

# Installation HandBook

## Liko Overhead Lift Systems

English  
3EN680001-04  
2012-05-03





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# 1. Introduction

An overhead lift is much more than simply a lift motor. Even though the lift motor does much of the work, it has plenty of help. By an overhead lift system, we mean a whole system of components which together make it possible to lift a patient. It is an easy-to-use system that is always close at hand.

In this Installation HandBook we refer to a variety of the most common overhead system designs: straight rail systems and traverse systems for maximum load of 250 kg (550 lbs.). When the two previous mentioned system types are designed for Bariatric use with a maximum load of 400-500 kg (880-1100 lbs.) we refer to these as a Ultra system.

Installing an overhead lift system requires careful consideration. You must know the types of problems that will need to be solved, the lifting situation and how you intend to lift with the system. To facilitate installation, it is also essential to know the underlying technical conditions and prerequisites in the location where the system is to be installed. To create the optimal system, the following should be considered: > What do we wish to achieve? > Will we be lifting to one or several locations? > How much space will be needed for lifting? > How will the room be furnished? > How will installation be performed?

This handbook provides support and guidance to installation performance of Liko overhead lift systems.

**This handbook contains important information about the design criteria and installation solutions for an overhead lift system. It is important to thoroughly understand the content of the handbook. Only personnel authorized by Liko can perform site survey, install the overhead system and issue the installation certificate, all in accordance with Liko's installation instructions and this handbook.**

 is a warning triangle used for situations which require extra care and attention.

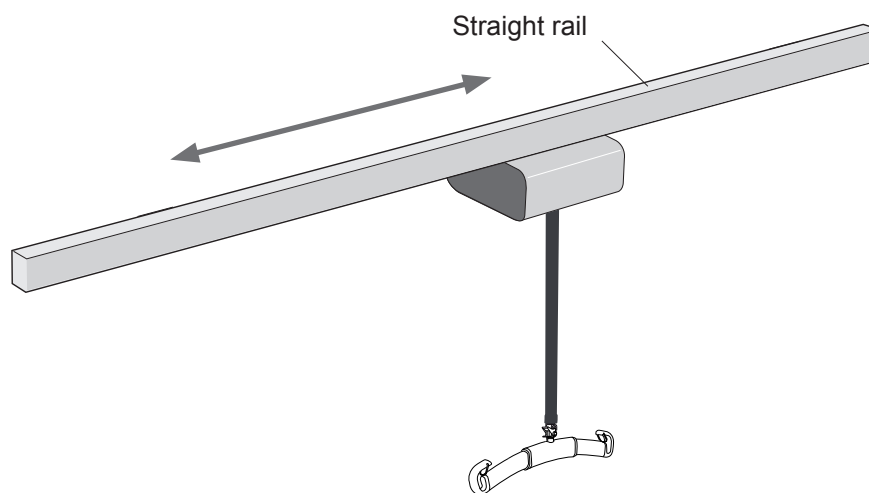
## 2. System Overview

Liko overhead lift systems are built as a *straight rail system* or a *traverse system*. A straight rail system is built of rail/rails in a line, where the lift motor can be moved in two directions.

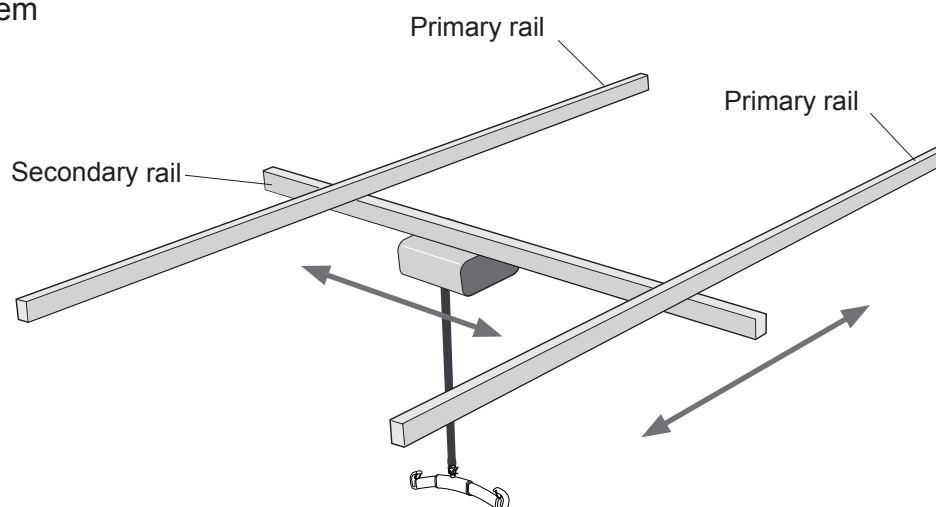
A traverse system consists of two primary rails with a secondary rail in-between. The secondary rail is connected to each primary rail with a traverse rail carrier, which is movable along the primary rails. The lift motor in a traverse system is attached to the secondary rail. In a traverse system the lift motor can be moved in four directions. See examples below.

The lifting area is defined as the area in which an overhead lift system can perform comfortable and secure lifts. For a straight rail system the lifting area is underneath the rail and stretches almost the entire length of the system. In a Traverse system the lifting area is close to the area created by the primary and secondary rails.

### Straight Rail System

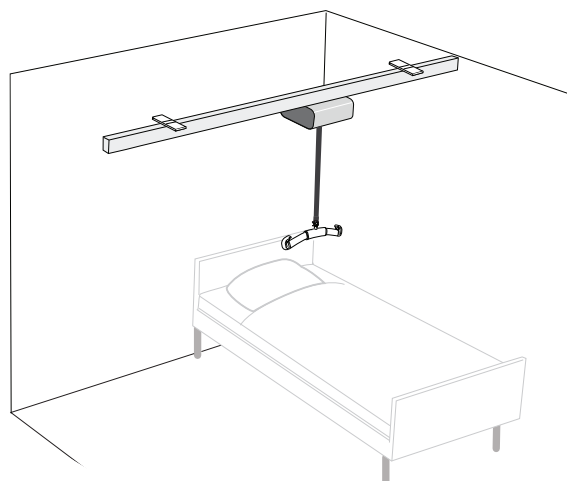


### Traverse System

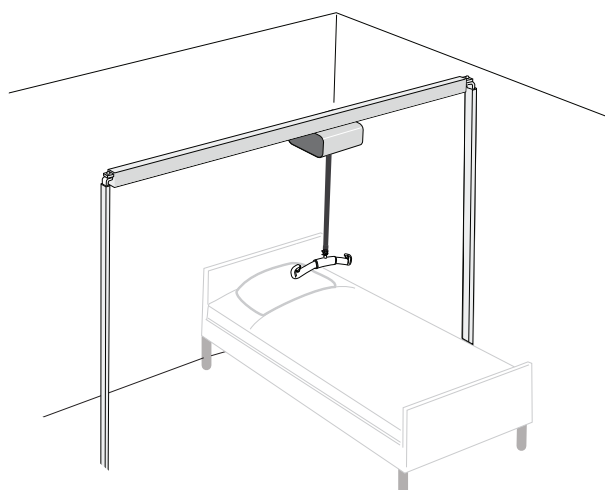
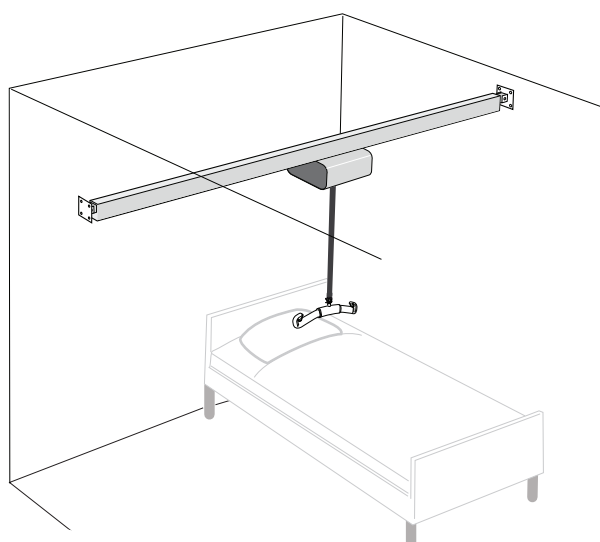


Liko overhead lift systems are installed either as a *ceiling mounted system* or a *suspended system*. A ceiling mounted system are fixed to a ceiling meanwhile a suspended system can be mounted wall to wall with wall brackets or with upright supports. Upright supports provide a floor standing, wall anchored system. See examples of the two installation principles below.

