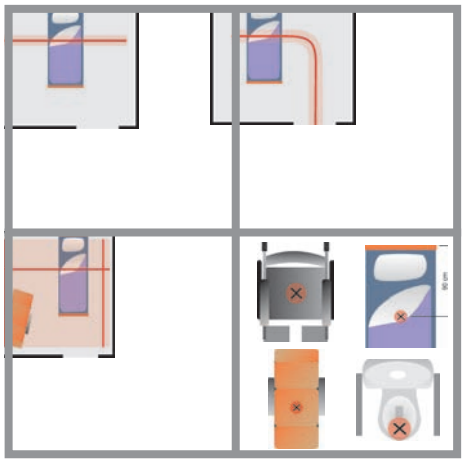
molift rail system handbook

designed for life

Efficient project planning and installation of Molift Rail System



molift

Table of content

How to use this manual

This manual is primarily intended for persons who are to sell, mount and maintain Molift Rail System (MRS).

Molift Rail System may only be mounted by Molift authorised staff who have received the required training by Molift Group AS.

Molift Group AS will only be responsible for the system provided that the motor has been supplied by Molift. Molift Rail system has been CE-marked according to directive 92/42/EEC.

The manual is divided into five main chapters:

Chapter 1 – Ceiling hoist system
Describes solutions and options offered by a ceiling hoist.

Chapter 2 – Specification of ceiling hoist system
Descriptions of requirements and conditions for mounting of a ceiling hoist system in a building, whether new or old.

Chapter 3 - Choice of parts and ordering
Description of Molift Rail System and all parts of the system, to be used for ordering, etc.

Chapter 4 – Mounting of Molift Rail System
Describes mounting details for different systems and buildings, with check lists included for each system.

Chapter 5 - Maintenance
Annual checks of Molift Rail System are recommended

Enclosure 1
Survey form, MRS Installation

The expert in moving and handling

As the expert in moving and handling Molift supports caretakers by providing them with the greatest possible relief of loads on the job, thereby helping them avoid strain injuries. The caretakers will enjoy and improved life without injuries, and the user will experience that the caretakers have additional energy to provide tender loving care and nursing.

Too much strain can result in irreparable damage. Many caretakers suffer injuries to the musculoskeletal system as a result of lifting and moving patients.

We claim that the well-being of a user depends on whether the caretaker is well. Through understanding when strain injuries arise and by working using the right techniques plus the proper equipment, the caretakers will benefit from a better life, on the job and at home, and improved health. The users will not have to succumb to a constant flow of new, unknown substitutes and low staffing owing to caretakers acutely reporting in sick. The employer will get healthy employee with less sickness absence and society will benefit from increased productivity and reduced costs.

In most countries it is compulsory that employers place the required resources at the disposal of their employees, to help them avoid physical strain.

Nursing homes/hospitals designed with pre-mounted ceiling hoist systems benefit greatly from these devices. They are easy to use for the caretakers and the patients feel comfortable with them. They are easily accessible, prevent lifting injuries – and are not in the way when not in use.

Molift has supplied ceiling hoist systems for many years and has now developed an entirely new rail system, Molift Rail System. It is simple to mount and at the same time we have adapted it to our high standards for design and user friendliness. The system can be mounted openly or in built-in versions in a lowered ceiling.

It is our hope that you – when planning a new building within the care sector – will find this manual to be of use in your work. Here you will find different alternatives adjusted to patient needs as well as technical specifications and definitions which will hopefully contribute to making your job easier.

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Explanation of symbols

This symbol is used to point out instructions and information related to work place safety where injury may occur if the information is disregarded or ignored. Follow these instructions, be careful and attentive at all times.

This symbol indicates important information regarding the use of the equipment. If not taken into consideration, it may lead to damage or functional defects to the lifter or other equipment.

Responsibility

Molift Group AS assume no liability for damage or malfunctions resulting from failure to comply with the instructions in this handbook. Warranty claims must be made immediately on detecting the defect. Consumable parts are not subject to the warranty.

