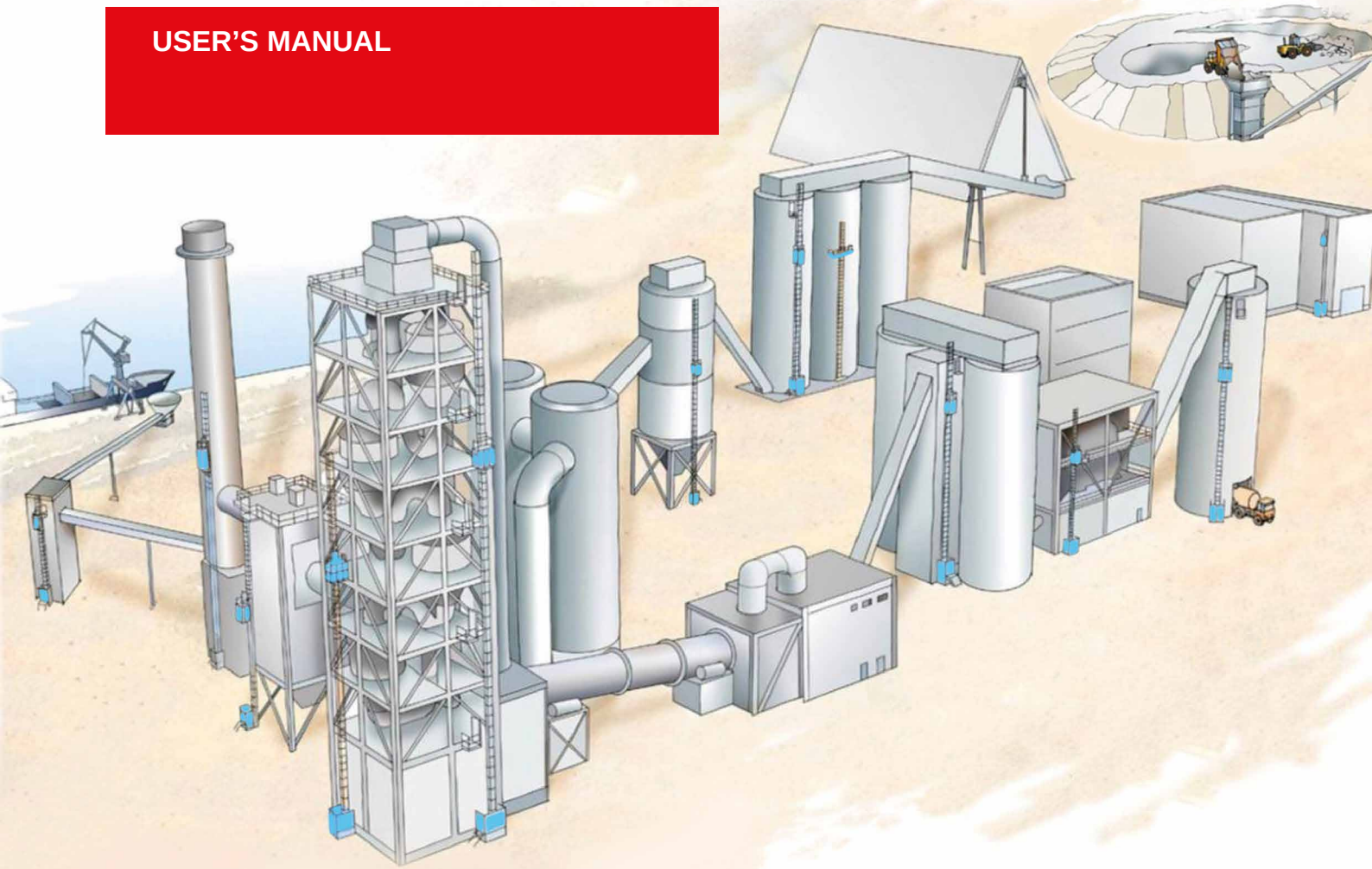
EMKO TECHNIC

Emko Technic MT-SPT-MTM

Emko Technic is one of the largest construction elevator suppliers in the world.
Our product range includes machines suitable for all systems and size classes.
We have perfect solutions for all types of construction and industrial areas.

www.emkotechnic.com

USER'S MANUAL



USER'S MANUAL SPT-MT-MTM

Revision 2.

This manual is assigned to: _____

Serial number: _____

Year of manufacture: _____

MANUFACTURER

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Revision	Change
2	All chapters have been changed.

Date	Revision number
29 April 2020	Revision 2
29 November 2019	Revision 1 (first release)

Language notes

English:
Contact EMKO TECHNIC, its affiliates or subsidiaries If this manual and corresponding Declaration of Conformity are NOT in the language of the country in which the machine has been imported and/or is going to be used. The rental company/owner/user of the machine has the obligation to store these documents with the machine.

Deutsch:
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Español:
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Si prega di contattare EMKO TECHNIC qualora questo manuale e la relativa dichiarazione di conformità NON siano redatti nella lingua del paese in cui questa macchina è stata importata o sarà usata. Il locatore/proprietario/utente di questa macchina ha l'obbligo di conservare questi documenti presso la macchina.

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U dient contact op te nemen met EMKO TECHNIC als deze handleiding en de bijbehorende verklaring van overeenstemming NIET zijn geschreven in de taal van het land waarin deze machine is ingevoerd of gebruikt gaat worden. De verhuurder/eigenaar/gebruiker van deze machine is verplicht deze documenten bij de machine te laten.

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EC Declaration of Conformity

EC DECLARATION OF CONFORMITY FOR MACHINES

We, EMKO TECHNIC
Saray Mah.1Keresteciler
San. Sit. 7 Nolu Cadde No:14
Kahraman Kazan Ankara-Turkey

hereby declare that, on the basis of its design and construction, the machine(s) brought into circulation by us conform to the relevant basic safety and health requirements contained in the EC Machine Directives 89/392/EC and/or according to international standards as per below.
Changes made to the machine without our consent invalidates this declaration.
This declaration applies to the Material Hoist (MH) / Mast Climbing Work Platform (MCWP) / Transport platform (TP) as outlined below:

Name machine	Type	Applicable standard	Turkey
SPT	TP / MH	EN 12158-1: 2000 EN 1495: 1997 EN 12159	n/a
MT	MCWP	EN 1495: 1997	8000 352 637

This declaration applies to:

Date/Manufacturer's signature: Ankara the Turkey,11 April 2020

Signatory: İbrahim Özyol
Chairman of the Board
Emko Technic

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Contents

Abbreviations

INDEX OF ABBREVIATIONS & NOMENCLATURE

A

A-drive = MT-Drive with platform fixed in front of drive
Anchor mounting ramp = ramp from which to fit anchors
Anchor passing ramp = Hinged floor on facade side of machine, which must be tilted out of the way when moving the machine
AVW = Audio Visual Warning

B

B-drive = MT-Drive at the dead end of platform
Back wall SPT = mast fence SPT
Base mast = short mast
Basic machine: assembly consisting of Drive, ground frame, 1 base mast, 1 mast section and striker plates
Brake release = handle for releasing the brake
Bridge ramp = entrance or exit ramp (bridge ramp in and bridge ramp out)

C

CCW = Counterclockwise
Configuration = standard machine
CW = Clockwise

D

Drive = Drive unit = assembly consisting of guide unit, propulsion modules, Safety Device, MCC, AVW
Display messages (initial display messages)

E

Emergency Decent Device = Manual brake release mechanism
Error codes (secondary level of messages = troubleshooting)

F

Fence = (synn. rail)

G

Gate = bifoldable door
Gate in (bridge ramp out)
Gate out (bridge ramp in)

M

Motor brake = brake in drive motor
Mast fence SPT = back wall SPT
Mast guard MT = back wall MT
MCC = Motor Control Center

O

OSD = Overload Sensing Device

P

P.A. = Platform Access kit

S

Step up converter = converter to generate the correct Voltage for the machine
Self carrying ramp = hydraulic exit ramp
SD (Safety Device) = Fail safe break
"Out-of-service-position" = Machine placed in outmost lowest position which does generate the least wind pressure on the machine
Single = With one mast

T

Twin = With two masts
Tie = connection between mast and anchor
Top mast = orange or red upper mast = mast without racks

V

VFC = Variable Frequency Control

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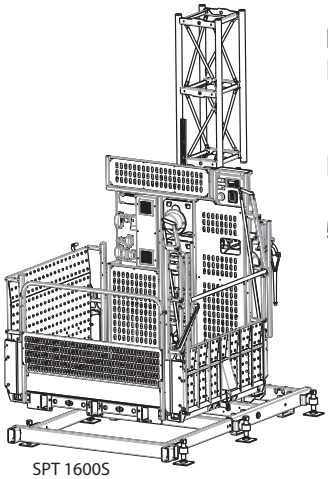
Introduction

This manual describes the EMK Modular System as introduced by EMKO TECHNIC 2007.
The SPT SEPET HOIST is a modular system and consists of 6 basic platform configurations, which can be set up with a variety of doors, rails, ramps and gates. This is entirely modular as the basic dimension of the platform is always 1.6 m. It is easy to build a single or a twin machine, using modular components. The SPT can also be programmed as SEPET HOIST (SPT). Effectively the speed will be doubled, but no persons will be allowed on the machine.

The MT is the Mast Tırmanıcı, consisting of 2 basic models (a SINGLE and TWIN), to be build according to the user's specifications.
Using similar components as the MT-series, combining both systems is well possible. With parts of both systems, it is possible to run an MT and a SPT on the same mast.

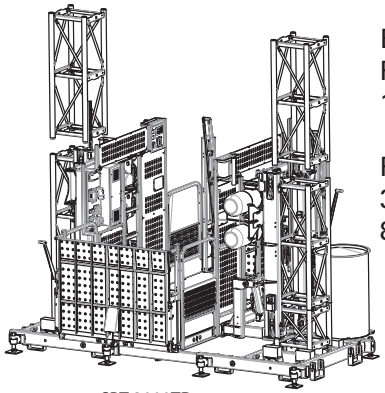
Features of the New Modular Range:
- Modular
- Plug and play
- Max. 200 m / 656 Ft

SPT-SERIES


SPT 1600S

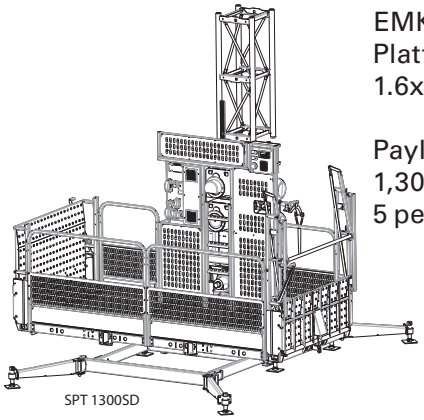
EMK SPT1600S
Platform dimension
1.6x1.6 m

Payload
1,600 kg / 3,530 Lbs
5 persons max


SPT 3000TD

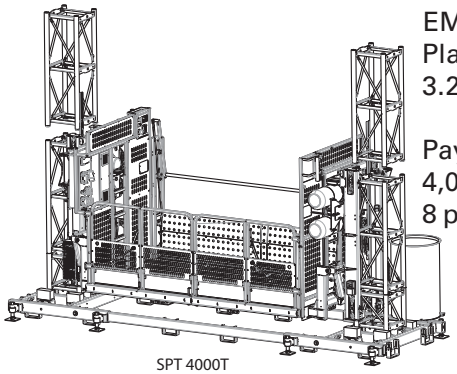
EMK SPT 3000TD
Platform dimension
1.6x3.2 m

Payload
3,000 kg / 6,613 Lbs
8 persons max


SPT 1300SD

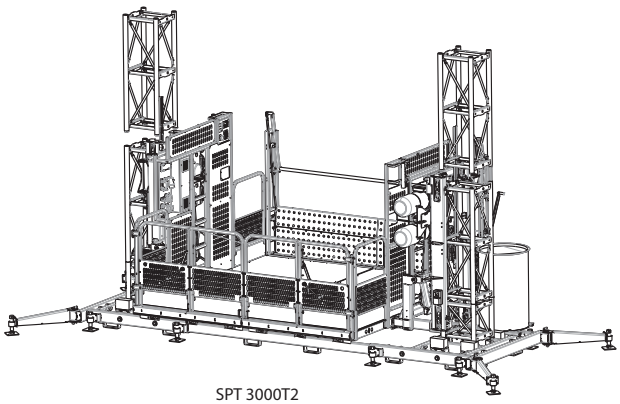
EMK SPT 1300SD
Platform dimension
1.6x3.2 m

Payload
1,300 kg / 2,866 Lbs
5 persons max


SPT 4000T

EMK SPT 4000T
Platform dimension
3.2 x1.6 m

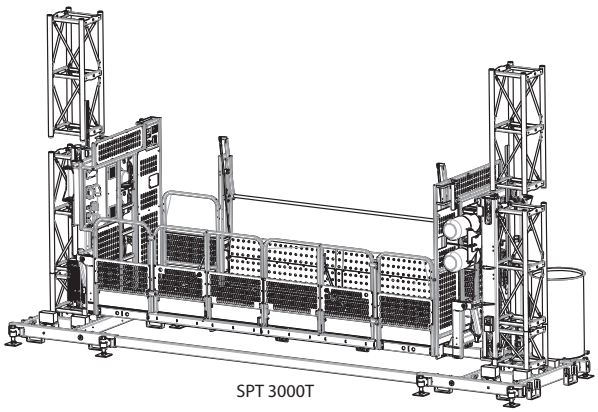
Payload
4,000 kg/8,820Lbs,
8 persons max



SPT 3000T2

EMK SPT 3000T2
Platform dimension
3.2x3.2 m

Payload
3,000 kg / 6,613 Lbs
8 persons max

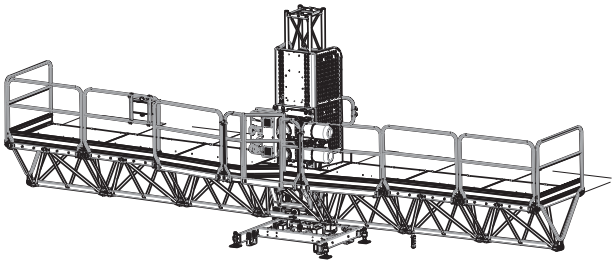


SPT 3000T

EMK SPT 3000T
Platform dimension
4.8 x1.6 m

Payload
3,000 kg / 6,613 Lbs
8 persons max

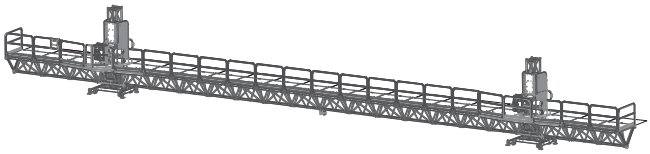
MT-SERIES



MT-A-SINGLE

EMK MT SINGLE
Platform lenght min / max
2.9 / 10.4 m

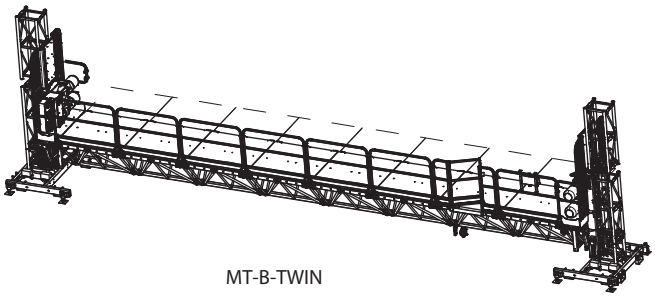
Payload
2,555 kg / 5,632 Lbs
2 persons max



MT-A-TWIN

EMK MT-A-TWIN
Platform lenght min / max
10.2 / 32.6 m

Payload
4,650 kg / 10,250 Lbs
4 persons max

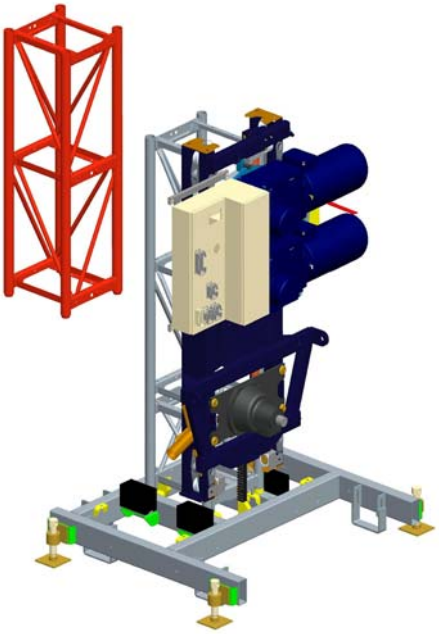


MT-B-TWIN

EMK MT-B-TWIN
Platform lenght min / max
12.8 / 32.6 m

Payload
4,650 kg / 10,250 Lbs
4 persons max

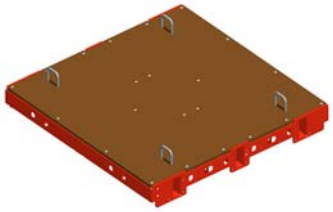
Basic parts for both SPT and MT



Basic machine Pack

Parts for SPT

Adaptor



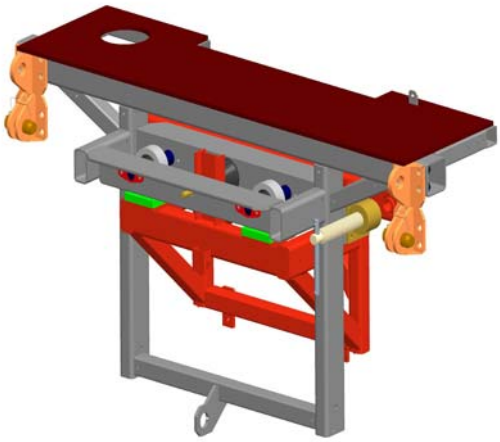
Choice of Platforms

Choice of ramps, fences, etc.

Parts for MT

Choice of gates, doors, fences, etc.

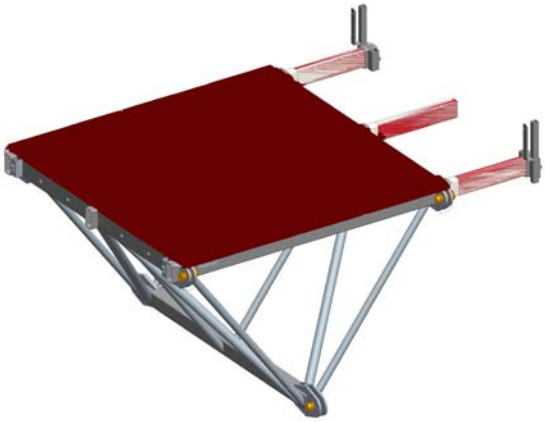
B-Drive



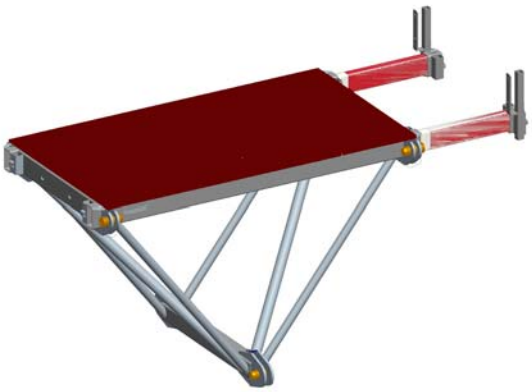
Support B + Hinge deck B

A-Drive

Support A + Hinge deck A



Deck 1.5 complete



Deck 0.8 complete

General information

ABOUT THIS MANUAL

This manual contains warnings about procedures which could damage the equipment, make it unsafe, or cause PERSONAL INJURY. Please understand that these warnings cannot cover all conceivable ways in which service (whether or not recommended by EMKO TECHNIC, its affiliates or subsidiaries) might be carried out, or the possible hazardous consequences of each conceivable ways. Anyone carrying out service procedures or using tools, whether or not recommended by EMKOTECHNIC, its affiliates or subsidiaries, must be thoroughly satisfied that neither personal safety nor equipment safety will be jeopardized.
Drawings, photographs and images are illustrative only and do not necessarily show the design of the product on the market at any given point of time.

Liability

All information contained in this manual is based upon the latest product information available at any time of printing. EMKO TECHNIC reserves the right to make changes at any time without prior notice.

Conventions

Important and *Warning* notes are used throughout the manual to provide the reader with additional information and to advise him/her on specific actions to be taken to protect personnel from potential injury or lethal conditions. They may also inform the reader of actions required to prevent equipment damage.

WARNING!
The "warning" symbol indicates a definite risk of equipment damage or danger to personnel. Failure to observe and follow proper procedures could result in serious or fatal injury to personnel, significant property loss, or significant equipment damage. Extreme care should be taken when performing operations or procedures preceded by this caution symbol.

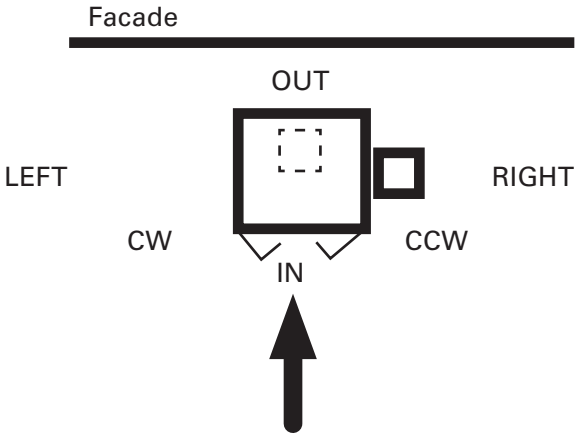
IMPORTANT:
The "important" symbol indicates that potential damage to equipment or injury to personnel exists. Follow instructions explicitly.

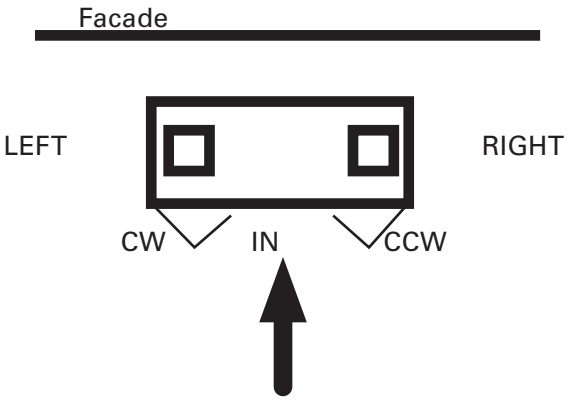
Safety warning

WARNING!
The equipment should not be operated if:
- the safety instructions in this manual are not thoroughly studied and understood
- the Instruction Manual is missing from the machine
- the CE declaration of conformity is missing from the machine
- in case the manual/CE declaration is not written in the language of the country where the machine is imported and/or is going to be used.
- Keep this manual in a well protected place and make it available for everyday consultation.

ORIENTATION

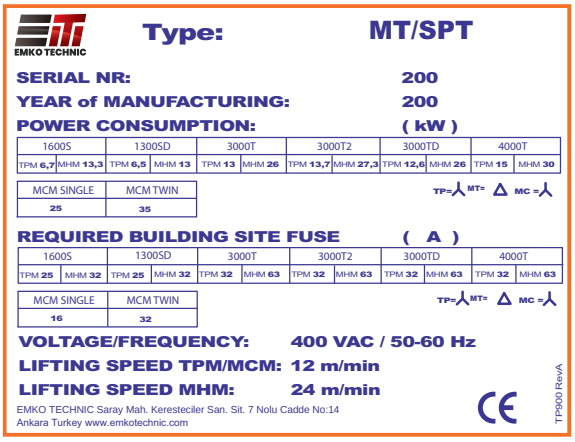
The orientation of the machines is defined as follows:



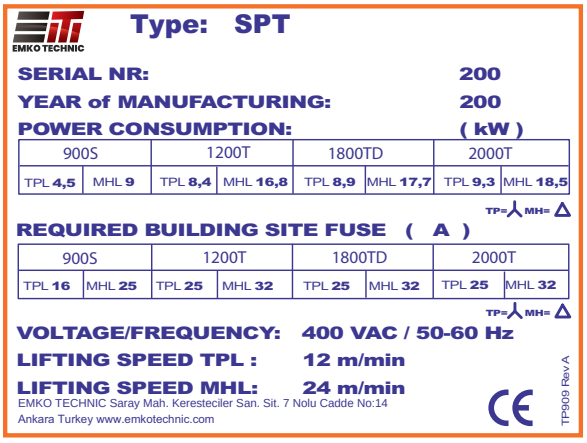


IDENTIFICATION

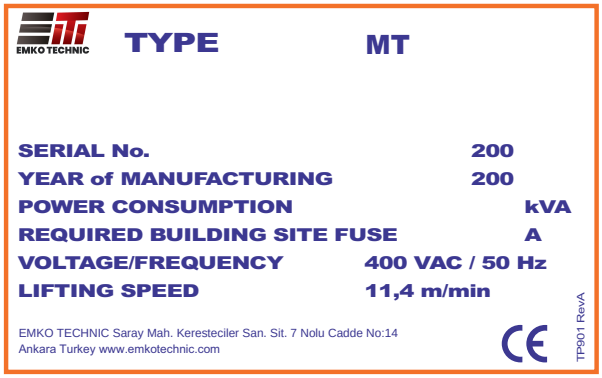
Because of the fact that the main machine parts are interchangeable, only the drive unit has a unique identification plate consisting of the main technical information of the drive unit.



Identification MT/SPT/



Identification SPT/



Identification MT

REQUIREMENTS

Intended Audience

This manual is intended for use by field engineering, installation, operation, service and repair personnel. Every effort has been made to ensure the accuracy of the information contained herein. EMKO TECHNIC, its affiliates or subsidiaries, cannot be held responsible for consequences arising from misuse.

Personnel Training

All personnel performing installation, connecting the power, operations, repair or maintenance procedures on the equipment, as well as those in the vicinity of the equipment, should be trained on machine safety, tool operation and maintenance to ensure their safety. Any personnel working with/on the machine must be at least 18 years old. Contact EMKO TECHNIC , its affiliates or subsidairies for more information on training. Erection, use and dismantling of the platform must be carried out by trained personnel under the direct control of the job site manager who must ensure that the above-mentioned operations are carried out correctly, observing all safety conditions and scrupulously following the instructions laid out in this manual.

Safety Requirements

Proper service and repair is important for safe and reliable operation. Operation and service procedures provided by EMKO TECHNIC manuals are the recommended methods of performing those operations.

INTENDED PURPOSE

EMK Manufacturing BV equipment is designed for specific functions and applications, and should be used only for their intended purpose as follows:

- SPT (Sepet Hoist)
a) The vertical movement of equipment and materials, accompanied by persons, to and from any boarding point.
b) The minimum number of persons on board of a SPT machine = 2.

- MT (Mast Tirmanici)
a) The vertical movement of persons and their equipment and materials to and from a single boarding point. The design of the MT is intended to be used by one or more persons from which to carry out work.
b) The minimum number of persons on board of a MC machine = 2.

- SPT (Sepet Hoist)
a) the vertical movement of equipment and materials to and from any boarding point.
b) no transportation of persons allowed

SAFETY DURING MAINTENANCE

Isolate, if possible, all energy sources before commencing maintenance work.

Do not perform maintenance or repairs while the equipment is in operation.
Wear proper protective equipment during installation, maintenance or repair.

REPLACING COMPONENTS

WARNING: Replace failed or damaged components with EMK Manufacturing B.V. genuine parts. Failure to do so may result in equipment damage, or personal injury.

WARNING: Before installing or performing maintenance or repairs on equipment, read the instructions to avoid endangering exposed persons or damaging equipment.

WARNING: Equipment must be maintained on a regular and routine basis. Failure to conduct routine maintenance could result in equipment damage or injury to personnel.

RESTRICTION
Load (materials, persons, etc.) must be distributed in accordance with the loading diagram.

LOCAL LAW AND LEGISLATION
Local safety laws and regulations must always be followed.

OPERATING TEMPERATURES
The machine has been designed and built for usage at temperatures between -25°C/-13°F up to + 50°C/ 122°F.
The minimum operating temperature is determined by:
a the gear seals, which must be replaced by seals of special material when operating below -30°C/-22°F.
b the gear oil, which must be replaced by a different viscosity when operating below -25°C/-13°F.
The maxium temperature of + 50°C/ 122°F is determined by the VFC.

OPERATING HUMIDITY
Max allowed humidity is 95%, non condensating.

STORAGE CONDITIONS
Store all parts of the machine in a sheltered place; prevent ingress of water.

Storage conditions above -20°C (-4°F)
When stored in a closed and heated area, no particular precautions need to be taken.

Storage conditions below -20°C (-4°F)
Precautions must be taken for a storage temperature lower than -20°C (-4°F), in particularly:

Long term storage
- remove the oil from the gear motors and fill up fully with preservative oil.
- systematically replace, when using the mast climbing work platform again, the gas ring on the slow shaft of the geared motor as at low temperatures the structure of the material changes and does not guarantee sealing.
- systematically replace, when using the mast climbing work platform again, all the bearings given that their gaskets tend to become fragile. When ordering, make sure to specify the particular storage condition to ensure the correct parts are delivered.

Electrical circuitry
- to prevent the electrical circuit from getting damaged due to the cold, remove the electrical control boxes, Motor Control Center (MCC) and store those in a dry place (in all cases at a temperature between -20°C/-4°F up to + 50°C/ 122°F).

SAFETY WITH REGARD TO WIND / WINDFORCE
The machine shall not be used and the platform must be put in the "out-of-service-position" in the following cases:

SPT: 20.0 m/s (45 Mph)
MT: 15.5 m/s (35 Mph) Tied mast
MT: 12.7 m/s (28 Mph) Untied mast

It is not allowed to build up or dismantle a machine at wind speeds above 12.7 m/s (28 Mph).

When materials and/or tools with a large surface area will be used, contact your supplier in connection with wind sensitivity.

Always consider the effects of other objects in the vicinity of the platform, like buildings with regard to a possible increase of wind-effects.

ELECTRICAL SAFETY

If work must be carried out close to high voltage cables, a minimum safety distance of 5 m (16 ft) must be maintained.

When electrical storms are expected, work on the platform must be stopped in time to avoid the danger of lightening strikes. The power supply must be switched off and the connector withdrawn from the supply socket.

If the machine is to be used during the hours of darkness, the area must be adequately lit.

WARNING: The user must have a good view in all conditions. Use aditional lighting if required.

Work on the electrical systems shall only be carried out by a qualified electrician.

The emergency stop must be active while:

- a mast element is being mounted
- an anchor is being fitted
- while maintenance activities are carried out
- in case work is carried out on the platform

When work is interrupted for any reason, the machine must be lowerd to it's "out-of-service-position" and the main switch must be secured with a padlock.

Ensure that any electrical supply cable has freedom of movement and will not get stuck between parts and can move freely up and down with the movement of the machine.

Verify that all replaced wiring is tagged and labelled during maintenance or service to ensure correct installation.

WARNING: Do not bridge the safety circuit at any point. Any safety switch or other part of the safety circuit is legally required to be present. If the circuit is broken a life threatening situation may accor and any warranty will be void.

SAFETY ISSUES DURING ERECTION

WARNING: TWIN machine: It is not allowed to erect the TWIN machine without connecting the BUS cable between the Primary and Secondary. This will result to the fact that no interlocking between the 2 drives wil be present which may lead to extremely dangerous situtations (Not applicable for MCL)

Changes or modifications to any configuration not mentioned in this manual shall not be made to the machine without the written permission of EMKO TECHNIC, its affiliates or subsidairies.

The ground surface must be stable to support the weight of the machine and the mast and the ground frame must be effectively supported.

The mast must be anchored in accordance with the instructions.

During assembly and maintenance, the machine shall not be used for any other purpose.

The assembly crew must be instructed and be familiar with this manual.

The assembly crew must be able to deal with any difficulty encountered in every possible situation during assembly, disassembly and usage.

After finishing work and or at the end of the working day, in order to avoid unauthorised use, the platform must be placed in its parking position and the main switch must be secured with a padlock.

If erecting two adjacent platforms there must be a clear gap between the ends of the platforms of at least 0.5 meter (17.5 inch).

Depending on local legislation, a suitable fencing, netting and/or a marking wire may be utilized around the platform area.

Safety rules for access and fencing

Fences shall never be removed during normal use above a height of 2 m/8.5 ft.

WARNING: In order to ensure that no person unintentionally walks under the platform and to protect persons against falling objects. The fencing and/or marking must be placed at a distance of at least 0.5 m (19.7 inch) from the machine (when the fence is lower than 2 m / 8.5 ft)

SAFETY DURING USE

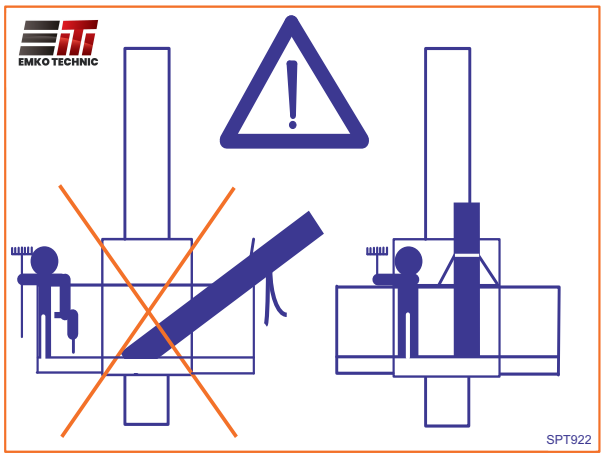
If anyone reports errors or dangers, the owner or the person responsible shall be informed immediately.

From the platform it must be possible to get to the Emergency Descend Device Handles.

The working area around the machine and the path must be free from obstacles.

WARNING: There shall always be two persons present on the platform during use. This is required in case it is necessary to make an emergency descent(NOT applicable to SPT)

Material shall never extend beyond the outer limits of the platform. Items which may roll must be properly secured.



Materials shall never be stacked against the fencing.

The maximum reaction force to the facade (for instance caused by tools) generated from the platform amounts 200 N (45 lbf) / person.

WARNING: During raising or descending no person may stand on the platform extensions. No load is allowed at any given time (MT only).

WARNING: Personnel shall only stand on the platform extensions when the machine is stationary.

It is not allowed to climb into the mast from the work platform.

Do not step on the wheels (if present)

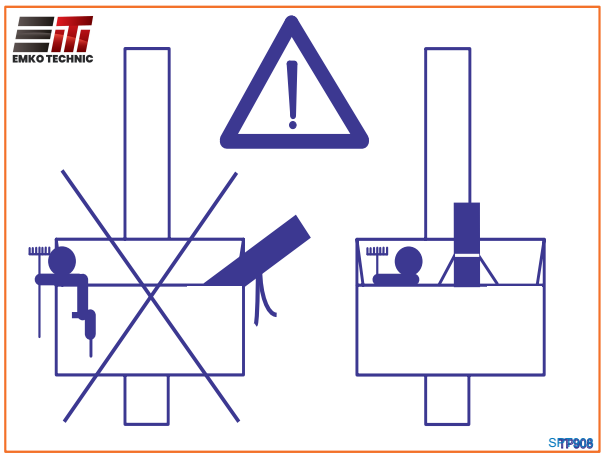
Personnel safety equipment

Personnel protective equipment such as a hard hat, safety shoes and tight-fitting clothes must be used.

If the fences do not provide sufficient protection during assembly and disassembly, a suitable safety harness shall be used at heights above 2 m (8.5 ft).

Lifting tools

Use certified lifting tools only

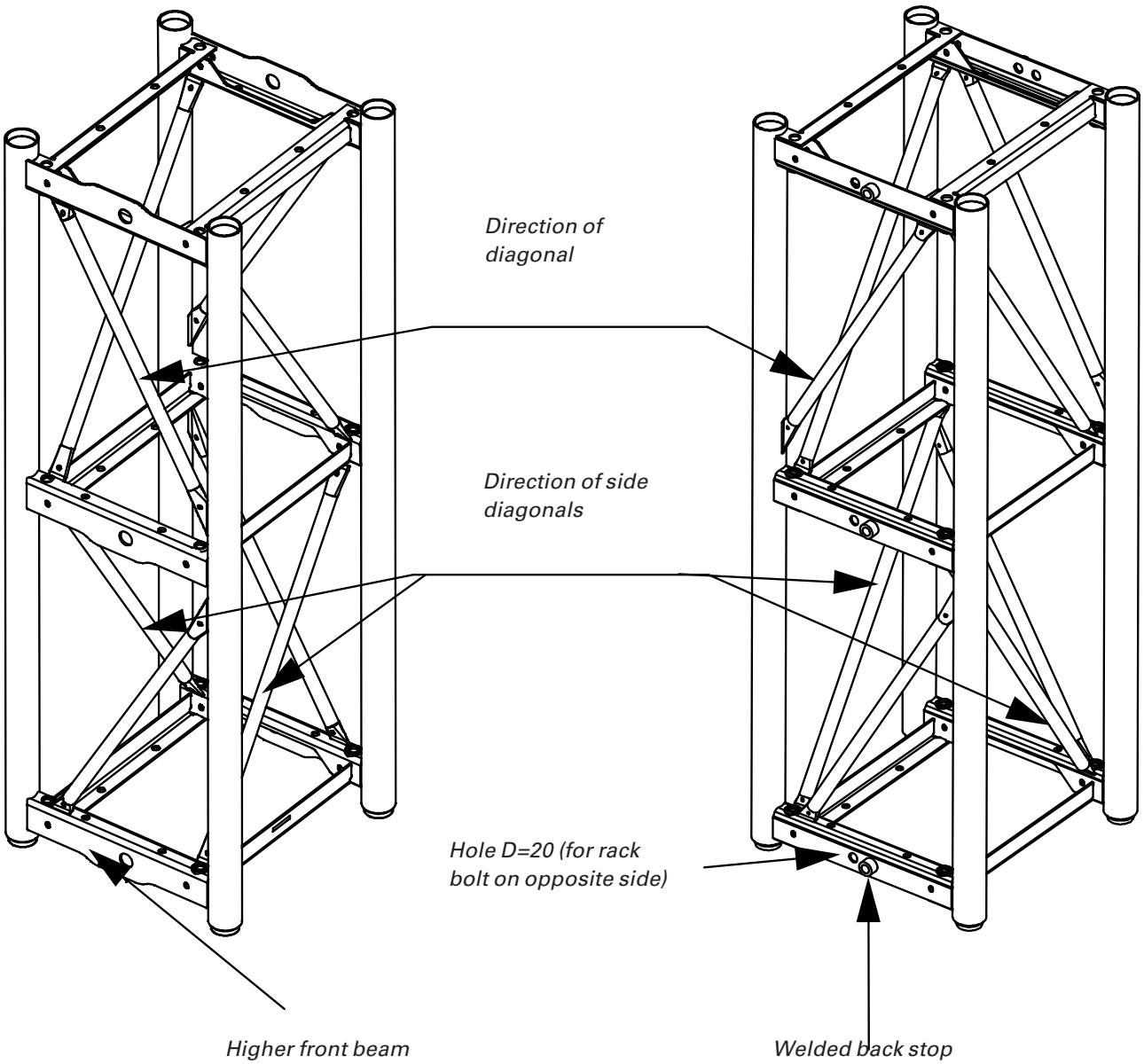


Materials shall never be stacked against the fencing.

DIFFERENCES BETWEEN NEW AND OLD 450 MAST (MEDIUM RANGE)

NEW 450 mast

OLD 450 mast



The tube wall thickness of a NEW mast is 3.6 mm.
The tube wall thickness of a OLD mast is 3.2 mm.

IMPORTANT: In the New Modular MEDIUM Range MT, SPT, MTM only the NEW 450 mast is allowed.
In case of questions for using "OLD" masts in the New Modular Range please contact Hek Manufacturing B.V. in Middelbeers, the Netherlands.

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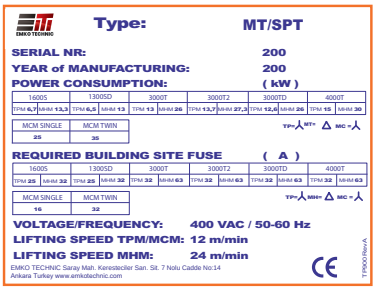
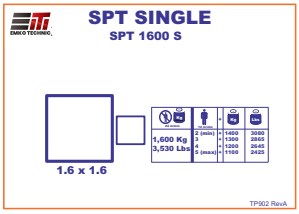
Warning plates

WARNING: Warning plates & signs must be present on the machine at all times. If a plate or sign is missing, ensure it will be replaced.

