

HEK
MODULAR
SYSTEM

HEK MCM APCM

Preface

For additional information on adjustments, maintenance and repair, contact the Service Department of Alimak Hek B.V.:

Alimak Hek B.V.
Westelbeersedijk 18
NL - 5091 SM Middelbeers
P.O. Box 2, NL - 5090 AA Middelbeers
The Netherlands

Tel: +31 (0)13 514 8653 (Office hours)
Fax: +31 (0)13 514 8640
E-mail: info.hek@alimakhek.com

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1 About this manual

1.1 About this manual

Purpose

The manual shows the information for the application engineer:

- How to choose the correct machine configuration for an application.
- Which information the other persons that are involved must receive.
- How to change a machine to an MC.

Language

The original language of the manual is English.

1.2 How to work with the manual

1. Familiarize yourself with the structure and content of this manual.
2. Do the actions completely and in the given sequence.

1.3 Record of changes

Version	Date	Description
V0	2011.01	Complete manual update
V1	2012.06	Complete manual update

1.4 Abbreviations

Abbreviation	Description
AC	Alternating Current
APCM	APpliCation Manual
ASSM	ASSEmbley Manual
AVW	Audio Visual Warning
DC	Direct Current
MC	Mast Climber work platform
MCC	Motor Control Centre
OPEM	OPERator Manual
PLC	Programmable Logic Control
SD	Safety Device
SERM	SERvice Manual
VFC	Variable Frequency Controller

1.5 Structure of the documentation set

The documentation set consists of four manuals:

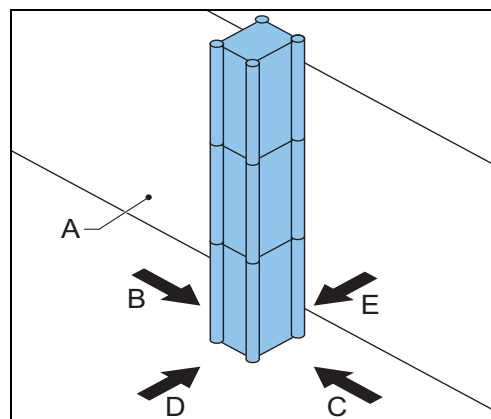
Abbreviation	Description
MCM_APCM	APpliCation Manual Explains how to translate requirements from a construction project into a suitable solution.
MCM_ASSM	ASSEmbley Manual Explains how to Assemble a machine on site.
MCM_OPEM	Operator Manual Explains how to do the daily operating of the machine.
MCM_SERM	SERvice Manual Explains how to service the machine.

To avoid duplications, in the manuals is often referred to information in the other manuals.

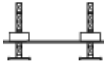
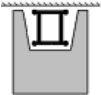
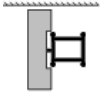
1.6 Orientation conventions

The illustration shows the convention of the orientation of the machine to a building.

- A Building
- B Left
- C Right
- D Front
- E Rear



1.7 Icons used in the manual

Icon	Description	Icon	Description
	WARNING An incorrect operation can cause personal injury, death or equipment damage.		WARNING Electrical risk.
	WARNING Falling risk.		WARNING Risk of falling objects.
	WARNING Pinch risk.		WARNING Sharp edges risk.
	CAUTION An incorrect operation can cause damage to the machine or to property.		
	Note A note shows more data.		Tip A tip shows more data than a note, but is less important.
	Only applies to single machine.		Only applies to twin machine.
	Only applies to A drive unit.		Only applies to B drive unit.

1.8 Description of the machine

A description of the machine is included in the Operator Manual.

2 Safety

2.1 Introduction

**Note**

Chapter Safety is divided into an Application part, an Assembly part, a Service part and an Operator part. Refer to chapter Safety in the:
Application Manual,
Assembly Manual,
Service Manual and
Operator Manual.

2.2 Safety: application procedures

- Use the correct base frame. If you do not use the correct base frame, it is possible that the machine is not stable.
- Make sure that the combination of mast ties and wall brackets is approved by Alimak Hek B.V.

3 Application



WARNING

Comply with all the applicable national and local safety rules and regulations.

3.1 Application procedure

3.1.1 Plan

1. Identify the type and configuration of the machine.
 - Use the project requirements.
 - Refer to section 3.2: mast type selection.
 - Refer to section 3.3: wind sensitivity.
2. Identify the global position for the machine. Use the project drawings or make a visit to the planned work site. Refer to section 3.4.
 - Check that there is sufficient drainage.
 - Check that the ground surface is correct. Refer to section 5.3.
 - Check the reachability of the work site.
3. Calculate required ties.
 - Define the tie scheme. Refer to section 3.6
 - Calculate the maximum forces that the ties must handle. Refer to section 3.5.
 - Check that the forces on the ties are smaller than their rated maximum.
4. Make a parts list and a packing list.
5. Arrange transport and include the lifting to and from the transport device.
6. Make sure that all the necessary permits are in place.
7. Make a list of the required training. Check / Make sure that staff has received the required training.



Note

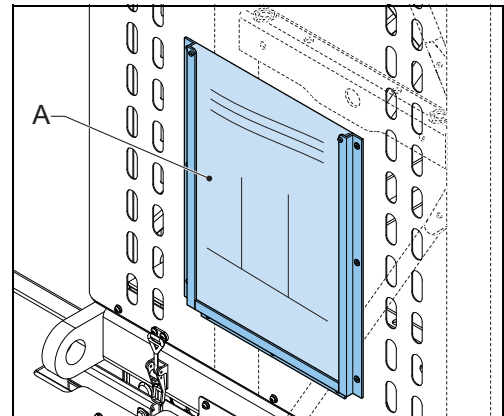
Alimak Hek BV can organize training sessions adapted to your specific needs.

3.1.2 Inform

1. Supply the site manager information on:
 - Ground pressure and support requirements.
 - Power supply requirements.
 - Tie forces and tie interval.
 - Necessary lighting and safety equipment.
2. Supply staff that assemble and disassemble the machine on site information on:
 - Machine type and configuration.
 - Ground pressure and support requirements.
 - Procedures to assemble and disassemble the machine.
 - Power supply requirements.
 - Necessary safety equipment.
 - Tie forces and tie interval.
 - Maximum loads.

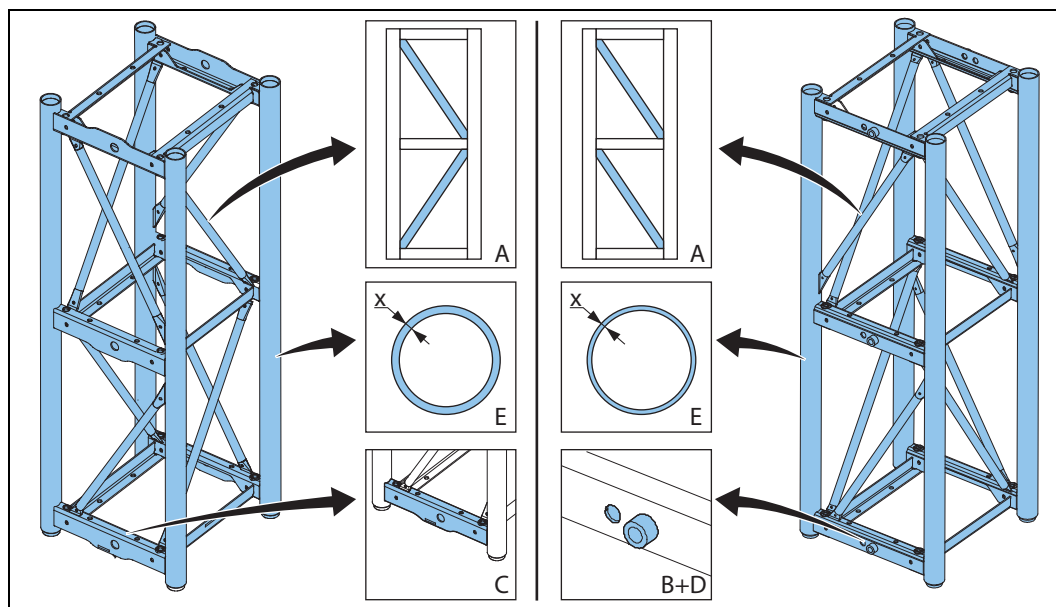
3.1.3 Install the safety sign for the maximum loads

1. Fill out maximum loads sign (A). Refer to section 3.7.
2. Install the maximum loads sign(A) to the machine, as soon as the machine is on site.