## Ceiling Mounted System

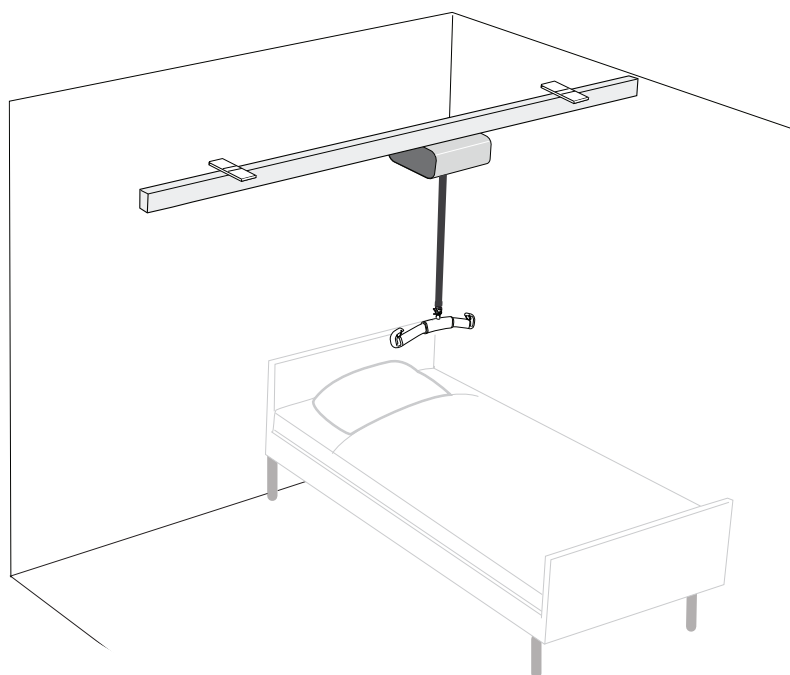


## Suspended Systems

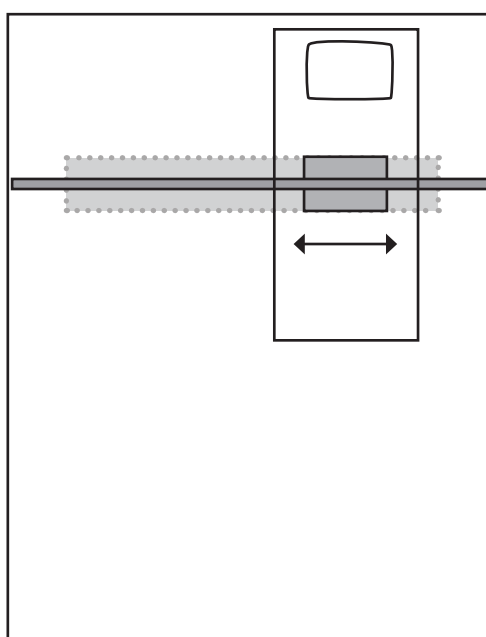


## 2.1 Ceiling Mounted System

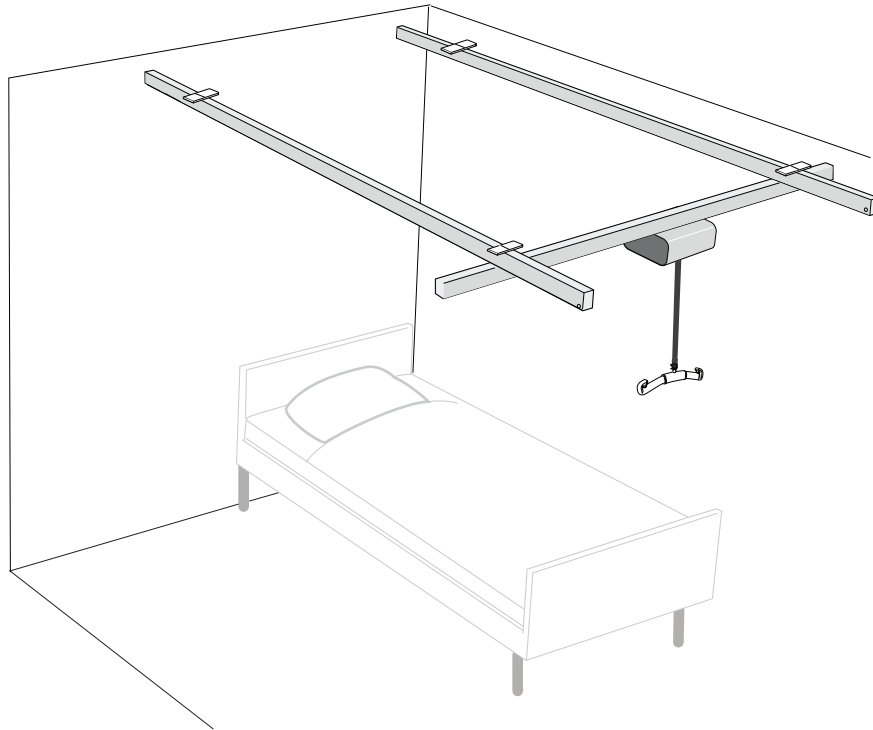
### Straight Rail



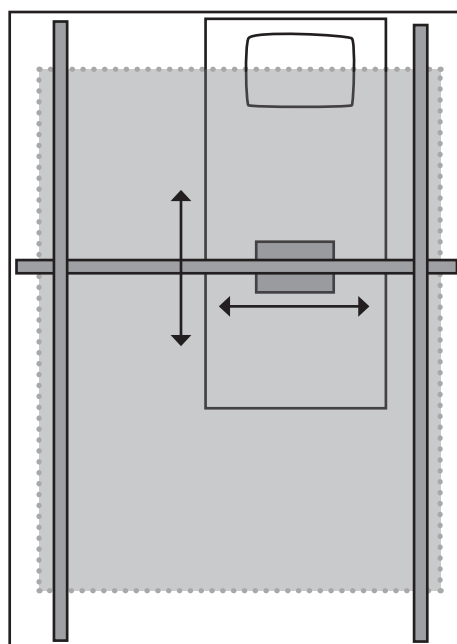
Lifting area: dotted/grey



## Traverse

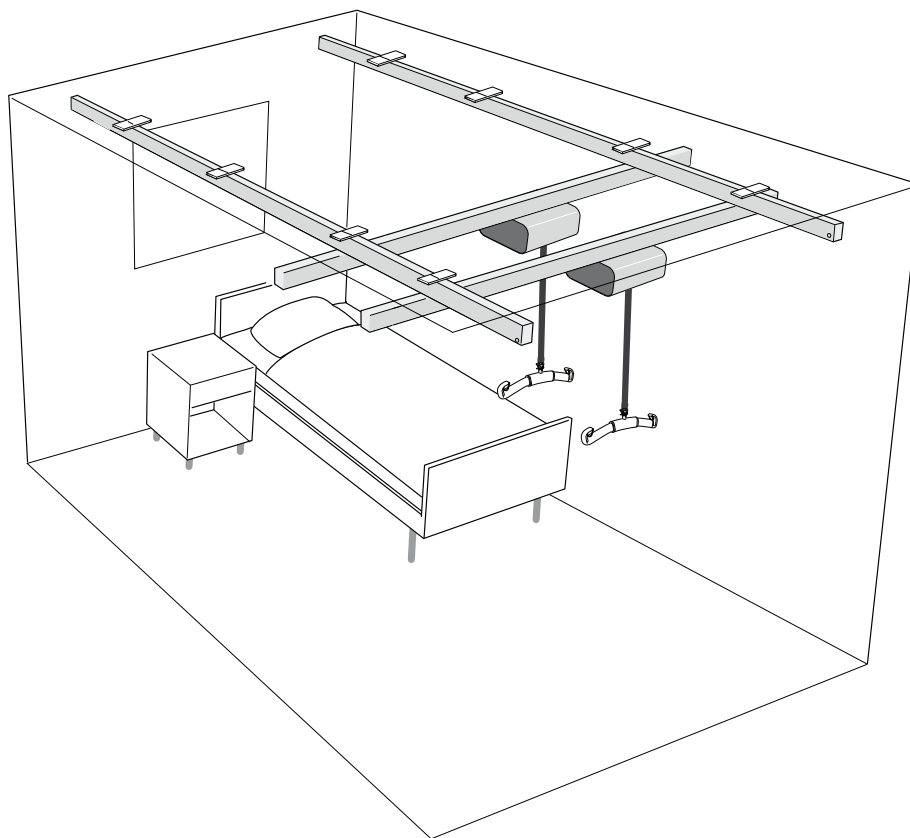


Lifting area: dotted/grey

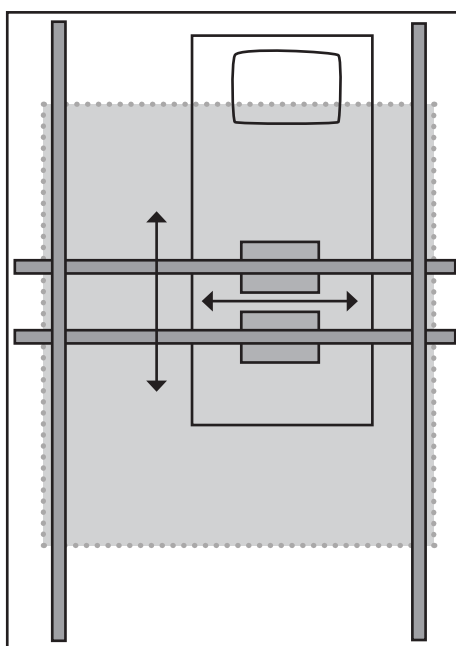




## Ultra Traverse

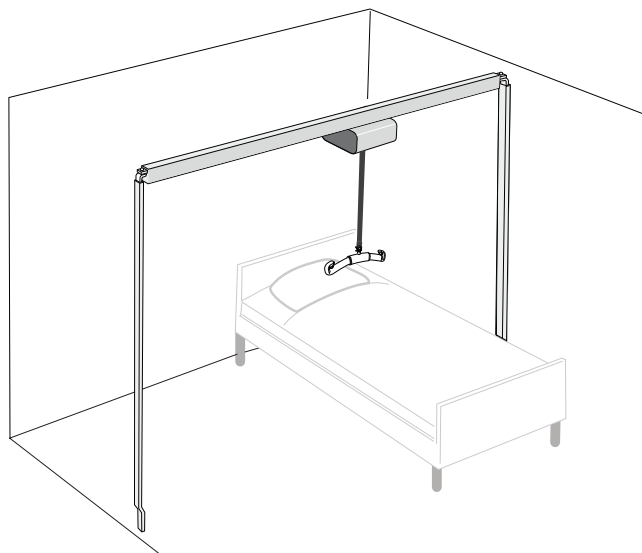
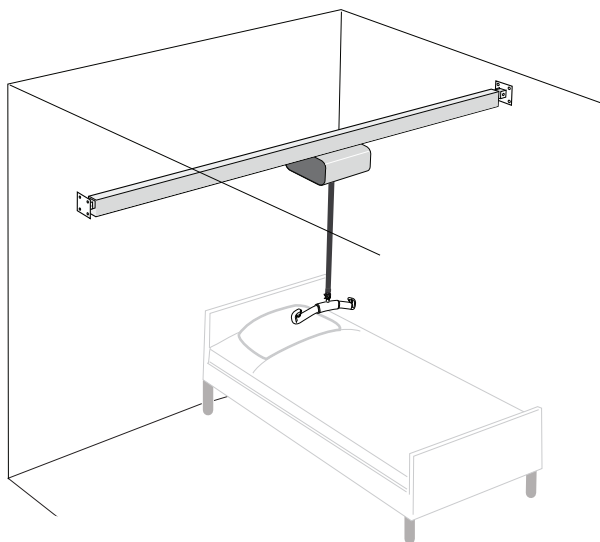


Lifting area: dotted/grey

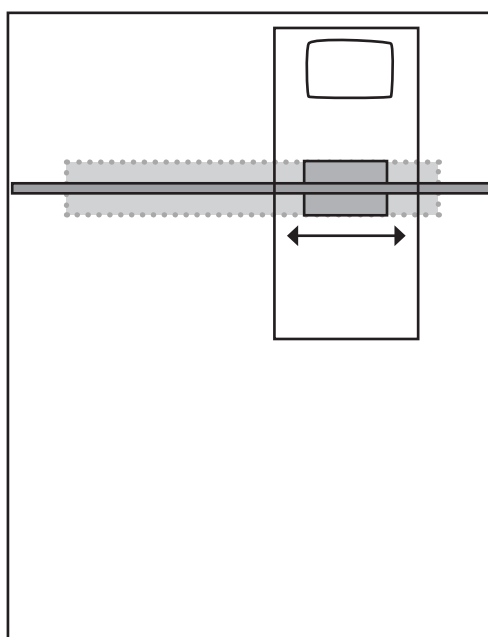


## 2.2 Suspended System

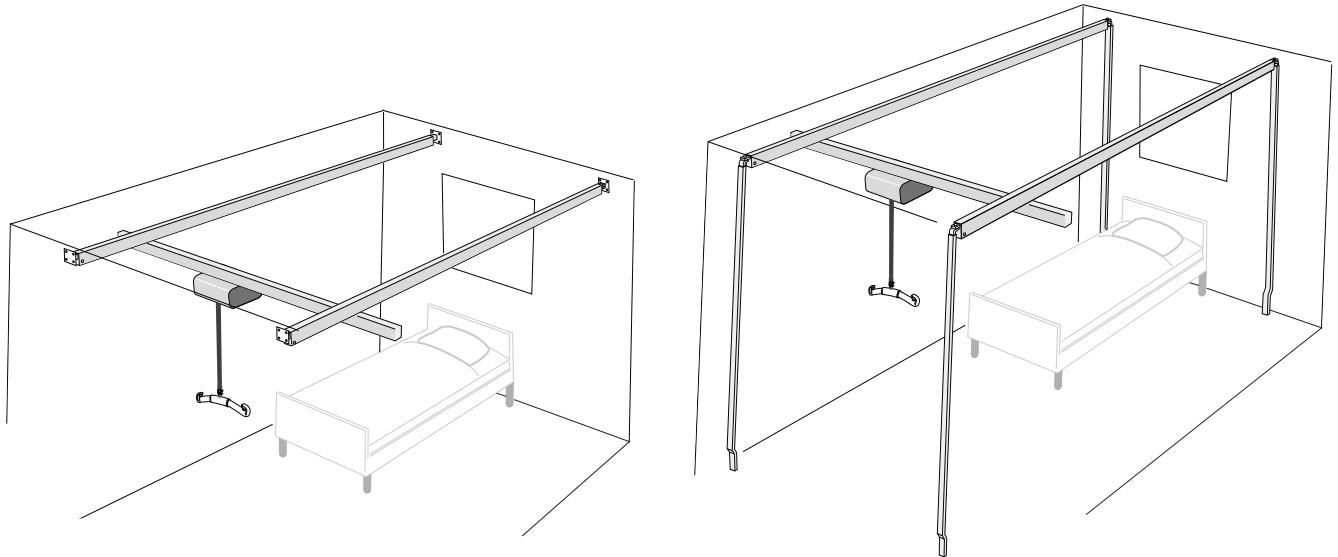
### Straight Rail



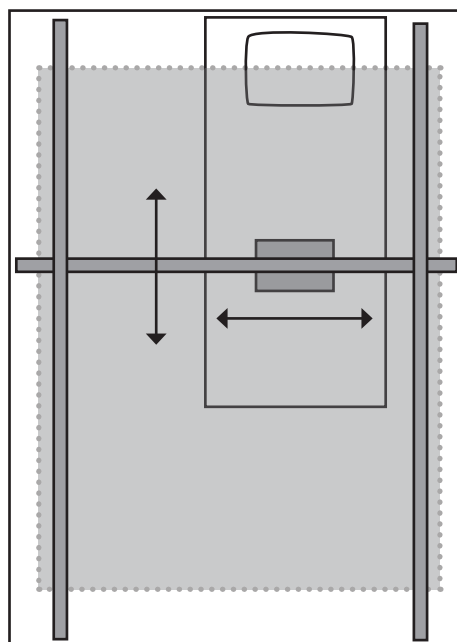
Lifting area: dotted/grey



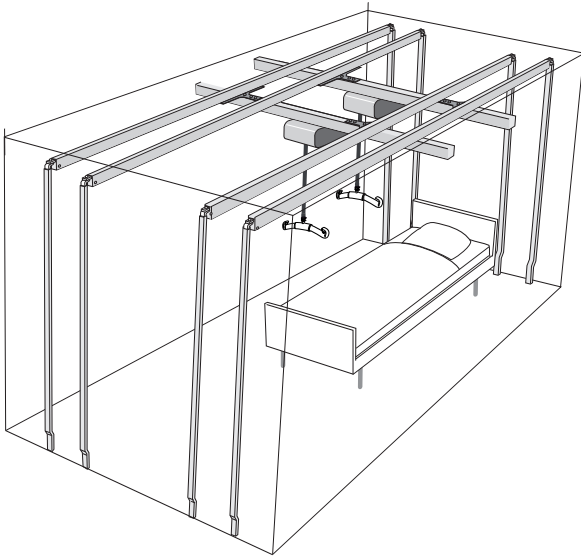
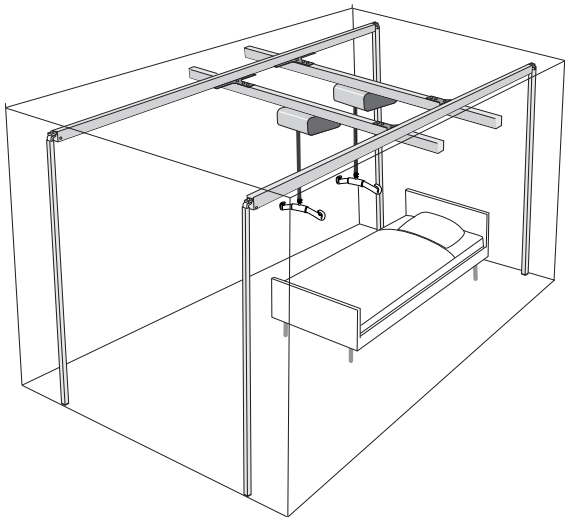
## Traverse



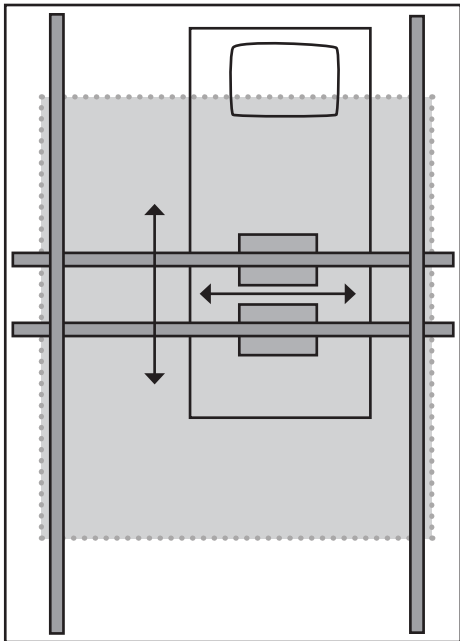
Lifting area: dotted/grey



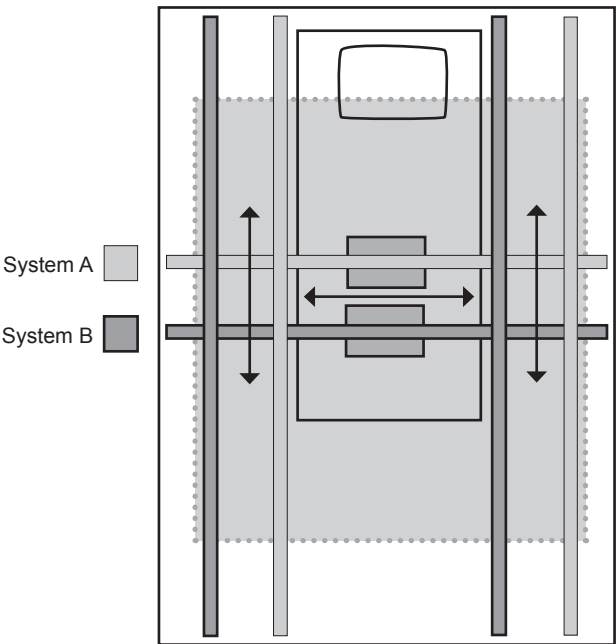
Ultra Traverse



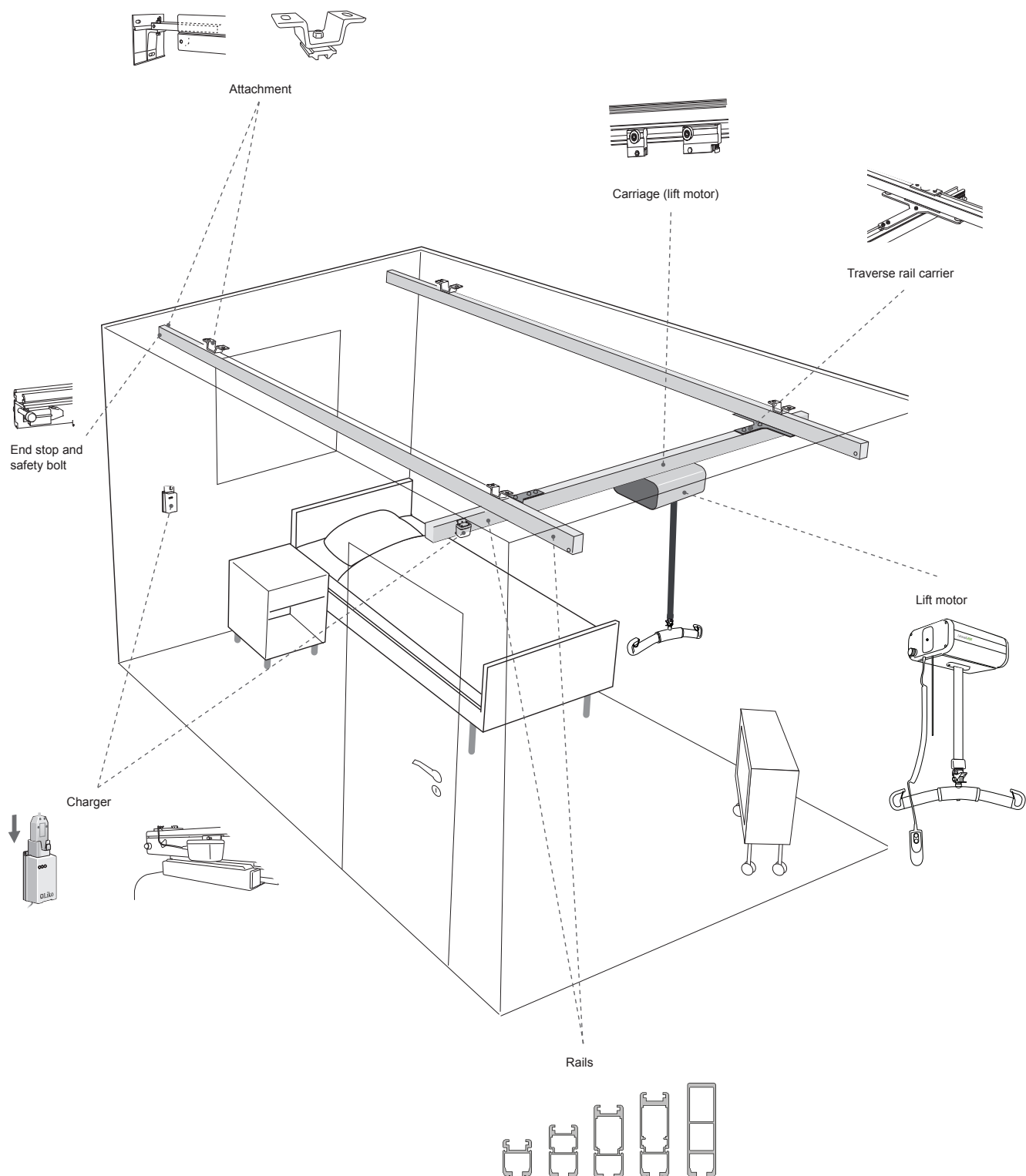
Lifting area: dotted/grey



Lifting area: dotted/grey

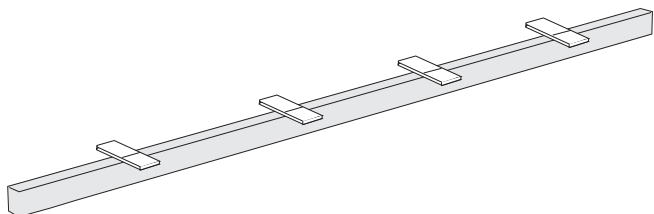


### 3. Component Overview

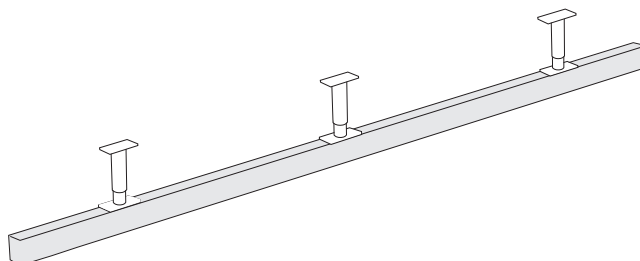


### 3.1 Attachment, Ceiling Mounted System

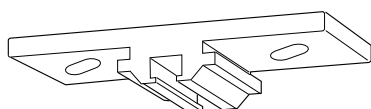
Ceiling bracket



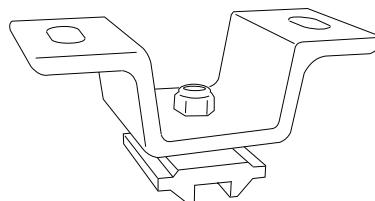
Pendant



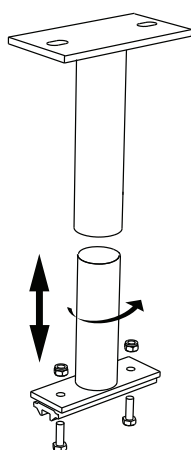
There are two different attachments for ceiling mounted systems. Ceiling brackets are developed for ceilings with no or minor obstacles for example cables. Pendants are a solution in a room with high ceiling, suspended ceiling or where ceiling mounted sprinkler systems or lamps etc. might be an obstacle.



