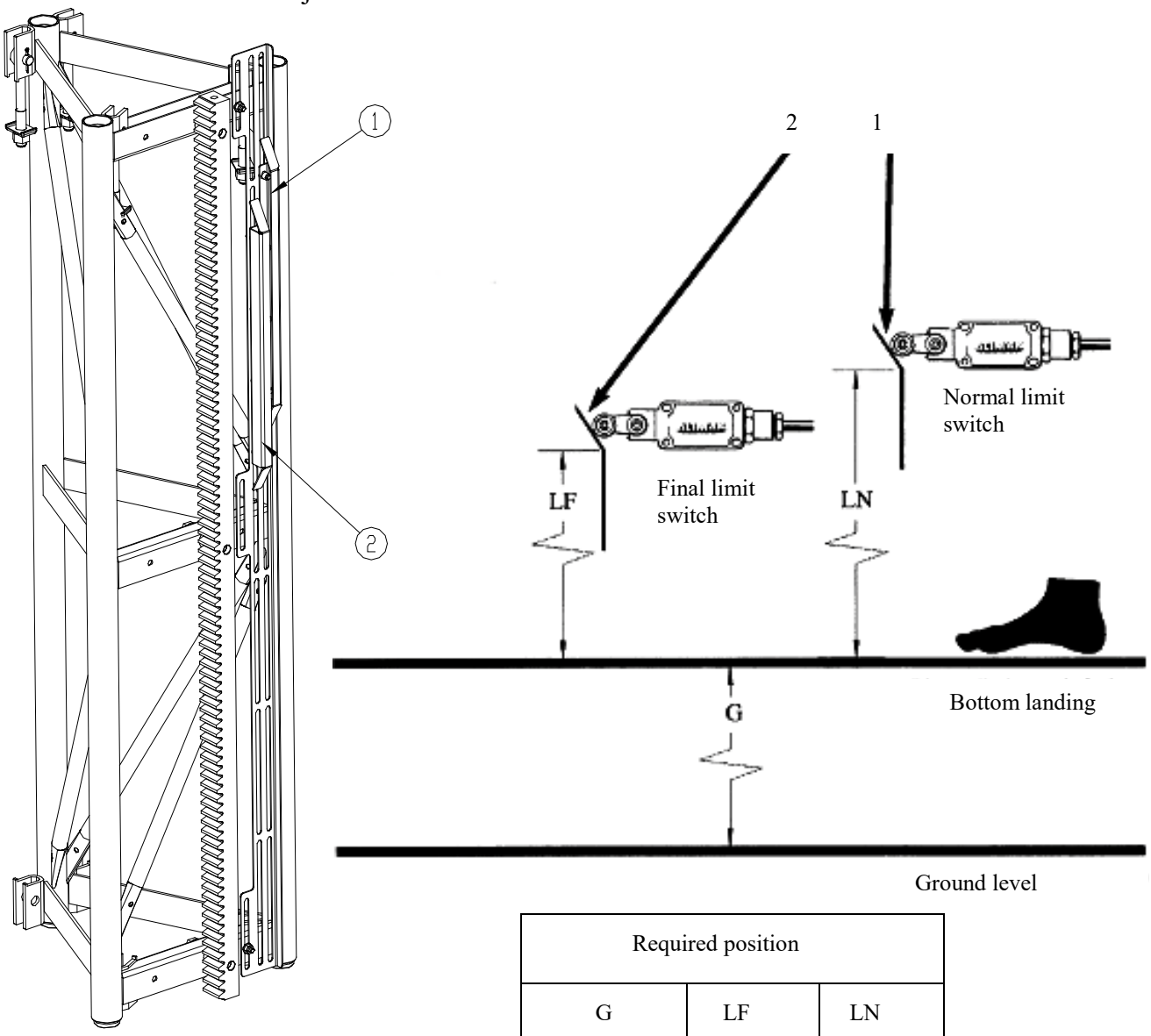


Fig.H.11 Lower normal cam and lower final cam

Required position		
G	LF	LN
min 410 mm	**1420 mm**	**1460 mm**

WARNING! ***Cams must be mounted on both masts of the machine, as each drive unit is stopped in its descent by the limit switch when it engages find the respective lower cam.***

WARNING! ***Adjust the descent cams so that the machine stops with the platform levelled to the horizontal.***

43. Connect the inlet plug (1-fig.H.12), on the electrical box on ground frame of the machine to the landing site power supply.

44. Rotate the main switch on the electrical box on ground frame (2-fig.H.12), in‘’1’’ position.

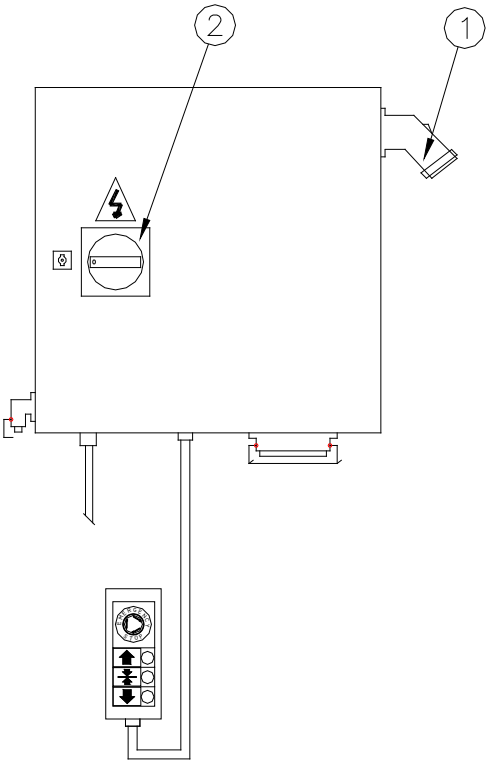


Fig.H.12 Base electrical box

45. Rotate the main switch on the electrical box on platform (1-fig.H.13) in ’’1’’ position.

46. During assembly or disassembly, the machine can be acted only by electrical box on platform. Therefore, the key switch (2-fig.H.13) must be in ‘’TP’’ position.

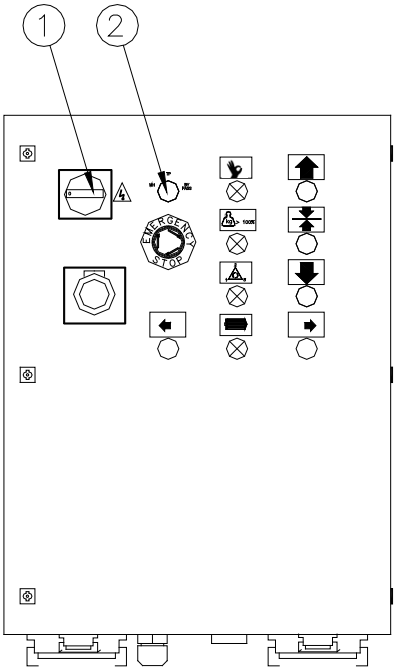


Fig.H.13 Platform electrical box

IMPORTANT: ***whatever the configuration used for the machine, (material hoist or transport platform), both the mains switch on the electrical box mast be rotated in ‘’1” position for it to operate (see point 44 and 45).***

H.3. Mast assembling

47. Place a number of mast sections on the machine, to allow mast to be erected to the next tie, ensuring that there is still sufficient working space.

Never exceed the maximum admitted load!

48. Use buttons up/down on the electrical box on platform to elevate the machine, until the position of upper brace pipe of drive unit will be a little under the last mast section, then stop the machine (fig.H.14).

    To facilitate safe assembly of the masts, the operator can use the erection ramp assembled on one side of the platform (see D.5.11).

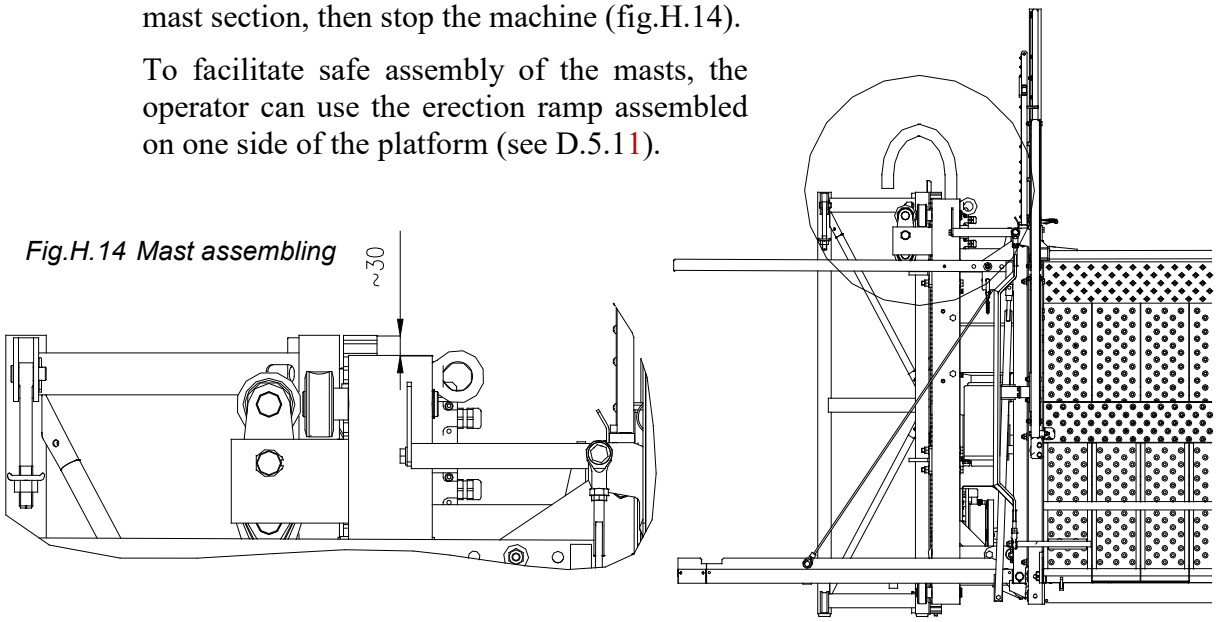


Fig.H.14 Mast assembling

WARNING! Always use the safety belt when using the erection ramp – attach the belt to the specific slot (4 fig. D16).

49. The drive unit must not be raised too high; the limit switch on mast rack (1-fig.H.15) must always remain in front of the rack. If the limit switch go up the mast rack, it will activate, cutting the power to the electrical motor, with the consequence of stopping the platform.

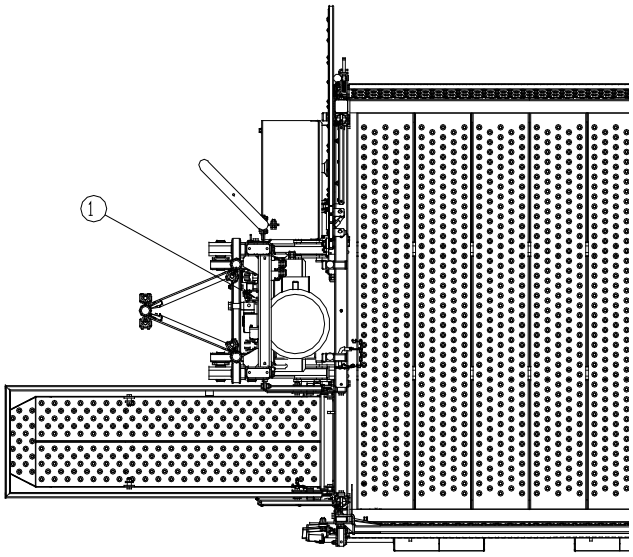


Fig.H.15 Limit switch mast presence

50. When the correct height has been reached, open the mast protection (1-fig.H.16) and placed a mast section onto the previously fitted mast section, secure it with four eyebolt M16 (material class 10.9; tightening torque 80 Nm).

    For lifting the masts during installation, the optional erection crane can be used, as described in section D.6.1.

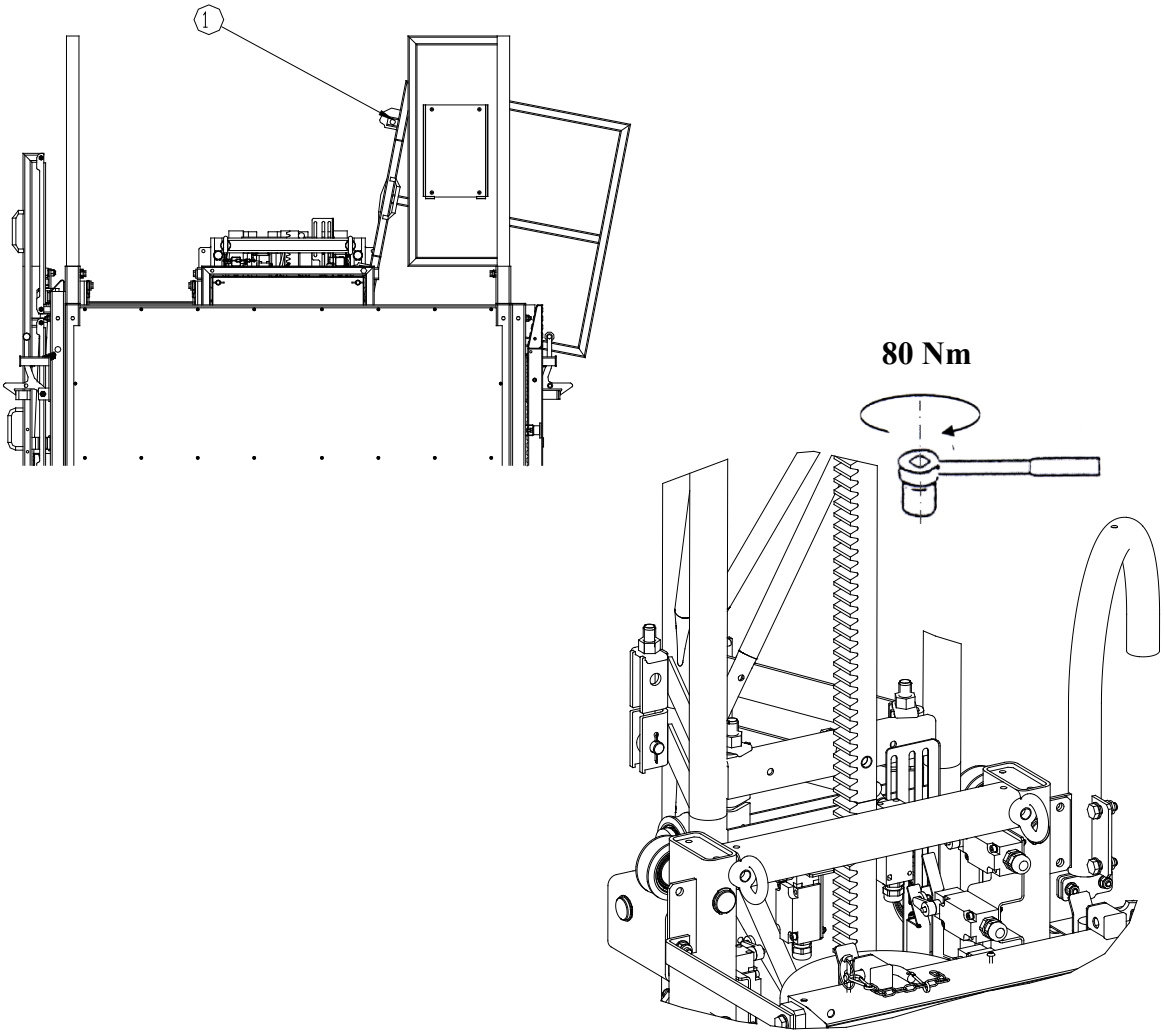
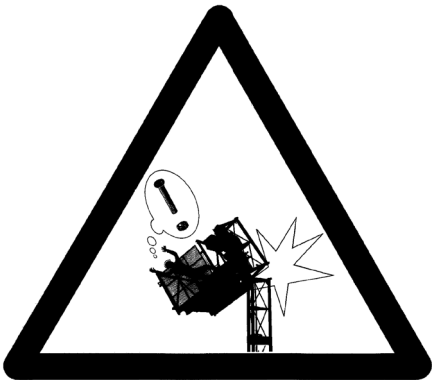


Fig.H.16 Tightening of mast bolts



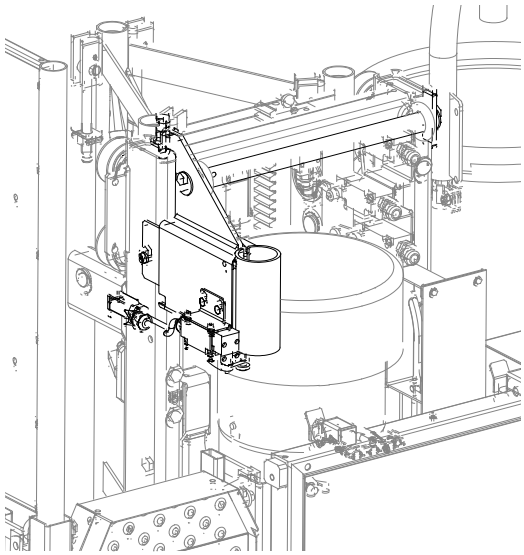
WARNING! ***The incomplete tightening of mast bolts can cause failure of the mast, allowing the platform to fall. Can cause death or serious injury.***

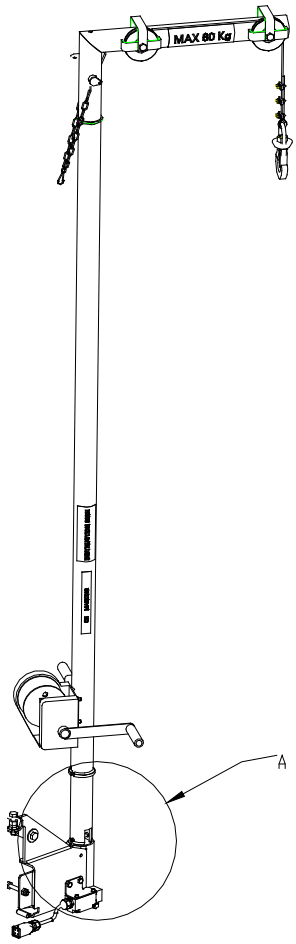
Repeat this procedure from point 47 to 50 for the following mast sections.

To ease handling of mast section during erection and disassembly, an erection crane is available as optional.

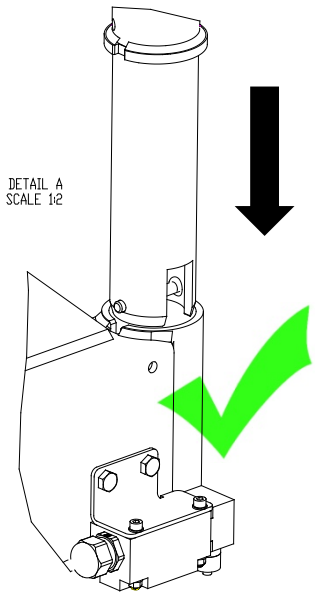
The correct positioning of erection crane during travel of the transport platform, both during normal operation and during erection, dismantling and maintenance operations is monitored by a limit switch.

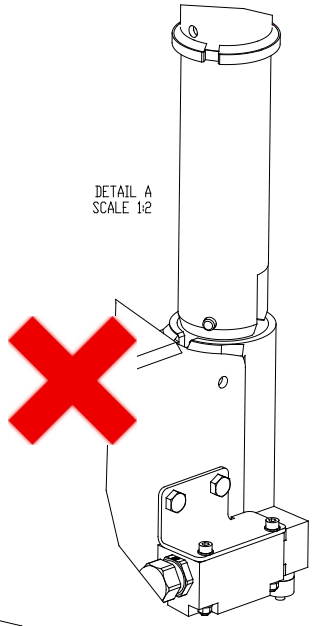
Assemble the brackets to the top of the drive units and connect each limit switch to the socket on junction box on drive unit after removing the blind plug.





Insert the erection crane into the bracket, keeping the guide pin aligned with the slot.

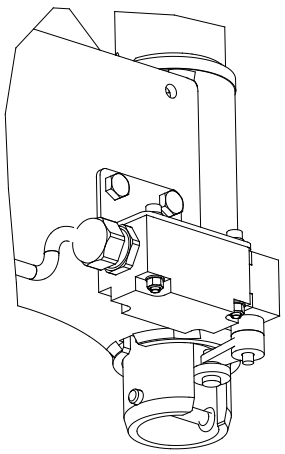




Let the crane slide down into the bracket and the slot at the base of the crane will be just in the right position for the limit switch.

If the limit switch is activated the machine can not start until the crane will be rotated to the safe position.

For the dismantling, put the pin in safe position and lift the crane from the bracket. Disconnect limit switch from junction box, reassemble blind plug and disassemble crane bracket from each drive unit.



H.4. Mast ties

51. Once the max number of mast section has been assembled in accordance to the prescription of this manual, the first tie must be fitted (first tie from the ground and following ones, see H.4.2). Check again with a spirit level, with a minimum length of one meter, that the mast is truly vertical in both directions.

Never exceed the maximum tie distance!

Owner/user is responsible for ensuring that the structure can safely withstand tie forces. See paragraph H.4.3.

H.4.1. TIE DESCRIPTION

H.4.1.1. Standard Tie Frame for support structure on the side of the mast

Tie frame is built up by two horizontal frames (1 fig.H.17) connected to the back pipe of mast by coupler.

A vertical pipe Ø48.3 (2 fig.H17) is connected to the frames.

A tie set consisting of two tie tubes (3 fig.H.17) and a brace pipe (4 fig.H.17), can be fixed to the mast by swivel couplers.

On one end of wall pipes (5 fig.H.17) is assembled a tie plate with which you will be able to fix to the wall. This configuration constitutes the standard set-up with support structure on the side of mast.

Stability to the structure is given by the brace pipe that joins together the two wall pipes.

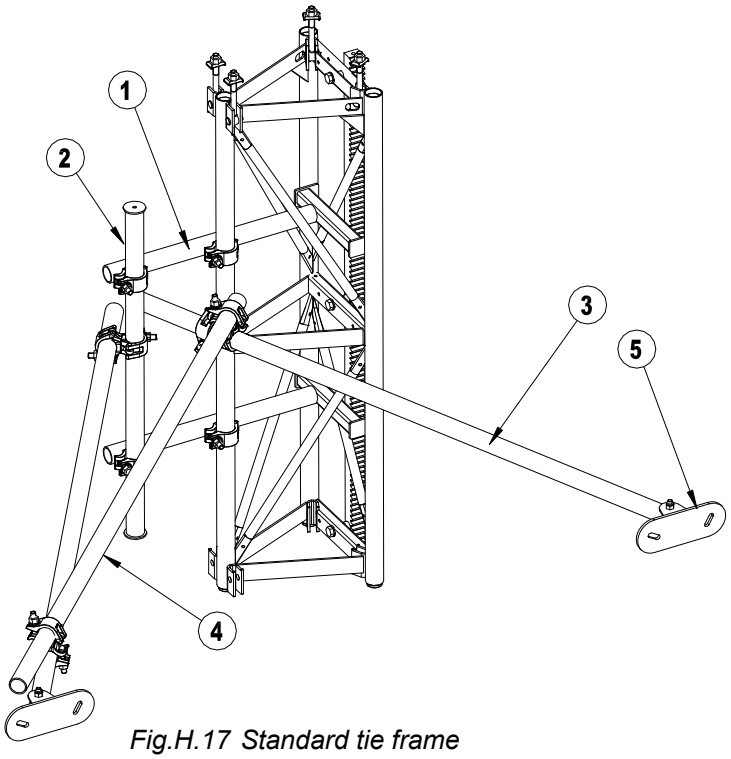


Fig.H.17 Standard tie frame

Tie frame are fixed to the mast at regular interval established during erection planning up. The variable fixing points on the mast permits the tie connection all along the mast height at the needed positions (fig.H.18).

IMPORTANT! Always connect wall pipes to the vertical pipe in the indicated zone between the two tie frame!

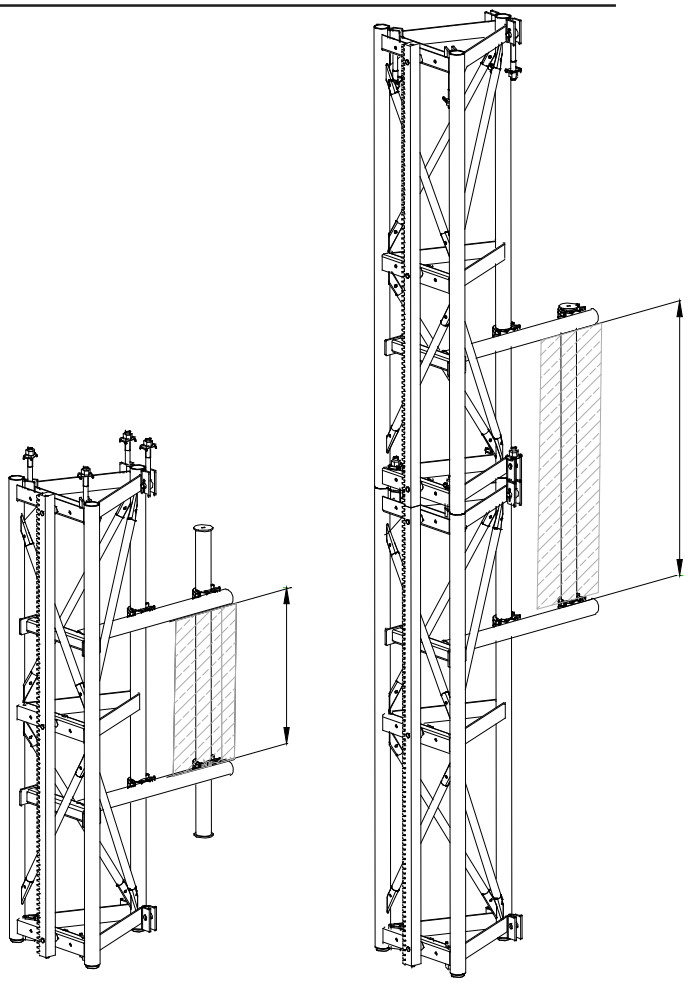


Fig.H.18 Tie frame positioning

H.4.1.2 Back Tie Frame for support structure on the back of the mast

An alternative back tie frame is available in case the installations need the mast to be tied not in the side as standard but in the back.

The structure is the same as standard tie-in as well as all indication reported in the previous chapter, only the frame has a different geometry and allows for a correct and stable attachment of wall pipes and brackets to the support structure placed in the back of mast

Tie frame is built up by two horizontal frames (1 fig.H.19) connected to the back pipe of mast by coupler.

Two vertical pipes Ø48.3 (2 fig.H19) (instead of one) connect the two frames for the maximum flexibility

Same as standard tie frame, a tie set consisting of two tie tubes (3 fig.H.19) with brackets (5-fig.H19) at their ends and a brace pipe (4 fig.H.19), can be fixed to the mast by swivel couplers.