3.2 Mast type selection

1. Only use the Mark II mast type. The illustration shows the difference between the old and the new mast type.



Left: Mark II mast type

Right: Mark I mast type

Table 3.1 Difference between Mark I and Mark II mast types

Item	Description of the difference
A	Different direction of the diagonal beams
B	Hole
C	The Mark II mast type has a higher front beam
D	The Mark I mast type has a welded rear stop
E	The wall thickness (X) of the Mark I mast type is 3.2 mm, the Mark II mast type is 3.6 mm

3.3 Wind sensitivity

1. Minimize the total surface area. Equipment or tools with large surface areas can result in dangerous forces on the total construction. Contact Alimak Hek B.V. when you use an exposed (above the fence) surface area $>1 \text{ m}^2$. Refer also to section 3.5.1.
2. Large nearby objects can change significantly the wind direction and wind speeds that act on the machine.

3.4 Distance to dangerous objects

1. Take into account the minimum distance when you need to do work in the vicinity of dangerous objects, such as high voltage cables. For the specification: refer to section 5.8.1.

3.5 Mast Ties

The Mast is secured with ties to a construction. It is absolute imperative that the ties and the construction can withstand the forces. In this section the general calculation procedure is explained to determine the forces that the mast can generate. In the subsequent sections the details are explained.

1. Decide upon the position of the machine with respect to the wall.
2. Decide upon the tie length (L), refer to section 3.5.4 and section 3.5.5.
3. Decide upon the spacing (B) between the wall brackets, refer to section 3.5.4 and section 3.5.5.
4. Determine the mast tie type:
 - TPM: Type B
 - MHM: Type B
 - MCM-A: Type A
 - MCM-B: Type B
 - MCM-ABBA: Contact Alimak Hek B.V.
5. Decide upon the Tie interval, refer to section 3.6.
6. Decide upon the overhang, refer to section 3.6.
7. Determine the maximum wind pressure for the work site. Use the wind zone of the work site. If the maximum wind pressure can exceed 1306 N/m^2 contact Alimak Hek B.V.
8. Look up R_x , R_y and M_z for in service in the table in 5.8.
9. Calculate the maximum resultant force on the wall, for in service.:
 - Refer to section 3.5.4, Equation A and section for mast tie type A.
 - Refer to section 3.5.5, Equation B and section for mast tie type B.
10. Look up R_x , R_y for out of service in the table in 5.8.2. M_z is zero.
11. Calculate the maximum resultant force on the wall, for out of service:



Note

The out of service resultant force on the wall is higher than the twin in service resultant force. A twin system has a stabilizing effect.

- Refer to section 3.5.4, Equation A and section for mast tie type A.
- Refer to section 3.5.5, Equation B and section for mast tie type B.

12. Make sure that the ties can withstand the forces.



WARNING

Contact Alimak Hek if the maximum wind pressure exceeds 1306 N/m^2 .



WARNING

To prevent lethal accidents:

Do not tie the mast to a construction that can not withstand the calculated maximum forces.

3.5.1 Forces that act on the mast

The mast is subjected to forces. Two important sources of these forces are:

- The wind (pressure) causes forces in the mast. These forces will be larger when:
 - The wind pressure increases.
 - The surface increases that is exposed to the wind.
 - For the upper tie: The overhang increases, refer to section 3.6.
- Tie interval. Adding more ties can have as unexpected effect that the forces on the mast increase. The cause is that the ties in combination with the mast act as a large crowbar.

All the forces on the mast are a combination of:

- R_x
- R_y
- A torque force: M_z

Refer to the figures in section 3.5.4 and section 3.5.5.

3.5.2 Mast ties

The resultant force P on the wall brackets is dependent upon R_x , R_y , M_z and:

- Distance between mast middle and wall: L .
- Distance between the wall brackets: B .
- Type of mast tie.
 - Mast type A.
 - Mast type B.

3.5.3 Calculate the resultant force on the wall

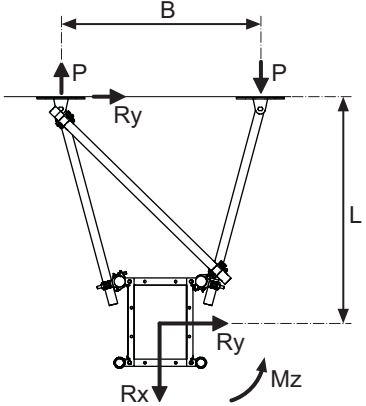
The resultant force P can be calculated with:

- Refer to section 3.5.4, Equation A for mast tie type A.
- Refer to section 3.5.5, Equation B for mast tie type B.

3.5.4 Mast tie type A

Mast tie type A is not commonly used for TMP/MHM machines. MCM-A machines derive the suffix "A" from this tie. MCM-A machines have the drive unit on the front side, with the rear side available for the tie type A.

Mast tie type A



The diagram illustrates the Mast tie type A configuration. It shows a mast structure with two anchors. The distance between the two anchors is labeled B . The distance from the center of the mast to the wall is labeled L . At the base of the mast, there are reaction forces R_x (horizontal) and R_y (vertical), and a torque M_z . At the top of the mast, there are reaction forces R_x and R_y . The resultant forces P are shown at the anchors.

$$P = \frac{R_x}{2} + R_y \cdot \frac{L}{B} + \frac{M_z}{B}$$

$$\frac{L}{B} < 2$$

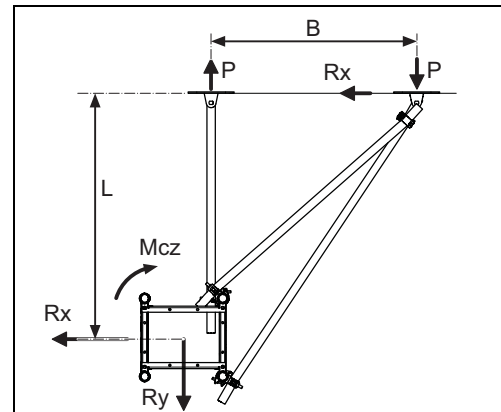
Equation A: Calculation of the resultant force on the wall for Mast tie type A.

- P Resultant force.
- B Distance between the two anchors.
- L Distance between middle of mast and wall.
- R_x Force on the mast in x-direction.
- R_y Force on the mast in y-direction.
- M_z Torque force on the mast.

3.5.5 Mast tie type B

Mast tie type B is commonly used for TMP/MHM machines. MCM-B machines derive the suffix “B” from tie type B. MCM-B machines have the drive unit on the left or right side, with the opposite side available for the tie type B.

Mast tie type B



Equation B: Calculation of the resultant force on the wall for Mast tie type B.

- P Resultant force.
- B Distance between the two wall brackets.
- L Distance between middle of mast and wall.
- Rx Force on the mast in x-direction.
- Ry Force on the mast in y-direction.
- Mcz Torque force on the mast.

$$P = Rx \cdot \frac{L}{B} + Ry \cdot \frac{(B+135)}{B} + \frac{Mcz}{B}$$



Note

In the formulas Mcz and Mz refer to the same variable: $Mcz = Mz$

3.6 Tie interval and overhang

Take note of the relations between the different ties:

- A Base frame to first tie: 3m.
- B Base frame to second tie: 9 m.
- C Tie Interval: 6m - 12m.
- D Overhang. Maximum: $\frac{1}{2} \times \text{interval-midpoint}$.



Note

Overhang causes significant forces on the top tie.