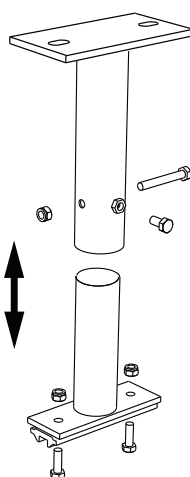
Ceiling Bracket 61



Ceiling Bracket 71



Pendant, adjustable  
(90-310 mm)



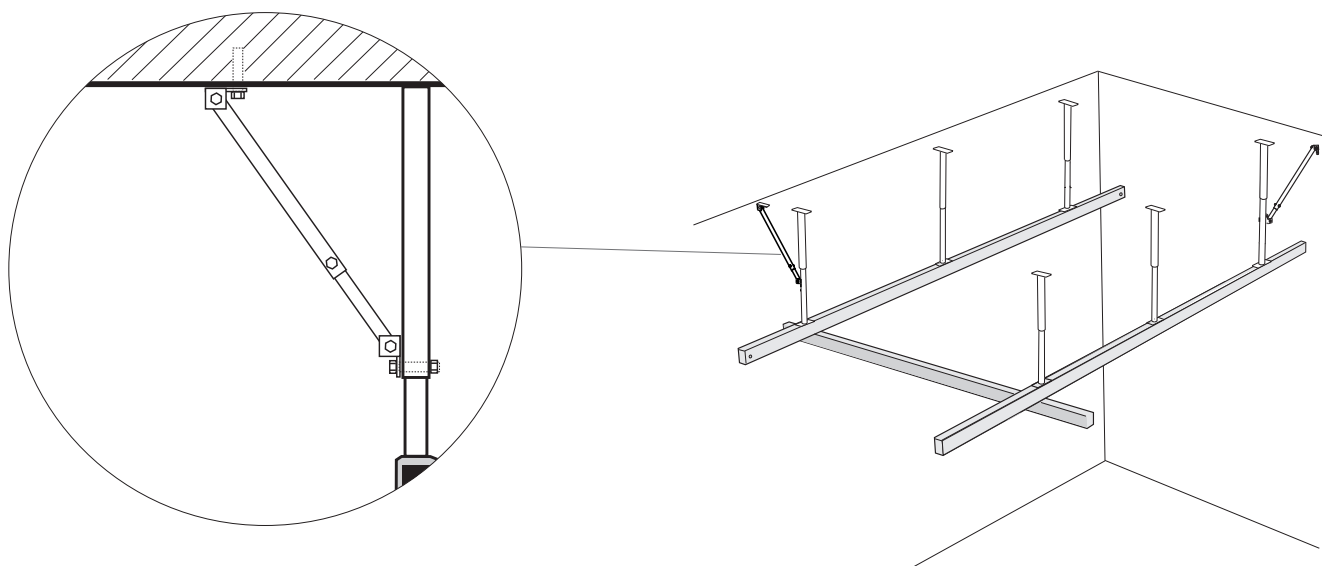
\* Pendant, adjustable  
(300-2100 mm)

*\* A system using pendants longer than 800 mm / 31½ inch. need two or more Side Supports to stabilize the system from horizontal movements.*



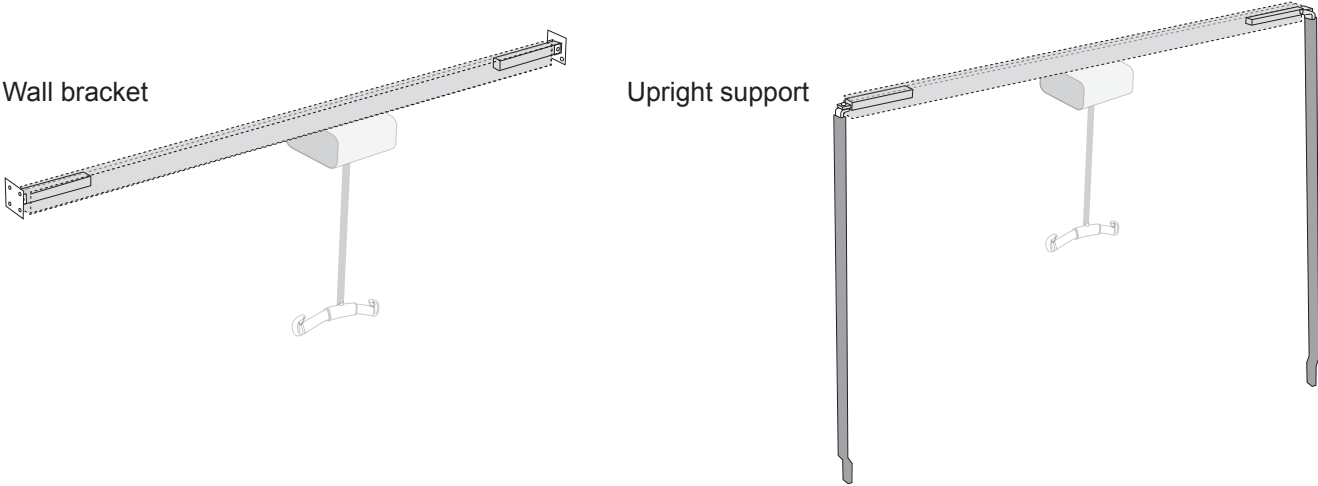
### Side Support

Side Supports stabilize the system from horizontal movements.

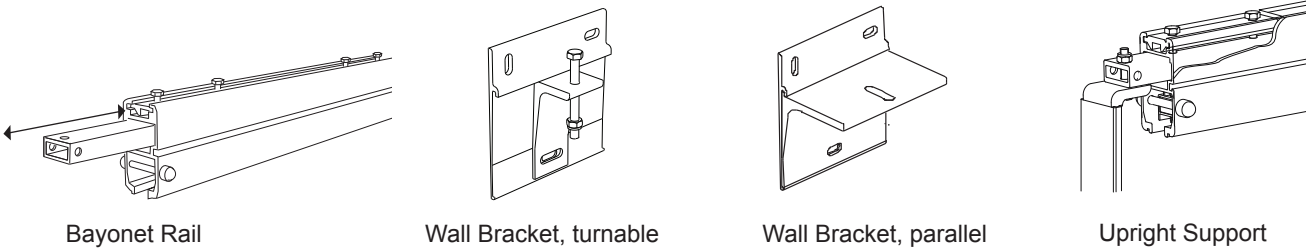


**Note! For more information regarding this product see chapter 5, Design Conditions!**

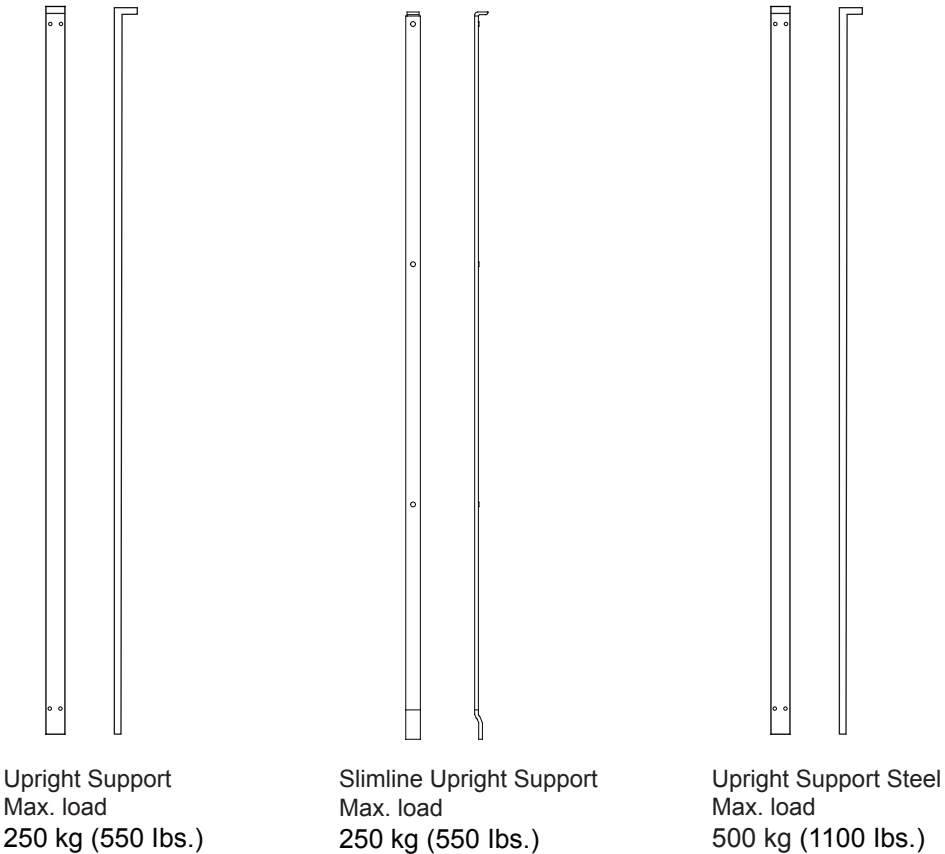
3.2 Attachment, Suspended System



Rail attachments in a suspended system are wall brackets or upright supports. For both these solutions bayonet rails are necessary as a connection between the attachments and the rail.



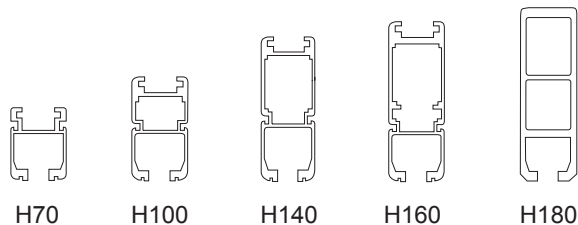
**Note! For more information regarding this product see chapter 5, Design Conditions!**





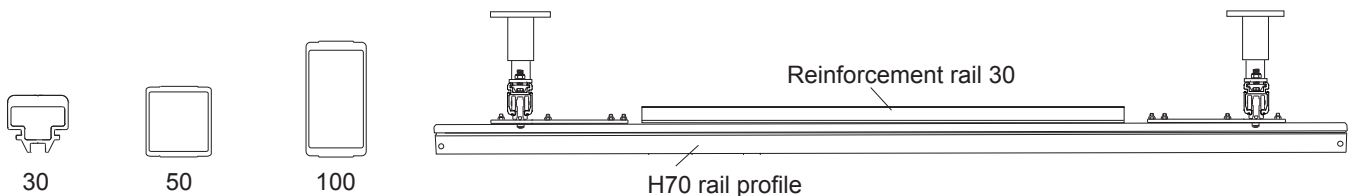
### 3.3 Rails

Liko has five different rail models and H = height in mm; H70, H100, H140, H160 and H180. The strength is related to the height (H) of the rail profile. A larger height (H) increases the strength of the rail. All rails are made out of anodised aluminium and they are available in two colors; white and nature (aluminium). These rail models are used in different combination in almost all Liko Overhead systems. Two exceptions though, the H180 rail is only for use in suspended systems and never as a Secondary rail and are available just in the colour nature. The H70 rail is not used for suspended systems only for ceiling mounted system.



Rail	Length	
<b>H70</b>	2.0 m - 5.0 m	78 Inch. - 196 Inch.
<b>H100</b>	2.0 m - 4.4 m	78 Inch. - 173 inch.
<b>H140</b>	2.8 m - 6.4 m	110 Inch. - 252 inch.
<b>H160</b>	5.4 m - 6.8 m	212 Inch. - 267 inch.
<b>H180</b>	7.8 m	307 Inch.

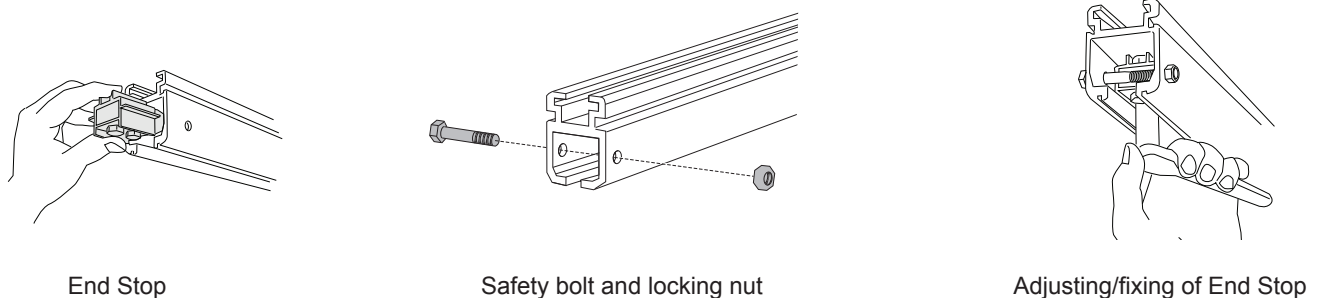
### Reinforcement rails



Reinforcement rails are used only with H70 rail profile when these are used as a Secondary rail in a traverse system. A reinforcement rail enables the maximum cc distance between the primary rails to increase. There are three different Reinforcement rail models, 30, 50, 100, all models are assembled at the top of the H70 Rail.

**Note! For more information regarding this product see chapter 5, Design Conditions!**

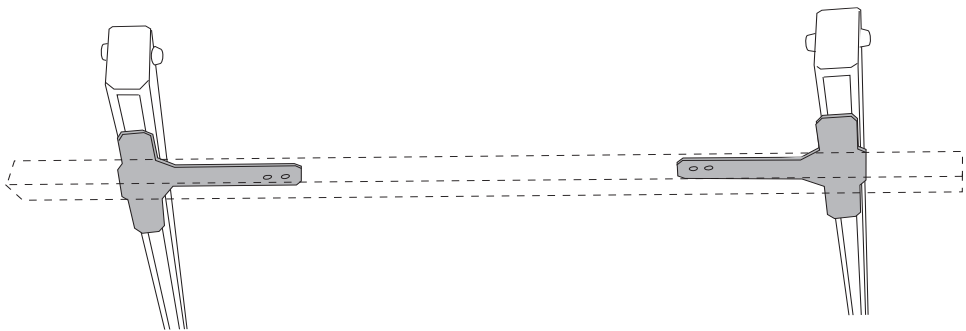
### 3.4 End Stop Set



The safety bolt is an important safety detail in an overhead system and a part of the end stop set. The safety bolt is inserted through the rail and fixed with a locking nut. All rail ends must have a safety bolt installed to secure carriages and traverse carriers to drop out of the overhead system. The end stop function is to reduce the stop motion when the lift motor comes close to the end of the rail. It's adjustable from inside of the rail and can for example be used to limit the range of the lift area.