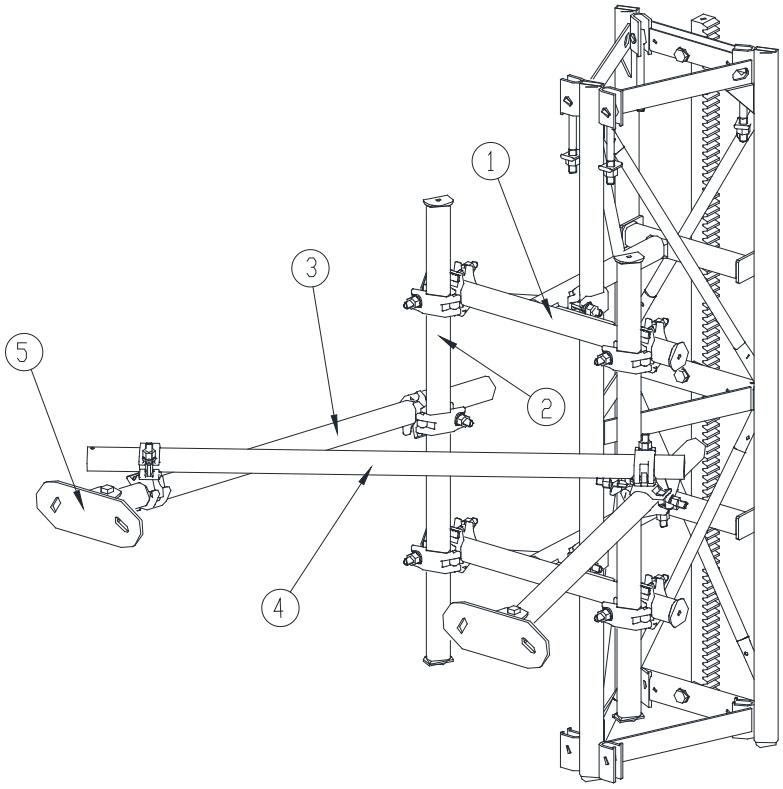


Fig.H.19 Back Tie Frame

H.4.1.3. Wall Pipes

The wall pipes are the connection means between the mast and building structure. They are built up of a Ø48.3x3.2 pipes and provided with a wall bracket connected to the pipe by a hinge. They are connected to the frame by means of swivel coupler. There are 3 type of wall bracket (type 1, type 2, type 3).

Wall bracket type 1: it has 2 slots for expansion bolt connection, staggered respect the rotation axle of the wall pipe. With this type of bracket the expansion bolt screwing is made easier.

The connection must be made by means of 2 expansion bolts having mechanical strength sufficient to bear the force exerted on the wall pipe (anyway not less than M12).

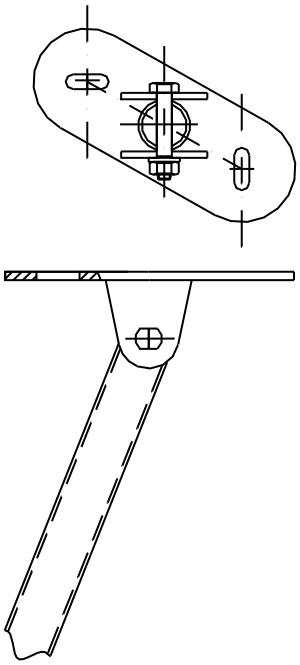


Fig.H.20 Wall bracket type 1

Wall bracket type 2: it has one slot for expansion bolt only; it can be used where minimal holes into the structure are required. However, the fixing bolt is larger, as forces are higher.

The connection must be made by means of 1 expansion bolts having mechanical strength sufficient to bear the force exerted on the wall pipe (anyway not less than M16).

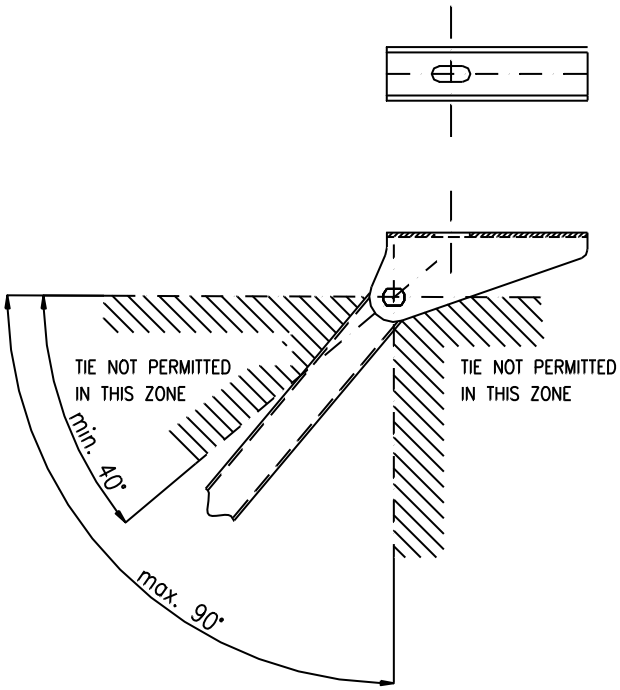


Fig.H.21 Wall bracket type 2

WARNING! ***The installation for this type of bracket must respect the limitation of wall pipe inclination as shown in the drawing.***

Wall bracket type 3: it has 2 slots for expansion bolt connection, in line with the axis of the wall pipe. This wall bracket makes easier the tie operation on building slabs with reduced vertical dimension.

The connection must be made by means of 2 expansion bolts having mechanical strength sufficient to bear the force exerted on the wall pipe (anyway not less than M12).

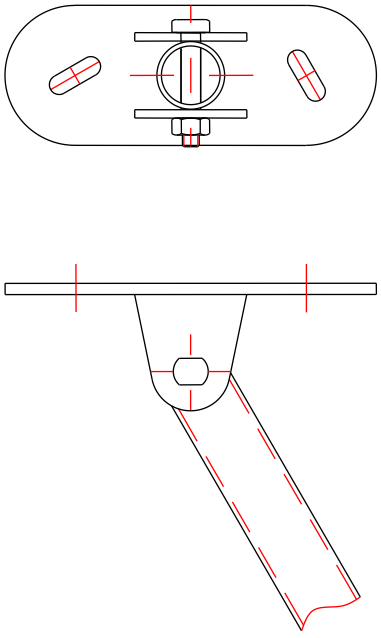
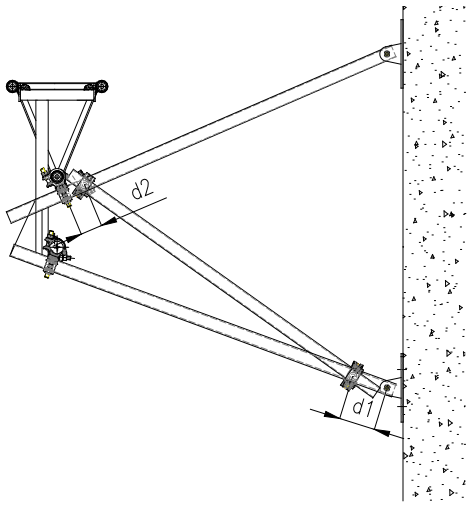
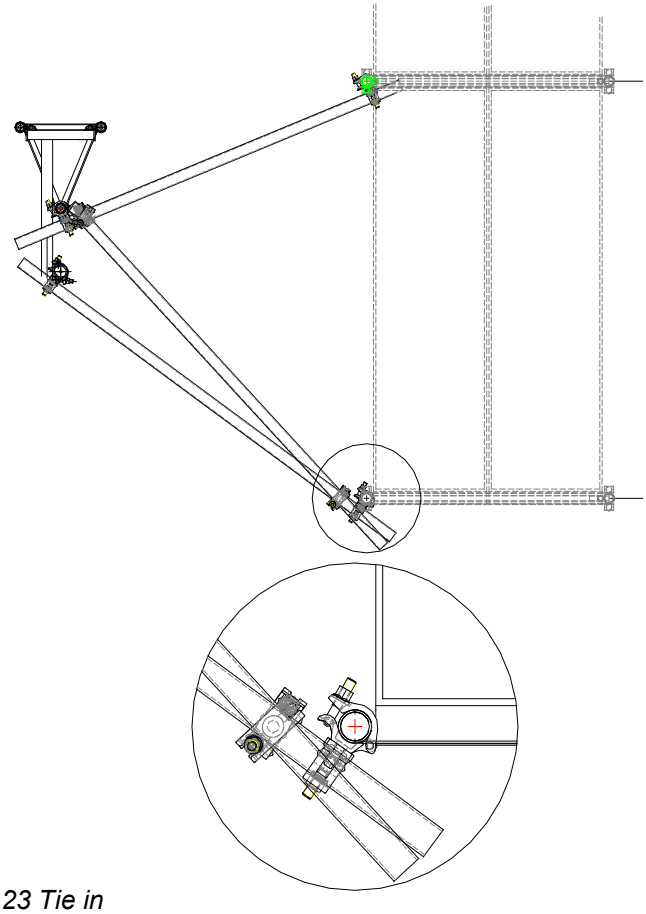


Fig.H.22 Wall bracket type 3

The tie brace pipe is necessary to give adequate strength and stiffness to the tie and must be fitted. The position of the swivelling clamp connection of the tie brace pipe to the tie pipes extensions must be such to make minimum the d1 and d2 distance, compatibly with overall dimensions of assembled components.

All tie system components are hot dip galvanized for the best protection from environmental and weather conditions. Only exception is tie frame which is painted.





Installation connected to scaffoldings

For cases when the platform must be connected to a scaffolding (standard size of pipe structure Ø48.3), the wall bracket can be omitted and the wall pipe directly connected to the scaffolding by Ø48 clamps, conforming to EN74 standard.

Ensure that the scaffolding can withstand the forces involved.

Follow indication of typical condition at paragraph H.5 or at paragraph H.4.3 for general force calculation.

Fig. H.23 Tie in

Installation on other structure

For cases where the platform must be connected to structures apart from building or scaffolding, for example steel structure, etc, it is possible to use different tie systems with respect to wall bracket with expansion bolts. It is possible use of bolted bracket for steel structure, but the tie system shall be evaluated and designed by a competent technician, to ensure a suitable structure to withstand forces as indicated in par. H.4.3.

Eventually contact Alimak for advices and/or installation layout, see paragraph.H.5.7.

H.4.2 TIE DISTANCES

a = overhang

b = tie distance

c = height from the ground to the first tie

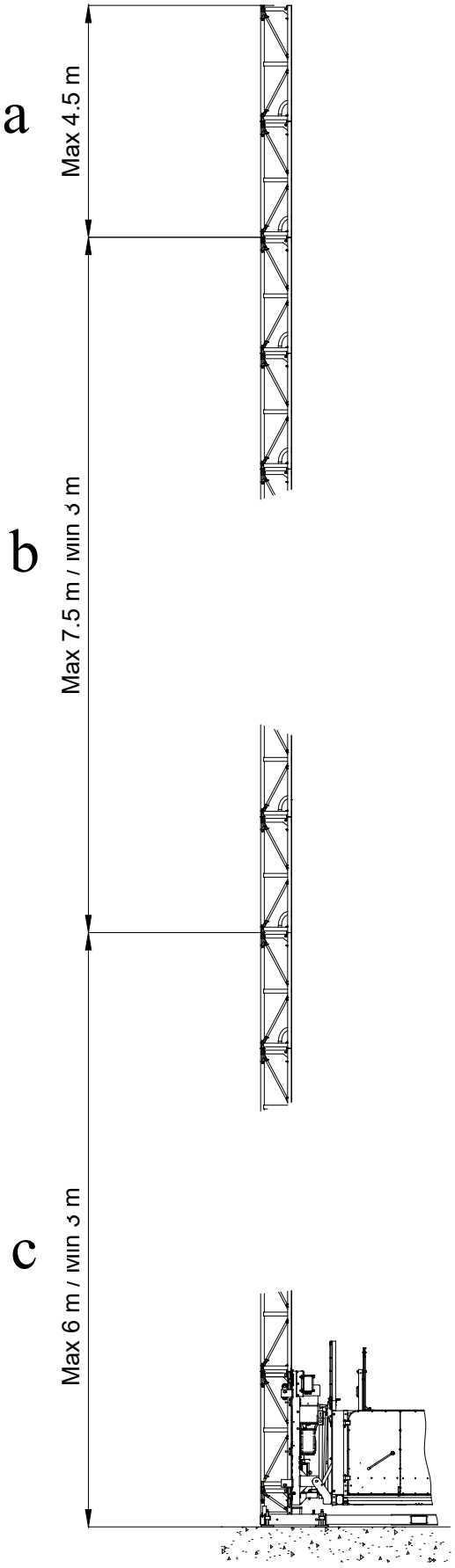


Fig. H.24 Tie scheme

H.4.3 FORCES ON TIES

Forces exerted by platform-tie system to the support structure, can be calculated as follows (L and B in mm):

$$L/B \leq 2$$

$P_1 = P_2$ = max pull-out on wall bracket

T = max shear force on wall bracket

Note: T to be applied to each connection

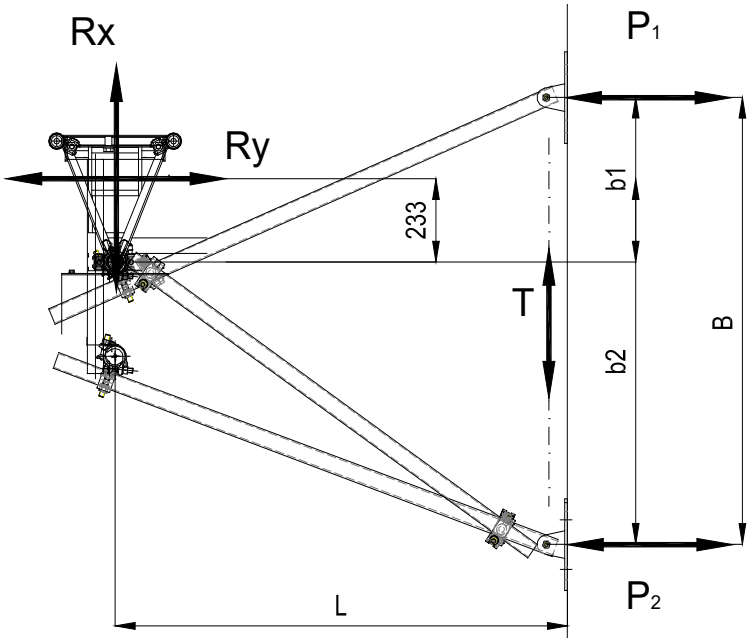
Rx and Ry are forces in the center of mast as per table at par. H.4.3.3

H.4.3.1 Standard tie frame

$$P_1 = \pm\left(R_x \frac{L}{B} + R_y \frac{b_2 + 233}{B} \right)$$

$$P_2 = \pm\left(R_x \frac{L}{B} + R_y \frac{b_1 - 233}{B} \right)$$

$$T = R_x$$

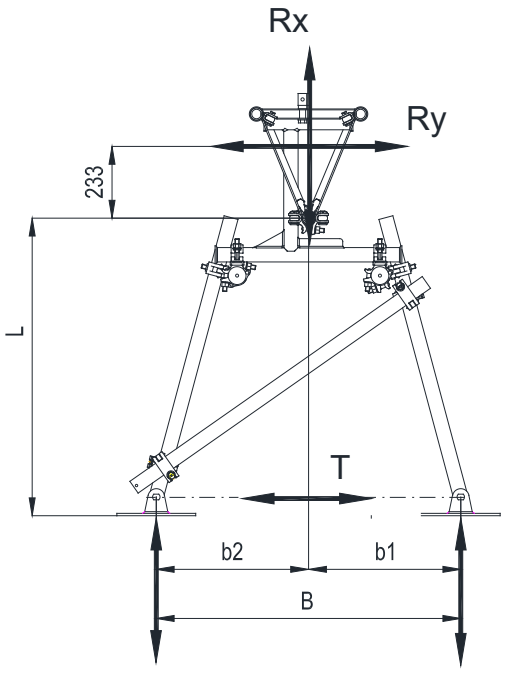


H.4.3.2 Back tie frame

$$P_1 = \pm\left(R_x \frac{b_2}{B} + R_y \frac{L + 233}{B} \right)$$

$$P_2 = \pm\left(R_x \frac{b_1}{B} + R_y \frac{L + 233}{B} \right)$$

$$T = Ry$$



H.4.3.3 Tie forces

Forces exerted by platform in SERVICE and various operating conditions are indicated in the following table.

Max tie forces in SERVICE condition			
Tie Configuration		R_x (kN)	R_y (kN)
Maximum tie distance (m)	Minimum tie distance (m)		
7.5	7.5	3.9	3.2
6	6	4.5	3.6
4.5	4.5	5.4	4.3
3	3	7.5	5.6
7.5	6	4,5	3,6
7.5	4.5	5,4	4,3
7.5	3	7,5	5,6
6	4.5	5,4	4,3
6	3	7,5	5,6

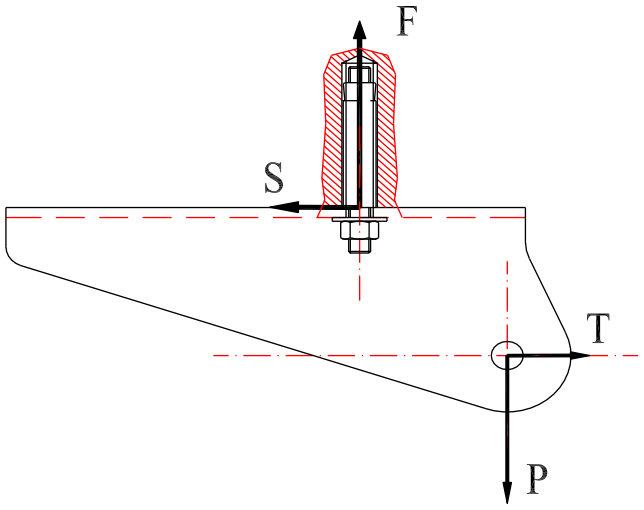
WARNING! ***Tie forces and respective fixing bolts must be calculated on the base of tie geometry, in particular considering the dimension L and B; that should be made by qualified engineer. For any information request contact Alimak or the nearest manufacturer representative.***

H.4.3.4 Forces on brackets

In the case where expansion bolts are used, the P and T force is distributed as follows:

Wall bracket type 1 and 3: on both expansion bolts

Wall bracket type 2: only on the expansion bolt in according to the following formula



$$F = 1.4 \cdot P$$

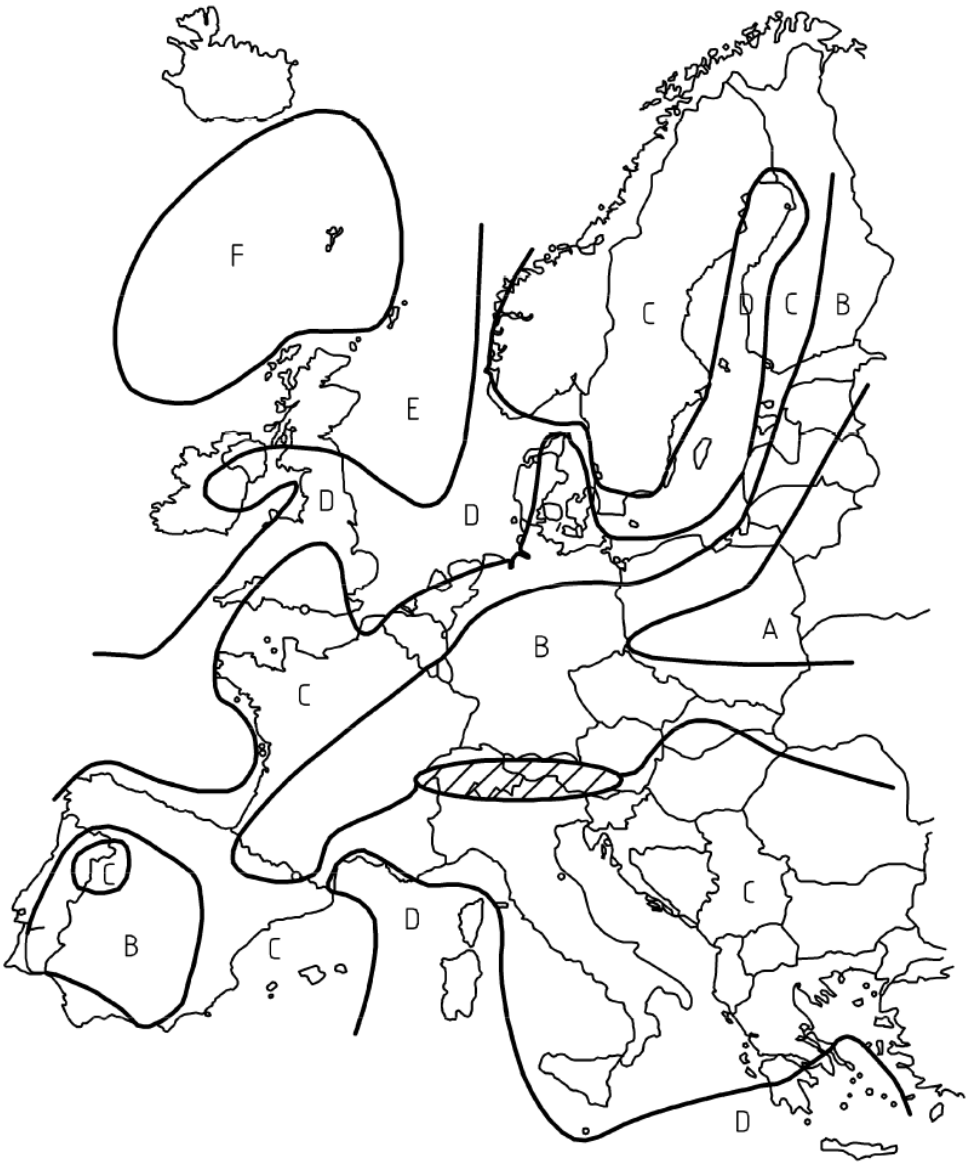
$$S = T$$

H.4.4 FORCES ON TIES: OUT OF SERVICE

Forces on ties in OUT OF SERVICE condition are **LOWER than in SERVICE,** under this assumption:

- **Max height 100 m**
- **Wind zone A/B, C, D**

For different condition from above, please contact Alimak representative



European Wind map

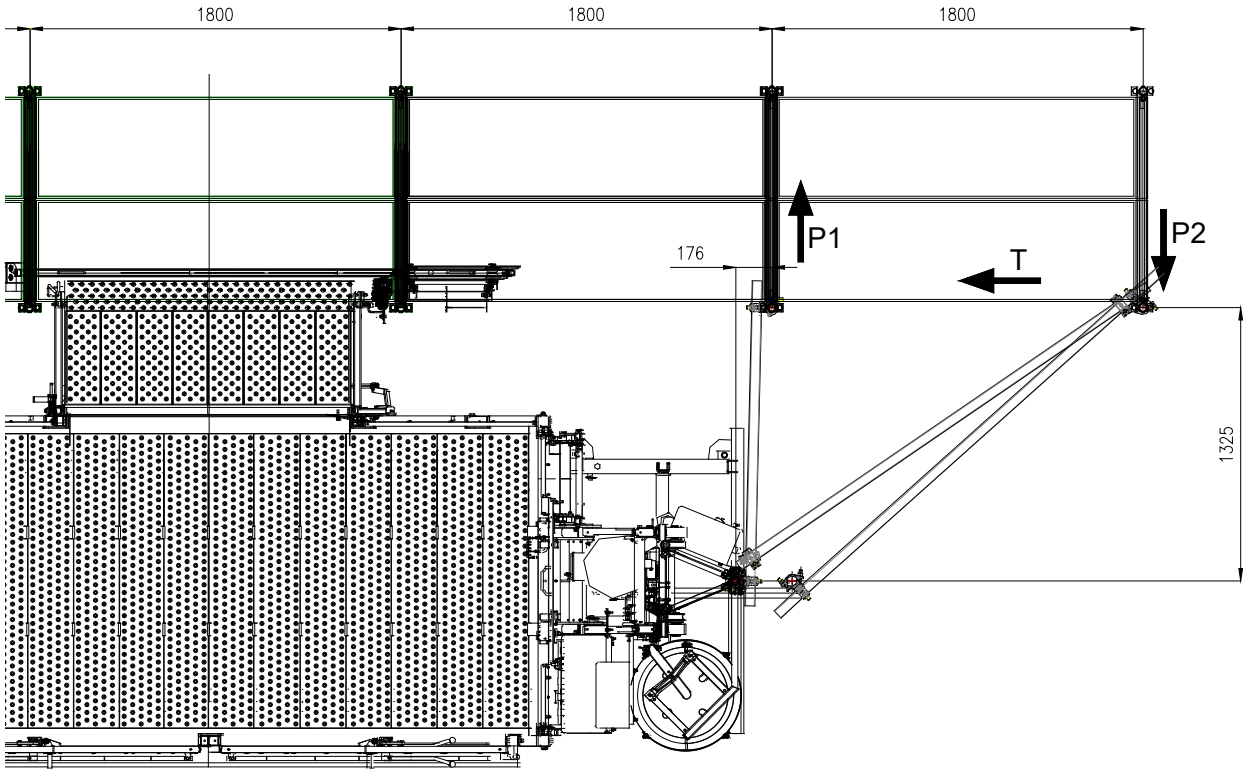
H.5. Tie conditions and layout

H.5.1. INSTALLATION TPL 2000 TO SCAFFOLDING 1.8 m WIDE

Conditions

Tie distance: 6 m

Max overhang: 3 m



Forces on clamps	kN
P1	7.7
P2	2.5
T	4.5

Note: For the verification of the individual fixing point, apply T on each clamp.

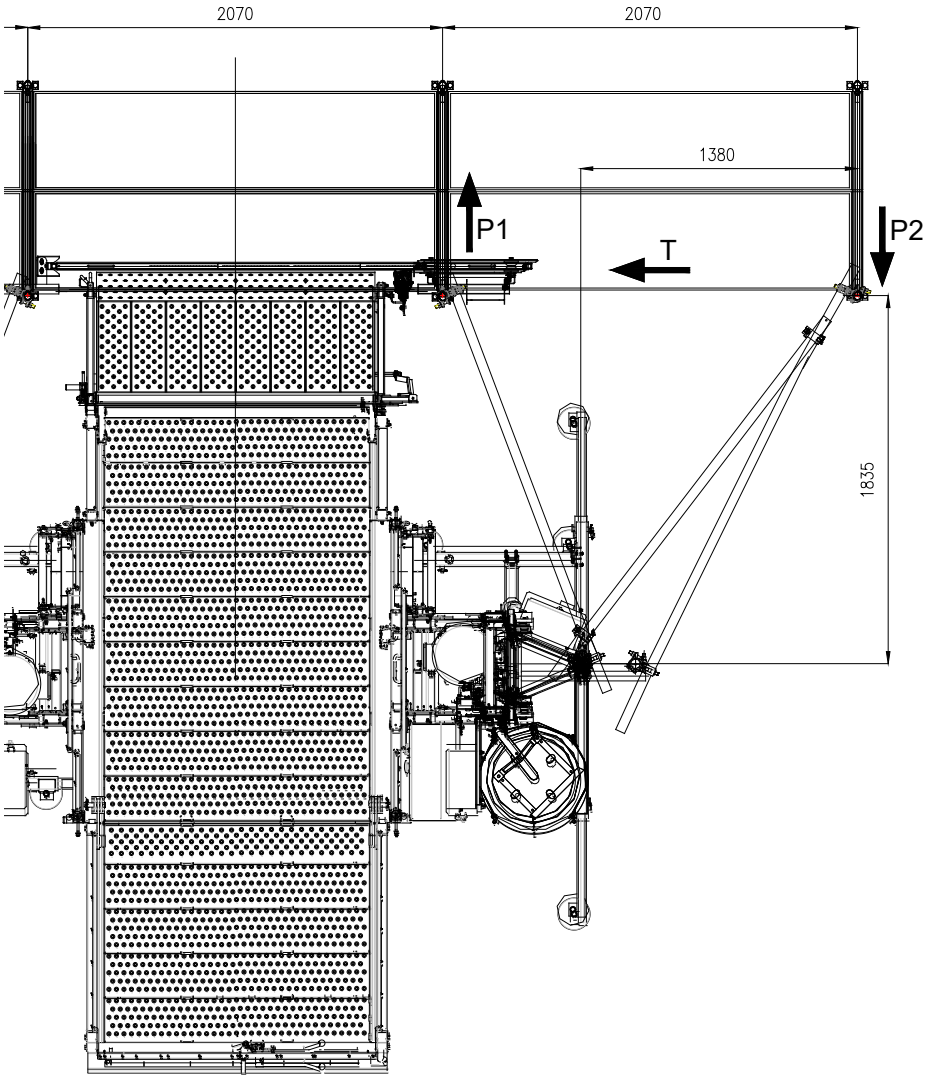
Loads on left tie are symmetric than shown in the figure.