All technical information, data and instructions contained in this handbook were up-to-date at time of print and are compiled on the basis of our experience and to the best of our knowledge. We reserve the right to incorporate technical modifications within the scope of further development of the product described in this manual. No claims can be derived from the information, illustrations or descriptions contained in these instructions. We assume no liability for any damage or malfunction caused by operating errors, non-compliance with the mounting instructions or inappropriate maintenance. We expressly point out that only genuine Molift spare parts and accessories approved by us may be used. For safety reasons, the fitting and use of spare parts or accessories, which have not been approved, and unauthorised modification or conversion of the product, are not permitted. Molift Group AS will accept no liability for damages resulting from such acts.

With the exclusion of product liability, Molift Group AS is liable for faults or omissions on its part within the scope of the warranty obligations stated in the purchase contract. Claims for damages are excluded, irrespective of the legal reason from which such claims are derived. Only documentation belonging to the actual equipment is valid.

Any failure to comply with the safety regulations and precautionary measures stated in these operating instructions renders the declaration of conformity supplied with the system in accordance with Council Directive (93/42/EEC) concerning medical devices invalid.

Chapter 1 – Ceiling hoist systems

There are different demands to the purpose of a ceiling hoist system. Everything from full freedom or moving from A to B. No matter what, you will benefit from our experience. At Molift we supply rail systems covering all needs. This makes it easier for you to choose the system most suitable for your building.

Why choose a ceiling hoist system

- For a permanent lifting need/future need
As for instance patient rooms at a nursing home.

- Prevent injuries to caretakers
Investigations show that easily accessible devices for lifting and moving make the job of the caretakers essentially easier.

- Space-saving
Ceiling hoist systems are out of the way when not in use, and at the same time always available when needed.

- Demand from owner
The tendency is that it is difficult to build hospitals/nursing homes without having planned ceiling hoist systems already in the planning phase.

- Easy to use
Ceiling patient hoist systems are "intuitive/easy" to use for the caretakers.

- Easy handling of heavy patients
Because ceiling hoist systems run easily on the trail, the patient's weight is of less importance.

- Good feeling of safety
The patient regards a ceiling hoist to be safe and secure.

Definitions

There are different demands to the purpose of a ceiling hoist system. Full freedom or transfer from A to B?

The size and flexibility of the ceiling hoist system's lifting area depend on the structure of the individual system.

Straight rail system

A single rail is installed above the areas which are defined as most important. The use will mainly refer to the most important lifts for getting up or transferring from bed to chair or similar.

The straight rail can be extended by combining one or more curves and straight rails, to allow the finished rail system to pass through one or more rooms. An example of this is a rail from bed to bath/toilet.

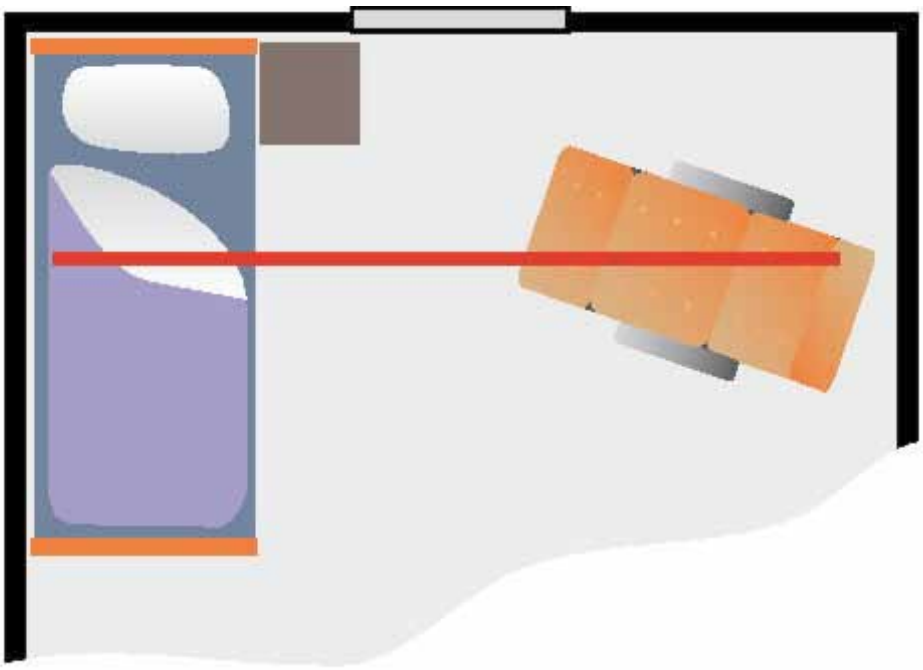


Figure 1. Straight rail system

Advantage: The most simple and sensible form of a ceiling hoist system is a single straight rail.