**△ Check to ensure that the End Stops together with the safety bolts are assembled into all rail ends in the overhead rail system.**

3.5 Traverse Rail Carriers

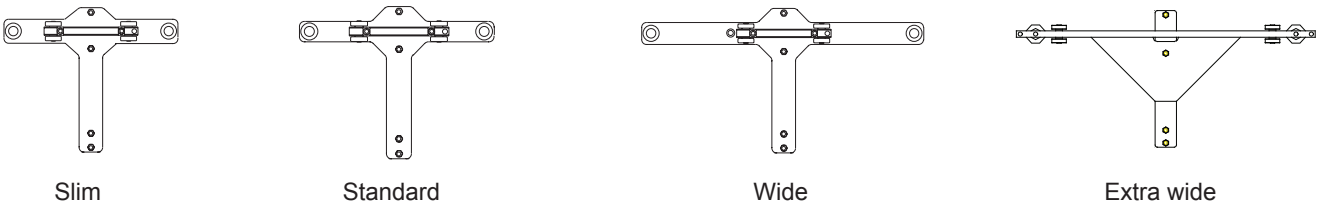


Liko has various models of traverse rail carriers for different installation solutions. It is important to choose correct width of traverse rail carriers which is based upon the distance between the primary rails in the traverse system, this in order to secure a smooth and easy movement of the secondary rail. The result of a traverse installation with traverse rail carriers that aren't wide enough is a "bumpy" asynchronous motion when moving the secondary rail.

*A rule of thumb: The longer the distance between the primary rails are the wider the traverse rail carriers should be.*

**△ Check to ensure that the End Stops together with the safety bolts are assembled into all rail ends in the overhead rail system.**

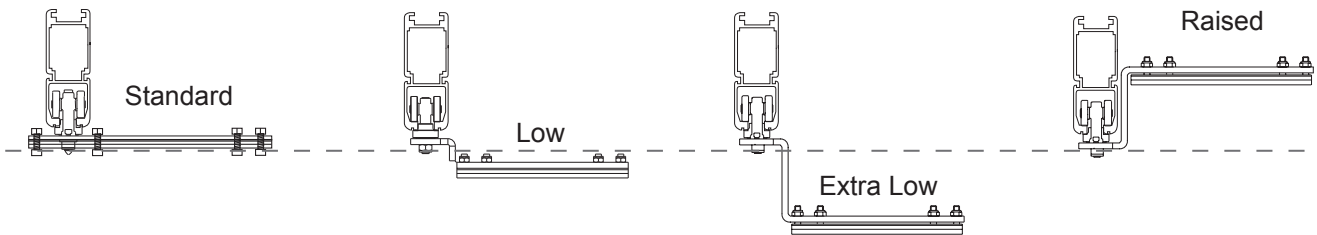
Traverse rail carriers: different in width



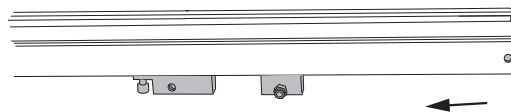
To choose correct traverse rail carrier

Traverse Rail Carrier	Distance between primary rails
Slim	≤ 2000 mm/ ≤ 78¾ inch
Standard	≤ 3000 mm/ ≤ 118 inch
Wide	≤ 4500 mm/ ≤ 177 inch
Extra Wide	≤ 6000 mm/ ≤ 232 inch

Other optional Traverse rail carriers ex. low - or raised profile.

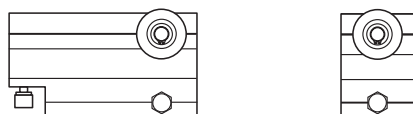


### 3.6 Carriages for Lift Motors

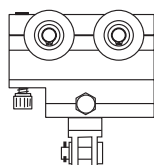
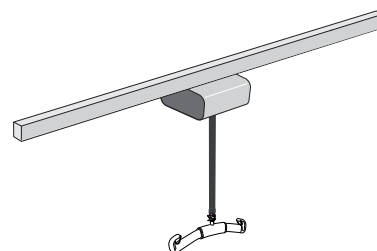


There are various models of carriages to use with Liko lift motors for instance there are carriages equipped with brake that increases the friction against the rail, thus slowing down the movement along the rail. With a Transfer Motor the movement of the lift motor along the rail is motor driven and controlled with the hand control. See examples below.

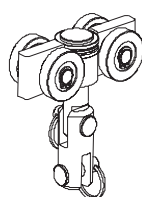
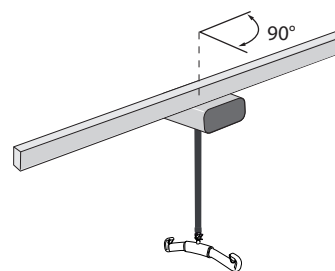
**△ Check to ensure that the End Stops together with the safety bolts are assembled into all rail ends in the overhead rail system.**



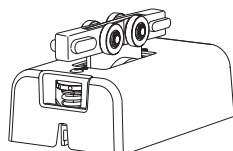
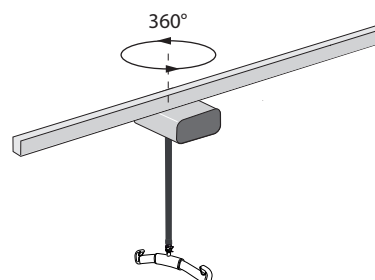
Carriage (2 piece) with brake



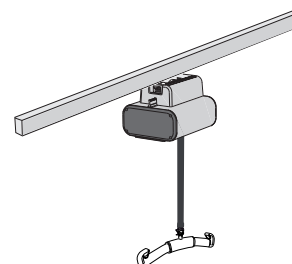
Carriage with brake for Likorall R2R  
(for 90° turning of lift motor)



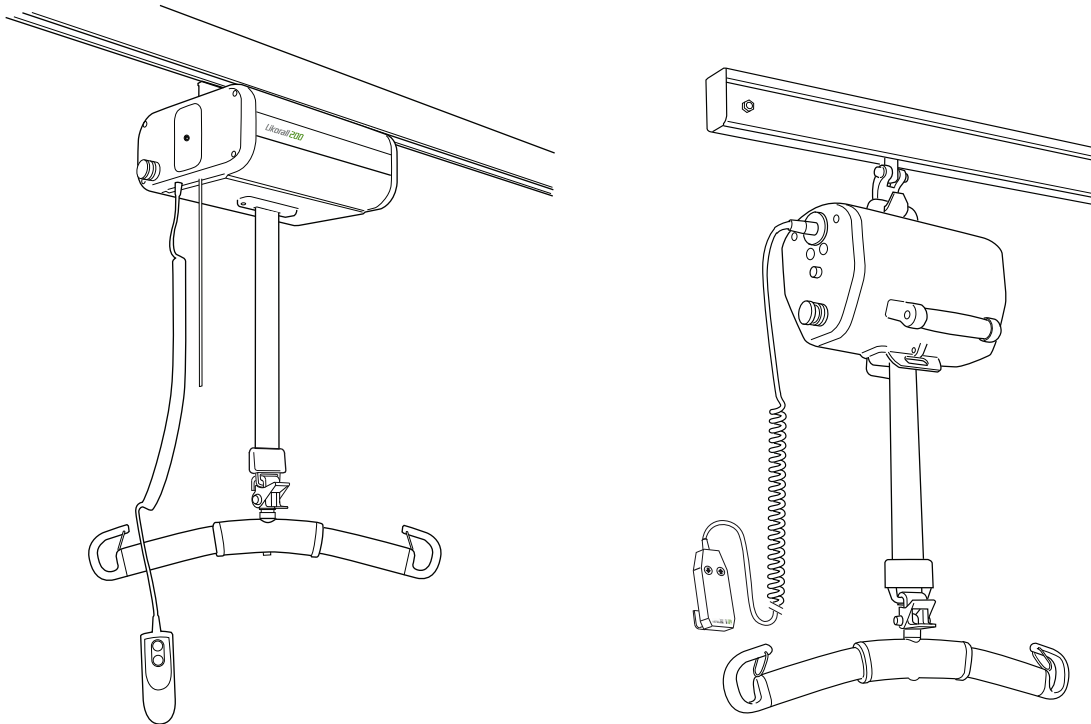
Carriage LR 360° for R2R



Transfer Motor Likorall ES



### 3.7 Lift Motor



The lift motor is mounted to a carriage. To the lift motor you can choose between a wide variety of accessories.

## 4. Fixing of Attachments

The fixing points of the installed overhead system should have a total of 4-fold tolerance compared to the highest maximum load of the system. The calculation should be on the attachment level.

### Ceiling attachments to concrete:

- must have a minimum of two fixing points.
- use M10 expander bolts or a type approved fixing component with ceiling brackets or pendants.

### Ceiling attachments to wooden beams:

- Liko's Threaded Steel Rod are approved as a single fixing.

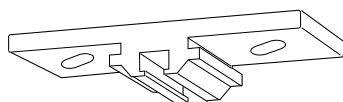
### Wall attachments to concrete:

- use M8 expander bolts or a type approved fixing component with wall brackets.

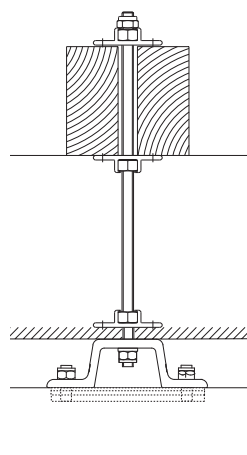
### Wall attachments to wood:

- use bolts with steel quality 8.8, at minimum.

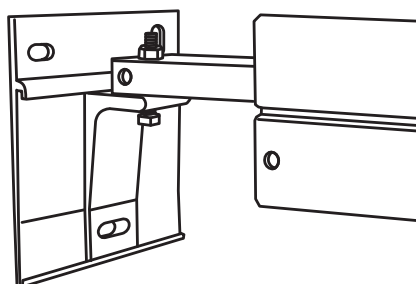
△ Fixings shall always be tighten with torque specified by the bolt manufacturer.



Ceiling bracket



Threaded Steel Rod (wooden beams)



Wall bracket

## 5. Design Conditions

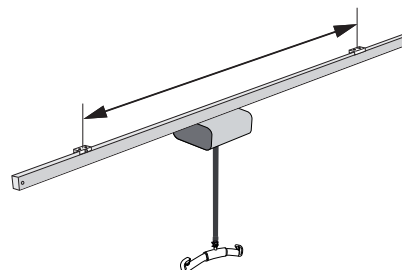
### 5.1 Ceiling Mounted Systems

**Note!** Distances varies with rail profile and the maximum load for the overhead system.

#### Straight Rail

Maximum (c/c) distance between attachment points

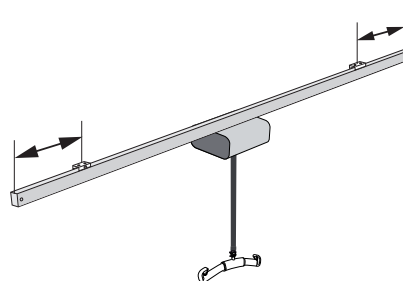
Max. load	200 kg / 440 lbs		230 kg / 507 lbs		250 kg / 550 lbs	
<b>H70</b>	2200 mm	86 inch.	2000 mm	78 inch	1500 mm	59 inch
<b>H100</b>	3300 mm	130 inch.	3000 mm	118 inch	2500 mm	98 inch
<b>H140</b>	6000 mm	236 inch.	5500 mm	216 inch	4800 mm	189 inch
<b>H160</b>	7400 mm	290 inch.	6800 mm	267 inch	5600 mm	220 inch
<b>H180</b>	(only for use as a suspended rail)					



#### Maximum distance for overhang

Overhang: distance from rail end to the centre of nearest attachment point.

Max. load	200 kg / 440 lbs		230 kg / 507 lbs		250 kg / 550 lbs	
<b>H70</b>	500 mm	20 inch.	450 mm	17 inch	350 mm	13 inch
<b>H100</b>	800 mm	31 inch.	750 mm	29 inch	600 mm	23 inch
<b>H140</b>	1000 mm	39 inch.	900 mm	35 inch	750 mm	29 inch
<b>H160</b>	1300 mm	51 inch.	1200 mm	47 inch	900 mm	35 inch
<b>H180</b>	(only for use as a suspended rail)					

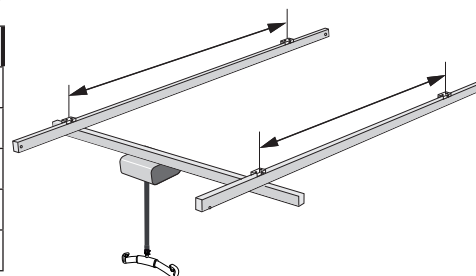


## Traverse

### Maximum (c/c) distance between attachment points

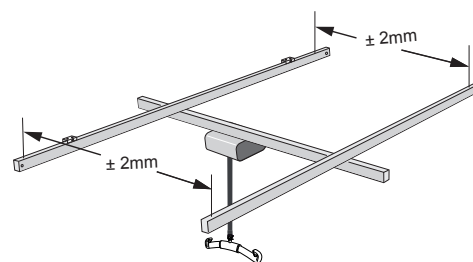
Distance varies with rail profile and the maximum load for the overhead system.

Max. load	200 kg / 440 lbs		230 kg / 507 lbs		250 kg / 550 lbs	
<b>H70</b>	2200 mm	86 inch.	2000 mm	78 inch	1500 mm	59 inch
<b>H100</b>	3300 mm	130 inch.	3000 mm	118 inch	2500 mm	98 inch
<b>H140</b>	6000 mm	236 inch.	5500 mm	216 inch	4800 mm	189 inch
<b>H160</b>	7400 mm	290 inch.	6800 mm	267 inch	5600 mm	220 inch
<b>H180</b>	(only for use as a suspended rail)					



### Maximum (c/c) distance between primary rails

Max. load	200 kg / 440 lbs		230 kg / 507 lbs		250 kg / 550 lbs	
<b>H70</b>	2200 mm	86 inch.	2000 mm	78 inch	1500 mm	59 inch
<b>H100</b>	3300 mm	130 inch.	3000 mm	118 inch	2500 mm	98 inch
<b>H140</b>	6000 mm	236 inch.	5500 mm	216 inch	4800 mm	189 inch
<b>H160</b>	7400 mm	290 inch.	6800 mm	267 inch	5600 mm	220 inch
<b>H180</b>	(only for use as a suspended rail)					



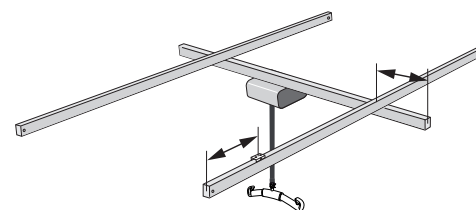
### Maximum distance for overhang

Secondary rail: distance from rail end to the center of the nearest primary rail.

Primary rail: distance from rail end to the centre of nearest attachment point.

**Note!** Measure both ends of each primary rail (4 measurements) and both ends of the secondary rail (2 measurements).

Max. load	200 kg / 440 lbs		230 kg / 507 lbs		250 kg / 550 lbs	
<b>H70</b>	500 mm	20 inch.	450 mm	17 inch	350 mm	13 inch
<b>H100</b>	800 mm	31 inch.	750 mm	29 inch	600 mm	23 inch
<b>H140</b>	1000 mm	39 inch.	900 mm	35 inch	750 mm	29 inch
<b>H160</b>	1300 mm	51 inch.	1200 mm	47 inch	900 mm	35 inch
<b>H180</b>	(only for use as a suspended rail)					

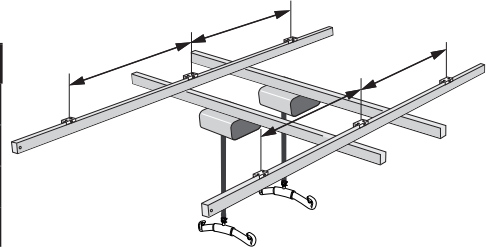


△ The distance of the secondary rail's overhang must never exceed 25 % of the distance between the primary rails.

## Ultra Traverse

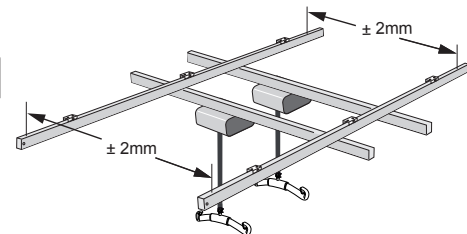
### Maximum (c/c) distance between attachment points

Max. load	400 kg / 880 lbs		460 kg / 1014 lbs		500 kg / 1100 lbs	
<b>H70</b>	1100 mm	43 inch.	1000 mm	39 inch	750 mm	29 inch
<b>H100</b>	1650 mm	65 inch.	1500 mm	59 inch	1250 mm	48 inch
<b>H140</b>	3000 mm	118 inch.	2750 mm	108 inch	2400 mm	94 inch
<b>H160</b>	3700 mm	145 inch.	3400 mm	133 inch	2800 mm	110 inch
<b>H180</b>	(only for use as a suspended rail)					



### Maximum (c/c) distance between primary rails

Max. load	400 kg / 880 lbs		460 kg / 1014 lbs		500 kg / 1100 lbs	
<b>H70</b>	2200 mm	86 inch.	2000 mm	78 inch	1500 mm	59 inch
<b>H100</b>	3300 mm	130 inch.	3000 mm	118 inch	2500 mm	98 inch
<b>H140</b>	6000 mm	236 inch.	5500 mm	216 inch	4800 mm	189 inch
<b>H160</b>	7400 mm	290 inch.	6800 mm	267 inch	5600 mm	220 inch
<b>H180</b>	(only for use as a suspended rail)					



### Maximum distance for overhang

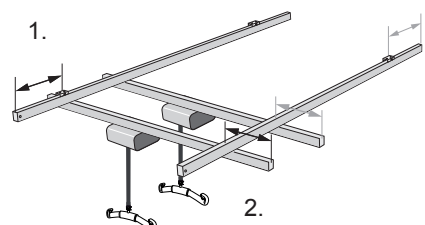
1. Overhang primary rail: distance from rail end to the centre of the nearest attachment point.  
Note! Measure both ends of each primary rail (4 measurements) in the system.  
"Max. load is total weight".
2. Overhang secondary rail: distance between secondary rail end and the centre of its nearest primary rail. Note! Measure both ends of each secondary rail (4 measurements) in the system.  
"Max. load is in each secondary rail"

1.