H.5.2. INSTALLATION TPL 2000D TO SCAFFOLDING 2.0 m WIDE

Conditions

Tie distance: 6 m

Max overhang: 3 m



Forces on clamps	kN
P1	6.8
P2	5.0
T	4.5

Note: For the verification of the individual fixing point, apply T on each clamp.

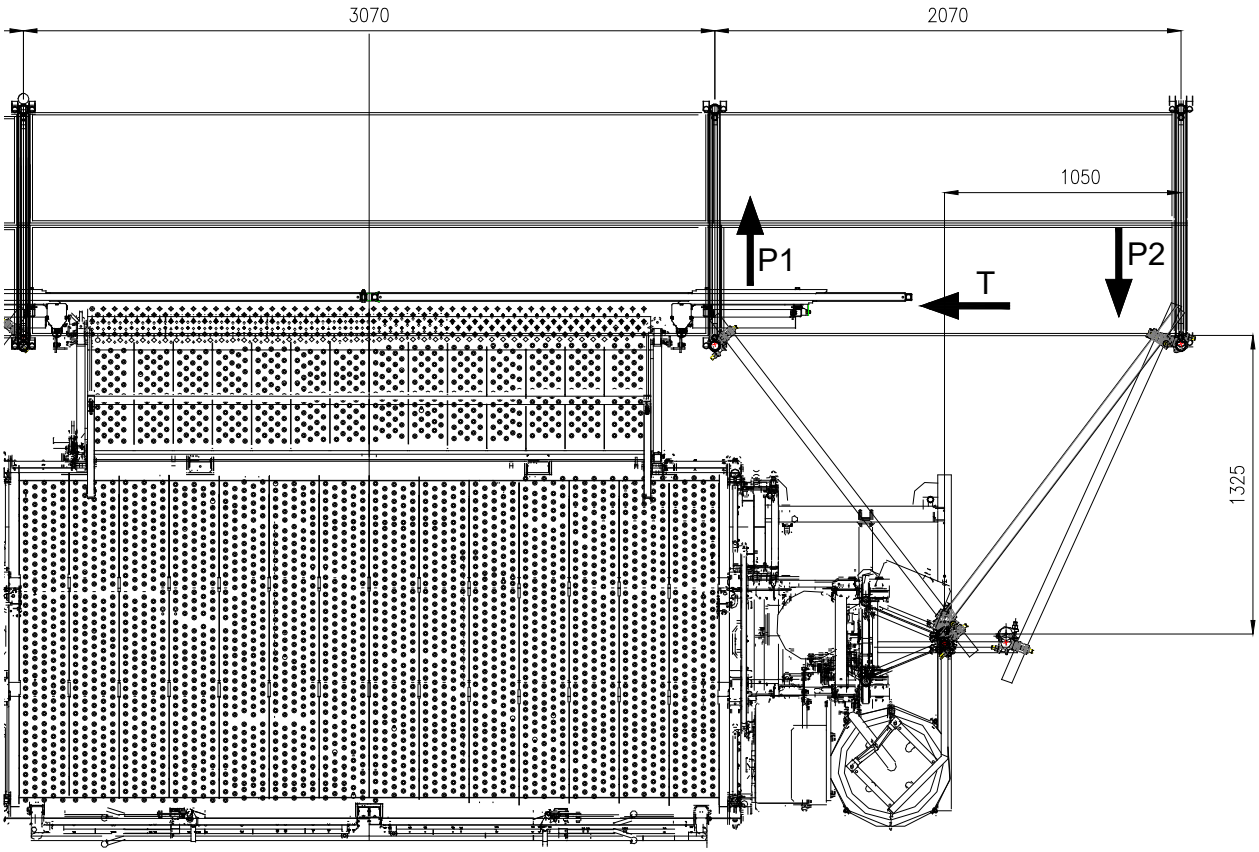
Loads on left tie are symmetric than shown in the figure.

H.5.3. INSTALLATION TPL 2000 TO SCAFFOLDING 2.0 m WIDE

Conditions

Tie distance: 6 m

Max overhang: 3 m



Forces on clamps	kN
P1	5.1
P2	4.5
T	4.5

Note: For the verification of the individual fixing point, apply T on each clamp.

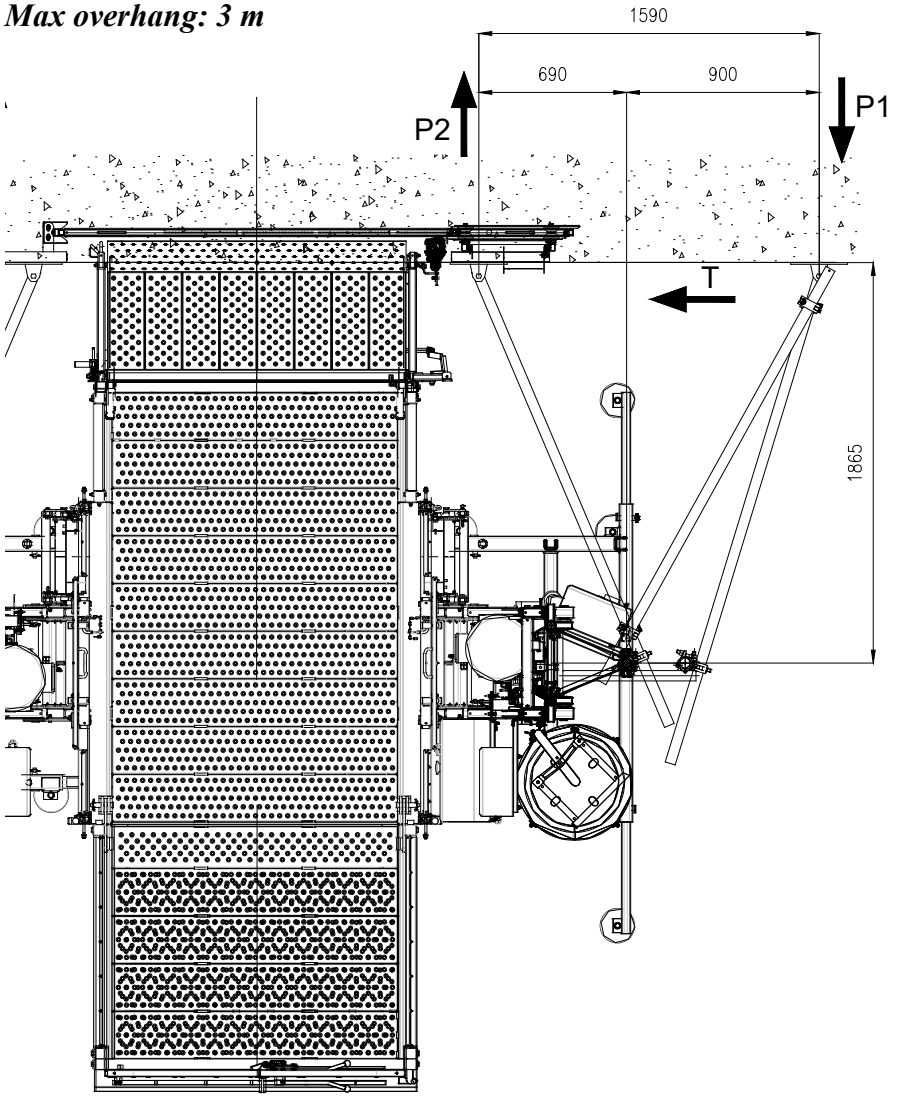
Loads on left tie are symmetric than shown in the figure.

H.5.4. INSTALLATION TPL 2000D TO FLOOR SILL

Conditions

Tie distance: 6 m

Max overhang: 3 m



Forces on wall brackets	kN
P1	7.8
P2	6.3
T	4.5

Note: For the verification of the individual fixing point, apply T on each wall bracket.

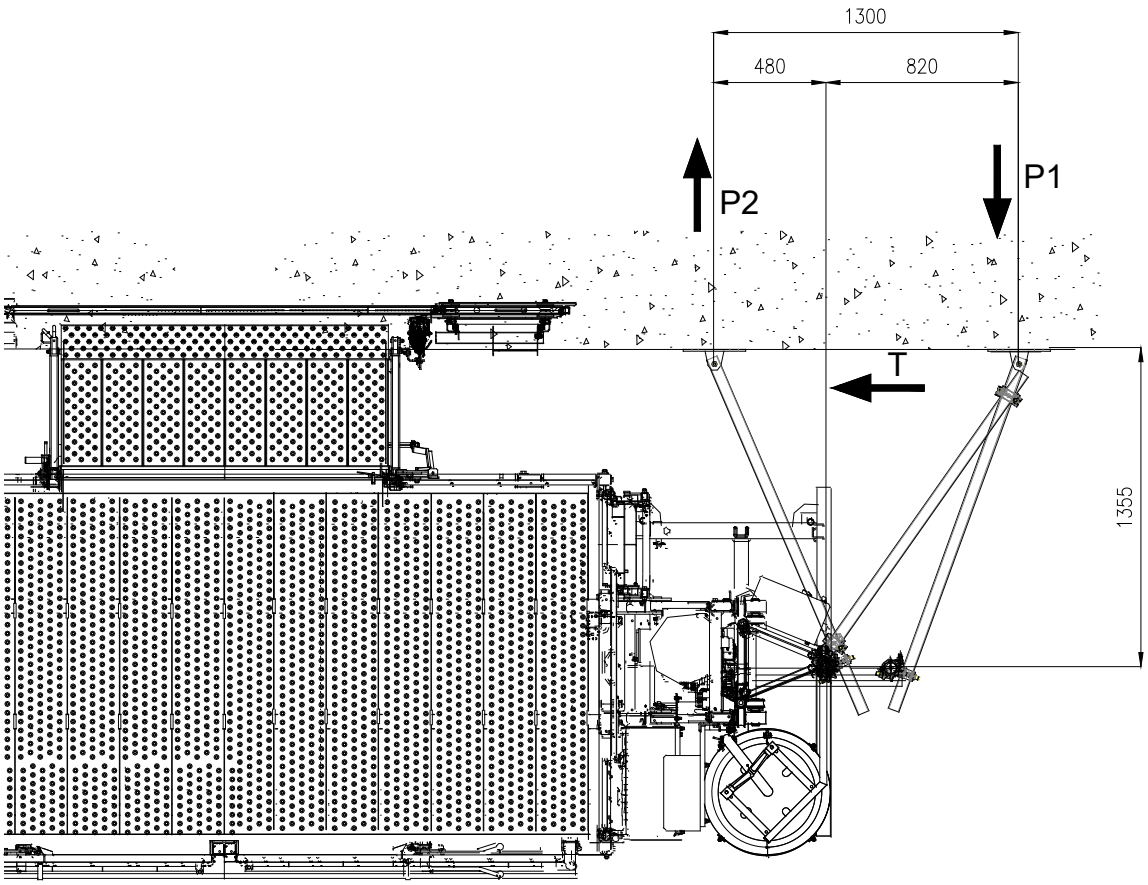
Loads on left tie are symmetric than shown in the figure.

H.5.5. INSTALLATION TPL 2000/ 1800 TO FLOOR SILL

Conditions

Tie distance: 6 m

Max overhang: 3 m



Forces on wall brackets	kN
P1	7.6
P2	5.4
T	4.5

Note: For the verification of the individual fixing point, apply T on each wall bracket.

Loads on left tie are symmetric than shown in the figure.

H.5.6. DIAGRAM TO BE FILLED FOR EACH INSTALLATION

The following 3 pages may be used to show actual situation in jobsite and related forces.

To be copied and filled in accordance to information of H.4.3 and H.4.4

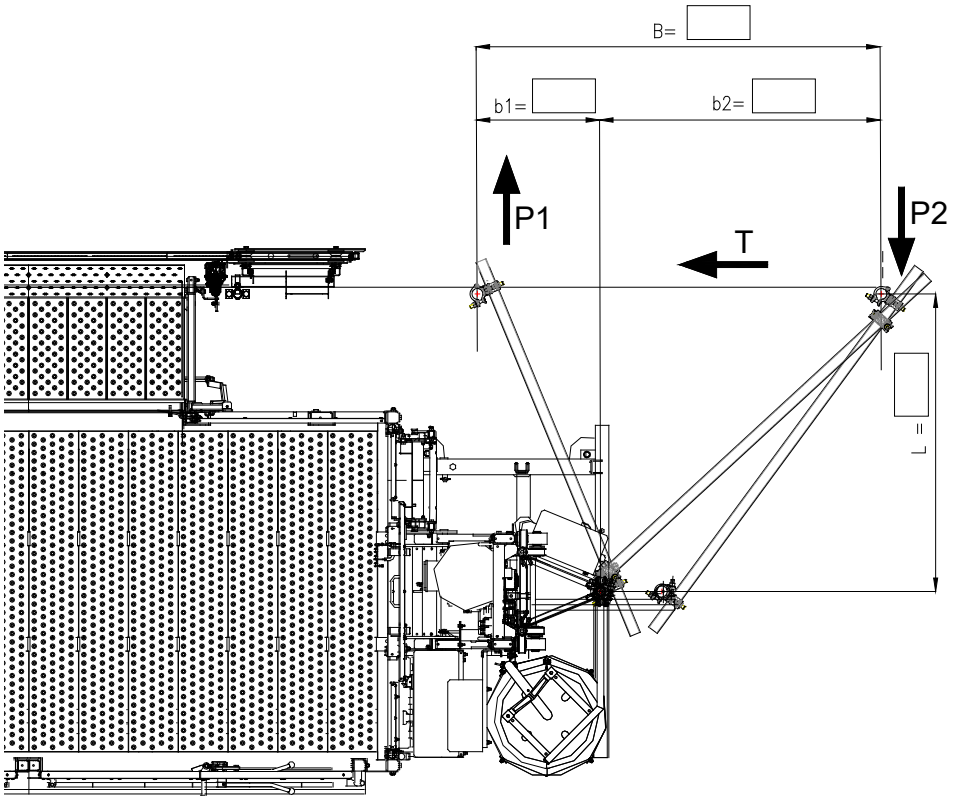
It can be kept as a part of Instruction Manual for the specific Jobsite.

H.5.6.1. Installation on scaffolding

Conditions

Tie distance: ***MIN*** ☐ ***m ; MAX*** ☐ ***m***

Max overhang: ☐ ***m***



Forces on clamps	kN
P1	
P2	
T	

Note: For the verification of the individual fixing point, apply T on each clamps.

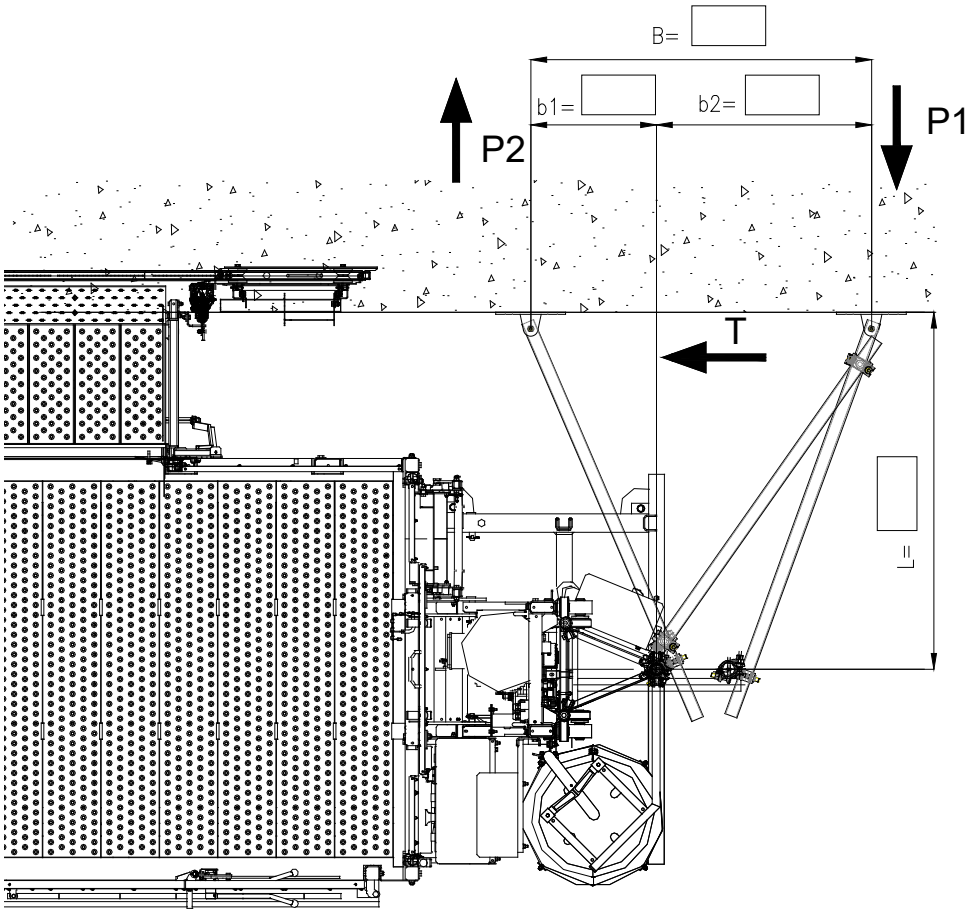
Loads on left tie are symmetric than shown in the figure.

H.5.6.2. Installation to floor sill

Conditions

Tie distance: ***MIN*** ☐ ***m ; MAX*** ☐ ***m***

Max overhang: ☐ ***m***



Forces on wall brackets	kN
P1	
P2	
T	

Note: For the verification of the individual fixing point, apply T on each clamps.

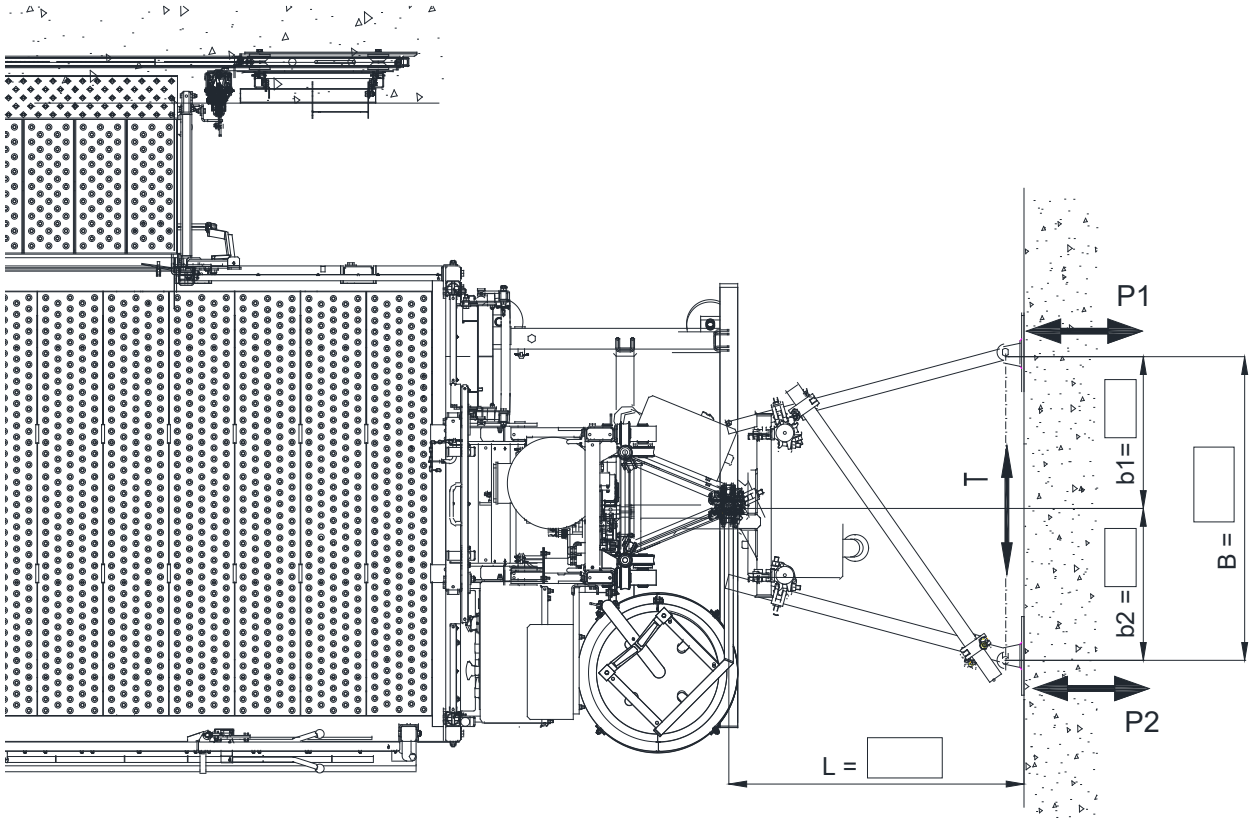
Loads on left tie are symmetric than shown in the figure.

H.5.6.3. Installation to floor sill – Back Tie Frame

Conditions

Tie distance: ***MIN*** ☐ ***m ; MAX*** ☐ ***m***

Max overhang: ☐ ***m***



Forces on wall brackets	kN
P1	
P2	
T	

Note: For the verification of the individual fixing point, apply T on each clamp.

H.5.7. NOT STANDARD

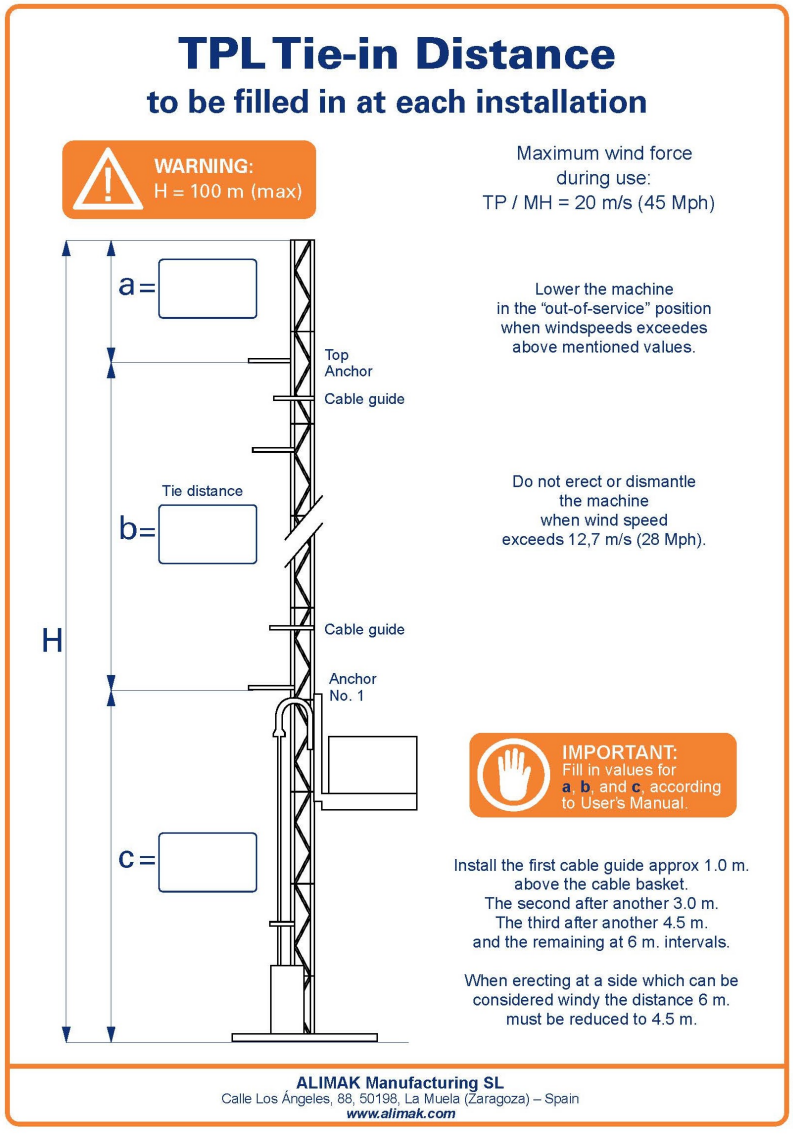
In case of tie configuration not included in the scope of this chapter, in particular:

- different tie distance from what indicated.
- special tie scheme.
- length of wall pipes longer than standard provided.

Please contact Alimak which will provide to send approval and/or drawing layout indicating configuration and loads admitted, further than security information needed. This document shall be annexed to the instruction manual and will constitute integrating part of the that, for the specific building site.

H.5.8. TIE CONDITIONS LABEL

For every installation of the machine, the adhesive label represented at side must be completed and secured to the mast protection.



H.6. Installing the cable guides

52. Attach the cable guide (1-fig.H.25) with the clamp to the mast.
The first cable guide must be placed 1 meter above the cable basket. The second after another 3 m. The third after another 4.5 m and the remaining at 6 m intervals.

When erecting at a site which can be considered windy – the distance 6 meter must be reduced to 4.5 meter.