Switch systems

Systems with switches divide the rail into two paths.

If you want a routing with several pick-up points this is possible by introducing one or more switches to the system. In this way it is possible to reach a larger part of the available area.

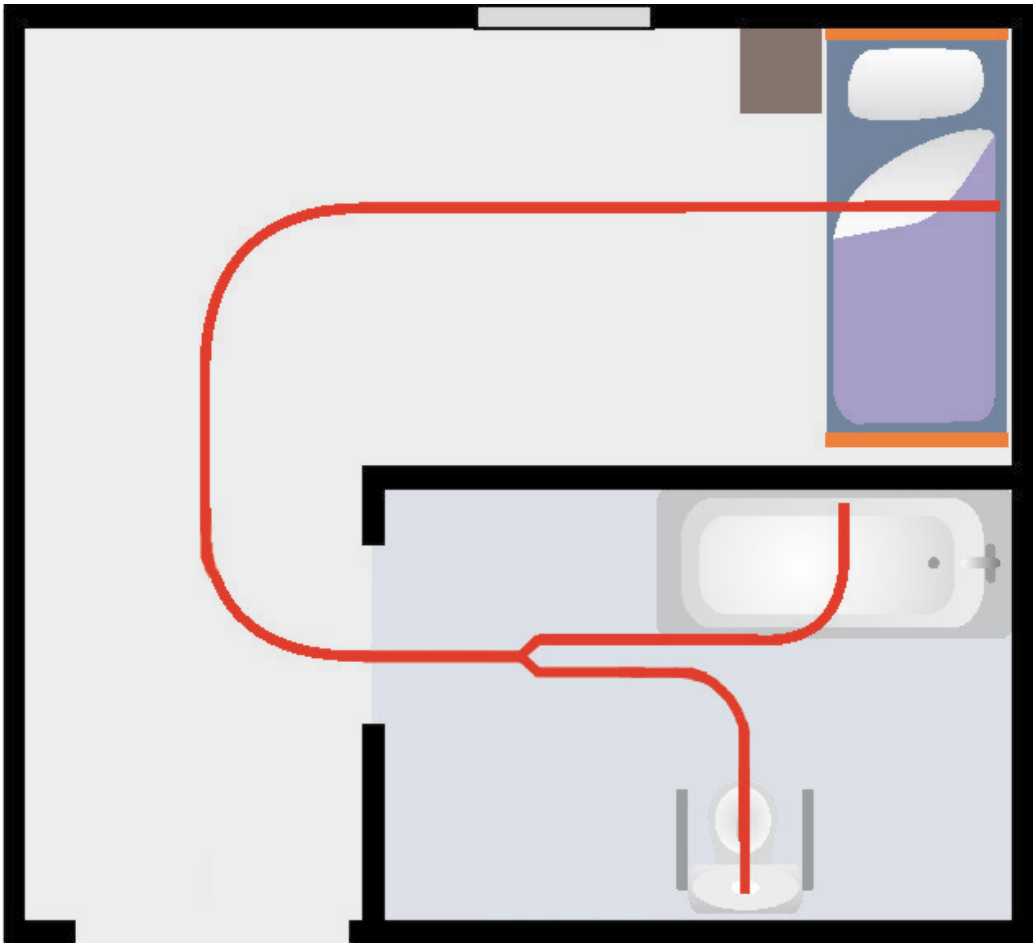


Figure 2. Switch system

Advantage: Divides a rail system in two with the opportunity of more pick-up points.

Molift Rail System switch and attachment brackets are ordered and supplied separately. The MRS switch system can be fitted directly to the ceiling or be suspended from the ceiling using 2 telescopic brackets. The MRS switch system is manually controlled. The system does not therefore require the installation of an additional power source.

Traverse

Traverse is the most versatile variable with a primary rail which is fastened to the ceiling or wall and a secondary rail which is fastened to the primary rail by means of trolleys.

A traverse system will cover the entire room, this provides the most versatile solution. A solution which enables lifting regardless of the patient's location in the room. Future refurnishing of the room will be possible, as the traverse system will continue to work.