Max. load	400 kg / 880 lbs		460 kg / 1014 lbs		500 kg / 1100 lbs	
<b>H70</b>	250 mm	10 inch.	225 mm	8 inch	175 mm	6 inch
<b>H100</b>	400 mm	15 inch.	375 mm	14 inch	300 mm	11 inch
<b>H140</b>	500 mm	19 inch.	450 mm	17 inch	375 mm	14 inch
<b>H160</b>	650 mm	25 inch.	600 mm	23 inch	450 mm	17 inch
<b>H180</b>	(only for use as a suspended rail)					

2.

Max. load	200 kg / 440 lbs		230 kg / 507 lbs		250 kg / 550 lbs	
<b>H70</b>	500 mm	20 inch.	450 mm	17 inch	350 mm	13 inch
<b>H100</b>	800 mm	31 inch.	750 mm	29 inch	600 mm	23 inch
<b>H140</b>	1000 mm	39 inch.	900 mm	35 inch	750 mm	29 inch
<b>H160</b>	1300 mm	51 inch.	1200 mm	47 inch	900 mm	35 inch
<b>H180</b>	(only for use as a suspended rail)					



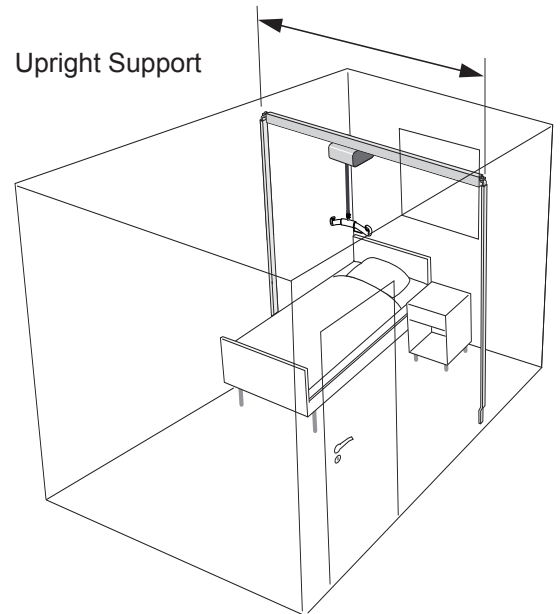
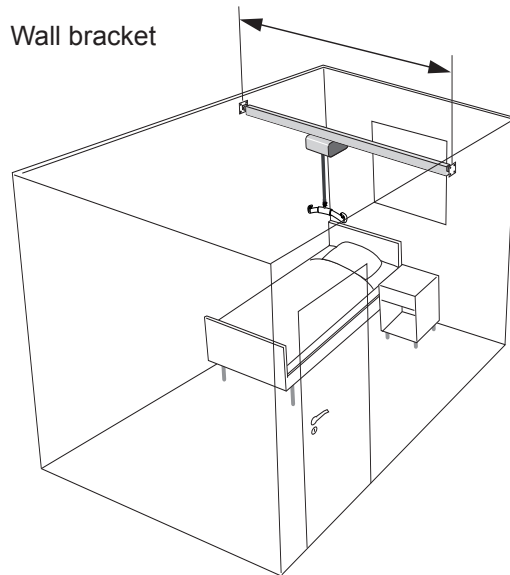
△ The distance of the secondary rail's overhang must never exceed 25 % of the distance between the primary rails.



## 5.2 Suspended Systems

**Note!** Distances varies with rail profile and the maximum load for the overhead system.

### Straight Rail



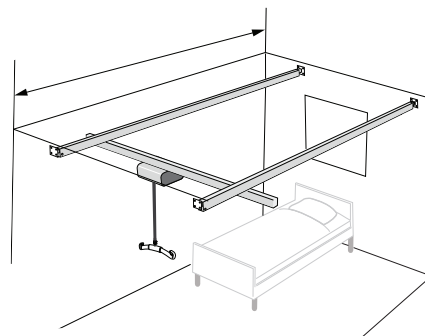
### Maximum distance between walls

Max. load	200 kg / 440 lbs		230 kg / 507 lbs		250 kg / 550 lbs	
<b>H100</b>	3300 mm	130 inch.	3000 mm	118 inch	2500 mm	98 inch
<b>H140</b>	6000 mm	236 inch.	5500 mm	216 inch	4800 mm	189 inch
<b>H160</b>	7400 mm	290 inch.	6800 mm	267 inch	5600 mm	220 inch
<b>H180</b>	8600 mm	338 inch.	8000 mm	315 inch	6500 mm	256 inch

## Traverse - Wallbrackets

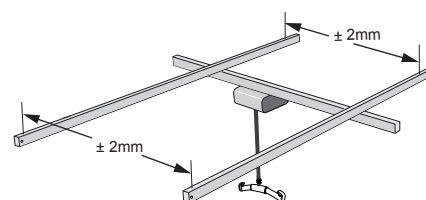
### Maximum distance between walls

Max. load	200 kg / 440 lbs		230 kg / 507 lbs		250 kg / 550 lbs	
<b>H100</b>	3300 mm	130 inch.	3000 mm	118 inch	2500 mm	98 inch
<b>H140</b>	6000 mm	236 inch.	5500 mm	216 inch	4800 mm	189 inch
<b>H160</b>	7400 mm	290 inch.	6800 mm	267 inch	5600 mm	220 inch
<b>H180</b>	8600 mm	338 inch.	8000 mm	315 inch	6500 mm	256 inch



### Maximum c/c distance between primary rails

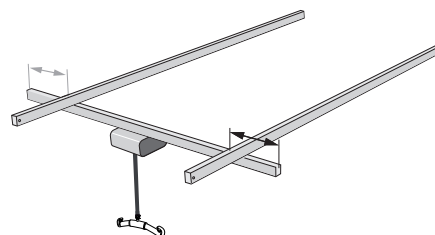
Max. load	200 kg / 440 lbs		230 kg / 507 lbs		250 kg / 550 lbs	
<b>H70</b>	2200 mm	86 inch.	2000 mm	78 inch	1500 mm	59 inch
<b>H100</b>	3300 mm	130 inch.	3000 mm	118 inch	2500 mm	98 inch
<b>H140</b>	6000 mm	236 inch.	5500 mm	216 inch	4800 mm	189 inch
<b>H160</b>	7400 mm	290 inch.	6800 mm	267 inch	5600 mm	220 inch



### Maximum distance for overhang

Overhang secondary rail: distance between secondary rail end and the centre of its nearest primary rail. Measure both ends of the secondary rail in the system.

Max. load	200 kg / 440 lbs		230 kg / 507 lbs		250 kg / 550 lbs	
<b>H70</b>	500 mm	20 inch.	450 mm	17 inch	350 mm	13 inch
<b>H100</b>	800 mm	31 inch.	750 mm	29 inch	600 mm	23 inch
<b>H140</b>	1000 mm	39 inch.	900 mm	35 inch	750 mm	29 inch
<b>H160</b>	1300 mm	51 inch.	1200 mm	47 inch	900 mm	35 inch

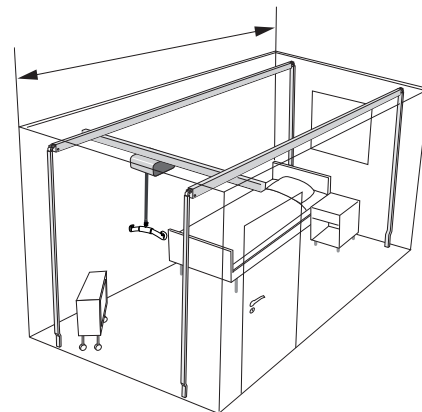


△ The distance of the secondary rail's overhang must never exceed 25 % of the distance between the primary rails.

## Traverse - Upright Supports

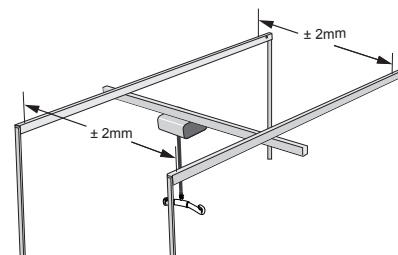
### Maximum distance between walls

Max. load	200 kg / 440 lbs		230 kg / 507 lbs		250 kg / 550 lbs	
<b>H100</b>	3300 mm	130 inch.	3000 mm	118 inch	2500 mm	98 inch
<b>H140</b>	6000 mm	236 inch.	5500 mm	216 inch	4800 mm	189 inch
<b>H160</b>	7400 mm	290 inch.	6800 mm	267 inch	5600 mm	220 inch
<b>H180</b>	8600 mm	338 inch.	8000 mm	315 inch	6500 mm	256 inch



### Maximum c/c distance between primary rails

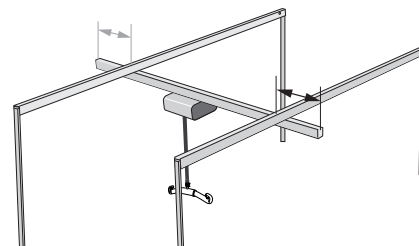
Max. load	200 kg / 440 lbs		230 kg / 507 lbs		250 kg / 550 lbs	
<b>H70</b>	2200 mm	86 inch.	2000 mm	78 inch	1500 mm	59 inch
<b>H100</b>	3300 mm	130 inch.	3000 mm	118 inch	2500 mm	98 inch
<b>H140</b>	6000 mm	236 inch.	5500 mm	216 inch	4800 mm	189 inch
<b>H160</b>	7400 mm	290 inch.	6800 mm	267 inch	5600 mm	220 inch



### Maximum distance for overhang

Overhang secondary rail: distance between secondary rail end and the centre of its nearest primary rail. Measure both ends of the secondary rail in the system.

Max. load	200 kg / 440 lbs		230 kg / 507 lbs		250 kg / 550 lbs	
<b>H70</b>	500 mm	20 inch.	450 mm	17 inch	350 mm	13 inch
<b>H100</b>	800 mm	31 inch.	750 mm	29 inch	600 mm	23 inch
<b>H140</b>	1000 mm	39 inch.	900 mm	35 inch	750 mm	29 inch
<b>H160</b>	1300 mm	51 inch.	1200 mm	47 inch	900 mm	35 inch



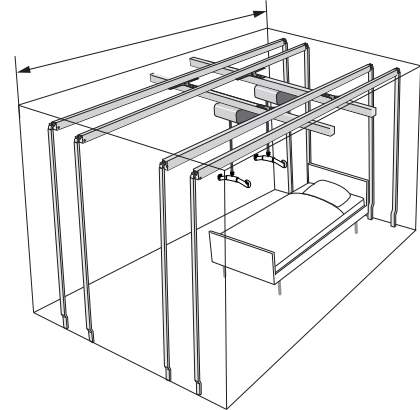
△ The distance of the secondary rail's overhang must never exceed 25 % of the distance between the primary rails.

## Ultra Traverse - Upright Supports

Note! Installed with upright supports, max. load 250 kg/550 lbs.

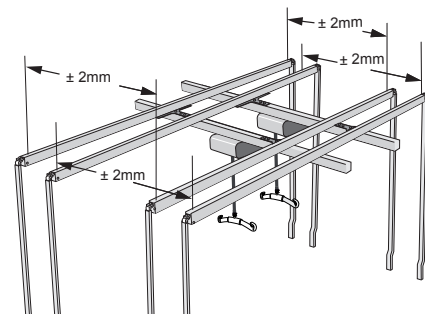
### Maximum distance between walls

Max. load	400 kg / 880 lbs		460 kg / 1014 lbs		500 kg / 1100 lbs	
<b>H100</b>	3300 mm	130 inch.	3000 mm	118 inch	2500 mm	98 inch
<b>H140</b>	6000 mm	236 inch.	5500 mm	216 inch	4800 mm	189 inch
<b>H160</b>	7400 mm	290 inch.	6800 mm	267 inch	5600 mm	220 inch
<b>H180</b>	8600 mm	338 inch.	8000 mm	315 inch	6500 mm	256 inch



### Maximum c/c distance between primary rails

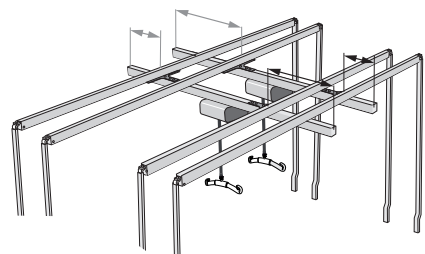
Max. load	400 kg / 880 lbs		460 kg / 1014 lbs		500 kg / 1100 lbs	
<b>H70</b>	2200 mm	86 inch.	2000 mm	78 inch	1500 mm	59 inch
<b>H100</b>	3300 mm	130 inch.	3000 mm	118 inch	2500 mm	98 inch
<b>H140</b>	6000 mm	236 inch.	5500 mm	216 inch	4800 mm	189 inch
<b>H160</b>	7400 mm	290 inch.	6800 mm	267 inch	5600 mm	220 inch



### Maximum distance for overhang

Secondary rail: distance from secondary rail end to the center of the nearest primary rail.  
Measure both ends of the secondary rail in each system.

Max. load	200 kg / 440 lbs		230 kg / 507 lbs		250 kg / 550 lbs	
<b>H70</b>	500 mm	20 inch.	450 mm	17 inch	350 mm	13 inch
<b>H100</b>	800 mm	31 inch.	750 mm	29 inch	600 mm	23 inch
<b>H140</b>	1000 mm	39 inch.	900 mm	35 inch	750 mm	29 inch
<b>H160</b>	1300 mm	51 inch.	1200 mm	47 inch	900 mm	35 inch



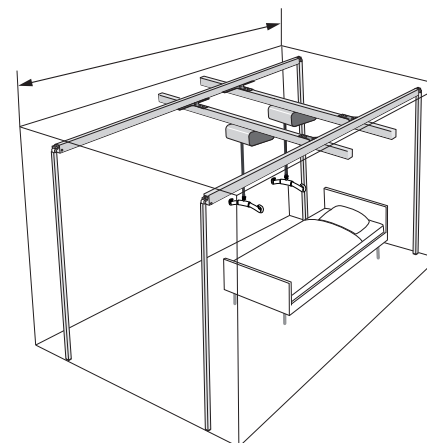
△ The distance of the secondary rail's overhang must never exceed 25 % of the distance between the primary rails.

## Ultra Traverse - Upright Supports

Note! Installed with upright supports steel, max. load 500 kg/1100 lbs.

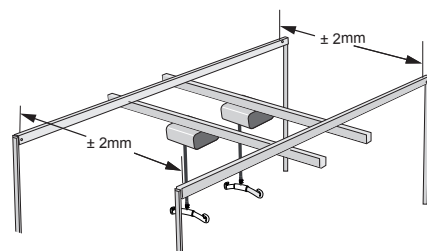
### Maximum distance between walls

Max. load	400 kg / 880 lbs		460 kg / 1014 lbs		500 kg / 1100 lbs	
<b>H100</b>	1650 mm	65 inch	1500 mm	59 inch	1250 mm	48 inch
<b>H140</b>	3000 mm	118 inch	2750 mm	108 inch	2400 mm	94 inch
<b>H160</b>	3700 mm	146 inch	3400 mm	133 inch	2800 mm	110 inch
<b>H180</b>	4400 mm	173 inch	4000 mm	157 inch	3250 mm	128 inch



### Maximum c/c distance between primary rails

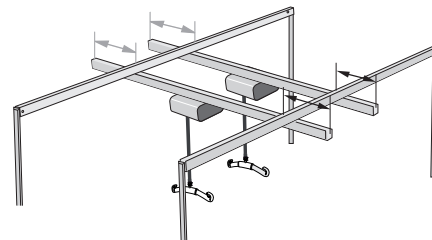
Max. load	400 kg / 880 lbs		460 kg / 1014 lbs		500 kg / 1100 lbs	
<b>H70</b>	2200 mm	86 inch.	2000 mm	78 inch	1500 mm	59 inch
<b>H100</b>	3300 mm	130 inch.	3000 mm	118 inch	2500 mm	98 inch
<b>H140</b>	6000 mm	236 inch.	5500 mm	216 inch	4800 mm	189 inch
<b>H160</b>	7400 mm	290 inch.	6800 mm	267 inch	5600 mm	220 inch



### Maximum distance for overhang

Secondary rail: distance from secondary rail end to the center of the nearest primary rail.  
Measure both ends of secondary rails in the system.