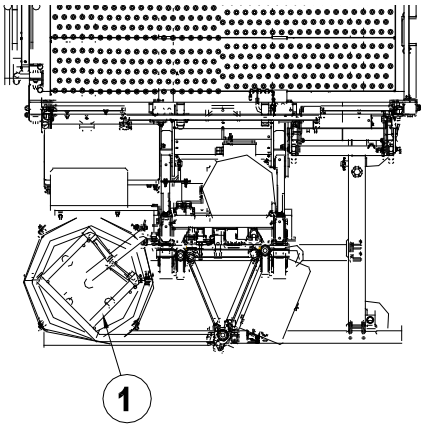
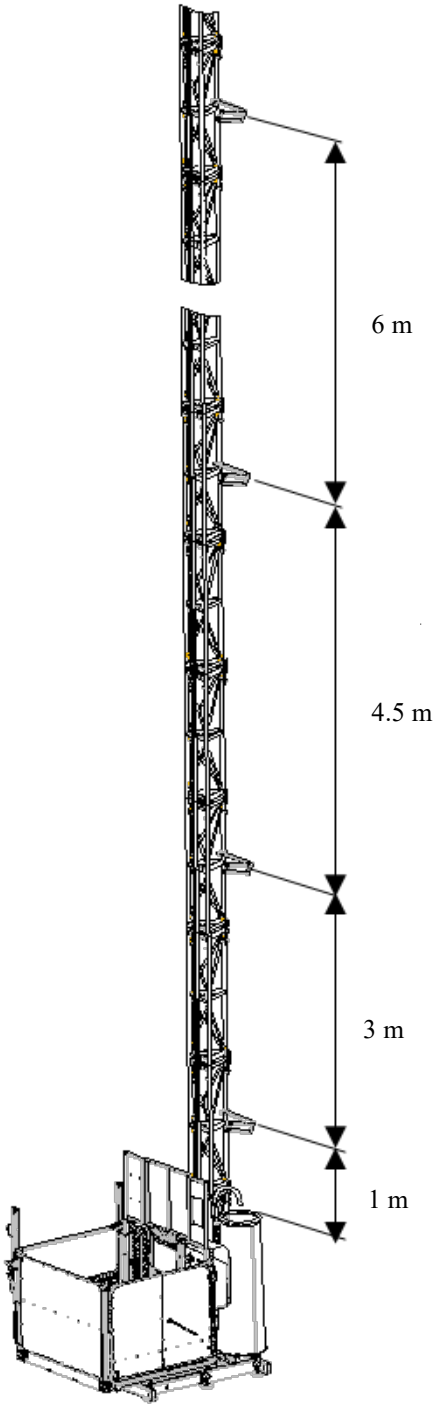


Fig.H.25 Cable guide



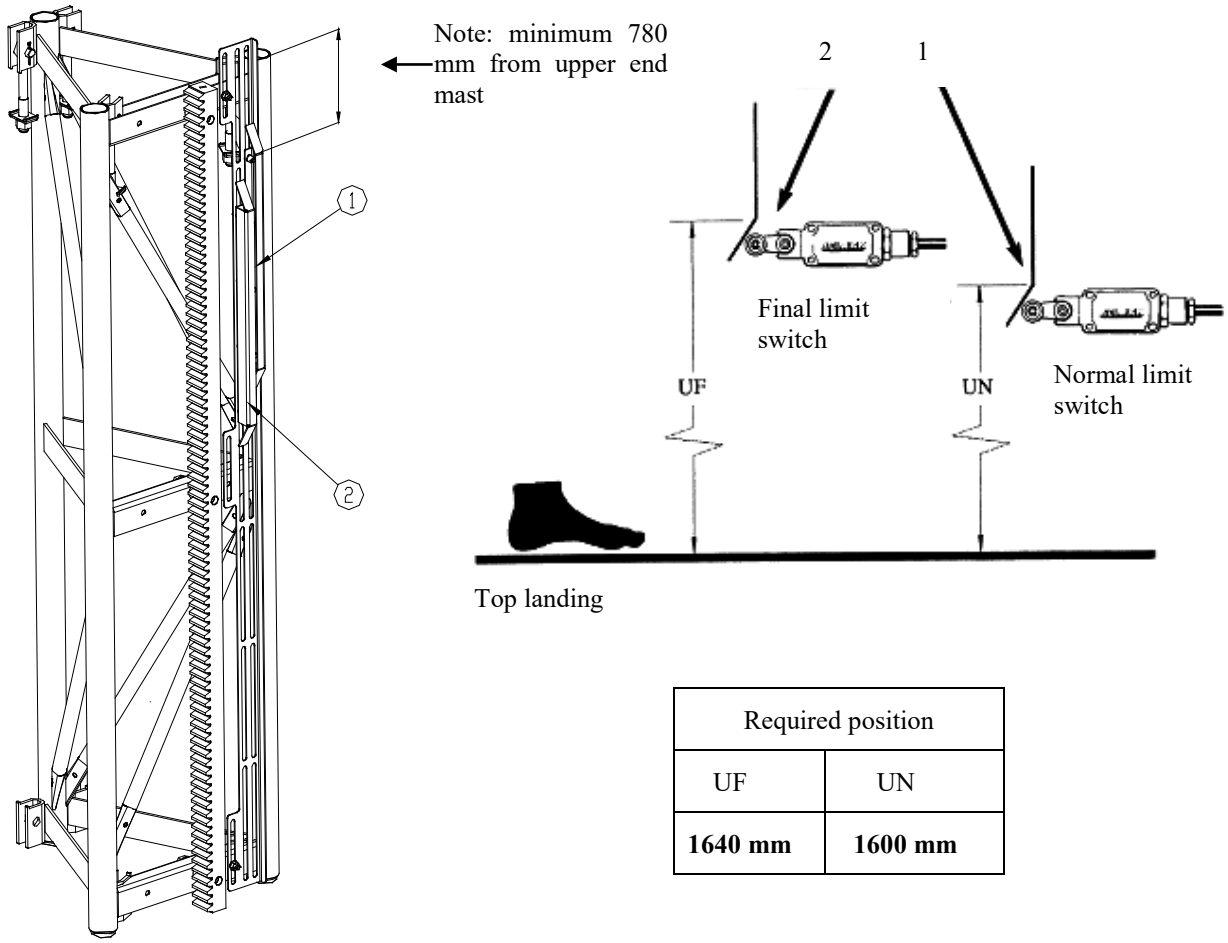
IMPORTANT: ***Cable guide assembly at indicated distance must be carried out simultaneously to the mast erection. Do not leave the cable free for distance higher than the prescribed ones.***

Do not place the cable guides near landing so that the rubber springs are kept open by the cable arm when the platform has stopped at the landing.

IMPORTANT: ***Cable guiding system must be greased according the instruction at chapter k, to have the correct coiling inside the basket.***

H.7. Installing the limit cams

53. Once reached desired height, install the upper normal cam (1-fig.H.26) and upper final limit cam (2-fig.H.26) on the last mast section. The maximum permissible mast height should not be exceeded.



Required position	
UF	UN
1640 mm	**1600 mm**

Fig.H.26 Upper normal and upper final limit cam

WARNING! ***Cams must be mounted on both masts of the machine, as each drive unit is stopped in its ascent by the limit switch when it engages the respective upper cam.***

WARNING! ***Adjust the ascent cams so that the machine stops with the platform levelled to the horizontal.***

H.8. Landings

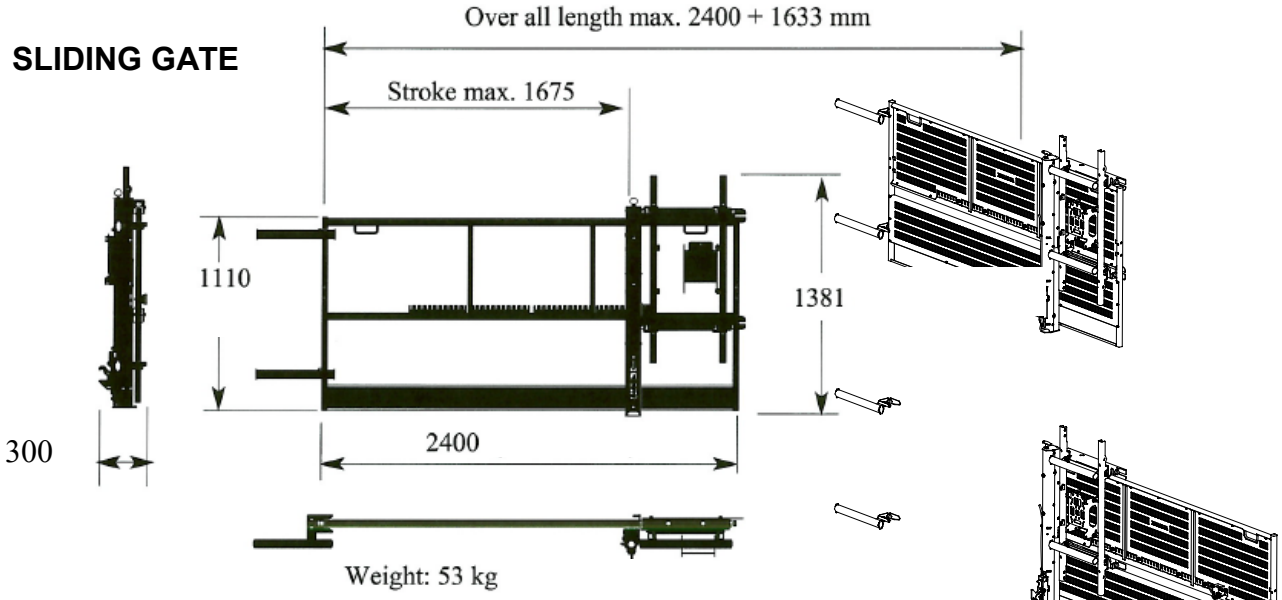
H.8.1 POSITIONING OF LANDING GATE

H.8.1.1. Landing gates 1,5 m

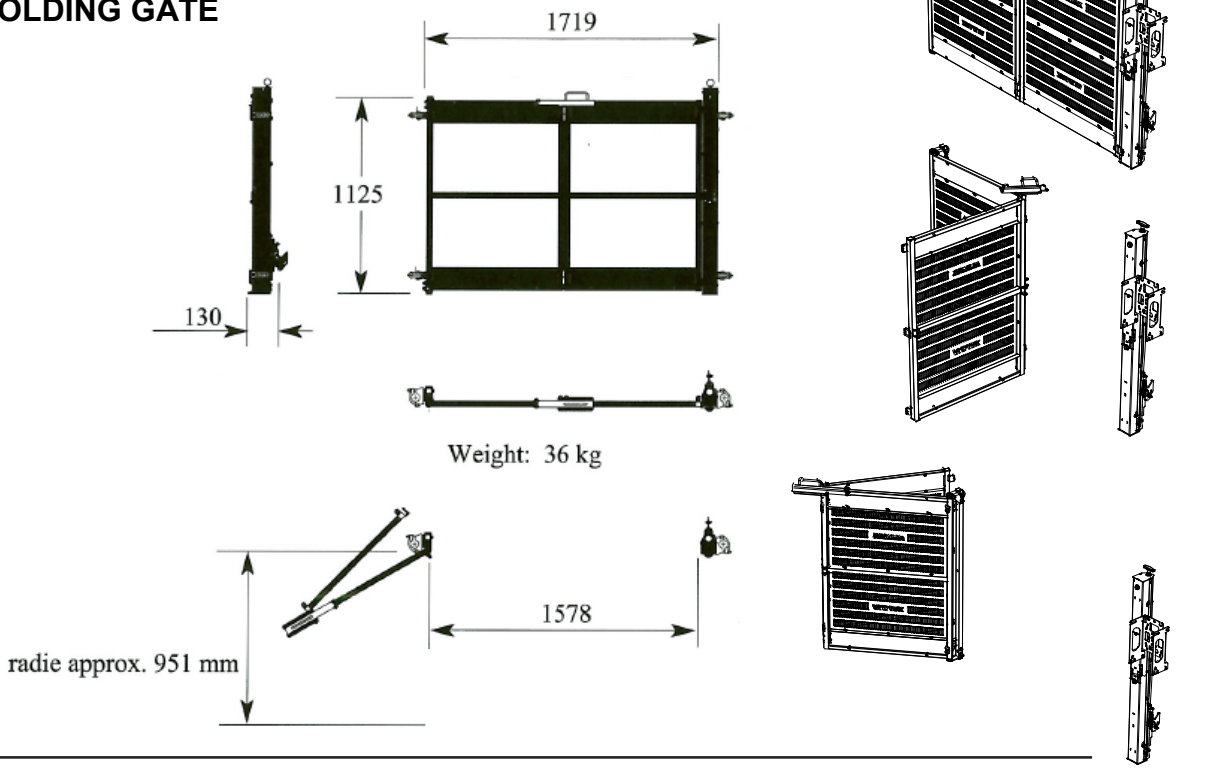
54. The landings may be installed in openings, on projections or on scaffolds or posts shores at the face of the structure.

The picture below shows the opening of landing gates.

SLIDING GATE



BI-FOLDING GATE



The picture below shows the interfaces ramp/ sliding gate. Ensure that landing gate mechanical locking works in the correct way with exit ramp.
Dimension between bracket are related to specific interface with:

(xxx) - Scaffolding 2.0 m wide
[xxx] – Scaffolding 2.5 m wide

They can change in dependence of supporting structure. In all case it is important the other dimensions are respected, they do not change whatever is the supporting structure.

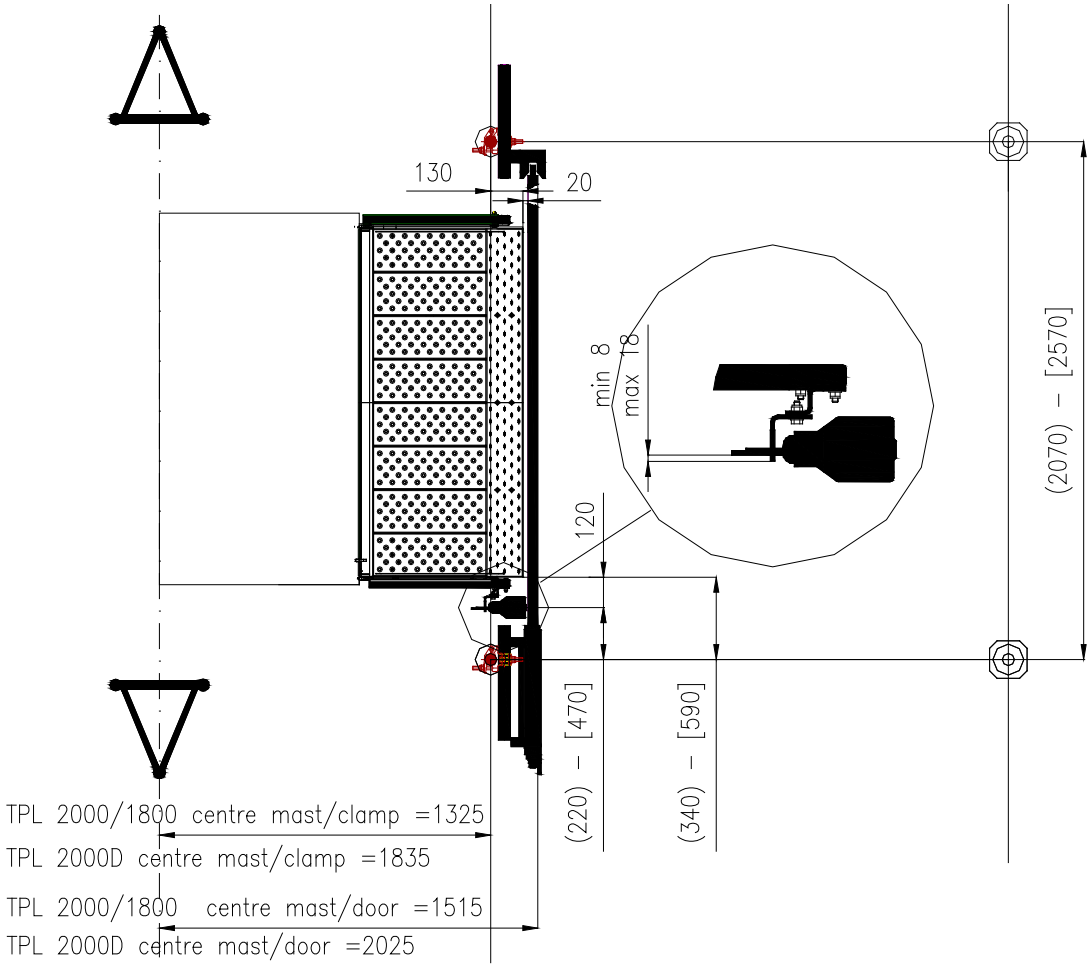


Fig.H.27 Interface Ramp/ Sliding gate 1.5 m

The picture below, show the interface ramp/bi-folding gate. Ensure that landing gate mechanical locking works in the correct way with exit ramp.
In all case it is important the other dimensions are respected, they do not change whatever is the supporting structure.
The landing gate is easily installed using Ø48 mm tube couplers, distance tubes and support pipes for installations on slab, façade scaffolding or directly on vertical scaffold pipes with supporting landing beam.

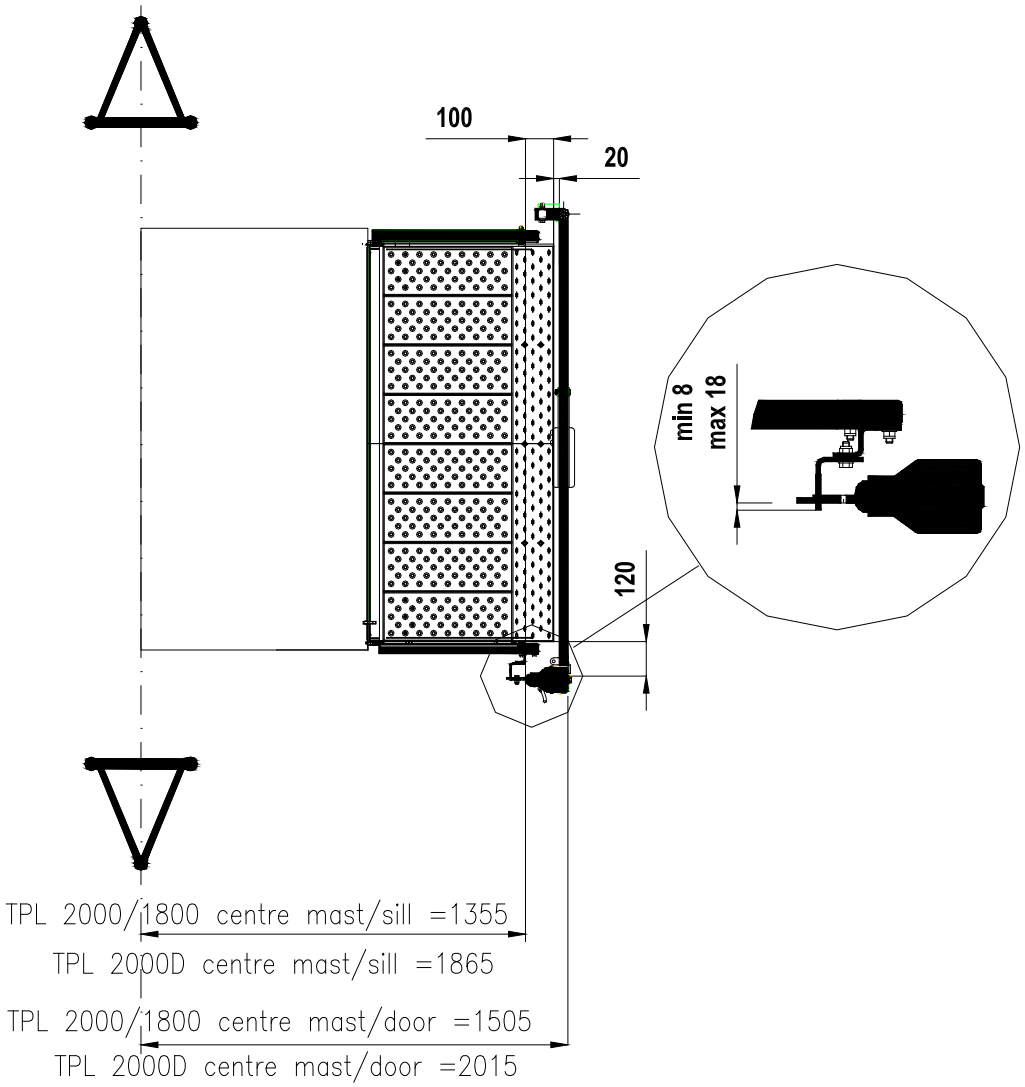


Fig.H.28 Interface Ramp/Bi-folding gate

Detail interface ramp + cam / gate interlock is shown in the picture. The cam on the ramp (which is provided with some degree of adjustment by sliding on bolted slots), must engage the hook on the interlock post of the landing gate, which provide to unlock the gate itself.

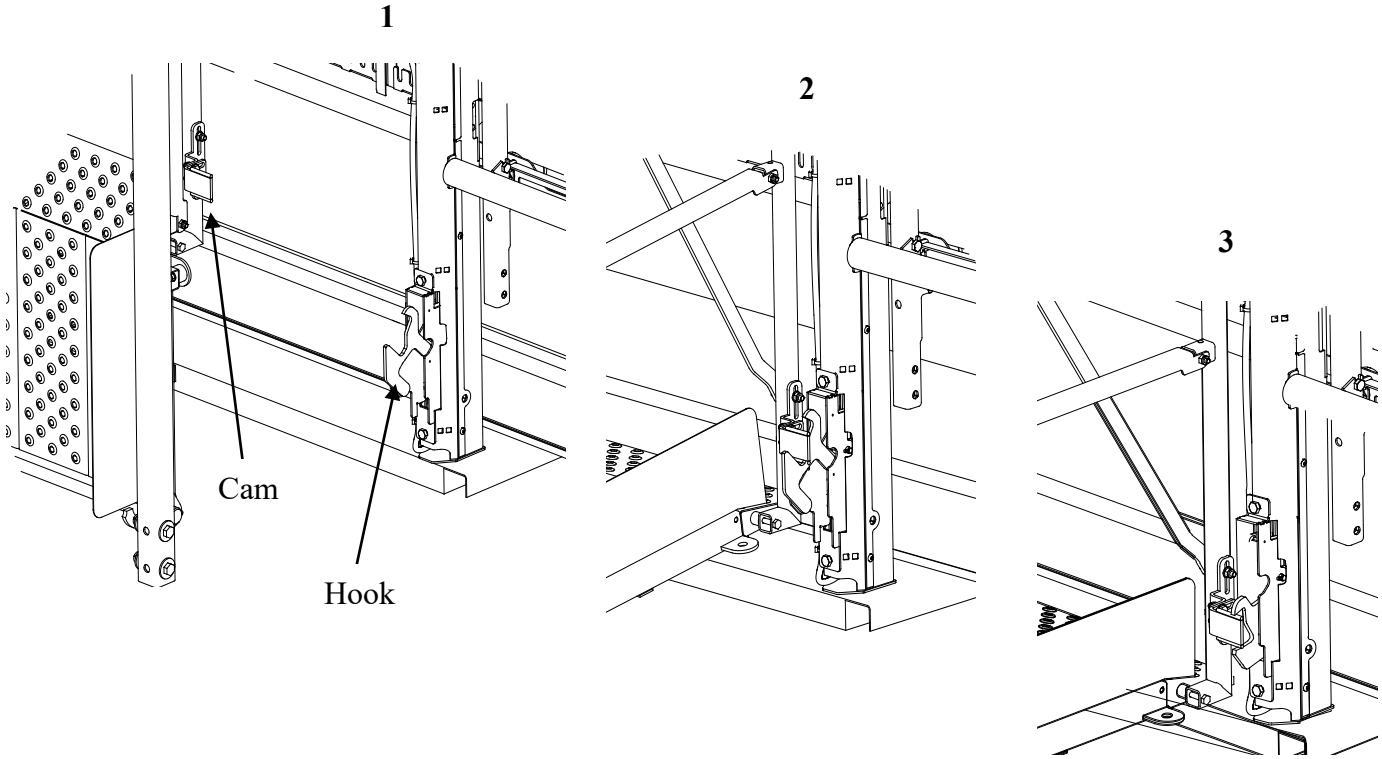


Fig.H.29 Interlock ramp/ landing gate

H.8.1.2. Landing gate 3 m

55. Right and left gates may be installed in openings, on projections or posts shores at the face of the structure.
The picture H.30 shows the dimensions and interfaces ramp/landing gate. Ensure that landing gate mechanical locking works in the correct way with exit ramp. In this case mechanical locking are 2 (right and left).
Dimension between bracket are related to specific interface with 3m.
They can change in dependence of supporting structure. In all case it is important the other dimensions are respected, they do not change whatever is the supporting structure.

WARNING! ***Install landing gate with sill and mechanical locking levelled to the horizontal.***

Adjust the landing cams on each mast so that the machine stops with the platform levelled to the horizontal and landing gate mechanical locking works in the correct way with landing gate cams (see paragraph H.8.2).

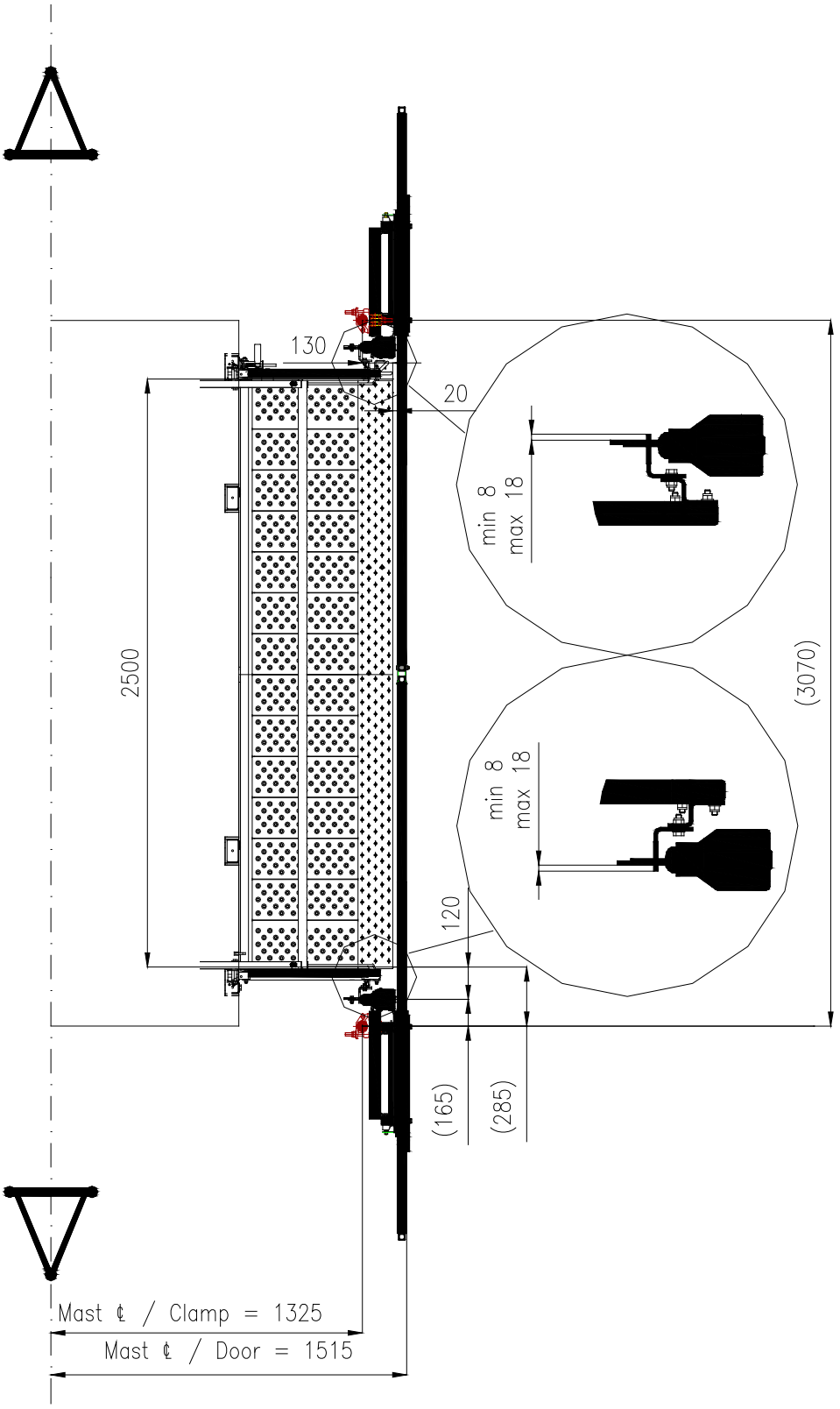


Fig.H.30 Interface Ramp/ Sliding gate (3 m)

IMPORTANT: Ensure that regulation about landing are respected!

Machine used as MH (Material Hoist)

Prescription according to standard EN12158-1, about landing gate with reduced height.

Exit ramp with protection guardrail.

The distance between the top of the landing gate on the building side and the guardrail on the platform must be minimum 500 mm.

Max distance allowed between landing gate and opened load ramp railings must not be over 150 mm.

The support area of the load ramp must not be less than 100 mm.

Other required distances are shown on fig. H. 31.