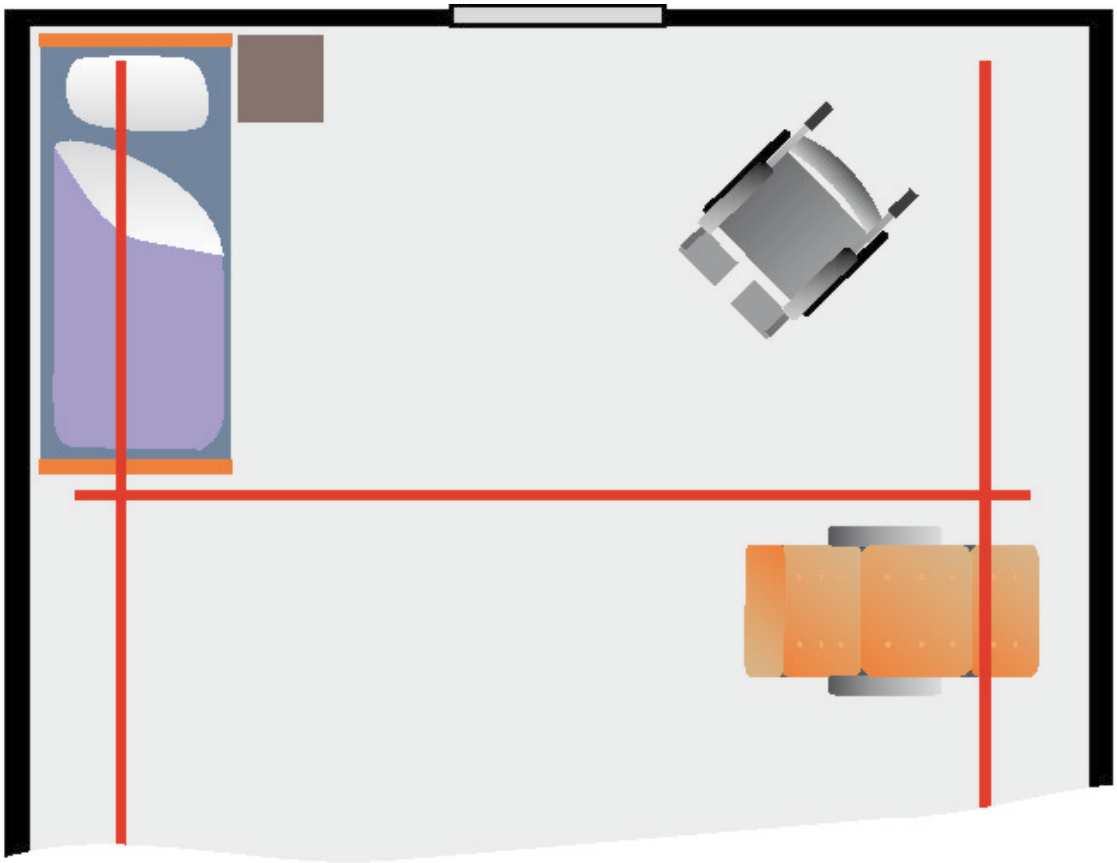


Figure 3. Traverse system

Advantage: The most versatile solution.

Lifting areas

The lifting area is the area of a room in which it is possible to carry out lifts.

The size of this area will depend on the choice of rails and the form and furnishing of the room.

The shaded fields of the illustrations below show the lifting area.

