

Alimak Manufacturing SL

2041000666 (EN)

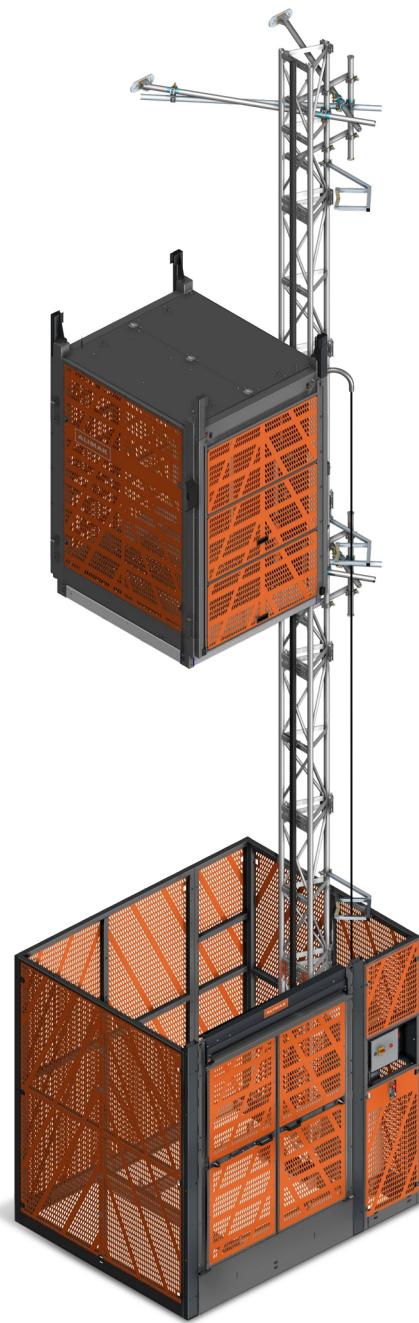
Revision 01.03 (20/11/2023)

**ALIMAK**

# ALIMAK MEDIUS 350 10-15

## LIFTING TRANSPORTATION SYSTEM

### Operator's manual



AL-MED001

Original instructions





BUREAU  
VERITAS

## ATTESTATION D'EXAMEN CE DE TYPE

### EC TYPE-EXAMINATION CERTIFICATE

N° 2681/2462/760/11/23/0032/EXT001 11 23

Bureau Veritas Exploitation, agissant dans le cadre de sa notification (numéro d'organisme notifié 2681), atteste que le type identifié ci-après, a été examiné selon les prescriptions de l'annexe IX de la directive « Machines » N° 2006/42/CE concernant le rapprochement des législations des états membres relatives aux machines et est conforme aux dispositions correspondantes de la directive.

*Bureau Veritas Exploitation, acting within the scope of its notification (Notified Body number 2681), attests that the type identified hereunder has been examined against the provisions of the Annex IX of the "Machinery" directive nr 2006/42/EC about the approximation of the laws of the member states relating to machinery and found to satisfy the provisions of the directive which apply to it.*

Fabricant (Nom) / Manufacturer (Name):	ALIMAK MANUFACTURING SL
Adresse / Address:	CALLE LOS ANGELES N° 88 NAVE 1 LA MUELA 50198. ZARAGOZA, Spain
Marque commerciale / Branding name:	ALIMAK
Mandataire / Authorised representative:	Néant

#### EQUIPEMENT / EQUIPMENT

Description de la machine / Machinery description:	Ascenseurs de chantier / Construction Hoists
Identification du type approuvé / Identification of approved type:	MEDIUS 350
Versions couvertes (le cas échéant) / Versions (where applicable):	MEDIUS 350 5-12 et MEDIUS 350 10-15
Caractéristiques de la Machine / Machinery characteristics	Voir annexe à la présente attestation. <i>See annexed to this certificate.</i>
Conditions de validité - Documents techniques / Conditions for validity - Technical documents:	Se reporter au dossier n° / refer to report nr : 19895214-1

La présente attestation est présumée nulle et le fabricant supportera seul les conséquences de son utilisation, en cas de modification apportée à la machine susceptible de remettre en cause sa conformité aux exigences essentielles de sécurité ou à ses conditions d'utilisation prévues et, de manière générale, si le fabricant ne respecte pas, notamment, l'une ou l'autre des obligations mises à sa charge par la Directive 2006/42/CE telle que transposée dans le(s) droit(s) national (aux) applicable(s).

*This certificate shall be deemed to be void and the manufacturer shall alone bear any consequences pursuant to its use, in case of modification to the machinery where this may affect conformity with the essential safety requirements or the prescribed conditions for use of the equipment, and generally where the manufacturer fails in particular to comply with any of his obligations under directive nr 2006/42/EC as transposed in the applicable law(s).*

Etabli à Made at	Le (JJ/MM/AAAA) On (DD/MM/YYYY)	Signé par Signed by	Signature Signature
PESSAC	30/11/2023	JEAN-PHILIPPE LEFRANCOIS	

Code d'enregistrement / Registration Code : 2681/2462/760/11/23/0032/EXT001 11 23

La présente attestation est soumise aux Conditions Générales de Service de Bureau Veritas Exploitation jointes à la demande d'intervention signée par le demandeur.  
*This certificate is subject to the terms of Bureau Veritas Exploitation General Conditions of Service attached to the agreement signed by the applicant.*

La présente attestation remplace l'attestation <i>This certificate supersedes certificate</i>	2681/2462/760/02/23/0032
Objet / Reason: Changements de nom du fabricant, de nom du type approuvé, et modifications techniques <i>/ Changes about manufacturer name, approved type name and technical modifications</i>	

Date d'expiration (jj/mm/aaaa) / Date of expiry (dd/mm/yyyy): 10/02/2028

# **ALIMAK MEDIUS 350 10-15 LIFTING TRANSPORTATION SYSTEM**

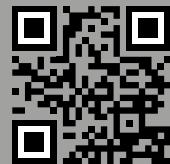
EN-AL-03-00-0001-02

**ALIMAK**

## **Limited Warranty**

Consult the warranty requirements in the general terms and conditions.

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**CE**

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# 1 Introduction

## 1.1 Symbols

EN-AL-04-02-0001-01

### DANGER



*Immediate or potentially imminent danger.  
Failure to observe may result in injuries or damages:  
- Death or serious injury.*

### WARNING



*Potentially hazardous situation.  
Failure to observe may result in injuries or damages:  
- Moderate injury or material damage.*

### CAUTION



*Dangerous situation.  
Failure to observe may result in injuries or damages:  
- Minor or moderate injury.*

### NOTICE



*Useful tips for an optimum work process.  
Failure to observe may result in injuries or damages:  
- None.*

## 1.2 Terms and definitions

EN-AL-04-04-0001-02

Terms	Definitions
Owner	Owner of the lifting transportation system and responsible for its application, operation and compliance with occupational health and safety regulations.  The owner must have adequate technical expertise with regards to the applicable emergency and safety systems and components, and is responsible for training the operator on the lifting transportation system model to be operated. This training must be carried out in an area free of obstructions, under the direction of a qualified person and for sufficient time to determine that the operator demonstrates proficiency in the knowledge and operation of the lifting transportation system.  The owner must have technical expertise to understand the basic mechanical/electrical parameters of the lifting transportation system. The owner is responsible for planning the installation of the product, as well as daily work and periodic inspections and maintenance.
	Installation technician and maintenance technician  An authorised person is allowed to access restricted areas for maintenance, inspection and rescue operations.  The person that carries out the service and inspection must have adequate technical expertise to understand the product in terms of construction and functionality for use and maintenance, configuration parameters and mechanical and electrical components.
	The persons responsible for the service must also be fully trained with regards to the emergency and safety systems and components.

## 1.3 Observations

EN-AL-04-01-0001-02

Only persons who have received the required familiarisation are authorised to use the lifting transportation system in accordance with the instructions in this manual.

Only the revision version of the manual supplied with the product is valid except with written authorisation from the manufacturer.

This manual must always be available to the personnel responsible for the installation, maintenance and operation of the lifting transportation system.

Additional copies may be requested from the manufacturer.

The contents of this manual (processes, components, descriptions, instructions, recommendations, requirements, etc.) are subject to change without prior notice.

Any additional cost related to or arising from any changes to the manuals does not entitle the customer to any form of compensation or other legal remedies.

### NOTICE



*The pictures and diagrams in this manual may not reflect the exact appearance, colours or layout of the Product. This does not have any impact on the Product's functionality or safety.*

## 1.4 Cautions

EN-AL-04-03-0001-02

### CAUTION



*Risk of accident. Follow all of the instructions in order to prevent injuries.*

### 1.4.1 Cautions about personnel

- Should be of legal age.
- Should be familiar with the accident prevention instructions and receive adequate training in terms of occupational health and safety.
- Must not use the lifting transportation system under the influence of alcohol or drugs that might compromise safety at the workplace.
- Must wear the personal protective equipment required for the specific application and complying with current regulations.
- Only maintenance technicians are authorised to check the functional safety of the system in case of repair or replacement of any component.
- Only maintenance technicians are authorised to check/repair electrical installations, the drive system, the overspeed safety device and safety devices.

### 1.4.2 Cautions about use

#### CAUTION

- !
- Stop working immediately and inform the supervisor in case any damages or malfunctions occur during operation or in case circumstances arise that could jeopardise safety.

- Only persons with relevant familiarisation associated with using and performing daily inspections on the Alimak lifting transportation system are authorised to use and perform daily inspections on the lifting transportation system.
- Check that all the lifting transportation system components are available and fully functional.
- Observe the procedures for handling and lifting loads.
- Ensure on site that the reaction forces of the system are transferred safely to the foundation and ties.
- Do not place objects or stand under the lifting transportation system.
- Place the load so that it is stable in the cage and does not exceed the maximum load capacity.
- In low light conditions, illuminate the work area to ensure sufficient visibility.
- Do not use the lifting transportation system under adverse weather conditions, including wind speeds of more than 20 m/s, except where other more restrictive speeds are defined.

### 1.4.3 Cautions about installation and maintenance

- Inspect the lifting transportation system according to the planning established in the Installation and maintenance manual.
- Increase the frequency of inspections in the case of a high frequency of operation or severe conditions of use.
- Switch off the electrical power supply for the lifting transportation system before carrying out any maintenance work.
- Sign and inform about the prohibition of use during maintenance tasks.
- Do not carry out installation and/or maintenance tasks under adverse weather conditions, including wind speeds of more than 12.5 m/s, except where other more restrictive speeds are defined.

#### **1.4.4 Cautions about lifting transportation system parts**

- Only use original Alimak parts.
- Use of non-original parts renders the manufacturer's warranty void and invalidates any type approval.
- No warranty is provided against damage resulting from reconstruction or modification of equipment or use of non-original parts that are not approved by the manufacturer.
- No modification, extension or reconstruction of the lifting transportation system is permitted without the manufacturer's prior written consent.

#### **NOTICE**



*The owner must check the need for third-party lifting transportation system inspections with local authorities and comply with any specified standards.*

# 2 General information

## 2.1 Purpose

EN-AL-05-01-0001-02

Use of the lifting transportation system is limited to authorised operators. Access to the base, assembly/disassembly and use of the lifting transportation system is controlled and is prohibited for unauthorised persons.

The lifting transportation system is only used for:

- Transporting loads and persons between the different levels of the installation.

## 2.2 Scope

EN-AL-05-02-0001-02

The Product details are described throughout this manual.

The Product comprises a lifting transportation system consisting of:

- Base frame
- Base enclosure
- Landing doors to upper levels
- Cage
- Drive system
- Overspeed safety device
- Control, safety and supply systems
- Safety devices
- Guiding system

### NOTICE



This manual contains the instructions for the Alimak Medius 350 10-15 lifting transportation system model.

## 2.3 Exclusions

EN-AL-05-03-0001-02

The owner must supply at least the following interface components that are not included in the scope of delivery of the lifting transportation system:

- Power cable and required connectors.

### NOTICE



If necessary, contact Alimak for assistance.