Key

A_2	≥0,5 m
B	≥0,4 m
C_1	≤0,15m
D	≤0,15 m
E	≤35 mm
F	≥0,15 m
G	≤0,5 m
H	≤0,5 m
M	= 1,1 m to 1,2 m

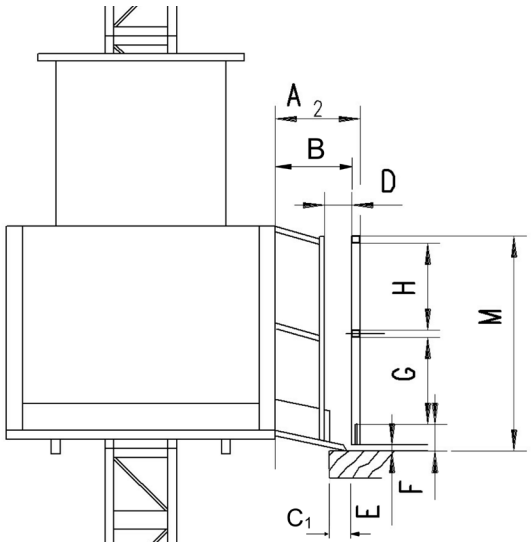


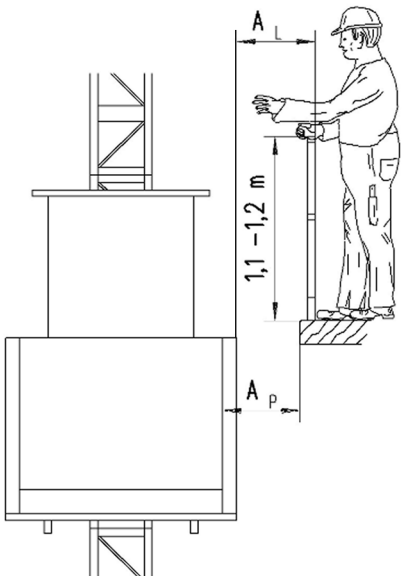
Fig.H.31 Adjustment according EN12158-1 and EN 16719

Machine used as TP (Transport Platform)

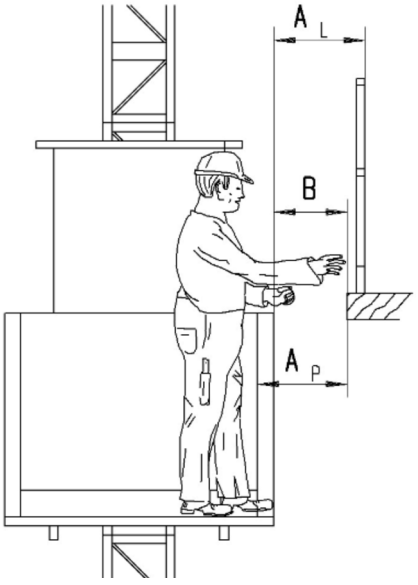
Prescription according to standard EN16719, about landing gate with reduced height.

In addition to the prescriptions for the machine used as MH, which applies also for TP, the following demand A & B about distances shall apply.

A



B



Key

A_P	≥0,5 m
A_L	≥0,5 m
B	≥ 0,4 m

Fig.H.32 Adjustment according EN 16719

56. Lubricate the moving parts of the gate and make sure that they work properly, adjust if necessary.
57. Connect the cable of the landing gate limit switch to the call landing unit as shown in the fig.H.33.

Note: the length of the cable can be varied so that suitable cable extensions can be used.

58. Connect the plug at the end of the cable of the landing call unit in the socket on the electrical box on ground frame (1-fig.H.34), after the by-pass plug (2-fig.H.34), in this socket is removed.
Without the blind plug, inserted in the electrical box, the electric equipment circuit is "cut off", which means that the platform will not operate before this plug is connected again.

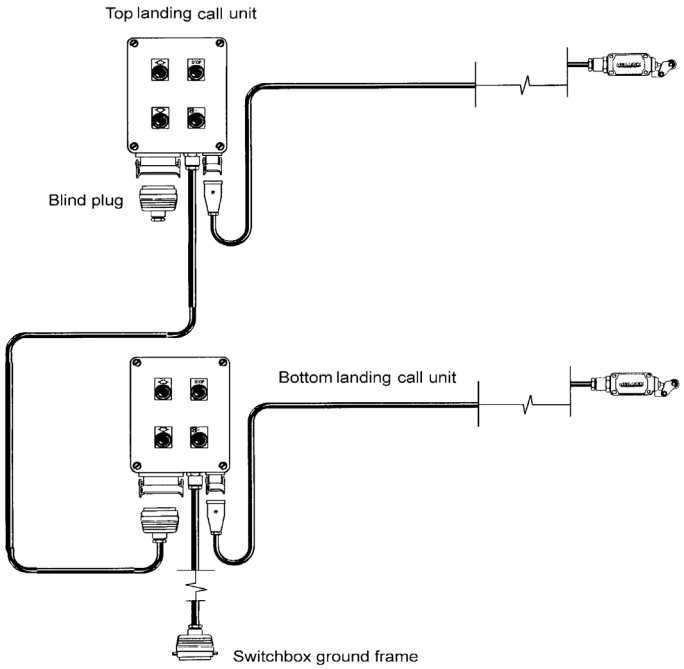


Fig.H.33 Landing gate arrangement

59. Connect the blind plug to the socket at the last landing call unit and check the function of the electrical interlock. (Limit switch).
The machine must not be operated when the landing gate is open.
60. Install remaining landing gates as described above.
The plug at the end of the cable of the call landing unit is connected to the sockets on the next landing and the by- passed plug is there by moved in order to always be at the last installed landing.
Clamp the cable between the interlockings of the landing gates in such a position that it cannot be jammed or mechanically damaged.

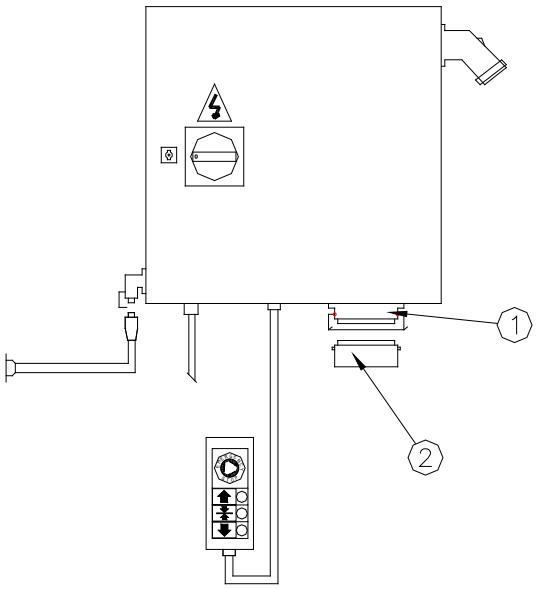


Fig.H.34 Electrical box on ground frame

H.8.2 ASSEMBLING OF LANDING CAM.

61. Assemble the landing cam at the landings planned of the installation on both masts in correspondence of landings (1-fig.H.35).
Cam is fixed on the left side of the mast.

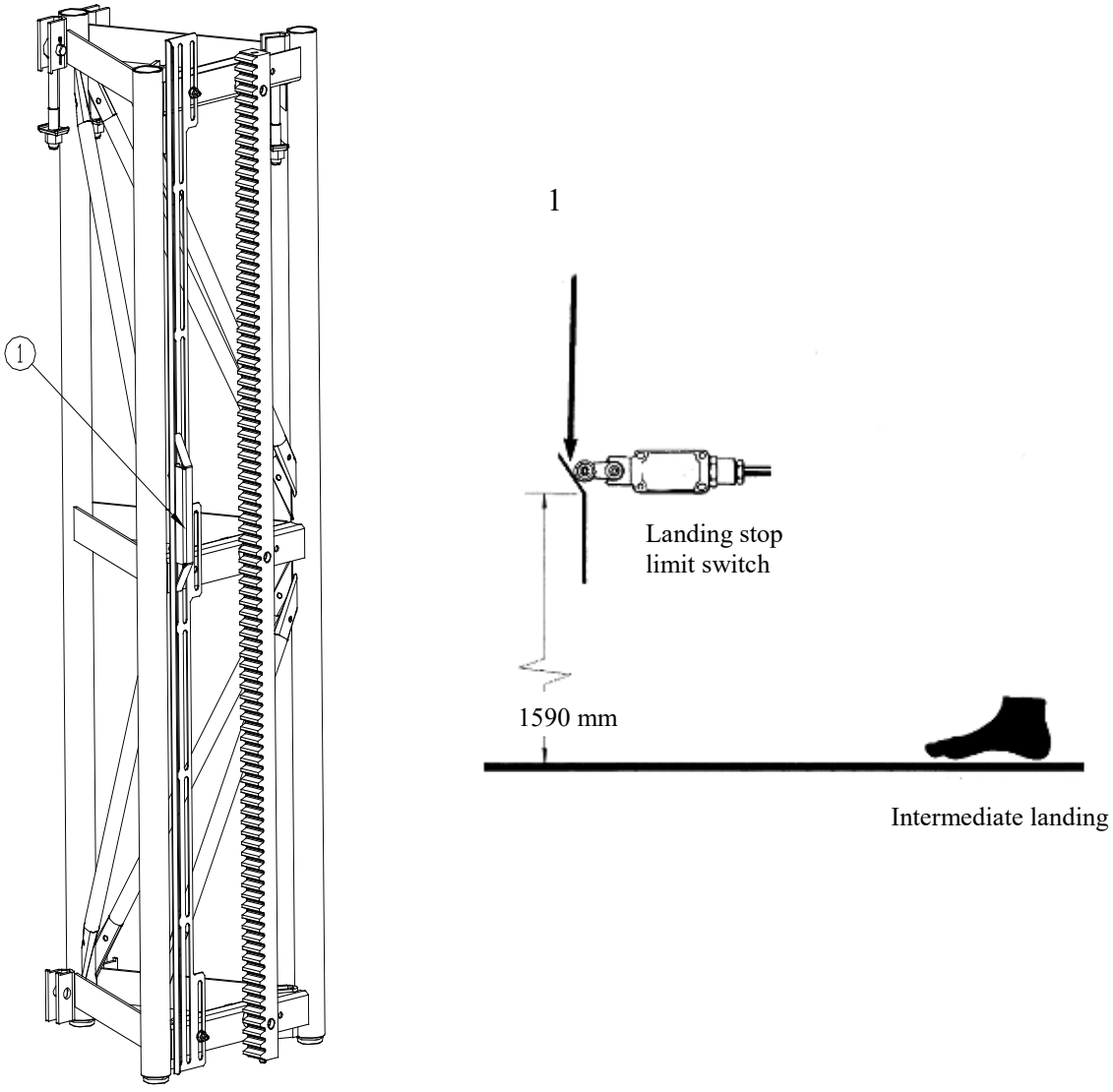


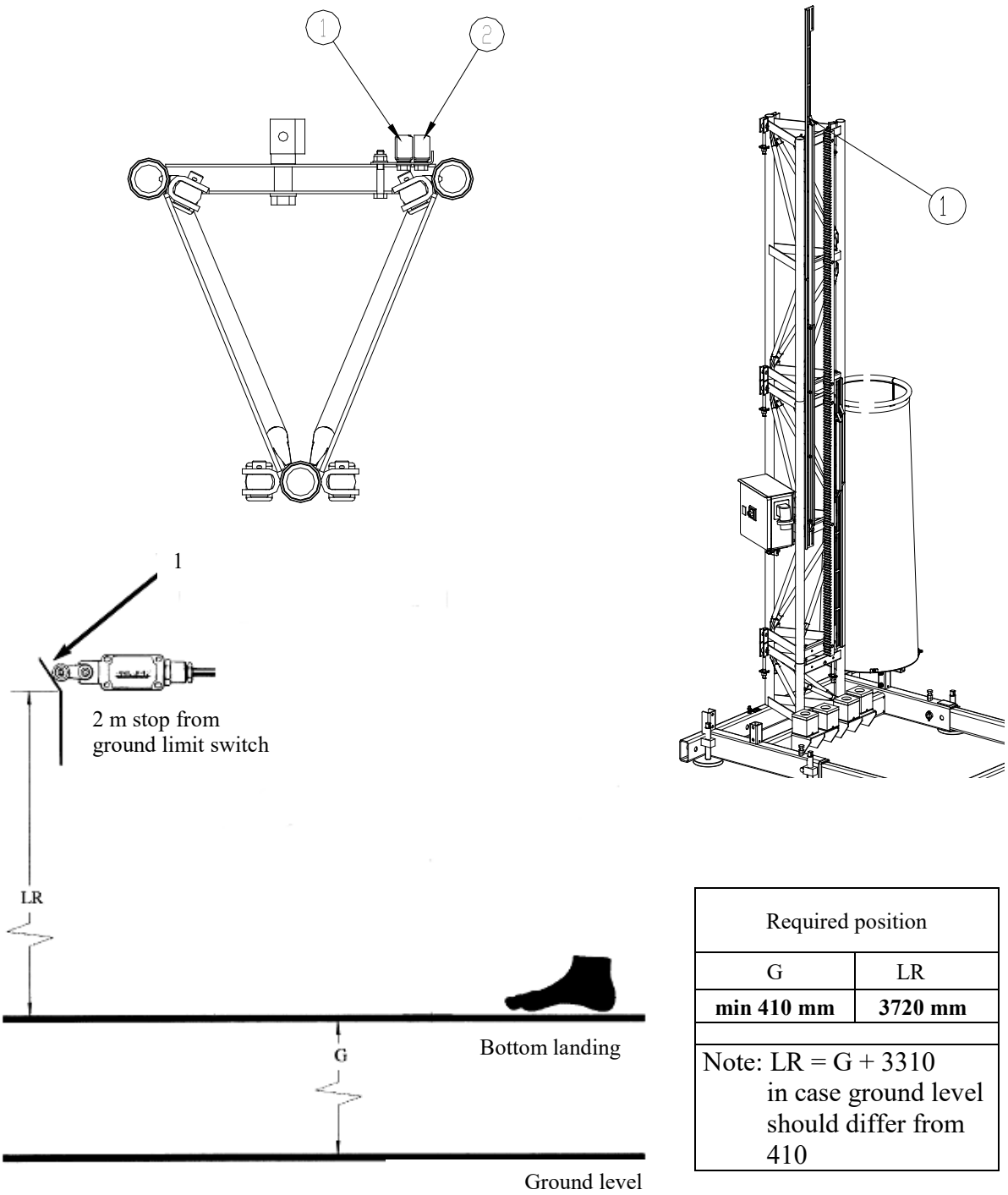
Fig.H.35 Landing cam

WARNING! ***Cams must be mounted on both masts of the machine, as each drive unit is stopped in front of requested landing by the limit switch when it engages the respective landing cam.***

WARNING! ***Adjust the landing cams on each mast so that the machine stops with the platform levelled to the horizontal and landing gate mechanical locking works in the correct way with landing gate cams (see paragraph H.8.1).***

H.8.3 ASSEMBLING OF 2 m STOP CAM (FROM GROUND).

62. The 2 meter stop (1-fig.H.36) cam must be assembled on the left side of the mast, near to the stop landing cam (2-fig.H.36).
In this case, it is required the mounting of a single cam only in one of the two masts. When the drive unit meets the cam, also the drive unit on the other mast stops.



Required position	
G	LR
min 410 mm	**3720 mm**
Note: LR = G + 3310 in case ground level should differ from 410	

Fig.H.36 2 m stop cam

H.9. Ground enclosure

MACHINE USED AS MATERIAL HOIST

In this configuration the use of the enclosure is mandatory (fig.H.37), according prescription at par. D.2. It is placed on the ground around the machine, as described in the chapter D.5.13.

Enclosure's gate is provided with electro mechanical safety device but no need to be connected to the electrical box on ground frame. To open the gate, first lift the spring pin.

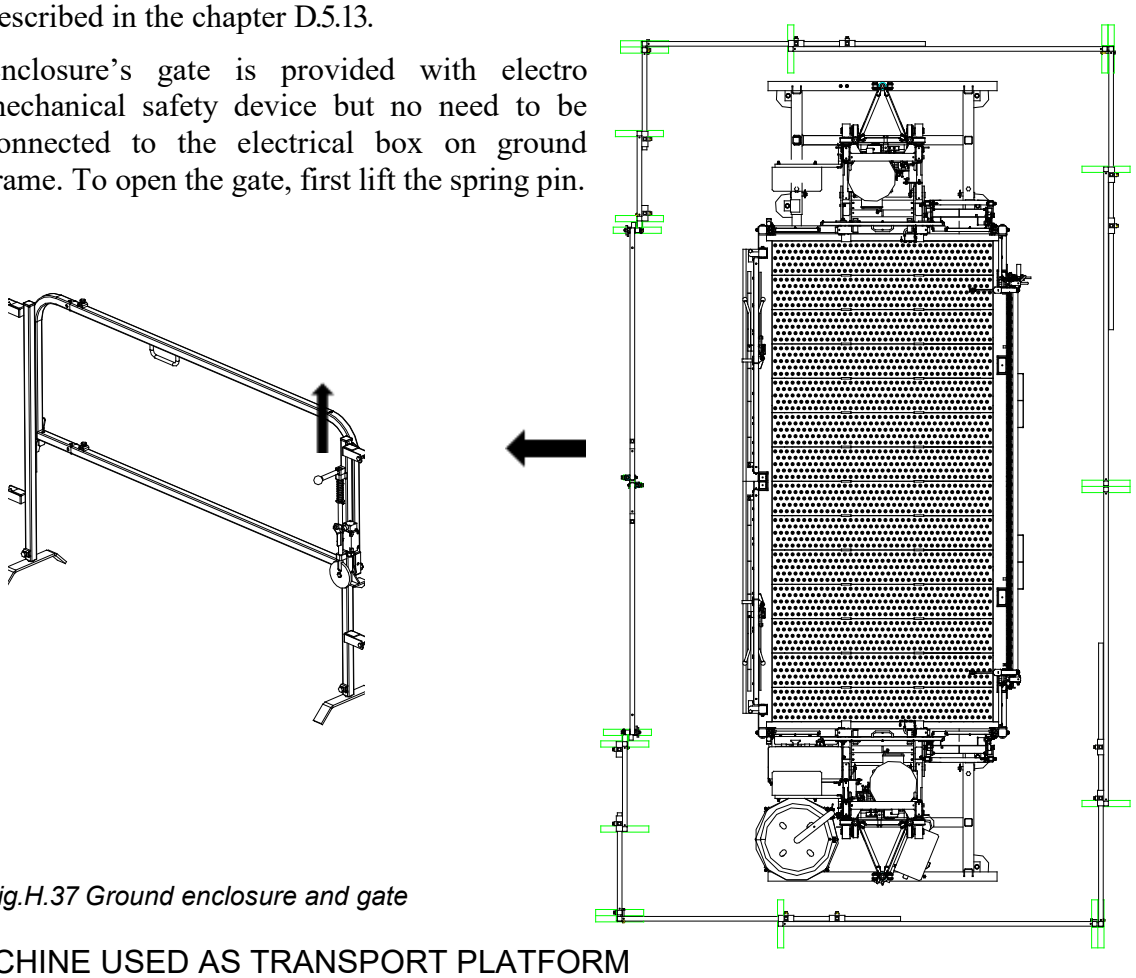


Fig.H.37 Ground enclosure and gate

MACHINE USED AS TRANSPORT PLATFORM

In this configuration the use of the enclosure is mandatory (fig.H.37), according prescription at par. D.2. It is placed on the ground around the machine, as described in the chapter D.5.13.

Enclosure's gate is provided with an electro mechanical safety device connected to the electrical box on ground frame (1-fig.H.38), after removing the blind plug.

NOTE: ***If the enclosure has the gate opened, so the limit switch is activated, it will not possible to move the machine.***

For both configuration must be used 2 m stop cam, as described in the chapter D.5.12.

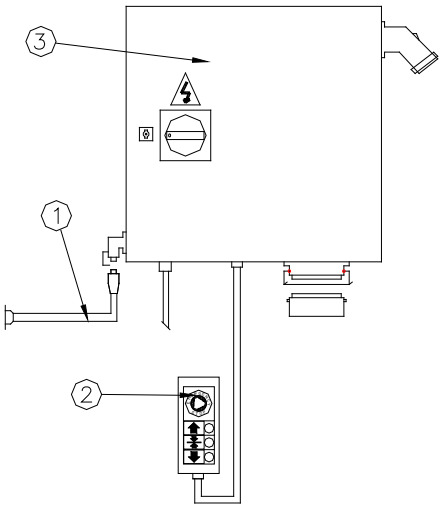


Fig.H.38 Electrical box on ground frame

H.10. Final functional checks before being put in operation

63. Make a run test and check:

- Ties;
- Mast fixing;
- Functioning of normal limit switch;
- Functioning of final limit switch (up, down and levelling);
- Functioning of control push button and its emergency button, when the machine is used as material hoist;
- Functioning of up, down and emergency buttons, when the machine is used as transport platform;
- Functioning and calibration of overload device, in case proceed with calibration as described on section K-7;
- Power cable and cable guide;
- Motion of power cable into the cable guides and the right replacement into the cable basket;
- Functioning of landing equipment;

64. Grease the rack.

65. Lock mast protection (1-fig.H.39) with the opposite pin (2-fig.H.39).

Local regulation may require other inspection or examinations before being put into service.

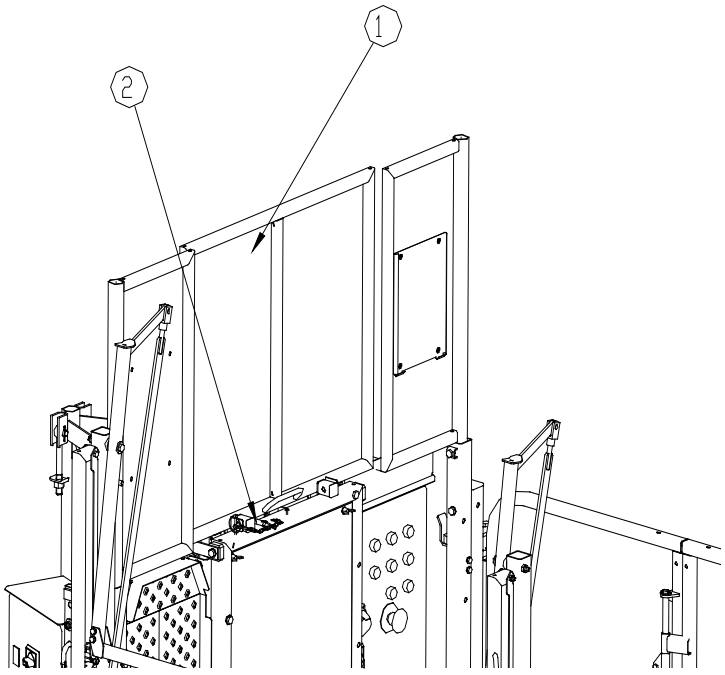


Fig.H.39 Mast protection

THE MACHINE IS READY TO BE USED NOW AS:

MATERIAL HOIST

For using the machine in this configuration, it is necessary put the key switch on the platform electrical box (1-fig.H.40) in ‘’MH’’ position (material hoist).

The machine will be activated by means of the push button box (2-fig.H.38) connected to the electrical box on ground frame (3-fig.H.38).

TRANSPORT PLATFORM

For using the machine in this configuration, it is necessary put the key switch on the platform electrical box (1-fig.H.40) in ‘’TP’’ position (transport platform).

The machine will be activated means of two buttons placed on the platform electrical box (2 and 3-fig.H.40).

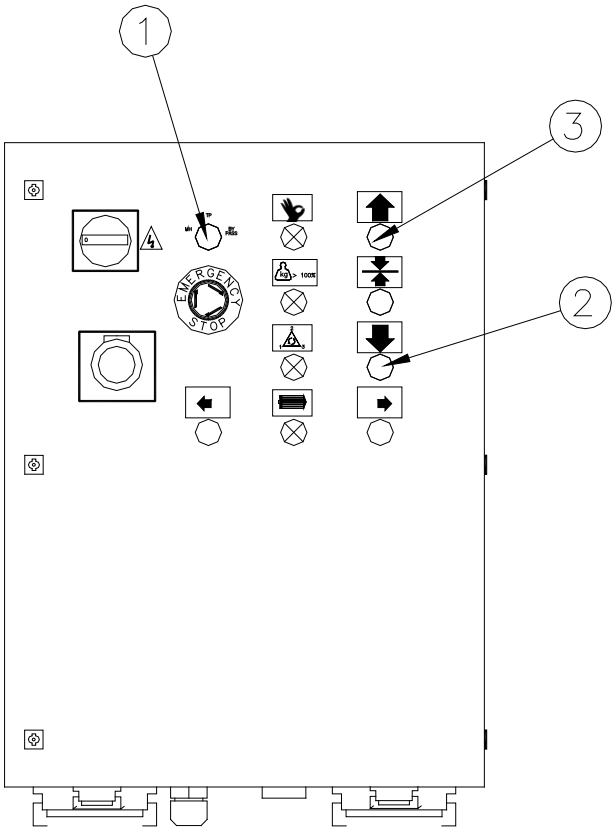
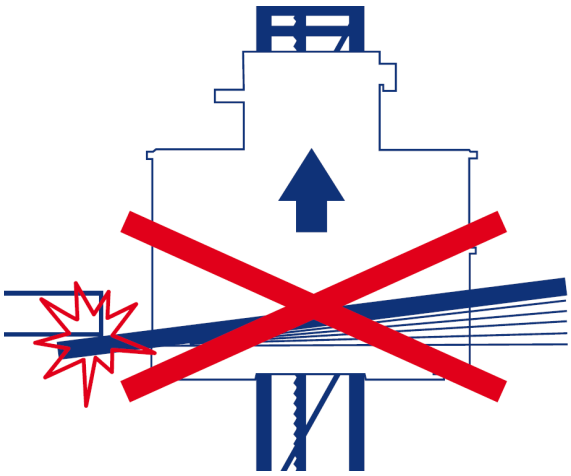


Fig.H.40 Platform electrical box

I. OPERATING INSTRUCTIONS

I.1 General

It is not allowed to have loads protruding over the edge of the machine.



Moveable loads should be secured. The platform guardrail must not support the loads in anyway.

When ending or interrupting the period of work, the main switch on the main panel should be locked with a padlock.

I.2 Safety and pre-operation inspection

1 Prior to any use of this hoist, make a test run, to verify the functionally of the machine, when it is use as transport platform or material hoist.

2 Check the following items:

- Ties and cable guides.
- Presence of safety devices.
- Upright position of masts and levelled position of baseframe.
- Any loose parts.
- Baseframe supports and quality of ground surface.
- Electrical connections (cable and tension).
- Presence and safety of landing protection devices.
- Correct functioning of end switches (upper, lower, emergency upper, emergency lower).
- Absence of obstacles in hoistway.
- Oil leakage from motor carriage.
- Functioning of motor brake.

3 Connect to the machine on the building site power supply, by means of inlet plug. (1-fig.I.02).

4 Close the loading/unloading ramps and the landing gates.

5 Remove the padlock from the main switch (3-fig.I.02 e 4-fig.I.01).

6 Check if the emergency stop pushbutton on the electrical box on drive unit (2-fig.I.01) and on the push button box (4-fig.I.02) is switched off (button should be released).

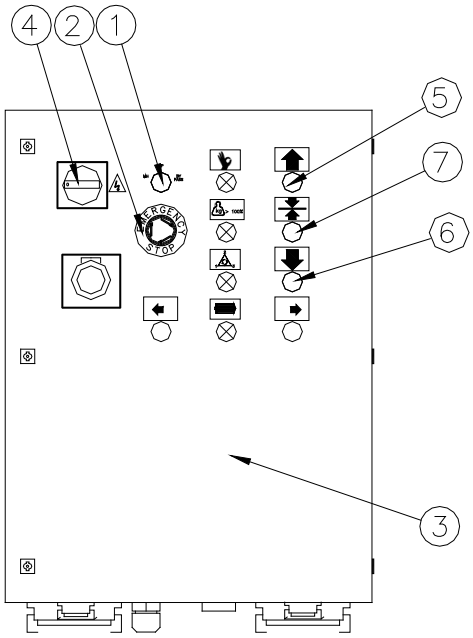


Fig.I.01 Electric panel on platform

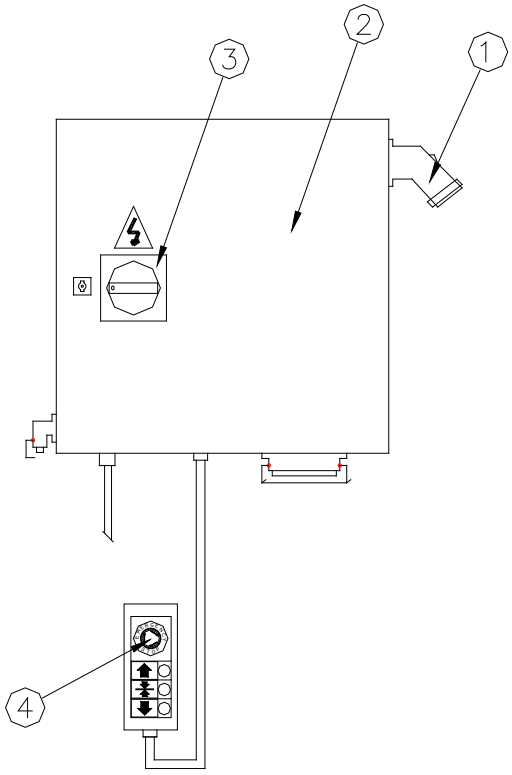
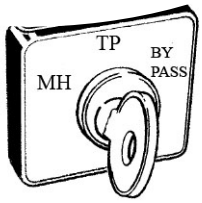


Fig.I.02 Electric base panel

I.3 Change setting, transport platform / material hoist

The machine can be commuted from transport platform to material hoist and vice versa, acting on the key switch placed on the electrical box in the platform (1-fig.I.01).
Key switch on:

‘’MH’’: function mode as material hoist (only goods)
“TP’’: function mode as transport platform (persons and goods)



WARNING! Changing the function mode determines a deep change of functionality. The commuting key must not be kept on the electrical box but it shall be kept by the responsible of the machine use in the job site.