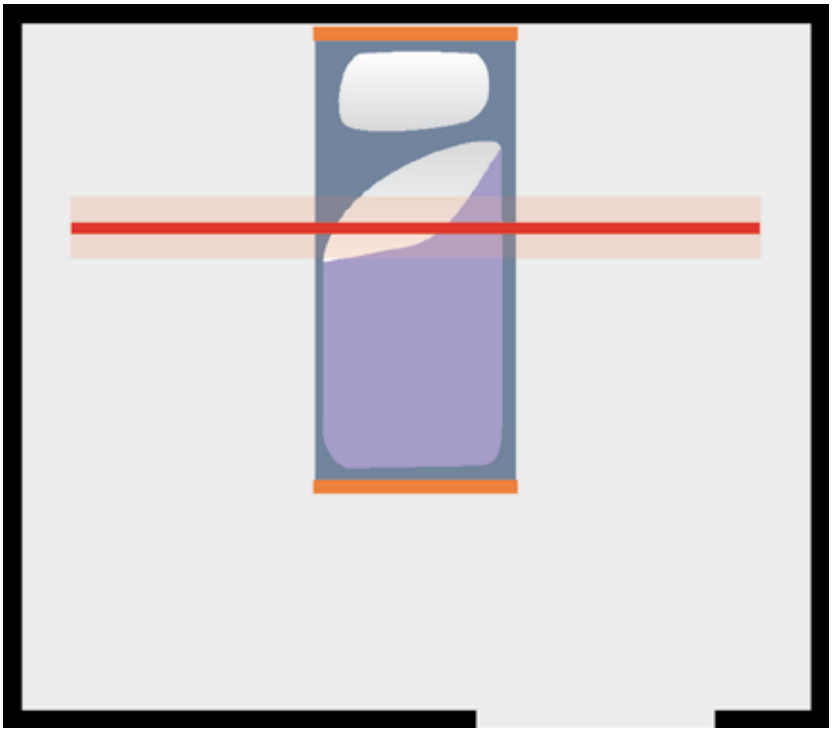


Figure 4. Lifting area for a single straight rail system

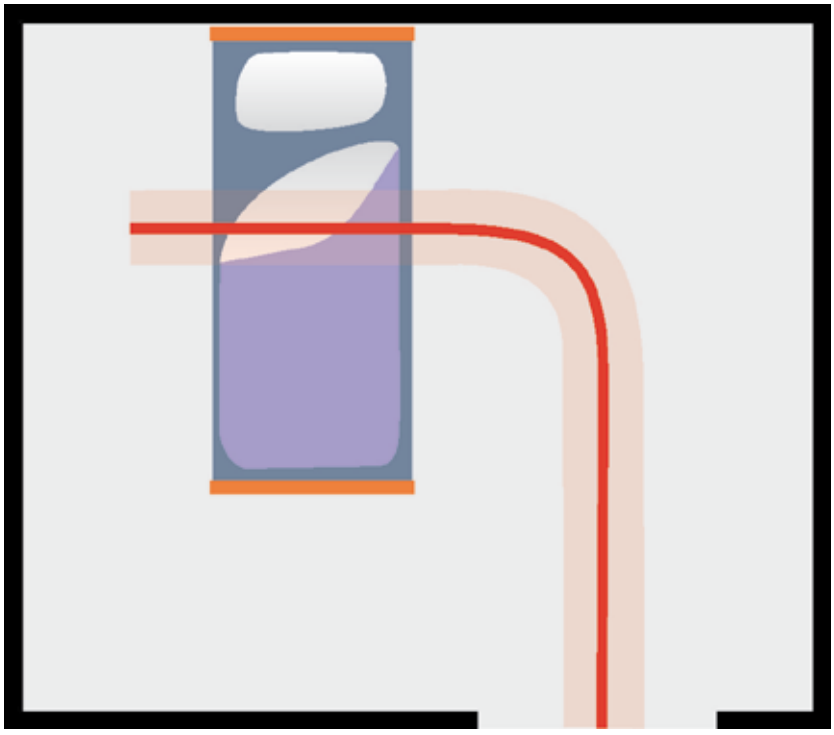


Figure 5. Lifting area for a single rail system with curve in one room.