## 2.4 Technical specifications

### 2.4.1 General specifications

EN-AL-05-04-0001-02

Lifting transportation system		Alimak MEDIUS 350 10-15
General	Maximum number of people	11
	Lifting transportation system speed	24 m/min
	Drive system type	Rack - pinion
	Maximum wind speed in service	20 m/s
	Load capacity	1000 kg
	Base unit weight (including the base enclosure)	1700 kg
	Transport dimensions (length x width x height)	2675 x 2180 x 2805 mm (without brackets) 2675 x 2180 x 3140 mm (with brackets)
Base frame	Base frame dimensions (length x width)	1670 x 1480 mm
Mast	Mast section length	1508 mm
	Mast section weight	54 kg
	Max. self-supporting height	0 m
	Max. height	100 m
Ties	Max. height of first tie	6 m
	Max. distance between ties	7.5 m
	Max. permitted height without ties	3 m
	Weight	42 kg
Loading platform	Outer dimensions (length x width)	1500 x 1600 mm
	Inner dimensions (length x width)	1440 x 1570 mm
Base enclosure	Height	> 2000 mm

## 2.4.2 Electrical specifications

EN-AL-05-04-0003-02

Lifting transportation system		Alimak MEDIUS 350 10-15
No. of motors/type		1/electric
Power		7.6 kW
Rated current		15.7 A
Electrical consumption		11 kVA
Electrical power supply		400 V / 50 Hz 3 Phases + N + PE
Fuse		32 A
Power and control cable	Lifting height H ≤ 70 m	4G4 + 16x1 mm <sup>2</sup>
	Lifting height H ≤ 100 m	4G6 + 12x1 mm <sup>2</sup>
Control circuit electrical power supply		230 V
Power cable from the supply line to the base electric panel - up to 50 m		5G10 mm <sup>2</sup>

## 2.4.3 Environmental specifications

EN-AL-05-04-0004-02

Alimak MEDIUS 350 10-15 lifting transportation system	
Operating temperature	-15°C / +40°C
Max. noise level (LwA)	95 dB
Sound pressure level in the workplace (LpA)	72 dB

### NOTICE



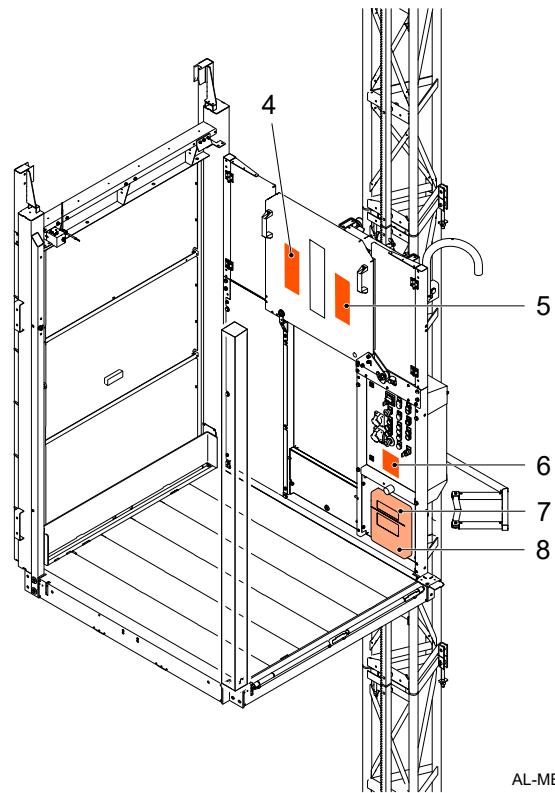
If using an auxiliary generator, the electrical consumption during start-up may be up to 6 times more than the nominal consumption.

## 2.5 Informative signs and documentation

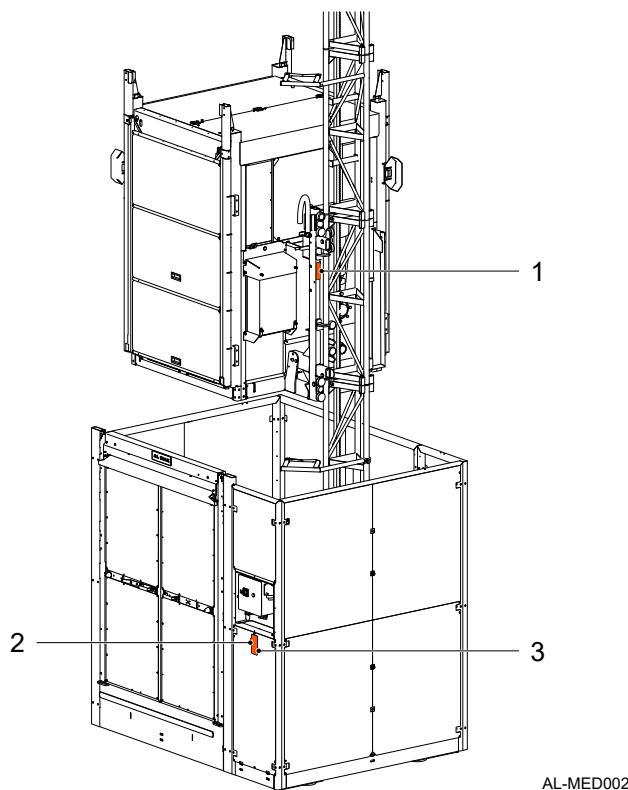
EN-AL-06-09-0001-02

The informative signs and documentation included with the lifting transportation system should always be available and legible. They provide the operator with information about the lifting transportation system and instructions regarding safety and emergency situations.

Location	Description	Position
Drive unit	Serial number plate	1
Base enclosure	Use by authorised personnel	2
	Max. noise level	3
Cage	Installation information	4
	Use and emergency information	5
	Rating plate	6
Document holder	Manual	7
	Electrical diagrams	8



AL-MED003



AL-MED002

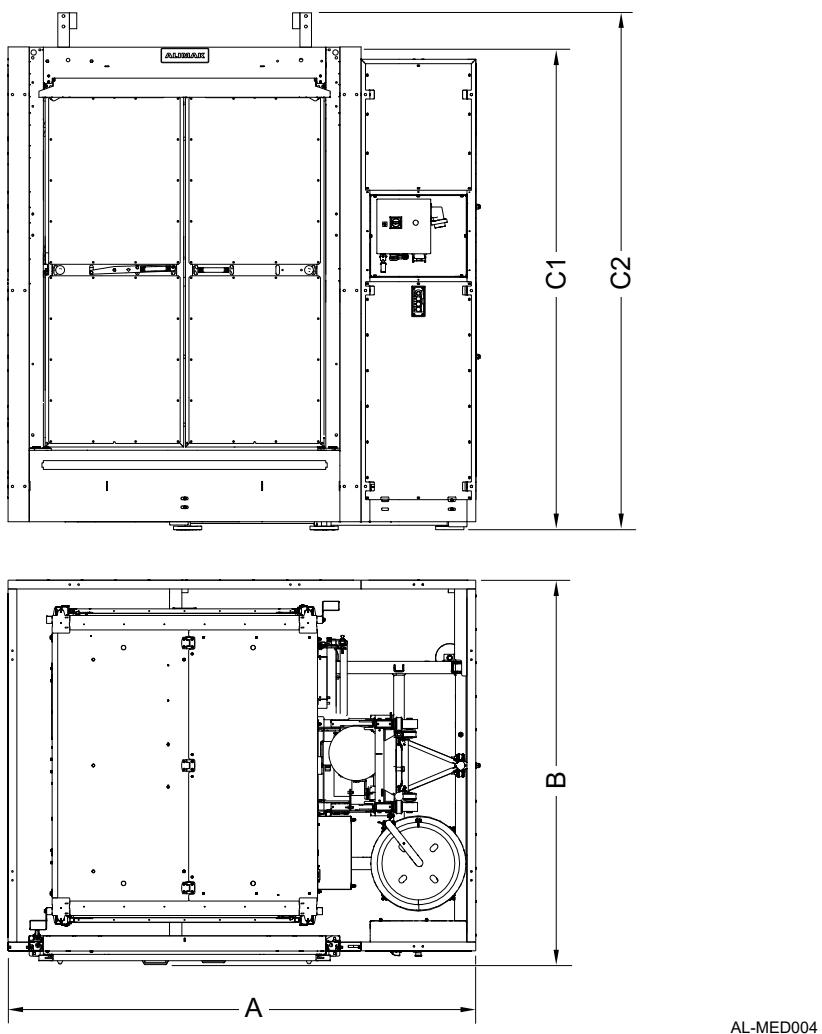
Figure 1 : Informative signs and documentation

## 2.6 Dimensions

### 2.6.1 Alimak MEDIUS 350 10-15

#### 2.6.1.1 General dimensions

EN-AL-05-05-0002-02



AL-MED004

**Figure 2 : General dimensions MEDIUS 350 10-15**

#### General dimensions MEDIUS 350 10-15

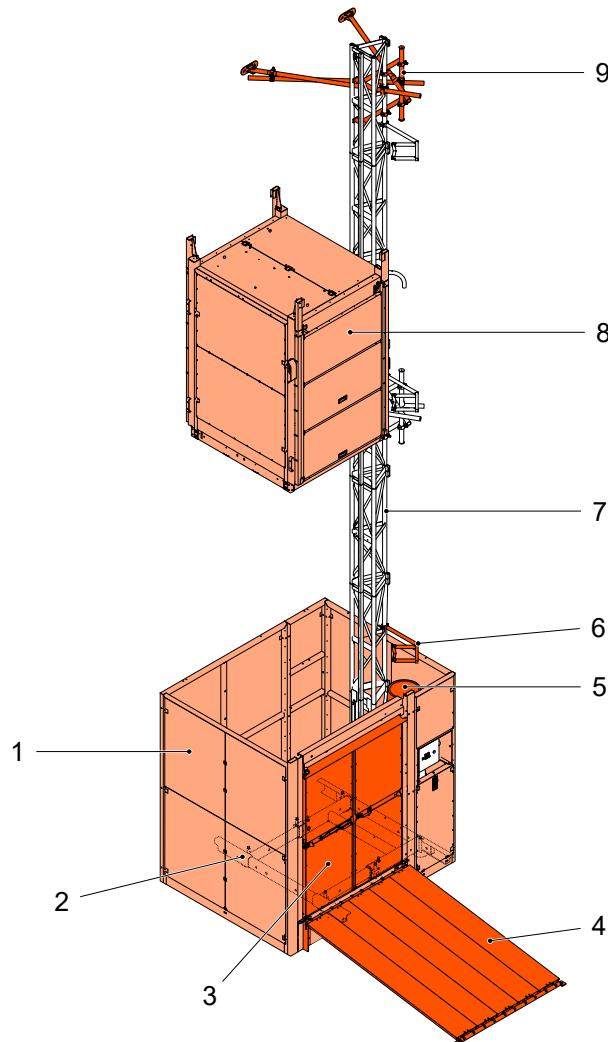
A	2675 mm
B	2180 mm
C1	2805 mm (without sliding gate guide brackets)
C2	3140 mm (with sliding gate guide brackets)

# 3 Description

## 3.1 Overview of the lifting transportation system

### 3.1.1 Alimak MEDIUS 350 10-15

EN-AL-05-04-0002-02



AL-MED005

Figure 3 : Overview of the lifting transportation system

#### Overview of the lifting transportation system

1	Base enclosure	6	Cable guide
2	Base frame	7	Mast
3	Base landing door	8	Cage
4	Access threshold ramp (optional)	9	Tie
5	Cable collect bin		

## 3.2 Height components

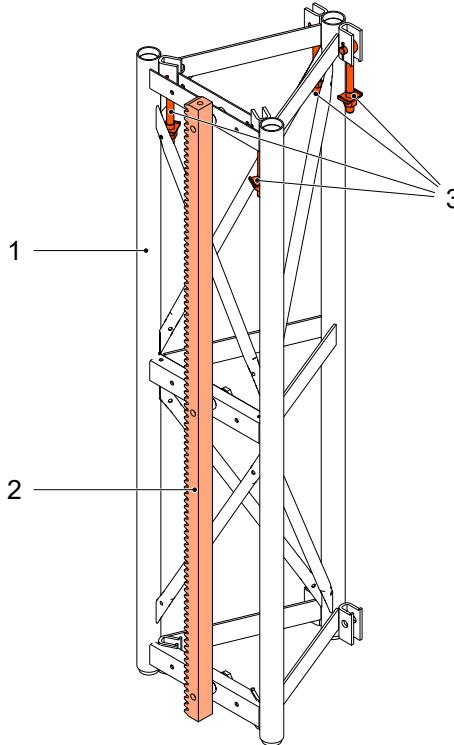
### 3.2.1 Mast

EN-AL-06-01-0007-02

The mast allows the drive unit to be guided along its travel path.