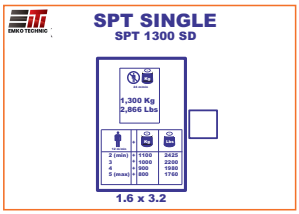


SPT900

Voorkant op A5 dubbelzijdig kunststof

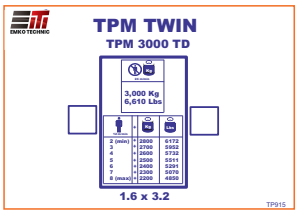


Achterkant

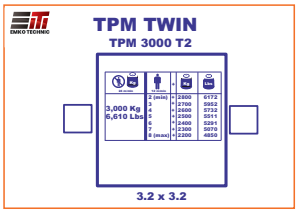


SPT902

Voorkant op A5 dubbelzijdig kunststof



Achterkant



SPT915

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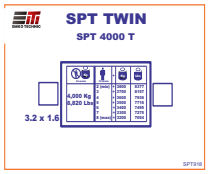

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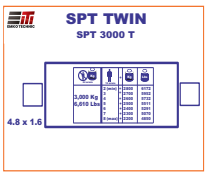
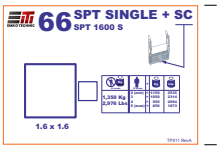


SPT918

Voorkant op A5 dubbelzijdig kunststof



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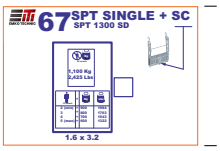
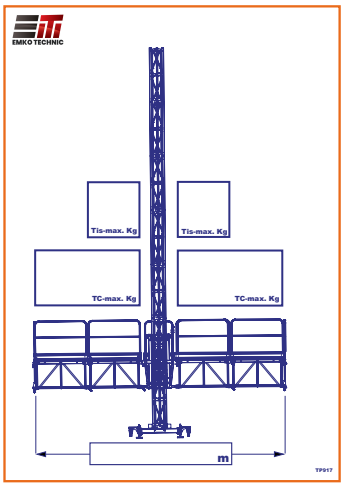
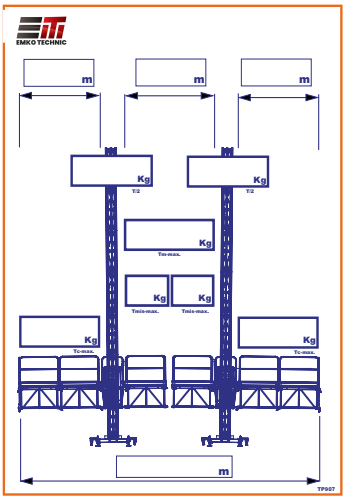


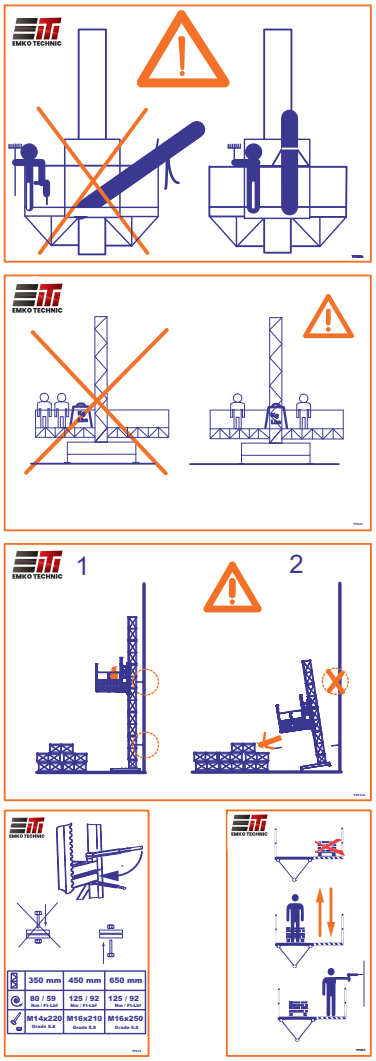
SPT911



SPT917



SPT907



Afmeting uitwendig 1030 x 280 mm

SPT916

SPT905

General Technical Data MOTOR

DATA REGARDING THE MOTOR

Motor connection	STAR/DELTA
Power factor (cosφ)	0.76
Voltage (V)	400 STAR (SPT/MT) / 230 DELTA (MH)

Type	Helical bevel gear motor with brake (right-angle)
Brand:	Nord (SK9042.1VF)
Rating	5.5kW, 4-pole (single speed)
Insulation class	F insulation class, temp. rise B
Design	Motor winded for 230/400VAC, 50Hz
Ratio approx.	40.54
Mounting position	M3 (B5III) and M4 (B5II)
Mounting	Special shaft & flange
Gear box oil	Synthetic VG220 (ambient between -25°C up to 80°C / -13°F up to 176°F *
Electro-mechanical brake	100 Nm/74 Ft.Lbs (230VAC) with hand release
Thermal protection	Temperature protection in each winding
Special features	Reinforced housing and bearings
Options	incremental encoder or resolver, absolute encoder

* In case the ambient temperature is below -30° C (-22°F) or above +60°C (140°F), the seals must be replaced by seals made of special material, see chapter "Maintenance".

The wiring of the motor is normally STAR, resulting in a 400V supply voltage to the motor. For high speed (24 m/min) applications (like MH) the motor connection has to be changed to DELTA applying 230V to the motor.

DATA REGARDING THE MOTOR BRAKE

Type	DC-brake
Size	100 Nm/74 Ft.Lbs
Protection from atmospheric agents	IP55 + additional dust ring
Numbers of poles	4
Nominal power (kW)	2.2
Frequency (Hz)	50/60Hz
Nominal brake voltage (V)	110 - 1Ph
Brake rectifier voltage (V)	230 - 1Ph

DATA REGARDING CONTROLS

Supply voltage	400VAC, 50-60Hz
Supply voltage brake, power plug, fan + heater and tool box (for equipment)	230VAC, 50 or 60Hz dependent of local supply
Internal control voltage	24VDC for PLC etc.; signal level >15VDC is high, 0-5VDC is low
Ambient temperature	VFC 0-50°C; PLC 0-50°C
Heater	Below -5°C / 23°F a heater is active
Derating	Above 40°C, VFC derating 5% per 10°C
Altitude	Altitude up to 1,000 m, above for VFC 1% per 100 m till 4,000 m
	Input current reduction by AC line choke
PLC brand	Siemens (S7-200)
VFC brand	Nord (SK700E)
Level boxes	230 V

Technical data

TECHNICAL DATA SPT

	SINGLE		TWIN			
	1300SD	1600S	3000TD	3000T2	4000T	3000T
Lifting speed (m/min)	12/24	12/24	12/24	12/24	12/24	12/24
Standard dimension of platform (m)	1.6x3.2	1.6x1.6	1.6x3.2	3.2x3.2	3.2x1.6	4.8x1.6
Working height up to (m)	200	200	200	200	200	200
Max allowed loading capacity (kg)**	1300	1600	3000	3000	4000	3000
Max. number of persons (with reduced payload)**	5	5	8	8	8	8
Maximum overhang	4.5					
Maximum horizontal manual force	200 N (45 Lbf) per person					
Tie distance (m)	9					
Height first tie (m /Ft)	3/10					
Height second tie (m / Ft)	9 /29.5					
Minimum height during transport	2.2					
Minimum loading level from the ground	0.5					
Freestanding height	Contact Hek Manufacturing BV, it's affiliates or subsidiaries,					
Maximum wind speed allowed during (dis)assembly (m/s - Mph)	12.7 / 28					
Maximum wind speed in service (m/s - Mph)	20 / 45 Mph					

** Note: The indicated load is including persons on the platform. For detailed information, please see the loading table.

ELECTRICAL DATA SPT

	SINGLE	TWIN
Lifting power (kW)	2x5.5	4x5.5
Power supply voltage (V)	400	400
Power supply frequency (Hz)	50-60	50-60
Power control voltage (V)	24 DC/230 VAC	24 DC/230 VAC
Power control frequency (Hz)	50-60	50-60
Outlets for hand tools (voltage and frequency)	230-50/60	230-50/60
Maximum current available from outlets for hand tool (A)	16	16

Configuration	SPT1600S	SPT1300SD	SPT3000T	SPT3000T2	SPT3000TD	SPT4000T
Power consumption SPT (kW)	6.7 / 13.3	6.5 / 13	13 / 26	13.7 / 27.3	12.6 / 25.3	15 / 30
Power supply fuses TP / MH (A)	25 / 32	25 / 32	32 / 63	32 / 63	32 / 63	32 / 63

TECHNICAL DATA MC

	SINGLE	TWIN-A	TWIN-B
Lifting speed (m/min)	12	12	12
Min/max length of platform (m)	2.9 / 10.4	10.2 / 32.6	12.8 / 32.6
Max length without wall extensions (m)	10.4	32.6	32.6
Max allowed loading capacity (kg) / Tis load (kg)**	2603 (2040)	3895 (2700)	6007 (2600)
Max. number of persons (with reduced payload)**	2	4	4
Maximum freestanding height allowed in service (m)*	Contact EMKO TECHNIC, it's affiliates or subsidiaries.		
Maximum freestanding height allowed out of service*			
Maximum wind speed allowed during (de-)installation (m/sec)	12.7		
Maximum wind speed in service with tied mast (m/sec)	15.5		
Maximum wind speed out of service (m/sec)	42		
Maximum lifting height with tied mast (m)	200		
Maximum tie distance (m) **	9		
Maximum overhang (m) **	4.5		
Maximum manual force when working with freestanding mast (N / person, Lbf / person)	200 / 45		
Minimum height during transport (m)	2.2		
Minimum height of platform floor from the ground (m)	1.6		

* Refer to chapter "INSTALLATION" for all the allowed tie different configuration. When using a chassis, a maximum freestanding height of 10 m is allowed with platform width of 10.4 m.
**Note: The indicated load is including persons on the platform. For detailed information, please refer to the loading table.

ELECTRICAL DATA MT

	SINGLE	TWIN
Lifting power (kW)	2x5.5	4x5.5
Power supply voltage (V)	400	400
Power supply frequency (Hz)	50-60	50-60
Power control voltage (V)	24 DC/230 VAC	24 DC/230 VAC
Power control frequency (Hz)	50-60	50-60
Outlets for hand tools (voltage and frequency)	230-50/60	230-50/60
Maximum current available from outlets for hand tool (A)	16	16
Power consumption (kW)	25	35
Power supply fuses (A)	16	32

NOISE LEVEL DATA MT & SPT

	SINGLE	TWIN
Maximum noise level at ground level while accelerating to maximum speed	72 dB(A)	72 dB(A)
Maximum noise level on the platform while running	72 dB(A)	72 dB(A)

DIMENSIONS & WEIGHTS OF PLATFORMS, MASTS, GROUND FRAME AND DRIVE UNITS

	SPT		MT	
	m	inch	m	inch
Size of deck module 1.6 x 1.6 (m / inch)	1.6 x 1.6	63 x 63	-	-
Size of deck module 3.2 x 1.6 (m / inch)	3.2 x 1.6	126 x 63	-	-
Size of deck module 4.8 x 1.6 (m / inch)	4.8 x 1.6	189 x 63	-	-
Size of deck module 3.2 x 3.2 (m / inch)	3.2 x 3.2	126 x 126	-	-
Size of deck 1.5	-	-	1.5x1.5	59x59
Size of deck 0.8	-	-	0,8x1.5	31.5x31.5
Size of mast (length x width) (m / inch)	1.5x0.45	59 x 17.7	1.5x0.45	59 x 17.7
Size of drive unit (length x width x height) (m / inch)	1.35x1.5x2	53x59x79	1.35x1.5x2	53x59x79
Size of ground frame (length x width) (m / inch)	Depending on type of configuration.			

WEIGHTS OF SINGLE COMPONENTS

Description	Part Number	Kg	Lbs
Ground frame MT Twin A&B	M0703-0099	440	970
Ground frame MT Single A	M0703-0098	220	485
Ground frame SPT 1600S (1616)	M0703-0100	330	727
Ground frame SPT 1300SD (1632)	M0703-0101	460	1014
Ground frame SPT 3000T (4816)	M0703-0102	550	1212
Ground frame SPT 4000T (3216)	M0703-0103	530	1168
Ground frame SPT 3000TD (1632)	M0703-0104	510	1124
Ground frame SPT 3000T2 (3232)	M0703-0105	695	1532
Mast 450 (one rack)	9105700-000	87	191
Mast 450 (two racks)	6900-101	103	227
Top mast 450	6900-060	52,5	116
Guide unit MTM/TPM	M0605-0100	235	518
Propulsion unit MT/SPT	M0605-0150	439	967
Safety device MT/SPT	M0605-0170	53,5	118
Combination Guide unit, propulsion unit, safety device MCM/TPM		736	1122
MT Medium/Heavy deck 1.5	M0611-0024	127	279
MT Medium/Heavy deck 0.8	M0612-0009	85	188
MT Guardrail 1.5	6900-030	15	33
MT Guardrail 0.8	6900-032	8,7	19
MT Gate	1802015301	29,5	65
MT brake release	M0701-0018	8	18
MT hinge deck support type A	M0702-0061	52,5	116
MT hinge deck type A	M0701-0094	206	454
MT hinge deck extension type A	M0605-0025	49,5	109
MT A Mast guard	M0702-0016	58	128
MT end guardrail	M0705-0005	22,5	50
MT hinge deck support type B	M0703-0010	49,5	109
MT hinge deck type B	M0605-0019	105	231
MT B Mast guard	M0706-0037	58	128

Description	Part Number	Kg	Lbs
SPT platform 1.6	M0606-5029	149	328
SPT platform 3.2	M0606-5031	290	640
SPT adaptor	M0610-0001	61	134
SPT support beam DU	0612-0003	9	20
SPT Mast guard 1.6	M0702-0025	68	149
SPT Guardrail 0.8	M0706-0059	12	27
SPT load bridge manual 1.6 x 0.6	M0612-5240	91,5	20
SPT bridge ramp 1.6 x 0.6	M0610-5200	*	*
SPT load bridge manual 1,6 x 1.1	M0612-5241	*	*
SPT bridge ramp 1.6 x 1.1	M0611-5231	*	*
SPT bifoldable gate 1.6	M0612-5241	45	99
SPT load ramp manual self-carrying 1.6 x 0.6	M0612-5263	*	*
SPT load ramp self-carrying 1.6 x 0.6	M0612-5236	*	*
SPT load ramp hydraulic self-carrying 1.6 x 0.6	M0612-5238	*	*
SPT load bridge manual 3.2 x 0.6	M0612-5242	135	298
SPT load ramp manual self-carrying 3.2 x 0.6	M0612-5237	*	*
SPT load ramp hydraulic self-carrying 3.2 x 0.6	M0612-5239	218	480

* under investigation

WEIGHT OF THE COMPLETE MACHINE

The weight of the complete machines is determined by the configuration. It can be determined by adding up all used components + mast parts as outlined above.

ELECTRICAL CABLES

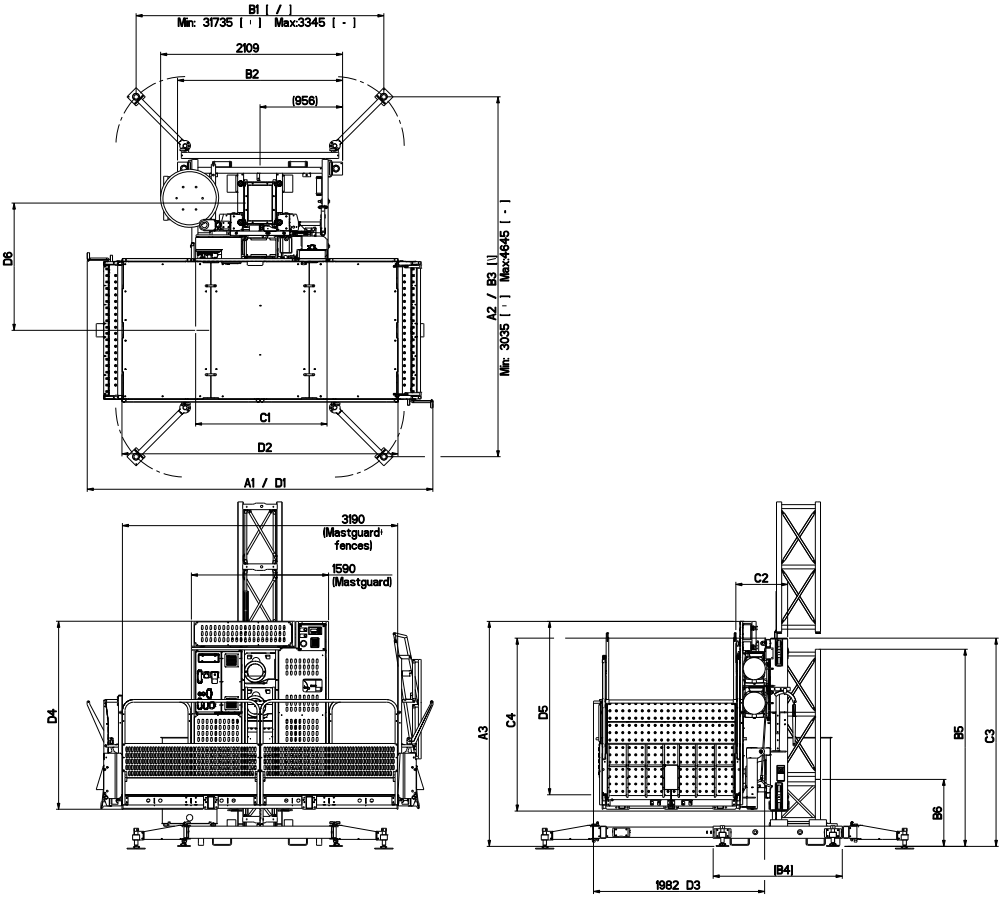
Machine type	Configuration	Speed	Connection	Volt	Fuse	Cable
		[m/min]		[V]	[Amp]	
MT	Single	0-12	Star	400	32	5 x 6mm
	Twin	0-12	Star	400	32	5 x 6mm
SPT	Single	0-12	Star	400	32	5 x 6mm
	Twin	0-12	Star	400	32	5 x 6mm
MHM	Single	0-24	Delta	230	32	5 x 6 mm + 10 x 1 mm
	Twin	0-24	Delta	230	64	5 x 10 mm + 10 x 1 mm

General arrangement drawings

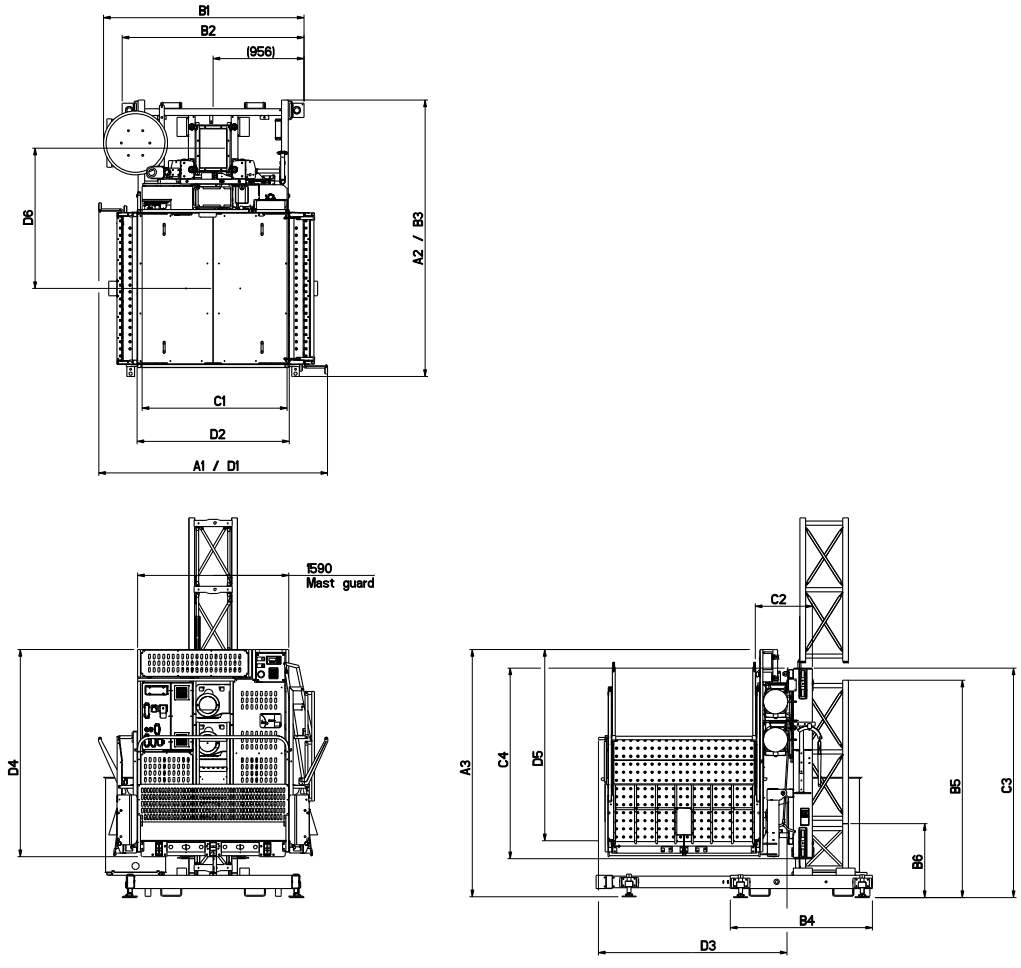
SPT-SINGLE

	Code	1300SD	1600S
Max. machine length (m)	A1	4.01	2.41
Max. machine width (m)	A2	4.34 (3.04-4.65)	2.91
Max. machine height (m)	A3	2.50-2.64	2.50-2.64
Max. base frame length (m)	B1	2.87 (1.74-3.35)	2.11
Base frame length excl. cable storage (m)	B2	1.91	1.91
Max. base frame width (m)	B3	4.14 (3.04-4.65)	2.91
Max. base frame width excl. extension (m)	B4	1.50	1.50
Max. base frame height incl. 1 mast (m)	B5	2.29-2.33	2.29-2.33
Base frame heigth incl. base mast (m)	B6	0.78-0.82	0.78-0.82
Max. DU length (m)	C1	1.52	1.52
Max DU width incl. gear (m)	C2	0.6	0.6
Max. DU height - incl. base frame (m)	C3	2.31-2.45	2.01
Max. DU height (m)	C4	2.01	2.01
Max. platform length incl. PA (m)	D1	4.01	2
Platform length (m)	D2	3.2	1.6
Maximum platform width incl. PA, adaptor, fence (m)	D3	1.98	1.98
Maximum platform height incl. PA, adaptor, fence (m)	D4	2.18	2.18
Maximum platform width incl. PA, adaptor, fence (m)	D5	2.01	2.01
Center to center (m)	D6	1.475	1.475

SPT 1300SD



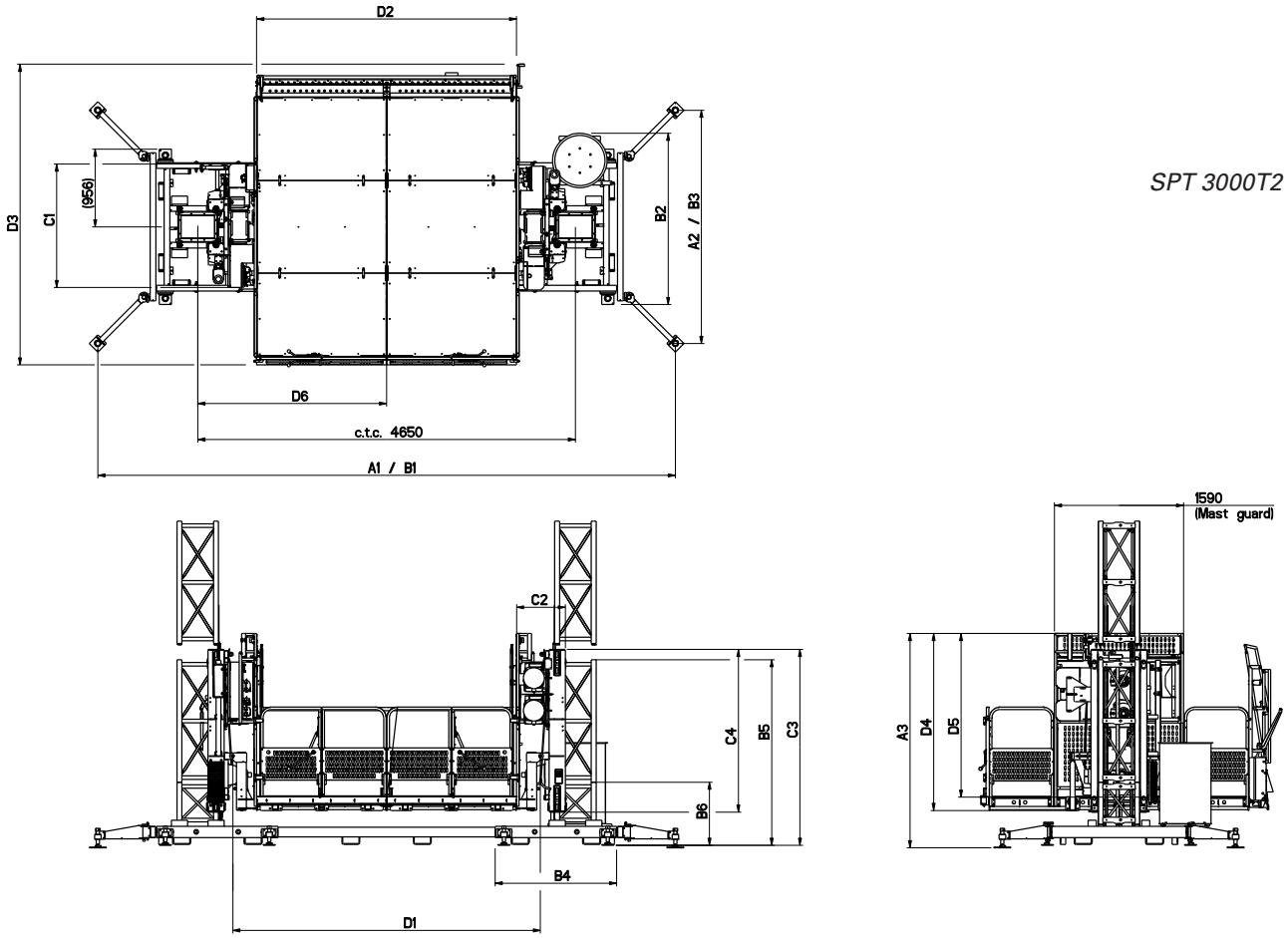
SPT 1600S



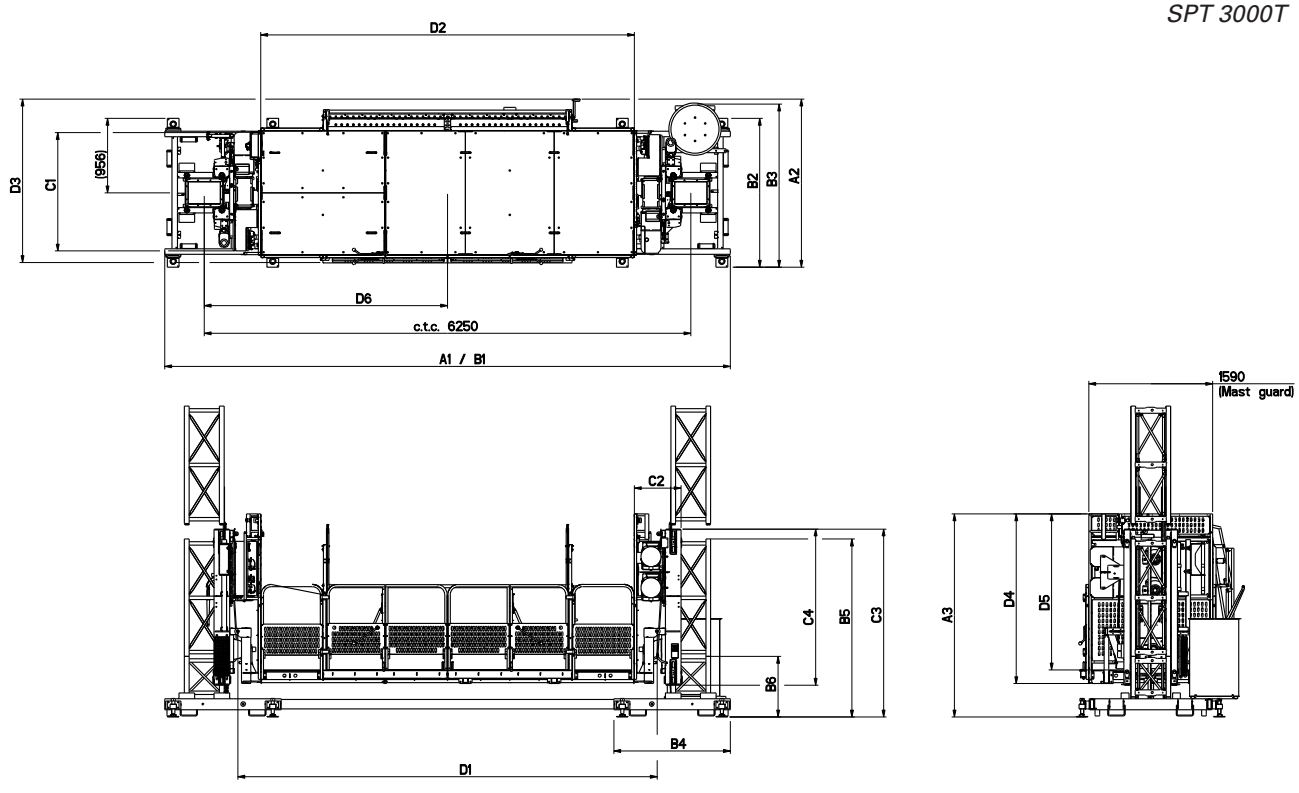
SPT-TWIN

	Code	3000T2	3000T	3000TD	4000T
Max. machine length (m)	A1	7.11 (5.98-7.58)	7.26	4.06	5.66
Max. machine width (m)	A2	2.87 (1.74-3.34)	2.16	4.01	2.16
Max. machine height (m)	A3	2.50-2.64	2.50-2.64	2.50-2.64	2.50-2.64
Max. base frame length (m)	B1	7.11 (5.98-7.58)	7.26	4.06	5.66
Base frame length excl. cable storage (m)	B2	2.11	1.91	1.91	1.91
Max. base frame width (m)	B3	2.87 (1.74-3.34)	2.10	2.11	2.11
Max. base frame width excl. extension (m)	B4	1.50	1.50	1.50	1.50
Max. base frame height incl. 1 mast (m)	B5	2.29-2.33	2.29-2.33	2.29-2.33	2.29-2.33
Base frame heigth incl. base mast (m)	B6	0.78-0.82	0.78-0.82	0.78-0.82	0.78-0.82
Max. DU length (m)	C1	1.52	1.52	1.52	1.52
Max DU width incl. gear (m)	C2	0.6	0.6	0.6	0.6
Max. DU height - incl. base frame (m)	C3	2.31-2.45	2.31-2.45	2.31-2.45	2.31-2.45
Max. DU height (m)	C4	2.01	2.01	2.01	2.01
Max. platform length incl. PA (m)	D1	3.79	5.39	2.19	3.79
Platform length (m)	D2	3.2	4.8	1.6	3.2
Maximum platform width incl. PA, adaptor, fence (m)	D3	3.72	2.12	4.01	2.16
Maximum platform height incl. PA, adaptor, fence (m)	D4	2.18	2.18	2.18	2.18
Maximum platform width incl. PA, adaptor, fence (m)	D5	2.01	2.01	2.01	2.01
Center to center (m)	D6	2.325	3.125	1.525	2.325

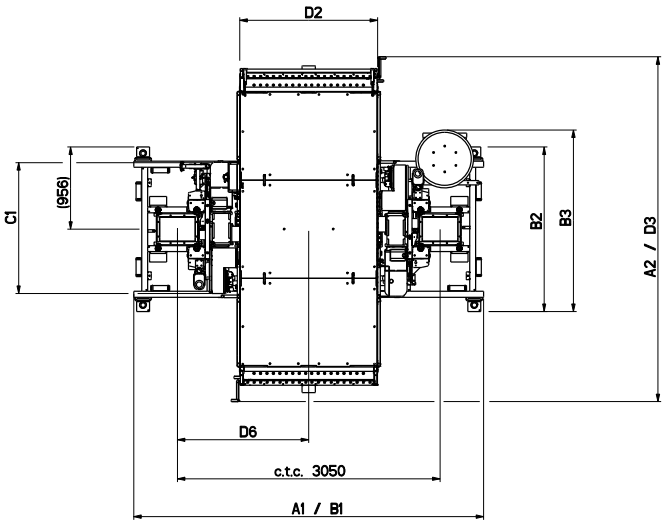
SPT 3000T2

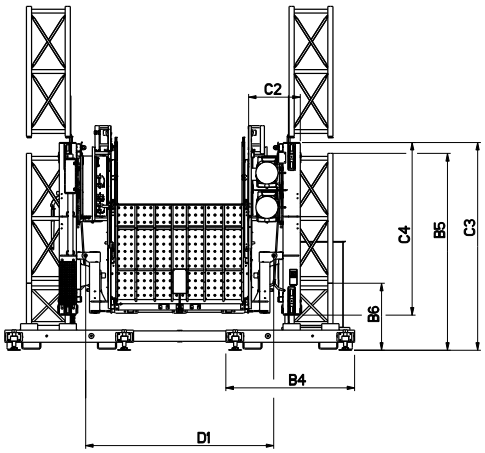


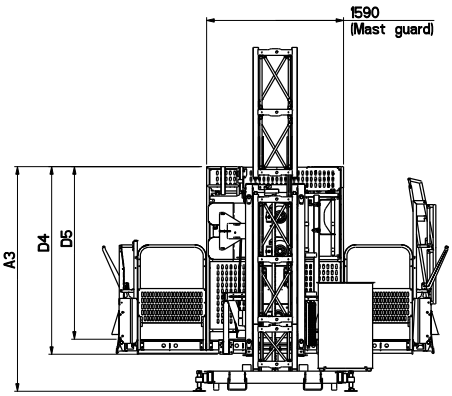
SPT 3000T



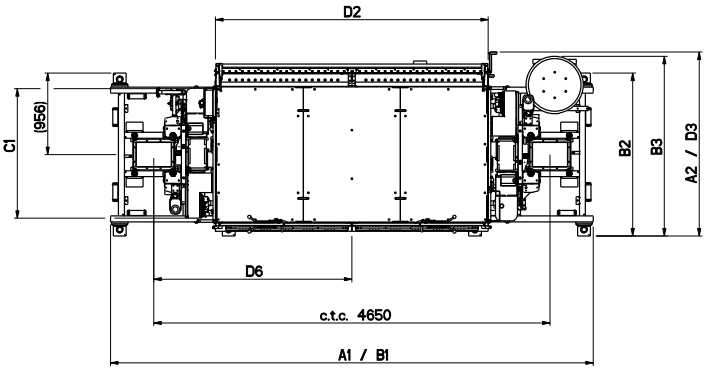
SPT 3000TD

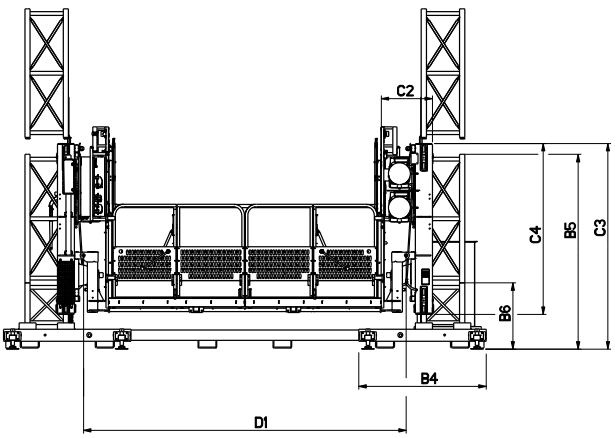


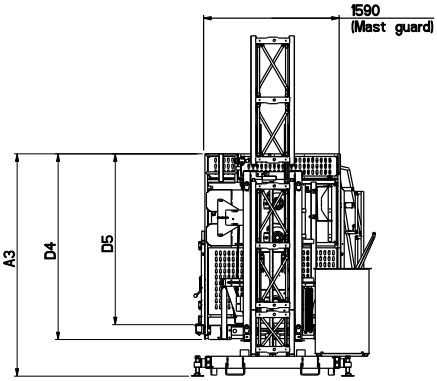




SPT 4000T



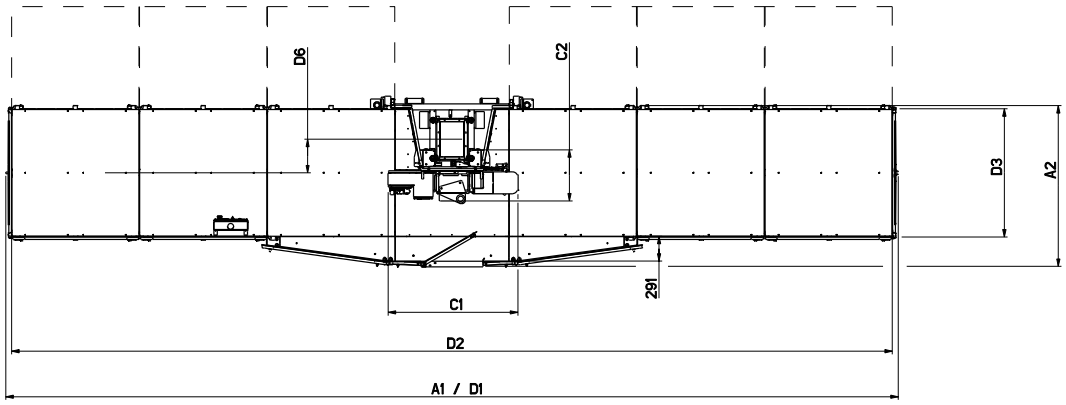


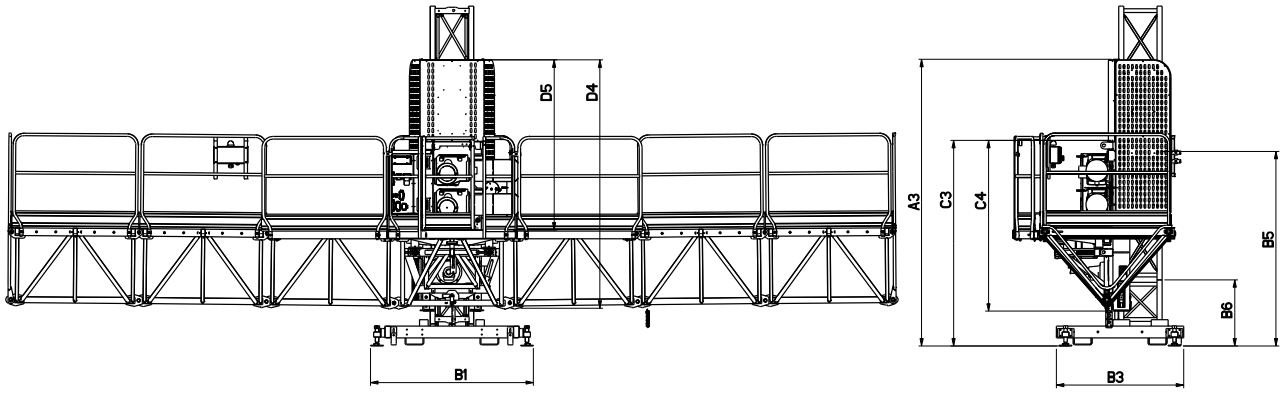


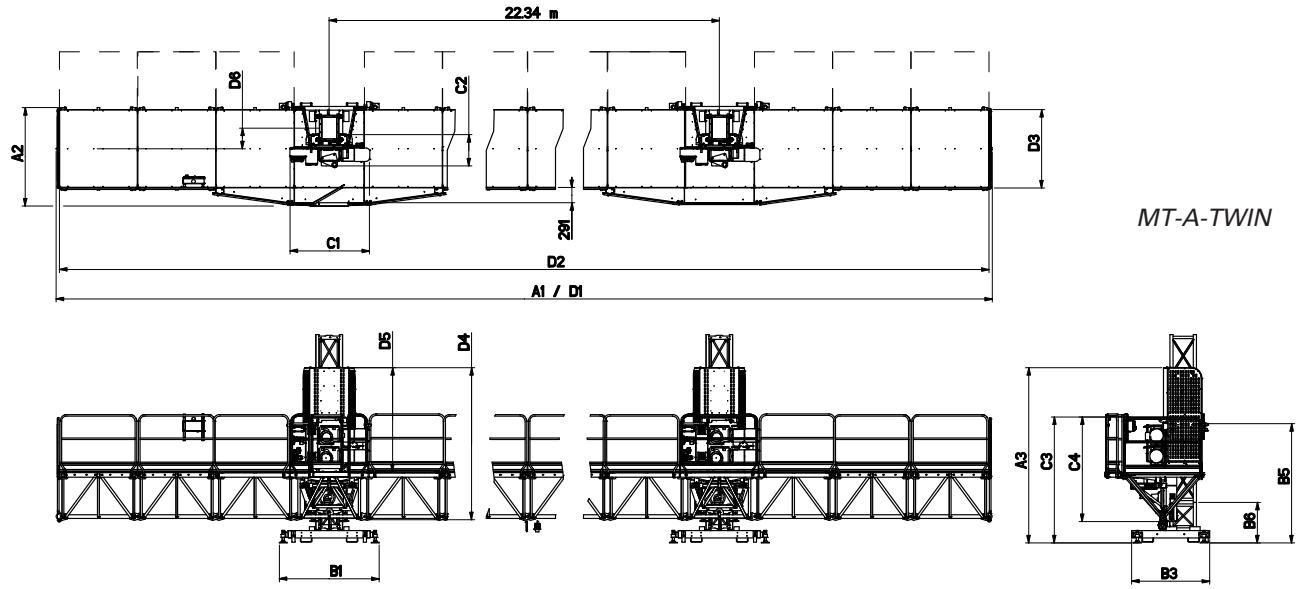
MCM

	Code	MT-A-SINGLE	MT-A-TWIN	MT-B-TWIN
Max. machine length (m)	A1	10.48	32.81	14.99
Max. machine width (m)	A2	1.89-3.09	1.89-3.09	1.91
Max. machine height (m)	A3	3.27-3.41	3.27-3.41	3.27-3.41
Max. base frame length (m)	B1	1.91	1.91	1.91
Max. base frame width (m)	B3	1.50	1.50	1.91
Max. base frame height incl. 1 mast (m)	B5	2.29-2.33	2.29-2.33	2.29-2.33
Base frame heigth incl. base mast (m)	B6	0.78-0.82	0.78-0.82	0.78-0.82
Max. DU length (m)	C1	1.52	1.52	1.52
Max DU width incl. gear (m)	C2	0.6	0.6	0.6
Max. DU height - incl. base frame (m)	C3	2.31-2.45	2.31-2.45	2.31-2.45
Max. DU height (m)	C4	2.01	2.01	2.01
Max. platform length incl. PA (m)	D1	10.48	32.81	12.86
Platform length (m)	D2	10.34	32.68	12.00
Maximum platform width incl. PA, adaptor, fence (m)	D3	1.50-2.70	1.50-2.70	1.50-2.70
Maximum platform height incl. PA, adaptor, fence (m)	D4	2.92	2.92	2.92
Maximum platform width incl. PA, adaptor, fence (m)	D5	2.00	2.00	2.00
Center to center (m)	D6	0.395	0.395	0

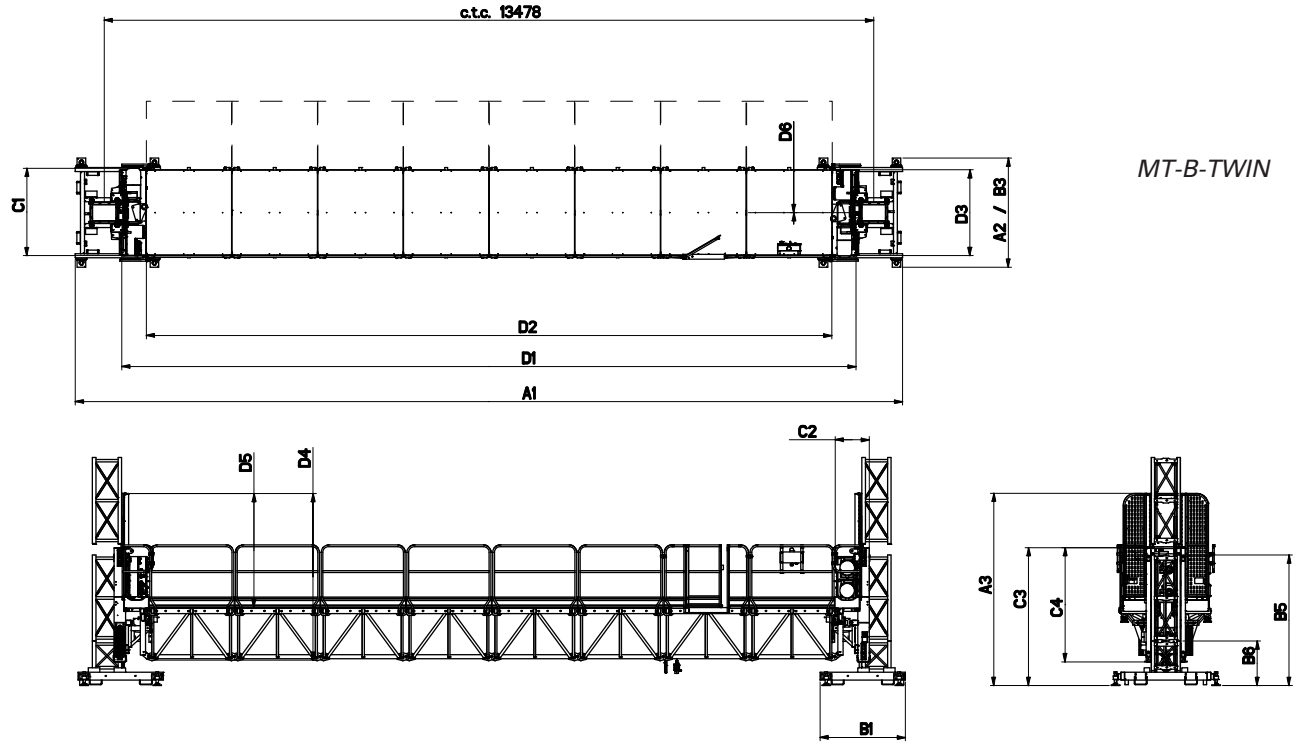
MT-A-SINGLE







MT-A-TWIN



MT-B-TWIN

USER'S MANUALTPM-MCM-MHM

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Safety equipment

ELECTRICAL SAFETY EQUIPMENT

1 Overload sensing device:
At each start up or down the load is measured by the VFC. When a too high value is detected, the overload protection will be activated (time dependent).