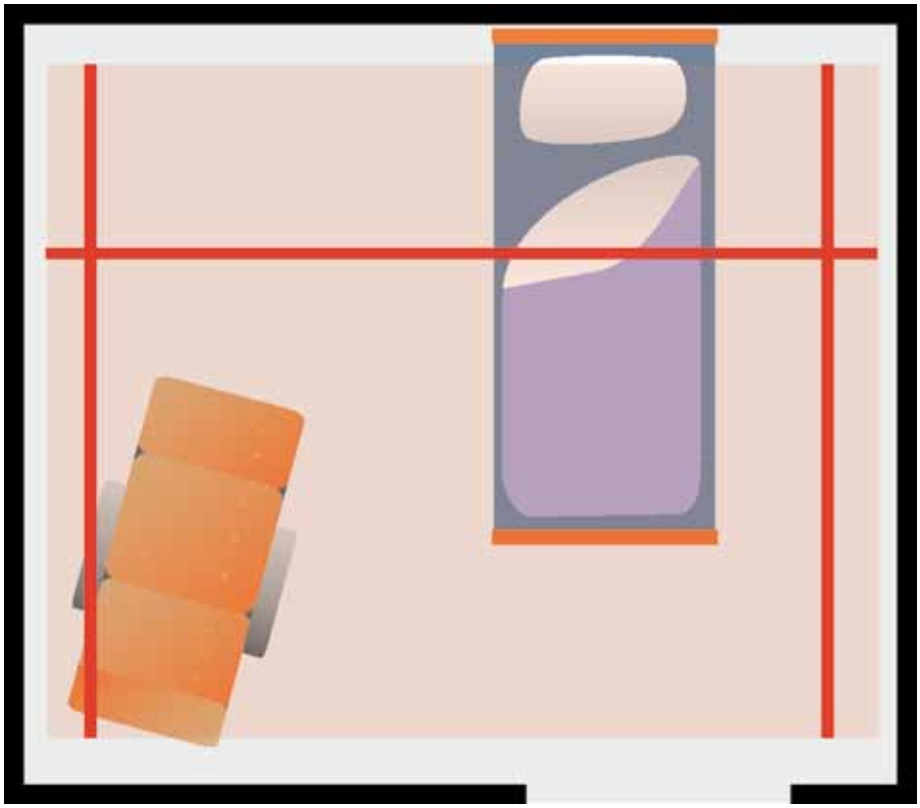


Figure 6. Lifting area for traverse system in a single room (covering the entire room).

Pick-up point

Ceiling hoist systems have a clearly defined lifting area and it should therefore be defined where lifting to/from is required. Typical places are: bed, toilet, resting chair etc.

Bed: The pick-up point is 90 cm from the head end of the bed or 100 cm from the wall behind.
Bath tub: The pick-up point is 5 cm before the end of the slanting part of the bath tub.
Toilet: The pick-up point is 5 cm in front of centre of the toilet pan.
Resting chair: The pick-up point is the centre of the seat.