I.4 Operation - Machine used as TRANSPORT PLATFORM

This type of operation (with the exception of the emergency stop push button) can only be applied if the machine is used as transport platform).

Only authorized and trained personnel are allowed to operate the machine.

KEY SWITCH MH / TP / BY PASS (1-fig.I.01):

- Rotate the key switch in ‘’TP’’ position.
- Controls from base and landing are automatically disabled.

WARNING! The machine can only be operated from the platform.

SECONDARY SWITCH (4-fig.I.01):
Rotate the switch to the position ‘’1’’, (be sure the same is done for the main switch on base panel (3-fig.I.02).

UP (5-fig.I.01) / DOWN (6-fig.I.01):
Push the button for the command up-down. As soon as the button is released, the platform will stop (hold to run operation).

STOP AT LANDING (7-fig.I.01):
While “Up” or “Down” button are pushed, when pushing the button “Stop Next Landing’’, the platform will stop at the next landing as it will meet (by action of landing cam). SNL push button must be pushed and released, whilst the “Up” or “Down” button continue to be held.

EMERGENCY PUSH BUTTON (2-fig.I.01):
If this button is pressed, the machine will be stopped.

STOP AT 2 m FROM THE GROUND:
The machine is supplied of a 2 meters stop. When descending the machine will stop at a height of 2 meters, following which the down button has to be pressed for further operation. A warning signal will be given.

I.5 Operation - Machine used as MATERIAL HOIST

This type of operation can only be applied if the machine is used as a material hoist.

Only authorized and trained personnel are allowed to operate the machine.

KEY SWITCH MH / TP / BY PASS (1-fig.I.01):

- Rotate the key switch in ‘’MH’’ position.
- Controls from platform are automatically disabled.

WARNING! The machine can only be operated from the base and the landings.

MAIN SWITCH (1-fig.I.03):
Rotate the main switch to position ‘’1’’.Furthermore the secondary key switch, that is placed on the electrical box on drive unit, must be rotated in the same position (4-fig.I.01).

UP (4-fig.I.03) / DOWN (6-fig.I.03):
Up/Down/Stop Next Landing operation, can be carried out:

- From the ground, using the push button box connected to the electrical box on ground frame.
- Landing gates, acting on the call landing unit (except when the machine is in the areas of 2 m from the bottom level).

Push the Up/Down button. The machine will drive to the desired direction. The button is of “self-holding type” so must be pressed and released.

WARNING! Presence of persons on platform during movement is not permitted! Only transport of good is permitted.

STOP AT LANDING (5-fig.I.03):
If the ‘’up’’ or ‘’down’’ button and subsequently the landing button is pressed, the machine will stop at the next landing. This button should only be pressed briefly.

IMPORTANT: ***When the machine is between the ground and the end of the 2 meter stop, the machine can be operated only from the base, with hold to run control.***

EMERGENCY PUSH BUTTON (3-fig.I.03):
If this button is pressed, the machine will be stopped.

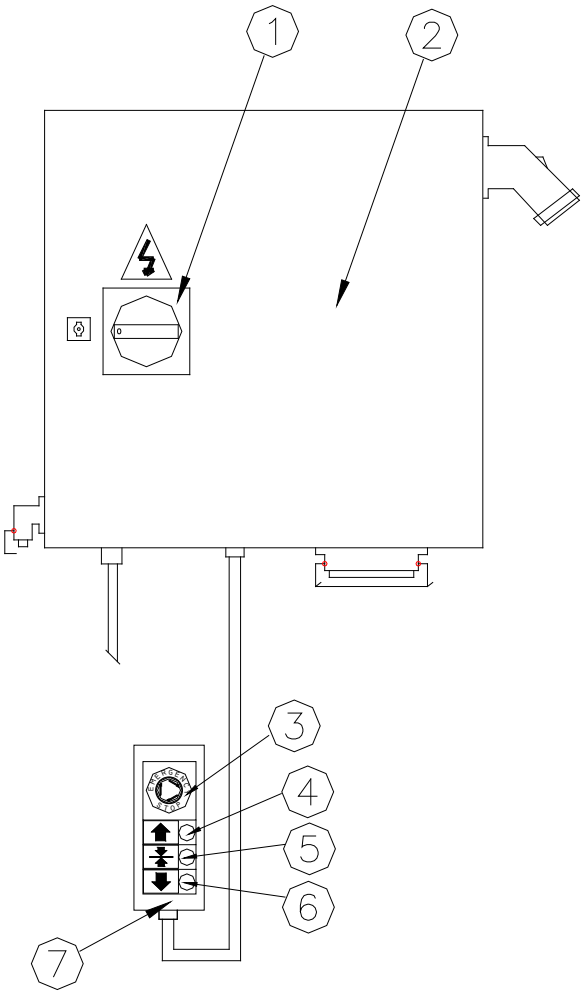


Fig.I.03 Pushbutton on Electric base panel

I.6 Loading and unloading instruction, both at the ground and landings: machine used as Transport platform

The following information only applies when the machine is used as transport platform.

I.6.1 OPENING AND CLOSING OF THE ENTRANCE GATE TO THE GROUND:

- Unlock the locking elements (2-fig.I.04) and open the foldable gate (1-fig.I.04). It is now no longer possible to operate the transport platform. The foldable gate movement activates a limit switch which interrupts the safety circuit.
- Load the machine platform. Do not exceed the maximum permitted load.

Important: follow the instructions at paragraph C.4 – Machine loading

- Close the foldable gate from the platform. When the foldable gate is fully closed, the limit switch will be released and the machine can be activated by means of the controls placed on the electrical box on the drive unit. This operation will be carried out by the operator on the platform.

I.6.2 LANDING GATE OPENING:

- Bring the transport platform to the required landing.
- Unlock the mechanical lock (5-fig.I.04) and lift the safety bar of the unloading ramp (4-fig.I.04). It is now no longer possible to operate the transport platform, since a limit switch has interrupted the safety circuit. The unloading ramp (3-fig.I.04) will open automatically, resting on the landing sill.
- The cam fitted with the ramp will activate the interlocking mechanism of landing gate, enabling the opening of the landing gate.
- Open the landing gate, by lifting the hand lock and sliding the gate panel.
- Now the unloading/loading operation can start safely.

I.6.3 LANDING GATE CLOSING:

- Carry out the unloading/loading operations, then enter the platform and close the landing gate. If the landing gate is not closed and locked, the ramp cannot be lifted up.
- Close the safety bar; the unloading ramp will close and lock automatically.
- The limit switches are released and the safety circuit is closed. The machine can be moved up or down.

I.7 Loading and unloading instruction, both at the ground and landings: machine used as Material hoist

The following information only applies when the machine is used as a material hoist.

I.7.1 OPENING AND CLOSING OF THE ENTRANCE GATE TO THE GROUND

- Unlock the locking elements (2-fig.I.04) and open the foldable gate (1-fig.I.04). It is now no longer possible to operate the transport platform. The foldable gate moving has activated a limit switch which interrupts the safety circuit.
- Load the machine platform. Do not exceed the maximum permitted load.

Important: follow the instructions at paragraph C.4 – Machine loading

- Close the foldable gate from outside. When the foldable gate is fully closed the limit switch is released and the machine can be activated by means of the controls placed on the push button box connected to the base panel. This operation will be carried out by the operator at the base.
- The operator at the ground, shall move the platform, by means of a pushbutton having ‘’hold to run’’ control, until the machine has exited the 2 meter stop cam. Then it will be possible to move the platform, by means of push button of the base or landing call box, to the desired level.

I.7.2 LANDING GATE OPENING:

- Bring the transport platform to the required landing.
- Another operator at the landing, will carry out the unloading/loading operations.
- With the landing gate closed, unlock the mechanical lock (5-fig.I.04) and lift the safety bar of the unloading ramp (4-fig.I.04). It is now no longer possible to operate the material hoist, since a limit switch has interrupted the safety circuit. The unloading ramp (3-fig.I.04) will open automatically, resting on the landing sill.
- The cam fitted with the ramp will activate the interlocking mechanism of landing gate, enabling the opening.
- Open the landing gate, by lifting the hand lock and sliding the gate panel.
- Now the unloading/loading operation can start safely.

I.7.3 LANDING GATE CLOSING

- Carry out the unloading/loading operations, exit the platform, and from the landing side, close the landing gate. If the landing gate is not closed and locked, the ramp cannot fold up from the landing sill.
- Lower the safety bar of the machine, by means of the handles placed on the side pipe of the ramp, the unloading ramp will close and lock automatically.
- The limit switches are released and the safety circuit is closed. The machine can be moved up or down.

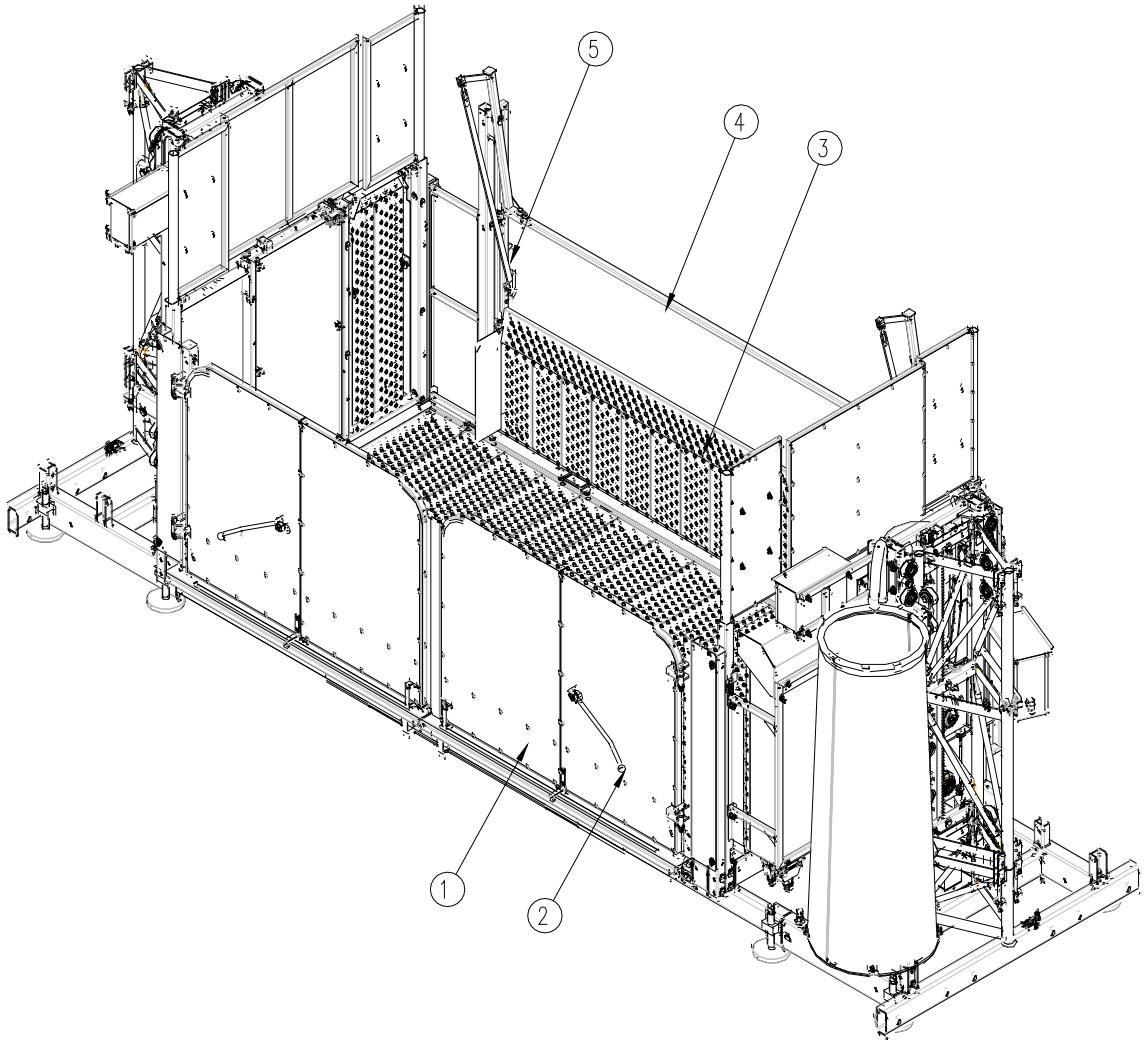


Fig.I.04 Entrance gate / Exit ramp

I.8 If the machine does not start

If the green lamp is on, (3-fig.I.05), all safety feature are OK and machine can run.

If this does not happen and the machine does not start, proceed on checking the following:

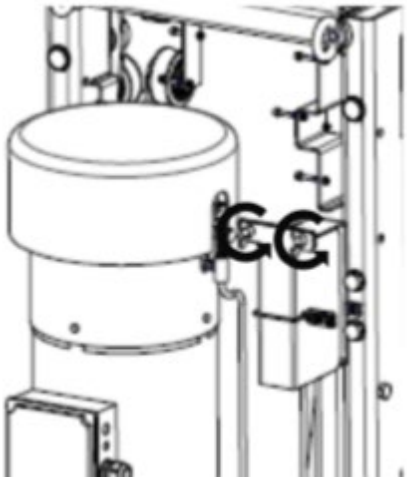
- Entrance gate and unloading ramp must be fully closed;
- All landing gate must be fully closed;
- Check that any emergency push button at the base panel, main panel and landing call box are not pressed in;
- Overrun limit switch not tripped;
- Erection platform must be fully closed;
- Safety device tripped;
- Ground enclosure correctly connected.

Check that contactors and relays inside electric panel on platform are in good operation order.
See the chapter “N”.

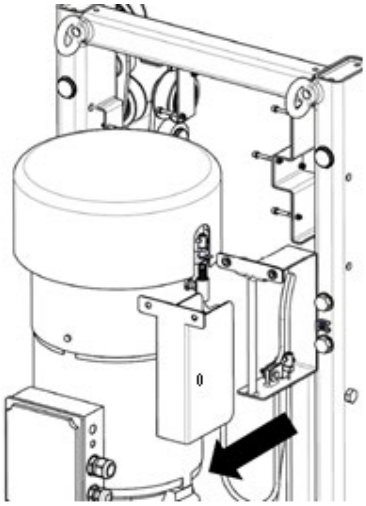
I.9 If the machine suddenly stops

If the hoist has stopped between landings due to a power failure or any other electric failure, such as blown fuses, tripped motor overload protector, etc., it can be manually lowered to the next lower landing for unloading.

- See chapter “L troubleshooting”" for finding out the possible and relative solutions.
- If the malfunction cannot be resolved, it is possible to make an emergency descent for reaching the first useful unloading level, in the following way:

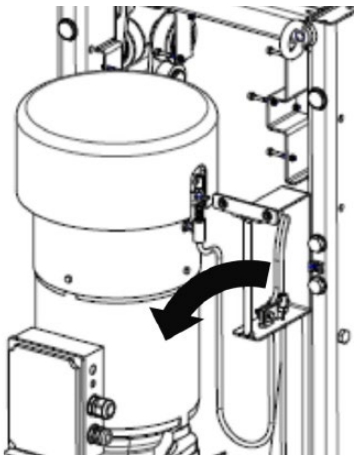


1. Unscrew the wing screws fixing the handle brake release cover plate.



2. Remove the cover plate. The action will break the seal.

IMPORTANT: the breaking of seal give evidence that brake has been used!



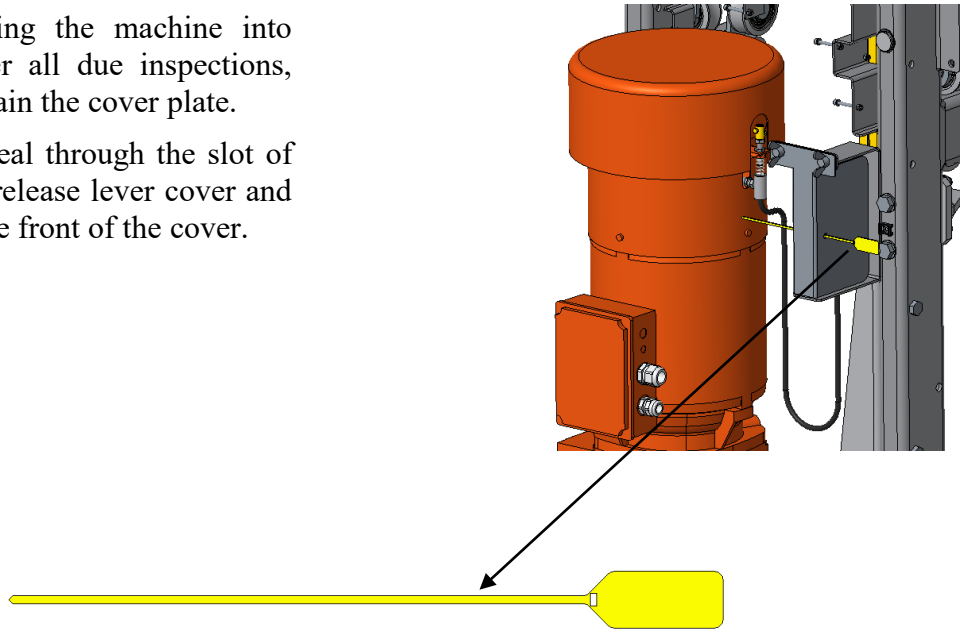
3. By actuating the handle, the machine will start the descend, until the mechanical control of levelling system in down direction will force the handle to be released and then reactivate the brake. Follow the same procedure for the other drive unit and continue until the platform was not conducted at the desired landing level.

   If more than one person is present on the platform, it is possible to perform the manual lowering simultaneously for both drive units. The mechanical control of levelling system in descent will automatically compensate the differences in speed between the two drive units, through intervention by the brakes corresponding to the faster drive unit, up to which the other drive unit does not reach it.

The speed of descent must not exceed the rated speed, otherwise the safety device will be automatically operated with consequent stop of the machine.

IMPORTANT: ***Operate the brake release device slowly and only slide short distance with maximum 1/3 of normal operating speed.***
Stop at least 1 minute every 10 meters so that the brake may have time to cool down.
Overheating the brake may cause damage, leading to a deterioration of the brake function.
Only use brake descent in power failure situations and only lower to the accessible landing level.

4. Before putting the machine into service, after all due inspections, assemble again the cover plate.
5. Put a new seal through the slot of hand brake release lever cover and close it in the front of the cover.



IMPORTANT: ***Seal must always be replaced after any operation with the hand brake release to reset the feature to the original condition.***

Set of seals is delivered with machine deliveries. Please contact Alimak representative for further supply.

I.10 If the safety device trips

When the maximum speed during a normal or manual descent is exceeded, the fail safe brake will stop the platform both electrically and mechanically.

WARNING! ***Tripping of safety device can be the result of a problem on the drive unit: immediately search for and solve the malfunctioning reason before resetting the safety device. The use of By Pass command has the only purpose to reach the base and, in safety conditions, allow the necessary investigations.***

If needed contact Alimak or its representative.

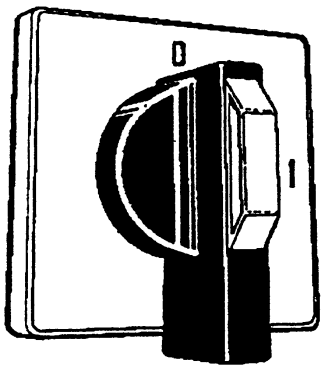
If the safety device trips, put the key switch selector on “by pass” position and make a short UP movement. In this way the device is unlocked.
The operation of reset must be done before putting the equipment in service again.
See chapter “K” for the relative instructions.

I.11 If the machine stops on the lower final limit cam

If, in case of overloading or misfunction of brake or safety device tripping, the platform has passed the final limit cam, the machine will be electrically disconnected by activation of final limit switch.

WARNING! ***If the final limit switch is activated, it can be a symptom of poor efficiency of brake system. Check the correct functioning of brake before putting the machine in service again.***

Before proceeding with the operation, switch off the power supply to the drive unit.
Check the brake and the other part that could be cause of final limit switch activation. Such operation must be done before putting the machine in service again.
Once functionality of brake is verified, switch on the supply to the machine, hold the selector in By-Pass position, and do a short UP command, in order to de-activate the final limit switch.



I.12 By-pass key switch

This key switch (2-fig.I.05) sets the machine as transport platform (TP) or material hoist (MH), or in by-pass function mode. When the lower final limit switch, or fail safe brake, or safety net device, is activated, carry out the following operations:

- Lower emergency limit switch

Put the key switch in the "by-pass" position and carry out a brief movement upwards, in order to release the final limit switch on the drive unit. From this point the machine can be used as normal.

- Fail safe brake

Before the machine is operated, carry out the "reset" of the safety device, as described in the chapter "K" of this manual.
When the safety device trips during normal operation, set the key switch in "by-pass" position and carry out a brief movement upwards, in order to unlock the safety device.

WARNING! Establish cause of safety device activation prior to resetting or moving the machine.

I.13 Overload protection

This device measures the static load of the machine.
In case of overload, a red indicator lamp (1-fig.I.05) on the electrical box illuminates. The machine can no longer be operated.
To remedy this situation, part of the load should be removed from the platform, the light will then switch off.

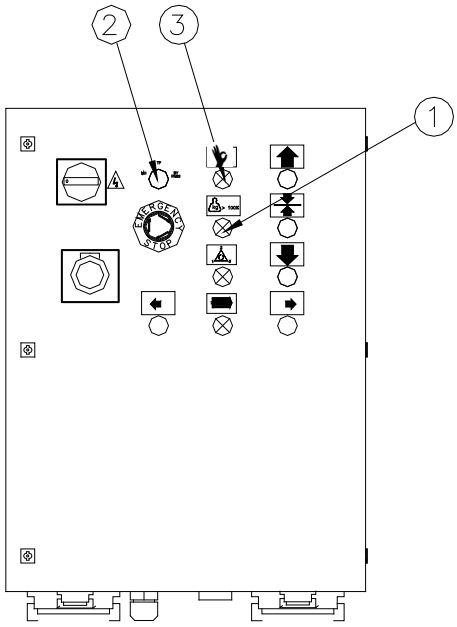


Fig.I.05 Devices into electric panel

J. DISMANTLING THE MACHINE

Ensure the maximum payload is not exceeded during dismantling procedures.

Do not dismantle the machine in wind speeds greater than 12.5 m/s.

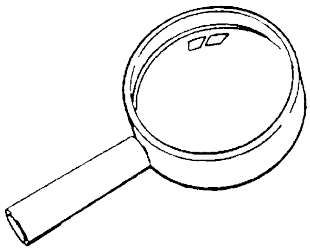
Never remove the final tie unless the mast sections above the tie have already been removed and there is no load in the cage.

Ensure no alterations to the installation have occurred and the first tie is correctly positioned.

1. Check the functions of all connections and all safety devices.
2. Set the main power switch on the main panel to ‘’TP’’, in such a way as to set to the machine to its “passengers transport” configuration.
3. Go to the top landing and start by removing the landing gates, making sure the maximum load is not exceeded when carrying the doors to ground level.
4. Remove the various landing stop cam.
5. Rotating the mast protection on the rear guardrail provides access so that the mast sections can be dismantled (see chapter “H”).
6. Dismantle the mast sections above the last tie using a crane or lifting them with two operators. Before removing the mast tie, carry to the ground level the mast sections that have already been removed.
7. Once the platform is empty, you can remove the tie.
8. Once the mast sections have been dismantled, remove wall pipes and relative wall fixing brackets (if present) and the tie frame.
9. If a tower crane is available on the construction site, the mast sections can be dismantled rapidly. In this case, the crane can hook four mast sections at a time and transport them to the ground, where they can be dismantled with ease.
10. Repeat this procedure until all the mast sections have been dismantled and leave the machine in its bottom position on the base.
11. Set the main power switch on the base panel and the secondary power switch on the cage electrical panel to position “0”.
12. Disconnect the machine power supply.
13. Dismantle the base enclosure.
14. Carefully stow away cables, electrical components, etc.

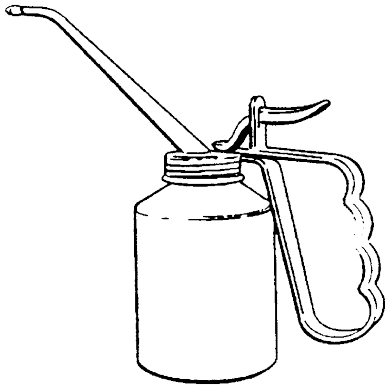
K. MAINTENANCE

K.1. General Notes



In order to avoid faults, the persons responsible for servicing this equipment must ensure the maintenance program outlined below is performed correctly within the prescribed time intervals.

Adjustments and replacements of parts must be carried out by qualified and skilled personnel.

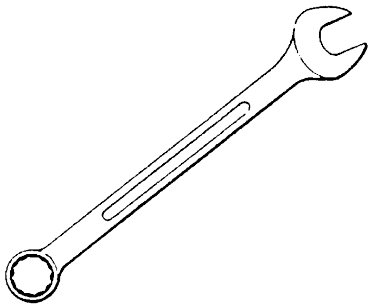


Use exclusively genuine original Alimak replacement parts!

No alteration to the equipment is permitted without approval of Alimak, since it might affect its stability, strength and performance.

K.1.1 SERVICE INTERVAL

The maintenance intervals depend on the operating hours and/or pre-set time periods.



Perform maintenance at the prescribed operating hours or at the prescribed time, whichever comes first.

K.1.2 LIST OF CHECKS

Check lists, with room for notes on the maintenance executed, will be found at the end of this manual.

Use them and keep your record of maintenance!

WARNING! ***Before performing any maintenance work, ensure the selector on the cage electrical panel is set to "TP".***

If you cannot complete any maintenance task, disconnect the machine from the power supply, lock out the power feeding breaker and apply a "Maintenance in progress" warning notice.

K.1.3 MAINTENANCE AND SERVICE SHEET

Refer to Chapter ‘’H’’ for mast screws tightening torque.