2 Overspeed:
The speed is measured by the motor feedback device (incremental encoder); when an overspeed is detected, it will result in a stop. Moreover, the machines are equipped with a safety device with a switch, connected in the safety line.

3 Leveling (twin application):
In a twin configuration, the Inclination is checked by the VFC, measuring the actual position of the motors of each side. An inclination of more than 1.5 degrees will result in a stop of the machine.

4 Main voltage:
The VFC monitors the incoming voltage. If this value is outside the working range, the machine will be stopped.

5 Temperature:
The temperature inside (heat sink) of the VFC is measured; if the temperature is outside the working range, the machine will be switched off. The cabinet has a climate control, consisting of a heater and fans controlled by a thermostat. The motors are fitted with a temperature protection device (bi-metal).

6 Limit switches:
End limit switches for up and down are standard on the machines.

7 Emergency buttons:
On each control panel and box, an emergency button is present.

8 Safety equipment specified by the standards/norms:

All the machines are equipped with the necessary specified safety equipment according the standards or norms for the specific applications.

Top mast
Buffers
Emercency decent devices
Mechanical inclination device (MCL TWIN only)
Gates, ramps, barriers
Safety hooks
Safety Device

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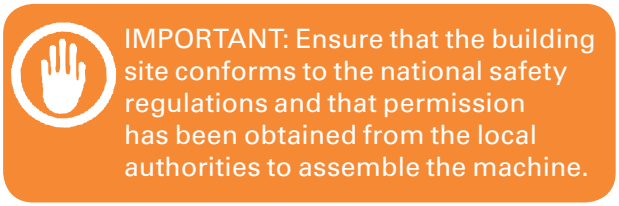
Preparation

PREPARATION FOR INSTALLATION



Ensure that after interrupting activity, once the work is started again, it is clear what stage had been reached before the work was stopped. Examples: Complete the ground support, completely assemble an anchor to the wall or finalize torqueing of the mast bolts of the particular mast element.

PREPARATION

In the project planning phase:

1 Determine the type and configuration of the machine based on the project requirements
2 Determine the global position for the mast climbing work platform based on the project drawings or site visit.
3 Prepare packing list of parts to be send to site.
4 Determine the way trucks will be loaded and in what sequence they will ride
5 Arrange adequate lifting equipment for unloading the machine on site.
6 Arrange permission from the local authorities for assembling the mast climbing work platform if required
7 Inform the applicable persons (e.g. site management) with regard to applicable tie forces / ground pressure and power supply requirements.

Shortly before shipping to site:

8 Check the conditions of the building site: - Does the location for of the mast fulfil drainage and soil requirements- Is suitable power supply available on site - Is adequate illumination arranged for the planned location.- Is the building site easily accessible for the truck(s)
9 Check whether any applicable permission for assembling the machine has been obtained from the relevant authorities.
10 Arrange suitable safety equipment and tools.

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Packing

FIRST TIME PACKING

1 Packing of the modular elements of the platform reduces space and prevents damage.
2 The various modules are joined together and placed inside boxes. A crane or equivalent transport must be used for unloading.
3 Proper packing inside special boxes is to be carried out for various small pieces (grouping of the platform accessories).
4 Attention is to be paid to protect the electrical control panel, which contains the most delicate elements.
5 Modules of the same type are joined together on the ground.

TYPICAL LOADING PROCEDURE

This procedure allows the load to be uniformly distributed on the transport vehicle, obtaining a center of gravity on the center line of the vehicle and placed near to the axle of the drive wheels.

1 Position all the packs containing joined mast elements.
2 Load the packs consisting of the platform modules vertically, fit them against the masts.
3 The base unit(s) is (are) loaded next to the platform modules.
4 Insert the set of guardrails between the base units and fixate them to prevent movement during transport.
5 All the platform accessories (posts, brackets, wall tie extensions, spanner set, instruction manual, electrical control panel) are packed, whenever possible, in special boxes that can be moved with fork lifts.

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Transport

WARNING: Observe the local traffic regulations. Moving the machine on public roads is not allowed.

Avoiding damage during loading and unloading

1 Use fork lifts or cranes with an adequate lifting capacity.
2 Avoid interference / impact with obstacles when lifting.
3 Packages must be adequately wrapped.
4 Use certified lifting tools.
5 Avoid damage of any kind when packing, lifting or positioning.
6 Handle control panels with special care.
7 Ensure no materials / parts can tip over.

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Pre-assembly

General information

WARNING: Depending on what type of machine you are building, you have to choose the correct Ground Frame. It is dangerous NOT to use the correct Groundframe as the stability of the machine may be jeopardized.

WARNING: If assembly work is stopped, complete the part of the assembly work which is carried out before actual stopping work

Before taking the machine into use, the assembly procedure must always be followed by a test run.
Until the test has been performed, the hoist may not be used for any purpose other than transporting its own mast elements + assembly personnel.

All the platform elements must be checked before each new installation, eliminating the elements which are unreliable due to breakage, deformations, corrosion, etc.

During erections the following points must be constantly checked according to the installation schematics and instructions supplied by the designer of the configuration.

1 the exact positioning and distances (horizontally and vertically) of the structures and the elements
2 the correct installation of the platform ties and guardrails
3 the functionality and the efficiency of the electrical, electromagnetic and mechanical safety devices supplied for erection, use and dismantling operations of the platform

FENCES / RAMPS ON THE PLATFORMS

SPT-SINGLE

The fixed fences can be mounted at 3 sides (Left + Right + opposite of the mast).
The entrance bridge ramps can be mounted on 3 sides (Left + Right + opposite of the mast).
The exit ramps or selfcarrying ramps can be mounted on 2 sides (Left + Right).

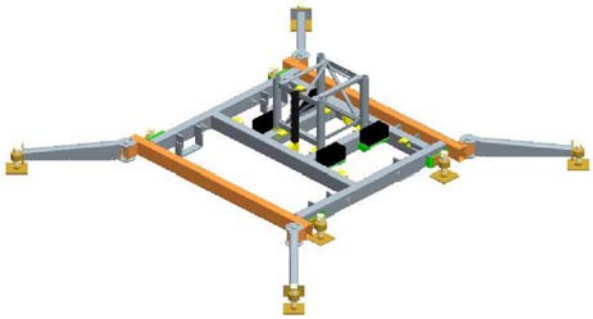
SPT-TWIN

The fixed fences can be mounted at 2 sides (Left + Right).
The entrance bridge ramps can be mounted on 2 sides (Left + Right).
The exit ramps or selfcarrying ramps can be mounted on 2 sides (Left + Right).

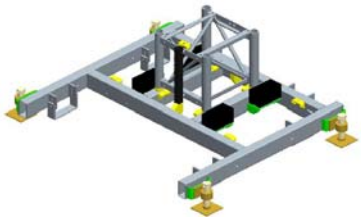
MT

The fixed fences can be mounted at all 4 sides or at 3 sides (when extensions are being used.

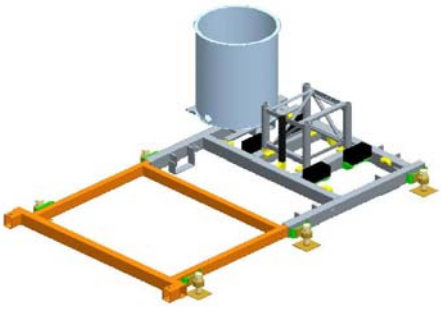
SELECTING THE GROUND FRAME



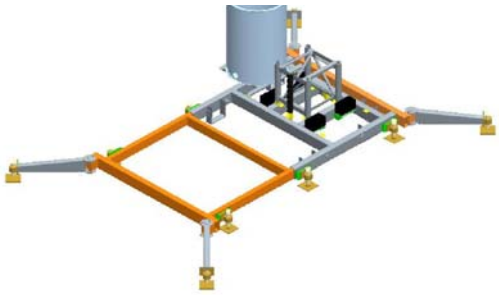
M0709-0022
Ground Frame



M0709-0023
Ground Frame Medium for MT-single



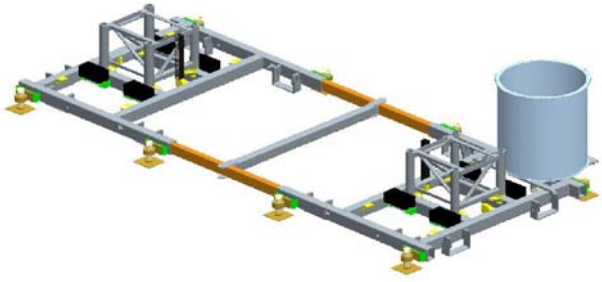
M0709-0024
Ground Frame SPT1600S



M0709-0025
Ground Frame SPT1300SD

M0709-0026
Ground Frame SPT3000T

M0709-0027
Ground Frame SPT4000T



M0709-0028
Ground Frame SPT3000TD

M0709-0029
Ground Frame SPT3000T2

DIMENSIONS OF GROUNDFRAMES

	L	W ***	H *	L **	W ^^	H	L	W	H (1) *	H (2) *
Single	1955	1915	780	X	X	X	1955	1915	2315	2510
Medium	1495	1915	780	X	X	X	1495	1915	2315	2510
SPT1600S	2910	2110	1265	1845	2100	2180	2910	2110	2315	2510
SPT1300SD	3185	2110	1265	1845	3700	2180	3185	3700	2315	2510
SPT3000T	7265	2110	1265	5230	2100	2180	7265	2110	2315	2510
SPT4000T	5665	2110	1265	3630	2100	2180	5665	2110	2315	2510
SPT3000TD	4065	2110	1265	2030	3700	2180	4065	3700	2315	2510
SPT3000T2	6125	2110	1265	3630	3700	2180	6125	3700	2315	2510

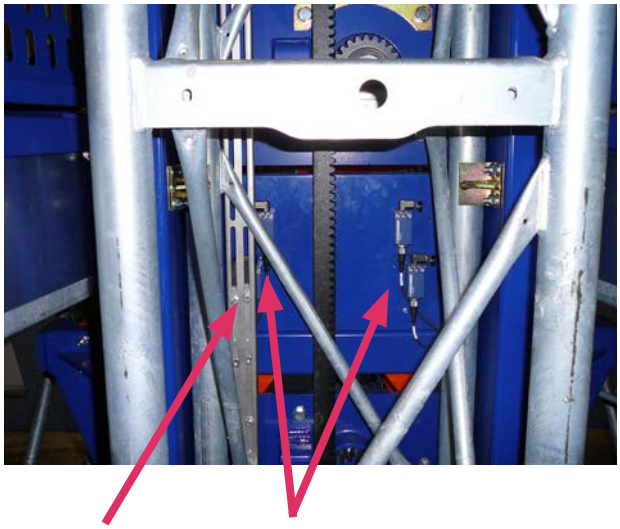
* It is possible to go 60 mm lower by displacing the forktruck-brackets and by screwing in the struts complete
** Mastguard included
*** 1915 without cable crum / 2110 with cable drum
^^ Platform width: platform + 500 (ramp / door)

H (1) : top of the Drive Unit
H (2) : top of the mastguard
At both heights the Drive Unit rests on the buffers of the baseframe.

PRE-ASSEMBLY OF ANY MACHINE

1 Select the correct ground frame(s).
2 Ensure the jacks are taking the weight of the machine, NOT the wheels (if present).
3 Mount 1 base mast section (short) and 1 mast sections to the ground frame.
4 Mount the lower striker plate to the mast, on the Right Hand side. The slotted holes should be on the left side, the plates should point upwards.
5 Connect the safety switches.
6 Pick up the drive unit and slide it over the mast; use the motor release brake to allow the pinion to rotate.
7 Position the drive unit on its buffers.

Mast parts



STRIKER PLATE + SWITCHES (View from facade side)

Drive unit

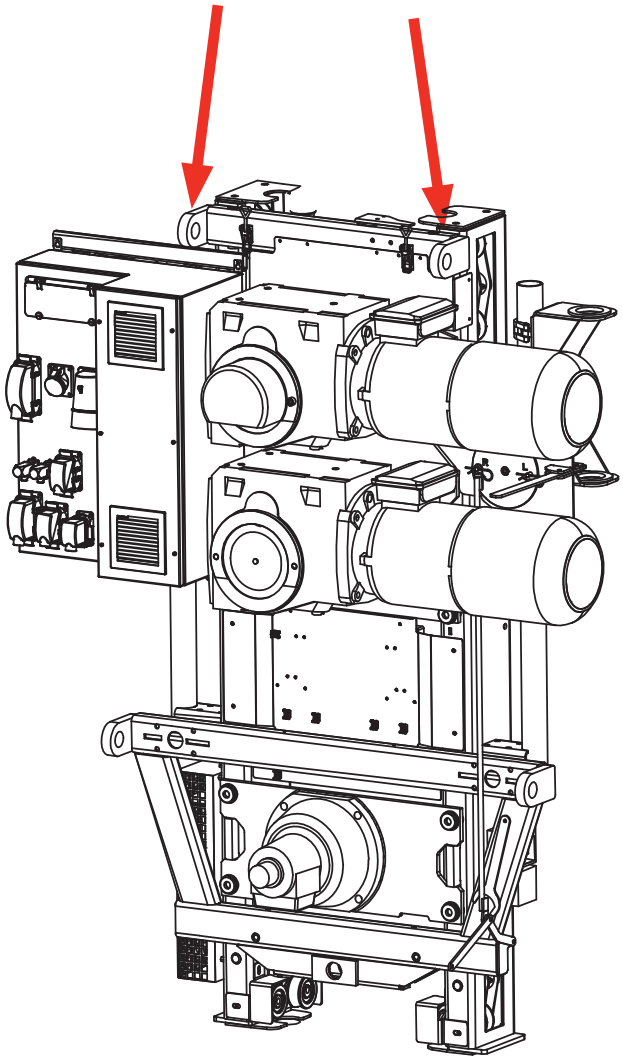
Pre-positioning

WARNING: The ground condition must be able to withstand a stress of 200 kN/m² (4,500 Lbf / sq. Ft). The underlayment used for packing under the machine must be capable of bearing a load of 200 kN/m² (4,500 Lbf / sq. Ft). The underlayment has to be suitable for the ground type and structure.

At the building site, the platform can be pre-positioned with a crane as follows:

1 It is recommended to use forklifts for lifting the ground frame(s) into position.
2 Alternatively use the lifting brackets on top of the drive.
3 Ensure the jacks of the outriggers remain extracted when moving the platform to prevent instability of the platform.
Pay attention to the distance between the scaffolding and/or the building and the path the machine will follow.
4 Level the machine with the jacks. Check with a spirit level.
5 Support the ground frame at the four corners under the mast as well as at the end of the supports. In this way, not only the differences in ground level are compensated for, but also the load is spread more evenly.
6 Screw up the jacks so that they are clear of the ground.

Use the brackets to lift the machine



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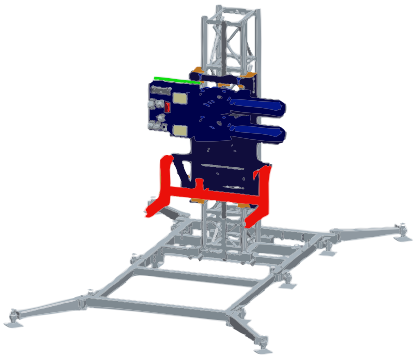
Assembly of the SPT-SINGLE

ASSEMBLY OF A SINGLE SPT-MACHINE

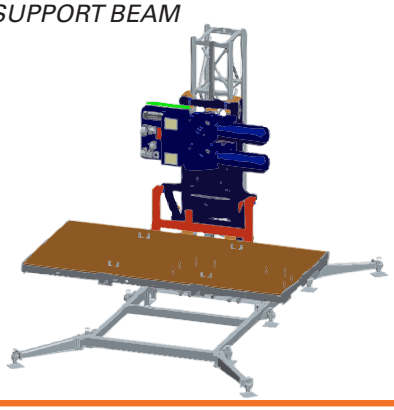
1 Fit 1 more mastelement to the machine.
2 Fit the Support Beam to the drive unit.
3 Connect the adaptor to the drive unit by using 2 lock pins and 2 bolts, nuts and washers.
4 Pre-asseble the required PLATFORM parts WITHOUT the gates, ramps, etc.
5 Ensure to exchange the stainless steel support plate and location of the locking pin when changing from a SINGLE to a TWIN machine and vice versa, see warning plate below.
6 Now, use a crane to hoist the platform over the ADAPTOR. Use the lifting EYES, or use a forklift.
7 Provisionally connect the machine electrically according to the chapter. "Electrics and controls".



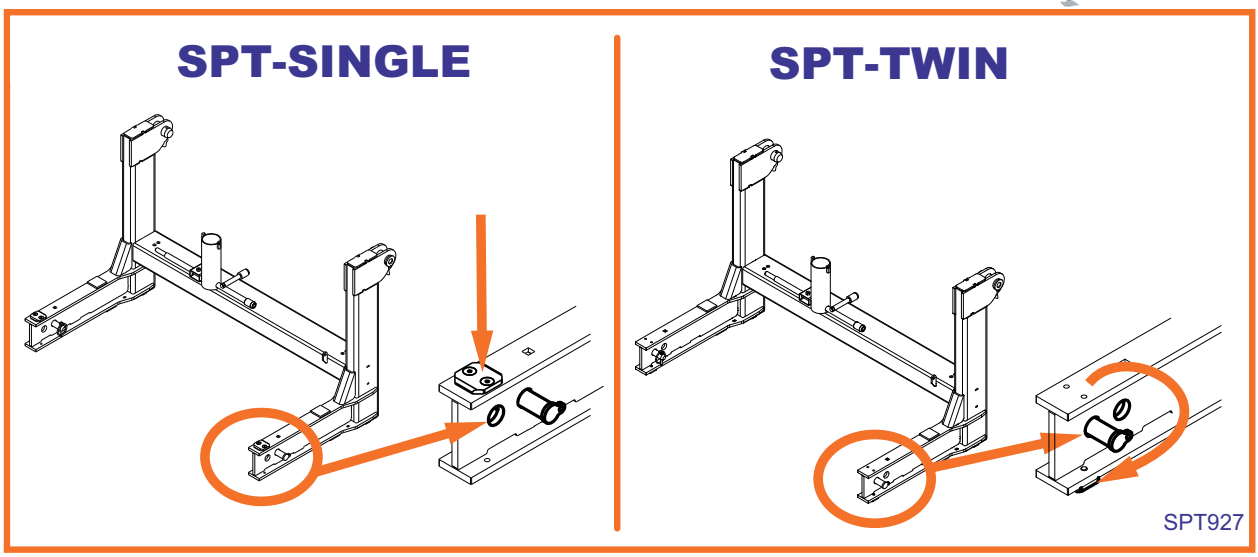
GROUND FRAME, ADAPTER + SUPPORT BEAM

ADAPTOR + SUPPORT BEAM

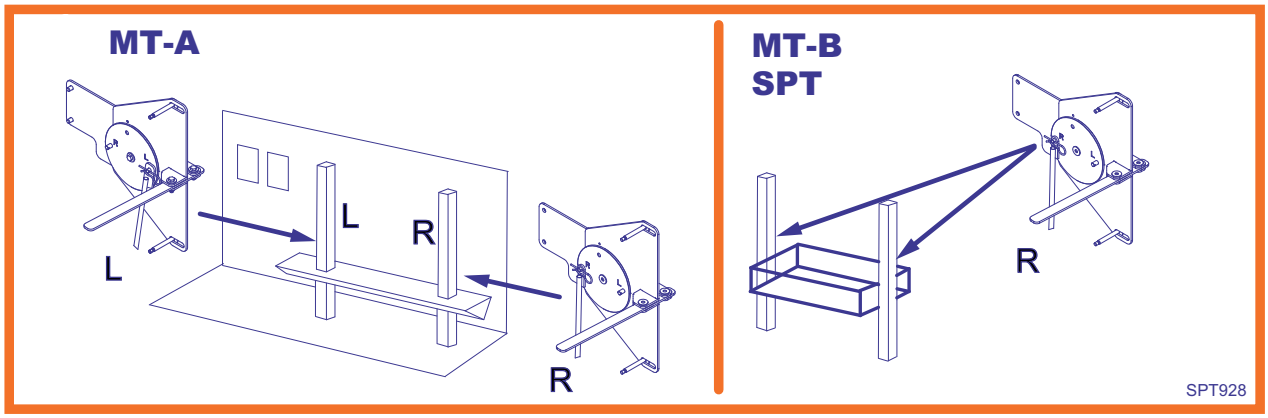
WARNING: Ensure to exchange the stainless steel support plate and location of the locking pin when changing from a SINGLE to a TWIN machine and vice versa.



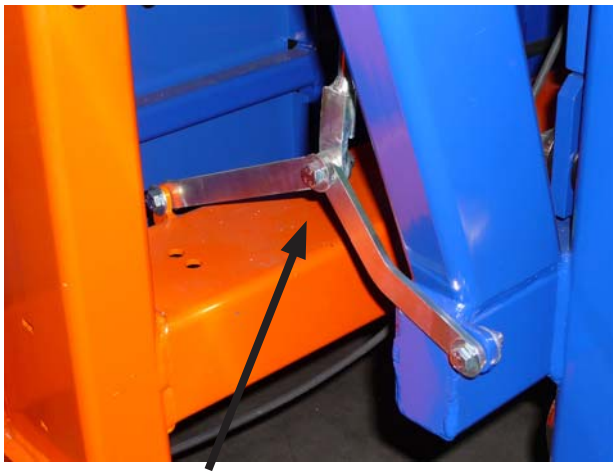
Platform



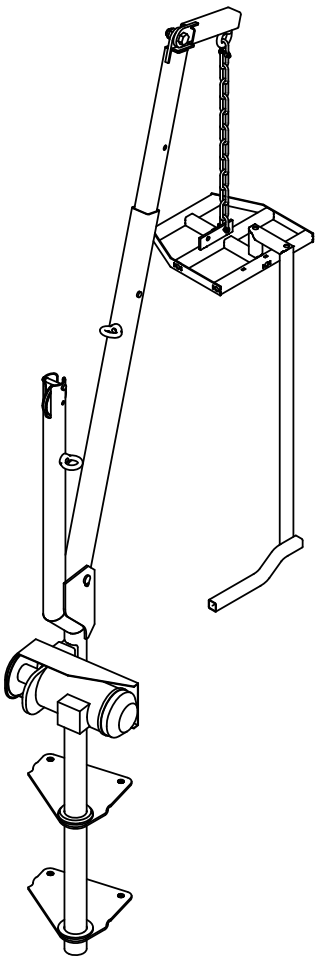
8 Fit the leveling connecting rod. This is not needed for a SINGLE machine, but is needed for TWIN applications anyway.
9 Fit the mounting crane.
10 Now fit the back walls.



LEVELING ROD



LEVELING MECHANISM



Mounting Crane: SPT crane mounted on the side, MT crane mounted on top motor gear box.

Back walls

11 Fit the entrance and exit ramps. Do not tighten the bolts.

Fit entrance and exit ramps

12 Fit the opposite fence. Do not tighten the bolts.

Fit fence

13 Connect all fences, bridge ramps, etc.

Connect all fences, bridge ramps etc.

14 Raise the platform and tighten all bolts, and connect the fence to the bridge ramps.
15 Mount the platform to the ADAPTOR using 2 lock pins.
16 Connect all wiring and switches. Ensure the cables are led THROUGH the platforms.
17 Connect the wires to the connection box.
18 Finally check all switches for correct functioning.

Fit the bolts from below

Lead the cables through the platform

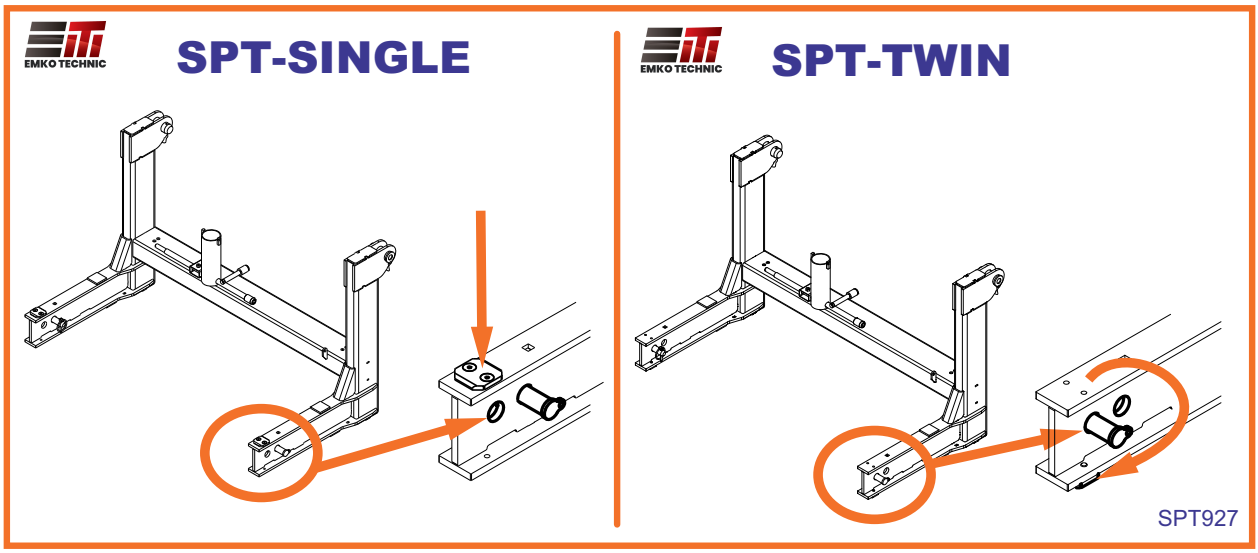
ASSEMBLING 2 SPT-PLATFORMS ON 1 MAST

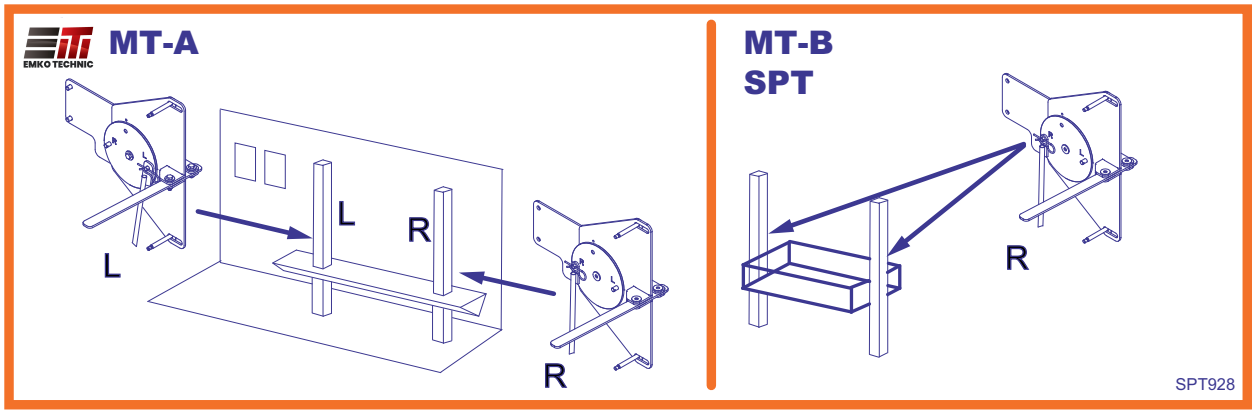
WARNING: Assembly is basically the same as Assembling 1 platform on 1 mast, but one has to ensure the stability of the machine will not be jeopardized during assembly of the second platform.

Assembly of the SPT-TWIN

1 Complete 2 basic machines.
2 Connect the ADAPTORS to both drive units by using the 2 lock pins.
3 Ensure the to exchange the steel support plate and location of the locking pin when changing from SINGLE to TWIN and vice versa.
4 Do NOT fit the support beams.
5 Slide the connecting beams of the groundframes in the first groundframe.
6 Now, use a crane to hoist the platform over the ADAPTOR. Use the lifting EYES, or use a forklift.
7 Stabilize the platform horizontally by some supports. Ensure they can hold the weight of the platform!
8 Lock the platform to the first ADAPTOR, using the 2 lock pins.
9 Now pick up the second drive unit and slide both the ADAPTOR and the connecting beams into place.
10 Lock the connecting beams and adaptor using the lock pins.
11 Fit the leveling mechanism correctly: Always connect the bars to the circular plate on the R-side.
12 Now fit the back walls.
13 Fit the opposit bifoldable doors, fences etc.
14 Fit the end ramps, fences, etc.
15 Fit the Leveling Device connection bar.
16 Connect all wiring and switches. Ensure the cables are led THROUGH the platforms.
17 Connect the wires to the connection box.

Alternatively, one can choose to assemble the PLATFORM together with the ADAPTORS and connect this subassembly to the DRIVE.





Leveling mechanism

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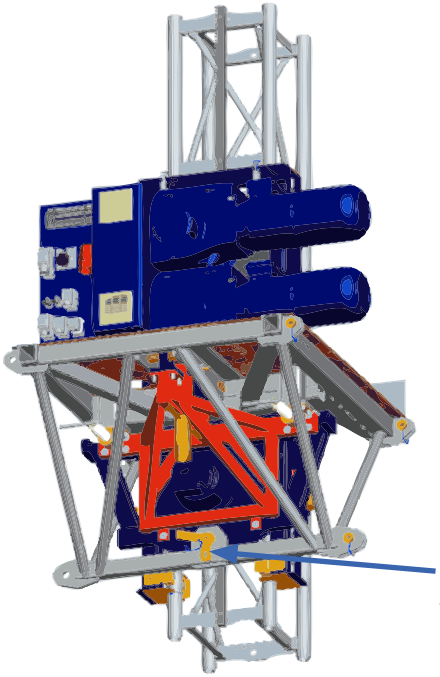
Assembly MT-Single & Twin

MTM-A-SINGLE-ASSEMBLY

1 Preassamble the Support to the Hinged Deck. Do this when they are NOT mounted to the machine.
2 Fit the Hinged deck support + Hinged Deck to the machine, using the 10 bolts and nuts. Ensure to choose correctly for the A or B-drive deck and adapter.
3 Fit the central lower locking pin
4 Ensure the arresting pins are properly screwed IN and TIGHTENED.

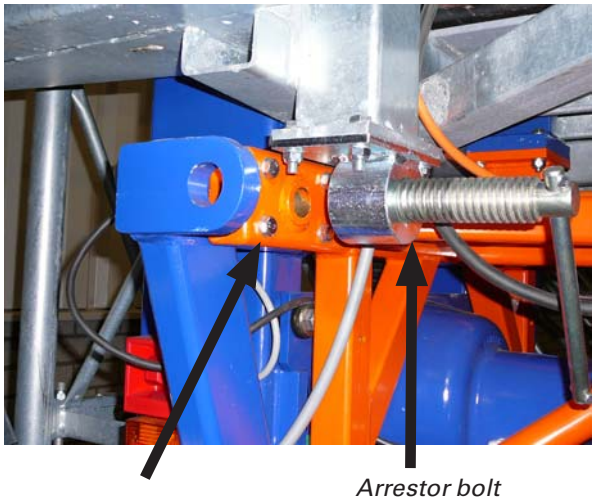


Central lower locking pin

Support connected to Hinged deck

2x4 bolts on top

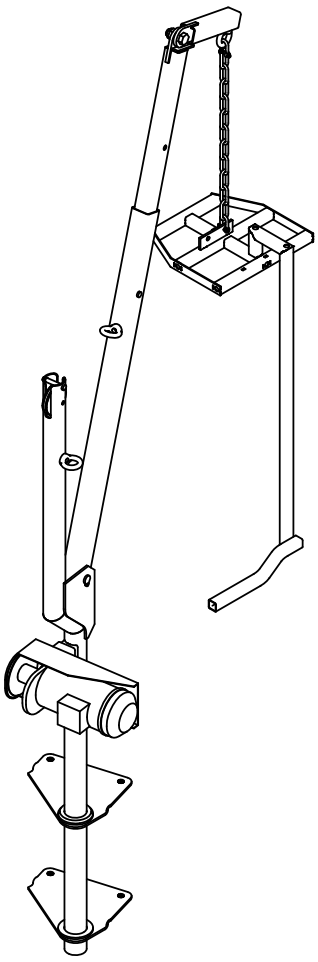
Arrestor pin screwed IN



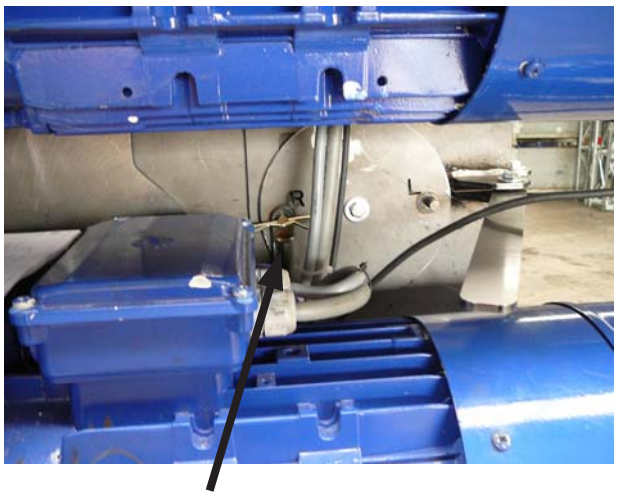
2x4 bolts on top

Arrestor bolt screwed OUT.

5 In spite of the fact that the leveling mechanism is not functional in the SINGLE-configuration, it is wise to fit the leveling parts, preventing loosing any parts. Always connect the bars to the circular plate on the side indicated with R.
6 Connect the decks equally left and right to the machine.
7 Now fit the fences, gates, etc.
8 Fit the mounting crane.
9 Lead the cables underneath the deck, fit them with some tie-wraps.
10 Connect the switches to the control box
11 Power up the machine (according to Manual).
12 Check if all switches function properly
13 Now the machine is ready for final positioning.
14 After erecting the mast, fit the mast guard.

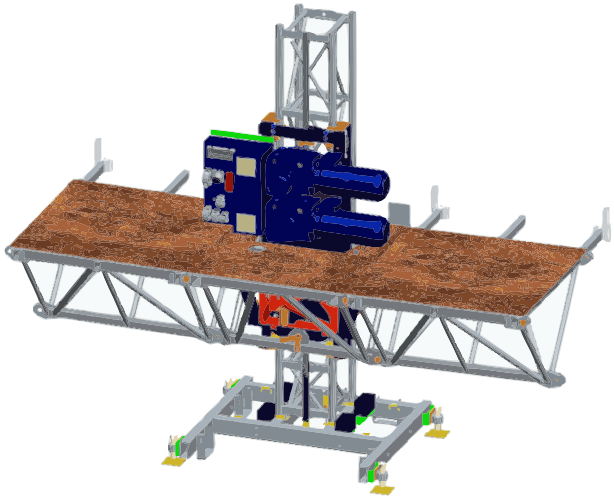


Mounting Crane: SPT crane mounted on the side, MT crane mounted on top motor gear box



Position of leveling mechanism parts

Position of leveling mechanism parts

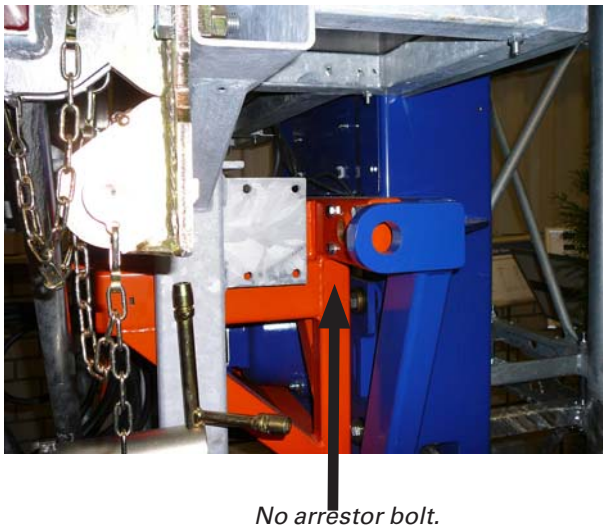


MCM-B-TWIN-ASSEMBLY

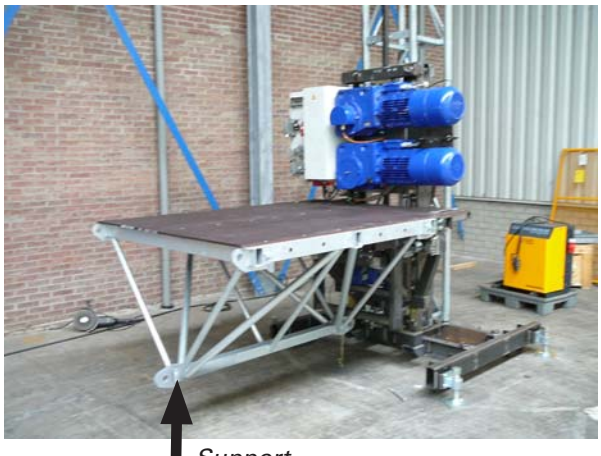
WARNING: Support the deck while building to prevent the machine from tipping over.

1 Ensure the ADAPTOR is mounted to the hinged deck OFF the machine (images w/o Forto-deck).
2 Fit the hinged deck-adaptor to the drive unit with 10 bolts and nuts.
3 Ensure the arrestor bolts (if present) are at this stage tightened.
4 Fit the leveling mechanism parts.
5 Fit the mast guard.
6 Fit the fences, gates etc as required.
7 Connect all wiring and switches. Ensure the cables are led UNDERNEATH the platforms, use tie-wraps.
8 Connect the wires to the connection box.
9 Power up the machine (according to Manual)
10 Finally check all switches for correct functioning.
11 Fit the back walls after erecting the mast.
12 Ensure the Arrestor bolts finally will be screwed out.

WARNING: The arrestor bolts have to be screwed OUT before ANY movement is made with the machine!