WARNING

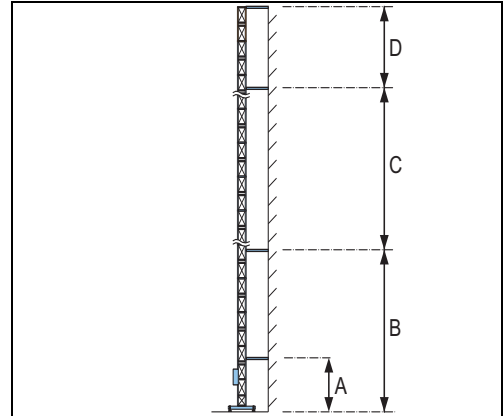
To prevent lethal accidents:

Design your application in conformance with this manual.



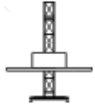
WARNING

Contact Alimak Hek if you plan to use a different tie interval.

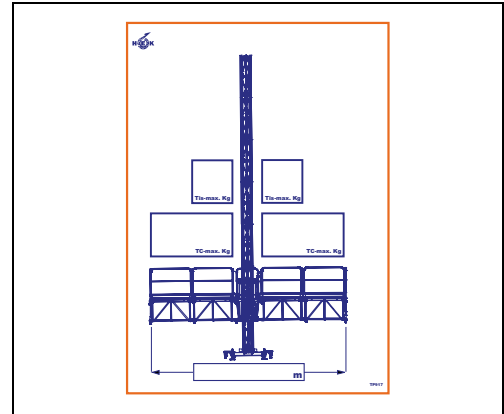


3.7 Safety sign maximum loads

3.7.1 Single mast machine:



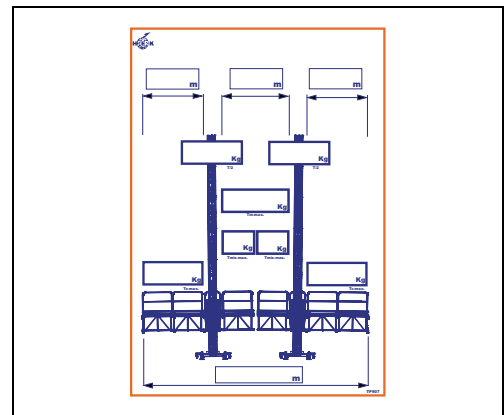
1. Fill out the safety sign. For the load tables, refer to section 5.6.



3.7.2 Twin mast machine:



1. Fill out the safety sign. For the load tables, refer to section 5.6.



4 Conversion of a TPM/MHM to MCM

4.1 Information

1. For information on conversion contact Alimak Hek B.V.

5 Technical specifications

5.1 Introduction



Note

This chapter is divided into an Assembly part, Operation part and Service part. Refer to chapter Technical Specifications in the: Service Manual, Operator Manual and Assembly Manual.

5.2 Ambient conditions

5.2.1 Ambient temperature range

The ambient temperature range for the machine:

- minimum -25 °C
- maximum +50 °C

These parts define the ambient temperature range:

- The gear seals: do not operate below -30 °C.
- The gear box oil: does not operate below -25 °C.
- The VFC: does not operate above +50 °C.

5.2.2 Maximum ambient humidity

The maximum allowed ambient humidity is 95%, non condensing.

5.2.3 Maximum wind velocity

Table 5.1 Maximum allowed wind velocity

Maximum allowed wind velocity	Condition
15.5 m/s	Machine with a tied mast
12.7 m/s	Machine when the mast is not tied
12.7 m/s	Assemble or dismantle the machine

Contact your supplier when you plan to use materials and/or tools with a surface area of more than 1m².

5.3 Ground surface and base frame support specifications

Parameter	Specification
Minimum pressure that the base surface must be able to withstand (kN/m ²)	200
Minimum pressure that the base frame support must be able to withstand (kN/m ²)	200

5.4 Lift speed

Table 5.2 Lift speed

Machine	Parameter	Specification
TPM and MCM	Lift speed (m/min)	12
MHM	Lift speed (m/min)	24

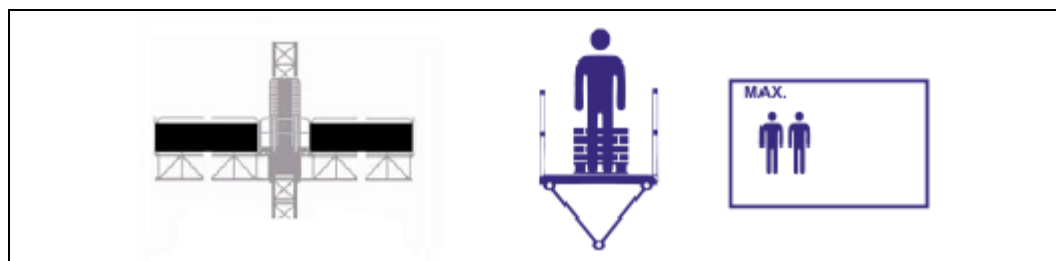
5.5 Noise level of the machine

Table 5.3 Noise level of the machine

Parameter	Specification
Maximum noise level (dB(A))	72

5.6 Load tables

5.6.1 Single - No extension

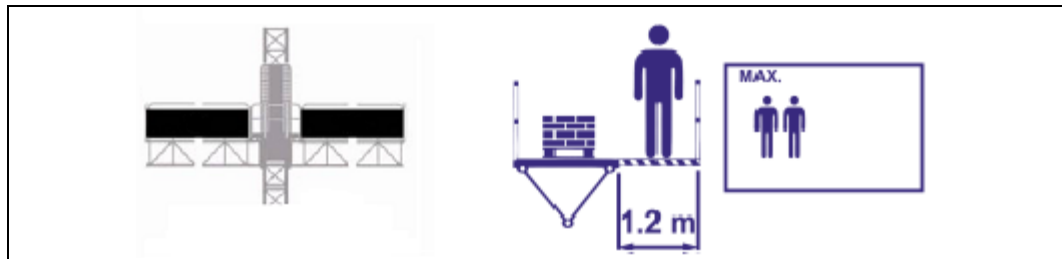


Platform Configuration							Platform Length (m)	Maximum Platform Load (kg)
		1.5	DU	1.5			4.34	3160
	0.8	1.5	DU	1.5	0.8		5.94	2880
	1.5	1.5	DU	1.5	1.5		7.34	2280
0.8	1.5	1.5	DU	1.5	1.5	0.8	8.94	1720
1.5	1.5	1.5	DU	1.5	1.5	1.5	10.34	1230

Remarks:

- Add to **Maximum Platform Load** the weight of **2 Persons (240 kg)** to get actual **Maximum Platform Load**.
- Consult Alimak Hek for non specified **Platform Configurations**.
- Consult Alimak Hek for data on applications with mast not tied to wall.

5.6.2 Single - Extension

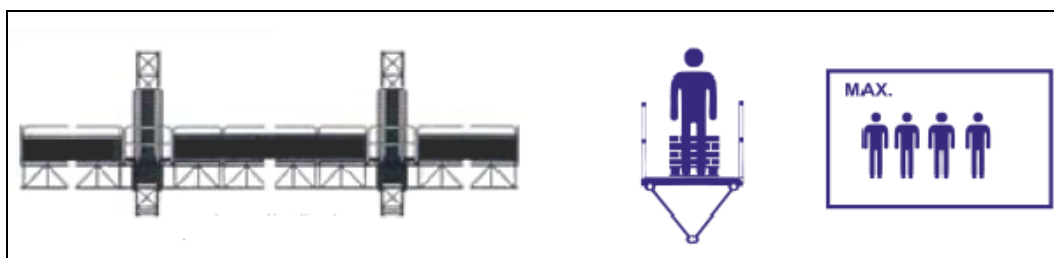


Platform Configuration							Platform Length (m)	Maximum Platform Load (kg)
		1.5	DU	1.5			4.34	3000
	0.8	1.5	DU	1.5	0.8		5.94	2720
	1.5	1.5	DU	1.5	1.5		7.34	2040
0.8	1.5	1.5	DU	1.5	1.5	0.8	8.94	1320
1.5	1.5	1.5	DU	1.5	1.5	1.5	10.34	780

Remarks:

- Add to **Maximum Platform Load** the weight of **2 Persons (240 kg)** to get actual **Maximum Platform Load**.
- Consult Alimak Hek for non specified **Platform Configurations**.
- Consult Alimak Hek for data on applications with mast not tied to wall.