Interval	Part	Instructions
40h of operation / at least once a month.	1.Rack	Grease the rack. Refer to paragraph “K2”.
	2. Signs/ handbooks	Signs and handbooks must be clearly legible and present in the prescribed places and quantities.
	3. Safety device	Ask the user and check to find out whether the safety device has tripped or has been producing unusual noise in the period prior to the inspection.
	4. Gearbox	Check the gear box oil level and top up if necessary. If oil seals need to be replaced, this must be done only by a qualified and skilled person.
	5. Drive unit guide rollers	Check that the fixing screws are correctly tightened.
	6. Motor brake	Make sure the cage stops within the limits specified below.
	7. Cable basket	Check that the cable coils correctly in the basket. Clean the cable basket.
	8. Interlocks	Check electrical and mechanical interlocks of the platform ramps/gates and landing gates.
	9. Lubrication	Refer to paragraph “K2”. During lubrication procedures also check the rack for damage, and check the rack fixing screws. Grease the levelling cable and brake release cable to prevent water intrusion

Interval	Part	Instructions
120h of operation/at least six times/year	10. Machine components	Check the components in accordance with the following prescriptions.
	11. Mast	Visually check that all the fixing screws are correctly tightened. Check also that the mast is correctly secured to the base frame.
	12. Tie-ins	Visually check that all tie screws and clamps are correctly tightened. Check also fixings to the building structure.
	13. Overrun limit switch and cams	Check fixing and functionality.
	14. Cable guide	Check fixing, functionality and installation in accordance with the position of the cable arm.
	15. Doors, guard rails and protections	Check functionality, fixing and wear of rollers. Check also that rubber dampers are correctly positioned.
	16. Buffers on base frame	Check that buffers are correctly positioned and in good condition.
	17. Signalling and lighting equipment	Check functionality of alarm signals, lights and automatic cage stopping at landings.
	18. Rack and pinion	Check wear of the rack and pinion in compliance with the instructions in the paragraph “K6”.
	19. Levelling system	Check the function of limit switches and cams. Check the function by releasing the brakes. See "Levelling equipment" section.
	20. Scaffolding adjacent to material hoists	Make sure scaffolding, gangways, windows, balconies, etc. are not interfering with the movement of the load platform Inform the building site foreman of all anomalies.
	21. Lubrication	Refer to paragraph “K2” below.

Interval	Part	Instructions
400h of operation/at least four times/year	22. Guide rollers	Check wear of the rollers and gaps of the bearings. If necessary, rollers must be replaced by qualified and skilled personnel.
	23. Electric motor	Clean the ventilation fan if necessary.
	24 Brake disk	Check that gap between electromagnetic coil and rotating disk is within the permissible limits shown in this handbook.
	25. Lubrication	Refer to paragraph “K2” below.
	26. Contactors	Check contact between the contactor blades.
	27. Overload device	Perform an overload test on the machine
600h of operation / at least twice a year	28. Safety device	Test the safety device in accordance with the instructions given in the “Drop test” heading.
1000h of operation / at least once a year	29. Electrical system	Check all cables, cable clamps, and connections.
	30. Motor overload protection	Check that the protection installed is compatible with the nominal current shown on the motor rating plate.
	31. Deformation / mechanical damage	Inspect the mast tubular sections, ties, floor surfaces. Check for the presence of deformation or mechanical damage.
	32. Mast	Visually check that all the fixing screws are correctly tightened. Check also that the mast is correctly secured to the base frame.
	33. Corrosion, damage and wear	Inspect components for corrosion and wear of bearings and of dampers: this inspection must be performed by a competent and authorized person. A specific Alimak method is available for checking of the condition of the internal walls of the tubular profiles: consult the Alimak representative.
Once a year	34. General Check	Ask the Alimak representative to have the machine checked over.
2000h of operation / at least once/ 2 years	35. Change oil	Refer to paragraph “K2” below.
Once every 8 years	36. Safety device	Replace Safety Device. Contact the Alimak representative.

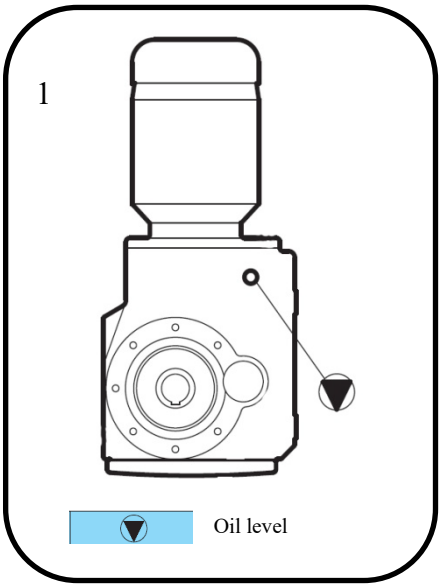
K.2. Lubrication

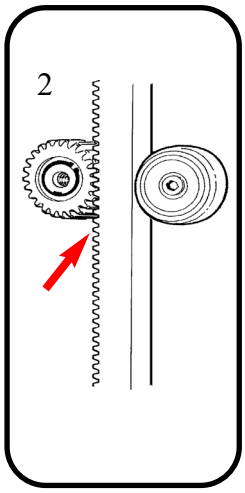
INTERVAL	LUBRICATION POINT	LUBRICANT	VOL.	INSTRUCTIONS
40 h of operation or at least once/month	1. Gearbox oil	See table below		Check level and top up if necessary.
	2. Rack	Alilube Part No.3001 396-201		Lubricate during descent run and suspend use of the material hoist for 2-3 hours in order to allow the spray to coagulate.
	3. Power cable, cable basket, cable arm and guides.	Ali-low-fric compound Part No. 9052045-000		Grease contact and sliding surfaces and inside the cable basket too.
	4. Sliding guides of gearmotor plates	Spray grease		Grease contact and sliding surfaces.
	5. Mechanical interlocks and pivots.	Grease		Grease contact and sliding surfaces.
	6. Landing gates	Grease		Grease contact and sliding surfaces.
	7. Mechanical levelling and cables	Lubricating oil, grease		Grease contact and sliding surfaces, grease cable to prevent water intrusion.
	8. Brake release cable	Grease		Grease cable to prevent water intrusion.
2000 h of operation or at least once/2 years	9. Gear box	Refer to table of lubricating oils	**6.7 l**	Change the oil.

Use only the lubricants recommended by Alimak. If this is not possible for any reason, seek advice from Alimak or the Alimak representative.

Lubricant type	Ambient temperature	BP	Castrol	FUCHS	KLÜBER LUBRICATION	Mobil	Shell
Mineral Oil	**ISO VG 220 -10...40°C**	**Energol GR-XP 220**	**Alpha EP 220 Alpha SP 220 Optigear BM 220 Tribol 1100/220**	**Renolin CLP 220 CLP 220 Plus**	**Klüberoil GEM 1-220**	**Mobilgear 600 XP 220 Mobilgear XMP 220**	**Omala S2 G 220**
	ISO VG 100 -15...25°C	Energol GR-XP 100	Alpha EP 100 Alpha SP 100 Optigear BM 100 Tribol 1100/100	Renolin CLP 100 CLP 100 Plus	Klüberoil GEM 1-100	Mobilgear 600 XP 100 Mobilgear XMP 100	Omala S2 G 100
Synthetic Oil (polyglykol)	ISO VG 220 -25...80°C	Enersyn SG-XP 220	Alphasyn GS 220	Renolin PG 220	Klübersynth GH 6-220	Glygoyle 220	Omala S4 WE 220
Biodegradable oil	ISO VG 220 -5...40°C	-	Tribol Bio Top 1418/220	Plantogear 220 S	Klübersynth GEM 2-220	-	Naturelle Gear Fluid EP 220
Food grade oil 1)	ISO VG 220 -25...40°C	-	Optileb GT 220 Tribol FoodProof 1800/220	Geralyn AW 220 Geralyn SF 220	Klüberoil 4 UH1-220N Klübersynth UH1 6-220	Mobil SHC Cibus 220	Cassida Fluid GL 220

This table presents comparable lubricants from various manufacturers. The brand of the lubricant can be changed with respect to the table remaining unchanged, the range of viscosity and type of lubricant. In case of use of a different type or brand over to the table, contact Alimak in advance for approval. Otherwise, the proper operation of the gearbox is not guaranteed and will not be covered under warranty.


1
Oil level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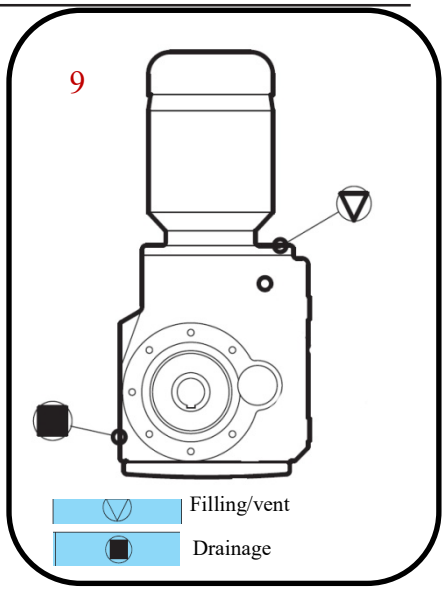
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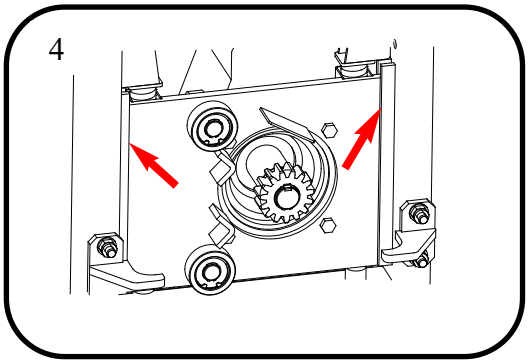
Filling/vent
Drainage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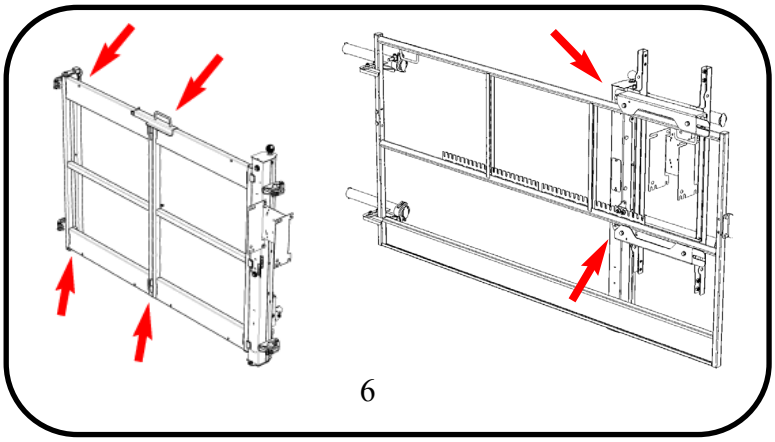
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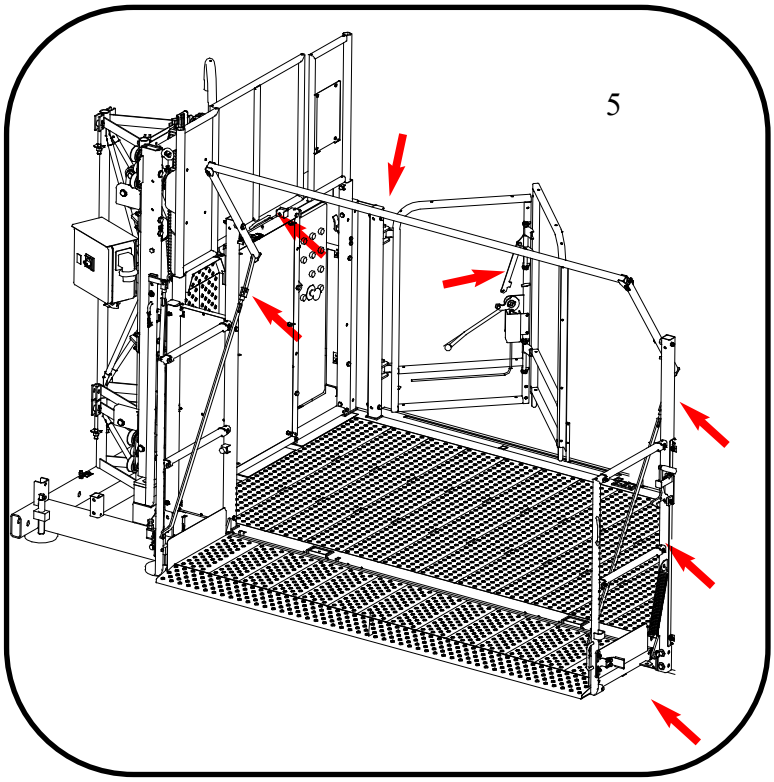
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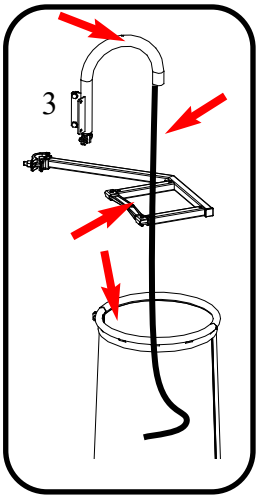
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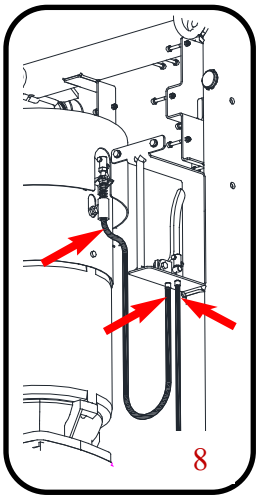
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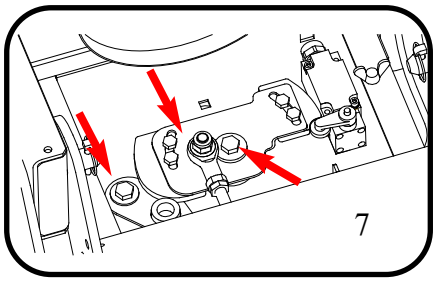

7

WARNING! ***Lubricants are harmful in contact with the skin. Always wear suitable protective equipment. Refer to specific oil for details. Possible risk of irreversible effects.***

WARNING! ***Falling hazard. Always use the safety harness connected to the goods hoist lifting hook when lubricating the various parts of the machine. Risk of serious personal injury or death.***

K.3 Machine stopping level

If the distance between the stopping positions of the unloaded machine and the fully loaded machine exceeds 50 mm, have the motor brake checked over by a skilled and qualified person.

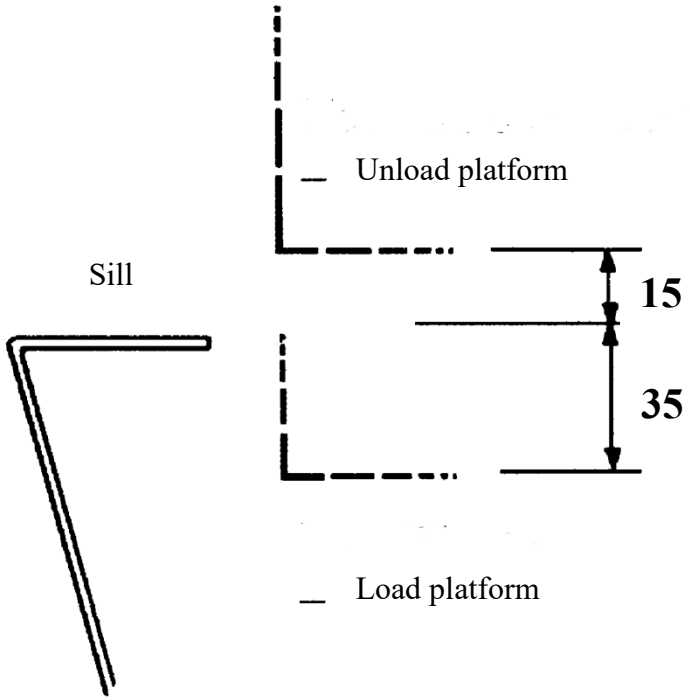


Fig.K.01 Machine braking

K.4. Motor brake adjustment

K.4.1. MOTOR BRAKE

1 Magnetic part
2 Armature
3 Brake disk
4 Driving hub
5 Fixing screw
6 Locking nut
7 Manual release lever
8 Bake lining protection
9 Thrust springs
10 Fan cover

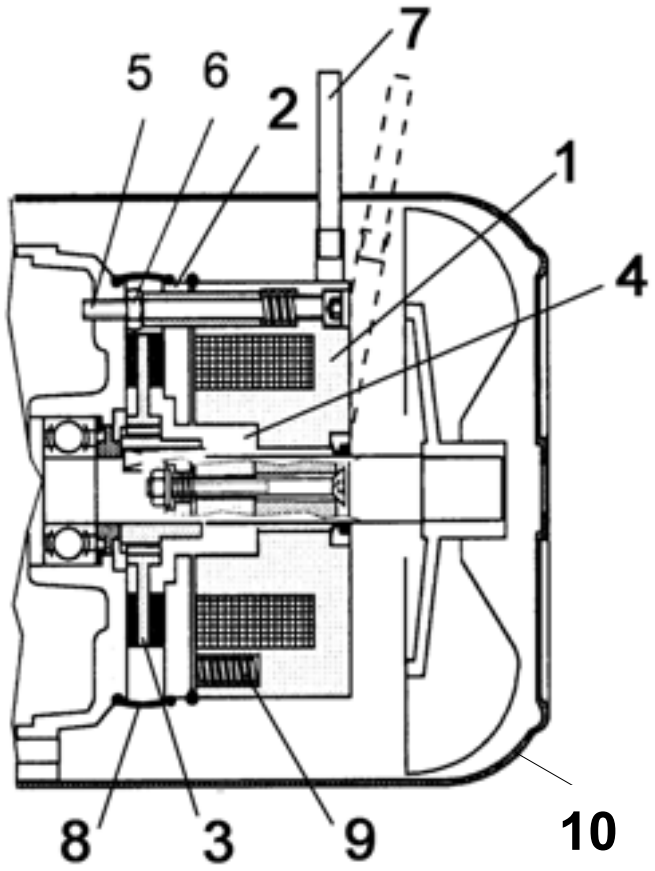


Fig.K.02 Motor brake

WARNING ***Disconnect the brake and unload the machine completely before performing any work on the brake.***

The machine must be brought to its fully down rest position on the base frame buffers before proceeding with brake checking operations.

K.4.2. INSPECTING THE BRAKE

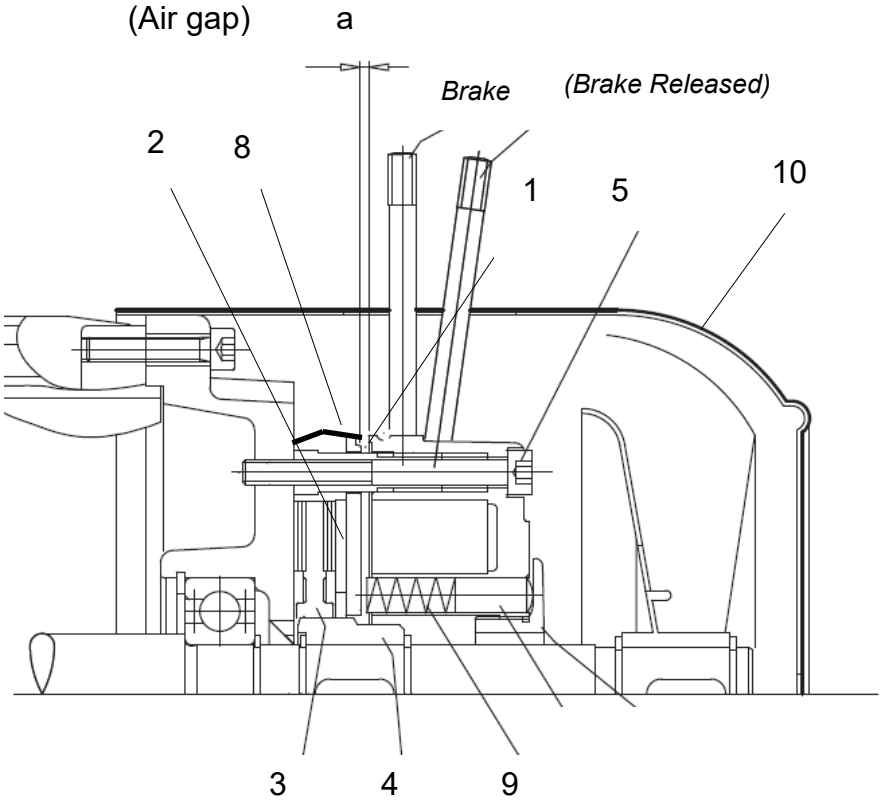


Fig.K.03 Brake Disk

1. Disconnect the motor from the power supply and lock off to prevent inadvertent starting.

2. Remove the motor fan cover (10).

3. Remove the brake lining protection (8).

4. Measure the thickness of the brake disk (3) using a sliding caliper:
   if the value is < 11.5 mm, the brake must be replaced.

K.4.3. AIR GAP ADJUSTMENT

Measure air gap “a” between magnetic part (1) and armature (2) (see fig. K-03), using a feeler gauge.

Compare the air gap measurement obtained with the maximum permissible value a_{max} = 1.0 mm. If a > 1.0 mm, adjust the air gap to restore it to the minimum measurement of a_{min} = 0.3 mm, working in compliance with the following instructions.

1. Adjust counter-nuts (6) and screws (5).
2. Check the air gap (a) with a feeler gauge; the minimum value must be 0.3 mm.
3. If the difference between the measured air gap and the value (0.3 mm) is too large (the air gap must always be less than 1.0 mm), repeat the adjustment from step “1”.
4. When all the values are within the prescribed settings refit the parts removed previously.

Air gap (a)		Brake lining thickness
Min.(mm)	Max.(mm)	Min (mm)
0.3	**1.0**	**11.5**

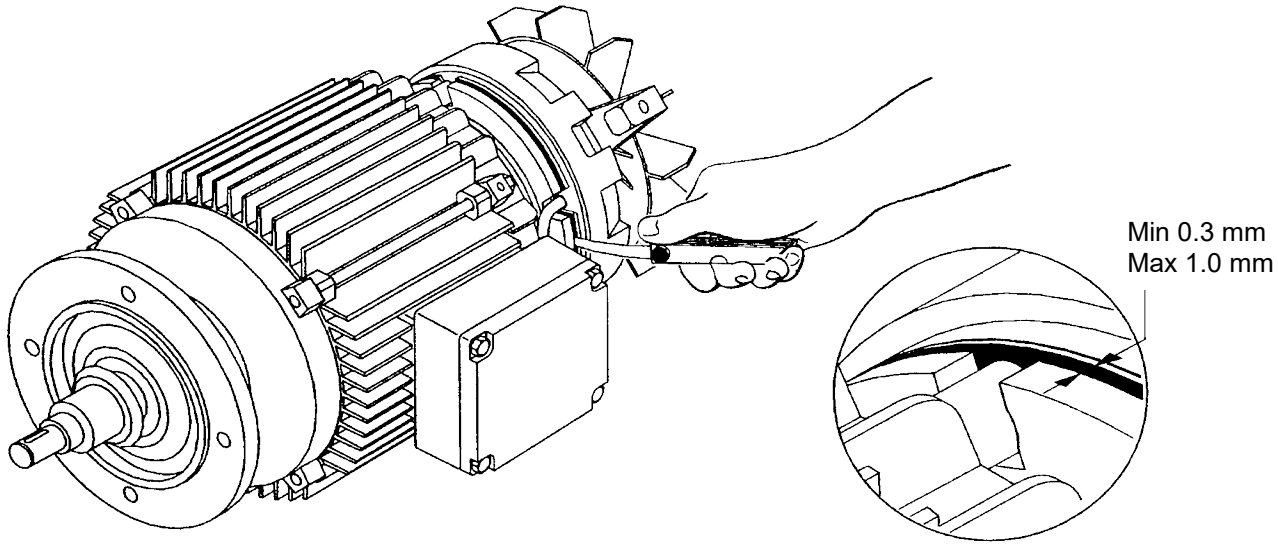


Fig.K.04 Air gap measurement

K.5. Safety device

K.5.1. GENERAL NOTES

The safety device is set up by the manufacturer at the correct operating speed.

The safety device is set up by the manufacturer. The safety device factory setting must not be altered.

K.5.2. OPERATIONS

When the maximum descent speed is exceeded, centrifugal weight (1-fig.K05) swings outwards and engages with cam (2-fig.K05).

The cam is placed on the internal surface of safety device brake drum (3-fig.K05). The brake disk then starts to rotate.

The brake disk is kept in position by brake lining (4-fig.K05) which acts to brake the rotation of the disk.

The rotation of disk drags also the cover (5-fig.K05), which activates the limit switch that disconnects the machine power supply.

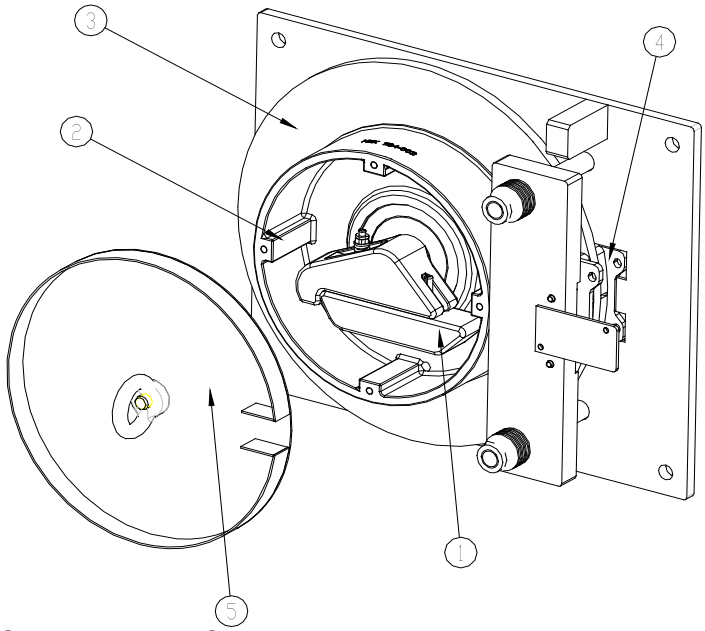


Fig.K.05. Safety device

After the safety device trips it is essential to find the cause. Make sure the problem that caused the trip is solved before resetting the safety device.

If serious malfunctions are encountered, consult your dealer without delay.

K.5.3. DROP TEST

To be carried out by trained service personnel.

A drop test with full load shall be carried out for each new installation and then at least twice a year – or in accordance with local safety regulations.

No persons must be in the area under the machine during execution of the drop test.

Proceed as follows:

1. Connect the drop test push button box (fig K.07) using the socket inside the main electrical panel (1-fig K.06).
2. Set key selector (2-fig K.06) to the "TP" position.
3. Load the platform with rated load, evenly distributed.
4. Push UP button until the machine has ascended by approximately 5 metres.
5. Press the "test" push button on the control pendant. The motor brakes will be released and the machine will start to drop. Once it has reached operating speed after 1.5 m the safety device will trip thus blocking the machine.

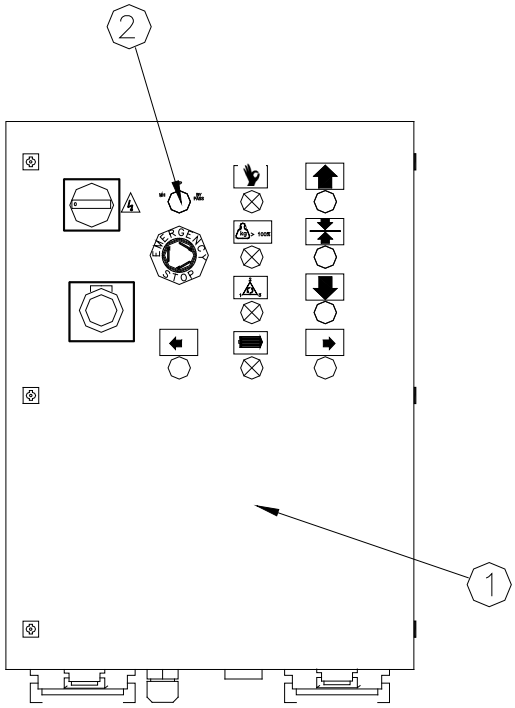


Fig.K.06. Main panel

As soon as the first safety device in one of the drive unit trips, immediately release the "test" push button removing the finger from it.