No arrestor bolt.



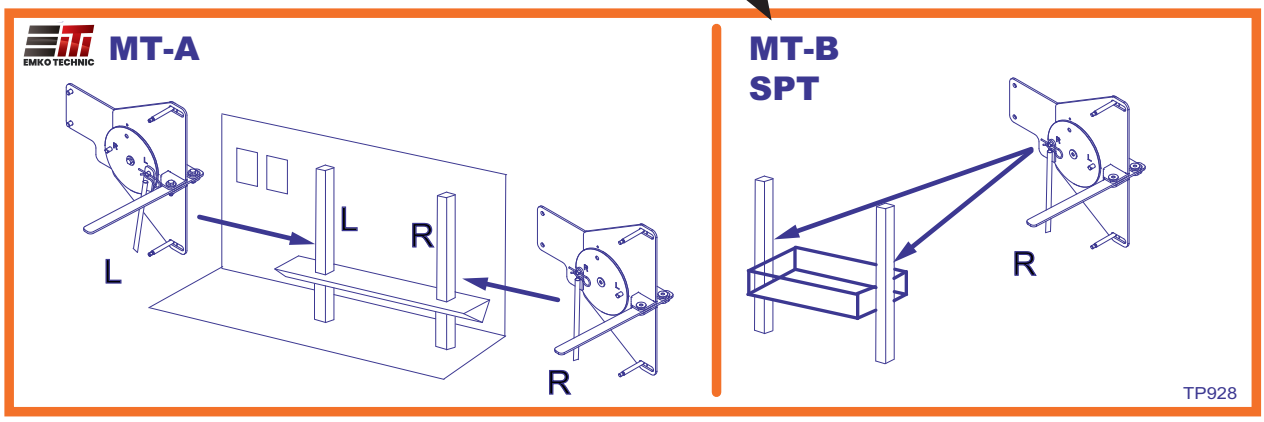
Support

MT-A-TWIN ASSEMBLY + TWIN-PROCEDURE

Also valid for the following configurations

1 Assemble a complete TWIN machine MECHANICALLY in one of the following configurations.
A-A
B-B
A-B
2 Follow the procedures for SINGLE machines. Do not assemble the fences.

WARNING: Ensure the Right Hand Side Leveling System Device is connected to the R-indicated side of the circular plate. Exception is the LH-mast of the MCM-A machine, The leveling device rod MUST be connected to the L-indicated side of the circular plate.



1 Do not exceed the maximum dimensions as indicated in the Manual.
2 Connect the 2 separate machines mechanically
3 Fit the fences, gates etc
4 Connect the 2 machines electrically.
5 Power up the machine.
6 Program the machine for the applicable configuration.
7 Power down the machine.
8 Now the machine is ready for final positioning.

ASSEMBLY OF THE PLATFORM SECTIONS

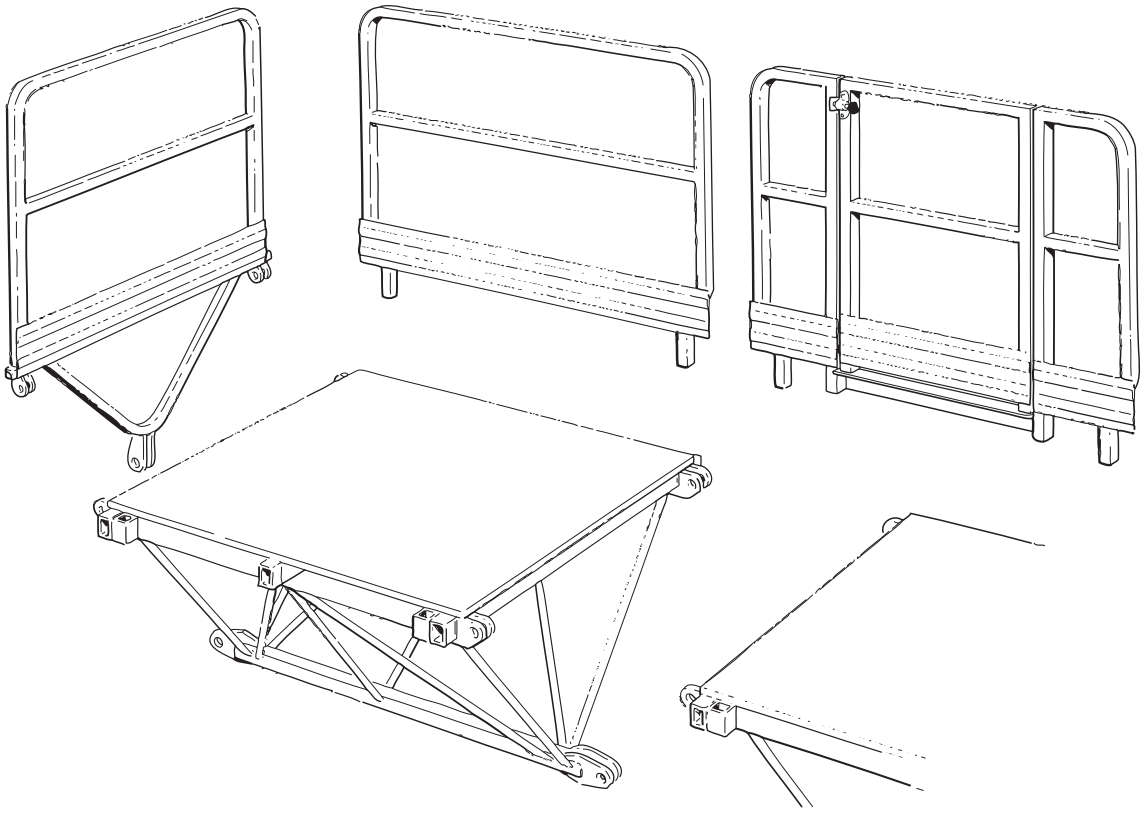
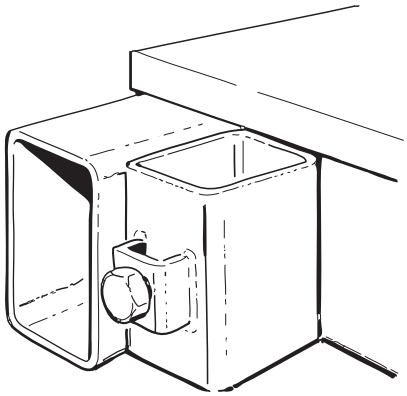


Image of platform and guardrail connections

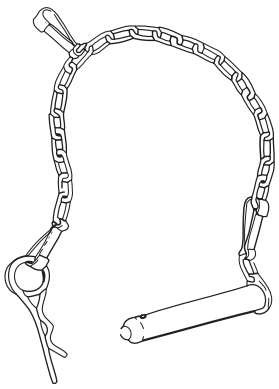
1 Mount the platform sections in the required configuration.
2 Mount the guardrails on the front part
3 Fit all the posts on the side, facing the building.
4 The posts must be joined together by planks (20x2.5 cm / 8 x 1 inch) to get a toe guard, intermediate and upper guardrails, to guarantee protection towards the building.
5 Fix the planks with screws through the dedicated holes in the support post.

WARNING: Ensure the planks can withstand a static force of 2,000N / 440 Lbf on a surface of 10 x 10 cm / 4"x 4" without permanent deformation.

WARNING: The platform extensions must be made in such a way, that a roll with a diameter of 15 mm / 0.6" cannot fall through any opening.



Post clamp bracket

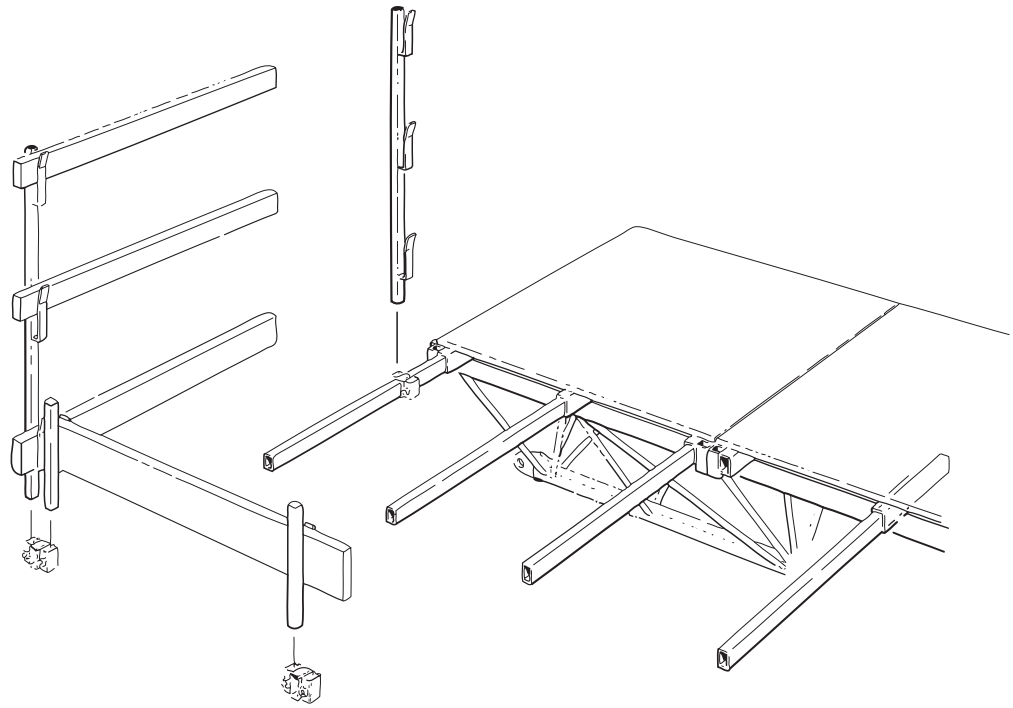


Connecting pin

WALL PROTECTION

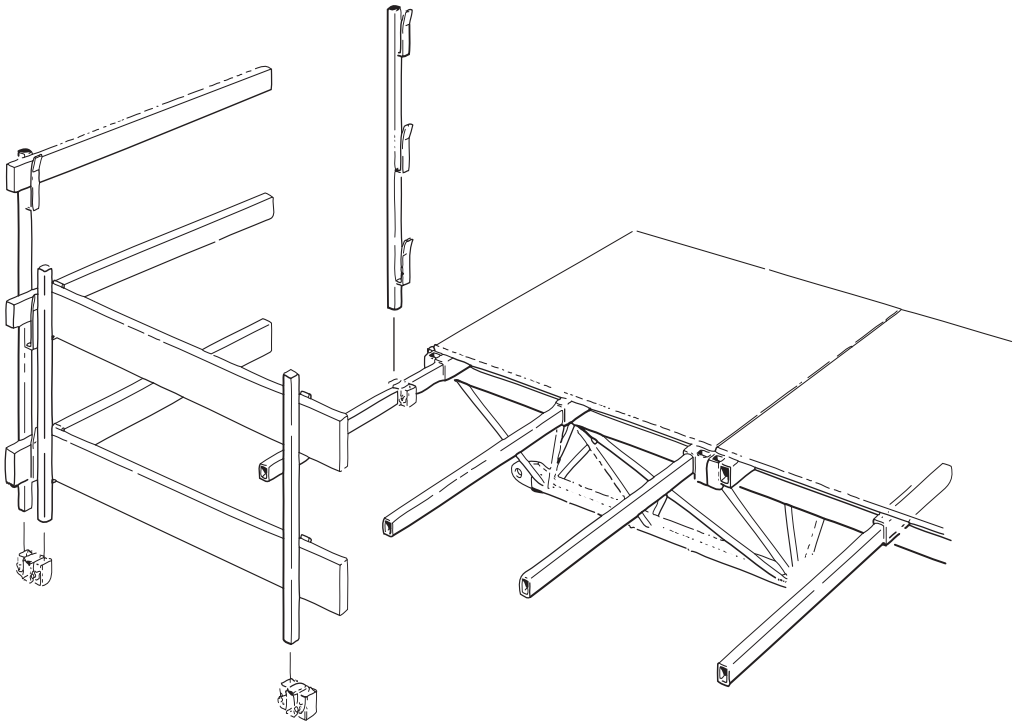
Wall distance SMALLER than or EQUAL to 25 cm/10 inches

The minimum height required for the wall protection with regard to the distance between wall and platform according to EN1495-A1.



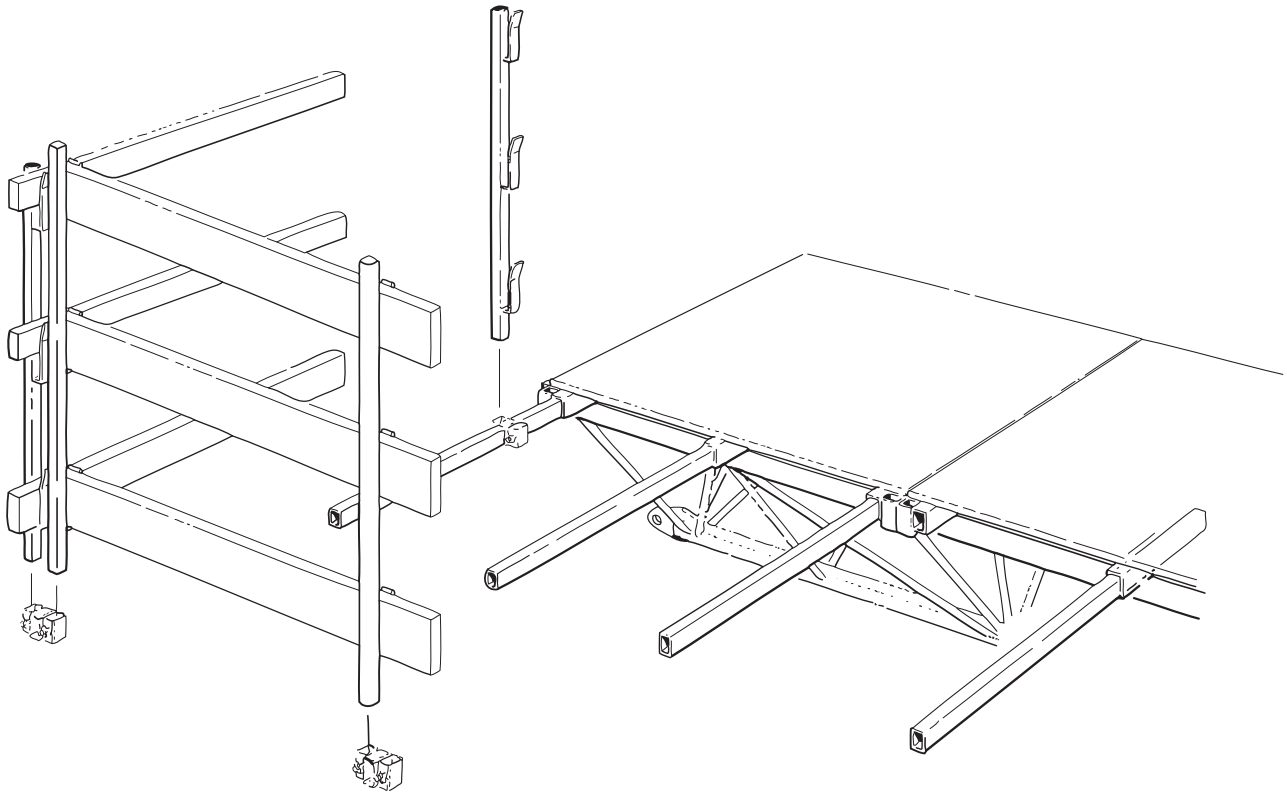
TOE BOARD required, minimum height 15 cm / 6 Inches

Wall distance BIGGER than 25 cm up to 40 cm (10 up to 16 inches)



Guardrail with minimum height of 70 cm / 28 Inches, with kick plate min. 15 cm / 6 Inches, without tie crossbeam.

Wall distance BIGGER than 40 cm / 16 inches



Guardrail with minimum height of 110 cm / 43 Inches, with TOE BOARD min. 15 cm / 6 Inches, with tie crossbeam

ERECTION ACCESSORIES

WARNING: Any work on the platform must be carried out at a height less than 2 m from the surface underneath the platform.

All accessories must be fixed before the platform is positioned horizontally and vertically, against the wall. The screws that fix the special guardrail slot supports must be loosened to allow all the short, normal end platform guardrails to be fitted.

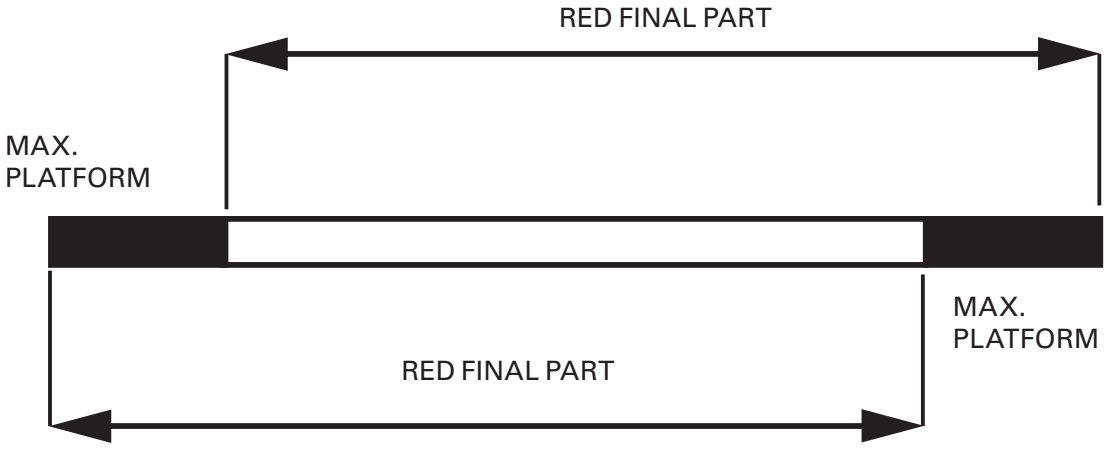
WALL EXTENSIONS

Use the adjustable extensions in case the distance to or shape of the wall requires this. Extract them to the required length and then carefully fix them in place by tightening the screws.

Wall extensions, built from rectangular pipe in high strength steel, are coloured according below picture, to indicate when the max extension is achieved.

The maximum extraction of the standard extensions is 1,2 m / 4 Ft . The work surface must be made from the extractable part of the platform using planks with the following specifications:

1 Depending on local legislation; thickness not less than 4 cm / 1,6 Inches, width not less than 20 cm / 8 Inches.
2 The planks must be properly fixed to the cross-pieces so that they cannot move, not even vertically due to bumps against fixed obstacles during the lowering of the platform.
3 The planks must be fixed to the metal cross-pieces in such a way that in no case the strenght of the cross-pieces will be reduced (no drilled holes allowed).
4 The work surface must be continuous and without gaps.

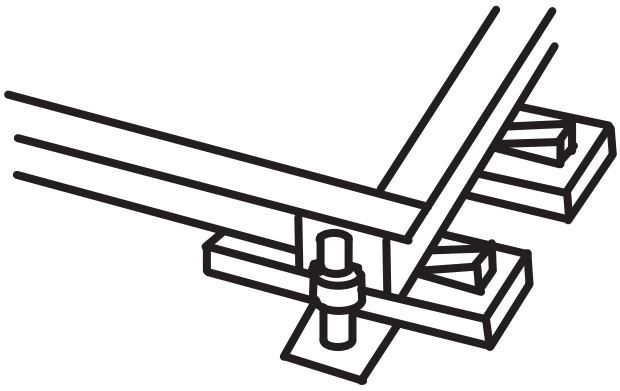


Final positioning

POSITIONING + FITTING FIRST ANCHOR AND TIES

Procedure

1 Ensure the proper ground condition requirements are met.
2 Lift the machine to its final position with a crane, or, if required, 2 cranes. Fork lifts may be used as well.
3 Ensure to place the machine level, using the jacks for leveling.
4 If the mast is in the correct position, fill up the space between floor and ground frame with timber and use wedges for an optimal load bearing capacity.
5 Now screw in the jacks, so they no longer have a load bearing function.



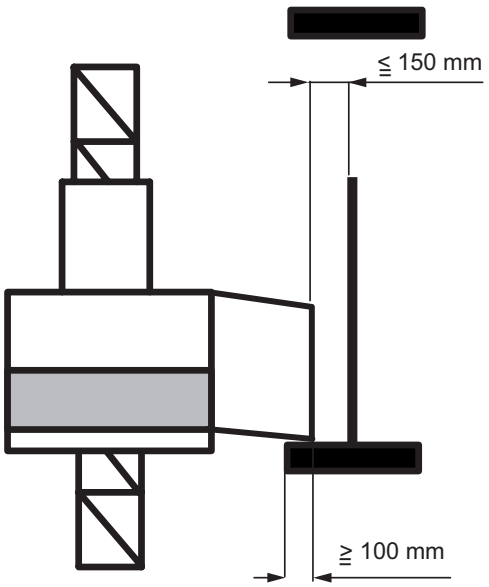
Wedging the ground frame

SPT positioning

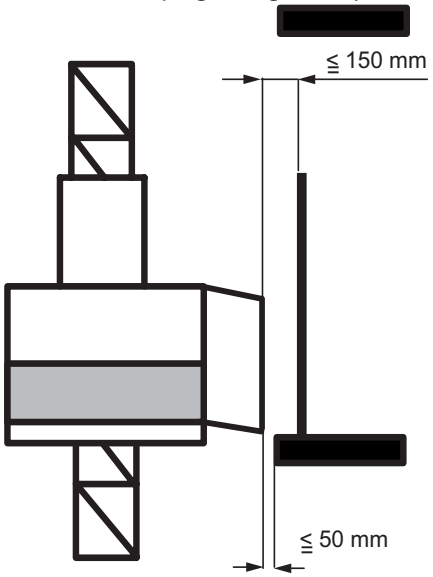
1 The max. distance between the landing door and the opened load barrier rail must not exceed 150 mm.
2 Non-Self Carrying Bridge Ramp: The supported area must be larger than 100 mm.
3 Self Carrying ramp: The maximum gap is 15 mm.

IMPORTANT: For SPT only; the distance between a machine and the building must be smaller or equal to 50 mm / 2".

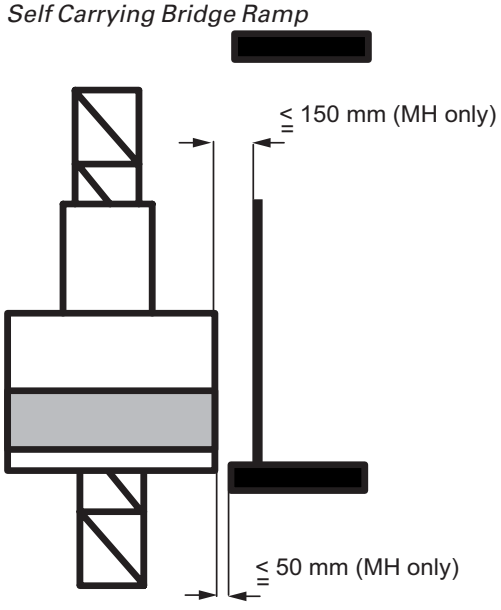
4 Now fit the first anchor and tie.



Non-Self Carrying Bridge Ramp



Self Carrying Bridge Ramp



Distance between machine and facade smaller or equal to 50 mm / 2" (MH only)

SPT: Reduced height landing door

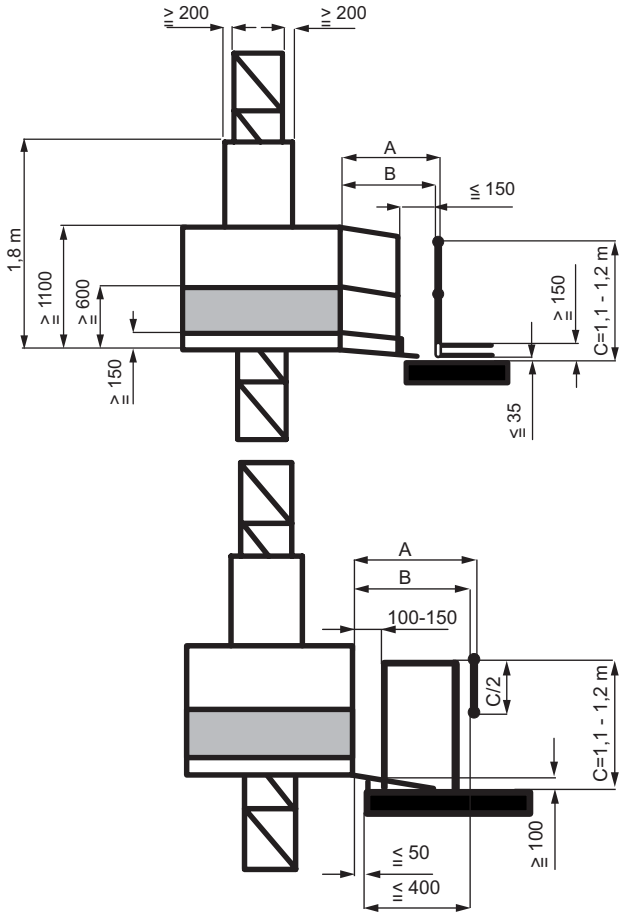
Mounting options of the low landing doors (< 2 m / 6.5 Ft) which are used in most of the situations.

A) The landing has been extended.

- The distance between the upper section of the landing door at the side of the building and any moving part of the hoist must be 0.5 m / 19 inches at the minimum (A).

B) The landing has NOT been extended.

- The distance between the upper section of the landing door at the side of the building and any moving part of the hoist must be 0.5 m / 19 inches at the minimum (A).
- The kick plate can be positioned at the end of the landing floor and its height has to be 150 mm / 6 inches at the minimum.



Examples of reduced Height landing Gates:

A>= 0.5 m - v ≤ 0.7 m/s

A>= 0.85 m - v > 0.7 m/s

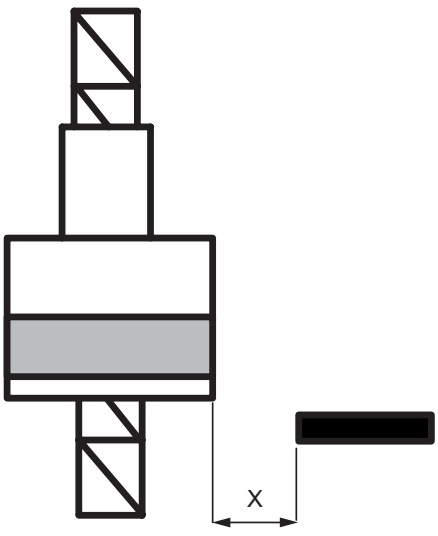
B>= 0.4 m - v ≤ 0.7 m/s

B>= 0.75 m - v > 0.7m/s

C = 1.1 m -1.2 m

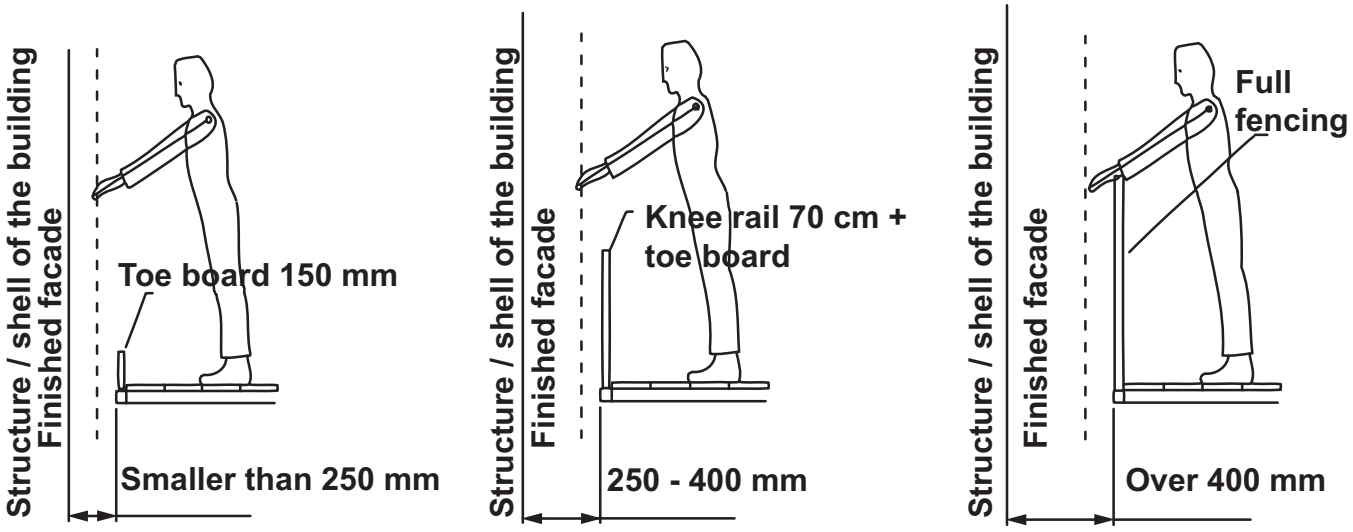
SPT: Distance machine - building

WARNING: The distance X between any part of the machine and any part of the building must be at least 500 mm (19 inches)



SPT: Minimum distance between machine and building.

MT-positioning



FUNCTIONAL TEST

Now carry out a functional test according to the "INSTALLATION CHECK LIST".

Ensure the machine is driven out of the buffers.

ASSEMBLE THE MAST TO IT'S NEXT ANCHOR AND TIE

WARNING: Carry not more than the number of mast elements + ties needed to assemble UP TO the next tie in one go (i.e. if the anchor distance is 9 m, the lenght of the mast element is 1.5 m, you can carry 6 mast elements + 2 ties on the machine.

1 Assemble the mast elements.
2 Fit the second anchor and tie. See chapters "Mast tie" and "Erection".

DROP TEST

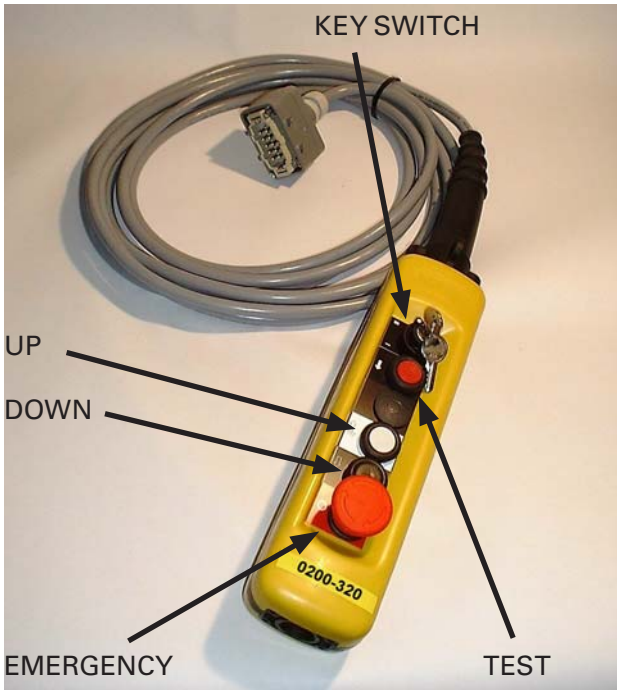
WARNING: During the drop test no persons are allowed under and/or on the platform.

Proceed as follows:
Load the machine with a load of appr. 200 Kg / 440 Lbs.

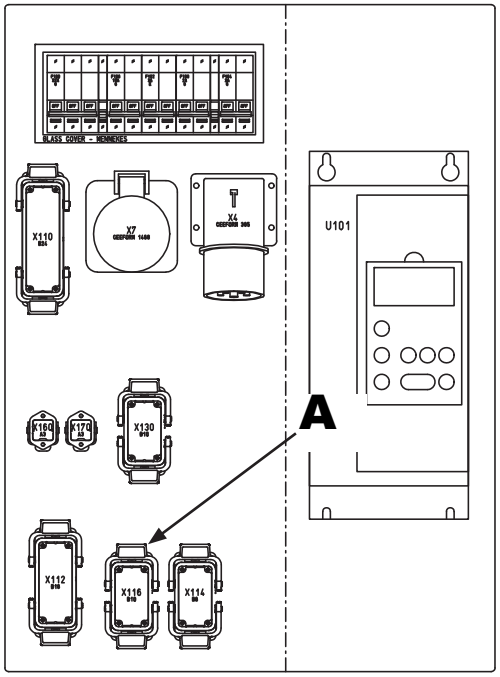
1 Remove the dummy plug at the Motor Control Center and connect the Drop Test Control instead of the dummy plug (A). Connect the Drop Test Control to the Motor Control Center.
2 Program the machine via the key pad in the SERVICE I mode.
3 Put the key switch on the Drop Test Control in the position "NORMAL".
4 Press the "UP"-pushbutton until the platform has ascended by appr. 3 m - 10 Ft.
5 Turn the key switch into the position "DROP TEST".
6 Press the test button. The motor brake will be lifted and the macine will start descending. After approx. 40 - 90 cm (1.5 - 3 Ft) the Safety Device must be engaged.
7 When the Safety Device is not engaged after approx. 1 mast element, immediately release the test button! Contact EMKO TECHNIC, its affiliates or subsidiaries.
8 When the Safety Device is engaged, it needs to be dis-engaged.

Dis-engaging the Safety Device

1 Put the key switch on the Drop Test Control in the position "NORMAL" and press the "UP"-pushbutton for 3 seconds.
2 Descent the platform to the "out-of-service" position.
3 Reset the Safety Device. See chapter "Operation".



Safety Device Drop Test Control - layout



Motor Control Center socket / detail of Safety Device Drop Test Control

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Electrics and controls

INTRODUCTION

The electric configurations cover two different type of machines: SPT or MT. The SPT and MH is just one design (physical identical). The configuration setup (settings) can be selected. The machines are operated via a PLC with BUS system

CONFIGURATIONS MT

Single:

- Incremental encoder (OSD)
- VFC + brake chopper
- PLC
- Bus system between PLC-VFC and PLC-display

Twin:

- incremental encoder (OSD) & absolute encoder (synchronizing)
- VFC + brake chopper
- PLC
- Bus system between VFC (Primary)-VFC (Secondary), PLC(Primary)-PLC (Secondary) and PLC-display

CONFIGURATIONS SPT

Single:

- incremental encoder (OSD) & absolute encoder, positioning)
- VFC + brake chopper
- PLC
- Bus system between PLC (drive-unit)-PLC (ground-unit, MH only), PLC-VFC and PLC display

Twin:

- incremental encoder (OSD) & absolute encoder (synchronizing, absolute positioning)
- VFC + brake chopper
- PLC
- Bus system between PLC (Primary)-PLC (Secondary)-PLC (control box) -PLC (ground-unit, SPT only) VFC (Primary)-VFC (Secondary), PLC-VFC and PLC display

CONNECTING A MACHINE

IMPORTANT: Ensure the power is 400 V AC/50-60 Hz and the main fuse corresponds with the required value. For the MH, always use the MULTI-CORE cable.

Connecting a SINGLE machine

1 Connect the Control Box (E0705-0041) to the Motor Control Center MCC (E0705-0015).
2 Connect the Control Box (E0705-0041) to the cable drum.
3 Use the cable guides and stress relieve to ensure tension is taken off the cable.
4 Connect the Power Cable to the Main Switch Box.

Connecting a TWIN machine

1 Connect the PRIMARY and SECONDARY machine using a splitter underneath the machine for connecting the MCC to the Cable Drum.
2 Connect the communications (BUS) cable between the MCC of the PRIMAIRY machine to the MCC of the SECONDARY machine.

SPT: REQUIRED CABINETS & CABLES

SINGLE: SPT 1600S + SPT 1300SD

E0705-0015

E0705-0041

TWIN: SPT 3000T + SPT 3000TD + SPT 3000T2 + SPT 4000 T

E0705-0015

+

E0705-0015

+

E0705-0041

+

E705-0075

+

E0705-0004

CHANGING TP TO MH

SPT-Kit

Contents:

1X Mainswitchbox	E0705-0052
1X Power Supply Box	E0705-0072
1X Cage Control	E0705-0042
1X Powercable	E0705-0005
1X Ground Support	0711-0006TV

Prior to starting converting a SPT , the existing power cable should be replaced by a multicore cable:

For 32 Amps = SINGLE, use drumcable 5*6 + 10*1
For 63 Amps = TWIN, use drumcable 5*10 + 10*1

Furthermore, follow the procedures as outlined on the next page.

SPT-SINGLE

E0705-0075

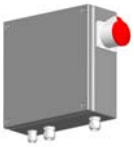
1. Do not use the Delta splitter E0705-0075.

E0705-0005

2. Do not use the cable E0705-0005.

E0705-0052

3. Install E0705-0052 on the ground support post 0711-0006TV.



E0705-0072

4. Install E0705-0072 on the platform control box position.

0711-0006TV

5. Install 0711-0006TV on the ground frame.

E0705-0042

6. Install E0705-0042 on the platform. Connect to MCC.

E0705-0060

7. At each level install a level box E0705-0060 for calling and sending the SPT. The landing boxes also function as the connection point for landing doors.

E0705-0003

8. Use the E0705-0003 cable for connecting the level boxes.

E0705-0041

9. Exchange E705-0041 from platform to ground support post.

SPT-TWIN

1. Remove the Delta splitter E0705-0075.

2. Connect the cable E0705-0005.

3. Install E0705-0052 on the ground support post 0711-0006TV.

4. Install E0705-0072 on the platform control box position.

5. Install 0711-0006TV on the ground frame.

6. Install E0705-0042 on the platform. Connect to MCC.

7. At each level install a level box E0705-0060 for calling and sending the SPT. The landing boxes also function as the connection point for landing doors

8. Use the E0705-0003 cable for connecting the levelboxes.

9. Exchange E705-0041 from platform to ground support post

MT-SINGLE

E0705-0015

E0705-0031

MT-TWIN

E0705-0015

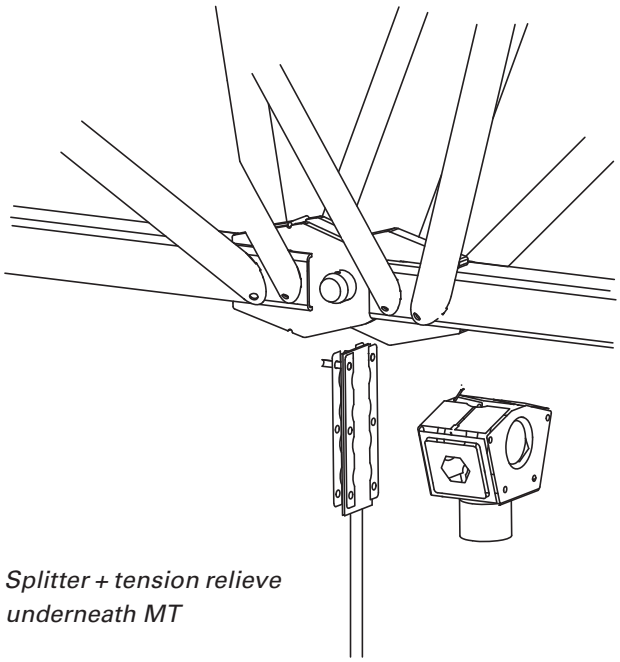
E0705-0015

E0705-0031

E0705-0075

E0705-0002

E0705-0001



Splitter + tension relieve underneath MT

AFTER CONNECTING ALL CABLES

1 Now connect the Main Switch Box to the main power.
2 Remove the padlock of the main switch box and switch the main switch to ON.

WARNING: Ensure that the safety system is functioning correctly. Check that the platform CANNOT be operated when a door/gate/fence/ramp, etc., is open (not valid when working with the remote control).

PLC

NOTE: If the PLC is changed out or the program seems to be lost, refer to chapter "Maintenance and Repair".