The rack is located at the front and is screwed to the mast.

The connecting components between the sections that make up the mast are captive and allow correct alignment and transfer of loads.



AL-MED006

**Figure 4 : Mast**

#### Mast

1	Mast
2	Rack
3	Mast connection system

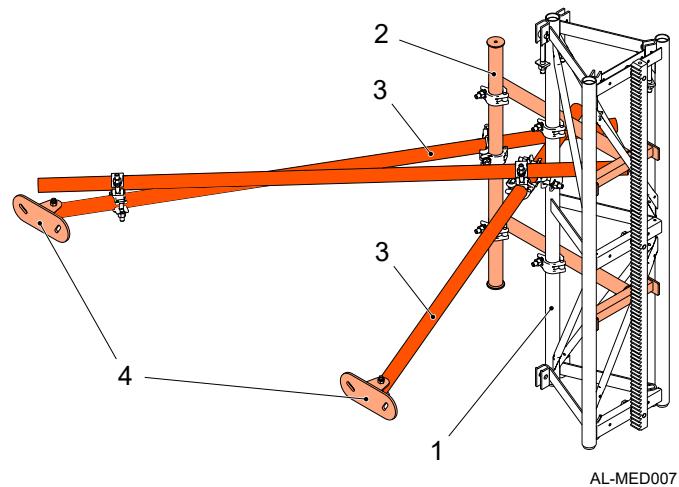
### 3.2.2 Mast ties

EN-AL-06-01-0006-02

The ties form a structure that allows the mast to be fixed to the support structure.

There are two types of tie structure available:

- Side tie structure (the support structure is located on the side of the mast)
- Rear tie structure (the support structure is located to the rear of the mast)

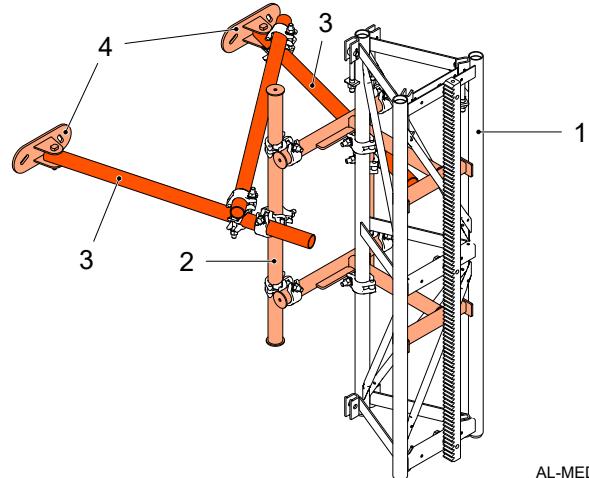


AL-MED007

**Figure 5 : Side tie structure**

#### Side tie structure

1	Mast
2	Tie frame
3	Side tie tubes
4	Wall brackets (only for facade assembly)



AL-MED008

**Figure 6 : Rear tie structure**

#### Rear tie structure

1	Mast
2	Rear tie frame
3	Rear tie tubes
4	Wall brackets (only for facade assembly)

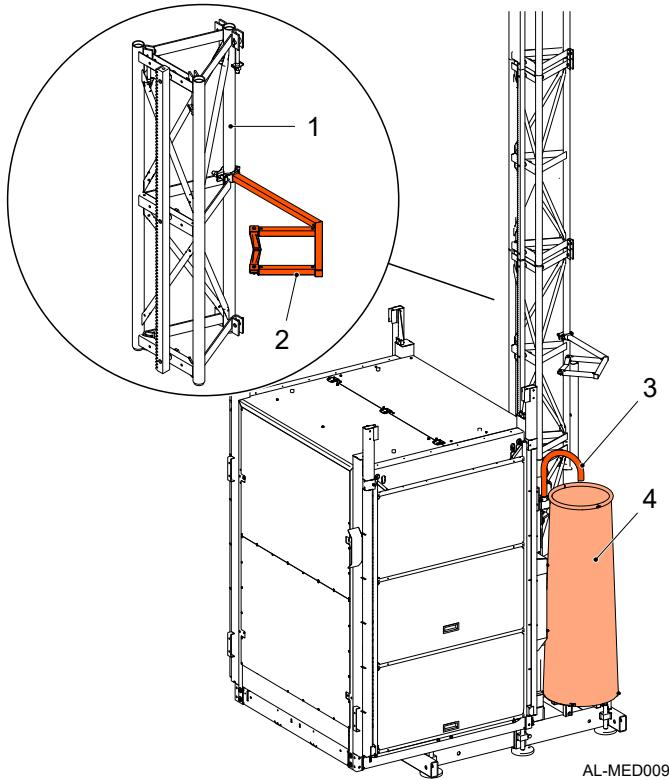
### 3.2.3 Guided cable management system

EN-AL-06-07-0001-02

In the guided cable management system the drive unit pulls the cable during ascent uncoiling it from a cable collect bin.

The cable guides are installed on the mast along the travel path to reduce cable movement.

The cable collect bin is located on the base frame.



**Figure 7 : Guided cable management system**

#### Guided cable management system

- |   |                   |
|---|-------------------|
| 1 | Mast              |
| 2 | Cable guide       |
| 3 | Cable bracket     |
| 4 | Cable collect bin |

### 3.3 Drive unit

#### 3.3.1 General description

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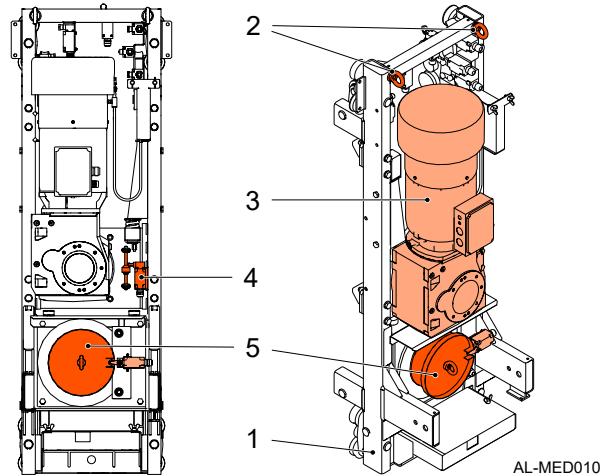
The drive unit consists of the following main elements:

- Drive unit frame
- Lifting eye bolts<sup>1)</sup>
- Gearmotor
- Drive system
- Overload detection device
- Overspeed safety device

#### WARNING

 <sup>1)</sup>Risk of breakage. Do not use the lifting eye bolts to lift the complete base unit.

Only use the lifting eye bolts to lift the drive unit and fix the assembly crane bracket.



**Figure 8 : Drive unit**

#### Drive unit

- |   |                         |
|---|-------------------------|
| 1 | Drive unit frame        |
| 2 | Lifting eye bolts       |
| 3 | Drive system            |
| 4 | Overload system         |
| 5 | Overspeed safety device |

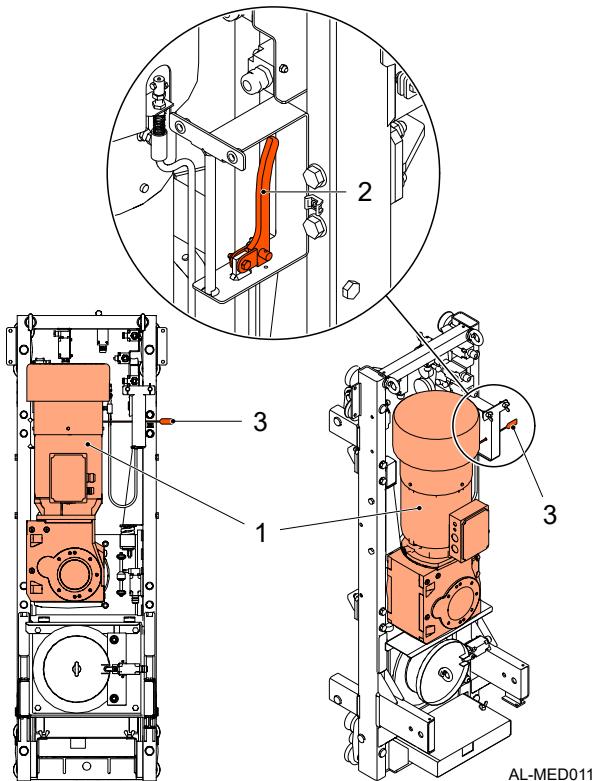
#### 3.3.2 Drive system

EN-AL-06-01-0002-02

The drive system allows the movement of the drive unit along the mast.

The drive system gearmotor is equipped with an electromagnetic brake. It stops the system when there is a stop command or in the event of a power failure.

The electromagnetic motor brake release lever allows the electromagnetic motor brake to be released manually for manual descent [Refer to section *Emergency manual lowering*, see on page 35].



**Figure 9 : Drive system**

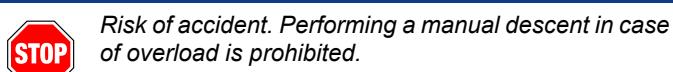
#### Drive system

- 1 Gearmotor
- 2 Electromagnetic motor brake release lever
- 3 Safety seal

#### 3.3.3 Overload detection device

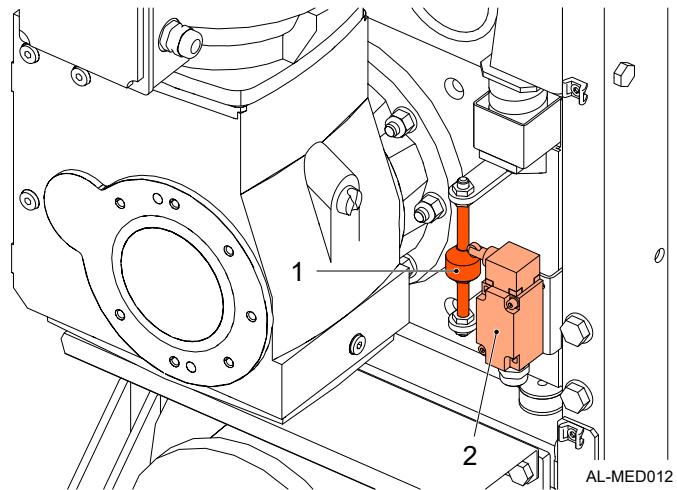
EN-AL-06-06-0005-02

##### DANGER



The overload detection device prevents the ascent and descent of the lifting transportation system in case of overload.

An indicator light and an acoustic buzzer on the cage electric panel indicate the overload [Refer to section [Cage electric panel](#), see on page 16].



**Figure 10 : Overload detection device**

#### Overload detection device

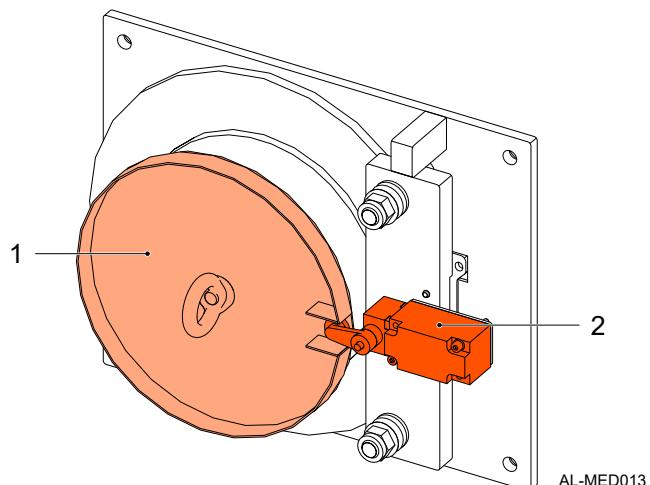
- 1 Overload detection device cam
- 2 Overload detection device switch

#### 3.3.4 Overspeed safety device

EN-AL-06-01-0005-02

The overspeed safety device is a mechanical device that stops the drive unit in the event of a drive system failure.