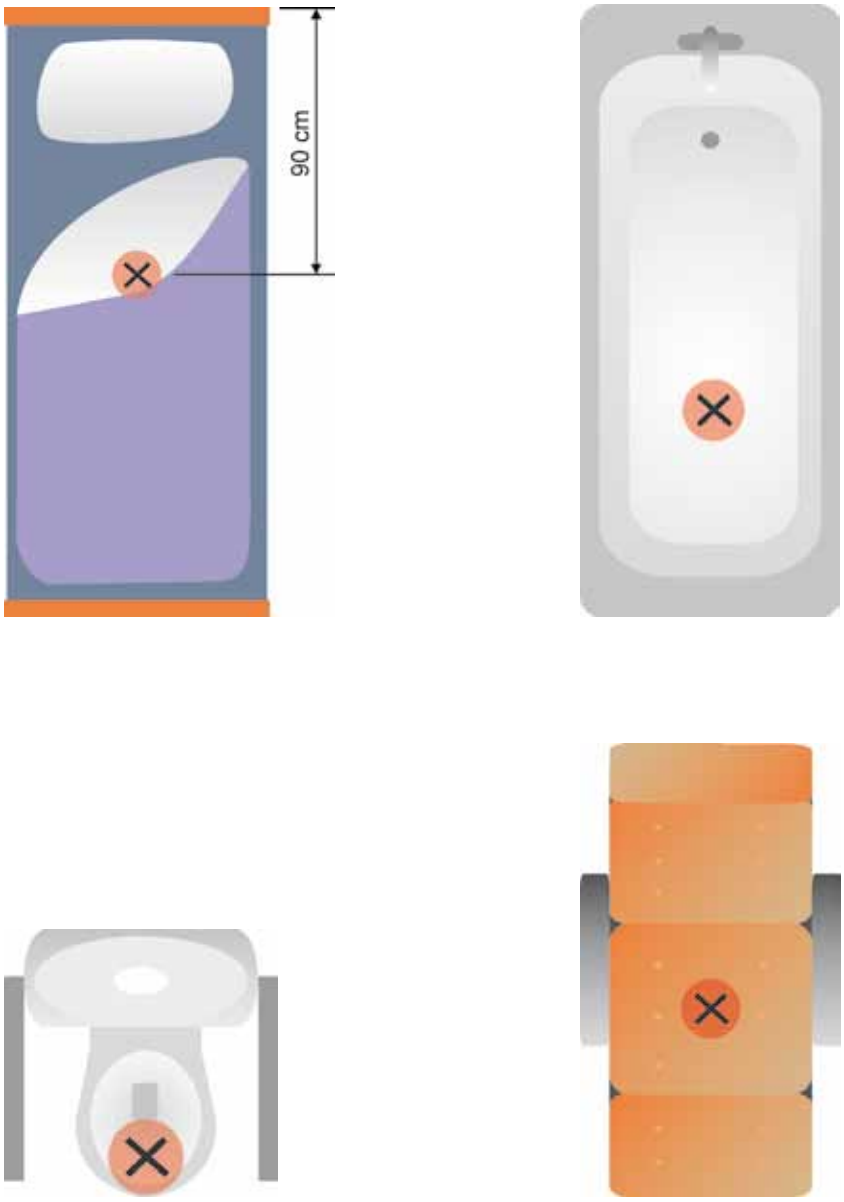


Figure 7. Pick-up points

Chapter 2 – Specification of ceiling hoist system

How to plan and mount a rail system?

A ceiling hoist system is supposed to make everyday life as simple and as effective as possible, for both caretakers and patient. When planning a ceiling hoist system, the type of mounting must be based on many conditions and evaluations. We will here present a survey of the existing conditions and the evaluations to be made in connection with the mounting of a ceiling hoist system.

Planning

Type of patient/user

- Is/are the patient/patients to be lifted or moved only in connection with the bed/wheelchair (commode) (linearly solutions along an axis)?
- Must there be full freedom for lifts and moving all over the room (traverse solution)?
- Should it be possible to combine several rooms using the system?

Type of building/room

The first thing to clarify is the kind of institution in which the system is to operate:

- Private home?
- Several rooms in a department of a nursing home or a hospital?
- Wet rooms (bath room)?

In general

The sooner in a building process the planning of ceiling hoist systems is included, the better the planning can allow for the various considerations. This will result in an effective mounting procedure of a system which is optimal to all parties.

Survey

Molift Group AS offers survey and planning in connection with your ceiling hoist systems.

A survey will uncover most aspects of an installation. It is recommended to go through the inspection scheme (see enclosure 1) and assess the assumptions stated. A survey should be done by personnel with detail knowledge of the building structures and knowledge of the need for and use of a ceiling hoist system.

Fill in the table with as much information as possible giving details on the following:

- Ceiling structure
- Wall structure
- Room
- Planned MRS system
- In general

Conditions for installation of MRS

MRS has been developed and produced in accordance with the current version of NS EN-ISO 10 535. Molift Group AS is responsible for the products supplied, including fasteners, where our fasteners are used and where they are fitted as specified in the instructions (Refer to chapter 4 - Fitting of MRS). Fitters must be able to present a valid installation certificate that has been issued by Molift Group AS.

Molift Group AS bears no responsibility for the ability of ceiling structures to carry the point loads specified in the load tables below. Molift Group AS' liability ends at the point where Molift's fastener's terminate in the ceiling structure, as shown in chapter 4 - Fitting MRS. Fasteners other than those described in chapter 3 and 4 can be used. Molift Group AS however bears no responsibility for these fasteners where used.

Molift Group AS recommends the use of HILTI fasteners when fitting MRS.

It is important that fasteners comply with the specified pull-out load safety margins and that fasteners are suitable for the underlay they are to be used in. Refer to examples in chapter 4.

Securing points

The ability of the ceiling/wall structure to bear the loads applied at the securing points by the planned system must be assessed. Current standards stipulate that each securing point is to be able to bear 1.5 x SWL. The current requirements for EACH for ceiling hoist system securing point are therefore as follows:

Vertical load:

SWL (weight class) Max load for the hoist	Requirements in accordance with EN/ISO 10535	The load each securing point must be able to bear (maximum working load)
160 kg	1,5 x 160 kg	240 kg ≈ 2,4 kN
205 kg	1,5 x 205 kg	307,5 kg ≈ 3,1 kN
230 kg	1,5 x 230 kg	345 kg ≈ 3,5 kN
255 kg	1,5 x 255 kg	382,5 kg ≈ 3,8 kN
300 kg	1,5 x 300 kg	450 kg ≈ 4,5 kN

Table 1. The table specifies the maximum working load requirements in relation to SWL, for fastener elements used to fit a bracket.