Overview of MCC-PLC I/O indications

Part	I/O-Number	Description
I_S035	I0.0	Mast detection
I_S051_S052	I0.1	Gates
I_S021	I0.2	Limit up
I_S023	I0.3	Limit down
I_S181_A	I0.4	Select MCWP
I_Spare_0_5	I0.5	Spare
I_ResetMCWP	I0.6	Reset Control box MCWP
I_S171	I0.7	Move up
I_S173	I1.0	Move down
I_S174	I1.1	Catwalk
I_S182_B	I1.2	Service level 1
I_S972	I1.3	Emergency stop button
I_S179	I1.4	Door open
I_S971	I1.5	Move up (Remote control droptest)
I_S973	I1.6	Move down (Remote control droptest)
I_S974	I1.7	Stops on next level (Remote control droptest)
I_Keyswitch_MHtoSPT	I2.0	Keyswitch MH to SPT
I_K112	I2.1	Connection X130
I_K113	I2.2	Connection X105
I_X112	I2.3	Connection X112 master/slave
I_K107	I2.4	Safety--line ground (landing bars)
I_K108	I2.5	Safety fail brake
I_K109	I2.6	Clixon brake resistors
I_K110	I2.7	Clixon motor 2
I_S011	I3.0	Ultimate limit up
I_S013	I3.1	Ultimate limit down
I_S061	I3.2	Mast cover
I_Spare_3_3	I3.3	Spare
I_F100	I3.4	Automatic fuse F100

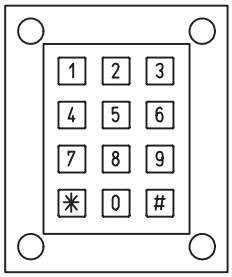
Part	I/O-Number	Description
I_F103	I3.5	Automatic fuse F103
I_K111	I3.6	Clixon motor 1
I_K101	I3.7	Safety relais 1
I_K102	I4.0	Safety relais 2
I_S182_A	I4.1	Service level 2
I_X130_5	I4.2	Hydraulic ramp bar is open
I_X130_6	I4.3	Catwalk gate en landing is open
I_X130_11	I4.4	Catwalk get signal from receiver
I_X130_12	I4.5	Proximity switch high to low speed
I_DroptestConnect	I4.6	Droptest connect
I_DroptestDrop	I4.7	Droptest dropping
Q_K114	Q0.0	Safety PLC = Oke
Q_Flashlight	Q0.1	Flashlight
Q_Buzzer	Q0.2	Buzzer
Q_ControlLight_RD	Q0.3	Control light red
Q_ControlLight_GN	Q0.4	Control light green
Q_ControlLight_BU	Q0.5	Control light blue
Q_K120	Q0.6	Audio and visual warning
Q_K121	Q0.7	Droptest dropping
Q_K115	Q1.0	Move up
Q_K116	Q1.1	Move down
Q_K117	Q1.2	Drive out Ultimate Limit down
Q_K119	Q1.3	Droptest safety fail brake
Q_K122	Q1.4	Spare
Q_K123	Q1.5	Hydraulic Ramp 1=Open 0=Close
Q_ReceiverActive	Q1.6	Make receiver active
Q_K118	Q1.7	Reset

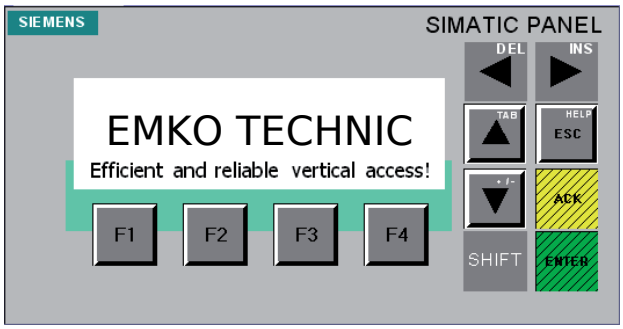
SPT Settings

SETTING THE MACHINE CONFIGURATION

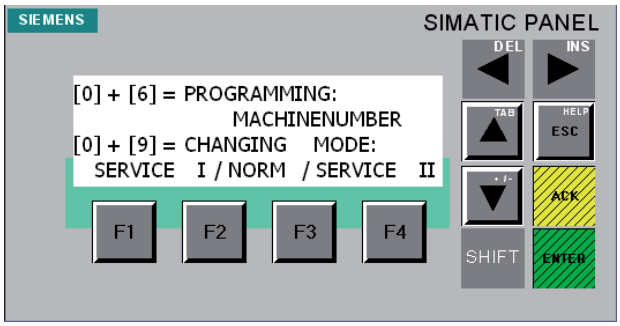
Accessing program

1 Fit communication (BUS) cable if applicable (in case of TWIN).
2 Fit power supply cable (in case of twin; use one cable and a 32 A (63 for SPT) fuse on PRIMARY, connect the cable to the SECONDARY, OR use 2 separate supply cables and 2 x 32 Amps fuse (63 A for MT).
3 The Welcome text is shown. It may take a few seconds before the screen is active.
4 Enter the program by pressing 1, 7 and * simultaneously for 5 seconds and confirm simultanously with 3.

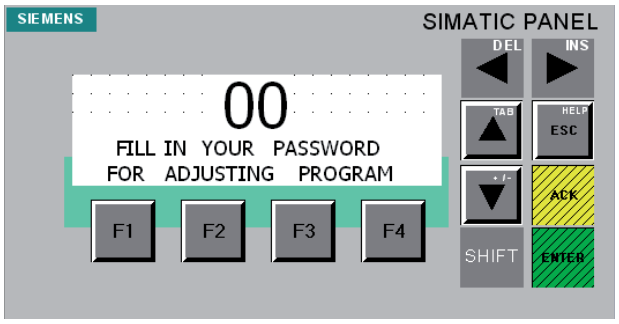




5 Now enter configuration details by pressing 0 + 6 simultanously for 3 seconds. The following screen apears:



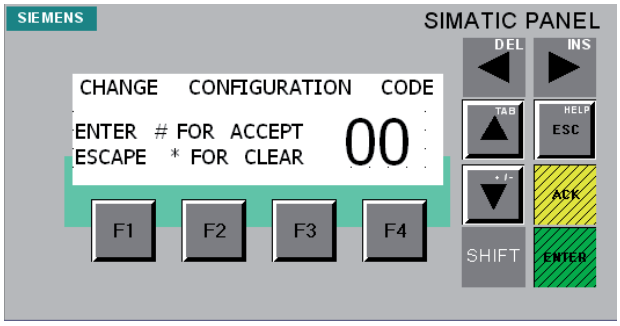
6 Now enter password "Eagle" (key in 3, 2, 4, 5 and 3) and confirm by pressing #.



Setting the program number

When the screen is active it will ask for details.
1 Enter the applicable program number with the key-pad.
2 Conform the setting with the "#" key

50: MHL 900S
51: MHL 900S
52: MHL 200T
53: MHL 1800TD
54: MHL 1200T
55: SPT 900S
56: SPT 2000T
57: SPT 1800T
58: SPT 1200T
60: MHM 1600S
61: MHM 1300 SD
62: MHM 3000T
64: MHM 4000T
65: MHM 3000T2
66: SPT 1600S
67: SPT 1300SD
68: SPT 3000T
69: SPT 3000TD
70: SPT 4000T
71: SPT 3000T2

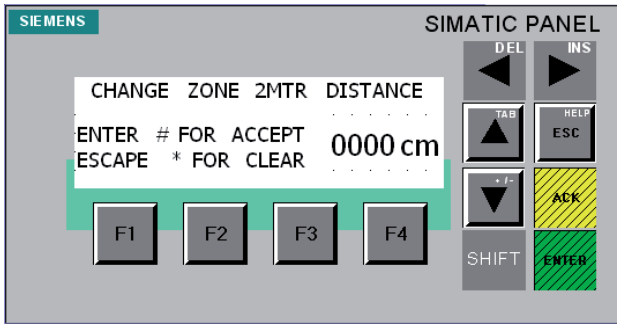


Setting the AVW-unit activation level

After confirmation of the program number, set the level at which the AVW will start when decending.

1 Enter the required distance with the keypad.
2 Conform the setting with the "#" key

WARNING: In case of a twin mast configuration do not release the "door open button" nor the Key switch yet. They can be released on a single mast (the setting is now completed) .



After confirming "AVW-activation-level".

MH-only: Connection of the level boxes

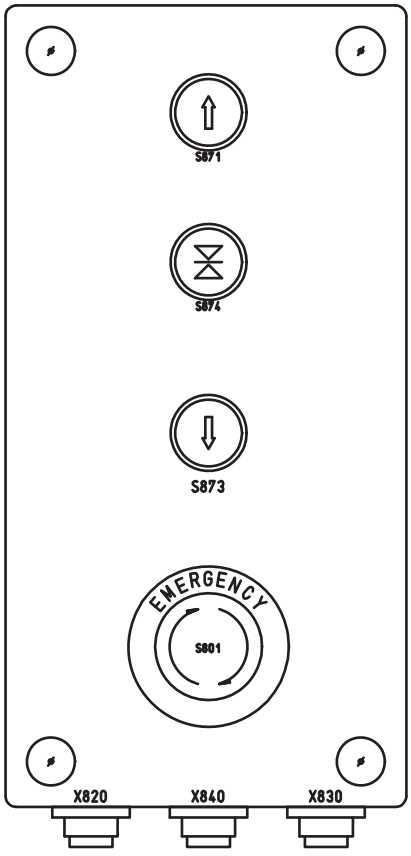
1 Connect the cable coming from the Control Box (SPT) to the lowest Level Box.

2 Connect the lower Level Box to the next Level Box and carry on this way till the top Level Box is connected.

3 Place a dummy plug in the remaining socket of the top Level Box.

WARNING: Mount the cables between the levels in such a way that they cannot get stuck or damaged.

4 Now raise the machine from the buffers, see further in this chapter.



Level box SPT/MT

PROGRAMMING THE LEVELS

Before starting programming the levels, make sure the memory is cleared and the remote control box is connected by:

1 Remove the dummy plug
2 Connect the plug of the Remote Control Box to the Motor Control Center

Clearing the memory

1 Enter the program, press simultaneously 1,7 and * for 5 seconds and confirm with 3.
2 Select the "CHANGING" mode by pressing 0+9 for 3 seconds.
3 Press simultanously 0 + 1 for 3 seconds to activate "SERVICE I".
4 Clear the memory with the remote controle by pressing simultaneously "up" "down" and "next level" for 5 seconds (AVW sounds). Memory is cleared.

Programming the levels

1 Move the machine to the 0-position by pressing UP or DOWN and confirm by pressing "NEXT LEVEL" for 2 seconds and then press "UP" (AVW sounds, 0-position is set display gives 0 - 0).
2 Move to first floor and press "NEXT LEVEL" for 2 seconds and then press "UP". (AVW sounds) (1st floor is programmed, display gives 1 - 1)
3 Repeat this procedure for all floor positions.
4 Programming finished

Now the machine has to be put back to the "NORMAL" mode.

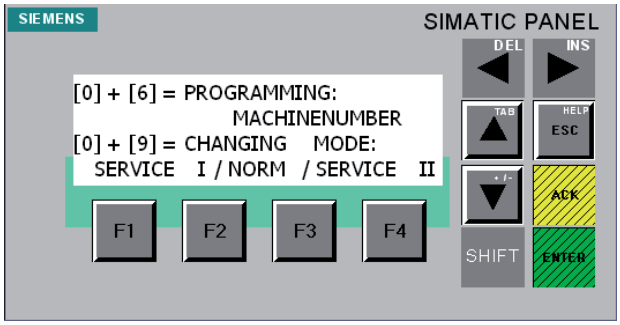
5 Enter the program, press simultaneously 1,7 and * for 5 seconds and confirm with 3.
6 Select the "CHANGING" mode by pressing 0+9 for 3 seconds.
7 Press simultanously 0 + 3 for 3 seconds to activate "NORMAL".
8 Machine is now ready for operation

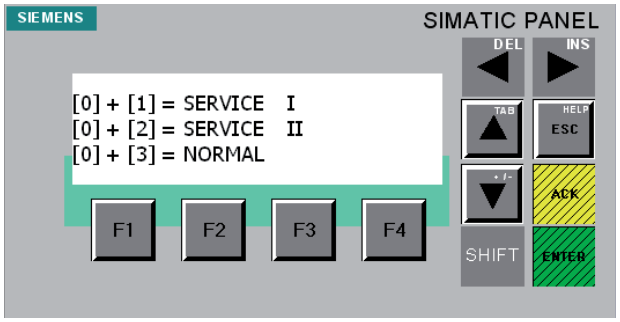
Adjusting the floor level

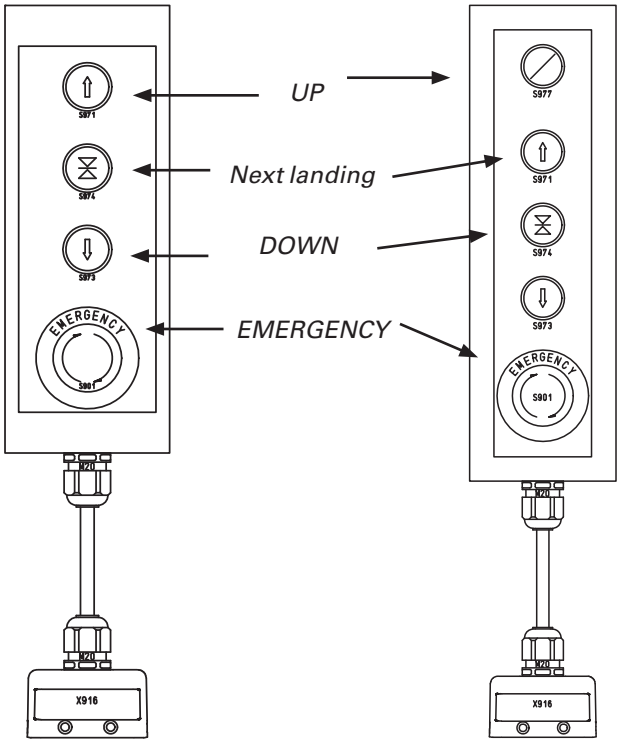
A correction of the floor level within 20 cm / 8 Inches is possible without having to reprogram everything.

Procedure:

1 Go the floor which needs to be adjusted.
2 Select "SERVICE I'
3 Now, adjust the level with pushbutton UP & DOWN
4 Push NEXT LEVEL for 2 seconds and then press UP (AVW sounds, correction made).
5 To program an extra floor, repeat steps 1 through 6, standing at the top floor.

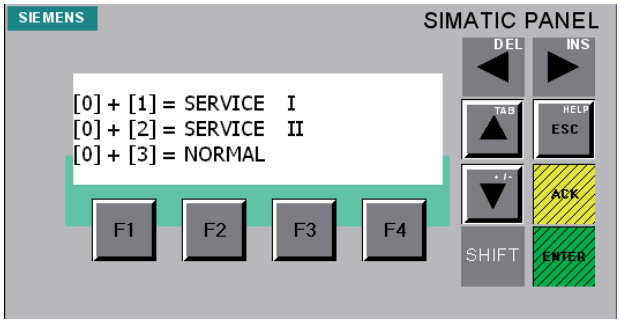






Remote Control Cage Control

Remote Control Cage Control SPT



RAISING THE MACHINE FROM THE BUFFERS

IMPORTANT: Whenever the plug of the Remote Control Box is removed, immediately re-insert the dummy plug to the connector on the MCC.

Connect the ground cabinet to the building site power supply and proceed as follows to raise the machine from the buffers.

1 Ensure all cables (BUS) are connected.
2 Remove the dummy plug (A) from the Motor Control Center.
3 Connect the plug of the Remote Control Box to the connector on the Motor Control Center and press the blue "RESET" button.
4 Enter the program, press simultaneously 1,7 and * for 5 seconds and confirm with 3.
5 Select the "CHANGING" mode by pressing 0+9 for 3 seconds.
6 Press simultanously 0 + 2 for 3 seconds to activate "SERVICE II".
7 Raise the machine out of the buffers by pushing the UP button.

Now the machine has to be put back to the "NORMAL" mode.

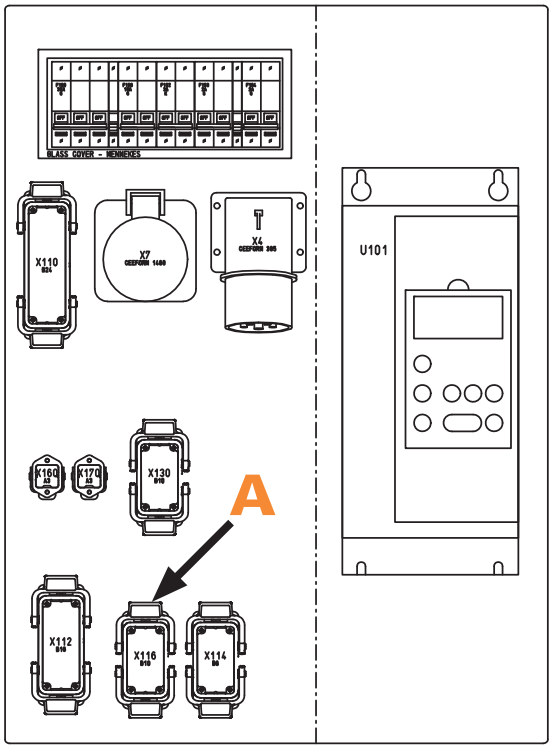
1 Enter the program, press simultaneously 1,7 and * for 5 seconds and confirm with 3.
2 Select the "CHANGING" mode by pressing 0+9 for 3 seconds.
3 Press simultanously 0 + 3 for 3 seconds to activate "NORMAL".
4 Machine is now ready for programming the floors.
5 Remove the remote control plug and put the dummy plug back.
6 Finally press the blue "RESET" button.

IMPORTANT: The 0-level of the machine is factory set at appr. 2,5 cm / 1 inch above the buffers.

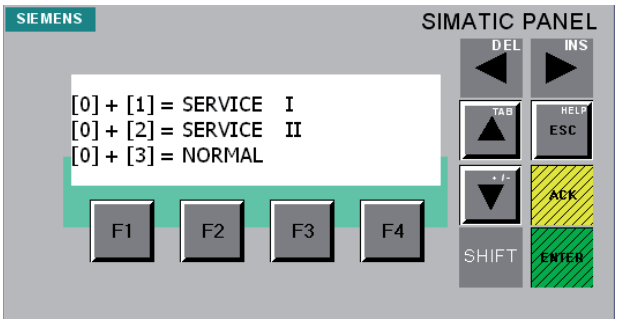
Lowering the machine into the buffers

1. Lower the machine by using the Emergency Descent Device.

WARNING: Use the Emergency Descent Device for lowering the machine a small distance only.



Electrical connection



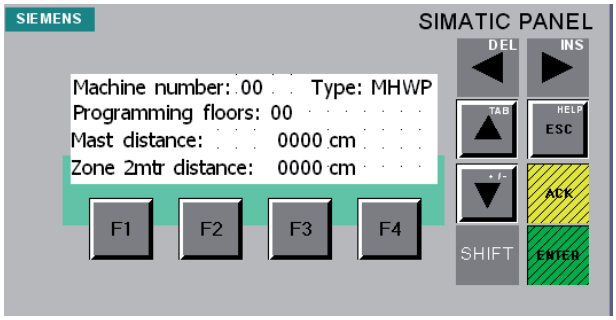
Calling the control screen

To enter the control screen, act as follows:

1 Press 0 and 5 simultaneously.
2 The control screen appears until the buttons are released.

The display shows the following machine settings:

- Machine number
- Type
- Running hours
- Mast distance
- Zone 2 m distance



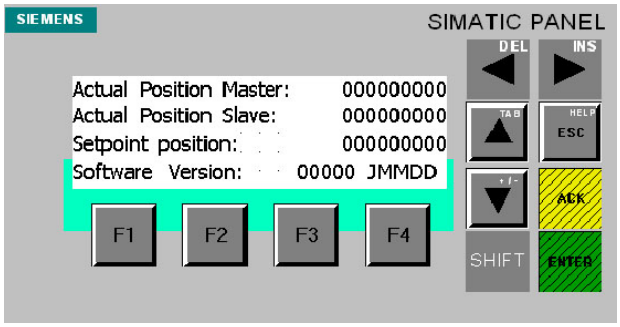
Calling the encoder status screen

The encoder status gives information about the primairy and secondary drive.
To enter the control screen, act as follows:

1 Press 0 and 8 simultaneously.
2 The control screen appears until the buttons are released.

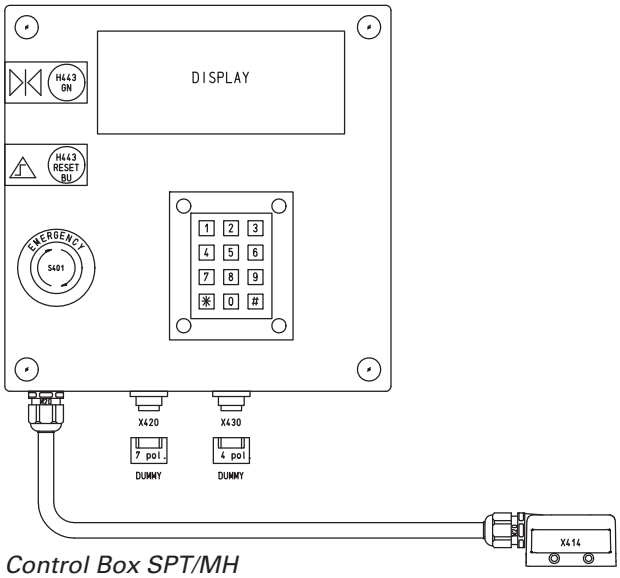
The display shows the following machine settings:

- Software version
- Position of primairy and secondary drive
- Setpoint position



Errors

See chapter "OPERATION".



Control Box SPT/MH

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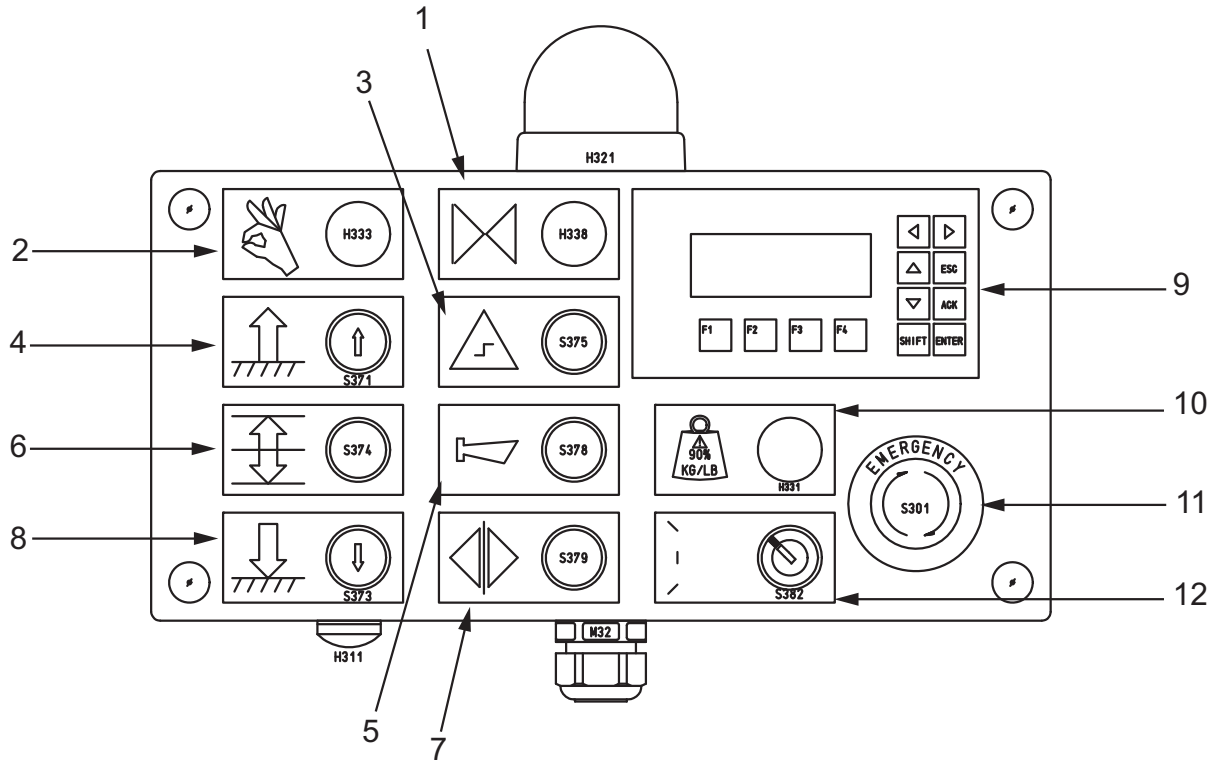
MT Settings

MT CONTROL BOX LAYOUT



Number	Description
01	Blue light: door open
02	Green light: ready
03	Blue pushbutton: reset
04	Up pushbutton
05	Horn
06	Next landing push button
07	Door open command
08	Down pusbutton
09	Display
10	90% payload pre warning (100% machine stop: horn and flash light)
11	Emergency stop push button
12	Key switch (service 1 - normal -service 2)

SETTING THE MACHINE CONFIGURATION

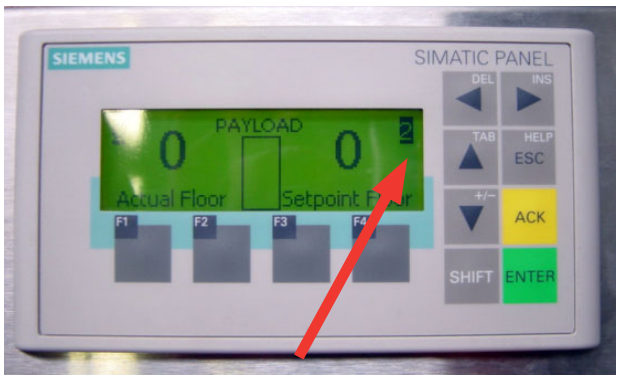
The machine configuration can be set / changed at any time. If ready, the green "ready to run light" (02) will indicate "ready".

Setting the program number

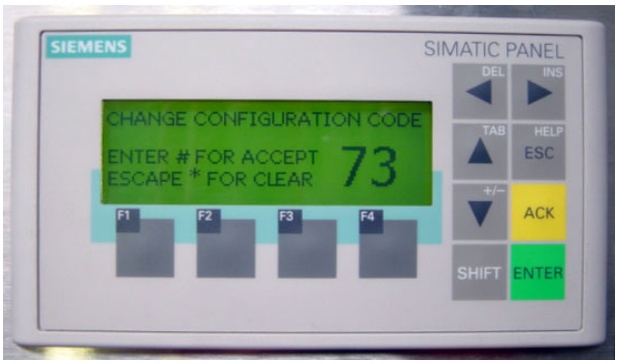
1 Turn the (spring loaded) key switch (12) to position II.
2 Simultaneously press the "DOOR OPEN " button (7) and hold that position.
3 By pressing the UP (4) and DOWN (8) buttons the program number can be set.

72 = MT Single
73 = MT Twin
85 = n/a
87 = n/a

4 Do not release the "door open button" nor the Key switch yet
5 Conform the setting with the "next landing" button (06).



Indication of SERVICE MODE II



Program number

After confirming program number + Setting the AVW-activation-level.

Setting the AVW-unit activation level

After confirmation of the program number, set the level at which the AVW will start when descending.

1 Select the required height by pressing the UP (4) and DOWN (8) buttons (10 cm / 4" steps). A level of 0 cm/inch is possible too.
2 Conform the setting with the "NEXT LANDING" button (6)
3 In case of a twin mast configuration do not release the "door open "button" nor the Key switch yet. They can be released on a single mast (the setting is now completed)

After confirming "AVW-activation-level".

Setting the mast distance TWIN

In case of a twin mast configuration the distance between the masts must be set. In that case the program asks for input.

1 Select the applicable distance by pressing the UP (4) and DOWN (8) buttons (10 cm / 4 inch steps).
2 Conform the setting with the "NEXT LANDING" button (6).

Now setting is finished.

WARNING: Setting a wrong distance may cause personal danger and permanent damage to the machine .

Raising the machine from the buffers

1 Turn the (spring loaded) key switch (12) into SERVICE II position
2 Simultaneously press the RESET button (3). The "ready to run" light will be lit. Do not release the key switch.
3 Press the the UP button (4). Now the machine will run just above the "ultimate emergency down switch".
4 Release the key switch.
5 Machine ready for operation

IMPORTANT: The 0-level of the machine is factory set at approx. 2.5 cm (1 inch) above the buffers.

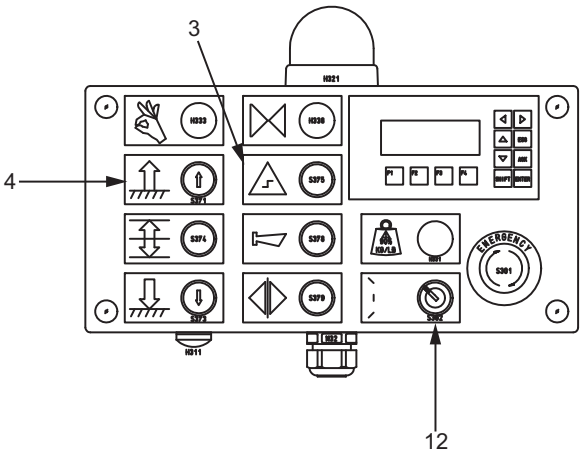
Lowering the machine into the buffers

1 Use above procedure in reverse order OR
2 Lower the machine by using the Emergency Descent Device.

WARNING: Only use the Emergency Descent Device for lowering the machine a small distance.

Setting the mast distance.

Display after releasing all buttons and key switch.



Setting the absolute 0-level

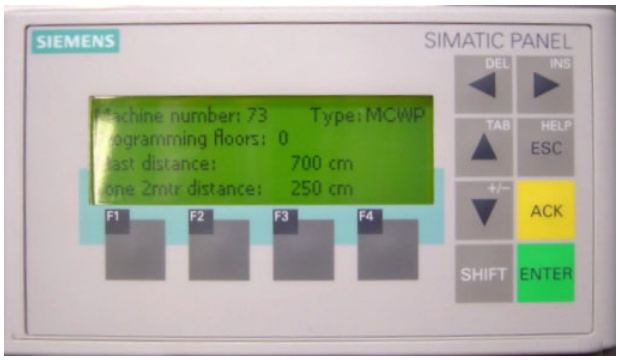
Basically the platform stops at a 0-level set in the VFC control.
It can be set at any suitable level over the maximum switch area of the lower limit switch.

1 Raise the platform to the allocated 0-level.
2 Turn the (spring loaded) key switch (12) to position II
3 Simultaneously press the RESET button (3) for 15 seconds. Now the 0-level is set.
4 Release the key switch
5 Raise the platform approximately 1 m / 3ft
6 Descent and check whether the platform stops at the Set level.
7 If not, repeat steps 1 and 2.

Calling the machine settings

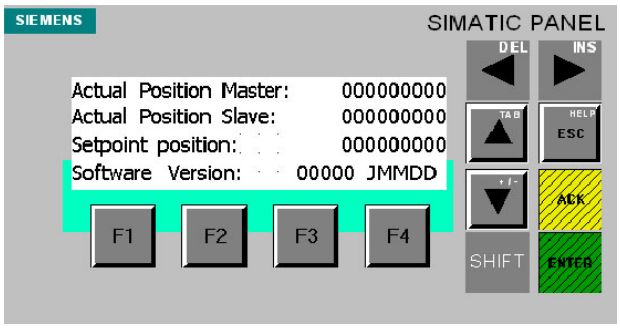
Simultaneously press the UP (4), DOWN (8) and "DOOR OPEN" (7) buttons.
The display shows the following machine settings:

- Machine number
- Type
- Running hours
- Mast distance
- Zone 2 m distance



Calling the encoder status screen

The encoder status gives information about the primairy and secondary drive.
To enter the control screen, act as follows:
1 Press 4, 6 and 7 simultaneously.
2 The control screen appears until the buttons are released: Given information is:
  - Software version
  - Level of machine
  - Inclination position



Calling the error log

See chapter "OPERATION"

Overview of MCC-PLC I-indications

Part	I-Number*	Description
I_KP_1	I0.0	Keypad key 1
I_KP_2	I0.1	Keypad key 2
I_KP_3	I0.2	Keypad key 3
I_KP_4	I0.3	Keypad key 4
I_KP_5	I0.4	Keypad key 5
I_KP_6	I0.5	Keypad key 6
I_KP_7	I0.6	Keypad key 7
I_KP_8	I0.7	Keypad key 8
I_KP_9	I1.0	Keypad key 9
I_KP_CLEAR	I1.1	Keypad key *
I_KP_0	I1.2	Keypad key 0
I_KP_SET	I1.3	Keypad key #
Levelbox Up	I1.4	Reserve
Levelbox Next Land	I1.5	Reserve
Levelbox Down	I1.6	Reserve
I_GB_LevelBARS	I1.7	Emergency button level box or controlbox TP
I_PB_SAFETYLINE	I2.0	Safety relay
I_GB_RESET	I2.1	Reset button control box TP
	I2.2	Reserve
	I2.3	Reserve
	I2.4	Reserve
	I2.5	Reserve
	I2.6	Reserve
	I2.7	Reserve

* No output used

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Mast tie

The platform must be tied to the building structure at regular tie intervals. It is possible that the tie configuration required is not included in this chapter. Some examples are:

- Smaller or bigger tie interval
- special tie scheme (various tie intervals on one mast)
- Tie tube length bigger than standard.

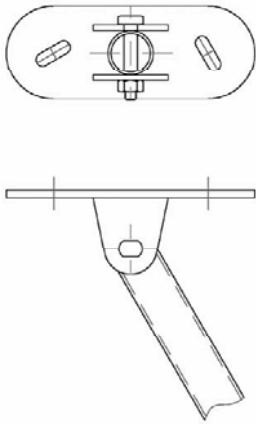
Please contact EMK Manufacturing B.V., its subsidiaries or affiliates for approval and/or layout drawings indicating the configuration and loads permitted, as well as any further safety information required.

WALL BRACKET

The standard wall bracket is provided with two slotted holes for wall anchor / bolt connection. The rotation of the holes is such that small inaccuracies in wall tie position can be met.

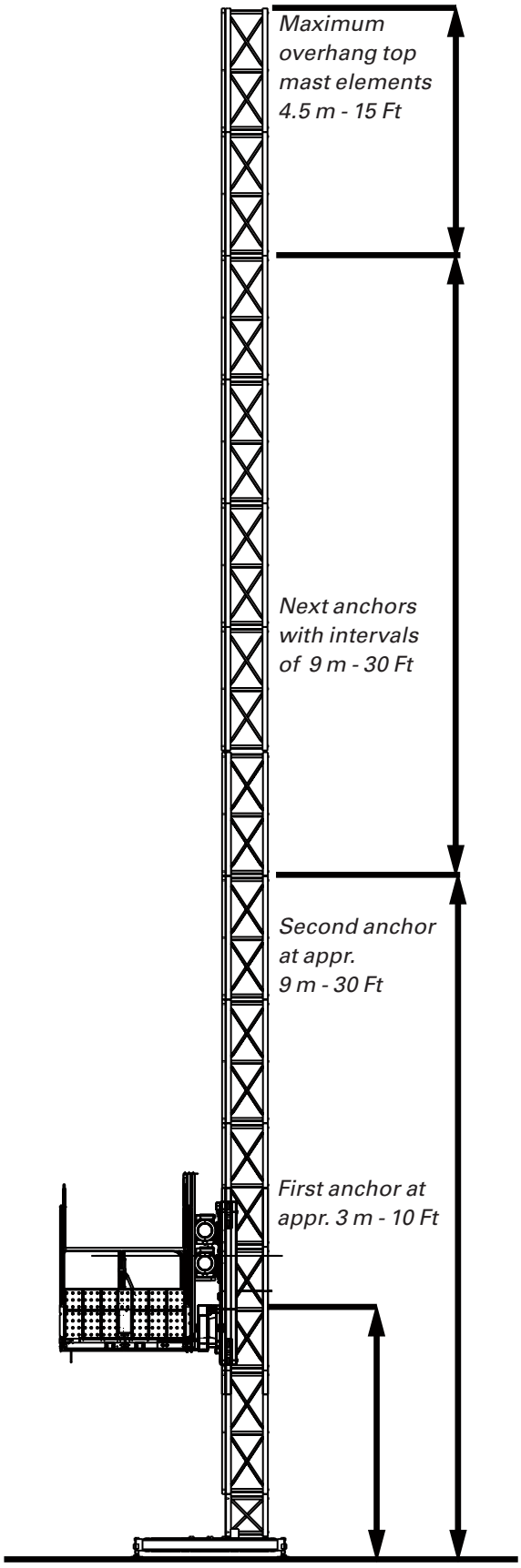
WARNING:Use Wall anchors / bolts that are suitable to withstand the tie forces only.

WARNING: In case the structure the platform is tied to is not a building but a scaffolding or steel structure etc, different type of mounting parts may be used. In those cases, the tie system may have to be evaluated. Pls. contact HEK Manufacturing B.V., its subsidiaries or affiliates for advice and/or installation layout drawings.



Standard wall bracket

Tie scheme SPT/MT



Out-of-service reaction forces

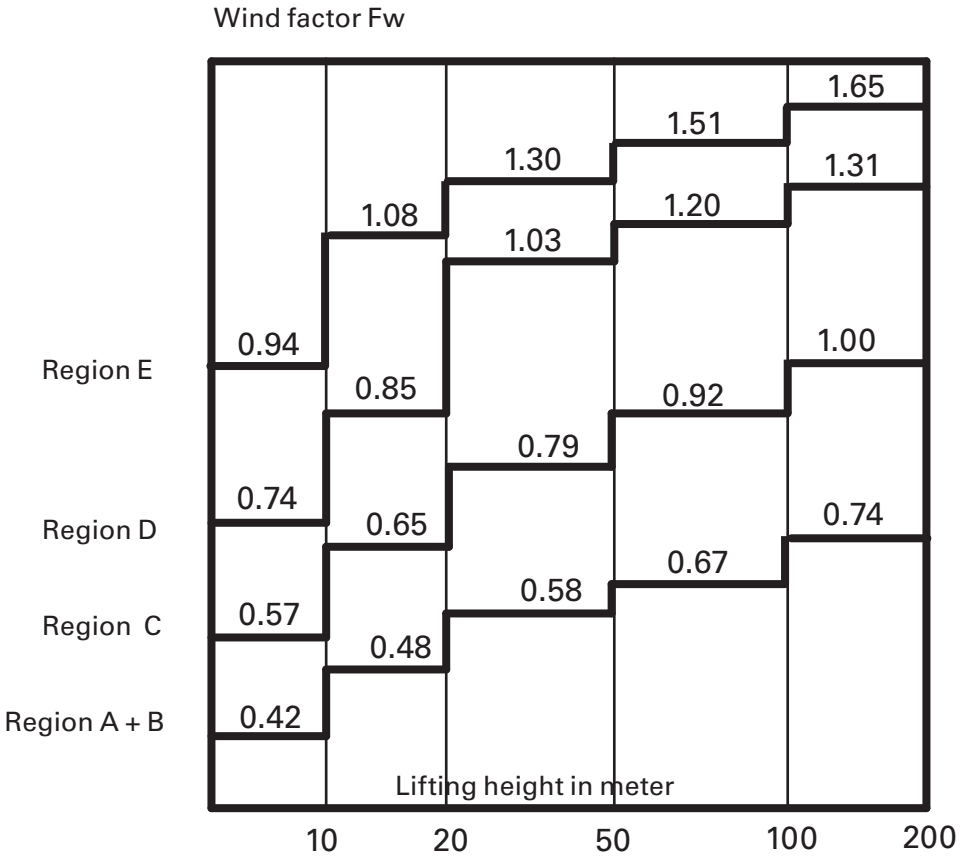
REACTION FORCES OUT OF SERVICE

Rx = Rx (acc. to table below) x Windfactor w (according to below diagram)

Ry = Ry (acc. to table below) x Windfactor w (according to below diagram)

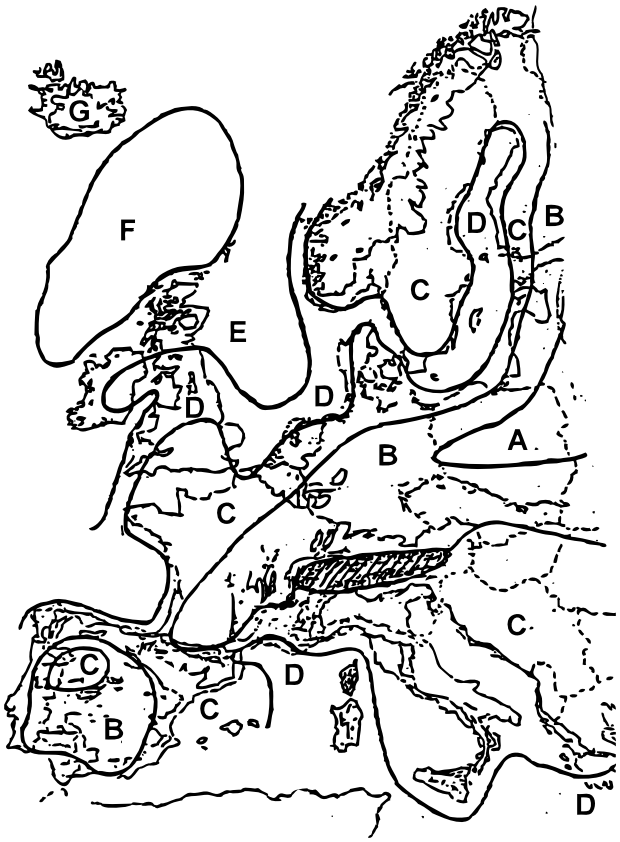
Table valid for windzone C and wind pressure q = 1306 N/mm2

Overhang (m)	a	4.5 m	3 m	0 m	4.5 m	3 m	0 m
Mast tie intervals	b	9 m	9 m	9 m	6 m	6 m	6 m
Rx (kN)		5.1	3.9	1.9	4.9	3.4	1.3
Ry (kN)		5.1	3.9	1.9	4.9	3.4	1.3



SPT

Outside the area covered on the map, pls. refer to the applicable wind maps for the applicable area.



IMPORTANT: Region F-G: Consult Hek Manufacturing B.V., its affiliates or subsidiaries.

MT

Pls. also refer to the applicable National Standards.

Mast tie SPT

For any SPT-tie not mentioned in this chapter, pls. contact EMKO TECHNIC, its affiliates or subsidiaries

TIE DESCRIPTION TYPE R3C-48

The standard Medium tie-set consists of

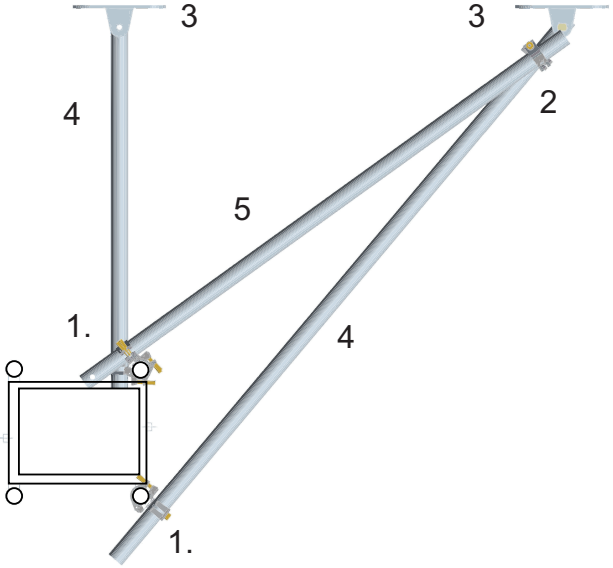
1 Clamps (3x)
2 Swivel clamp Dia. 48.3 mm (1x)
3 Wall brackets Dia. 48.3 mm (2x)

Besides the above parts also required are:

4 Main tubes Dia. 48.3 mm (2x)
5 Cross brace Dia. 48.3 mm (1x)

On request EMKO TECHNIC can supply the items 4 and 5.