In case of activation, the overspeed safety device acts on the overspeed safety device switch, which interrupts the control of the lifting transportation system.



**Figure 11 : Overspeed safety device**

#### Overspeed safety device

- 1 Switch activation cam
- 2 Overspeed safety device switch

##### NOTICE



*The overspeed safety device can only be reset by authorised technical personnel, once the problem that caused the activation has been eliminated.*

## 3.4 Safety devices

### 3.4.1 Landing stop limit switch

EN-AL-06-05-0001-02

By pressing the next landing button, the landing stop limit switch stops the ascent and descent of the cage by detecting the level detection cam located on the different levels of the installation. Activation of the landing stop limit switch allows the opening of the cage gate for access to the levels.

### 3.4.2 Cage gate control limit switch

EN-AL-06-05-0003-02

Activation of the cage gate control limit switch allows the opening of the cage gate that provides access to the bottom level.

### 3.4.3 Rack presence switch

EN-AL-06-05-0007-02

The rack presence switch stops the cage movement and interrupts the control of the lifting transportation system if the rack is not detected along the travel path, therefore only manual descent is possible.

### 3.4.4 Top limit switch

EN-AL-06-02-0004-02

The top limit switch stops the cage from ascending when it comes into contact with the top limit cam located on the mast.

The descent of the cage is possible if the top limit switch is activated.

### 3.4.5 Emergency limit switch (bottom and top)

EN-AL-06-06-0006-02

The emergency limit switch stops the cage from descending when it comes into contact with the emergency bottom limit cam located on the mast in the event of a failure of the bottom limit switch.

The ascent of the cage is possible if the Mode of use selector is turned to the Bypass mode position [Refer to section [Special operations](#), see on page 35].

The emergency limit switch stops the cage from ascending when it comes into contact with the emergency top limit cam located on the mast in the event of a failure of the top limit switch.

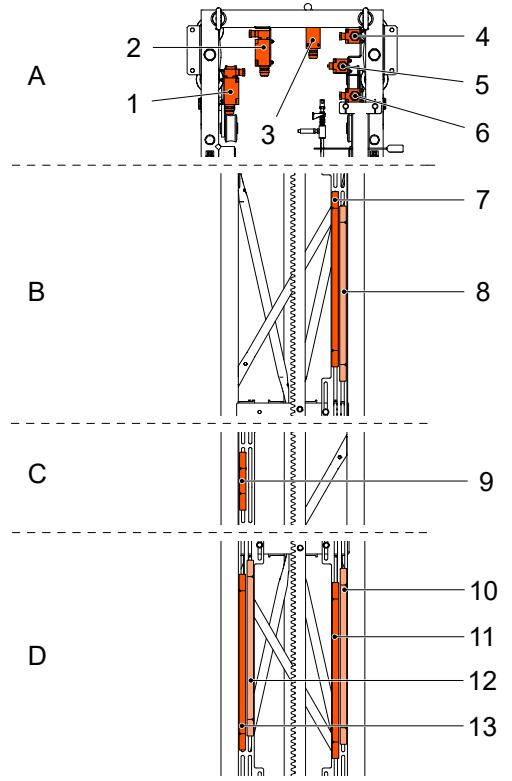
The emergency top limit switch interrupts the control of the lifting transportation system, therefore only manual descent is possible.

### 3.4.6 Bottom limit switch

EN-AL-06-06-0009-02

The bottom limit switch stops the cage from descending when it comes into contact with the bottom limit cam located on the mast.

The ascent of the cage is possible if the bottom limit switch is activated.



AL-MED014

Figure 12 : Safety devices

#### Safety devices

- |    |   |
|----|---|
| 1  | Landing stop limit switch               |
| 2  | Cage gate control limit switch          |
| 3  | Mast detection limit switch             |
| 4  | Top limit switch                        |
| 5  | Emergency limit switch (bottom and top) |
| 6  | Bottom limit switch                     |
| 7  | Emergency top limit cam                 |
| 8  | Upper level stop cam                    |
| 9  | Level stop cam                          |
| 10 | Bottom limit cam                        |
| 11 | Emergency bottom limit cam              |
| 12 | Cage gate control cam                   |
| 13 | Lower level stop cam                    |
| A  | Drive unit                              |
| B  | Upper section of the mast               |
| C  | Intermediate sections of the mast       |
| D  | Lower section of the mast               |

## 3.5 Base enclosure

### 3.5.1 General description

The cage movement area is protected by a base enclosure.

The base enclosure is composed of side panels and a door, all of them >2.0 m high.

The side panels and door are perforated to allow the inside of the enclosure to be viewed from the outside.

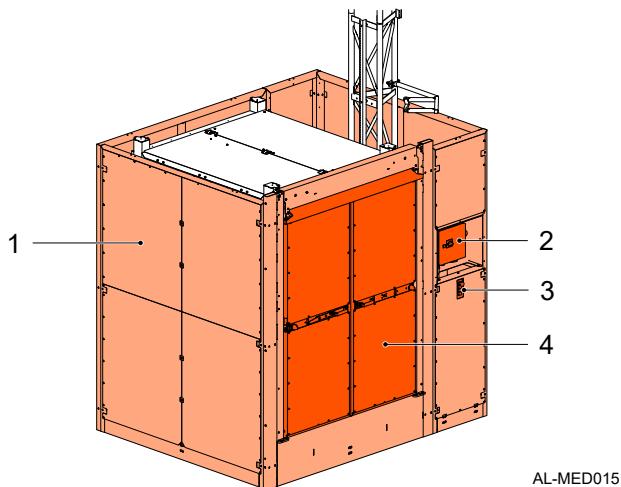
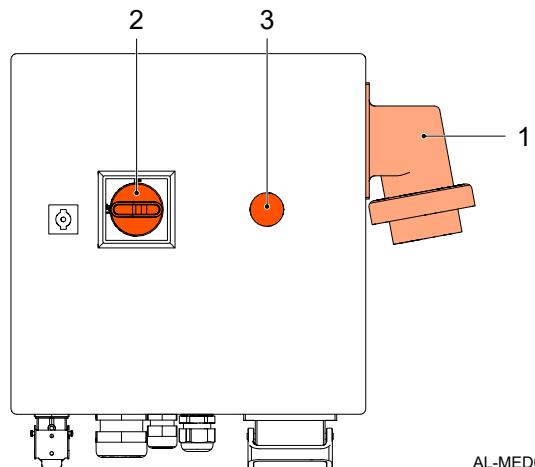


Figure 13 : Base enclosure

AL-MED015



AL-MED016

Figure 14 : Base electric panel

### Base electric panel

- |   |   |
|---|---|
| 1 | Electrical power supply connector       |
| 2 | Main switch with padlock lock           |
| 3 | Landing doors not ready indicator light |

### Base enclosure

- |   |                      |
|---|----------------------|
| 1 | Base enclosure       |
| 2 | Base electric panel  |
| 3 | Base control station |
| 4 | Base enclosure door  |

### 3.5.2 Base electric panel

EN-AL-06-08-0001-01

The base electric panel is located in the base enclosure.

A connector on the side of the base electric panel allows the electrical power supply connector to be connected.

The base electric panel is equipped with an indicator light that indicates if any of the landing doors on any of the levels are not ready for use (the door is not closed or the emergency-stop button is activated).

#### NOTICE



*The main switch can be locked in the OFF position using a padlock.*

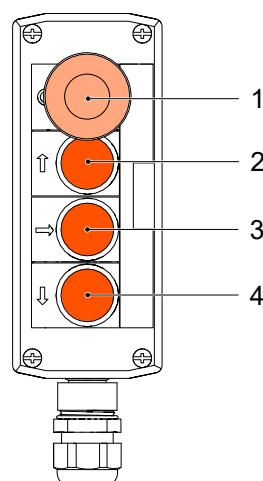
### 3.5.3 Base control station

EN-AL-06-04-0005-02

The base control station allows the lifting transportation system to be controlled from outside the base enclosure.

The base control station has the following controls:

- Emergency-stop button
- UP button
- Next landing button
- DOWN button



AL-MED017

Figure 15 : Base control station

### Base control station

- |   |                       |
|---|-----------------------|
| 1 | Emergency-stop button |
| 2 | UP button             |
| 3 | Next landing button   |
| 4 | DOWN button           |

### 3.5.4 Base enclosure door

EN-AL-06-04-0006-02

The base enclosure door is equipped with a mechanical locking system that allows the enclosure door to open when the cage is on the bottom level.

A switch monitors the opening status of the base enclosure door.

In case of emergency, the manual release from outside the base enclosure door is carried out using a triangular key.

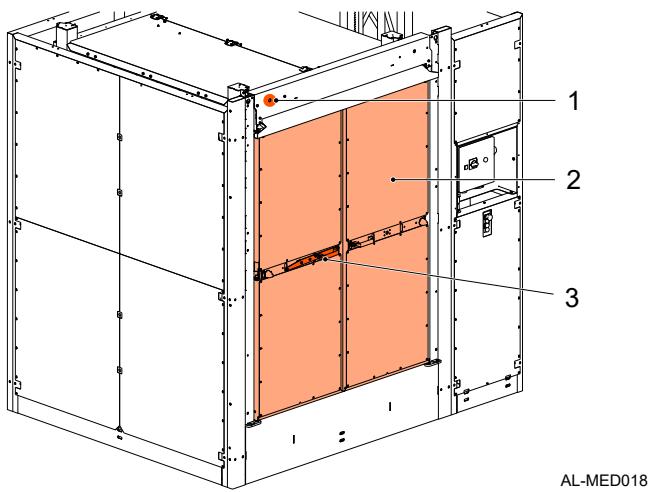


Figure 16 : Base enclosure door

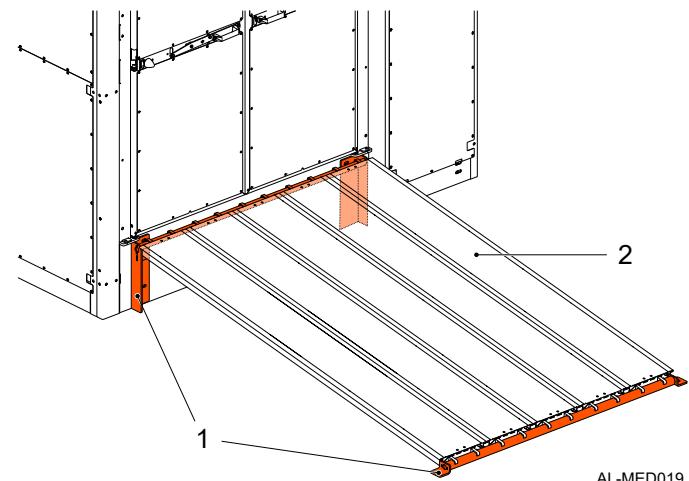


Figure 17 : Access threshold ramp

#### Access threshold ramp

- |   |                                |
|---|--------------------------------|
| 1 | Access threshold ramp brackets |
| 2 | Access threshold ramp          |

## 3.6 Cage

### 3.6.1 Cage electric panel

EN-AL-06-01-0008-02

The cage electric panel allows the lifting transportation system to be controlled from inside the cage.

The cage electric panel is located in the drive unit.

The cage electric panel has the following controls:

- UP button
- Next landing button / Door unlock
- DOWN button
- Emergency-stop button

The cage electric panel is equipped with indicator lights which turn on in the following cases:

- Lifting transportation system ready (green)
- Overload (red)
- Incorrect phase sequence (blue)
- Motor malfunction (red)

The cage electric panel is also equipped with the following components:

- Disconnector<sup>1)</sup>
- Mode of use selector (Normal Mode / Inspection Mode / Bypass Mode)
- An acoustic warning buzzer.
- 220V electric outlet.
- Alarm device button
- Cage light selector

#### Base enclosure door

- 1 Manual release with an 8 mm triangular key
- 2 Base enclosure door
- 3 Opening lever

### 3.5.5 Access threshold ramp

EN-AL-06-04-0007-02

#### WARNING

 Risk of breakage. Do not exceed the maximum load of 500 kg on the access threshold ramp.