5.6.3 Twin A - No extension



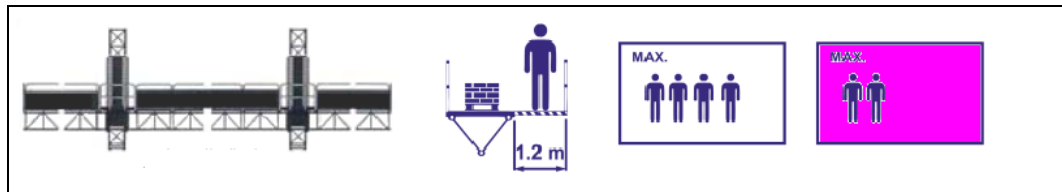
midspan	End sections, identical on both sides									
	1.5		1.5+0.8		1.5+1.5		1.5+1.5+0.8		1.5+1.5+1.5	
	Length	Load	Length	Load	Length	Load	Length	Load	Length	Load
3 x 1.5	10.2	4780	11.8	4540	13.2	3920	14.8	2580	16.2	1800
3 x 1.5 + 0.8 ¹	11.0	4740	12.6	4520	14.0	4120	15.6	2700	17.0	1860
4 x 1.5	11.7	4720	13.3	4500	14.7	4300	16.3	2820	17.7	1920
4 x 1.5 + 0.8 ¹	12.5	4680	14.1	4460	15.5	4300	17.1	2920	18.5	1980
5 x 1.5	13.2	4640	14.8	4440	16.2	4280	17.8	3020	19.2	2040
5 x 1.5 + 0.8 ¹	14.0	4600	15.6	4400	17.0	4240	18.6	3120	20.0	2060
6 x 1.5	14.7	4560	16.3	4360	17.7	4220	19.3	3220	20.7	2160
6 x 1.5 + 0.8 ¹	15.5	4140	17.1	4320	18.5	4160	20.1	3300	21.5	2180
7 x 1.5	16.2	4480	17.8	4280	19.2	4140	20.8	3400	22.2	2260
7 x 1.5 + 0.8 ¹	17.0	3580	18.6	4220	20.0	4080	21.6	3480	23.0	2280
8 x 1.5	17.7	4380	19.3	4200	20.7	4060	22.3	3580	23.7	2360
8 x 1.5 + 0.8 ¹	18.5	3140	20.1	3860	21.5	4000	23.1	3640	24.5	2380
9 x 1.5	19.2	4280	20.8	4100	22.2	3960	23.8	3740	25.2	2440
9 x 1.5 + 0.8 ¹	20.0	2800	21.6	3360	23.0	3900	24.6	3740	26.0	2460
10 x 1.5	20.7	4100	22.3	4000	23.7	3860	25.3	3700	26.7	2520
10 x 1.5 + 0.8 ¹	21.5	2500	23.1	2960	24.5	3540	26.1	3640	27.5	2540
11 x 1.5	22.2	3040	23.8	3520	25.2	3760	26.8	3600	28.2	2600
11 x 1.5 + 0.8 ¹	23.0	2240	24.6	2640	26.0	3100	27.6	3540	29.0	2620
12 x 1.5	23.7	2780	25.3	3200	26.7	3660	28.3	3500	29.7	2660
12 x 1.5 + 0.8 ¹	24.5	2000	26.1	2340	27.5	2740	29.1	3400	30.5	2680
13 x 1.5	25.2	2020	26.8	2300	28.2	2600	29.8	3080	31.2	2700
13 x 1.5 + 0.8 ¹	26.0	1780	27.6	2080	29.0	2420	30.6	2840	32.0	2740
14 x 1.5	26.7	1780	28.3	2000	29.7	2260	31.3	2660	32.7	2780

1 The 0.8m section only allowed in the second position, besides the drive unit.

Remarks:

- Add to **Maximum Platform Load** the weight of 4 Persons (400 kg) to get actual **Maximum Platform Load**.
- Consult Alimak Hek for non specified **Platform Configurations**.

5.6.4 Twin A - Extension



midspan	End sections, identical on both sides									
	1.5		1.5+0.8		1.5+1.5		1.5+1.5+0.8		1.5+1.5+1.5	
	Length	Load	Length	Load	Length	Load	Length	Load	Length	Load
3 x 1.5	10.2	3360	11.8	2600	13.2	1960	14.8	2500 ¹	16.2	1600 ¹
3 x 1.5 + 0.8 ²	11.0	3400	12.6	2720	14.0	2120	15.6	2580 ¹	17.0	1680 ¹
4 x 1.5	11.7	3420	13.3	2780	14.7	2220	16.3	1600	17.7	1760 ¹
4 x 1.5 + 0.8 ²	12.5	3420	14.1	2820	15.5	2300	17.1	1700	18.5	1820 ¹
5 x 1.5	13.2	3400	14.8	2840	16.2	2360	17.8	1780	19.2	1880 ¹
5 x 1.5 + 0.8 ²	14.0	3300	15.6	2840	17.0	2380	18.6	1840	20.0	1880 ¹
6 x 1.5	14.7	3340	16.3	2820	17.7	2380	19.3	1880	20.7	2000 ¹
6 x 1.5 + 0.8 ²	15.5	3020	17.1	2800	18.5	2380	20.1	1880	21.5	2000 ¹
7 x 1.5	16.2	3240	17.8	2760	19.2	2360	20.8	1880	22.2	2100 ¹
7 x 1.5 + 0.8 ²	17.0	2440	18.6	2720	20.0	2320	21.6	1880	23.0	2100 ¹
8 x 1.5	17.7	3120	19.3	2680	20.7	2300	22.3	1860	23.7	2180 ¹
8 x 1.5 + 0.8 ²	18.5	1980	20.1	2500	21.5	2260	23.1	1840	24.5	2180 ¹
9 x 1.5	19.2	3000	20.8	2580	22.2	2220	23.8	1780	25.2	2240 ¹
9 x 1.5 + 0.8 ²	20.0	1600	21.6	2000	23.0	2160	24.6	1740	26.0	2240 ¹
10 x 1.5	20.7	2860	22.3	2460	23.7	2120	25.3	1700	26.7	2300 ¹
10 x 1.5 + 0.8 ²	21.5	1180	23.1	1580	24.5	1960	26.1	1660	27.5	2300 ¹
11 x 1.5	22.2	2220	23.8	2320	25.2	2000	26.8	1600	28.2	2340 ¹
11 x 1.5 + 0.8 ²	23.0	1700 ¹	24.6	1100	26.0	1520	27.6	1540	29.0	2360 ¹
12 x 1.5	23.7	1820	25.3	2140	26.7	1860	28.3	1500	29.7	2280 ¹
12 x 1.5 + 0.8 ²	24.5	1380 ¹	26.1	1700 ¹	27.5	1060 ¹	29.1	1240	30.5	2180 ¹
13 x 1.5	25.2	1080	26.8	1340	28.2	1680 ¹	29.8	1080	31.2	2100 ¹
13 x 1.5 + 0.8 ²	26.0	1060 ¹	27.6	1360 ¹	29.0	1680 ¹	30.6	2180 ¹	32.0	2000 ¹
14 x 1.5	26.7	1500 ¹	28.3	1740 ¹	29.7	1040	31.3	2100 ¹	32.7	1920 ¹

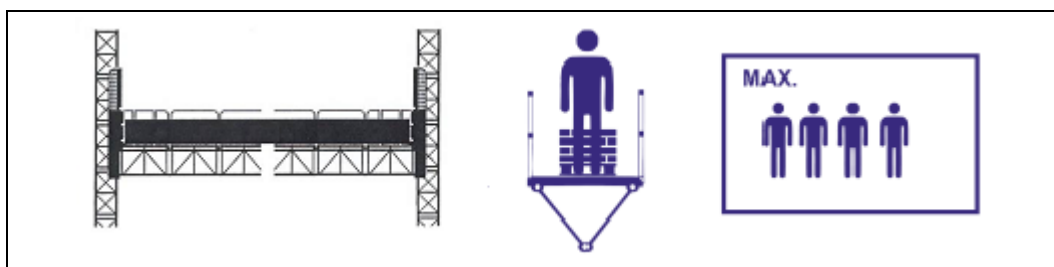
1 Maximum is two persons.