The main tubes (wall tubes) are fixed on the vertical posts of the mast on the wall side by means of fixed couplers. On the other end each tube is fixed to the façade by means of a wall plate. In order to give the tie strength and rigidity a cross brace tube must be connected between the main tubes.



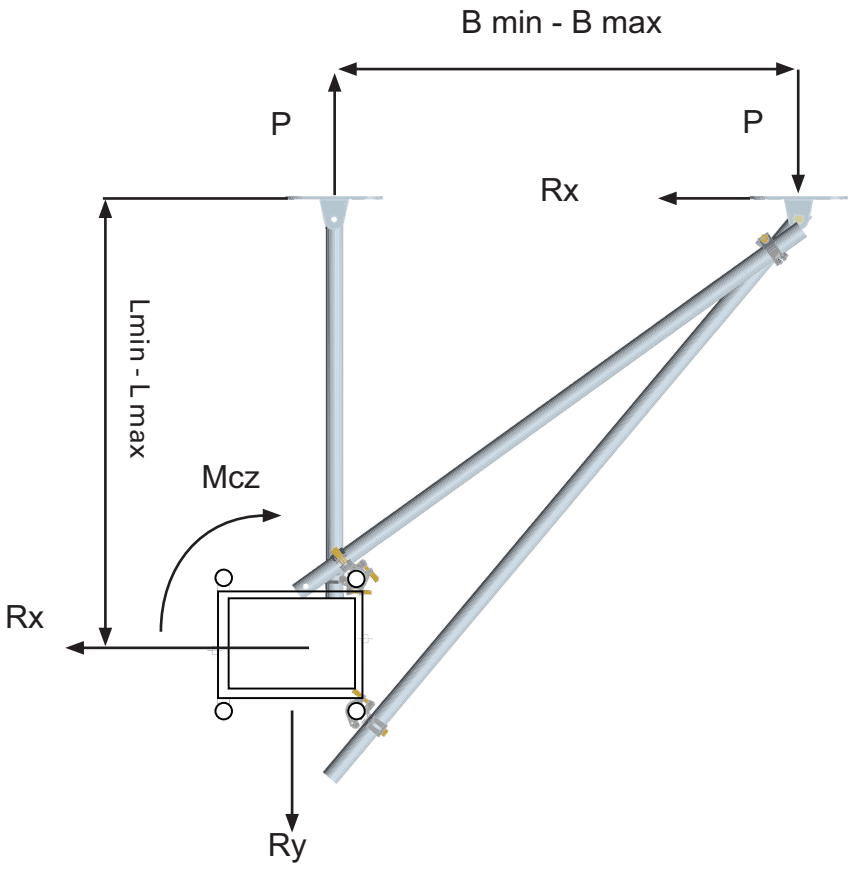
REACTION FORCES IN THE CENTER OF THE MAST

Values for Rx, Ry & Mz Platform in Service SINGLE

Overhang (m)	a	4.5 m	3 m	0 m	4.5 m	3 m	0 m
Mast tie intervals	b	9 m	9 m	9 m	6 m	6 m	6 m
Rx (kN)		10.6	9.9	9.8	15.3	14.5	14.5
Ry (kN)		2.8	1.9	2.1	1.6	1.4	1.6
Mz (kNm)		0.75	0.75	0.75	0.75	0.75	0.75

Values for Rx, Ry & Mz Platform in Service TWIN

Overhang (m)	a	4.5 m	3 m	0 m	4.5 m	3 m	0 m
Mast tie intervals	b	9 m	9 m	9 m	6 m	6 m	6 m
Rx (kN)		3.4	3.1	2.8	4.2	4	3.6
Ry (kN)		5.4	5.1	4.8	6.4	6.2	5.8
Mz (kNm)		0.2	0.2	0.2	0.2	0.2	0.2



STRENGHT OF THE TIES

SPT-SINGLE

Dwg-No.	L min (mm)	Lmax (mm)	Bmin - Bmax (mm)	P max (kN)*	
				In service	Out of service
m0708-0058	1250		1100 - 2000	19.2	11.6
		1665	1500 - 2000	18.7	11.3
m0708-0140	2050		2000 - 3200	17.4	10.7
		2465	2300 - 3000	18.1	10.9

SPT-TWIN

Dwg-No.	L min (mm)	Lmax (mm)	Bmin - Bmax (mm)	P max (kN)*	
				In service	Out of service
m0708-0058	1250		600 - 2000	16.6	16.9
		1665	800 - 2000	16.2	16.6
m0708-0140	2050		1000 - 3000	15.9	16.3
		2465	1200 - 3000	15.7	16.2

* Note: Values of Pmax are based on a maximum allowable coupler load of 16.5 kN (3,710 Lbf)

INSTALLATION OF TYPE R3C-48

WARNING: Not installing the cross-brace will result in an unstable tie.

The tie crossbeam is required to provide adequate strength and stiffness to the tie.

It Is recommend to connect the tie wall pipe on the main part of the mast section. For twin masts and in case of a platform distance to the wall <35 cm, the tie crossbeam can be omitted.

Installation

1 When using wall plates make sure the main tubes are fitted with holes to mount it on the plates. If necessary drill the hole
2 Determine the position of the wall plates both in height and spread.
3 Mark the holes of the wall plates on the wall
4 Drill the holes
5 Mount the wall plates using suitable wall anchors
6 Check the level and / or the wall distance of the mast / platform. Is necessary adjust it.
7 Connect the main tubes to the wall plates.
8 Connect the main tubes to the mast tubes using the fixed Dia. 48.3 mm clamps.
9 Mount the brace tube to one of the mast tubes using a fixed Dia. 48.3 mm clamp.
10 Mount the other end of the brace tube on the wall end of the opposite main tube using the Dia. 48.3 mm Swivel clamp
11 Double-check the level and / or the wall distance of the mast / platform. If necessary release the tie clamps and readjust.

Reaction forces

Maximum reaction force P in the wall anchorage of the tie can be calculated as follows:

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

Rx and Ry according to chapter "Raction forces".

P must never exceed Pmax indicated for each size of mast tie according to the table.

Mast tie MT

For any MT-tie not mentioned in this chapter, pls. contact EMK Manufacturing B.V., i's affiliates or subsidiaries

TIE DESCRIPTION TYPE R2C-48

The standard Medium tie-set consists of

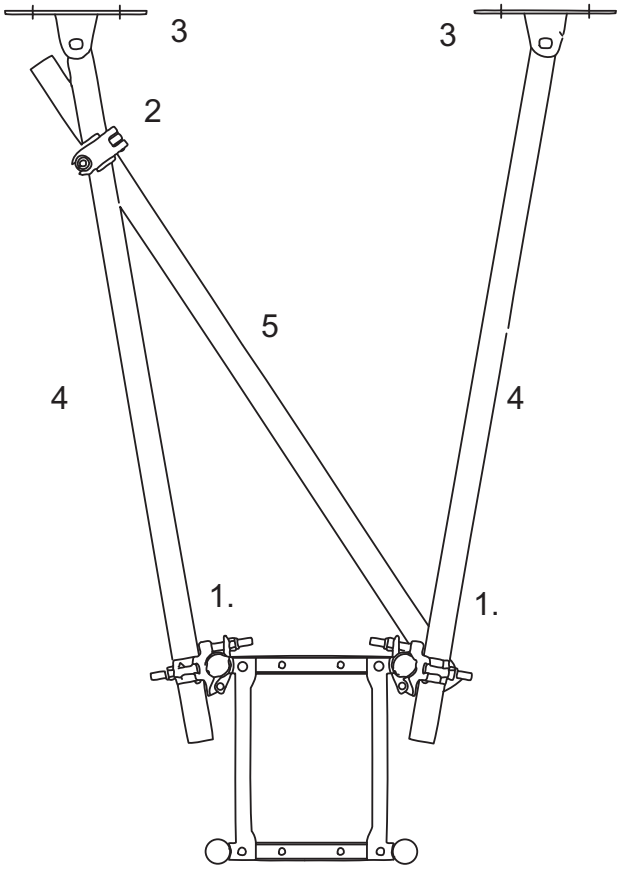
1 Clamps (3x)
2 Swivel clamp Dia. 48.3 mm (1x)
3 Wall brackets Dia. 48.3 mm (2x)

Besides the above parts also required are:

4 Main tubes Dia. 48.3 mm (2x)
5 Cross brace Dia. 48.3 mm (1x)

On request Hek Manufacturing B.V., its affiliates or subsidiaries can supply the items 4 and 5.

The main tubes (wall tubes) are fixed on the vertical posts of the mast on the wall side by means of fixed couplers. On the other end each tube is fixed to the façade by means of a wall plate. In order to give the tie strength and rigidity a cross brace tube must be connected between the main tubes.



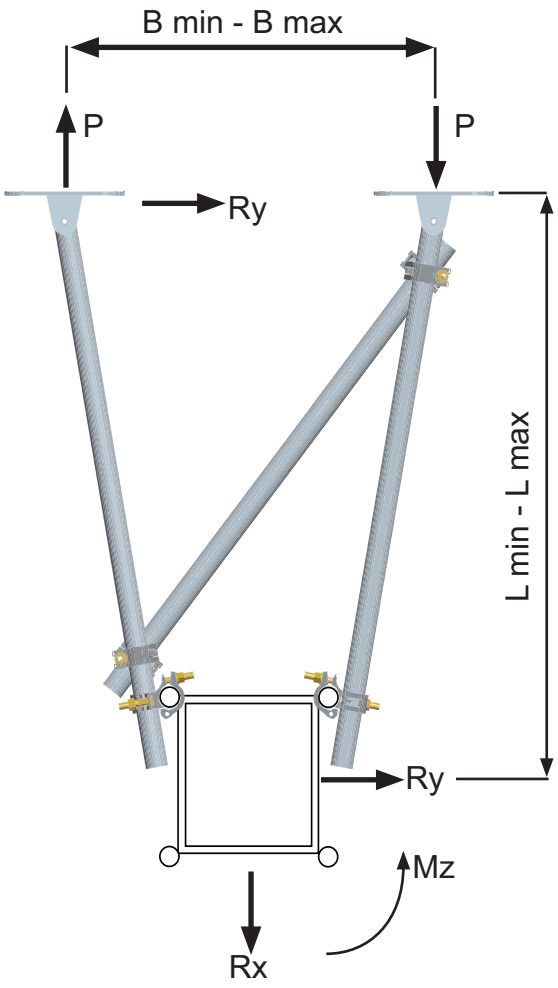
IN-SERVICE REACTION FORCES IN THE CENTER OF THE MAST

Values for Rx, Ry & Mz Platform in Service SINGLE

Overhang (m)	a	4.5 m	3 m	0 m	4.5 m	3 m	0 m
Mast tie intervals	b	9 m	9 m	9 m	6 m	6 m	6 m
Rx (kN)		6.7	5.9	4.4	8.6	7.3	5.7
Ry (kN)		7.5	6.5	6.0	9.9	8.5	7.8
Mz (kNm)		3.4	3.4	2.7	3.4	3.4	2.4

Values for Rx, Ry & Mz Platform in Service TWIN

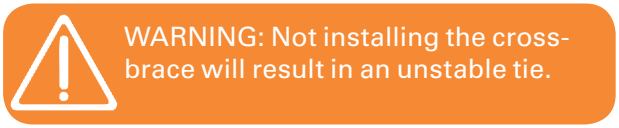
Overhang (m)	a	4.5 m	3 m	0 m	4.5 m	3 m	0 m
Mast tie intervals	b	9 m	9 m	9 m	6 m	6 m	6 m
Rx (kN)		9.0	7.9	6.9	11.7	10.1	8.7
Ry (kN)		3.5	3.1	2.9	3.7	3.3	3.1
Mz (kNm)		-0.8	-0.8	-0.7	-0.8	-0.8	-0.7



STRENGHT OF THE TIES

L min (mm)	Lmax (mm)	Bmin - Bmax (mm)	P max (kN)	
			In service	Out of service
365		520 - 780	17.8	5.9
	645	520 - 780	10.8	2.4
645		520 - 1100	23.0	8.5
	1245	620 - 1100	9.7	2.4
1245		620 - 1250	29.7	12.2
	1845	920 - 1250	8.0	2.4

INSTALLATION OF TYPE R2C-48



The tie crossbeam is required to provide adequate strength and stiffness to the tie.

It Is recommend to connect the tie wall pipe on the main part of the mast section. For twin masts and in case of a platform distance to the wall <35 cm / 14 Inches, the tie crossbeam can be omitted.

Installation

1 When using wall plates make sure the main tubes are fitted with holes to mount it on the plates. If necessary drill the hole
2 Determine the position of the wall plates both in height and spread.
3 Mark the holes of the wall plates on the wall
4 Drill the holes
5 Mount the wall plates using suitable wall anchors
6 Check the level and / or the wall distance of the mast / platform. Is necessary adjust it.
7 Connect the main tubes to the wall plates.
8 Connect the main tubes to the mast tubes using the fixed Dia. 48.3 mm clamps.
9 Mount the brace tube to one of the mast tubes using a fixed Dia. 48.3 mm clamp.
10 Mount the other end of the brace tube on the wall end of the opposite main tube using the Dia. 48.3 mm Swivel clamp
11 Double-check the level and / or the wall distance of the mast / platform. If necessary release the tie clamps and readjust.

Reaction forces

Maximum reaction force P in the wall anchorage of the tie can be calculated as follows:
The following condition should be met:

$$P = \frac{Rx}{2} + Ry \cdot \frac{L}{B} + \frac{Mz}{B}$$

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

P must never exceed Pmax indicated for each size of mast tie according to the table. The calculation assumes a slipping force of the couplers of 17kN (3,822 Lbf).

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Erection

Safety

WARNING: Ensure that the mast detection switch functions correctly before you start assembling the machine. The platform must not be raised too high during assembly. The proximity switch must always remain in front of the mast.

WARNING: If the proximity switch cannot detect the metal of the mast any longer, the ascending stops. Now, the machine can only descend.

WARNING: All bolts have to be installed from the bottom to the top. In this way, the technician can detect missing bolts.

WARNING: During assembly, the max. load on the work platform is 2 persons + personal materials and tools (max. 120 kg / 265 Lbs).

WARNING: Push the emergency stop button before mounting the next mast element.

Assembling the mast with the crane

1 Put a maximum of 6 mast elements on the platform; ensure that there is enough working space left.
2 Fit the lifting hook of the crane.
3 Raise the drive-unit by means of the assembly control box appr. 100 mm (4 inches) below the top of the upper mast element.
4 When the correct height has been reached, a mast element can be placed in the lifting hook.
5 Move the hook of the crane into place.
6 Lift the mast element and rotate it in position.
7 Fit the bolts and self locking nuts.
8 Take the hook from the mast and move it away for the next pick up.
9 Repeat this procedure for the following mast elements.
10 The last mast element to be mounted is the orange uppermost mast element. Do not exceed the max. heigth allowed.

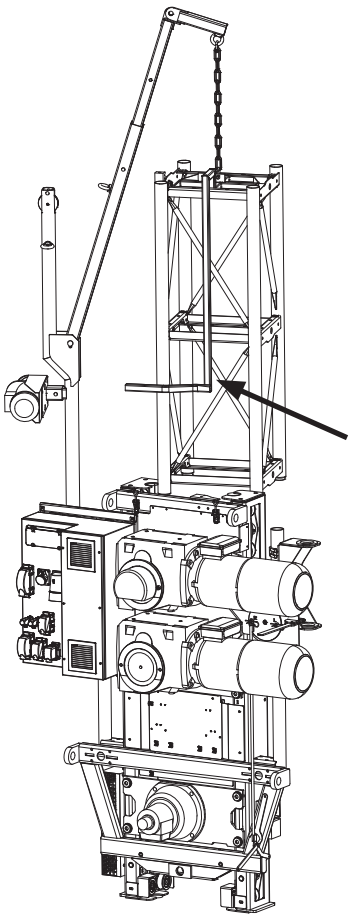
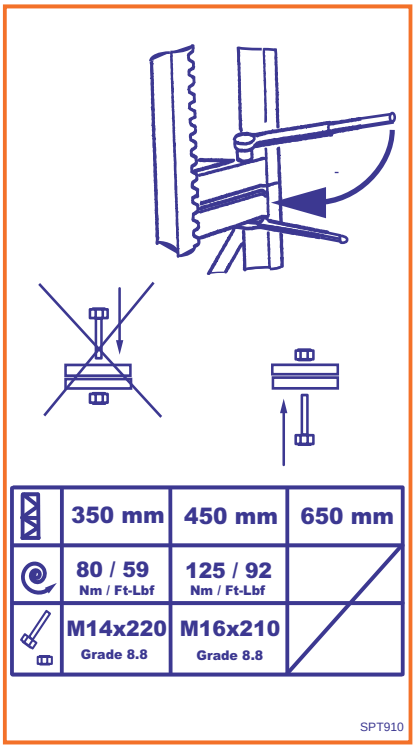


Image crane (SPT crane mounted on the side, MT crane mounted on top motor gear box))



Tightening the mast bolts

Fitting the 3 meter tie

1 Once the first mast elements have been assembled, the 3 meter anchor anchor must be fitted.
2 Check again with a spirit level that the mast is truly vertical in both directions.

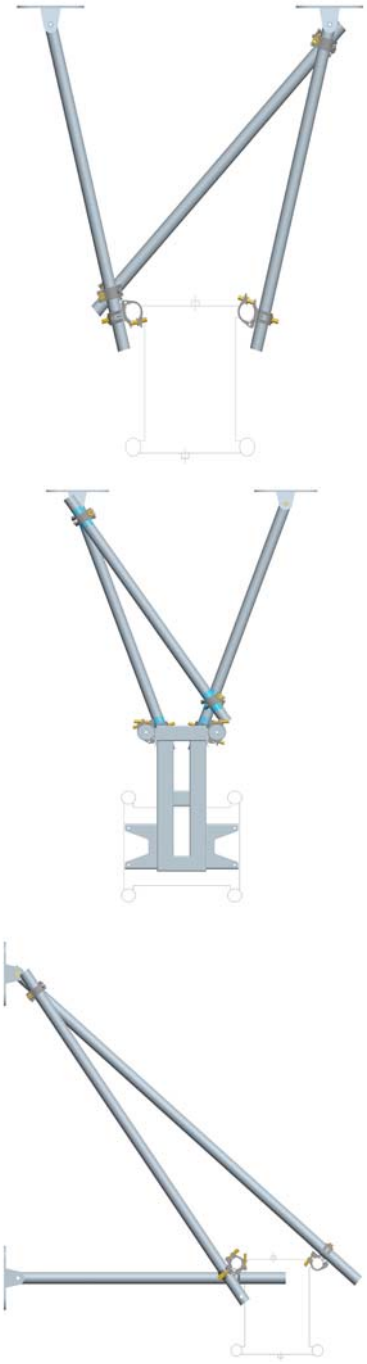
The mast can be anchored to the facade of the building or to scaffolding (not allowed for MT).

Anchoring to the building facade:
Ensure that the facade can withstand the forces involved, see paragraph "Mast Tie".

Attaching to a scaffolding:
Ensure that the scaffolding can withstand the forces involved.

WARNING: Additional anchors must be positioned every 9 m / 30 Ft.

WARNING: The power supply cable must not run on the anchored side of the machine.



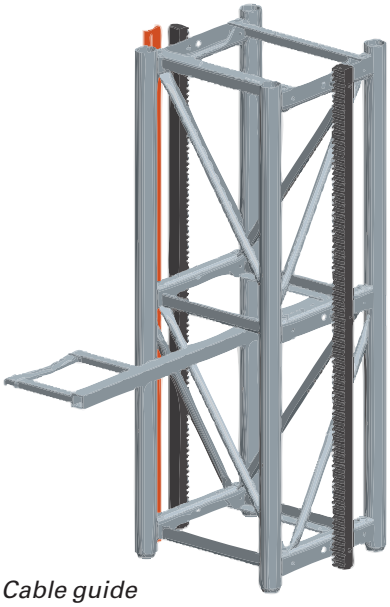
CABLE GUIDES AND SUPPORT

1 Ensure the cable support arm is correctly fitted to the drive unit.
2 Attach the cable guide with the rotatable coupling to the mast.
3 The first cable guide must be placed 1 meter above the cable drum.
4 Additional cable guides must be attached every 6 m.

COMPLETING THE ASSEMBLY

1 As soon as the required mast height has been reached, mount the top assembly limit striker plate.
2 Remove the mast mounting crane once the mast erection is completed.
3 Finally complete the Installation checklist.

SPT cable support arm



Cable guide

Striker plate

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Check lists

INSTALLATION CHECKLIST 1/2

Installation crew checks after installation (including repositioning of the machine).

Type	....
Machine number	....
Nominal load	..... kg/Lbs
Lenght platform	..... m/ft
Width platform	..... m/ft
Height mast	..... m/ft
Owner	.....
Town/city	.....
Checked date. (day/month/year)	.....
Checked by (name in print)	.....
Sign	.....

Column 1: x = Correct
Column 2: x = Not correct. IF NOT CORRECT, MAKE NOTE IN REMARK FIELD
Column 3: x = Not applicable

		1	2	3
1	Is the stability of the machine correct?			
2	Are the outriggers applied correctly according to the manual?			
3	Is the support underlayment put in place according to the manual?			
4	Are all ties fit according to the manual/specifications?			
5	Have all wall mounting anchors been fitted in accordance with the instructions of an expert (i.e. the supplier of the wall anchors)?			
6	Are all prescribed bolt connections present and tightened in the prescribed manner?			
7	If a platform extension is present, has it been fitted and fixed firmly in position in accordance with specifications?			
8	Is the general state of the machine acceptable, free from mechanical deformations and shortcomings?			
9	Have measures been taken to prevent users on the platform and non-users around –especially underneath- the platform from becoming trapped or crushed?			
10	When the machine is erected in front of openings or gangways where people continually pass by, are safety measures taken?			
11	In case multiple mast climbing work platforms have been erected adjacently, is the minimum spacing between them at least 0.5 m in order to prevent the danger of crushing?			
12	Have the railings been fitted and fixed firmly onto the platform according the manual?			
13	Is the mast guard with a minimum height of 2m/6ft present and fixed in position?			
14	Is the mast climbing work platform fitted with a topmast (coloured red or orange, at the end of the mast?			
15	Are the running out safety devices present?			
16	Does each motor brake function independently when in a stationary condition?			

INSTALLATION CHECKLIST 2/2

Column 1: x = Correct
Column 2: x = Not correct. IF NOT CORRECT, MAKE NOTE IN REMARK FIELD
Column 3: x = Not applicable

		1	2	3
17	Is the emergency lowering system functional (refer to the user manual)?			
18	Check proper functioning and indication on display of the following:			
	a. Emergency switch			
	b. Lower limit switch			
	c. Lower emergency limit switch			
	d. Upper limit switch			
	e. Upper emergency limit switch			
	f. Gate switch			
	g. Tie ramp switch (if applicable)			
	h. Striker plates			
	j. Proximity switch			
19	Does the power supply cable run completely free?			
20	Are there no damaged power supply cables, connector plugs or other electrical components?			
21	Is the main switch lockable?			
22	Is the user manual available at least in the correct language?			
23	Are the type plates, correct loading plates, the warning signs and the operating instructions: UP, DOWN and EMERGENCY STOP present?			
24	Are the operating buttons located in such a manner that the operator has a clear view over the entire platform?			
25	Functions the electric and mechanical levelling mechanism correctly (<5°)			
25	Is the fail safe brake test carried out successfully?			
26	Is the mast straight all the way to the top?			
27	Are all cable guides present?			
28	Are the buffers present and in good order?			
29	Check correct setting of PLC / VFC (if applicable)			
30	Check presence and correct funtioning of landing barriers and landing control boxes.			
31	Check the clearance of the adjustable rollers according to chapter "Maintenance".			
32	Is a test run carried out successfully?			

Remarks: ALWAYS FILL IN IN CASE OF ANY SHORTCOMING.

Note: An administrative record of the results of this checklist/inspection should be kept.

Allowed loads

MT

The loading plate must be filled out by the supervisor of the job site responsible for the installation, according to the layout of the machine
The plate must indicate the "as-is" specifications of the machine installed and the nominal permitted loads related to the layout
The plates must be attached to the back wall, at positions in which they can be immediately seen by the operator
Ensure the information cannot be erased or changed by unauthorized persons

SPT

The SPT-loads are predetermined and must be followed.

ALLOWED LOADS SPT

Payload Max	Persons	Allowed load (Kg)	Allowed Load (Lbs)
SPT 1600S			
1,600 Kg / 3,530 Lbs	2 (min)	1400	3080
	3	1300	2865
	4	1200	2645
	5 (max)	1100	2425
SPT 1300SD			
1,300 Kg / 2,866 Lbs	2 (min)	1100	2425
	3	1000	2200
	4	900	1980
	5 (max)	800	1760
SPT 3000TD			
3,000 Kg / 6,610 Lbs	2 (min)	2800	6172
	3	2700	5952
	4	2600	5732
	5	2500	5511
	6	2400	5291
	7	2300	5070
	8 (max)	2200	4850
TPM 3000T2			
3,000 Kg / 6,610 Lbs	2 (min)	2800	6172
	3	2700	5952
	4	2600	5732
	5	2500	5511
	6	2400	5291
	7	2300	5070
	8 (max)	2200	4850
SPT 4000T			
4,000 Kg / 8,820 Lbs	2 (min)	3800	8377
	3	3700	8157
	4	3600	7936
	5	3500	7716
	6	3400	7495
	7	3300	7275
	8 (max)	3200	7054
SPT 3000T			
3,000 Kg /6,610 Lbs	2 (min)	2800	6172
	3	2700	5952
	4	2600	5732
	5	2500	5511
	6	2400	5291
	7	2300	5070
	8 (max)	2200	4850

ALLOWED LOADS TP FOR SELF CARRYING RAMPS*

Payload Max	Persons	Allowed load (Kg)	Allowed Load (Lbs)
SPT 1600S + EMK			
1,350 Kg / 3,530 Lbs	2 (min)	1150	2540
	3	1050	2310
	4	950	2090
	5 (max)	850	1870
SPT 1300SD + EMK			
1,100 Kg / 2,866 Lbs	2 (min)	900	1980
	3	800	1760
	4	700	1540
	5 (max)	600	1320

* The allowed loads for the TWIN SPT with self carrying ramp are identical to the SINGLE machines (see table on previous page)

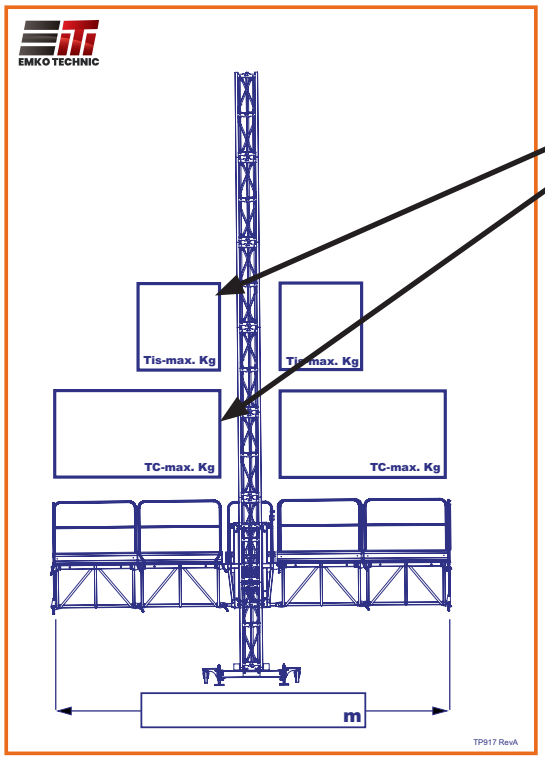
Please contact EMKO TECHNIC, its subsidiaries or affiliates for approval and/or layout drawings indicating the configuration and loads permitted, if the required configuration is not included in the previous table, or if particular configurations are necessary, e.g.

- configurations and/or platform length not included in the previous table
- particular load distribution

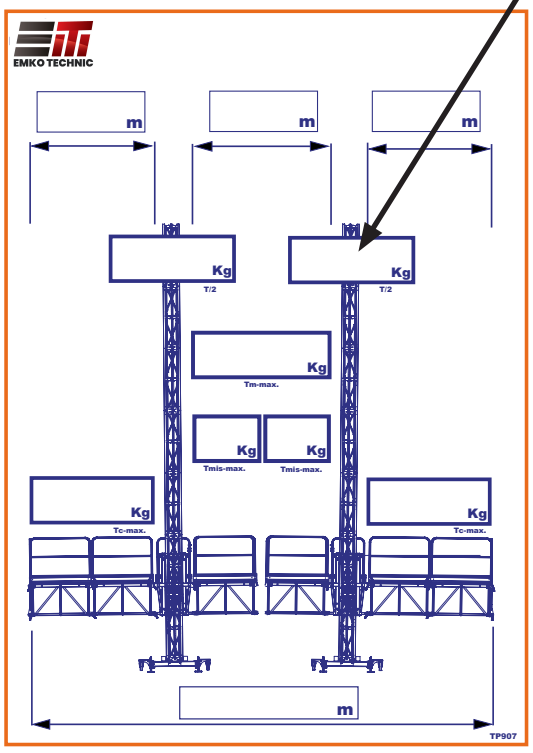
ALLOWED LOADS MT

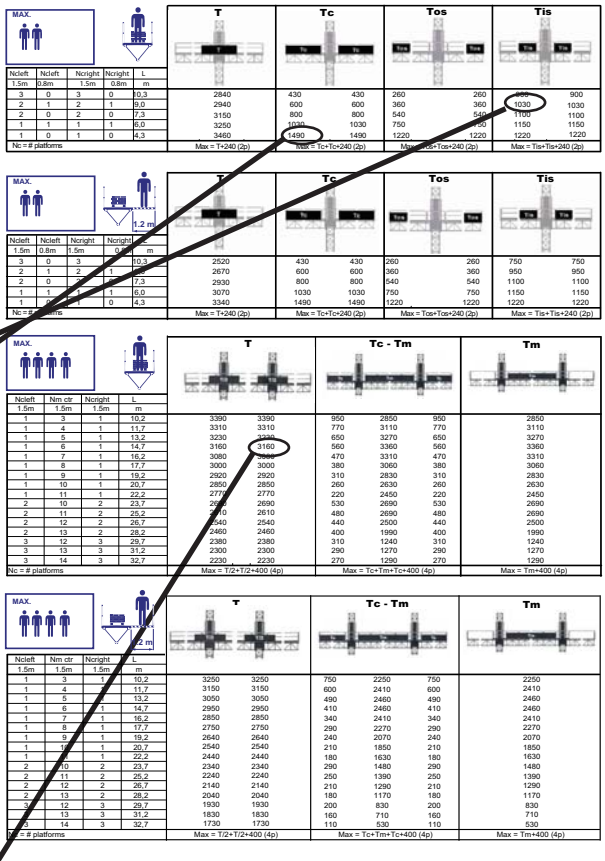
The loading plate of the MT SINGLE, TWIN and ABBA machines has to be determined and filled in on the appropriate loading plate.

ALLOWED LOADS MT SINGLE



ALLOWED LOADS MT TWIN



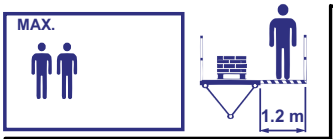


Examples

WARNING: The loads given in the following tables are INCLUSIVE a maximum of 2 (SINGLE) or 4 (TWIN) persons.

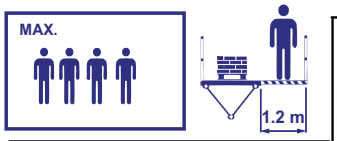
ALLOWED LOADS MT-A-DRIVE

Ncleft	Ncleft	Ncright	Ncright	L	T	Tc		Tos		Tis	
1.5m	0.8m	1.5m	0.8m	m							
3	0	3	0	10,3	2840	430	430	260	260	900	900
2	1	2	1	9,0	2940	600	600	360	360	1030	1030
2	0	2	0	7,3	3150	800	800	540	540	1100	1100
1	1	1	1	6,0	3250	1030	1030	750	750	1150	1150
1	0	1	0	4,3	3460	1490	1490	1220	1220	1220	1220
Nc = # platforms					Max = T+240 (2p)	Max = Tc+Tc+240 (2p)		Max = Tos+Tos+240 (2p)		Max = Tis+Tis+240 (2p)	



Ncleft	Ncleft	Ncright	Ncright	L	T	Tc		Tos		Tis	
1.5m	0.8m	1.5m	0.8m	m							
3	0	3	0	10,3	2520	430	430	260	260	750	750
2	1	2	1	9,0	2670	600	600	360	360	950	950
2	0	2	0	7,3	2930	800	800	540	540	1100	1100
1	1	1	1	6,0	3070	1030	1030	750	750	1150	1150
1	0	1	0	4,3	3340	1490	1490	1220	1220	1220	1220
Nc = # platforms					Max = T+240 (2p)	Max = Tc+Tc+240 (2p)		Max = Tos+Tos+240 (2p)		Max = Tis+Tis+240 (2p)	

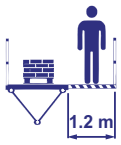
Ncleft	Nm ctr	Ncright	L	T		Tc - Tm			Tm
1.5m	1.5m	1.5m	m						
1	3	1	10,2	3390	3390	950	2850	950	2850
1	4	1	11,7	3310	3310	770	3110	770	3110
1	5	1	13,2	3230	3230	650	3270	650	3270
1	6	1	14,7	3160	3160	560	3360	560	3360
1	7	1	16,2	3080	3080	470	3310	470	3310
1	8	1	17,7	3000	3000	380	3060	380	3060
1	9	1	19,2	2920	2920	310	2830	310	2830
1	10	1	20,7	2850	2850	260	2630	260	2630
1	11	1	22,2	2770	2770	220	2450	220	2450
2	10	2	23,7	2690	2690	530	2690	530	2690
2	11	2	25,2	2610	2610	480	2690	480	2690
2	12	2	26,7	2540	2540	440	2500	440	2500
2	13	2	28,2	2460	2460	400	1990	400	1990
3	12	3	29,7	2380	2380	310	1240	310	1240
3	13	3	31,2	2300	2300	290	1270	290	1270
3	14	3	32,7	2230	2230	270	1290	270	1290
Nc = # platforms				Max = T/2+T/2+400 (4p)		Max = Tc+Tm+Tc+400 (4p)			Max = Tm+400 (4p)



Ncleft	Nm ctr	Ncright	L	T		Tc - Tm			Tm
1.5m	1.5m	1.5m	m						
1	3	1	10,2	3250	3250	750	2250	750	2250
1	4	1	11,7	3150	3150	600	2410	600	2410
1	5	1	13,2	3050	3050	490	2460	490	2460
1	6	1	14,7	2950	2950	410	2460	410	2460
1	7	1	16,2	2850	2850	340	2410	340	2410
1	8	1	17,7	2750	2750	290	2270	290	2270
1	9	1	19,2	2640	2640	240	2070	240	2070
1	10	1	20,7	2540	2540	210	1850	210	1850
1	11	1	22,2	2440	2440	180	1630	180	1630
2	10	2	23,7	2340	2340	290	1480	290	1480
2	11	2	25,2	2240	2240	250	1390	250	1390
2	12	2	26,7	2140	2140	210	1290	210	1290
2	13	2	28,2	2040	2040	180	1170	180	1170
3	12	3	29,7	1930	1930	200	830	200	830
3	13	3	31,2	1830	1830	160	710	160	710
3	14	3	32,7	1730	1730	110	530	110	530
Nc = # platforms				Max = T/2+T/2+400 (4p)		Max = Tc+Tm+Tc+400 (4p)			Max = Tm+400 (4p)

ALLOWED LOADS MT-B-DRIVE

Ncleft	Nm ctr	Ncright	L	T		Tmis		Tm
1.5m	1.5m	1.5m	m					
X	3	X	5,3	3840	3840	1260	1260	5010
X	4	X	6,8	3760	3760	1250	1250	4860
X	5	X	8,3	3680	3680	1200	1200	4720
X	6	X	9,8	3610	3610	1170	1170	4590
X	7	X	11,3	3530	3530	1140	1140	4460
X	8	X	12,8	3450	3450	1100	1100	4330
Nc = # platforms				Max = T/2+T/2+400 (4p)		Max = Tmis+Tmis+400 (4p)		Max = Tm+400 (4p)



Ncleft	Nm ctr	Ncright	L	T		Tmis		Tm
1.5m	1.5m	1.5m	m					
X	3	X	5,3	3770	3770	960	960	3820
X	4	X	6,8	3670	3670	910	910	3590
X	5	X	8,3	3560	3560	860	860	3370
X	6	X	9,8	3460	3460	800	800	3160
X	7	X	11,3	3360	3360	750	750	2940
X	8	X	12,8	3260	3260	690	690	2730
Nc = # platforms				Max = T/2+T/2+400 (4p)		Max = Tmis+Tmis+400 (4p)		Max = Tm+400 (4p)

Check lists

HAND OVER CERTIFICATE

To be filled in after installation by user and EMKO TECHNIC installation supervisor.
Machine number:.....
File number:.....Project number:.....

General		OK / na
1	INSTALLATION CHECK LIST: available, filled in and signed?	
2	User's manual: available near the machine and contents explained?	
3	Loading schematics / warning plates: available and explained?	
4	Explain that in case the machine or the anchoring of the mast needs to be changed, always WRITTEN permission is obtained from Hek Manufacturing BV, its affiliates or subsidiaries.	
5	Explain that after work, or when the machine is not manned or guarded, - the machine must be lowered to the lowest position - the main switch must be in OFF position and padlocked.	
6	Explain the Out-Of-Service requirements.	
7	Explain that during operation nobody is allowed to be in the area underneath the machine.	
8	Explain that removal of any gate, rail ramp, etc., is strictly forbidden above 2 m/6 ft height.	
9	Explain that removal of any safety feature like switches, bridging the safety circuit is strictly forbidden.	
10	Explain house keeping; rubbish must be removed.	
11	Explain load distribution over platform.	
12	Explain that any change of platform configuration or construction is strictly forbidden.	
13	Explain that protruding cargo is strictly forbidden.	
14	Explain how to prevent damage by loading/unloading of All weather protection	
Demonstrate:		
1	Ascent and decent with machine	
2	Emergency button	
3	Emergency decend	
4	Anchor passage gate	
5	Rails / doors / gates / ramps	
6	Is user training carried out successfully?	

☐ If not OK, make notes OR ☐ Machine released with the following restrictions:

Remarks:

Customer declares that this machine was handed over in a safe and in working order. Customer also declares to have received instructions for the safe use of the machine.
Customer declares to instruct future users.
Date: .....
User (name in print + sign):.....
Job title:.....
EMKO TECHNNICinstructor (name in print and sign).....

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Disassembly

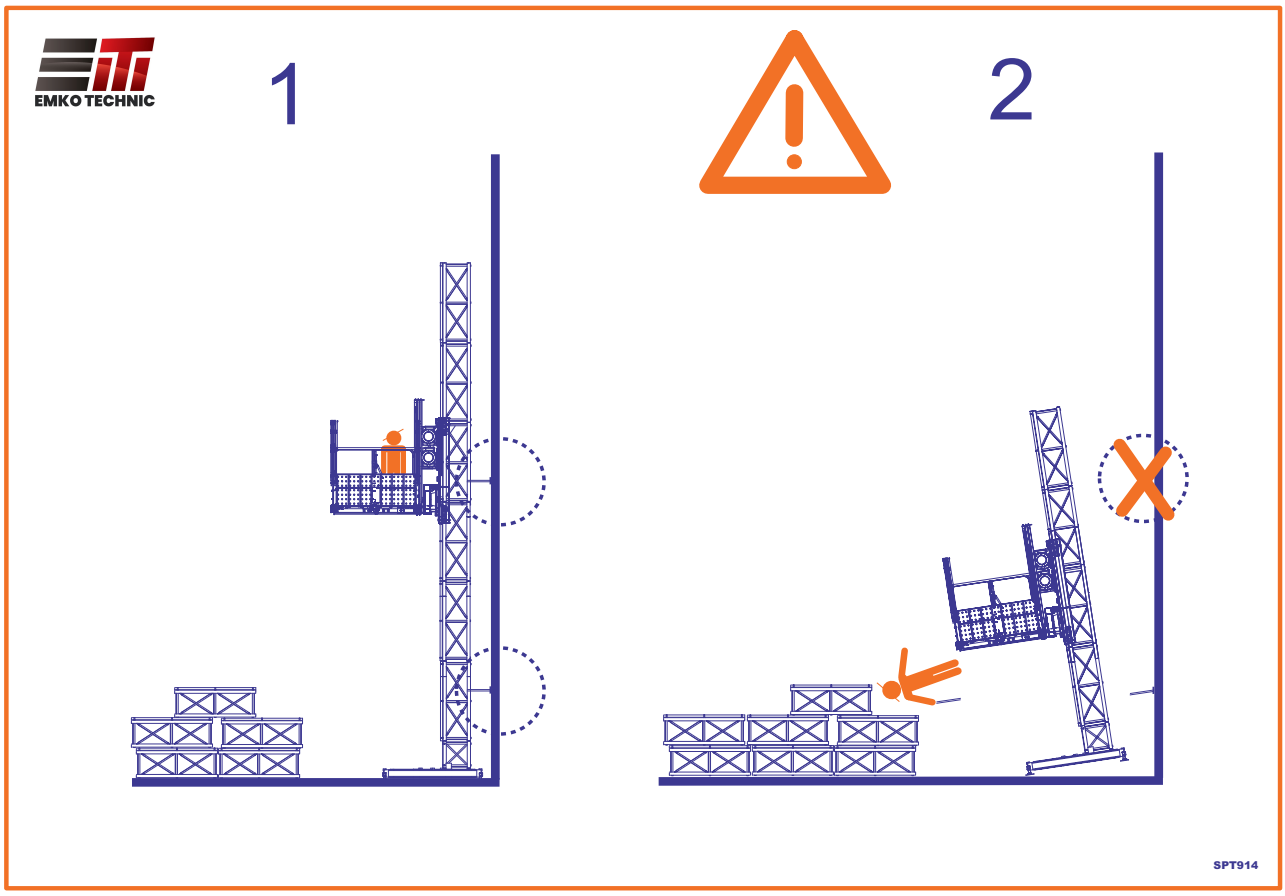
Dismantling the machine is the platform erection in reverse order:

1 The mast sections must be dismanteled gradually.

2 The mast ties must be dismanteled as soon as the mast sections above them have been removed, ensuring the stability of the machine
The maximum number of mast sections and anchors to be transported during the dismanteling of the mast is:
Single mast platform: 6 masts and 1 tie
Twin mast platform: 12 masts and 2 ties

3 The dismanteled mast sections and the anchors must not be thrown down but brought to the ground using the platform or, preferably, a crane.