The lift has brackets<sup>1)</sup> for the installation of an access threshold ramp constructed with conventional scaffolding floors.

These brackets are installed on fixing points positioned under the base enclosure door.

#### NOTICE



<sup>1)</sup>Alimak can optionally supply the brackets for the access threshold ramp.

## NOTICE



<sup>1)</sup> Use of the disconnector is exclusive for maintenance tasks.

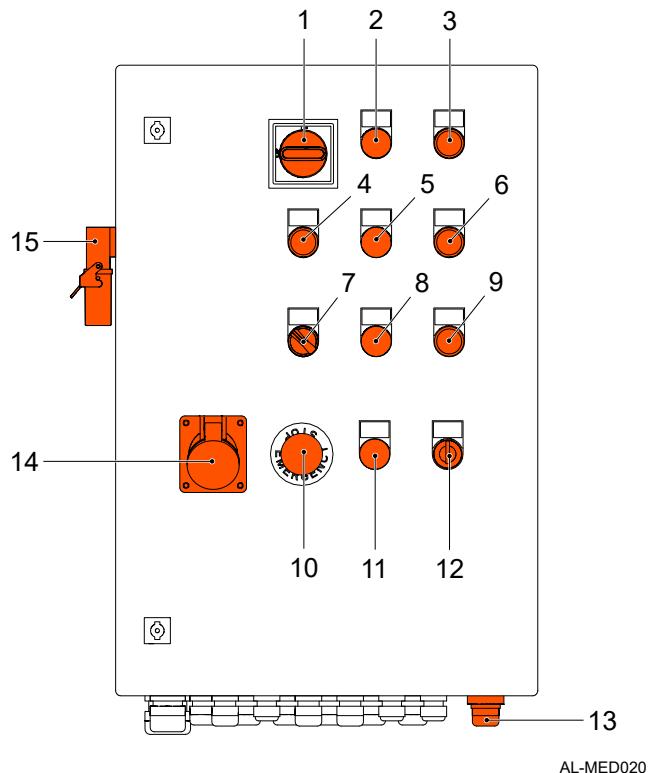


Figure 18 : Cage electric panel

### Cage electric panel

- 1 Disconnector
- 2 Ready indicator light (green)
- 3 UP button
- 4 Alarm device button
- 5 Overload indicator light (red)
- 6 Next landing button / Door unlock
- 7 Cage light selector
- 8 Motor malfunction indicator light (red)
- 9 DOWN button
- 10 Emergency-stop button
- 11 Incorrect phase sequence indicator light (blue)
- 12 Mode of use selector (Normal Mode / Inspection Mode / Bypass Mode)
- 13 Acoustic warning buzzer
- 14 220V electric outlet
- 15 Assembly crane limit connector

## 3.6.2 Mast railing

EN-AL-06-04-0004-02

### WARNING



Risk of injuries. Press the emergency-stop button on the cage electric panel before carrying out any inspection or maintenance operation with the mast railing open.

The cage is equipped with a mast railing.

The mast railing is equipped with a safety switch that, when open, prevents movement of the lifting system.

A perforation in the mast railing allows the safety device switches located on the top of the drive unit and the activation cams on the mast to be viewed from inside the cage.

The mast railing<sup>1)</sup> is opened using a triangular key.

### NOTICE



<sup>1)</sup>Opening the mast railing is only permitted for inspection and maintenance operations or to access the electromagnetic motor brake release lever for manual descent.

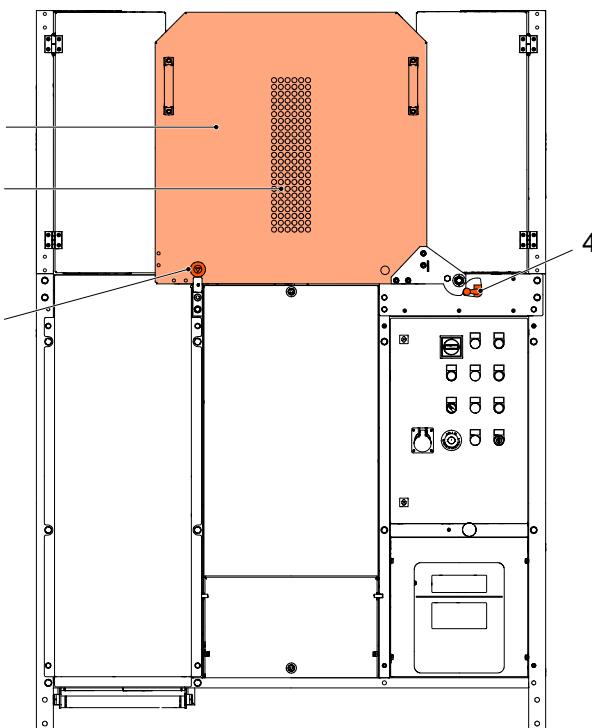


Figure 19 : Mast railing

### Mast railing

- 1 Mast railing
- 2 Perforated area
- 3 Lock
- 4 Mast railing safety switch

### 3.6.3 Cage gate

#### 3.6.3.1 Sliding gate

EN-AL-06-04-0009-02

Sliding gate can be installed on the sides (A, B or C) of the cage [Refer to section Configuration of cage accesses in the Installation and maintenance manual].

A switch monitors the opening status of the cage gate.

The cage gates are equipped with an electromechanical locking switch that:

- Prevents movement of the cage if the cage gate is open.
- Allows the cage gate to open when it is level with a platform.

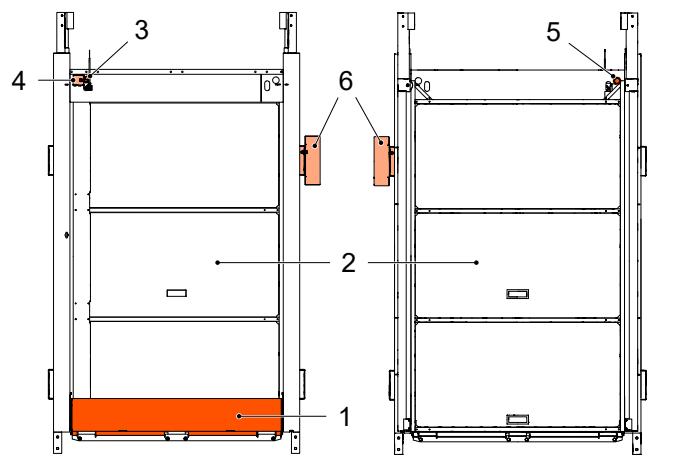
The locking switch is equipped with a manual release for opening the gate between levels. The gate is unlocked from inside the cage using a triangular key. For unlocking from the outside, no tool is required. Manual release is only permitted for evacuation and rescue operations.

A folding threshold ramp protects the space between the cage and the platform. A mechanical locking system prevents the gate from closing if the threshold ramp is not raised.

#### NOTICE



*A timer activates the cage gate lock when it is closed. Press the next landing button / door unlock on any control panel to unlock the gate.*



AL-MED023

**Figure 21 : Sliding gate**

#### Sliding gate

1	Folding threshold ramp
2	Sliding gate
3	Closed gate switch
4	Electromechanical locking device with manual release (8 mm triangular key)
5	Unlocking from the outside
6	Cage gate interlocking landing cam

## 3.7 Access to different landing levels

### 3.7.1 Landing control panels

EN-AL-06-04-0012-02

The landing control panels are located close to the cage access on different levels of the installation.

The landing control panels allow external control of the lifting transportation system from each level of the installation.

The landing control panels have the following controls:

- UP button
- Next landing button / Door unlock
- DOWN button
- Emergency-stop button

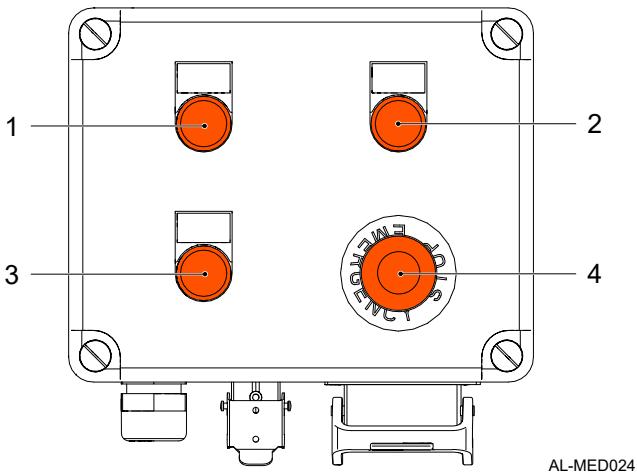


Figure 22 : Landing control panel

#### Landing control panel

- |   |                                   |
|---|-----------------------------------|
| 1 | UP button                         |
| 2 | Next landing button / Door unlock |
| 3 | DOWN button                       |
| 4 | Emergency-stop button             |

### 3.7.2 Full height landing doors

EN-AL-06-04-0011-02

Full height landing doors are equipped with a mechanical locking system that allows them to open when the cage is level with an access level of the installation.

Full height landing doors are equipped with a manual release using a triangular key to open the door. Manual release is only permitted for evacuation and rescue operations.

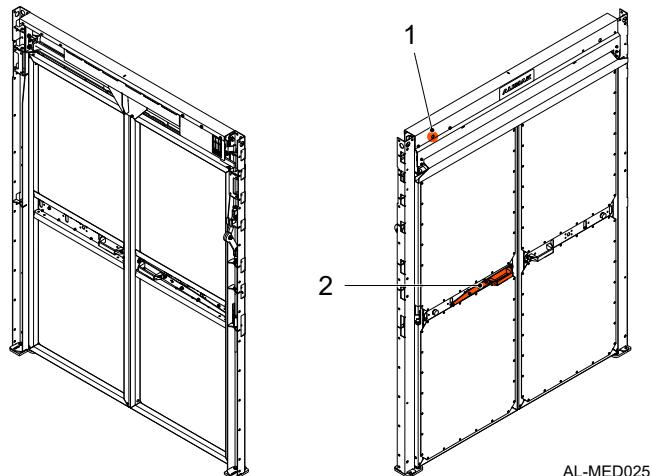


Figure 23 : Full height landing doors

#### Full height landing doors

- |   |  |
|---|--|
| 1 | Manual release with an 8 mm triangular key |
| 2 | Opening lever                              |

### 3.7.3 Reduced height landing doors

EN-AL-06-04-0004-02

Reduced height landing doors may be folding or sliding, with opening on the left or right.

Reduced height landing doors are equipped with a mechanical locking system that allows them to open when the cage is level with an access level of the installation.