Max. load	200 kg / 440 lbs		230 kg / 507 lbs		250 kg / 550 lbs	
<b>H70</b>	500 mm	20 inch.	450 mm	17 inch	350 mm	13 inch
<b>H100</b>	800 mm	31 inch.	750 mm	29 inch	600 mm	23 inch
<b>H140</b>	1000 mm	39 inch.	900 mm	35 inch	750 mm	29 inch
<b>H160</b>	1300 mm	51 inch.	1200 mm	47 inch	900 mm	35 inch



△ The distance of the secondary rail's overhang must never exceed 25 % of the distance between the primary rails.

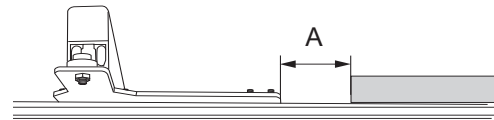
## 5.3 Reinforcement rail

Reinforcement rails are only for use with the H70 profile and only when the rail has the function as a secondary rail in a traverse system. The reinforcement rail increase the maximum c/c distance between the primary rails according to a specific table for each model, 30, 50, 100.

### Reinforcement rail 30

Maximum c/c distance between primary rails

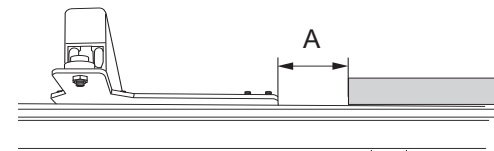
Max. load	230 kg / 507 lbs		250 kg / 550 lbs		Reinforcement rail lenght ( L )
H70	2000 - 2500 mm	78 - 98 inch.	2000 - 2420 mm	78 - 94 inch.	L = 1450 mm (57 inch.)
A max	260 mm	10.23 inch.	210 mm	8.26 inch.	



### Reinforcement rail 50

Maximum c/c distance between primary rails

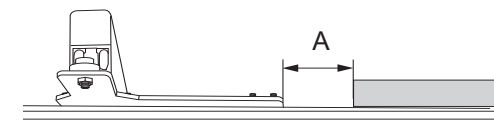
Max. load	230 kg / 507 lbs		250 kg / 550 lbs		Reinforcement rail lenght ( L )
H70	2500 - 3000 mm	98 - 118 inch.	2500 - 2920 mm	98 - 115 inch.	L = 1950 mm (77 inch.)
A max	260 mm	10.23 inch.	210 mm	8.26 inch.	



### Reinforcement rail 100

Maximum c/c distance between primary rails

Max. load	230 kg / 507 lbs		250 kg / 550 lbs		Reinforcement rail lenght ( L )
H70	2920 - 3430 mm	114 - 135 inch.	2920 - 3330 mm	114 - 131 inch.	L = 2400 mm (95 inch.)
H70	3420 - 3930 mm	134 - 154 inch.	3420 - 3830 mm	134 - 150 inch.	L = 2900 mm (114 inch.)
H70	3920 - 4430 mm	154 - 174 inch.	3920 - 4330 mm	154 - 170 inch.	L = 3400 mm (134 inch.)
H70	4420 - 4930 mm	174 - 194 inch.	4420 - 4830 mm	174 - 190 inch.	L = 3900 mm (154 inch.)
A max	250 mm	9.84 inch.	200 mm	7.84 inch.	



## 5.4 Bayonet rail

In a suspended system Bayonet rails (incl. mounting kit) must always be fitted between the rail and the wall brackets or the rail and the upright supports.

When mounting a system to bayonet rails, a correct length of both the Bayonet rails and the other rails being used (straight- or primary ) are of great importance for a correct and secure installation. See calculation formula below.

The correct rail length, when using Bayonet rails:

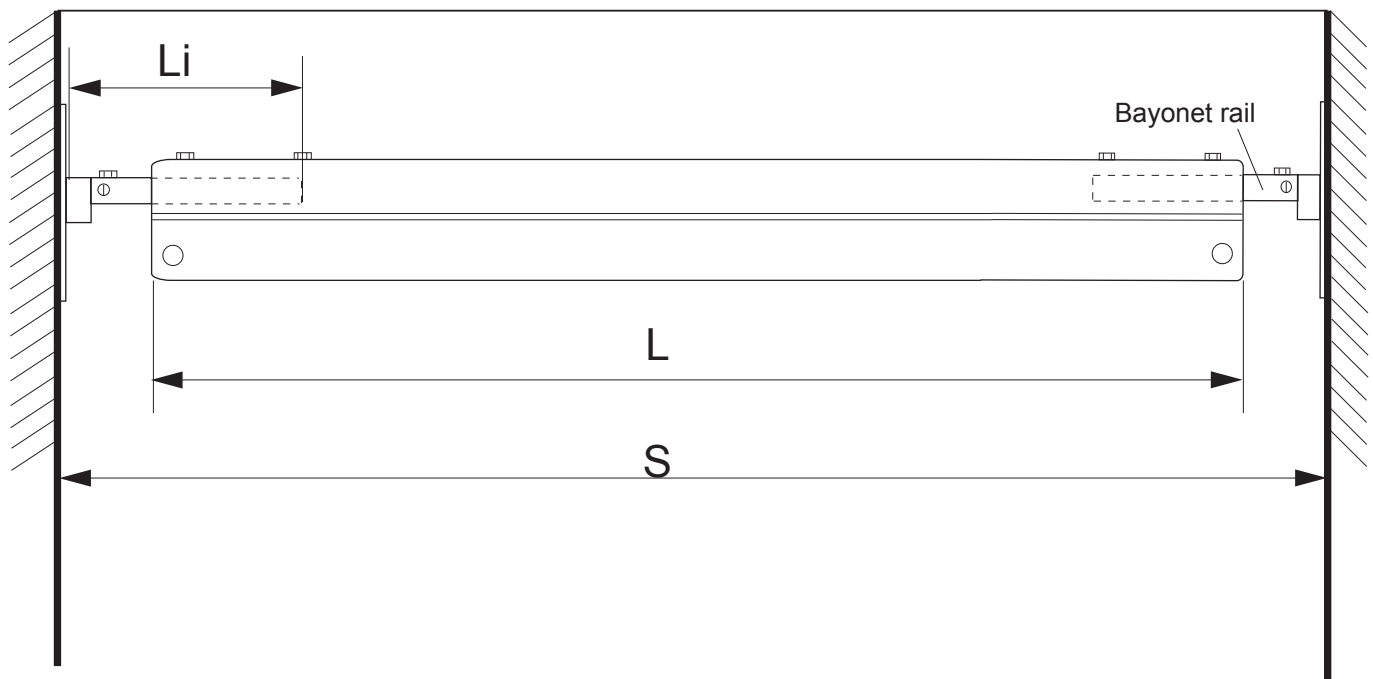
Maximum Rail length:  $L_{\max} = S - 100 \text{ mm (4 inch.)}$

Minimum Rail length:  $L_{\min} = S - L_i + 100 \text{ mm (4 inch.)}$

$L_i$  = Bayonet rail length (see product list)






$L$  = Rail length

$S$  = Span



## 5.5 Side Support positioning

### Definition of Illustrated components:

Side Support	→	Rail Curve 90°		Traverse Switch	
Straight rail / primary rail	—	Rail Curve 45°		Side rail Switch	
Secondary rail	—			Turn table	
Pendant	○				

### Straight rails and Traverse system

Length of pendant < 800 mm, (< 31 ½ inch.): **No need of side supports.**

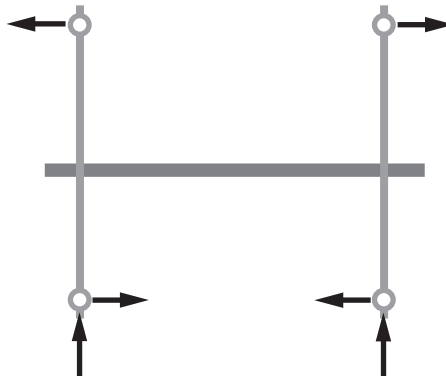
Length of pendant 800 > 1500 mm, (31 ½ inch > 60 inch.)

- **Side supports** should be mounted to the first and the last pendant and in between those to every third pendant positioned perpendicular to the rail in a Straight rail system and to both primary rails in a Traverse system.
- **One Side support** should be mounted to the first or last pendant positioned parallel to the rail in a Straight rail system and to both the primary rails in a Traverse system:

Straight rail system



Traverse system

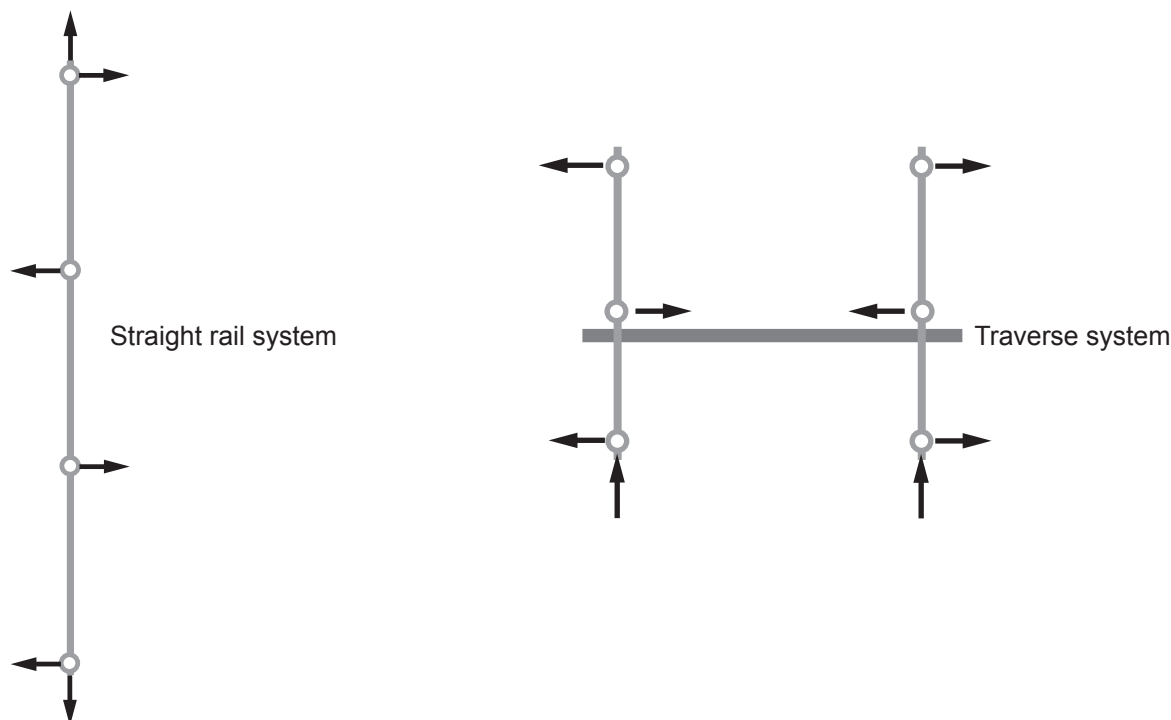




Length of pendant > 1500 mm (> 60 inch.)

**Side support** should be mounted to all pendants positioned perpendicular to the rail in a Straight rail system and to both primary rails in a Traverse system.

**Side support** should be mounted to the first and last pendant positioned parallel to the rail in a Straight rail system. Traverse Systems need one Side support parallel to each Primary rail end.



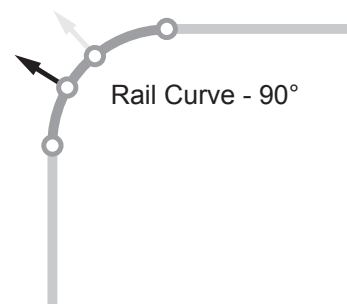
### Rail Curves - 90° and 45°

Length of pendant < 800 mm (< 31½ inch.) **No need of side supports.**

Length of pendant > 800 mm (> 31½ inch.)

**One side support** should be mounted perpendicular to one of the pendants in the curve section.

Rules for Side supports of the curve joining rails, see above.

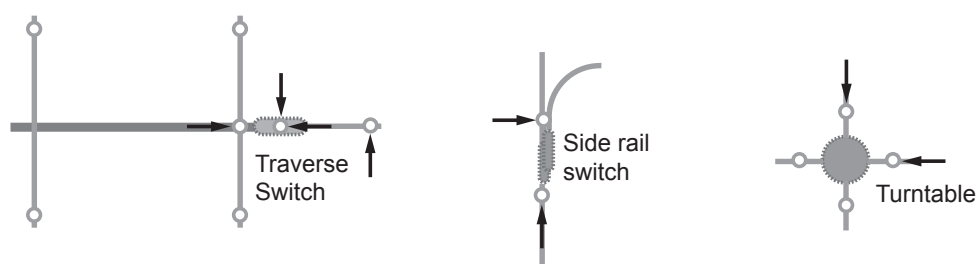


### Rail Switches

Length of pendant < 400 mm (< 16 inch.) **No need of side supports.**

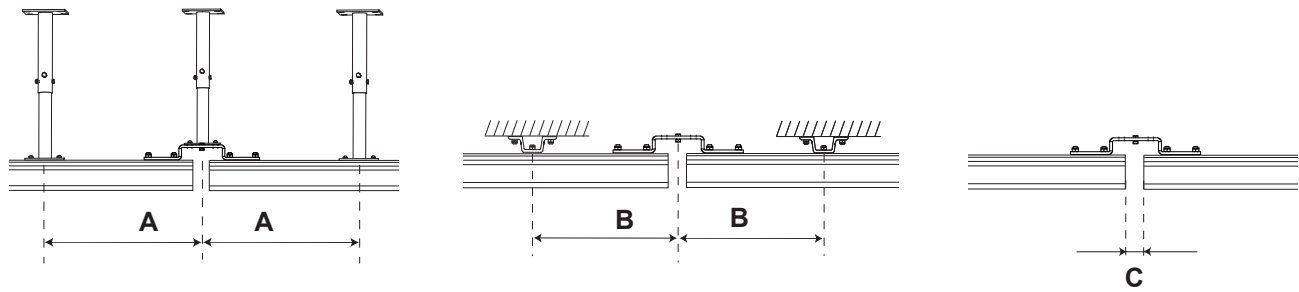
Length of pendant > 400 mm (> 16 inch.)

All Liko's switch functions need minimum two side supports perpendicular to each other mounted on the closest pendants.



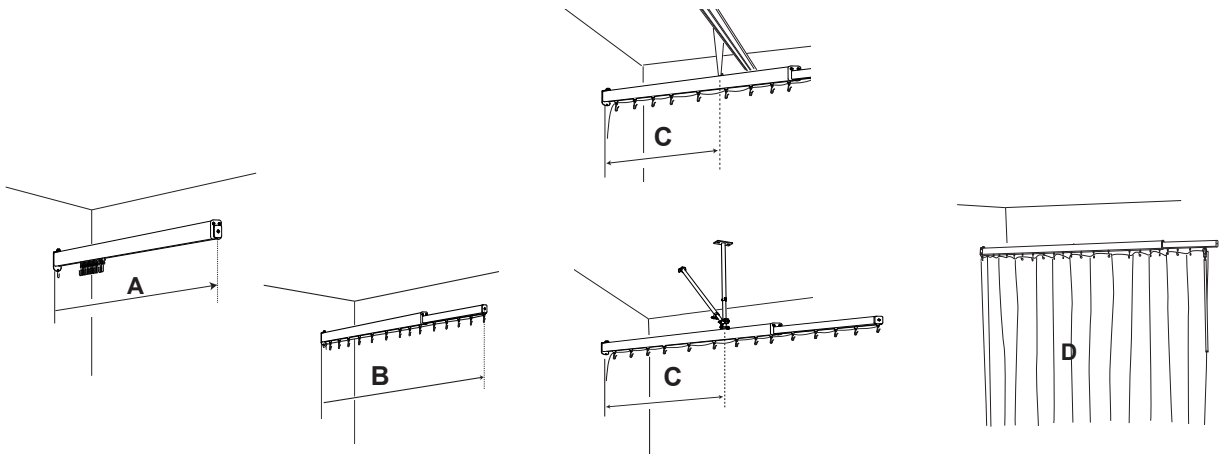
5.6 Curtain System

E-system



- A** 1000 mm / 40 inch. Maximum distance with attachment to pendant plate
- B** 270 mm / 10.6 inch. Maximum distance, no attachment to pendant plate
- C** 40 mm / 1.6 inch. Maximum distance between rails

T-system



	<b>A</b> (min.)	<b>B</b> (max.)	<b>C</b> (max.)	<b>D</b> (Curtain length)
Curtain rail <b>T 2.0</b>	1456 mm / 57.3 inch.	2000 mm / 78.7 inch.	400-1396 mm / 15.7-55.0 inch.	2000-2500 mm / 78.7-98.4 inch.
Curtain rail <b>T 2.5</b>	1681 mm / 66.2 inch.	2500 mm / 98.4 inch.	500-1621 mm / 19.7- 63.8 inch.	2500-3000 mm / 98.4-118.1 inch.
Curtain rail <b>T 3.0</b>	1956 mm / 77.0 inch.	3000 mm / 118.1 inch.	600-1896 mm / 23.6- 74.7 inch.	3000-3500 mm / 118.1-137.8 inch.