WARNING: Ensure the 2 lowest anchors are only to be removed after securing the machine will not tilt after removing. Unload the machine, check the condition of the ground and outriggers before doing so!



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USER'S MANUAL TPM-MT-MTM

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Safety notes

WARNING: The platform load must not be exceeded with more load than allowed according to the load tables.

WARNING: It is forbidden to put material on the platform extension. Only persons and personal equipment are allowed on the wall extension (not applicable for SPT).

Preparation

Before commissioning the machine and at the start of each day, carry out the checks according to the the daily checklist.

During operation

- In case of a power failure, the platform shall be brought to the ground using the Emergency Decent Device. This must be carried out SLOWLY, not faster than normal operation speed.

WARNING: After a descent of 5 meters (16 Ft) , the platform must be stopped for 2 minutes in order to allow the brake(s) to cool down.

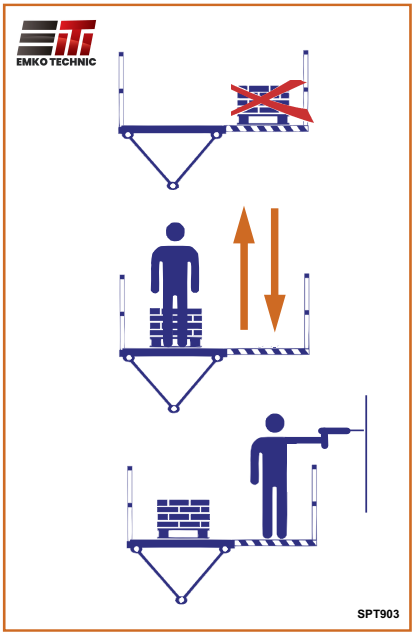
- In any other unusual situation the platform shall be brought to the ground as soon as possible,
- After a failure, the machine must be checked and repaired, and shall not be used untill this is carried out.

IMPORTANT: In the event of a fault with the machine, which can jeopardise safety, the operator shall immediatelly immobilise the machine and notify a responsible person.

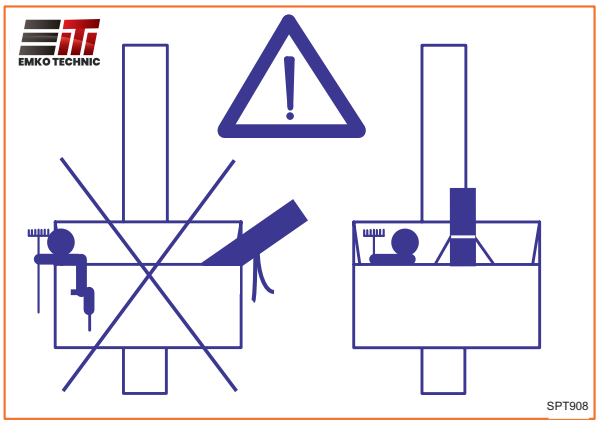
AT THE END OF THE WORK PERIOD

1 The platform shall be brought into the "out-of-service" position and it shall be isolated and pad-locked to prevent unauthorised operation.

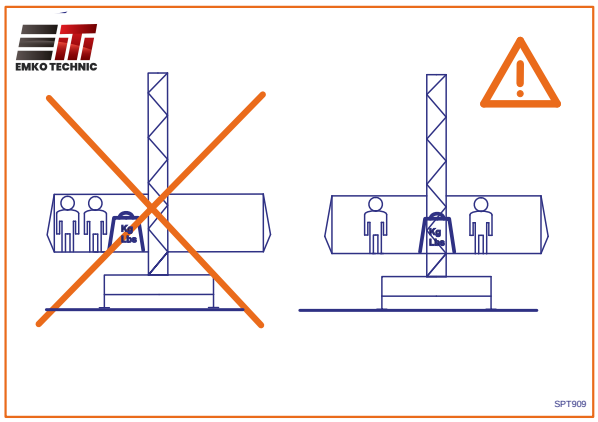
2 In case of emergency, the operator must follow the relevant instructions in this manual.



No load allowed on any extension (MT only)



Do not transport parts which is protruding outside the fence of the platform.



Ensure the load is distributed equally distributed over the platform.

Operating instructions

IMPORTANT: Transporting persons on the MH is strictly forbidden.

WARNING: When work is stopped or when the building site is unattended the platform must be placed in the "out-of-service" position. This position must provide the most shelter from wind (without load). The main switch must be secured in the OFF position with a padlock.

WARNING: The load shall never extend beyond the edges of the platform. Materials which can roll must be properly secured.
Never place loads against the fencing.

WARNING: It is forbidden to be in the area immediately under the platform.

WARNING: Using the platform without closed fences being present is not permitted.

WARNING: Always push the emergency stop button before carrying out work to the ground cage/ fencing/machine.

WARNING: Always ensure the loaddistribution is according the Loading Diagrams.

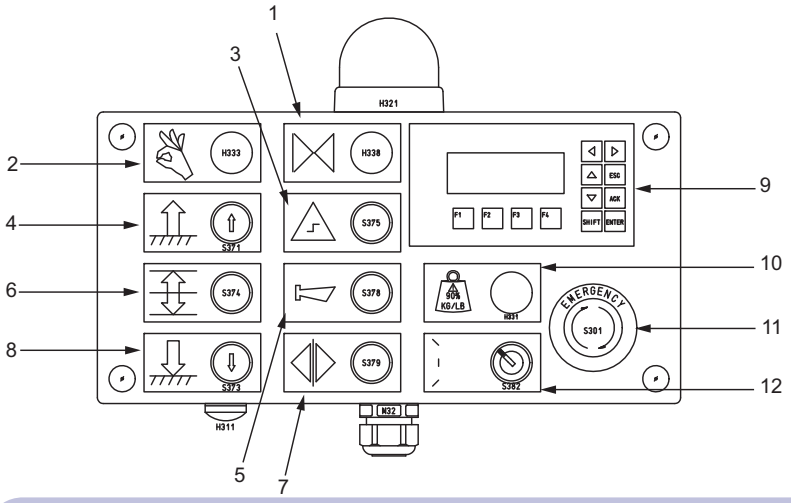
WARNING: The machine must be operated by trained personnel, appointed by the site manager.

WARNING: The operator must ensure unimpeded vision of the hoistway.

START USING THE MACHINE

1 Before the platform is put into operation, it must be checked according to the checklist "Daily Checks".
2 Remove the padlock from the main switch and put this switch in position ON.
3 Ensure that, if applacbel, the safety circuit of the ground station is closed (emergency stop on door and in cage, ground cage doors and landing barriers). Ensure that the safety circuit of the drive unit is closed (switches, fences, doors, etc.).
4 Check that the EMERGENCY STOP push button (on the ground box in case of MH) is not activated. The pushbutton has to be pulled out; if not, rotate the button counter-clockwise.

CONTROL BOX & OPERATION MC

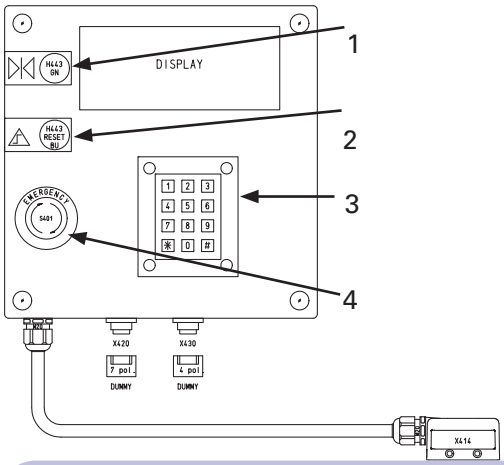


Operation MT

1 Press UP-button to go UPWARDS and HOLD
2 Press DOWN-button to go downwards and HOLD.
3 Press NEXT LANDING when reaching required landing.

Number	Description
01	Blue light: door open
02	Green light: ready
03	Blue pushbutton: reset
04	Up pushbutton
05	Horn
06	Next landing push button
07	Door open command
08	Down pusbutton
09	Display
10	90% payload pre warning (100% machine stop: horn and flash light)
11	Emergency stop push button
12	Key switch (service 1 - normal -service 2)

CONTROL BOX & OPERATION SPT

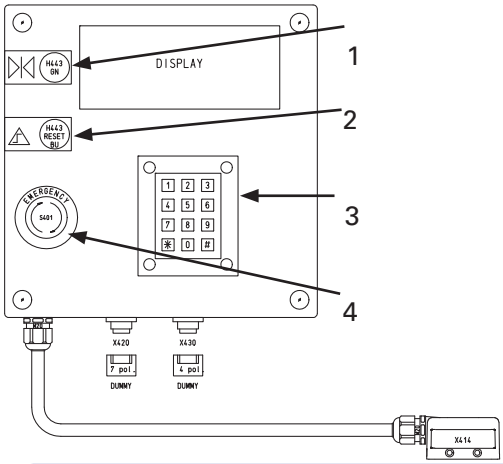


Operation SPT

1 Key in: <FLOOR NUMBER>
2 <ENTER> by pressing # and HOLD
Now the platform will move to the floor as keyed in.

Number	Description
01	Door open
02	Reset
03	Key pad
04	Emergency pushbutton

CONTROL BOX & OPERATION SPT



Operation MH

1 Key in <Floor number>
2 <ENTER> by pressing # and HOLD
3 Now the platform will move to the floor as keyed in.

Number	Description
01	Door open
02	Reset
03	Key pad
04	Emergency pushbutton

EMERGENCY STOP

In a dangerous or critical situation, the emergency pushbutton can be pushed. The platform will stop immediately. After resetting the emergency pushbutton, you may proceed with the normal use when the situation is safe.

After a power failure

After a power failure, the machine wil initialize itself. It will know were it is and no special measures need to be taken.

WARNING: When work is stopped or when the building site is unattended the platform must be placed in the "out-of-service-position" by means of the # 'ENTER' button. The main switch must be secured in the OFF position with a padlock.

EMERGENCY DESCENT (NOT MH)

In case of an emergency, e.g. a power failure, the platform can always be made to descend.

- Operate the Emergency Decent Device on the motor.
  Ensure that the speed of descent is not higher than normal, otherwise the fail safe brake will be automatically operated.

WARNING: After a descent of 5 m (15 Ft) the platform must be stopped for 2 minutes in order to allow the brake(s) to cool down.

RAISING THE MACHINE FROM THE BUFFERS AFTER EMERCENCY DECENT

If the drive unit descents into the buffers, e.g. during an emergency descent, the lower EMERGENCY limit switch will be operated. The platform cannot be controlled any longer.

1 Follow the procedure "Raising the machine from the buffers, see chapter "Installation". Only trained personel is allowed to carry out this action.

THE MACHINE OVERSHOOTS ITS MAXIMUM INCLINATION ANGLE (TWIN)

If the machine inclination angle is too high, the display will show a message explaining the event.

Manual Descent

One can try to level out the machine by using the Brake Release Handles. Alternatively use one of below methods:

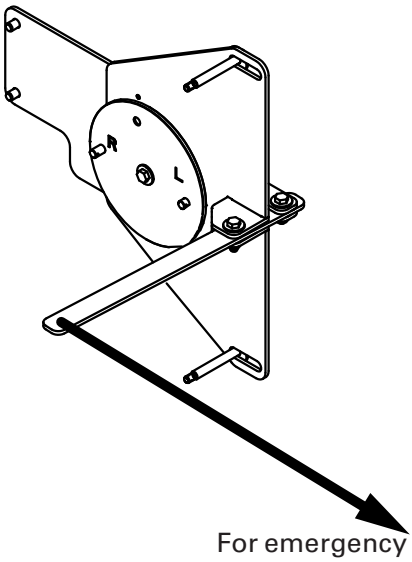
Electrical Descent MT

1 Put the key switch into SERVICE II position.
2 Push the DOWN-button
3 The machine will now level-out.

Electrical Descent SPT

1 Switch with the keypad into SERVICE II.
2 Key in a floor number . This must be a floor lower than the actual position of the machine.
3 Push the ENTER (#) -button
4 The machine will now level-out.

EMERGENCY DESCENT MTM + SPT

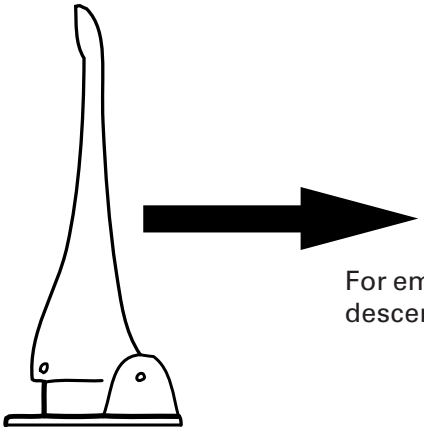


For emergency descent: PULL

Emergency descent for SINGLE
1 Pull the handle, allowing brakes to release.
2 Move down.

Emergency descent TWIN:
1 Pull the 2 handles simultanously, allowing the brakes to clear.
2 Move down.
3 If the platform lowers too much on one side, lower the highest drive till the platform is near horizontal again.
4 Start from step 1.

EMERGENCY DESCENT SPT



For emergency descent: PULL

Emergency descent SINGLE:
1 Pull the handle, allowing the brakes to clear.
2 Move down.

Emergency descent TWIN:
1 Pull the 2 handles simultaneously, allowing the brakes to clear.
2 Move down.
3 If the platform lowers too much on one side, lower the highest drive unit till the platform is near horizontal again.
4 Start from step 1.

IMPORTANT: Remove the back wall of the machine prior to pulling the handle(s), use a 13 mm spanner.

WARNING: Do NOT climb over the fence in order to reach for the brake release handles(s)

Brake release handle SPT

Remove the bolts (2 plc) with a 13 mm spanner.

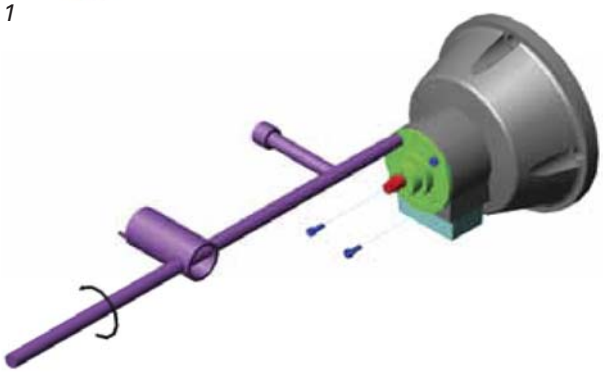
RESETTING THE SAFETY DEVICE

Procedure resetting the brake with the help of a tool

1 Remove the cover.

1

2 Use the cranking lever to release the backplate bolts.

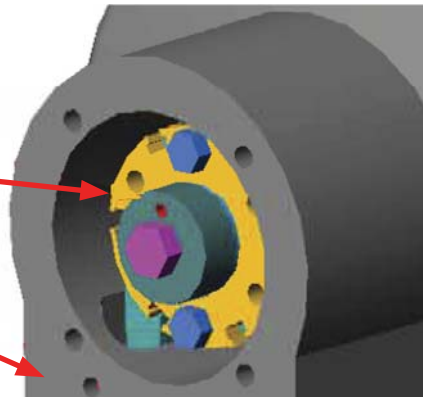


2

3 Remove the backplate from the housing.

3

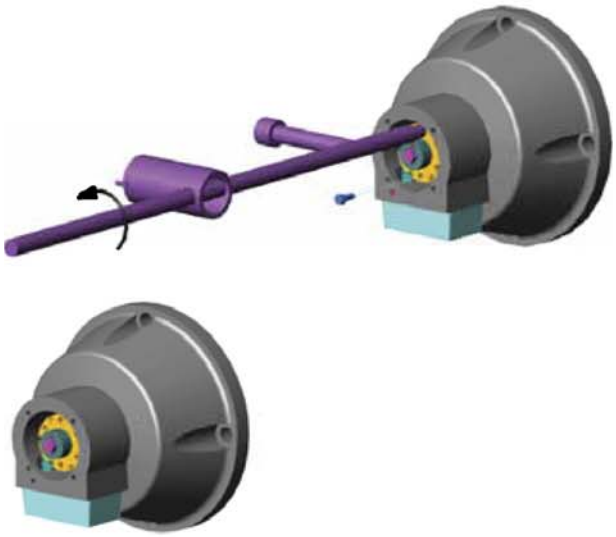
4 The braking nut is "pulled in".
Setting pin is "pulled in".



4

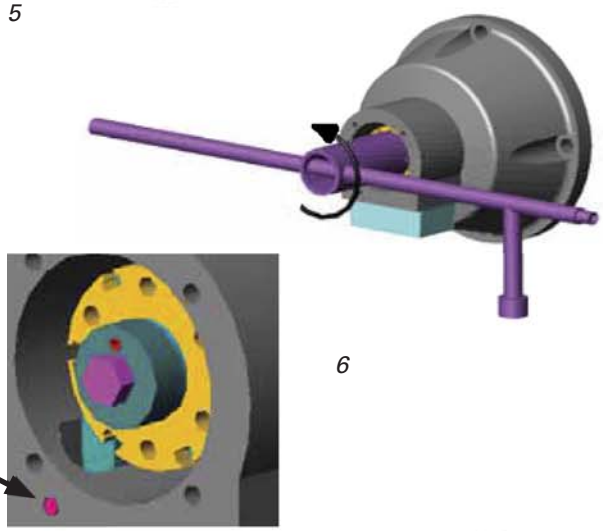
Resetting the Safety Device

5 Use the cranking lever to release the bolts that hold the braking nut.



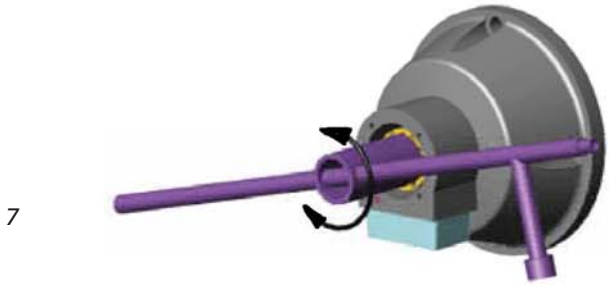
5

6 Turn until the setting pin is flush with the housing.



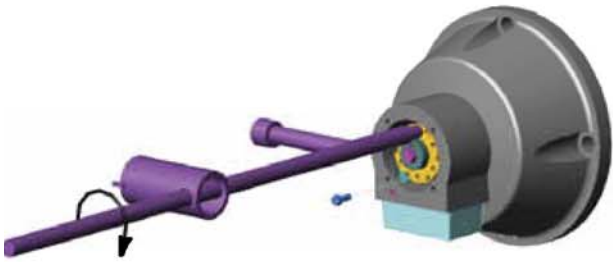
6

7 Use the sleeve and cranking lever to line up either the top / bottom or left / right hole with the threaded holes in the backplate.



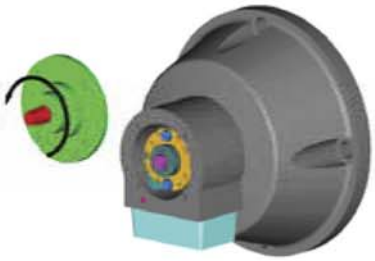
7

8 Insert the 2 bolts and tighten them with the cranking lever.



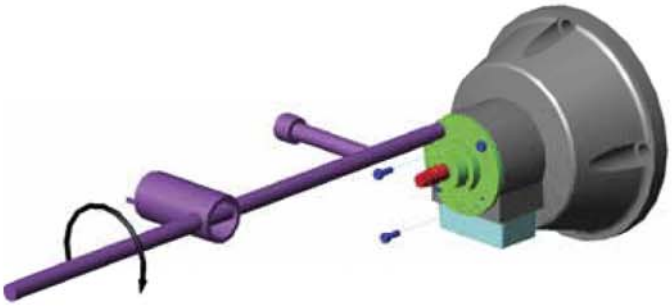
8

9 Manually turn the pressure release screw out of the back plate (anti clockwise).



9

10 Remount the backplate.

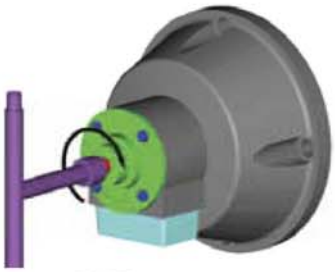


10

11 Manually turn the pressure release screw back into the backplate (clock wise).

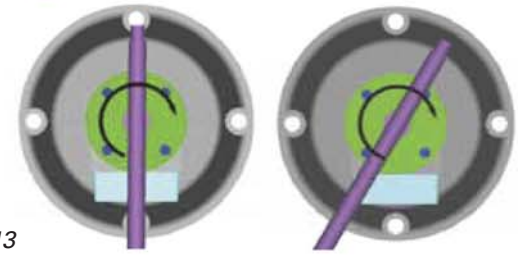
11

12 Use the cranking lever to turn the pressure release screw 30° clock-wise.



12

13 Use the cranking lever to turn the pressure release screw 30° clockwise.



13

14 Remount cover.

14

Finally check if the safety circuit is closed (no error message in display).

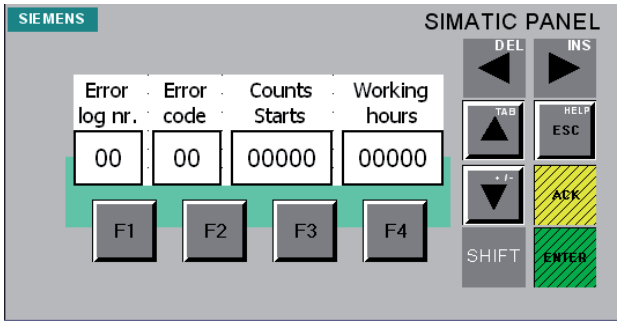
ERRORS

IMPORTANT: The explanation of the error codes can be found in part "OPERATION" of this manual.

Reading the error log SPT

The PLC saves all error messages that may occur. The error codes are saved in a log file. To read and analyze the display messages, procede as follows:

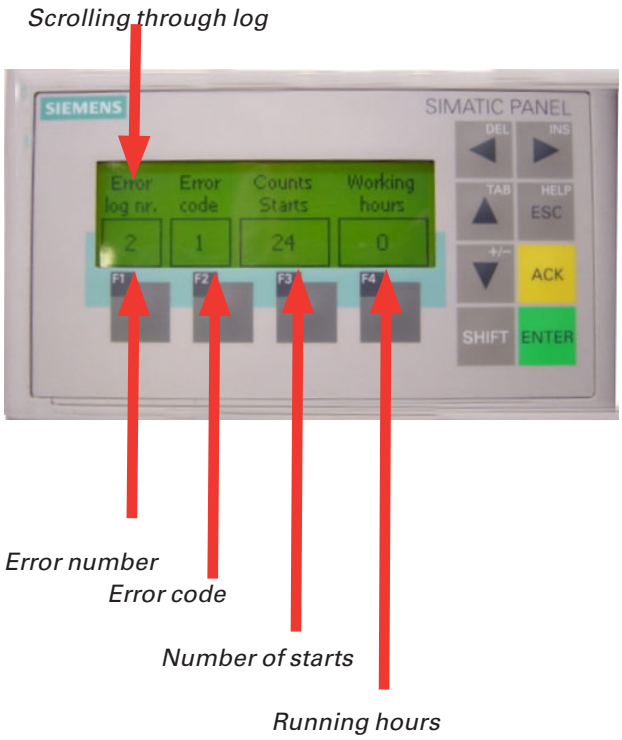
1 Use the key pad
2 Push 1,3 and * for 3 seconds
3 Scroll UP with key 3
4 Scroll down with key 9
5 Reset hours and number of starts display with key 4,5,6 and * for 10 seconds
6 Exit by pressing 1,3 and * for 3 second

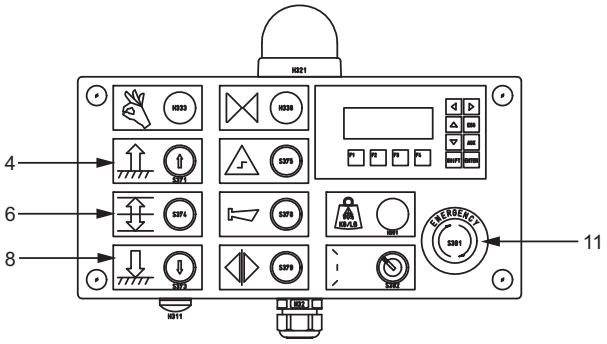


Reading the error log MT

The PLC saves all error messages that may occur. The error codes are saved in a log file. To read and analyze the display messages, proceed as follows:

1 Press the EMERGENCY button (11)
2 Simultaneously press the UP (04), NEXT LANDING (06) and DOWN (08) buttons for 3 seconds. The error log screen is shown.
3 By pressing the UP (04) and DOWN (08) button you can scroll through the file.
4 Repeating step 2 will return the display to its normal mode.





Errors

Number	Description
01	LANDING BARS ARE NOT CLOSED OR DUMMY NOT USED
02	EMERGENCY STOP BUTTON GROUND BOX & LEVEL BOX
03	FUSE F100 TRIPPED
04	FUSE F103 TRIPPED
05	S033 SAFETY FAIL BRAKE WORKED
06	CLIXON BRAKE RESISTORS TOO HOT
07	CLIXON MOTOR II MOTOR II TOO HOT
08	CLIXON MOTOR I MOTOR I TOO HOT
09	EMERGENCY STOP BUTTON CONTROL BOX
10	S011 END LIMIT UP MACHINE = TOO HIGH
11	S013 END LIMIT DOWN MACHINE = TOO LOW
12	S061 MAST COVER COVER REMOVED
14	REMOTE CONTROL / DROPTEST EMERGENCY STOP BUTTON PUSHED OR NO DUMMY CONNECTOR
15	X130 - EXTENSIONS SECURITY LINE NOT OK
16	FREQUENCY-CONTROLLE R: ERROR <tag ErrorcodeVFC>
17	MAST DETECTION NOT OK
18	MACHINE NUMBER NOT OK
19	PAYLOAD ERROR
20	X112 DUMMY NOT PRESENT
21	DIFFERENCE POSITION MASTER / SLAVE TOO HIGH
22	EMERGENCY STOP BUTTON GROUNDBOX PUSHED OR NO DUMMY CONNECTOR
23	SECOND MACHINE : FUSE F100 TRIPPED
24	SECOND MACHINE : FUSE F103 TRIPPED
25	SECOND MACHINE : SAFETY FAIL BRAKE USED
26	SECOND MACHINE : CLIXON BRAKE RESISTORS
27	SECOND MACHINE : CLIXON MOTOR II
28	SECOND MACHINE : CLIXON MOTOR I
29	SECOND MACHINE : CONTROLPANEL EMERGENCY STOP BUTTON OR NO DUMMY
30	SECOND MACHINE : ULTIMATE LIMIT UP REACHED
31	SECOND MACHINE : ULTIMATE LIMIT DOWN REACHED
32	SECOND MACHINE : MASTCOVER REMOVED
34	SECOND MACHINE : REMOTE / DROPTESTER : EMERGENCY HITBUTTON PRESSED OR NO DUMMY
35	SECOND MACHINE : X130 EXTENSIONS SECURITY LINE NOT OK
36	SECOND MACHINE : FREQUENCY-CONTROLLE R ERROR <tag ErrorcodeVFC>
37	SECOND MACHINE: MASTDETECTION NOT OK
38	LANDINGBARS ARE NOT CLOSED
39	SECOND MACHINE : PAYLOAD ERROR

WARNING: Inform the technical service department of EMKO TECHNIC, its affilates or subsidiaries in every case not covered in the above error table.

Check lists

DAILY CHECKLIST; ALSO TO BE USED AFTER A STORM > 17,1 M/S / 38 MPH

User checks daily and after a storm > 7 Bft (>17,1 m/s, >38 Mph); correct if needed before taking the machine into service. To be filled in daily before using the machine by user, signed by supervisor.
Date: .....
User:.....
Mach.#:.....
Checked by (name in print):.....
Sign: .....

column 1: x = in order
column 2: x = not in order
column 3: x = not applicable

		1	2	3
Checks BEFORE entering the machine:				
1	State of ground, outriggers, ground frame support?			
2	Position and state of mast?			
3	Fences, doors, ramps and rails in good order and locked?			
4	Power cable, correctly in drum, free to move?			
5	Extensions still present and locked?			
6	No visible damages?			
7	Ejectory of machine is free of obstacles?			
8	All platforms/decks resent and fitted correctly			
Checks ON the machine BEFORE test drive:				
1	Mast guards present and locked?			
2	All weather protection construction undamaged?			
3	All warning plates present?			
4	Functioning of			
	a Emergency button(s)			
	b Limit switch under			
	c Ultimate Limit switch under			
	d Limit switch top			
	e Ultimate Limit switch top			
	f Gate/ramp/door switches			
	g Communication with SECONDARY machine			
	h Anchor passage ramp switch (if applicable)			
Checks DURING test drive:				
1	Anchors: Observe correct fixation; sample torques in bolts after storm 1:10*			
2	Mast bolt connections, sample torques in bolts after storm 1:10*			
	* In case a bolt/anchor is loose, carry out proofing 100%			
3	Machine at constant and sufficient distance from facade (may indicate loose anchors/mast)			
4	TWIN machine; check if the machine does not exceeds 5° after releasing individual brake			
5	Carry out brake test			
6	Test for unusual vibrations and noises			

In case the machine or the anchoring of the mast needs to be repaired, changed or otherwise altered, contact EMKO TECHNIC, its affiliates or subsidairies.
Note: An administrative record of the results of this checklist/inspection should be kept.

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USER'S MANUALTPM-MCM-MHM

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Maintenance

SAFETY

The personnel responsible for maintenance must ensure that all the scheduled maintenance operations will be carried out.

Maintenance must be carried out by certified personnel, trained by EMKO TECHNIC or its affiliates or subsidiaries.

Use manufacturer's genuine spare parts only.

At all times, when work is carried out, move the machine in its "out-of-service-position", and switch the main switch on the electrical control panel to the (OFF) position.

Remove the power supply plug

A warning sign indicating that maintenance is being carried out must be placed on the control box.

It is mandatory to use the checklists in this chapter. They must be completed after any maintenance or service.

WARNING: Always switch OFF and lock the main switch when leaving the platform, even without having completed the service work.

Ensure Personnel Safety Equipment is being used, like safety belts and hard hats.

CHECK LIST MAINTENANCE

20 running hours or at least once a week (whatever comes first)

Lubricate the rack.

Lubrication depends on the operational situation like humidity, temperature, intensity of use and dust. A guide line for lubrication is as follows:
- Clean the rack before lubrication if very dirty (i.e. covered in sand).
- Use 1 cartridge of grease (375 ml) per 75 m/ 225 ft of lightly coated rack length.
- Do not overgrease; one should not "hear" grease when running the machine.

40 running hours or at least once a month (whatever comes first)

	Details	Instructions	OK
1	Installation of the platform	Make sure that the installation has not been modified; see Installation Checklist	
2	Oil in the gear motors	Check the oil level of oil in the gear motors and fill up if necessary.	
3	Damaged seals	Detect any damaged seals and replace immediately.	
4	Levelling	Check the levelling system in the twin mast platform,and adjusting it if necessary.	
5	Masts, ties and fixing bolts	Check all the masts, the ties and the relative fixing bolts. Check the state and safety of each tie, carefully examining the state of the grips placed in the wall.	
6	Check for any unusual noises or vibrations	Move the platform to the highest part of the installation and check for any unusual noises or vibrations.	
7	Buffer on the base frame	Check that the buffers are efficient an set correctly.	
8	Filters in MCC	Check and clean filters, replace if needed	

120 running hours or at least once in the 3 months (whatever comes first)			**OK**
1	Electric motors and fans	Remove any deposits from the electric motor housing and the fans.	
2	Brakes of the electric motor	Clean them and adjust the air gap to its normal working distance if needed.	
3	Racks	Sample check the screw fixing the racks on the mast sections (1:10)*	
		*If 1 bolt loose, carry out check 100%.	
4	Pinion	Check pinion for wear	

5	Rollers	Check the drive unit rack and guide rollers, making sure the clearances are correct and that there are no unusual noises or wear and tear. If necessary replace immediately and tighten the bolts.	
6	Mast section	Check the running surface of the mast section. If any sign of damage is seen, check carefully the integrity of the running wheels involved.	
7	Mesh between the pinion and the rack	Check the mesh between the pinion and the rack.	
8	Self propelling chassis	Lubricate the drive shaft (grease nippple 2 plc).	

360 running hours or at least once a year (whatever comes first)			**OK**
1	Electrical panel	Check the electrical control panel carefully and clean the inside, especially the electrical contactors, using appropriate substances.	
2	Structure of the platform	Check the structure of the platform and the mast making sure there are no cracks, bent connections or other damages.	
3	Gearbox	Afterabout 300-400 hours of work, when the reduction gear has finished its running in cycle, remove the oil completely; wash the inside well and refill with new mineral oil as per the table below. The next oil change must be done after 5,000 hours of work or after 2 years. Wash the inside well at every oil change.	
4	Self carrying ramp	Check the level of the hydraulic fluid in the tank of the hydraulic motor	
720 h running hours or at least once in the 2 years (whatever comes first)			**OK**
23	Electrical connection	Check all the electrical connections, the ducts and anything else regarding the safety and integrity of the electrical installation.	
24	Motor overload protection	Make sure that motor overload protection is correctly set/PLC/ VFC	
25	Damage, wear and tear	Make sure that all the parts supporting the load are not damaged due to corrosion or wear and tear.	
26	Self carrying ramp	Replace the hydraulic fluid of the tank of the hydraulic motor	

OIL & GREASE SPECIFICATIONS

Specification of required gearbox oil

Type of lubricant	Ambient temp.	ARAL	BP	Castrol	ESSO	FUCHS	KLÜBER LUBRICATION	Mobil	Shell
Synthetic oil	-5 ... 60°C ISO VG 680	Degol GS 680	Energol SG-XP 680	--	--	Renolin PG 680	Klübersynth GH 6-680	Glygoyle HE 680	Shell Tivela S 680
	ISO VG 220 -25 ... 80°C *	Degol GS 220	Enersyn SG-XP 220	Alphasyn PG 220	Glycolube 220	Renolin PG 220	Klübersynth GH 6-220	Glygoyle HE 220	Shell Tivela S 220

IMPORTANT: This listing gives a number of compatible oils of various brands. Within the same viscosity class and type, a free choice of brand can be made. In case one chooses for another brand or viscosity, pls. contact EMK O TECHNIC , its affiliates or subsidairies for guidance.

IMPORTANT: In case the ambient temperature is below -30° C (-22°F) or above +60°C (140°F), the seals must be replaced by seals made of special material, pls. contact EMKO TECHNIC, its affiliates or subsidairies for guidance.

Specifications EMK Rack and Pinion grease

For the lubrication of the rack and pinion of all types of machines we specify the following grease types:
1 Shell Super Kuggfett
2 Alassca 170 OG
These types of grease can be obtained from EMKO TECHNIC

Any alternative grease must have the following specifications:

Test Method	Values	
NLGI classification	ASTM D-217	0
Basic oil		Mineral oil
Color visual		Dark brown
Structure		Smooth, buttery
Penetration at 25°C (77°F) 60 Strokes	ASTM D-217	
Dropping point	ASTM D-2265	260°C (500°F)
Viscosity at 40°C	ASTM D-445	40 mm^2/s
at 100°C		800 mm^2/s
Corrosion protection value	SS-SIS 155130	0 – 0
Ambient temperature		-30°C to +150°C -22°F to + 302°F
4-Ball weld test	DIN 51350	>7800 N

Rack & pinion, mast, gears, rollers, brakes

RACK & PINION

Measuring the extent of wear of the rack and pinion

Codes:

R-M5:	Rack module 5 mm
P-M5 PC-75:	Pinion SD module 5 mm, 15 cogs
P-M5 PC-115:	Propulsion module 5 mm, 24 cogs

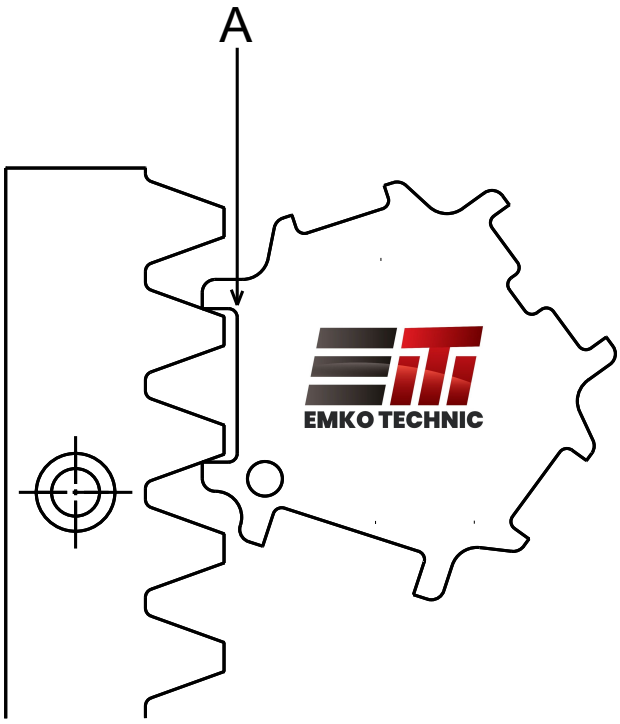
1 Place the calibre over the rack cogs, parallel to the rack.

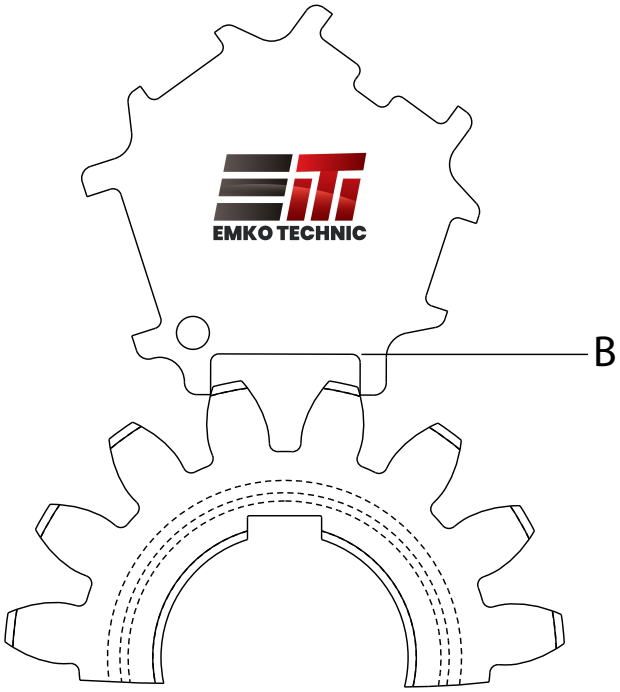
2 The reference surface (A) must NOT touch the rack. If it does touch the rack, the rack must be rejected.

3 Measure the rack at several positions across the entire length.

4 This also applies to the pinion. The reference surface (B) must NOT touch the tops of the cogs. If it does touch the tops of the cogs, the pinion must be rejected.

5 Measure the pinion at several positions.





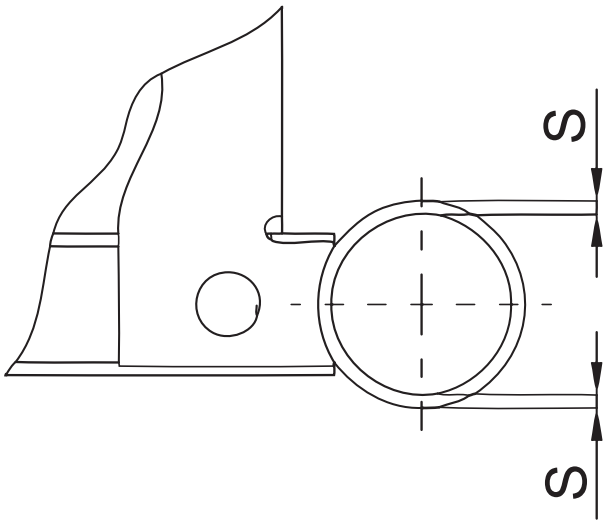
MAST TUBES

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

New mast tubes (S) = 3.6 mm

Max. wear mast tubes (S) = 3.1 mm (15% reduction of wall thickness).

If during the inspection of the platform wear it outside its limits, replace the worn parts immediatelly.