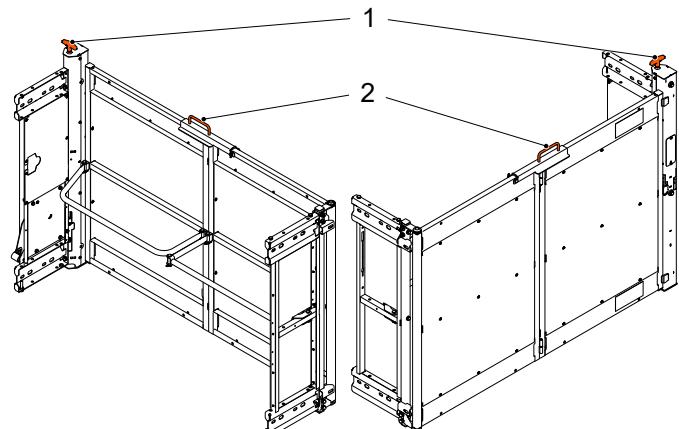
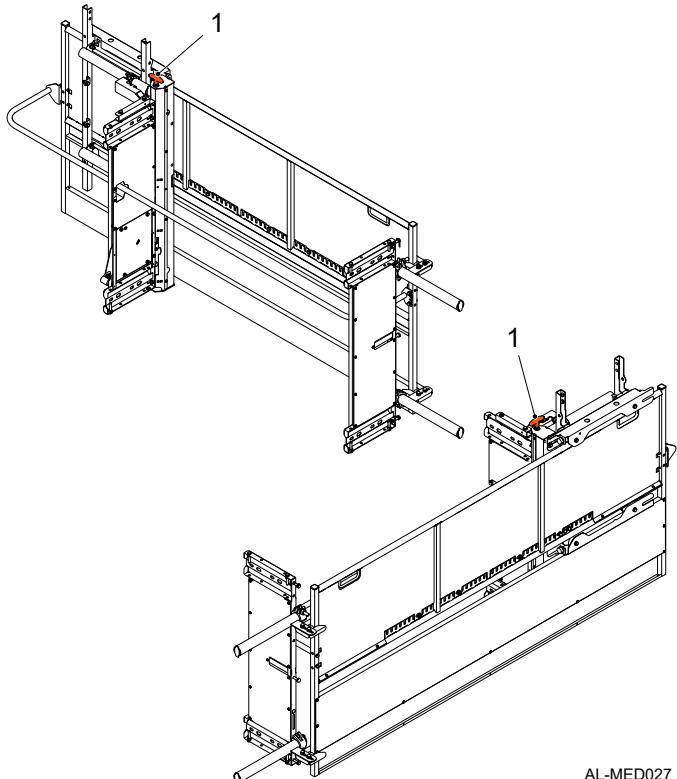


Figure 24 : Reduced height landing doors

#### Reduced height landing doors

- |   |                              |
|---|------------------------------|
| 1 | Opening handle               |
| 2 | Central hinge release handle |



AL-MED027

**Figure 25 : Reduced height landing doors**

**Reduced height landing doors**

1 | Opening handle

# 4 Using the lifting transportation system

## 4.1 Prohibited uses

EN-AL-08-01-0001-02

### DANGER



*Risk of injuries. Failing to observe the warnings may have extremely dangerous consequences for the physical well-being of the operators.*

The following actions are prohibited:

- Using the lifting transportation system for purposes other than those intended.
- Using the lifting transportation system for unauthorised persons.
- Using the lifting transportation system without being familiarised with the safety and operating instructions.
- Manipulating switches, sensors or safety devices.
- Attempting to repair the lifting transportation system components. Only authorised technicians are authorised to perform maintenance tasks on the lifting transportation system.

## 4.2 Safety instructions

EN-AL-10-13-0001-02

### WARNING



*The lifting transportation system must always be used in accordance with applicable local regulations regarding work and safety.*

### NOTICE



*In case of conflict between what is described in this manual and local regulations, the most restrictive will always take precedence.*

### 4.2.1 Safety instructions prior to use

EN-AL-10-14-0002-02

- The lifting transportation system must always be in optimal operating condition and must not show any signs of having been mishandled.
- The electrical system must be in optimal operating condition and must not have any damage that could compromise operation during use.
- The surface on which the lifting transportation system rests and the adjustment of the adjustable base plates must be in optimal operating condition.
- The masts, ties and cable guides must be in optimal operating condition.
- The cage's travel path must be free of obstacles.
- The enclosures and protections of the levels must be in optimal operating condition.

### 4.2.1.1 Safety instructions during use

EN-AL-10-03-0000-02

### WARNING



*Do not use the lifting transportation system under adverse weather conditions, including wind speeds of more than 20 m/s.*

- The cage's travel path must be free of obstacles.
- Do not place objects or stand under the cage.
- Do not overload the cage with loads that exceed the rated load.
- Do not access the cage with heavy systems for moving loads, such as electric forklifts, as they may overload the machine.
- Place the load in the cage in such a way that the weight is distributed.
- Fix and secure the load to prevent it from moving when the cage moves.
- In low light conditions, illuminate the work area to ensure sufficient visibility.
- Stop working immediately and inform the supervisor in case any damages or malfunctions occur during operation or in case circumstances arise that could jeopardise safety.

### 4.2.2 Safety instructions after use

EN-AL-10-11-0001-02

- Once finished using the lifting transportation system, place the cage on the bottom level.
- Disconnect and lock the main switch to prevent misuse.

### NOTICE



*Do not turn the cage electric panel disconnector. Only use in case of inspection or maintenance operations.*

## 4.3 Inspection prior to use

EN-AL-10-11-0002-02

### NOTICE



*Only persons with relevant training associated with using and performing inspections prior to use on the Alimak lifting transportation system are authorised to use and perform inspections on the lifting transportation system in accordance with applicable local regulations.*

### NOTICE



*Record the result of the inspection prior to use in the Appendix: Operator log.*

#### 4.3.1 Visual inspection

EN-AL-11-00-0005-02

Function / System	Operations
Lifting transportation system	<p>Visually check that there are no cracks, dents or disparities on the following parts of the lifting transportation system and components:</p> <ul style="list-style-type: none"><li>• Drive system</li><li>• Guiding system</li><li>• Overspeed safety device</li><li>• Cage electric panel</li><li>• Base electric panel</li><li>• Switches and sensors</li><li>• Electrical cables, elements for securing cables and electrical connections</li><li>• Mast section connection</li><li>• Absence of oil leaks on the drive unit</li><li>• Informative signs and documentation</li><li>• Base frame<ul style="list-style-type: none"><li>– Buffers</li><li>– Cable collect bin</li><li>– Bottom limit cam</li><li>– Emergency bottom limit cam</li><li>– First mast section and rack</li><li>– Base frame level and mast in vertical position</li><li>– Adjustable base plates on the base frame fixed correctly</li></ul></li></ul>
Installation components	<ul style="list-style-type: none"><li>• Visually check the installation tie systems.</li></ul>
Travel path	<ul style="list-style-type: none"><li>• Visually check that there are no obstacles in the travel path of the cage.</li></ul>

#### 4.3.2 Functional check

EN-AL-11-04-0014-02

Function / System	Operations
Main switch	<ol style="list-style-type: none"> <li>1. Turn the main switch on the base electric panel to the OFF position [Refer to section <a href="#">Base electric panel</a>, see on page 15].</li> <li>2. Turn the Mode of use selector on the cage electric panel to the Normal Mode position [Refer to section <a href="#">Cage electric panel</a>, see on page 16].</li> <li>3. Press the UP button on the cage electric panel, release it and then press the DOWN button. <b>The cage should not ascend or descend.</b></li> <li>4. Turn the main switch on the base electric panel to the ON position.</li> </ol>
Emergency-stop button (cage electric panel / base control station) and Lower level switch	<ol style="list-style-type: none"> <li>1. Press the UP button on the base control station to ascend the cage approximately 1 m.</li> <li>2. Push the emergency-stop button on the base control station [Refer to section <a href="#">Base control station</a>, see on page 15]. <b>The landing doors not ready indicator light should light up on the base electric panel.</b></li> <li>3. Press the UP button on the base control station, release it and then press the DOWN button. <b>The cage should not ascend or descend.</b></li> <li>4. Pull the gate to open it. <b>The gate should not open.</b></li> <li>5. Deactivate the emergency-stop button.</li> <li>6. Descend the cage until the bottom limit switch comes into contact with the bottom limit cam [Refer to section <a href="#">Bottom limit switch</a>, see on page 14]. <b>The cage should stop.</b></li> </ol>
Cage gates and Top limit switch	<ol style="list-style-type: none"> <li>1. Enter the cage.</li> <li>2. Press the UP button on the cage electric panel to ascend. [Refer to section <a href="#">Cage electric panel</a>, see on page 16].</li> <li>3. Pull the gate to open them when the cage is moving. <b>The gate should not open.</b></li> <li>4. Press the emergency-stop button on the cage electric panel when it is between two levels of the installation.</li> <li>5. Pull the check that the boltsgate to open them. <b>The gate should not open.</b></li> <li>6. Deactivate the emergency-stop button.</li> <li>7. Ascend the cage until the top limit switch comes into contact with the top limit cam [Refer to section <a href="#">Top limit switch</a>, see on page 14].</li> <li>8. Pull the gate to open them. <b>Only the cage gate to the different levels should open.</b> <b>The landing door to the top level should open.</b></li> <li>9. Descend the cage to the bottom level.</li> </ol>

### 4.3.3 Inspection logs

EN-AL-11-04-0015-02

Function / System	Operations
Hour counter	<ol style="list-style-type: none"><li>1. Turn the disconnector to the OFF position.</li><li>2. Open the cage electric panel door.</li><li>3. Check the reading of the hour counter. <b>Record the hour counter reading on the Operator log [Refer to appendix <i>Operator log</i>, see on page 39].</b></li><li>4. Close the cage electric panel door.</li><li>5. Turn the disconnector to the ON position.</li></ol>

### 4.3.4 Out of service

EN-AL-07-01-0016-02

If the lifting transportation system is not in optimal condition after carrying out the inspection prior to use:

- Turn the main switch to the OFF position and lock with a padlock to prevent unintentional operation of the lifting transportation system.
- Record that the lifting transportation system is out of service in the Appendix: Operator log and inform the supervisor.

## 4.4 Using the lifting transportation system

### 4.4.1 Normal Mode / Inspection Mode / Bypass Mode

EN-AL-07-01-0019-02

#### WARNING



The person responsible for use of the lifting transportation system must keep the Mode of use selector key.

The cage electric panel has a Mode of use selector (Normal Mode / Inspection Mode / Bypass Mode)<sup>1)</sup>

The mode of use selector in the Normal Mode position allows movement of the construction hoist in automatic mode from inside the cage and from the access levels of the installation.

The mode of use selector in the Inspection Mode position allows movement of the construction hoist exclusively from inside the cage in manual mode.

The mode of use selector in the Bypass mode position allows movement of the construction hoist exclusively from inside the cage in manual mode for special operations that require a safety device to be overridden temporarily.

#### WARNING



<sup>1)</sup>The Inspection and Bypass modes should only be used for maintenance tasks or special operations.

### 4.4.2 Sleep mode

EN-AL-11-04-0001-02

The lifting transportation system has a sleep mode. After a period of time, the power supply to the cage gate electromechanical locking device is cut off.

The power supply is automatically restored when there is any interaction with the lifting transportation system, opening a level landing door or pressing a button on an electric panel.

### 4.4.3 Using the construction hoist from inside the cage

EN-AL-11-04-0002-02

#### DANGER



Risk of injuries. Strictly comply with all safety instructions described in this manual and those provided by the operator when using the lifting transportation system.

1. If the cage is on an upper or lower level, press the DOWN button or UP button to call or send the cage [Refer to section [Base control station](#), see on page 15 or section [Landing control panels](#), see on page 19].

2. Press the next landing button after having exceeded the level immediately preceding the one where the cage should stop (except on the lower and upper levels, where the bottom or top limit switch will stop the cage).

**The cage will stop once the level immediately above or below has been reached.**

3. Open the enclosure door.

4. Open the cage gate and deploy the folding threshold ramp.

5. Enter and place the load in the cage if applicable.

6. Retract the folding threshold ramp.

7. Close the enclosure door.

8. Close the cage gate.

9. Press the UP button or the DOWN button on the cage electric panel [Refer to section [Cage electric panel](#), see on page 16] to ascend or descend the lifting transportation system.

10. Press the next landing button on the cage electric panel after having exceeded the level immediately preceding the one where the cage should stop (except on the lower and upper levels where the bottom or top limit switch will stop the cage).

**The cage will stop once the level immediately above or below has been reached.**

11. Open the cage gate.

12. Open the enclosure door.

13. Deploy the folding threshold ramp.

14. Remove the load from inside the cage if applicable.

15. Exit the cage.

#### NOTICE



Once finished using the lifting transportation system, close in this order: folding threshold ramp, cage gate and enclosure door so that the call function is available.

#### 4.4.4 Using the construction hoist from outside the cage

EN-AL-11-04-0004-02

##### DANGER



*Risk of injuries. Strictly comply with all safety instructions described in this manual and those provided by the operator when using the lifting transportation system.*

1. If the cage is on an upper or lower level, press the DOWN button or UP button to call or send the cage [Refer to section *Base control station*, see on page 15 or section *Landing control panels*, see on page 19].
2. Press the next landing button after having exceeded the level immediately preceding the one where the cage should stop (except on the lower and upper levels, where the bottom or top limit switch will stop the cage).