2 The 0.8m section only allowed in the second position, besides the drive unit.

Remarks:

- Add to **Maximum Platform Load** the weight of **2 Persons (240 kg)** or 4 Persons (400 kg) to get actual **Maximum Platform Load**.
- Consult Alimak Hek for non specified **Platform Configurations**.

5.6.5 Twin B - No Extension



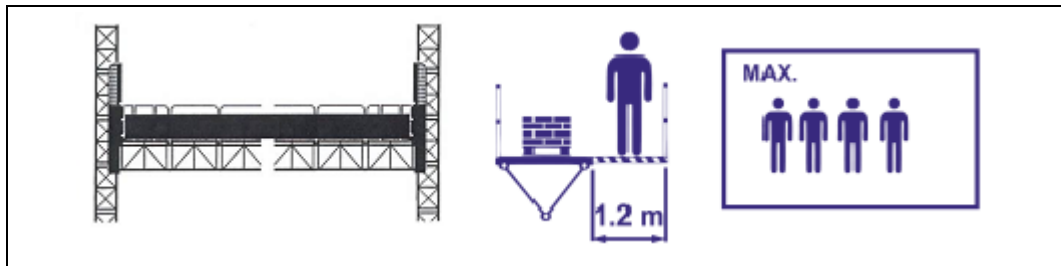
Midspan	Platform length (m)	Platform load (m)
3 x 1.5	4.5	5580
3 x 1.5 + 0.8 ¹	5.3	4680
4 x 1.5	6	5500
4 x 1.5 + 0.8 ¹	6.8	4560
5 x 1.5	7.5	5420
5 x 1.5 + 0.8 ¹	8.3	4440
6 x 1.5	9	5340
6 x 1.5 + 0.8 ¹	9.8	4320
7 x 1.5	10.5	5280
7 x 1.5 + 0.8 ¹	11.3	4200
8 x 1.5	12	5200
8 x 1.5 + 0.8 ¹	12.8	4080
9 x 1.5	13.5	4080
9 x 1.5 + 0.8 ¹	14.3	3960
10 x 1.5	15	4020
10 x 1.5 + 0.8 ¹	15.8	3420
11 x 1.5	16.5	3000
11 x 1.5 + 0.8 ¹	17.3	2920
12 x 1.5	18	2840
12 x 1.5 + 0.8 ¹	18.8	2460
13 x 1.5	19.5	2180
13 x 1.5 + 0.8 ¹	20.3	2000
14 x 1.5	21	1900

1 The 0.8m section only allowed on the first position.

Remarks:

- Add to **Maximum Platform Load** the weight of **2 Persons (240 kg)** or 4 Persons (400 kg) to get actual **Maximum Platform Load**.
- Consult Alimak Hek for non specified **Platform Configurations**.

5.6.6 Twin B - Extension



Midspan	Platform length (m)	Platform load (m)
3 x 1.5	4.5	4360
3 x 1.5 + 0.8 ¹	5.3	3640
4 x 1.5	6	4040
4 x 1.5 + 0.8 ¹	6.8	3440
5 x 1.5	7.5	3780
5 x 1.5 + 0.8 ¹	8.3	3260
6 x 1.5	9	3560
6 x 1.5 + 0.8 ¹	9.8	3060
7 x 1.5	10.5	3340
7 x 1.5 + 0.8 ¹	11.3	2880
8 x 1.5	12	3140
8 x 1.5 + 0.8 ¹	12.8	2680
9 x 1.5	13.5	2940
9 x 1.5 + 0.8 ¹	14.3	2500
10 x 1.5	15	2760
10 x 1.5 + 0.8 ¹	15.8	2300
11 x 1.5	16.5	2280
11 x 1.5 + 0.8 ¹	17.3	2120
12 x 1.5	18	1960
12 x 1.5 + 0.8 ¹	18.8	1620
13 x 1.5	19.5	1320
13 x 1.5 + 0.8 ¹	20.3	1100
14 x 1.5	21	1660 ²

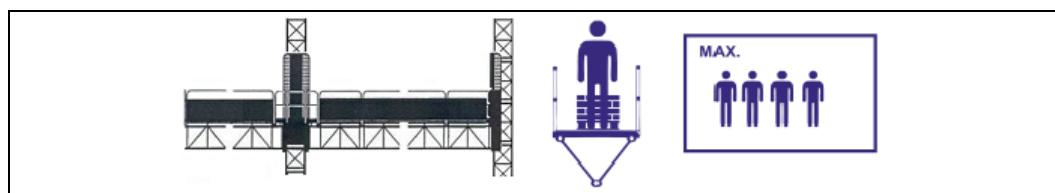
1 The 0.8m section only allowed on the first position.

2 Maximum is two persons.

Remarks:

- Add to **Maximum Platform Load** the weight of **2 Persons (240 kg)** or **4 Persons (400 kg)** to get actual **Maximum Platform Load**.
- Consult Alimak Hek for non specified **Platform Configurations**.

5.6.7 Twin AB - No Extension



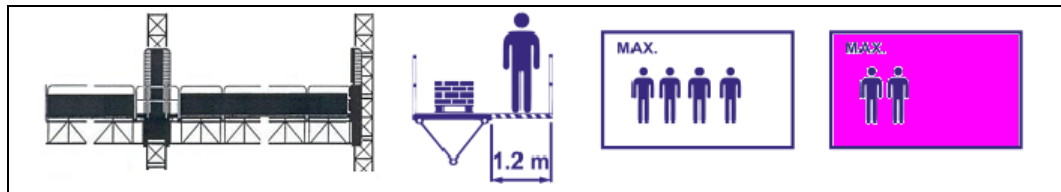
midspan	End section only on A-side.									
	1.5		1.5+0.8		1.5+1.5		1.5+1.5+0.8		1.5+1.5+1.5	
	Length	Load	Length	Load	Length	Load	Length	Load	Length	Load
3 x 1.5	7.3		8.8		8.8		9.6		10.3	
3 x 1.5 + 0.8 ¹	8.1		9.6		9.6		10.4		11.1	
4 x 1.5	8.8		10.3		10.3		11.1		11.8	
4 x 1.5 + 0.8 ¹	9.6		11.1		11.1		11.9		12.6	
5 x 1.5	10.3		11.8		11.8		12.6		13.3	
5 x 1.5 + 0.8 ¹	11.1		12.6		12.6		13.4		14.1	
6 x 1.5	11.8		13.3		13.3		14.1		14.8	
6 x 1.5 + 0.8 ¹	12.6		14.1		14.1		14.9		15.6	
7 x 1.5	13.3		14.8		14.8		15.6		16.3	
7 x 1.5 + 0.8 ¹	14.1		15.6		15.6		16.4		17.1	
8 x 1.5	14.8		16.3		16.3		17.1		17.8	
8 x 1.5 + 0.8 ¹	15.6		17.1		17.1		17.9		18.6	
9 x 1.5	16.3		17.8		17.8		18.6		19.3	
9 x 1.5 + 0.8 ¹	17.1		18.6		18.6		19.4		20.1	
10 x 1.5	17.8		19.3		19.3		20.1		20.8	
10 x 1.5 + 0.8 ¹	18.6		20.1		20.1		20.9		21.6	
11 x 1.5	19.3		20.8		20.8		21.6		22.3	
11 x 1.5 + 0.8 ¹	20.1		21.6		21.6		22.4		23.1	
12 x 1.5	20.8		22.3		22.3		23.1		23.8	
12 x 1.5 + 0.8 ¹	21.6		23.1		23.1		23.9		24.6	
13 x 1.5	22.3		23.8		23.8		24.6		25.3	
13 x 1.5 + 0.8 ¹	23.1		24.6		24.6		25.4		26.1	
14 x 1.5	23.8		25.3		25.3		26.1		26.8	

1 The 0.8m section only on end position A-drive or first on B-drive.

Remarks:

- Add to **Maximum Platform Load** the weight of **2 Persons (240 kg)** or **4 Persons (400 kg)** to get actual **Maximum Platform Load**.
- Consult Alimak Hek for non specified **Platform Configurations**.
- Consult Alimak Hek for the data on **AB Platforms**.