6. If the safety device fails to trip release the "test" pushbutton on the pendant immediately. Contact the after-sales assistance service or your local agent.
7. Reset the safety device Refer to the instructions given in the heading "Resetting the safety device".

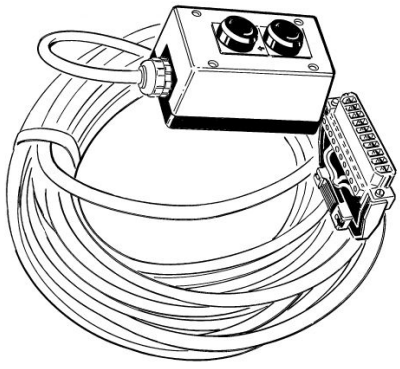


Fig.K.07. Drop Test Push Button

K.5.4. RESETTING THE SAFETY DEVICE

Before resetting the safety device, find the cause that resulted in its tripping.

1. Connect the drop test push button box (fig K.07) using the socket inside the main electrical panel (1-fig K.06).

2. Set key selector (2-fig K.06) to the “TP” position.

3. Push UP button until the machine has ascended by approximately 0.5 metres. Now the tripping mechanism (1-fig. K 05), returns to the original position.

4. Bring the machine to the ground level acting on the drop test device pushing “test” button.
   Carry out brief descent run (30/40 cm) pay attention do not reach safety device tripping speed.

5. Unscrew eyebolt (1-fig.K.08) from the safety device and turn disk cover (2-fig.K.08) until the head of the limit switch is free (3-fig.K.08). This action serves to reconnect power to the machine.

6. Retighten eyebolt (1-fig.K.08).

7. Disconnect the drop test control box from the main electrical panel.

8. The machine is now ready to resume normal operation.

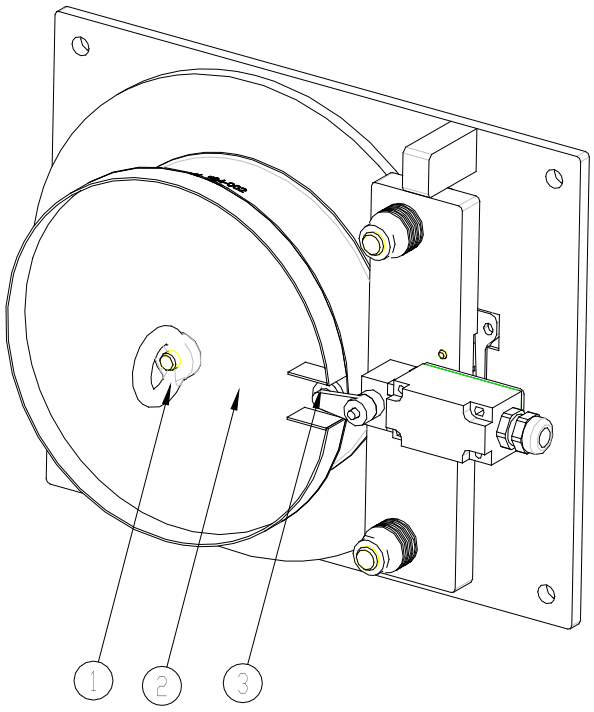


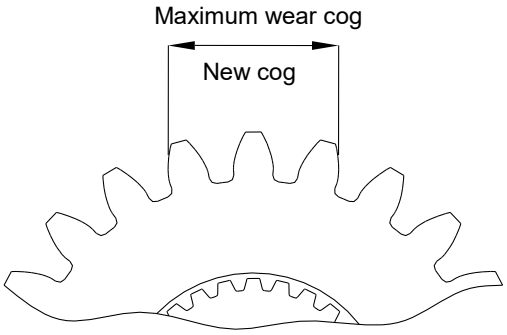
Fig.K.08. Resetting the safety device

K.6. Wear limits

K.6.1. PINION

Check the wear with the aid of sliding calliper.
New gear: **37.8 mm**

Max wear gear: **36.5 mm** (change the cog)

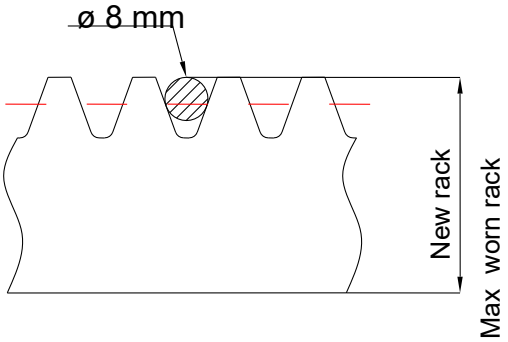


K.6.2. RACK

Measure with a ø 8 mm gauge rod and sliding calliper.

New rack: **39.9 mm**

Max wear rack: **38.2 mm** (change the rack)

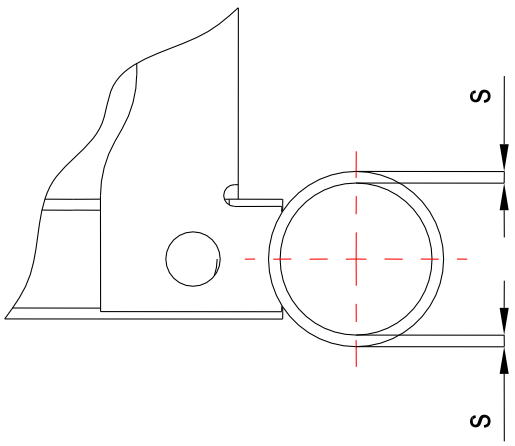


K.6.3. MAST PIPES

Checking of wear and corrosion of the mast sections is carried out by means of an ultrasonic tester.
The bottom mast section must also be thoroughly checked.

New mast pipes (s) = **3.6 mm**

Max. wear mast pipes (s) = **3.1 mm**, approximately 15% reduction of wall thickness.



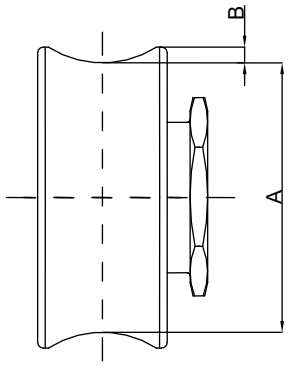
If during the inspection of the platform to verify wear values different the from above mentioned, replace immediately worn parts.

K.6.4 GUIDE ROLLERS

Wear limits

Measure with sliding calliper.

Dimensions	New roller	Worn-out roller (mm)
A	ø 71.5	min. ø 67.5
B		min. 2



Note that the "wear" on the roller face must be equal – all around.

K.7. Overload protection test

K.7.1 TEST

The machine must be stopped at ground level and levelled.

Proceed as follows:

1. Load the platform evenly distributed with:

   2000 kg (TPL 2000 e 2000D)
   1800 kg (TPL 1800).

   - The red LED on the electrical panel (1-fig.K.09) of the machine must not illuminate.

2. Load the platform evenly distributed with:

   2400 kg (TPL 2000 e 2000D)
   2160 kg (TPL 1800).

   - The red LED must illuminate.

If, in such situations, the LED fails to illuminated, perform the calibration procedure as the next section.

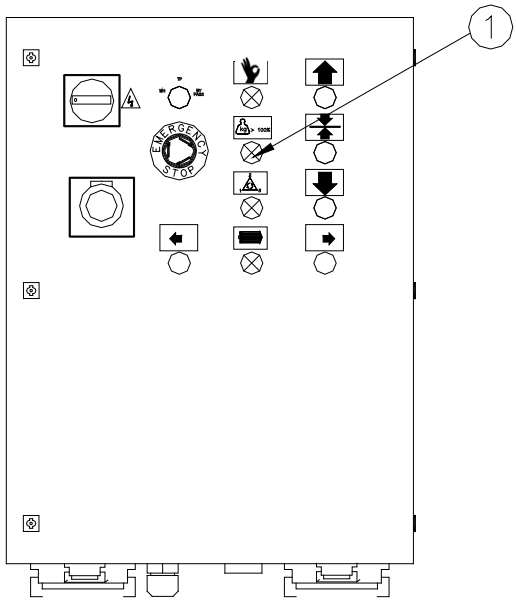


Fig.K.09. Platform electrical panel

K.7.2 CALIBRATION

1 Make sure that guide plates of the machinery plate have been greased on both drive unit of the machine otherwise provide to grease (see lubrication K.2).

2 Load the machine evenly distributed on the platform with the rated load depending on the configuration (2000 kg for TPL 2000D and TPL 2000 – 1800 kg for TPL 1800).

3 Loosen the overload cams (1 fig.K.10) so that the corresponding limit switches (2 fig.K.10) are not activated on both drive unit.

4 Proceed on a drive unit at a time. Adjust the overload cam in order to activate its overload limit switch (hear the click of activation).

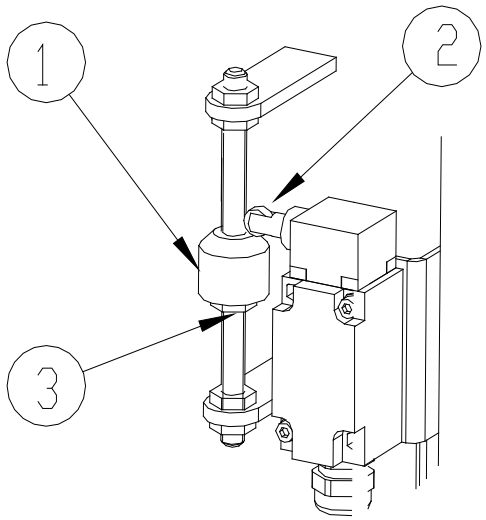


Fig.K.10 Overload cam and limit switch

The overload alarm is activated: the red lamp on the main panel will turn on and the horn will be activated by emitting a continuous sound.

At this point, turn back the overload cam of 1+1/2 turn and lock it with the nut (3 K fig 10). The alarm will turn off the overload: red lamp on the main panel will turn off and the horn will stop ringing.

5 Make the adjustment given in point 3 on the other drive unit.

6 Check that the machine can move up and down with the rated load.

7 Add 20% of the rated load evenly distributed on the platform (400 kg for TPL2000D and TPL2000 and 360 kg for TPL1800) and make sure that the overload alarm is activated (the lamp on the main panel will turn on and the horn will emit a continuous sound) and that it is not possible to move the machine.

8 If the verification of the overload functioning was unsuccessful, re-start the calibration again from point 1, adjusting the overload cam.

L. TROUBLESHOOTING

Problem	Cause	Solution
MOTOR		
Motor fails to start	Power contactor has opened	Check contactor and adjust as necessary
	Motor contactor not functioning	Inspect motor contactor and eliminate fault
Motor starts with difficulty	Motor input voltage too low	Check power supply and restore to nominal values
	Excessive voltage drop at start-up	Unsuitable power feeding cable Power feeding cable too long
	Contactors • KG, KS, KD, K1 and K4 (high speed TPL); • KG, KS e KD, K3 and K6 (low speed TPL); Are activated but machine fails to start	Motor brake locked – repair brake Faulty brake
Excessive motor noise or anomalous power draw	Motor windings fault. Rotor is shorting to stator	Fit new motor
Motor overheating (motor fault red warning light on)	Motor connected to unsuitable power feeding network	Connect correctly
	Power input voltage fluctuates more than 5% beyond nominal value	Ensure mains voltage is within nominal values
	Insufficient flow of cooling air, air flow obstructed	Ensure air flow over motor is sufficient
	Fault contacts on power feeding cables (intermittent operation with just one phase)	Make sure all power feeding contacts are good
Fuses blown or automatic circuit breaker tripping continuously .	Short circuit on power feeding cables	Eliminate short circuit. Call an authorized electrician
	Motor short circuit	Eliminate short circuit. Call an authorized electrician
	Bad connection of power feeding cables	Make good contact

Problem	Cause	Solution
BRAKE		
Brake is not released.	Incorrect voltage to rectifier	Brake power input must be within voltage values shown in the rating plate
	Faulty rectifier	Fit new rectifier
	Insufficient air gap	Adjust air gap
	Excessive mains voltage drop (max. permissible voltage drop value is 5%)	Ensure mains voltage is within nominal values.
Motor fails to brake	Brake disk excessively worn. Adjuster nuts are sticking due to excessive air gap	Fit new brake disk and/or set up brake correctly
	Manual brake release incorrectly adjusted	Position adjuster nuts correctly.
Delayed braking	Loss of exclusively single-phase power input	Connect brake to a circuit breaker that opens single-phase supply and AC supply simultaneously

Problem		
RECTIFIER		
Functioning at insufficient voltage value	Use a portable tester to check the DC voltage between terminals (+) and (-) and AC voltage between the terminals marked with the relevant symbols	
Rectifier not connected	Test using an ohmmeter or DC tester	
	Check rectifier diodes to verify circuit continuity between terminals marked on diode	
	Diodes should prevent the passage of current in one direction: check this condition and then invert the positions of the tester probes to check that current flows in the opposite direction. An impedance is created that can be measured in the current flow direction. This value is produced by the diodes threshold voltage	

Problem	Cause	
MACHINE OPERATION		
Safeties open circuit (GREEN INDICATOR OFF)	KG contactor not functioning	Check: Safeties circuit between terminals 114 and 118 Emergency stop pushbutton Contactor control circuit, door limit switch, mast presence, erection ramp
Phase sequence error (BLUE INDICATOR ON)		Use screwdriver to invert phase sequence by means of phase inverter control on power feeding plug in base electrical panel
Machine overloaded (RED OVERLOAD INDICATOR ON)		Remove excessive load from cage

Consult your dealer's assistance service or the Alimak assistance service for any faults not covered by the above table.

M ENVIRONMENTALLY FRIENDLY DISPOSAL OF THE MACHINE

M.1 General notes

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

The possibilities which then present themselves include:

- Part-exchange for a new machine.
- Disposal by a recycling facility.
- Demolition.

M.2 Discarding the machine

Contact local authorities for information about how to dismantle the product properly. By ensuring that it is handled correctly, you contribute to preventing possible environmental and health problems.

Before and during dismantling, complete the following steps:

- Drain the oil out of the reduction gearbox and dispose of this via an authorized facility.
- Remove any usable parts.
- Dismantle glass.
- Dismantle and sort of electric and electronics, such as cables, sensors, etc.
- Dismantle and sort rubber and plastic details such as hoses, seals and bushings.
- Separate aluminium components.
- Dispose of the remaining via waste disposal facility.
- Recycle components – material where facilities exist.

N CHECK LIST

N.1 Controls at assembly

The following form must be attached to the instruction manual of the machine as an original copy. Each time a new installation is carried out, the form must be filled in (on the copy) by the person/s adequately trained in the correct use and maintenance of the platform. The name and address of the installer/s must also be written on the copy. Once copy of the above form, filled in correctly in all its parts, must be consigned to the supervisor of the job site where the platform is installed and another cop consigned to the owner of the platform.

CONTROLS AT ASSEMBLY – CHECK LIST

The assembly has to be carried out by trained/authorized personnel only.

Please mark with a cross to the right to confirm that:

1 Visual inspection is carried out regarding presence & correctly positioning and installation of machine components: OK

- Mast elements ☐
- Rails, entrance /exit ramps / gates ☐
- Baseframe ☐
- Drive unit ☐
- Base panel ☐
- Main panel ☐
- Platform accessories ☐

2 Visual inspection is carried out regarding mechanical damages on structural parts such as:

- Baseframe ☐
- Platform ☐
- Drive unit and gearmotors ☐
- Mast elements ☐
- Rails, entrance /exit ramps / gates ☐
- Tie - in ☐

3 The installation is made according to current instruction manual as it pertains to:

- Base foundation ☐
- Rails, entrance /exit ramps / gates ☐
- Tie-in ☐
- Landing gates ☐

4 The load sign agrees with the actual installation (see Instruction Manual). ☐

5 All signs are readable (see Instruction Manual). ☐

6 Mast protection is installed. ☐

7 Service and maintenance are carried out according to current Instruction Manual. ☐

8 Drop test is carried out – where applicable. ☐

9 Test run and inspection are performed on:

- Up & final limit switch. ☐
- Down & final limit switch. ☐
- Stop next landing cam ☐
- Emergency Stop button ☐
- Gates/ramps electrical interlocks. ☐
- Horizontal levelling system ☐
- No obstacles within the working area of the platform.
  (There MUST NOT be any obstacles) ☐

10 Test emergency lowering is carried out. ☐

11 Check that:

- There is an Instruction Manual/Operator's Manual. available for the operators/users. ☐
- Sliding brake lever is present ☐

12 Check that the base area is suitably fenced with a sign "Working Area". ☐

13 Check that the user(s) has (have) received information about safety and operating instruction, service and maintenance. ☐

N.2 Periodical Maintenance Check

Interval	Part	Data						Comments
Interval nà1 N° 1 Every 40 h /once a months	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8							
	9							
Interval N° 2 Every 120 h / 6 time a years	10							
	11							
	12							
	13							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
Interval N° 3 Every 400 h / 4 time a year	22							
	23							
	24							
	25							
	26							
	27							
Interval N° 4 Every 600 h / 2 time a year	28							
Interval N° 5 Every 1000 h /once a month anno	29							
	30							
	31							
	32							
	33							
Every year	34							
Interval N° 6 Every 2000 h / once/ 2 years	35							
Every 8 years	36							

Working hours							

Inspector's sign							Note:

APPENDIX

Test report

Dynamic and static test according to the Machine Directive before taking the machine into service.

Dynamic and static test with regard to the lift equipment's capability and mechanical stability.

The following tests have been successfully performed.

STATIC TEST

Static test means the test during which the lifting machinery is first inspected and subject to a force corresponding to the maximum working load multiplied by the appropriate static test coefficient (1.25) and then re-inspected once the said load has been released to ensure that no damage has occurred.

Actual load .....

Observation .....

DINAMIC TEST

Dynamic test means the test during which the lifting machinery is operated in all its possible configurations at the maximum working load multiplied by the appropriate dynamic test coefficient (1.10) considering the dynamic behaviour of the lifting machinery in or- der to check that it functions properly.

Actual load .....

Observation .....

Issuer .....

Date .....

Place …….

CE declaration form

2031011400C

CE	GB	I	E	F
	EC DECLARATION OF CONFORMITY	DICHIARAZIONE DI CONFORMITÀ CE	DECLARACION DE CONFORMIDAD CE	DÉCLARATION DE CONFORMITÉ CE
	Individual machine	Singola macchina	Máquina individual	Machine isolee
Alimak Manufacturing S.L. C/ Los Ángeles, 88 – Nave 1 50198 La Muela, Zaragoza - Spain	We Manufacturer	Noi Costruttore	Nosotros Fabricante	Nous Fabricant
Alimak Manufacturing S.L. C/ Los Ángeles, 88 – Nave 1; 50198 La Muela, Zaragoza - Spain	Legal person keeper of technical file in EU	Persona giuridica detentricedel fascicolo tecnico in EU	Las personas jurídicas Guardián del expediente técnico en EU	Les personnes morales Gardien de dossier technique in EU
	declare that the product	dichiariamo che il prodotto	declaramos que el producto	déclarons que ce produit
TPL 2000/ TPL 2000D/ TPL 1800	Machine name	Nome della macchina	Nombre de la máquina	Désignation de la machine
Material Hoist / Montacarichi da Cantiere (MH) Transport Platform / Piattaforma di trasporto (TP)	Machine type	Tipo di macchina	Tipo de máquina	Type
{SerialNo}	Serial or batch No.	Numero di matricola	Número de serie o de lote	Numéro de série ou de lot
7,6 (TP)/ 15,2 (MH)	Power (kW)	Potenza (kW)	Potencia (kW)	Puissance (kW)
ALIMAK	to which this declaration relates, is in conformity with the requirements of the Council Directive: **2006/42/CE (MD), 2014/30/EU (EMC)**	a cui questa dichiarazione si riferisce, è conforme ai requisiti della Direttiva del Consiglio: **2006/42/CE (MD), 2014/30/EU (EMC)**	a que se refiere esta declaracion,es conforme a los requisitos dela Directiva del Consejo: **2006/42/CE (MD), 2014/30/EU (EMC)**	que concerne cette déclaration, est en conformité avec les exigences de la Directive du Conseil: **2006/42/CE (MD), 2014/30/EU (EMC)**
2000/14/EC [D.Lgs. 262/2002] (MH)	Other directive applicable (procedure according annexed V)	Altra direttiva applicabile: (procedura di cui all'allegato V)	Otras directiva aplicable (procedim. establecido en el anexo V)	Autres directives applicables (procédure conform. à l'annexe V)
EN12158 (MH), EN 16719 (TP)	Harmonized standards applied	Standard armonizzati applicati	Normas armonizadas aplicadas	Normes harmonisées appliquées
	National standards applied	Standard nazionali applicati	Normas nacionales aplicadas	Normes nationales appliquées
92 db(A) , (MH) 95 db(A) , (MH)	Measured acoustic power level LwA Guaranteed acoustic power level LwA	Livello di potenza sonora misurato LwA Livello di potenza sonora garantito LwA	Nivel de potencia acústica medido LwA Nivel de potencia acústica garantizado LwA	Niveau de puissance acoustique mesurée LwA Niveau de puissance acoustique garanti LwA
IMQ - 0051	Name of notified body	Nome dell'Ente di Notifica	Nombre de la entidad colaboradora notificada	Nom de l'organisme notifié
IMQ CN 390 DM rev.3	Number EC type examination certificate	Numero del Certificato di Tipo EC	Número de examen de tipo EC	Numéro de l'attestation d'examen Européen de type
Via Quintiliano, 43 – 20138 Milano - Italy	Address of notified body	Indirizzo dell'Ente di Notifica	Dirección de la entidad colaboradora notificada	Adresse de l'organisme notifié
Sergio Serrano, Managing Director	Name and position of the issuer	Nome e posizione del dichiarante	Nombre y cargo del emisor	Nomse et fonction de l'émetteur
	Signature of issuer	Firma del dichiarante	Firma del emisor	Segnature de l'émetteur
La Muela, ***{DateDoc}***	Place and date of issue	Luogo e data di emissione	Lugar y fecha de la emisión	Lieu et date d'émission

S	D	NL	P	DK	G
EG-DEKLARATION OM ÖVERENSSTÄMMELSE	EG KONFORMITÄTS-ERKALÄRUNG	EG VERKLARING VAN OVEREENSTEMMING	DECLARAÇAO DE CONFORMIDADE CE	EF OVERENSSTEMMELSES-ERKLÆRING	ΔΗΛΩΣΗ ΣΥΜΜΟΡΦΩΣΗΣ ΣΕ ΟΔΗΓΙΑ ΕΥΡΩΠΑΙΚΗΣ ΚΟΙΝΟΤΗΤΑΣ
Individuell maskin	Gesamtmaschine	Individuele machine	Máquita individual	Individuel maskine	Μεμονωμενο Μηχανημα
Vi	Wir	Wij	Nós	Vi	Εμεις
Fabrikant	Hersteller	Fabrikant	Fabricante	Fabrikant	κατασκευαστής
Jur person vårdare av kravspecifikationen i EU	Juristische Person Halter von technischen Unterlagen in der EU	Rechtspersoon keeper van technisch dossier in EU	Pessoa colectiva guarda da documentação técnica na UE	Juridisk person målmanden fra teknisk dossier i EU	Νομικό πρόσωπο κάτοχος του τεχνικού φακέλου στην ΕΕ
Bekräftar harmed att maskinen	erklëren, dass das Produkt	Verklaren dat het produkt	Declaramos que o produto	Enklærer at produktet	δηλωνουμε οτι το προιον
Maskinens namn	Maschinenname	Naam machine	Nome da máquina	Maskine, navn	Ονομασια Μηχανηματος
Maskintyp	Maskintyp	Type machine	Tipo de máquina	Maskine, type	Τυπος Μηχανηματος
Serie-eller satsnummer	Serien- oder Chargen-Nr.	Serie- of groep nr..	N° de série ou lote	Serie eller produktionsnr.	Αριδμος Σειρας η Παρτιδας
Kraft (kW)	Leistung (kW)	Vermogen (kW)	Poder (kW)	Power (kW)	Δύναμη (kW)
För vilken denna deklaration gäller,överensstämmer med kraven i Ministerrädets direktiv: 006/42/CE (MD), 2014/30/EU (EMC)	Auf das sich diese Erklärungbezieht, den Anforderungen der Richtlinie des Rates: 2006/42/CE (MD), 2014/30/EU (EMC)	Waarop deze verklaring betrekking Heeft, in overeenstemming is met de vereisten van de Richtijn van de Raad 2006/42/CE (MD), 2014/30/EU (EMC)	A que se recere esta declaraçao Está em conformidade com os Requisitos da Directiva do Conselho: 2006/42/CE (MD), 2014/30/EU (EMC)	hvortil denne erklæring releteres sig, er i overensstemmelse med kravene i Rådets: 2006/42/CE (MD), 2014/30/EU (EMC)	με το οποιο συνδεεται η παρουσα δηλωση, τελει εν συμμορφωσει με ις απαιτησεις τ της Οδηγιας του Συμβουλιου της. 2006/42/CE (MD), 2014/30/EU (EMC)
Andra gällande direktiv (förfarande enligt bifogade V)	Andere anwendbare Direktiven (Verfahren nach Anhang V)	Andere toepasbare richtlijnen (Procedures overeenkomstig bijlage V)	Outras directivas aplicáveis (procedimento de acordo com anexo V)	Andre anvendelige direktiven (procedure, der er knyttet V)	Αλλες εφαρμοσιμες οδηγιες (σύμφωνα με τη διαδικασία που επισυνάπτεται V)
Harmoniserade standarder Som tillämpats	Angewandte harmonisierte Standards	Geharmoniseerde standards toegepast	Padroes harmonizados aplicadosi	Gældene harmoniserede standarder	Εναρμονισμενα εφαρμοσμενα προτυπα
Nationella standarder som tillämpats	Angewandte nationale Standards	Nationale standards toegepast	Padroes nacionais aplicados	Nationale standarder	Εδνικα εφαρμοσμενα προτυπα
Ljudeffektnivå uppmätt LwA Ljudeffektnivå garanteras LwA	Schallleistungspegel gemessen LwA Schallleistungspegel gemessen LwA	Geluidsniveau gemeten LwA Geluidsvermogensniveau gegarandeerd LwA	Nível de potência sonora medido LwA Nível de potência sonora garantido LwA	Lydeffektniveau målte niveau LwA Lydeffektniveau garanteret niveau LwA	Ηχητική μετρούμενη ισχύς LwA Ηχητική εγγυημένη ισχύ LwA
Anmält organs namn	Name der gemeldeten Stelle	Name van erkende certificatie-instelling	Nome da entidade notificada	Navn på underrettet organ	Το Ονομα του δηλωθεντος αντικειμενου
Anmält organs adress	Adresse der gemeldeten Stelle	Adres van erkende certificatie-instelling	Morada da entidade notificada	Adresse på underrettet organ	Η Διευθυνση του δηλωθεντος αντικειμενου
EG-typkontrollnummer	Nummer des EG-Zertifikats	Nummer van EC-type-beproevingscertificaat	Numero do certificado de Inspecçao tipo EC	EF-typeattestnummeret	Ο Αριθμος του πιστοποιητικου ελεγχου, τυπου ΕC
Uffärdarens namn befattning	Name und Position des Erstellers	Naam en funktie van de Uitgever	Nome e cargo do emissor	Udsteder navn og stilling	Ονομα και δεση εκδοτη
Uffärdarens namnteckning	Unterschrift des Erstellers	Handtekening van de uitgever	Assinatura do emissor	Udsteder, underskrift	Υπογραφη εκδοτη
Plats och datum för utfärdandet	Ort und Datum der Erstellung	Plaats en datum van uitgifte	Local e data de emissao	Udstedelsessted og dato	Τοπος και ημερομηνια εκδοσης