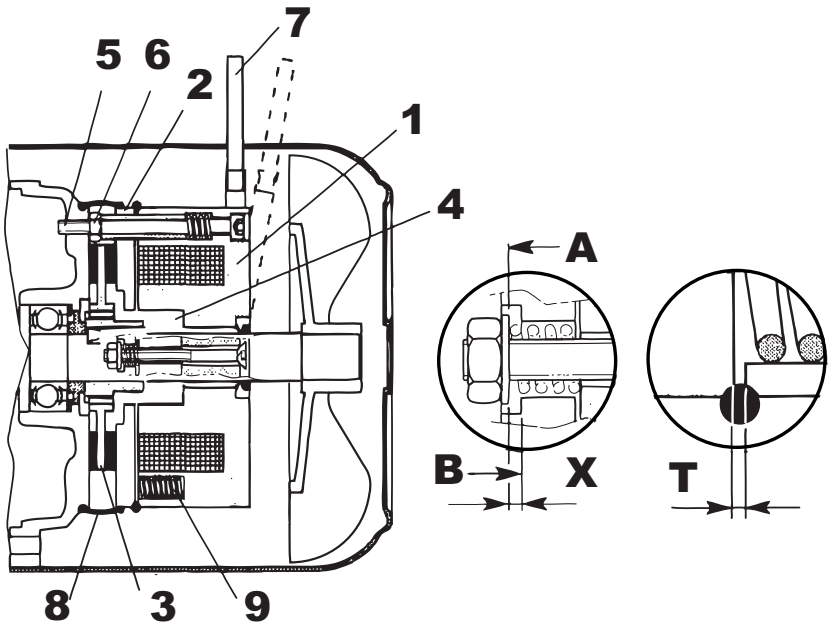


MOTOR BRAKE (100 NM VERSION)

IMPORTANT: Pls. consult the OEM-documentation for the latest information, see www.AlimakHek.com, or contact Hek manufacturing B.V., Its affiliates or subsidiaries.

Brake disk parts

1 Stator
2 Pressure plate
3 Brake disk
4 Hub
5 Locking nut
6 Locking screw
7 Hand release
8 Sealing ring
9 Brake coils



Motor brake as being used; no incremental encoder shown.

Adjustment of air gap

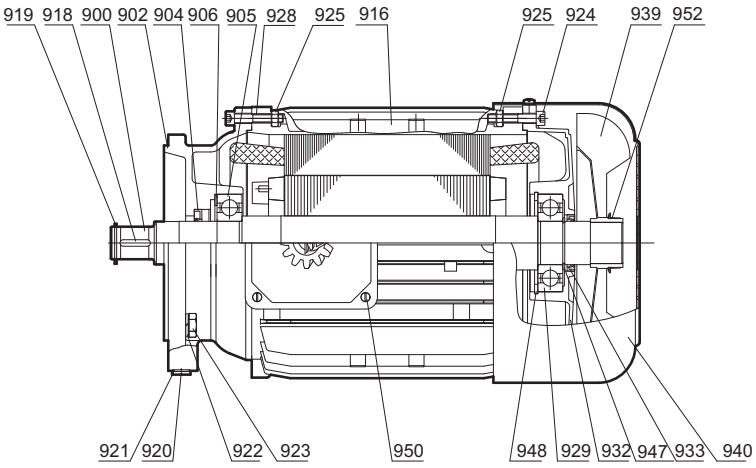
Measure the air gap "T" between pressure plate (2) and stator (1) with the aid of a feeler gauge. Compare the measured air gap to the maximum permissible T_{max} = 0.45 mm. If T > 0.45 mm, adjust it to nominal T_{min} = 0.4 mm, according to the following instructions.

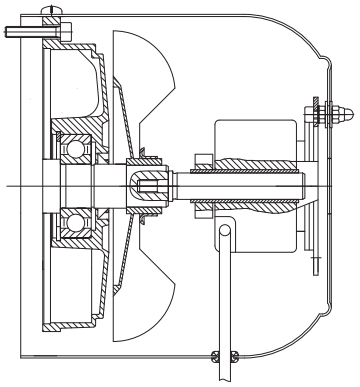
Air gap (T)		Gap (X)
Nom. (mm)	Max. (mm)	(mm)
0.4	0.45	1.0

1 Tighten hexagon nuts (5) and lock screw (6)
2 Check the air gap using a feeler gauge. The nominal value of air gap must be 0.3 mm.
3 If the difference between the measured air gap and 0.3 mm is too large (it should be always less than 0.45 mm), repeat the adjustment "1".
4 When the value is correct, replace the sealing ring and motor cover ensuring all fixings are secure.

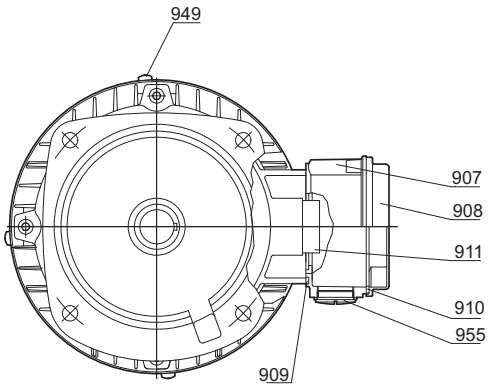
WARNING: Disconnect the brake and release any load before working on the brake. The hoist must be brought down to rest on the buffer landings before maintenace is carried out.

Inspection of brake disk





Motor brake as being used; no incremental encoder shown.



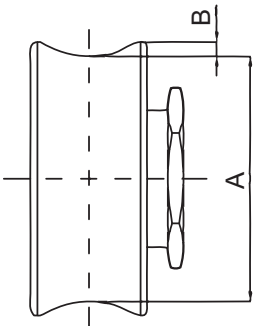
WARNING: Disconnect the electric motor before commencing maintenance.

1 Remove the incremental decoder (not shown).
2 Remove the fan cover.
3 Remove the sealing ring.
4 Measure the thickness of brake disk using a calliper gauge: if the measure is less than ≤ 12,5 mm; or the thickness of each friction element is ≤ 1.0 mm, the disk must be replaced.

N°	Description	N°	Description
900	Rotor with shaft	923	Hexagon nut
902	End shield A	924	Collar screw
904	Shaft seal	925	Hexagion nut
905	Bearing A	928	Hexagon screw
906	Bearing shim	929	Bearing B
907	Terminal box frame	932	End shield B
908	Terminal box cover	933	Shaft seal
909	Terminal box frame gasket	939	Fan
910	Terminal box cover gasket	940	Fan cover
911	Terminal board	942	Circlip
916	Stator case	947	Circlip
918	Key	948	Circlip
919	Circlip	949	Oval flat - head screw
920	Oil-plug	950	Oval flat - head screw
921	Seal	952	Locking ring
922	Spring washer	955	Plug

GUIDE ROLLER

Wear limits; measure with sliding caliper.



SPT/MT/MTM

Dimensions	New roller (mm)	Worn-out roller (mm)
A	dia. 74	min. dia. 70
B	-	min. 2

SPT/MT/MTL

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

Note that the "wear" on the roller face must be equal – all around; the nominal clearance is 0.35 mm (0.0138 inch).

Adjustment of guide rollers

WARNING:Rollers must only be adjusted when there is no load on the platform.

The following adjustments are carried out by freeing the attaching bolt/nut of the roller and rotating the eccentric shaft with the tool provided until the correct setting is attained. Retighten the bolt.

1 Center the drive unit on the mast section.
Start with upper roller and adjust the air gap in order to the following table:

A = 1 mm	B = 0 mm
C = 0 mm	D = 1 mm
E = 0 mm	F = 1 mm

WARNING: The side rollers must be adjusted when they are level with a horizontal frame of the mast and always adjusted in pairs.

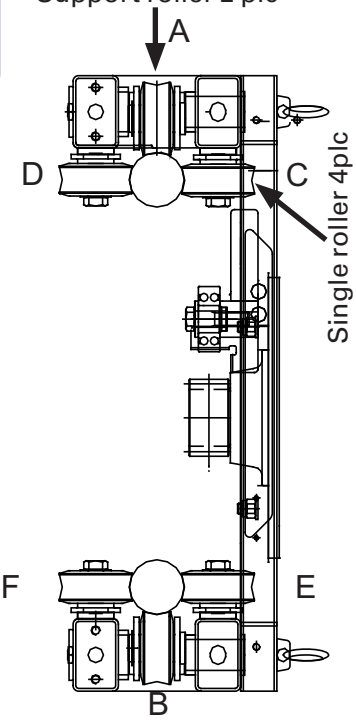
2 Lift the drive unit and adjust the lower roller in order to the following table:

G = 0 mm	H= 1 mm
I = 1 mm	L = 0 mm
M = 1 mm	N = 0 mm

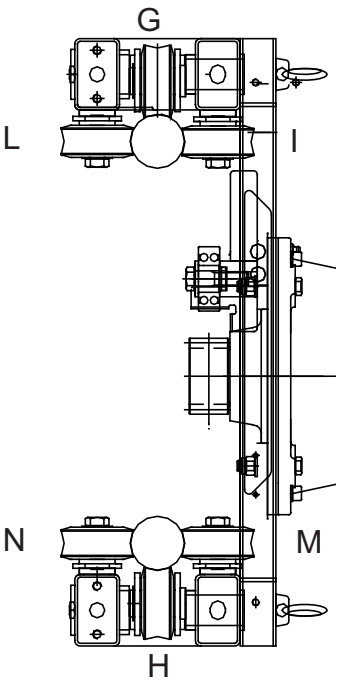
IMPORTANT: The side rollers must not be adjusted closer than 1 mm. Only occasional contact between roller and mast pipe is allowed during operation.

Upper rollers

Support roller 2 plc



Lower rollers



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USER'S MANUALTPM-MCM-MHM

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Trouble shooting

MECHANICAL TROUBLE SHOOTING

MOTOR

DEFECTS	CAUSES	SOLUTIONS
Motor too hot (this can only be established after measurement)	Motor not connected in conformity with main voltage.	Adjust connection.
	Main voltage has a variation superior to 5% of nominal motor voltage.	Make sure mains voltage is correct.
	Low volume of cooling air, air passages blocked.	Ensure good air circulation.
	Cooling air is too warm	Check ambient temperature Check ventilator
	Overloading at normal mains voltage, absorption too high and speed too low.	The platform can be must overload with distributed loads bad: respecting the load table of the platform
	Bad contact of mains cables (temporary operation with one phase). Fuse blown	Make sure contact is good. Replace blown fuse.
The motor does not start	Fuse blown	Reset blown fuse.
	Contactor has interrupted mains.	Check and adjust relay
	Motor relay doesn't work. Defect in command.	Check relay command and eliminate error.

MOTOR

DEFECTS	CAUSES	SOLUTIONS
Motor does not start or has problems in starting.	When starting the machine, voltage or the frequency noticeably diminish with respect to their nominal value.	Improve the state of the mains supply.
	Bad contacts in junction boxes.	Repair the contacts.
Motor noisy and absorbs a lot of current.	Defective winding. The rotor rubs against the stator.	Replace the motor.
Fuses blow or the circuit breaker cuts out continuously.	Short circuit in the mains cables.	Eliminate short circuit.
	Short circuit of the motor. Mains cables connected badly.	Call in a specialist to eliminate short circuit. Connect correctly.

BRAKE

DEFECT	CAUSES	SOLUTIONS
Brake does not release.	Incorrect voltage at rectifier.	The brake must be supplied with the voltage indicated on the plate.
	Rectifier deteriorated.	Replace rectifier.
	Insufficient air gap.	Adjust air gap of the brake.
	Excessive drop in voltage at the mains (10% allowed).	Make sure voltage is sufficient.
The motor does not brake.	Brake disc totally worn. The adjustment nuts stick due to excessive air gap.	Replace brake disc and adjust correctly.
	Manual release badly adjusted.	Position the adjustment nuts correctly.
Brake engages late.	Only single phase voltage interruption.	Connect brake for simultaneous interruption of single phase and AC circuit voltage.

USER'S MANUALTPM-MCM-MHM

FOR ANY SPARE PARTS, PLS. CONTACT EMKO TECHNIC OR CHECK www.emkotechnic.com

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Spare Parts Masterlist			MT	SPT	MT	SPT
	S0605-0100	GUIDE UNIT MEDIUM			1	1
	S0605-0100-01	GUIDE ROLLER EXCENTRIC			4	4
	S0605-0100-12	GUIDE ROLLER CENTRIC			4	4
	S0605-0100-02	TANDEM ROLLER MEDIUM			4	4
	S0605-0100-03	WRENCH GUIDEROLLER	1	1	1	1
	S0605-0100-04	COVER GUIDEROLLER LEFT			2	2
	S0605-0100-05	COVER GUIDEROLLER RIGHT			2	2
	S0605-0100-06	AUDIO VISUAL WARNING			1	1
	S0605-0100-07	EMERCENCY CAM			4	4
	S0605-0100-08	OVERLOAD DUMMY			1	1
	S0605-0100-09	SPRING LOCK			4	4
	S0605-0100-10	POWERPACK 15KW COMPLETE			1	1
	S0605-0100-11	SCRAPER PLATE			4	4

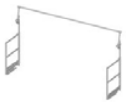
Spare Parts Masterlist			MT	SPT	MT	SPT
	S0701-0010	PUNCH SPINDLE			1	
	S0701-0018	BRAKE RELEASE EDD MCM			1	1
	S0605-0150	PROPULSION COMPL. MEDIUM			1	1
	S0605-0150-02	PINION COVER			2	2
	S0605-0150-03	MOTORPLATE MEDIUM			1	1
	S0605-0150-04	MOTORPLATE FASTENERS			6	6
	S0605-0150-05	COUNTER ROLLER MOTORPLATE			2	2
	S0605-0170	SAFETY DEVICE MEDIUM			1	1
	S0605-0170-01	SD-PLATE MEDIUM			1	1
	S0605-0170-02	SAFETY DEVICE MEDIUM			1	1
	S0710-0015	HINGED DECK TYPE B CONFIG			1	
	S0710-0015-01	TOEBOARD HINGED DECK B			2	
	S0605-0019	HINGED DECK TYPE B			1	

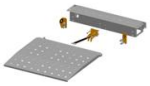
Spare Parts Masterlist			MT	SPT	MT	SPT
	S0605-0019-00	HINGED DECK TYPE B			1	
	S0605-0019-01	ADAPTER HINGED DECK B			2	
	S0605-0019-02	SHAFT HINGED DECK			1	
	S0605-0019-03	STRIP BREAKE RELEASE			1	
	S0605-0019-04	RUBBER PLATE HINGED DECK			1	
	S0703-0010	HINGED DECK SUPPORT B			1	
	S0710-0014	HINGED DECK TYPE A CONFIG			1	
	S0710-0014-01	TOEBOARD HINGED DECK A			2	
	S0701-0094	HINGED DECK TYPE A			1	
	S0701-0094-01	SLIDING BLOCK HINGED DECK			2	
	S0701-0094-02	LOCKING PIN HINGED DECK			1	
	S0701-0094-03	RUBBER BUFFER HINGED DECK			2	
	S0702-0061	HINGED DECK SUPPORT A			1	

Spare Parts Masterlist			MT	SPT	MT	SPT
	S0605-0025	EXTENSION HINGED DECK			1	
	S0704-0004	FLOOR MIDDLE EXTENSION			1	
	S0704-0005	FLOOR LEFT EXTENSION			1	
	S0704-0006	FLOOR RIGHT EXTENSION			1	
	S0606-5013	FENCE PLATFORM 0.8M		2		2
	S0606-5019	FENCE PLATFORM 1.6M		2		2
	S0606-5020	SAFETYDEVICE COMPL. SPT		1		
	S0606-5020-01	SAFETY DEVICE SPT		1		
	S0606-5020-02	SAFETYDEVICE PLATE SPT		1		
	S0606-5029	TP PLATFORM 1.6M		1		1
	S0606-5031	TP PLATFORM 3.2M		1		1
	S0606-5034	ADAPTER SPT		2		
	S0607-5053	MCL DRIVE UNIT COMPLETE	1			

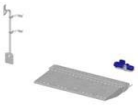
Spare Parts Masterlist			MT	SPT	MT	SPT
	S0607-5053-00	DRIVE UNIT WELDING ASSY	1			
	S0607-5053-01	PROXIMITY SWITCH MT	1			
	S0607-5053-02	LIMITSWITCH MT DUAL	2			
	S0607-5053-03	JUNCTIONBOX MT	1			
	S0607-5053-04	LEVELLING SYSTEM MT	1			
	S0607-5053-05	COVER PLATE MT	1			
	S0607-5053-06	FLOOR DRIVE UNIT MT	1			
	S0607-5053-07	LIMITSWITCH MT SINGLE	2			
	S0607-5053-08	COUNTERPART	2	2		
	S0607-5053-09	DUMMY OVERLOAD	1	1		
	S0607-5053-10	END PLATE	2	2		
	S0607-5053-11	SPRING LOCK	2			
	S0607-5053-12	FIXED ROLLER LIGHT	6	4		

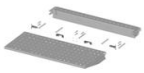
Spare Parts Masterlist			MT	SPT	MT	SPT
	S0607-5053-14	TANDEMROLLER DUAL LIGHT	4	4		
	S0607-5054	PROPULSION MT	1			
	S0607-5054-01	FASTENERS MOTORPLATE	6	4		
	S0607-5054-02	GEARMOTOR MT	2			
	S0607-5054-03	COUNTER ROLLER	2			
	S0607-5054-04	MOTORPLATE MT	1			
	S0607-5054-05	COVER PINION	2			
	3008-004	PINION MT	2			
	S0607-5061	PROPULSION COMPL.SPT		1		
	S0607-5061-01	GEARMOTOR 5.5KW		1		
	S0607-5061-02	MOTORPLATE SPT		1		
	S0607-5061-03	PINION		1		
	S0607-5065	MASTGUARD MT	1			

Spare Parts Masterlist			MT	SPT	MT	SPT
	S0607-5065-01	MASTGUARD FRONTAL MT	1			
	S0607-5065-02	MASTGUARD SIDEFRAME MT	1			
	S0609-5129	GUARDRAIL WITH BAR 1.6M		1		1
	S0609-5130	GUARDRAIL WITH BAR 3.2M		1		1
	S0609-5139	FLOOR JUNCTION KIT		1		1
	S0609-5158	DOOR BIFOLD.GATE RIGHT		1		1
	S0609-5159	DOOR BIFOLD.GATE LEFT		1		1
	S0609-5170	DOOR BIFOLD.GATE LEFT		1		1
	S0609-5171	BIFOLDABLE GATE RIGHT		1		1
	S0609-5171-01	DOOR LIMITSWITCH		1		1
	S0609-5171-02	DOORFRAME RIGHT		1		1
	S0609-5173	BIFOLDABLE GATE LEFT		1		1
	S0609-5173-02	DOORFRAME LEFT		1		1

Spare Parts Masterlist			MT	SPT	MT	SPT
	S0610-0001	ADAPTOR SPT				1
	S0610-5200	BRIGE RAMP 1.6X1.1		1		1
	S0610-5200-01	THRESHOLD BRIDGE RAMP 1.6		1		1
	S0610-5200-02	BRIDGE RAMP 1.6X0.6		1		1
	S0610-5201	GASSPRING COVER		1		1
	S0610-5213	BRIDGE RAMP 0.6X0.6		1		1
	S0610-5213-01	GAS SPRING WITH SUPPORT		1		1
	S0610-5213-02	BRIDGE RAMP 0.6M		1		1
	S0610-5213-03	THRESHOLD RAMP 0.6		1		1
	S0610-5217	GUARDRAIL 0.8		1		1
	S0610-5217-01	PIPE BRACKET 0.8		1		1
	S0610-5219	GUARDRAIL 1.6		1		1
	S0610-5219-01	POST LEFT		1		1

Spare Parts Masterlist			MT	SPT	MT	SPT
	S0610-5219-02	PILLAR		1		1
	S0610-5219-03	ARM GUARDRAIL		1		1
	S0610-5219-04	TOE BOARD LEFT		1		1
	S0610-5219-05	TOE BOARD RIGHT	1	1	1	1
	S0610-5219-06	CONNECTION ARM GUARDRAIL		1		1
	S0610-5219-07	PIPE BRACKET 1.6		1		1
	S0610-5219-08	BUFFER BRACKET		1		1
	S0610-5219-09	BUFFER BRACKET		1		1
	S0610-5219-10	POST RIGHT		1		1
	S0610-5220	GUARDRAIL 3.2		1		1
	S0610-5220-01	PIPE BRACKET 3.2		1		1
	S0611-5227	DOOR BIFOLD.GATE RIGHT		1		1
	S0611-5231	BRIDGE RAMP 1.6X1.1		1		1

Spare Parts Masterlist			MT	SPT	MT	SPT
	S0611-5231-02	BRIDGE RAMP 1.6X1.1		1		1
	S0612-5234	HYDRAULIC SC EXITRAMP 1.6		1		1
	S0612-5234-01	PUSHBUTTON SUPPORT		1		1
	S0612-5234-02	HYDRAULIC KIT		1		1
	S0612-5234-03	HYDRAULIC PUMP		1		1
	S0612-5235	JUNCTION PLATE BRIDGERAMP		1		1
	S0612-5236	MANUAL SC EXITRAMP 1.6		1		1
	S0612-5236-01	GASSPRING WITH SUPPORT		1		1
	S0612-5237	MANUAL SC EXITRAMP 3.2		1		1
	S0612-5237-01	CONNECTIONPART RAMP EMK		1		1
	S0612-5238	HYDRAULIC SC RAMP 1.6X0.6		1		1
	S0612-5239	HYDRAULIC SC EXITRAMP 3.2		1		1
	S0612-5240	BRIDGE EXIT RAMP 1.6X06		1		1

Spare Parts Masterlist			MT	SPT	MT	SPT
	S0612-5240-01	GASSPRING WITH SUPPORT		1		1
	S0612-5240-02	SWITCH BRIDGE RAMP		1		1
	S0612-5240-03	LOCKING ASSEMBLY		1		1
	S0612-5241	BRIDGE ENTR. RAMP 1.6X1.1		1		1
	S0612-5241-03	POST BRIDGE RAMP RIGHT		1		1
	S0612-5241-04	POST BRIDGE RAMP LEFT		1		1
	S0612-5242	BRIDGE EXIT RAMP 3.2		1		1
	S0612-5243	BRIDGE EXIT RAMP 0.6		1		1
	S0612-5263	RAMP SELFCARRYING 1.6X0.6		1		1
	S0612-5263-01	RAMP SC 1.6X0.6		1		1
	S0612-5263-02	THRESHOLD 1.6M		1		1
	S0702-0016	MASTGUARD MT-A			1	
	S0702-0016-01	SINGPLATE HOLDER MT			1	

Spare Parts Masterlist			MT	SPT	MT	SPT
	S0702-0019	MASTGUARD MT-A RIGHT			1	
	S0702-0025	MASTGUARD 1.6M SPT				1
	S0702-0025-01	SIGNPLATEHOLDER SPT				1
	S0702-5310	STAIRS MT	1			
	S0703-0016	MASTGUARD MT-A LEFT			1	
	S0703-0018	MASTGUARD MIDDLE CONSOLE			1	
	S0703-0027	MASTGUARD MT-B RIGHT			1	
	S0703-0028	MASTGUARD MT-B LEFT			1	
	S0703-0054	LOCKING PIN 37MM			7	2
	S0703-0074	POWERPACK SUPPORT			1	1
	S0703-0091	BRACKET FENCE POST			6	
	S0703-5357	POWERPACK SUPPORT SPT		1		
	S0703-5384	POWERPACK 11KW COMPLETE		1		

Spare Parts Masterlist			MT	SPT	MT	SPT
	S0704-0088-01	LIMIT SWITCH			2	2
	S0704-0088-02	PROXIMITY SWITCH MEDIUM			1	1
	S0705-0005	END FENCE MEDIUM			2	
	S0705-0041	CABLE EXTENDER MEDIUM			1	1
	S0705-0066	ERECTION HATCH SPT				1
	S0706-0021	BREAKE RELEASE EDD SPT			1	1
	S0706-0021-01	KIT BRAKE RELEASE SPT			1	1
	S0706-0037	MASTGUARD MT-B			1	
	S0706-0093	TOEBORD EXTENSION RIGHT			1	
	S0706-0094	TOEBORD EXTENSION LEFT			1	
	S0706-5489	TPL DRIVE UNIT COMPLETE		1		
	S0706-5489-00	DRIVE UNIT WELDING ASSY		1		
	S0706-5489-03	FLOOR PLYWOOD SPT		1		

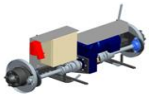
Spare Parts Masterlist			MT	SPT	MT	SPT
	S0706-5489-04	LIMITSWITCHES TPL		1		
	S0706-5489-05	BREAKE RELEASE TPL		1		
	S0706-5489-06	HINGE SUPPORT		2		
	S0706-5489-07	WIRING SUPPORT PLATE		1		
	S0706-5489-08	SECURETY PLATE		1		
	S0706-5489-10	LEVELLING SYSTEM TPL		1		
	S0706-5489-11	TANDEMROLLER SINGLE LIGHT		4		
	S0706-5489-13	PROXIMITY SWITCH TPL		1		
	S0706-5517	FRAME CABLEDRUM		1		
	S0706-5518	SUPPORT FRAME TPL900S		1		
	S0706-5518-01	FRONTAL SUPPORT		1		
	S0706-5518-02	EXTENSION SUPPORT		2		
	S0706-5519	BASEFRAME LIGHT COMPLETE	1	1		

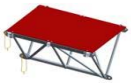
Spare Parts Masterlist			MT	SPT	MT	SPT
	S0706-5519-01	RUBBER BUFFER	2	2		
	S0706-5519-02	OUTRIGGER	4	4		
	S0706-5519-03	PIN OUTRIGGER	8	8		
	S0706-5520	BASEFRAME LIGHT SINGLE	1	1		
	S0706-5521	CABLEDRUM SYSTEM LIGHT		1		
	S0706-5521-01	CABLEDRUM		1		
	S0706-5521-02	CABLE SUPPORT LIGHT		1		
	S0706-5522	WHEEL SET	4	4		
	S0707-0009	RESET KEY SAFETY DEVICE			1	1
	S0707-0039	CONTROLBOX COMPLETE			1	
	S0707-0054	SUPPORT BEAM SPT				1
	S0707-5546	REMOVABLE BACKPANEL SPT		1		
	S0707-5547	CONTROLBOX COMPLETE		1		

Spare Parts Masterlist			MT	SPT	MT	SPT
	S0707-5552	BACKWALL 1.6 SPT		1		
	S0707-5552-01	FASTENER PLATE BACKWALL		4		
	S0707-5552-02	FASTENER PLATE BACKWALL		4		
	S0707-5569	BACKWALL 1.6 SPT		1		
	S0707-5570	REMOVABLE BACKPANEL SPT		1		
	S0708-0015	CRANE SUPPORT SPT				1
	S0708-0062	STAIRS MT			1	
	S0708-0120	BASE MAST 450			1	1
	S0708-0350-01	RACK 40X40 L=1508 M5	1	1	1	1
	S0709-0001	BRACKET GATE MC			4	
	S0709-0022	BASEFRAME MT			1	
	S0709-0023	BASEFRAME MEDIUM			1	1
	S0709-0023-01	LIFT TRUCK SUPPORT			4	4

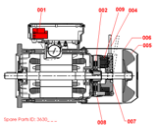
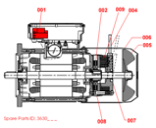
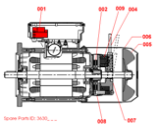
Spare Parts Masterlist			MT	SPT	MT	SPT
	S0709-0024	BASE FRAME EXTENSIONS				1
	S0709-0025	BASE FRAME EXTENSION				1
	S0709-0025-01	BASEFRAME EXTENSION				1
	S0709-0026	BASE FRAME EXTENSION				1
	S0709-0027	BASEFRAME EXTENSION 3.2				1
	S0709-0028	BASE FRAME EXTENSIONS				1
	S0709-0028-01	CONNECTION BEAM				1
	S0709-0028-02	TRANSPORT SUPPORT				1
	S0709-0029	BASE FRAME EXTENSION				1
	S0709-0037	CHASSIS MCM EXCL. SDK			1	
	S0709-0037-01	SWITCH WITH SUPPORT			1	
	S0709-0037-02	OUTRIGGER CHASSIS LEFT			2	
	S0709-0037-03	OUTRIGGER CHASSIS RIGHT			2	

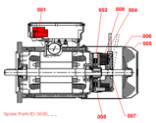
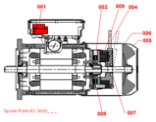
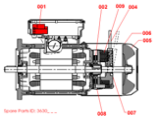
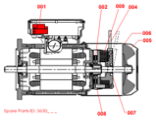
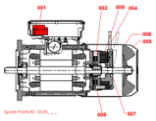
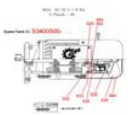
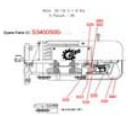
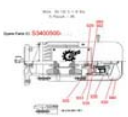
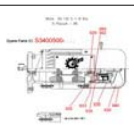
Spare Parts Masterlist			MT	SPT	MT	SPT
	S0709-0037-04	LOCKING PIN OUTRIGGER			4	
	S0709-0037-05	SCREWJACK MOBILE CHASSIS			4	
	S0709-0037-06	STEERING AXLE			1	
	S0709-0037-07	SCREWJACK IN MAST COMPL.			1	
	S0709-0037-08	HANDLE SCREWJACK IN MAST			4	
	S0709-0037-09	SOCKET CONNECTOR			1	
	S0709-0037-10	HANDLE COUPLING			1	
	7208-029	SCREWJACK IN MAST			1	
	7208-031	SLIP CLUTCH SDK MSHF			2	
	7208-032	CHAINWHEEL M4/Z50			2	
	7208-033	WHEEL MSHF/PROMAX			4	
	7508-023	LOCKING PIN			1	
	7508-160	REMOTE CONTROL SDK			1	

Spare Parts Masterlist			MT	SPT	MT	SPT
	7508-175	SUPPORT EARTHWIRE			1	
	S0709-0042	ADAPTOR PLATE MEDIUM			1	
	S0709-0053	CABLE DRUM MEDIUM				1
	S0709-0059	OUTRIGGERS EXTENSION			1	1
	S0709-0060	BASEFRAME EXTENSION 3.2				1
	S0709-0070	GROUND CONTROLE COMPLETE		2	1	2
	S0711-0030	SDK CHASSIS MCM 400V/50HZ			1	
	S0711-0033	MCC BOX		1	1	1
	S0711-0034	MCC CENTER DOOR		1	1	1
	S0711-0035	MCC HATCH		1	1	1
	S0711-0037	MCC MOUNTING PLATE		1	1	1
	S0711-0100	PROTECTION MOTOR / MCC			1	1
	S0711-0101	COVER GEARMOTOR + MCC			1	1

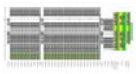
Spare Parts Masterlist			MT	SPT	MT	SPT
	S0801-0030	FRAME MOTORPROTECTION			1	1
	S0801-0090	BRAKE RESISTOR 4KW 800VDC		1	1	1
	S1013000090	LOCATING PIN	4	4		
	S1706006400	UPPER BREAKE RELEASE MT	1			
	S1706006401	LOWE BREAKE RELEASE MT	1			
	S2400-025	POST BRACKET	6			
	S3000-016	LIMIT CAM LIGHT RANGE	2	2		
	S3000-022	PLATFORMSECTION MCL 1.5M	1			
	S3000-023	PLATFORMSECTION MCL 0.8M	1			
	S3000-027	WALL EXTENSION	3			
	3000-033	PLATFORM 1.5M 30350 COMPL	1			
	3000-034	PLATFORM 0.8M 30350 COMPL	1			
	S3000-029	END GUARDRAIL MT	2			

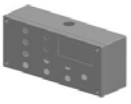
Spare Parts Masterlist			MT	SPT	MT	SPT
	S3000-053	POST FOR GATE RIGHT	1			
	S3000-054	POST FOR GATE LEFT	1			
	S3000-097	GATE MCL	1			
	S3000-097-01	SWITCH GATE MCL	1			
	S6900-015	TOOLSKIT	1	1	1	1
	S6900-016	LIMIT CAM MEDIUM			2	2
	M0611-0024	DECK MC MEDIUM/HEAVY 1.5M			1	
	M0612-0009	DECK MC MEDIUM/HEAVY 0,8M			1	
	6900-030	FENCE 1.5M	1		1	
	6900-032	FENCE 0.8M	1		1	
	S6900-031	POST	4		4	
	S6900-098	GATE MT			1	
	S6900-098-01	LOCK GATE MT			1	

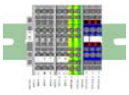
Spare Parts Masterlist			MT	SPT	MT	SPT
	S6900-098-02	SWITCH GATE MT			1	
	S6900-142	SUPPORT BEAM SPT SINGLE		2		
	S9800-005	SCREW JACK OUTRIGGER	4	4	8	8
	M0708-0350	MAST 350 SINGLE CPL	1	1		
	M0708-0355	TOPMAST 350	1	1		
	M0708-0450	MAST 450 SINGLE CPL			1	1
	M0708-0451	MAST 450 TWIN			1	1
	M0708-0455	TOPMAST 450			1	1
Motorparts						
	3630001	AC/DC RECTIFIER POS.1390	1			
	3630002	BRAKE DISC FA15 POS.1310	1			
	3630003	VENT NIPPLE	1			
	3630004	HANDRELEASELEVER POS.1360	1			

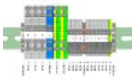
Spare Parts Masterlist			MT	SPT	MT	SPT
	3630005	FAN BN100 D28 POS.1150	1			
	3630006	FANCOVER M3L POS.1180	1			
	3630007	DC BRAKE TYPE FD POS.1300	1			
	3630008	V-RING POS.1370	1			
	3630009	BRAKE SPRINGS POS.1320	1			
	S3400500-001	CLAMP TERMINAL BOX		1	1	1
	S3400500-002	COVER H 19551895 9042		1	1	1
	S3400500-929	BEARING		1	1	1
	S3400500-932	END SHIELD B		1	1	1
	S3400500-933	SHAFT SEAL		1	1	1
	S3400500-936	BRAKE 100NM		1	1	1
	S3400500-938	BRAKE HUB		1	1	1
	S3400500-939	EXTERNAL FAN 132		1	1	1

Spare Parts Masterlist			MT	SPT	MT	SPT
	S3400500-940	FAN COVER		1	1	1
	S3400500-990	FRICTION SURFACE		1	1	1
	S3400500-992	DUST PROOF SEAL		1	1	1
	3672002	HANDRELEASELEVER SDK NORD			1	
Electro						
	SE0705-0011	POWERPACK 11KW MCC		1		
	SE0705-0011-01	POWERPACK EMPTY BOX		1	1	1
	SE0705-0011-02	VFC 11KW NORDAC U101		1		
	SE0705-0011-03	CPU 24IN 16OUT A100		1	1	1
	SE0705-0011-04	RELAIS K103		1	1	1
	SE0705-0011-05	RING KERNEL TRAFO T101		1	1	1
	SE0705-0011-06	HOUSING & SOCKET X110		1	1	1
	SE0705-0011-07	HOUSING & SOCKET X112		1	1	1

Spare Parts Masterlist			MT	SPT	MT	SPT
	SE0705-0011-08	HOUSING & SOCKET X114		1	1	1
	SE0705-0011-09	HOUSING & SOCKET X116		1	1	1
	SE0705-0011-10	HOUSING & SOCKET X130		1	1	1
	SE0705-0011-11	HOUSING & SOCKET X160		1	1	1
	SE0705-0011-12	HOUSING & SOCKET X170		1	1	1
	SE0705-0011-13	POWER INLET 400V X4		1	1	1
	SE0705-0011-14	POWER INLET 230V X7		1	1	1
	SE0705-0011-15	MAINRELAIS K101		1	1	1
	SE0705-0011-16	MAINRELAIS K102		1	1	1
	SE0705-0011-17	TERMINAL BLOCK MCC		1	1	1
	SE0705-0011-18	FILTER OUTLET B103		1	1	1
	SE0705-0011-19	HEATER WITH FAN B102		1	1	1
	SE0705-0011-20	THERMOSTATE B101		1	1	1

Spare Parts Masterlist			MT	SPT	MT	SPT
	SE0705-0011-21	AUTOMATIC FUSE BLOCK		1	1	1
	SE0705-0011-22	INTERFACE-RELAYS K107-123		1	1	1
	SE0705-0011-23	POWERSUPPLIER 24VDC N100		1	1	1
	SE0705-0015	POWERPACK 15KW MCC			1	1
	SE0705-0015-02	VFC 15KW NORDAC			1	1
	SE0705-0031	CONTROLBOX MT			1	1
	SE0705-0031-01	CONTROLBOX EMPTY BOX			1	1
	SE0705-0031-02	PUSHBUTTONS CONTOLEBOX MC			1	1
	SE0705-0031-03	EMERGENCYBUTTON S301		1	1	1
	SE0705-0031-04	CONTROLBOX LIGHTS MC			1	1
	SE0705-0031-05	KEYSWITCH S382			1	1
	SE0705-0031-06	HOUS/CONNECTOR X310			1	1
	SE0705-0031-07	TERMINAL BLOCK X300			1	1

Spare Parts Masterlist			MT	SPT	MT	SPT
	SE0705-0031-08	FLASHLIGHT + BUZZER			1	1
	SE0705-0031-09	DISPLAY OP73		1	1	1
	SE0705-0041	CONTROLBOX SPT		1	1	1
	SE0705-0041-01	CONTROLBOX EMPTY BOX		1	1	1
	SE0705-0041-02	PUSHBUTTON CONTOLEBOX SPT		1	1	1
	SE0705-0041-04	CONTROLLIGHT H443 SPT		1	1	1
	SE0705-0041-05	CPU 8XIN 6XOUT SIEMENS		1	1	1
	SE0705-0041-06	HOUSING & CONNECTOR X414		1	1	1
	SE0705-0041-07	TERMINAL BLOCK X400		1	1	1
	SE0705-0041-08	KEYPAD N401		1	1	1
	SE0705-0041-09	CABLE CONNECTORS BINDER		1	1	1
	SE0705-0042	CAGE CONTROL SPT		1	1	1
	SE0705-0052	MAINSWITCHBOX 63A		1	1	1

Spare Parts Masterlist			MT	SPT	MT	SPT
	SE0705-0052-01	MAINSWITCHBOX EMPTY BOX		1	1	1
	SE0705-0052-02	MAINSWITCH Q501		1	1	1
	SE0705-0052-04	HOUSING & CONNECTOR X514		1	1	1
	SE0705-0052-05	TERMINAL BLOCK X500		1	1	1
	SE0705-0060	LEVELBOX		1	1	1
	SE0705-0060-01	LEVELBOX EMPTY BOX		1	1	1
	SE0705-0060-02	PUSHBUTTONS LEVELBOX		1	1	1
	SE0705-0060-03	CONNECTORS 7-PENS BINDER		1	1	1
	SE0705-0060-04	EMERGENCYBUTTON S801		1	1	1
	SE0705-0075	POWERCABLE SPLITTER		1	1	1
	SE0715-0011	KIT NORD ENCODERS		1	1	1
	0200-318	REMOTE CONTROL		1	1	1
	0200-320	DROPTEST CONTROL		1	1	1

Spare Parts Masterlist			MT	SPT	MT	SPT
	E0705-0001	CONTROL CABLE 1 L=25			1	1
	E0705-0002	POWER CONNECTCABLE 2 L=15			1	1
	E0705-0004	CONTROLE CABLE 1 L=8		1	1	1
	E0705-0005	POWER CONNECTCABLE 2 L=8		1	1	1
	3008-001	MAIN PANEL 30350 / MCL	1			
USERS INFO						
	9925030	PROTECTIVE DOCUMENTBAG	1	1	1	1
	HMS95-001	MANUAL SPT GB			1	1
	HMS95-011	MANUAL MCL GB	1			
	HMS95-021	MANUAL SPT GB		1		
	S0805-0001	SIGNSKIT MCL	1			
	S0805-0101	SIGNSKIT SPT		1		
	S0805-0201	SIGNSKIT MT			1	

Spare Parts Masterlist			MT	SPT	MT	SPT
	S0805-0301	SIGNSKIT TPM				1
OPTIONALS						
	S0702-5340	Cable guide				
	S0610-5221	Roof 1.6x1.6				
	S0610-5222	Roof 1.6x3.2				
	S0610-5225	Roof 3.2x3.2				
	S0710-5600	Safety net				
	S0609-5117	Crane				
	S0607-5100	2 meter stop				
	S0609-5117	CRANE ASSEMBLY				
	S0610-5195	Stop next landing cam				
	S0702-5342	CABLE GUIDE ASSEMBLED				

Spare Parts Masterlist			MT	SPT	MT	SPT
	S0703-0106	ERECTION MODULE				
	S0703-5372	Complete tie in S3 L=2600 type 1				
	S0703-5406	ERECETION PLATFORM ASSEMBLED				
	M0706-0059	FENCE - 0.8m				
	M0706-0091	FENCE - 1.6m				
	S3000-153	MAST TY COMPLETE TYPE 3				
	S0707-0025	COMPLETE TIE R2C48-EXT600-TYPE 3				
	S0708-0043	COMPLETE TIE S3C60-PLTF16-TYPE3				
	S0708-0076	COMPLETE TIE WALL TUBE - PLFT16				
	S0708-0140	COMPLETE TIE S3C48-PLTF32-TYPE3				
	S0708-0141	TUBE & BRACKET - S3C48 - PLTF32				
	S0708-0143	TUBE & BRACKET -S3C48-PLTF32				
	S0709-0005	Complete Tie Wall Tube -PLFT16-Type3				

Spare Parts Masterlist			MT	SPT	MT	SPT
	S0709-0070	GROUND CONTROL				
	S0709-5586	JAM PROTECTION				
	S0710-5600	SAFETY NET				
	S3000-153	Tie Light				
	S3000-153-01					
	S6900-115	LANDING GATE 1.5M RIGHT				
	S0704-0057	STEP DOWN EXTENSION				