## 5.7 Compatibility of Liko Carriages for use with Traverse Switch

For a overhead rail system equipped with a Traverse Switch, carriages must be supplemented with End Stop LR\* according to the the compatibility table below.

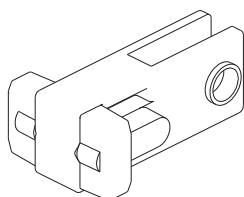
\*End Stop LR (2pcs.) are included with the Traverse Switch prod. no 3124604.

**Compatibility Table:** See key below.

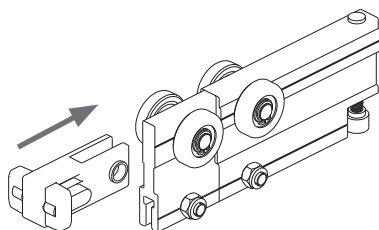
Prod. no.		3126008	3126011	3126012	3126014	3126015	3126028	3126044	3136010	3136100	3136011
Carriage		Quick-release carriage Likorall	Carriage (two pieces) with brake	Carriage (two pieces) without brake	Carriage without brake for Likorall R2R	Carriage with brake for Likorall R2R	Carriage Likorall 360° for R2R	Transfer motor Likorall ES	Carriage S50 with Single Hook	Carriage D45 with Double Hook	Carriage S65 with Single Hook
Lift motor	Likorall	2	3	4	4	2	4	1	—	—	—
	Multirall	—	—	—	—	—	—	—	4	4	4

### Key:

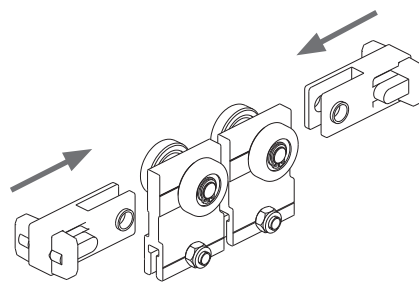
- Not compatible
- 1 Ready to use.
- 2 Not approved for travers switches.
- 3 Apply one: End Stop LR, Trav. switch, before use.
- 4 Apply two: End Stop LR, Trav. switch, before use.



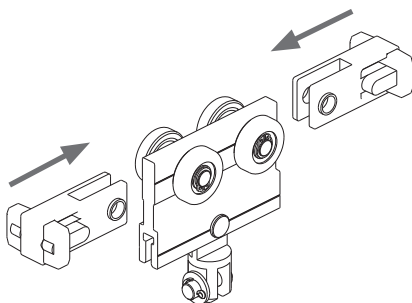
**End stop LR, Trav. switch**  
(2 pcs.) incl. with Traverse Switch, prod. no 3124604



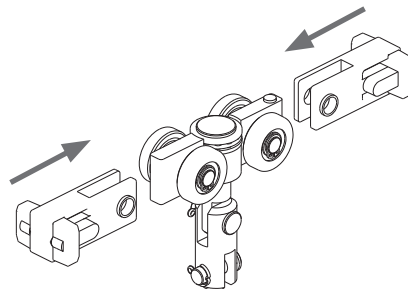
Prod. no. 3126011



Prod. no. 3126012



Prod. no. 3126014



Prod. no. 3126028

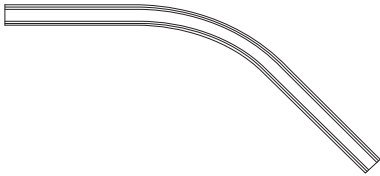
## 6. Additional Components

### 6.1 Curves

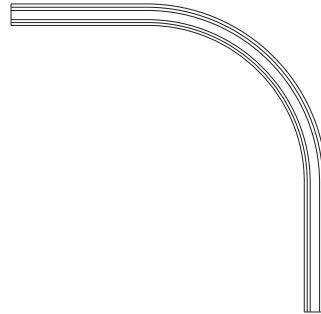
A unique feature for straight rail system using H70 rail profile is the curve design. The two alternative curve profiles are the 45° curve or the 90° curve which can be useful in various straight rail system designs.

**Note!** Rail curves can only be used in ceiling mounted systems, not for use in suspended systems.

45° Rail curve H70



90° Rail curve H70



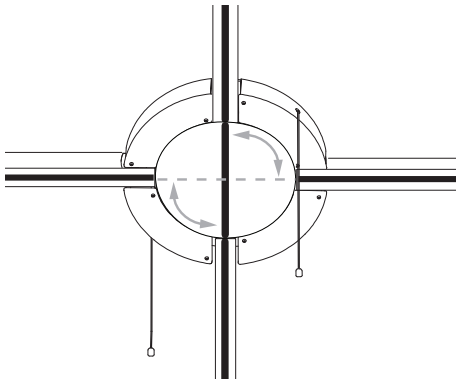
### 6.2 Switches

For transitions between straight rail systems there are two type of switches, designed only for the H70 rail profile. Both the Turntable and the Side Rail Switch comes in two models with either manual or electrical maneuvering.

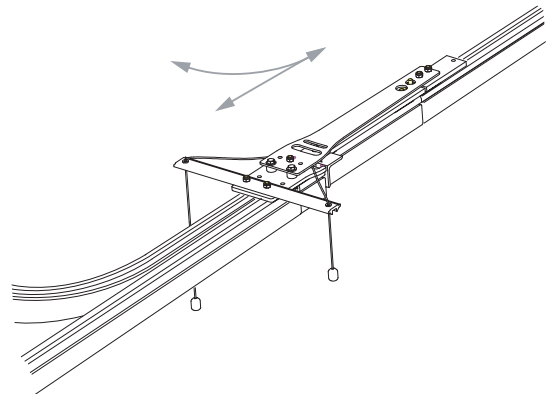
For transition between a traverse system and a straight rail system the Traverse Switch is the solution, designed only for the H70 rail profile. The Traverse Switch has electrical maneuvering.

#### Transition between Straight rail systems

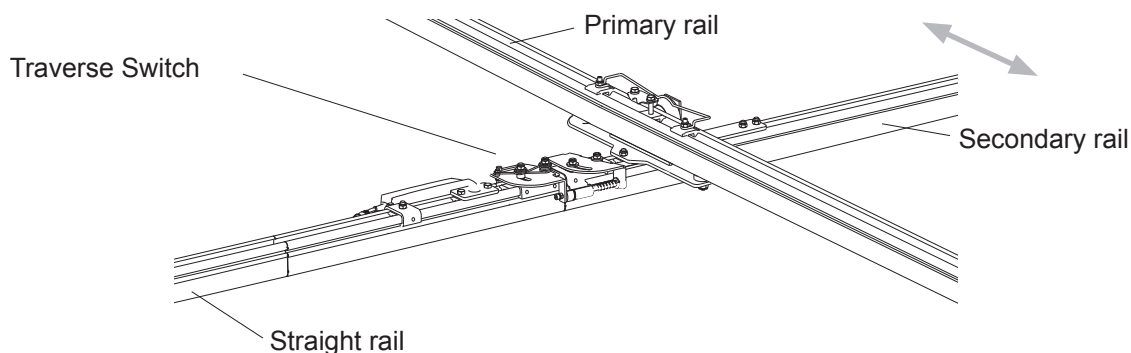
Turntable



Side Rail Switch



#### Transition between a traverse system and a straight rail system



## 6.3 Curtain System FreeSpirit

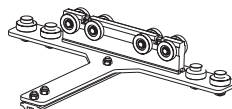
A curtain system gives privacy to patients that share the same room. Liko have the E-system and the T-system, two different type of curtain system designs.

The E-system constitutes of various attachments to hold a curtain Rail and needs specific chosen carriers for both traverse- or straight rail systems. These carriers are designed to pass thru the gap between rails in where a curtain rail are attached. E-systems fit traverse- or straight rail systems.

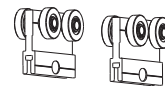
### E-system



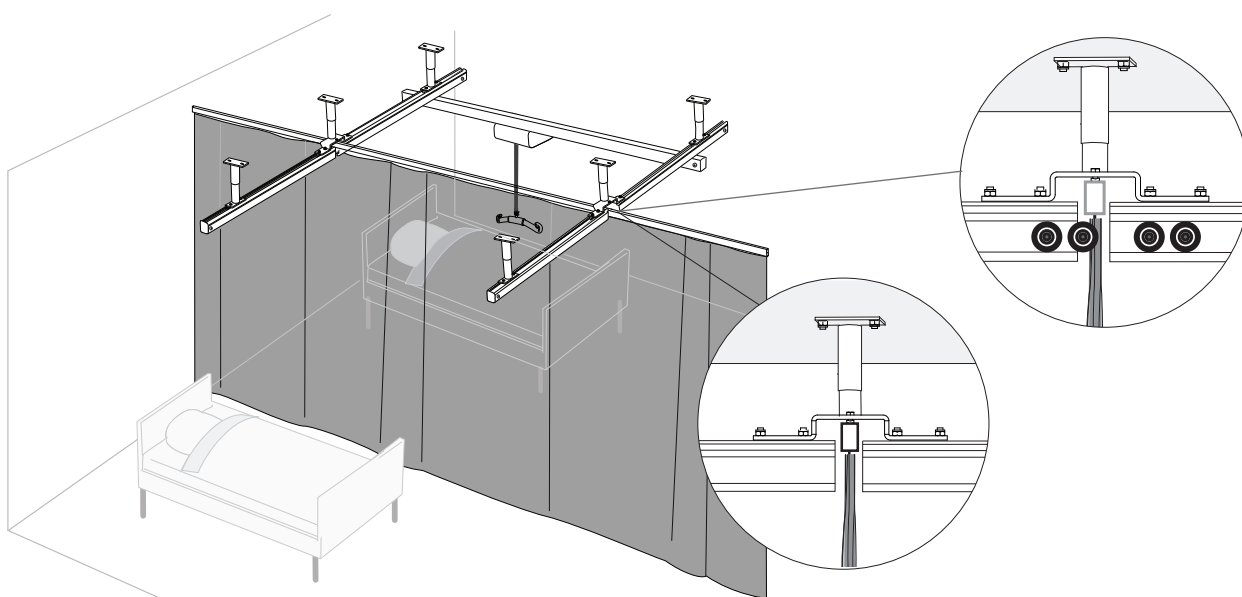
Pendant plate 90  
E-system



Traverse Rail Carrier  
Standard, Wide

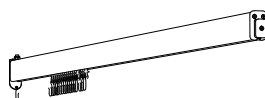
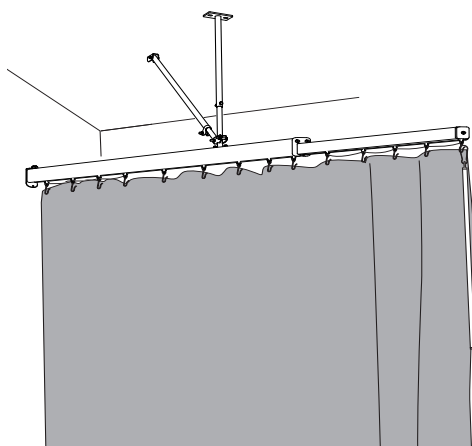


2X  
Carriage without brake  
Liko rail



The T-system are a curtain rail with telescope function. The system can be attached to wall or suspended with special bracket from the rail.

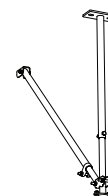
### T-system



Curtain rail T  
2.0-3.0m



Curtain bracket  
T300

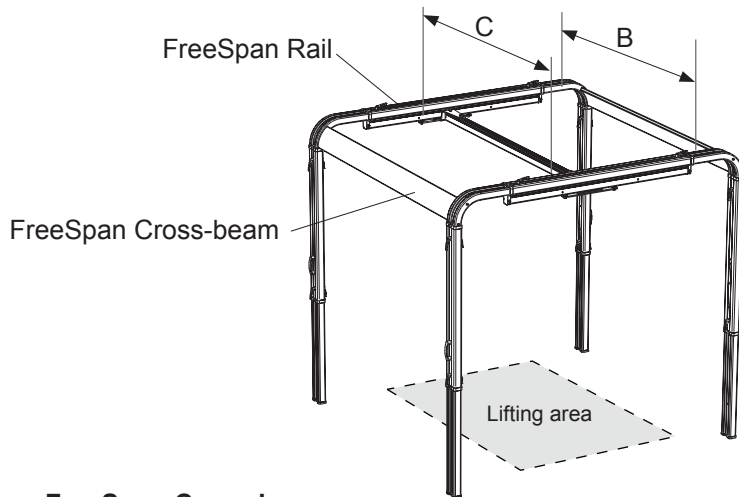


Pendant T. adjustable  
300-1350

## 6.4 FreeSpan traverse

FreeSpan Traverse is a floor standing overhead lift system, a solution if ceiling or walls for any reason not allows a regular overhead installation or when a temporary lifting need occurs.

FreeSpan traverse have some set up variations to choose among as, three lenghts for the Cross-beam section and eight lenghts between 1.5 - 5.0 meters (59 to 197 inch.) for the FreeSpan Rail section. The specially developed Traverse rail carriers (raised) keep a secure lifting area within the systems floor area.



### FreeSpan Cross-beam

Lenght (B)  
2 m / 79 inch.  
3 m / 118 inch.  
4 m / 157 inch.

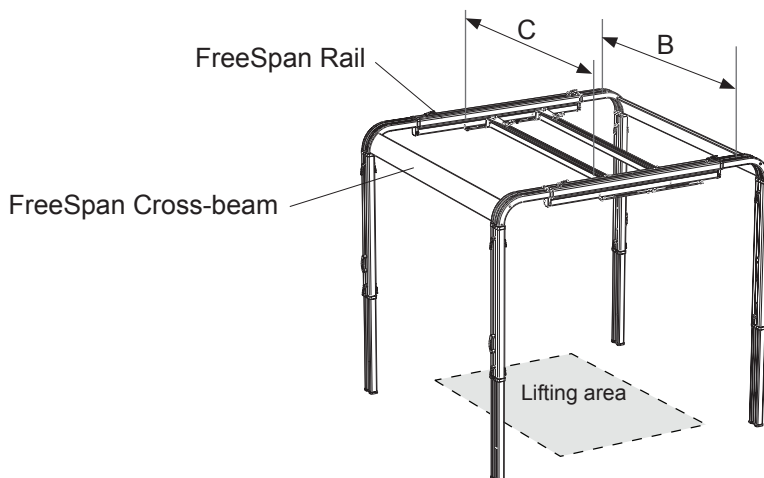
### Secondary rail

Lenght (C)  
2 m / 79 inch.  
3 m / 118 inch.  
4 m / 157 inch.

The FreeSpan UltraTwin traverse are a bariatric solution with a set up containing double secondary rail assembly. FreeSpan UltraTwin traverse have three lenghts for the Cross-beam section and five lenghts between 1.5 - 3.5 meters (59 to 138 inch.) for the FreeSpan Rail section. The specially developed Traverse rail carriers (raised) keep a secure lifting area within the systems floor area.

Between the double set of Traverse rail carriers in a Ultra traverse system, Ultra Traverse Dampers must be installed to eliminate a direct contact.

**NOTE! FreeSpan UltraTwin traverse is limited to five variations for the lenghts of the FreeSpan Rail section.**



### FreeSpan Cross-beam

Lenght (B)  
2 m / 79 inch.  
3 m / 118 inch.  
4 m / 157 inch.