**The cage will stop once the level immediately above or below has been reached.**

3. Open the enclosure door.
4. Open the cage gate and deploy the folding threshold ramp.
5. Enter and place the load in the cage if applicable.
6. Exit the cage once the load has been placed.
7. Retract the folding threshold ramp and close the cage gate.
8. Close the enclosure door.
9. Press the DOWN button or the UP button on the level where the operator is to call or send the cage.
10. Press the next landing button after having exceeded the level immediately preceding the one where the cage should stop (except on the lower and upper levels, where the bottom or top limit switch will stop the cage).

**The cage will stop once the level immediately above or below has been reached.**

11. Open the enclosure door.
12. Open the cage gate and deploy the folding threshold ramp.
13. Enter and remove the load from inside the cage if applicable.
14. Exit the cage.

##### NOTICE



*Once finished using the lifting transportation system, close in this order: folding threshold ramp, cage gate and enclosure door so that the call function is available.*

# 5 Troubleshooting

EN-AL-07-15-0001-02

## DANGER



*Risk of injuries. In case of damage or malfunction, stop the lifting transportation system immediately. Observe the instructions, procedures, conditions of use, and warnings in this manual at all times.*

## DANGER



*Risk of falling. A damaged or defective drive system or overspeed safety device seriously compromises the safety of the lifting transportation system. In case of damage or malfunction, replace or repair the drive system or overspeed safety device immediately.*

## DANGER



*Electrical hazard. Switch off the electrical power supply before opening any control panels on the lifting transportation system.*

Only maintenance technicians are authorised to perform maintenance and repair tasks on the lifting transportation system.

The content described below aims to resolve problems that are within the operator's scope and prevent more serious problems that may cause situations of risk.

## NOTICE



*The lifting transportation system is equipped with an alarm device button from inside the cage with an independent power supply. In case of not being qualified to resolve the problem, use the alarm device button to request assistance.*

## 5.1 Prior checks in case of stoppage or malfunction

EN-AL-07-15-0002-02

Before continuing with a more in-depth analysis of the cause of the lifting transportation system stopping or malfunctioning, check the points described below that cover the most common malfunctions that may occur during use.

PRIOR CHECKS IN CASE OF STOPPAGE OR MALFUNCTION	
Check	Operation
<b>Base electric panel</b>	
Check the power supply on the lifting transportation system	<ol style="list-style-type: none"><li>1. Turn the main switch ON.</li><li>2. Activate the emergency-stop button. <b>The landing doors not ready indicator light should turn on.</b></li><li>3. Deactivate the emergency-stop button.</li></ol>
<b>Accesses and emergency-stop buttons</b>	
Check the accesses and emergency-stop buttons	<ol style="list-style-type: none"><li>1. Close the landing doors on all levels of the installation.</li><li>2. Deactivate all of the emergency-stop buttons of the installation. <b>The landing doors not ready indicator light should not turn on.</b></li></ol>
<b>Cage electric panel</b>	
Check the power supply on the cage electric panel	<ol style="list-style-type: none"><li>1. Enter the cage. If necessary, use the manual release system to open the gate.</li><li>2. Turn the disconnector to the ON position.</li></ol>

## 5.2 Troubleshooting and possible malfunctions

EN-AL-07-15-0003-02

Cause	Solution
<b>THE CAGE DOES NOT ASCEND OR DESCEND</b>	
<b>A1 Main switch</b>	
Main switch is in the OFF position.	Turn the main switch ON.
<b>A2 Emergency stop</b>	
Emergency-stop button activated on the base control station, on the cage electric panel or on any landing control panel.	Deactivate the emergency-stop button.
<b>A3 Power failure</b>	
Power cable	<ol style="list-style-type: none"><li>1. Check the connection of the electrical power supply connector to the base electric panel.</li><li>2. Visually check whether the power cable is damaged or severed.</li><li>3. Replace the power cable if necessary.</li></ol>
Protections	<ol style="list-style-type: none"><li>1. Open the base electric panel.</li><li>2. Check whether any protection has tripped.</li><li>3. Reset the protection.</li></ol>
Phase relay	<ol style="list-style-type: none"><li>1. Check whether the incorrect phase sequence indicator light (blue) on the cage electric panel is on.</li><li>2. If the incorrect phase sequence indicator light (blue) is on, correct the phase sequence on the electrical power supply connector of the base electric panel.</li></ol>
<b>A4 Construction hoist call system</b>	
Landing doors not ready	<ol style="list-style-type: none"><li>1. Check whether the landing doors not ready indicator light is lit on the base electric panel.</li><li>2. Close the level landing door.</li><li>3. Check the level landing door emergency-stop button.</li></ol>
Mode of use selector	<ol style="list-style-type: none"><li>1. Check that the Mode of use selector on the cage electric panel is in the Normal Mode position.</li></ol>
<b>A5 Safety devices</b>	
Gate open or electromechanical locking system for the cage gate damaged or defective.	Close the gate and check the electromechanical locking system switch for the cage gate.
Mast railing open.	Close the mast railing.
Assembly threshold ramp open.	Close the assembly threshold ramp.
Assembly crane installed and positioned in position for use.	Remove the assembly crane or rotate it to the standby position on the assembly crane support.

Cause	Solution
<b>THE CAGE DOES NOT ASCEND OR DESCEND</b>	
<b>A6 Emergency safety devices</b>	
Emergency limit switch activated with the emergency bottom limit cam.	<ol style="list-style-type: none"> <li>1. Raise the system until the emergency bottom limit switch is released from the activation cam.</li> <li>2. Check whether or not it is necessary to adjust or repair the emergency bottom limit switch or cam.</li> <li>3. Check whether or not it is necessary to adjust or repair the bottom limit switch or cam.</li> </ol>
Emergency limit switch activated with the emergency top limit cam.	<ol style="list-style-type: none"> <li>1. Perform a manual descent to an accessible level.</li> <li>2. Check whether or not it is necessary to adjust or repair the emergency top limit switch.</li> <li>3. Check whether or not it is necessary to adjust or repair the top limit switch.</li> </ol>
Rack presence switch deactivated.	<ol style="list-style-type: none"> <li>1. Perform a manual descent to an accessible level.</li> <li>2. Check whether or not it is necessary to adjust or repair the rack presence switch.</li> </ol>
Overspeed safety device activated as a result of the drive system failing.	<ol style="list-style-type: none"> <li>1. Block the use of the lifting transportation system.</li> <li>2. Inform the supervisor.</li> </ol>
Overspeed safety device activated as a result of the rack failing.	<ol style="list-style-type: none"> <li>1. Block the use of the lifting transportation system.</li> <li>2. Inform the supervisor.</li> </ol>
<b>A7 Control circuit and power supply</b>	
Electrical power supply interrupted or control failure.	<ol style="list-style-type: none"> <li>1. Perform a manual descent to an accessible level.</li> <li>2. Identify the cause of the failure or wait until the electrical power supply is restored.</li> <li>3. Check that the disconnector on the cage electric panel is in the ON position.</li> <li>4. Check for possible failures in the lifting transportation system's control circuit.</li> </ol>
Guided cable severed or damaged.	<ol style="list-style-type: none"> <li>1. Visually check whether the guided cable is damaged or severed.</li> <li>2. Replace the guided cable if necessary.</li> <li>3. Check the guided cable connection.</li> </ol>
Malfunction in the lifting transportation system's DOWN control circuit.	Check and, if necessary, repair connections, wiring and relays.
Malfunction in the lifting transportation system's UP control circuit.	Check and, if necessary, repair connections, wiring and relays.
<b>A8 Motor malfunction. The motor malfunction indicator light (red) lights up on the cage electric panel</b>	
Lack of cooling to motor.	Clean the motor cover or unclog the air inlet if clogged.
Motor phase malfunction.	Correct the motor phase malfunction.

Cause	Solution
<b>THE MOTOR STARTS WITH DIFFICULTY OR DOES NOT START</b>	
<b>B1 Electrical power supply</b>	
Motor input voltage too low.	<ol style="list-style-type: none"> <li>1. Measure the voltage and current consumption on the motor.</li> <li>2. Correct voltage of electrical power supply.</li> </ol>
<b>B2 Electromagnetic motor brake</b>	
Electromagnetic motor brake closed.	Repair any power faults or replace electromagnetic motor brake.
Electromagnetic motor brake defective.	Replace the defective electromagnetic motor brake.
Rectifier defective.	Replace defective rectifier.
<b>B3 Overload system</b>	
The overload system is not properly adjusted.	<ol style="list-style-type: none"> <li>1. Descend the cage to the bottom level.</li> <li>2. Adjust the overload system.</li> </ol>
<b>THE CAGE DOES NOT STOP AT THE CORRECT HEIGHT</b>	
<b>C1 Level detection cam</b>	
Level detection cam poorly adjusted or damaged	<ol style="list-style-type: none"> <li>1. Visually check whether the level detection cam is poorly adjusted or damaged.</li> <li>2. Adjust the level detection cam or replace if necessary.</li> </ol>
<b>C2 Electromagnetic brake</b>	
Electromagnetic motor brake misadjusted.	<ol style="list-style-type: none"> <li>1. Stop the lifting transportation system immediately. <b>The electromagnetic motor brake must be adjusted.</b></li> <li>2. Inform the supervisor.</li> </ol>
Electromagnetic motor brake worn.	<ol style="list-style-type: none"> <li>1. Stop the lifting transportation system immediately. <b>The electromagnetic motor brake must be replaced.</b></li> <li>2. Inform the supervisor.</li> </ol>
Electromagnetic motor brake defective.	<ol style="list-style-type: none"> <li>1. Stop the lifting transportation system immediately. <b>The electromagnetic motor brake must be replaced.</b></li> <li>2. Inform the supervisor.</li> </ol>
<b>THE CAGE DOES NOT STOP AT SOME OF THE INTERMEDIATE LEVELS</b>	
<b>D1 Level stop cam</b>	
Level stop cam not installed.	<ol style="list-style-type: none"> <li>1. Visually check whether the level stop cam is installed.</li> <li>2. Install the level stop cam.</li> </ol>
<b>THE CAGE DOES NOT STOP AT ANY OF THE INTERMEDIATE LEVELS</b>	
<b>E1 Landing stop limit switch</b>	
Upper level switch misadjusted or damaged.	<ol style="list-style-type: none"> <li>1. Visually check whether the upper level switch is poorly adjusted or damaged.</li> <li>2. Adjust the upper level switch or replace if necessary.</li> </ol>

<i>Cause</i>	<i>Solution</i>
<b>THE CONSTRUCTION HOIST DOES NOT UNLOCK THE CAGE GATE ON THE BOTTOM OR TOP LEVEL</b>	

#### F1 Level stop cam

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Level stop cam poorly adjusted or not installed.

1. Visually check whether the level stop cam is poorly adjusted or not installed.
2. Adjust the level stop cam or install if necessary.

#### THE CONSTRUCTION HOIST UNLOCKS THE INCORRECT TO THE CAGE GATE ON THE BOTTOM LEVEL

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#### G1 Door control cam

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Door control cam poorly adjusted or not installed.

1. Visually check whether the door control cam is poorly adjusted or not installed.
2. Adjust the door control cam or install if necessary.

#### THE LIFTING TRANSPORTATION SYSTEM DOES NOT UNLOCK ANY UPPER LEVEL LANDING DOOR

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#### H1 Interlocking landing cam for cage gates

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Interlocking landing cam poorly adjusted or not installed.

1. Visually check whether the interlocking landing cam is poorly adjusted or not installed.
2. Adjust the interlocking landing cam or install if necessary.

#### THE LIFTING TRANSPORTATION SYSTEM DOES NOT UNLOCK THE BASE LANDING DOOR

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#### I1 Interlocking landing cam for cage gates

---

Interlocking landing cam poorly adjusted or not installed.

1. Visually check whether the interlocking landing cam is poorly adjusted or not installed.
2. Adjust the interlocking landing cam or install if necessary.

#### THE LIFTING TRANSPORTATION SYSTEM DOES NOT UNLOCK ANY UPPER LEVEL OR BASE LANDING DOOR

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#### J1 Level landing door interlocking system

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Level landing door interlocking system poorly adjusted or damaged.