5.6.8 Twin AB - Extension



midspan	End section only on A-side.									
	1.5		1.5+0.8		1.5+1.5		1.5+1.5+0.8		1.5+1.5+1.5	
	Length	Load	Length	Load	Length	Load	Length	Load	Length	Load
3 x 1.5	7.3		8.8		8.8		9.6		10.3	
3 x 1.5 + 0.8 ¹	8.1		9.6		9.6		10.4		11.1	
4 x 1.5	8.8		10.3		10.3		11.1		11.8	
4 x 1.5 + 0.8 ¹	9.6		11.1		11.1		11.9		12.6	
5 x 1.5	10.3		11.8		11.8		12.6		13.3	
5 x 1.5 + 0.8 ¹	11.1		12.6		12.6		13.4		14.1	
6 x 1.5	11.8		13.3		13.3		14.1		14.8	
6 x 1.5 + 0.8 ¹	12.6		14.1		14.1		14.9		15.6	
7 x 1.5	13.3		14.8		14.8		15.6		16.3	
7 x 1.5 + 0.8 ¹	14.1		15.6		15.6		16.4		17.1	
8 x 1.5	14.8		16.3		16.3		17.1		17.8	
8 x 1.5 + 0.8 ¹	15.6		17.1		17.1		17.9		18.6	
9 x 1.5	16.3		17.8		17.8		18.6		19.3	
9 x 1.5 + 0.8 ¹	17.1		18.6		18.6		19.4		20.1	
10 x 1.5	17.8		19.3		19.3		20.1		20.8	
10 x 1.5 + 0.8 ¹	18.6		20.1		20.1		20.9		21.6	
11 x 1.5	19.3		20.8		20.8		21.6		22.3	
11 x 1.5 + 0.8 ¹	20.1		21.6		21.6		22.4		23.1	
12 x 1.5	20.8		22.3		22.3		23.1		23.8	
12 x 1.5 + 0.8 ¹	21.6		23.1		23.1		23.9		24.6	
13 x 1.5	22.3		23.8		23.8		24.6		25.3	
13 x 1.5 + 0.8 ¹	23.1		24.6		24.6		25.4		26.1	
14 x 1.5	23.8		25.3		25.3		26.1		26.8	

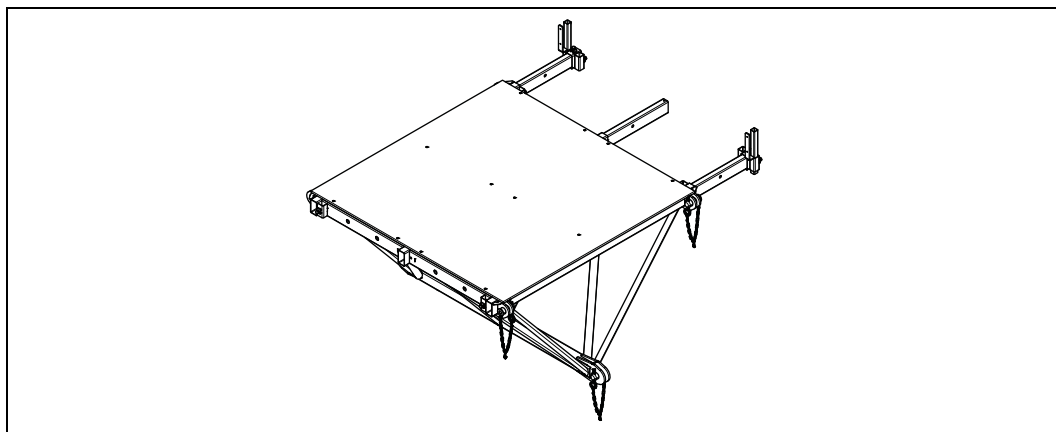
1 The 0.8m section only on end position A-drive or first position on B-drive.

Remarks:

- Add to **Maximum Platform Load** the weight of **2 Persons (240 kg)** or **4 Persons (400 kg)** to get actual **Maximum Platform Load**.
- Consult Alimak Hek for non specified **Platform Configurations**.
- Consult Alimak Hek for the data on **AB Platforms**.

5.7 Dimensions

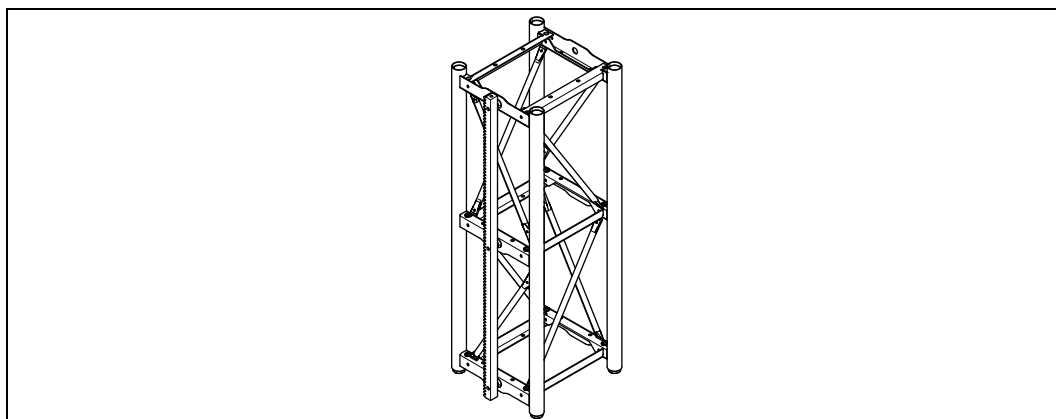
5.7.1 Dimensions - Deck



Parameter	Specification
Deck 1.5 (length m x depth m)	1.5 x 1.5
Deck 0.8 (length m x depth m)	0.8 x 1.5

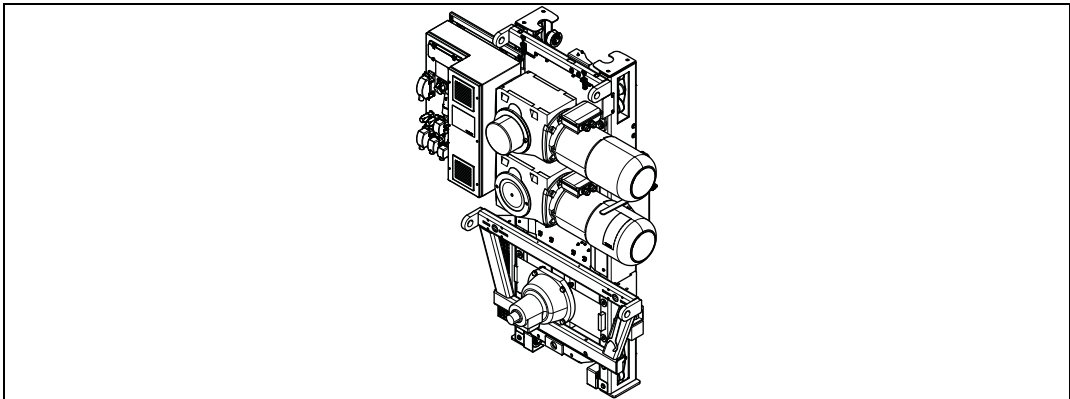
Other deck dimensions are also available. Contact Alimak Hek.