### Secondary rail

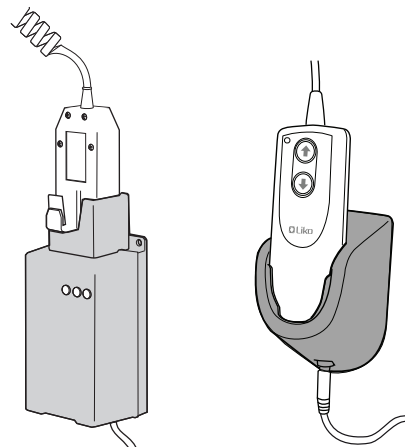
Lenght (C)  
2 m / 79 inch.  
3 m / 118 inch.  
4 m / 157 inch.

## 6.5 Charging

Charging options for Liko lift motors varies with the lift motor model and the application. To the Likorall model there are a wide range of charging options while the Multirall model has only one charging option. The different charging options are presented below.

### Wall mounted Battery Charger

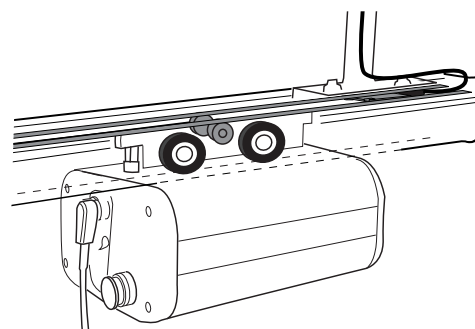
To a wall mounted battery charger the lift motors hand control is connected during the charging process. Mounted direct to wall or to a Parking panel (accessory).



### In-Rail Charging

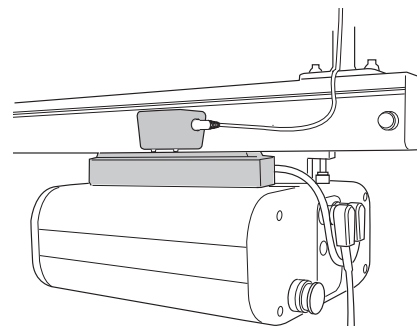
In-Rail Charging system (IRC) are assembled inside a straight rail. Charging is led by a charging track along the inside of the rail and by the special IRC carriage into the lift motor. Assembly of a IRC system are made during or after the overhead system installation.

The IRC systems intended use is to continuous charge one lift motor through the entire rail systems lenght. IRC fits both straight rail and traverse systems. An Ultra system which consists of two lift motors demands two separate IRC systems.



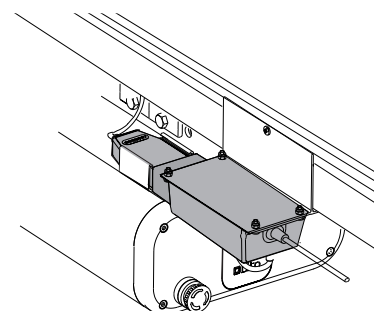
### Multi Station

With a Multi Station mounted at the side of the overhead rail a Multi-connector will be needed, attached on top of the lift motor. During charging the lift motor (with Multi-connector) must be placed beneath a Multi station so that contact between the two units occurs.



### Charger Station

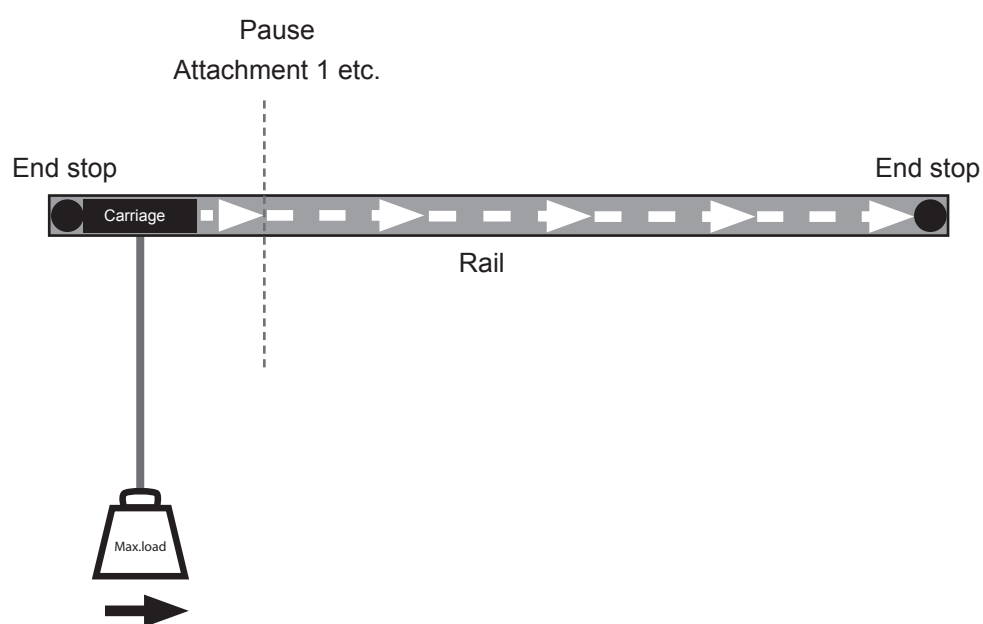
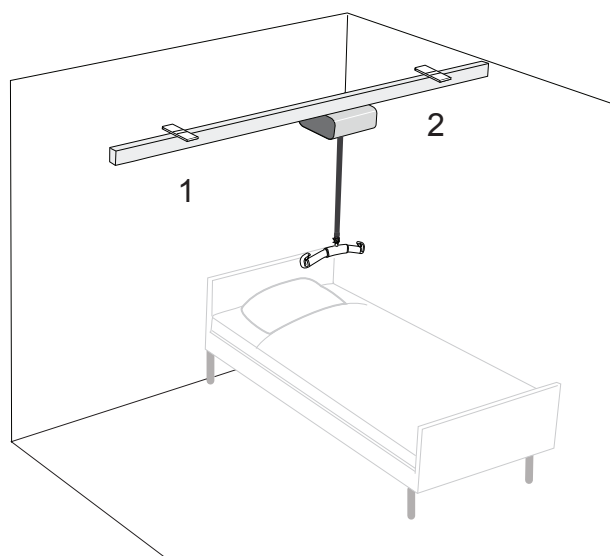
The Charger Station is a kit for stationary assembly containing of a charger and a hand control. The kit is Mounted on the lift motor and on the overhead rail. During charging the lift motor with the hand control fixed on top are placed so the hand control fit into the charger on the rail.



## 7. Final Installation Procedure

### 7.1 Test Loading: Straight Rail System

Apply the maximum load for the overhead rail system. Travel the applied load along the rail from one end stop to the other end stop, with a pause under each attachment point. Travel as the dashed line shows.





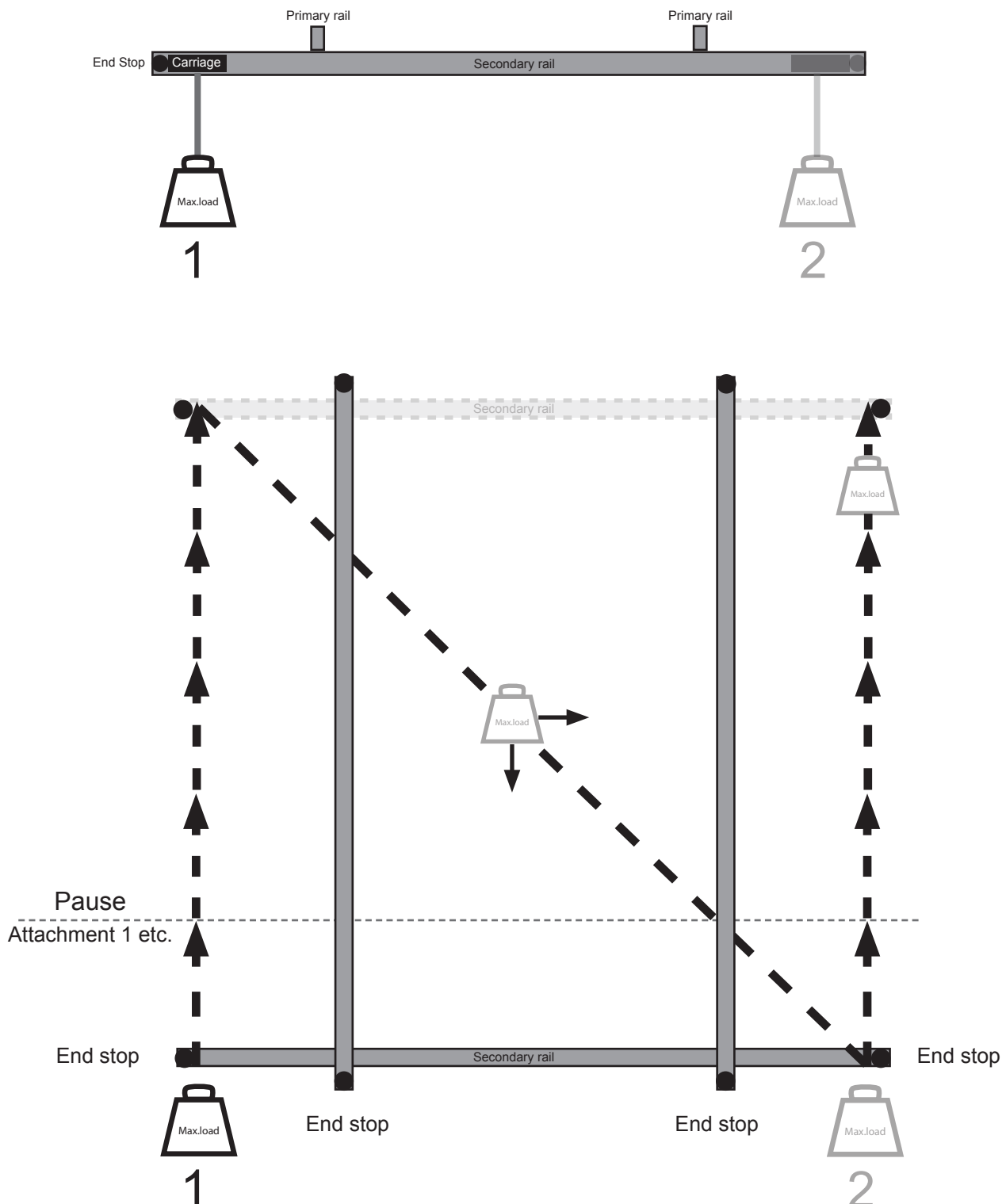
## 7.2 Test Loading: Traverse System

Apply the maximum load for the overhead rail system.

Place the carriage with the applied load at the end stop of the secondary rail (1). Move the secondary rail, with a pause under each attachment point, from one end stop to the other end stop of the first primary rail.

Continue by moving the applied load diagonally through the centre of the system over to the other side, as the dashed line shows.

Now continue by moving the secondary rail with the applied load, from (2), with a pause under each attachment point, from one end stop to the other end stop of the second primary rail.

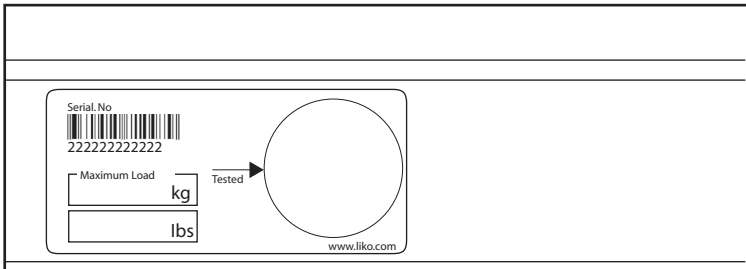


7.3 Identification

After an approved test load procedure the overhead system is ready for identification marking. This marking is made with a decal rail marking on which the maximum load is to be stated. The decal must be placed clearly visible on the rail in the system to which the lift motor is attached.

When a Periodic Inspection of the system is performed a test symbol will be placed in the circular area on the rail decal marking. A Periodic Inspection of the overhead system must be made at least once a year.

Decal rail marking



## 7.4 Installation Certification

The installation certification is the last performance in order to finish the installation of the overhead rail system. The installation certificate has to be performed by installation personnel authorized by Liko.



### Installation Certificate

3EN903001-05

<b>Order No:</b>  <b>Customer's address:</b>	<b>Customer's No:</b>  <b>Installation address:</b>
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#### Overhead Lift System

Maximum Load	kg	lbs.
--------------	----	------

	Installation to:	Serial No.	Location
Straight-rail system	Concrete ceiling		
	Wooden ceiling		
	Wall: suspended		
	Upright support: suspended		
Curve system	Concrete ceiling		
	Wooden ceiling		
Traverse system	Concrete ceiling		
	Wooden ceiling		
	Wall: suspended		
	Upright support: suspended		
Switch system	Concrete ceiling		

#### Checklist

	Checked
<b>1. Attachment</b>	
1.1 Ceiling bracket	<input type="checkbox"/>
1.2 Wall bracket	<input type="checkbox"/>
1.3 Upright support	<input type="checkbox"/>
1.4 Screw joint	<input type="checkbox"/>
<b>2. Rail System</b>	
2.1 Primary rails / Secondary rails	<input type="checkbox"/>
2.2 Traverse rail carrier / Transfer motor traverse	<input type="checkbox"/>
2.3 End stop	<input type="checkbox"/>
2.4 Screw joint	<input type="checkbox"/>
<b>3. Lift Motor</b>	
3.1 Attachment carrier	<input type="checkbox"/>
3.2 Lifting area	<input type="checkbox"/>
3.3 Lift strap / Attachment sling bar	<input type="checkbox"/>
3.4 Hand control	<input type="checkbox"/>
<b>4. Safety Advice</b>	
4.1 Emergency lowering	<input type="checkbox"/>
4.2 Sling bar latches	<input type="checkbox"/>
<b>5. Electronic</b>	
5.1 Cables / Connections	<input type="checkbox"/>
5.2 Battery / Charging features	<input type="checkbox"/>
5.3 Emergency stop	<input type="checkbox"/>
<b>6. Test Loading</b>	
6.1 Test Loading performed	<input type="checkbox"/>
<b>7. Documentation</b>	
7.1 Decal Rail Marking	<input type="checkbox"/>
7.2 Instruction Guide	<input type="checkbox"/>

#### Lift Motor

	S	ES	R2R	Serial No.	Year of mfr.
Likorall 242	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Likorall 243	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Likorall 250	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Likorall 200	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Multirall 200	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Other:					

#### Notes:

Installation is performed by an installer educated by Liko, in accordance with Liko Installation Instructions and with Liko original parts. Liko's rail system therewith complies with the requirements according to ISO 10535.

Separate description of Installation, according to appendix 1: Yes ☐ No ☐

Inspection performed by authorized Liko installer: \_\_\_\_\_

Clarification of author: \_\_\_\_\_

## 8. Periodic Inspection of Liko Overhead Rail System

Periodic Inspection of a Liko Overhead System should be performed at least once a year. Periodic Inspection of a Liko Rail System has to be performed by installation personnel authorized by Liko.



**Liko**  
A Hilti Company

**Rail system**  
**Periodic Inspection**

3EN1110D1-08  
2008-09-08

**System information**

Type of Rail system: \_\_\_\_\_

S/N: \_\_\_\_\_

Approved Max Load: \_\_\_\_\_

Year of installation: \_\_\_\_\_

**Customer references**

Agreement No: \_\_\_\_\_

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Post code: \_\_\_\_\_

The Rail system must be thoroughly inspected at least once per year. Inspection and service must be carried by Liko authorized personnel. Instructions for check points, from page 2

Check points:	Approved	to be actioned	not approved	Comments
<b>Installation</b>				
1 General inspection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2 Labels / Signs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3 Ceiling / Pendant / Ceiling Fixture	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4 Wall / Wall Bracket	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Load-bearing parts / Rail system</b>				
5 Upright Support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6 Primary rail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7 Secondary Rail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8 Traverse Carriage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
9 End stop	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10 Rail Joint	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Power Unit</b>				
11 Lift motor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Load testing</b>				
12 Maximum load rail system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Documentation</b>				
13 Instructions / Instruction guide	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Approval to use the overhead system ☐ Approved ☐ To be actioned ☐ Not approved

If the system has one or more check points with result "Not approved" the system must not be used. If the system has one or more check points with result "To be actioned" these actions should be performed immediately. After performed actions sign below. If anything is unclear or if you have questions, please contact Liko or your local Liko representative. Contact information is to be found at [www.liko.com](http://www.liko.com).

Inspection performed by: \_\_\_\_\_ Date: \_\_\_\_\_

Final approval by: \_\_\_\_\_ Approval date: \_\_\_\_\_

Next inspection: \_\_\_\_\_

Inspection performed in accordance with ISO 10535:2006 Annex B- Periodic inspection

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