1. Visually check whether the interlocking system is poorly adjusted or damaged on the level landing door.
2. Adjust the interlocking system or replace if necessary on the level landing door.

Cause	Solution
<b>THE LIFTING TRANSPORTATION SYSTEM HAS STOPPED UNEXPECTEDLY</b>	
<b>K1 Electrical power supply</b>	
Power failure.	<ol style="list-style-type: none"> <li>1. Perform a manual descent to an accessible level.</li> <li>2. Identify the cause of the failure or wait until the electrical power supply is restored.</li> </ol>
Maximum height of guided cable exceeded.	Check whether the maximum height of the guided cable has been exceeded in the installation.
<b>K2 Overspeed safety device</b>	
Overspeed safety device activated as a result of the drive system failing.	<ol style="list-style-type: none"> <li>1. Stop the lifting transportation system immediately.</li> <li>2. Inform the supervisor</li> </ol>
Overspeed safety device activated as a result of the rack failing.	<ol style="list-style-type: none"> <li>1. Stop the lifting transportation system immediately.</li> <li>2. Inform the supervisor</li> </ol>
<b>THE GUIDED CABLE DOES NOT COIL CORRECTLY INSIDE THE CABLE COLLECT BIN</b>	
<b>L1 Cable guiding system</b>	
Cable guiding system poorly adjusted or cable guides damaged.	<ol style="list-style-type: none"> <li>1. Visually check whether the cable guiding system is poorly adjusted or the cable guides are damaged.</li> <li>2. Adjust the cable guiding system or replace the cable guides if necessary.</li> </ol>
<b>L2 Cable collect bin</b>	
Cable collect bin damaged or lack of lubricant on the inner wall of the cable collect bin.	<ol style="list-style-type: none"> <li>1. Visually check whether the cable collect bin is damaged or there is a lack of lubricant on the inner wall.</li> <li>2. Repair the damage to the cable collect bin or replace it if necessary.</li> <li>3. Apply lubricant to the inner wall of the cable collect bin if necessary.</li> </ol>
<b>L3 Cable</b>	
Cable damaged or deformed.	<ol style="list-style-type: none"> <li>1. Visually check whether the cable is damaged or deformed due to wind, low temperatures or any snagging on other components in the installation.</li> <li>2. Replace the cable if necessary.</li> </ol>
Lack of lubricant on the cable.	Apply lubricant to the cable if necessary.

<i>Cause</i>	<i>Solution</i>
<b>HIGH NOISE LEVEL OF THE DRIVE SYSTEM, BUT THE LIFTING TRANSPORTATION SYSTEM CAN ASCEND AND DESCEND</b>	
<b>M1 Rack</b>	
Rack insufficiently lubricated.	Lubricate the rack.
The rack is dirty or has metal shavings.	Clean and lubricate the rack.
Rack worn.	Replace the worn rack sections.
<b>M2 Drive pinion</b>	
Drive pinion worn.	Replace the worn drive pinion.
<b>M3 Guiding system</b>	
Guiding system worn.	Replace guide rollers.
<b>M4 Drive system</b>	
Drive system defective.	<ol style="list-style-type: none"> <li>1. Stop the lifting transportation system immediately.</li> <li>2. Inform the supervisor.</li> </ol>

### **THE LIFTING TRANSPORTATION SYSTEM IS TILTED (MISALIGNED) EXCESSIVELY**

<b>N1 Ties</b>	<ol style="list-style-type: none"> <li>1. Check there are no tie connections that are poorly tightened.</li> <li>2. Check whether the ties are installed incorrectly or damaged.</li> <li>3. Apply the correct torque to the tie connections or replace them if necessary.</li> </ol>
<b>N2 Mast</b>	<ol style="list-style-type: none"> <li>1. Check there are no connections that are poorly tightened.</li> <li>2. Check that the ties are installed correctly.</li> <li>3. Check that the fixing plates for the tie system brackets are installed correctly on the mast.</li> </ol>
<b>N3 Base frame support points</b>	<ol style="list-style-type: none"> <li>1. Check that there are no base frame support points that are poorly tightened.</li> <li>2. Level the base frame and apply the correct torque to the support points if necessary.</li> </ol>

# 6 Special operations

EN-AL-11-00-0004-02

## DANGER



*These operations are only contemplated in case of emergency and must at no time be understood as part of normal operation of the lifting transportation system.*

*Inform the supervisor upon completion of any of them in order to assess the scope of the problem and block the use of the lifting transportation system in case of risk.*

## DANGER



*Only persons with specific training are authorised to carry out the operations described in this section.*

*In case of not being able to carry out any of the operations described, use the alarm device button to request assistance.*

## 6.1 Emergency manual lowering

EN-AL-11-04-0000-02

## WARNING



*Try to resolve the problem causing the malfunction before carrying out the manual descent operation [Refer to section [Troubleshooting](#), see on page 27]*

## WARNING



<sup>1)</sup>A seal prevents unauthorised use and allows control of the possible use of the electromagnetic motor brake release lever.

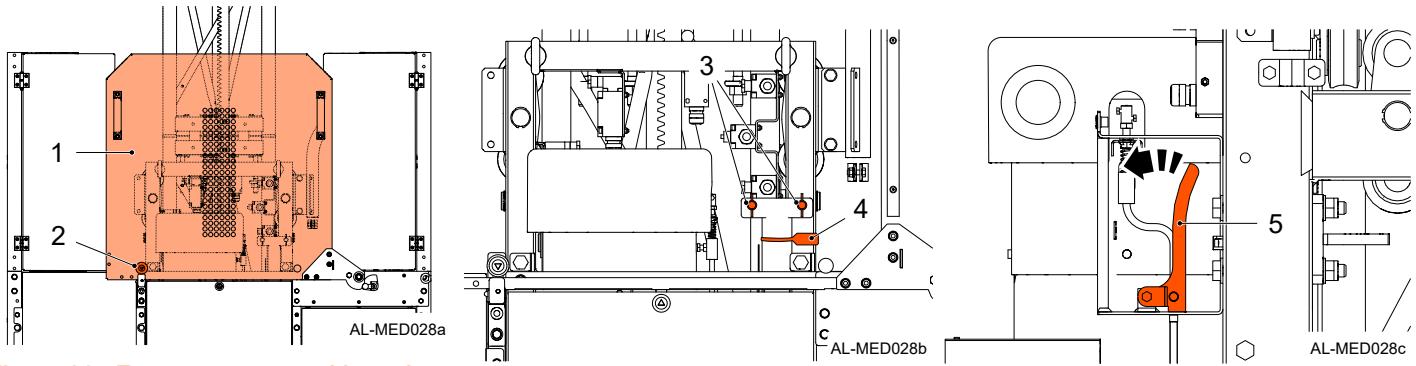
*The manual descent speed must not exceed the rated speed, otherwise the overspeed safety device will be activated automatically causing the cage to stop.*

*Slowly operate the electromagnetic motor brake release lever so that the manual descent speed is approximately 1/3 of the rated speed.*

*Wait at least 1 minute every 10 metres of manual descent to ensure proper cooling of the brake.*

The manual descent system allows the cage to be lowered in case of a power failure or in certain installation, inspection and maintenance operations.

Function / System	Operations
Manual descent	<ol style="list-style-type: none"><li>1. Open the mast railing<sup>2)</sup> to access the electromagnetic motor brake release lever.</li><li>2. Operate the electromagnetic motor brake release lever<sup>1)</sup>.</li><li><b>The cage will begin to descend by operating the electromagnetic motor brake release lever.</b></li><li>3. Descend to a level of the installation that allows safe exit from the cage.</li><li>4. Carry out the necessary inspections, place a new seal<sup>3)</sup> on the electromagnetic motor brake release lever of the electromagnetic motor brake and close the mast railing before putting the construction hoist back into service.</li><li>5. Inform the supervisor and record the manual descent in the Appendix: Operator log.</li></ol>



**Figure 26 : Emergency manual lowering**

#### Emergency manual lowering

- 1 Mast railing
- 2 8 mm triangular key lock
- 3 Lever cover bolts
- 4 Lever cover seal
- 5 Electromagnetic motor brake release lever

#### NOTICE



<sup>2)</sup>The mast railing is opened using a triangular key.

The mast railing can only be opened for inspection and maintenance operations or to access the electromagnetic motor brake release lever for manual descent.

#### NOTICE



<sup>3)</sup>A set of seals is supplied with the lifting transportation system.

If necessary, contact Alimak to request new seals.

## 6.2 Using the lifting transportation system in Bypass Mode

EN-AL-11-00-0006-02

### WARNING



*The person responsible for use of the lifting transportation system must keep the Mode of use selector key.*

### WARNING



<sup>1)</sup>*Before resuming operation of the construction hoist, determine the cause of activation of the overspeed safety device and make sure the problem has been resolved.*

*In case of detecting serious faults, stop the lifting transportation system immediately and contact Alimak for assistance.*

Bypass Mode is a mode of use exclusively for maintenance tasks or emergency situations.

The most common situations in which it will be necessary to use the lifting transportation system in Bypass Mode are:

Cause	Operations
Activation of the emergency bottom limit switch	<ol style="list-style-type: none"><li>1. Turn the Mode of use selector on the cage electric panel and keep it in Bypass Mode.</li><li>2. Press the UP button on the cage electric panel to ascend the cage a few centimetres until the emergency bottom limit switch is deactivated. <b>Once the emergency bottom limit switch has been deactivated, the construction hoist can be used in Normal Mode.</b></li><li>3. Turn the Mode of use selector on the cage electric panel to Normal Mode.</li></ol>
Activation of the overspeed safety device	<ol style="list-style-type: none"><li>1. Turn the Mode of use selector on the cage electric panel and keep it in Bypass Mode.</li><li>2. Press the UP button on the cage electric panel to ascend the cage a few centimetres until the overspeed safety device is unlocked<sup>1)</sup>.</li><li>3. Turn the Mode of use selector on the cage electric panel to Normal Mode.</li></ol>

# Appendix

## Checklist

EN-AL-12-06-0002-02

Installation information			
Date:		Serial no. of the lifting transportation system:	
Name of the operators:		Serial no. of the drive system:	
Hour counter reading:		Serial no. of the overspeed safety device:	
Installation address:			

Checklist			
4.3.1 Visual inspection	OK	NOK	Incidents and comments
Lifting transportation system			
Installation components			
Travel path			
4.3.2 Functional check	OK	NOK	Incidents and comments
Main switch			
Emergency-stop button (cage electric panel / base control station) and Lower level switch			
Cage gates and Top limit switch			

Result of inspection prior to use	OK	NOK	Incidents and comments
The lifting transportation system is suitable for use			

Name of the operator (in capital letters):	
Signature:	

## NOTICE



*Write the result of the verification in the OK or NOK field:*

*OK: Result of the verification approved*

*NOK: Result of the verification not approved*

## Operator log

EN-AL-12-01-0001-02

## CAUTION



*Extraordinary inspections are required in case the Operator log is lost.*

Record the results of the daily inspections on the pages of the Operator log.

The Operator log must be available to the competent authorities.

If necessary, request additional pages for the Operator log from the manufacturer. Contact Alimak for assistance.

NOTICE



*Write the general result of the daily inspection in the OK or NOK field:*

*OK: general result of daily inspection approved*

*NOK: general result of daily inspection not approved*

NOTICE



*Write the general result of the daily inspection in the OK or NOK field:*

*OK: general result of daily inspection approved*

*NOK: general result of daily inspection not approved*

NOTICE



*Write the general result of the daily inspection in the OK or NOK field:*

*OK: general result of daily inspection approved*

*NOK: general result of daily inspection not approved*

## Change log

EN-AL-02-00-0001-02

Revision	Date [month/year]	Description
01.01	09/2023	ALIMAK MEDIUS 350 10-15 lifting transportation system operator's manual (CE certification draft)
01.02	11/2023	Name updated to ALIMAK MEDIUS 350 10-15
01.03	11/2023	ALIMAK MEDIUS 350 10-15 lifting transportation system operator's manual (serial production)



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