5.7.2 Dimensions - Mast section



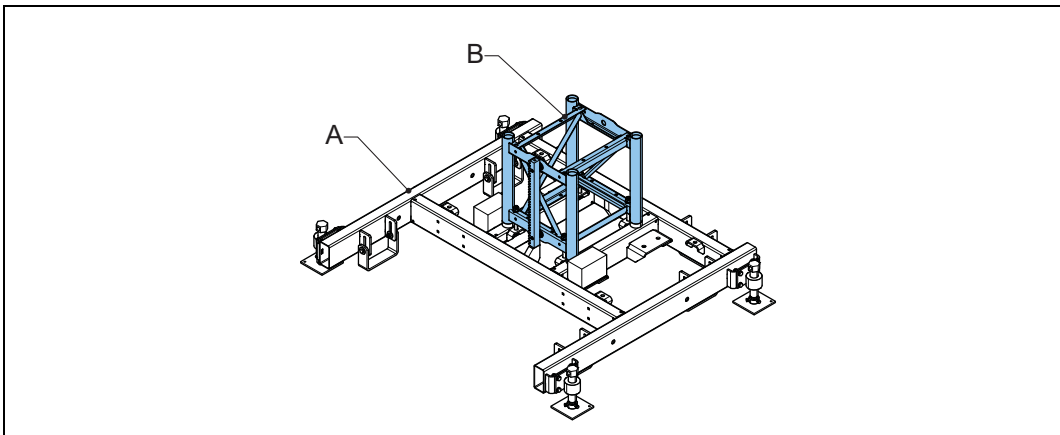
Parameter	Specification
Mast section (length m x width m x height m)	0.51 x 0.51 x 1.5

5.7.3 Dimensions - Drive unit



Parameter	Specification
Drive unit (length m x width m x height m)	1.35 x 1.5 x 2

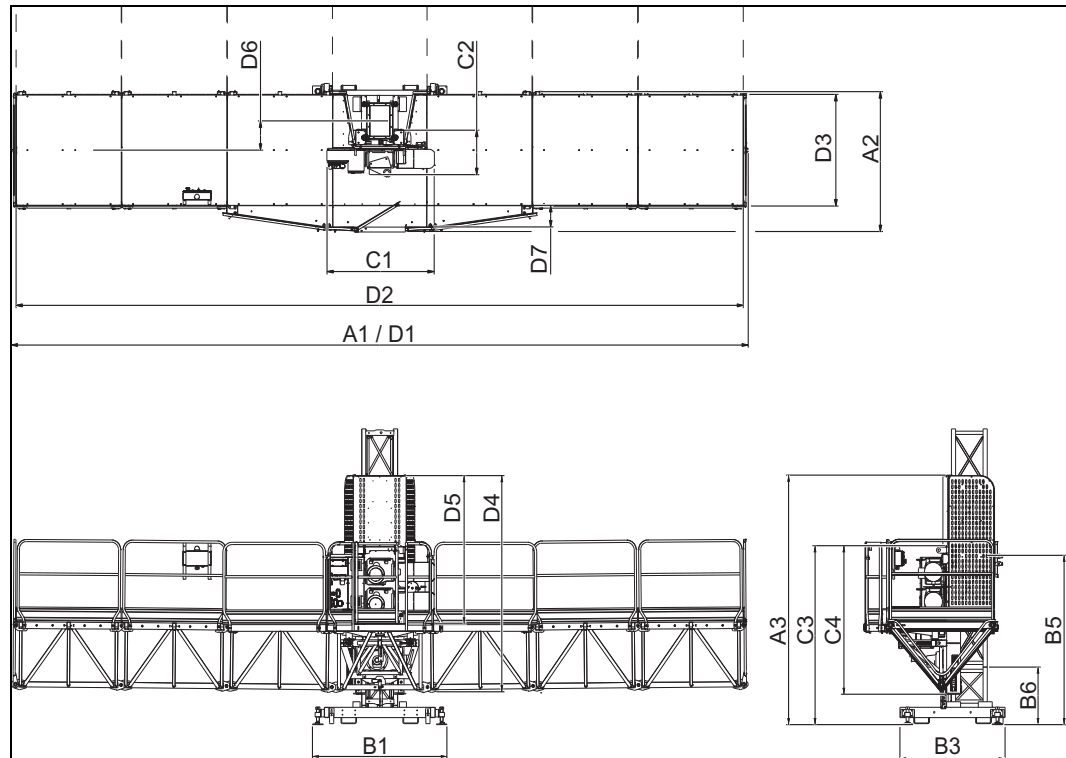
5.7.4 Dimensions - Base frame



- A Base frame
- B Base mast

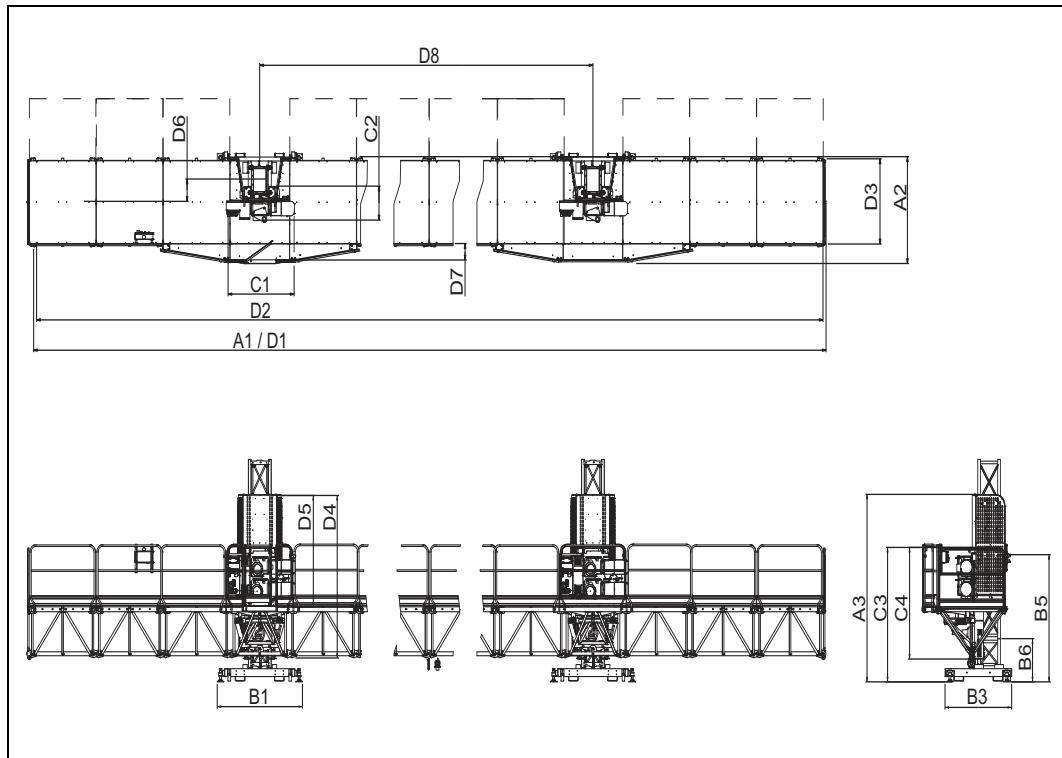
Parameter	Specification
Base frame	Depends upon the configuration of the machine

5.7.5 Dimensions - Single



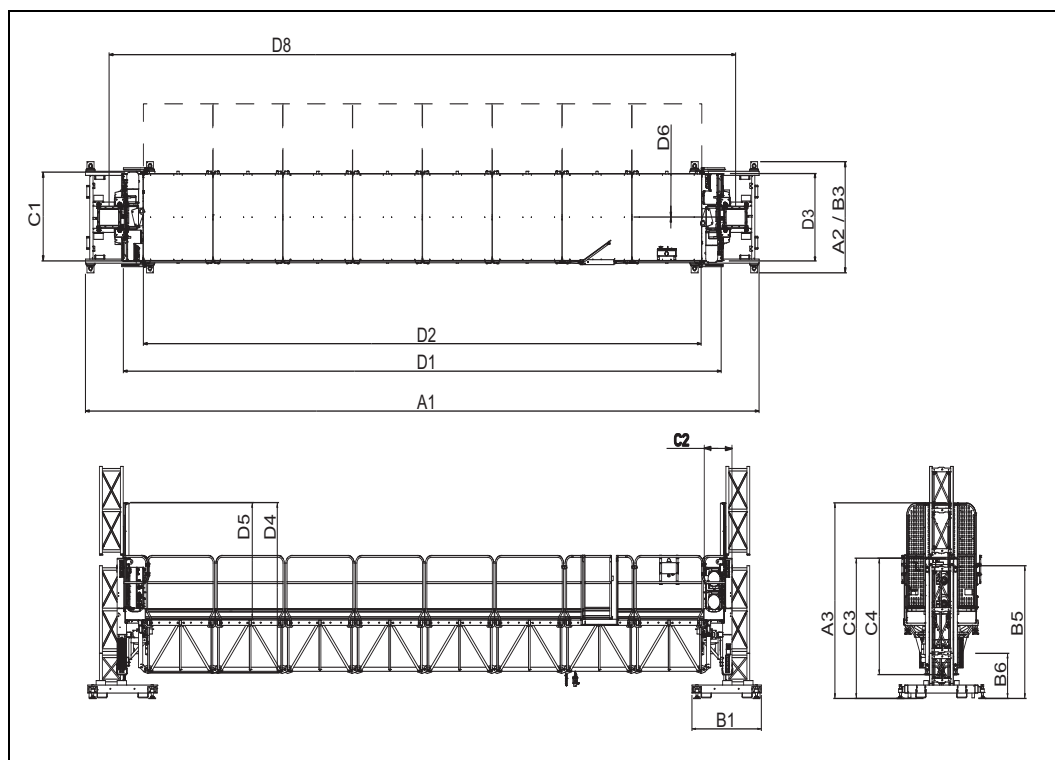
Item	Description	Dimension (m)
A1	Maximum length	10.48
A2	Maximum width	3.09
A3	Maximum height	3.41
B1	Maximum base frame length	1.91
B3	Maximum base frame width	1.50
B5	Maximum base frame height, including 1 mast module	2.33
B6	Maximum base frame height, including the base mast	0.82
C1	Maximum drive unit length	1.52
C2	Maximum drive unit width, including the gear	0.6
C3	Maximum drive unit height, including the base frame	2.45
C4	Maximum drive unit height	2.01
D1	Maximum length of the platform, including the platform access	10.48
D2	Maximum platform length	10.34
D3	Maximum platform width, including platform access, adaptor and fence	2.70
D4	Maximum platform height, including platform access, adaptor and fence	2.92
D5	Maximum platform width, including platform access, adaptor and fence	2.00
D6	Centre to centre	0.395
D7	Platform access width	0.291

5.7.6 Dimensions - Twin A



Item	Description	Dimension (m)
A1	Maximum length	32.81
A2	Maximum width	3.09
A3	Maximum height	3.41
B1	Maximum base frame length	1.91
B3	Maximum base frame width	1.91
B5	Maximum base frame height, including 1 mast module	2.33
B6	Maximum base frame height, including the base mast	0.82
C1	Maximum drive unit length	1.52
C2	Maximum drive unit width, including the gear	0.6
C3	Maximum drive unit height, including the base frame	2.45
C4	Maximum drive unit height	2.01
D1	Maximum length of the platform, including the platform access	32.81
D2	Maximum platform length	32.68
D3	Maximum platform width, including platform access, adaptor and fence	2.70
D4	Maximum platform height, including platform access, adaptor and fence	2.92
D5	Maximum platform width, including platform access, adaptor and fence	2.00
D6	Centre to centre	0.395
D7	Platform access width	0.291
D8	Maximum distances between the drive units	22.34

5.7.7 Dimensions - Twin B



Item	Parameter	Dimension (m)
A1	Maximum length	14.99
A2	Maximum width	1.91
A3	Maximum height	3.41
B1	Maximum base frame length	1.91
B3	Maximum base frame width	1.91
B5	Maximum base frame height, including 1 mast module	2.33
B6	Maximum base frame height, including the base mast	0.82
C1	Maximum drive unit length	1.52
C2	Maximum drive unit width, including the gear	0.6
C3	Maximum drive unit height, including the base frame	2.45
C4	Maximum drive unit height	2.01
D1	Maximum length of the platform, including the platform access	12.86
D2	Maximum platform length	12.00
D3	Maximum platform width, including platform access, adaptor and fence	2.70
D4	Maximum platform height, including platform access, adaptor and fence	2.92
D5	Maximum platform width, including platform access, adaptor and fence	2.00
D6	Centre to centre	0
D7	Platform access width	0.291
D8	Maximum distances between the drive units	13.478

5.7.8 Mass of parts

Parts	Mass (kg)
Base frame MCM Twin A&B	440
Base frame MCM Single A	220
Mast section (one rack)	87
Mast section (two racks)	103
Top mast 450	52.5
Guide unit	235
Drive unit	439
SD	53.5
Combination of guide unit, drive unit and SD	736
Deck 1.5 x 1.5	127
Deck 0.8 x 1.5	85
Guard rail 1.5	15
Guard rail 0.8	8.7
Gate	29.5
Brake release	8
Adaptor for machine type A	52.5
Adaptor for machine type B	49.5
Hinged deck type A	206
Hinged deck type B	105
Hinged deck extension type A	49.5
Mast guard	58

5.8 Mast and tie requirements and limitations

5.8.1 Mast and tie limitations

Table 5.4 Mast and tie limitations

	Parameter	Specification
A	Maximum height without mast tie	12 m
B	Maximum lift height with a tied mast (m)	200
C	Maximum distance from tie to tie (m)	Use only specified tie-interval in section 5.8.2. In all other cases call Alimak Hek B.V.
D	Minimum distance to high voltage cables (m)	5
E	Maximum overhang (m)	½ of the tie distance
F	Minimum height of the platform from the ground level (m)	0.45

5.8.2 Rx, Ry and Mz for MCM

The data for the MCM are not available yet. Use the TPM/MHM table as an approximation. A MCM that complies with the TPM/MHM requirements, also complies with the MCM-requirements.

Refer to section 5.8.3 for the TPM/MHM data.



CAUTION

The data for the MCM machines are not available yet.

5.8.3 Rx, Ry and Mz for TPM / MHM

Table 5.5 Rx, Ry and Mz for TPM / MHM machine.

			Main Tie interval C [m]								
			6m		9m			12m			
			general ¹	Overhang D [m] ²	general ²	Overhang D [m] ²		general ²	Overhang D [m] ²		
				3 m		3 m	4,5 m		3 m	4,5 m	6 m
Single	Rx	[kN]	12,9	13,6	9,5	9,5	10,5	7,5	8,0	8,7	9,2
	Ry	[kN]	3,6	6,4	3,0	5,7	6,3	3,1	5,5	6,0	6,5
	Mz	[kN]	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
Twin	Rx	[kN]	4,2	3,0	3,5	3,5	3,7	3,5	3,5	3,5	3,6
	Ry	[kN]	2,6	3,1	2,4	2,6	3,1	2,5	2,5	2,9	3,2
	Mz	[kN]	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2
Out of Service	Rx	[kN]	4,2	4,0	6,3	5,5	5,8	8,3	8,0	7,4	7,9
	Ry	[kN]	3,8	3,6	5,7	5,2	5,3	6,2	6,2	7,2	7,1

1 The values Rx, Ry and Mz apply to all ties except to the last (highest) tie.

2 The values Rx and Ry apply to the last (highest) tie only.



Alimak Hek B.V.

Westelbeersedijk 18
5091 SM Middelbeers
The Netherlands

P.O. Box 2
5090 AA Middelbeers
The Netherlands

Tel. +31 13 514 86 53
Fax. +31 13 514 86 30

www.alimakhek.com