Ceiling hoist systems are to also be able to withstand the lateral loads that are applied when the patient is in a position of up to 25 degrees from the vertical plane at the very start of the lifting process.

Horizontal load:

SWL Max load for the hoist	Molift specification	Max allowable horizontal load in ceilings
160 kg	160 kg x sin 25°	68 kg
205 kg	205 kg x sin 25°	87 kg
230 kg	230 kg x sin 25°	97 kg
255 kg	255 kg x sin 25°	108 kg
300 kg	300 kg x sin 25°	127 kg

Table 2. Maximum lateral load applied to brackets when the hoist is outside of the vertical plane

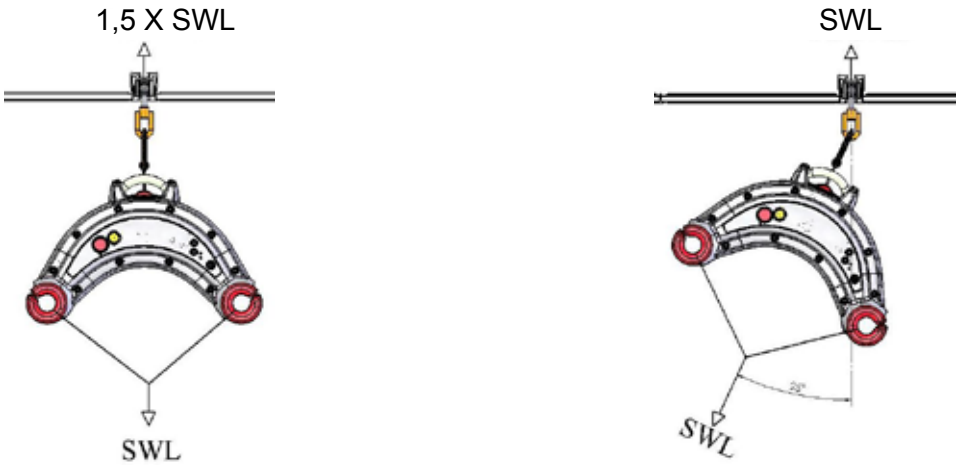


Figure 8. Illustration of vertical load and horizontal load with Molift Nomad

Requirements to materials

Requirements/conditions to be met by some know materials are stated below. If materials not mentioned below are used, and if the materials for some reason have been weakened, these must be evaluated specifically. At any rate the conditions for the strength of the securing device are stated in Table 1 and Table 2 on page 15.

Concrete structures

The quality of the concrete to which attachment brackets are to be fitted, is a crucial factor in the ability of the concrete to withstand the loads applied by the brackets. Molift specifies concrete in accordance with the standard NS-EN 206-1 and underlying standards. Concrete must be minimum of the following quality if the SWL and minimal fitting times for MRS systems are to be achieved:

- Wall : B20 (C20) or better - thickness minimum 150 mm
- Ceiling : B30 (C25) or better - the ceiling must be dimensioned to bear own weight + the loads applied by the ceiling hoist system.

It is possible to install the system in concrete of a lower quality; then installation of reinforcement of the concrete to meet the system requirements of MRS should be expected. Molift Group AS is not responsible for installation or evaluation of necessary reinforcement.

If in doubt about the concrete quality, Molift Group AS recommends that tensile stress tests be made with the securing devices used and also test loads within the minimum specifications for vertical loads according to the valid standard (see Table 1 on page 15).

Wood structures

Wood structures are essentially wooden beams. It is important that the beams be dimensioned to carry the load of the ceiling hoist system (see Table 1 and Table 2) and that the rail system be placed in a position as advantageous as possible in relation to the frequency of beams. If a ceiling hoist system is to be mounted in an existing building, it can be vital for effective installation that there is free access to beams and loft.

In most cases it is necessary to reinforce the ceiling structure to be able to use MRS telescope securing devices. The type of reinforcement depends on how far apart the beams are situated. An open beam layer will require reinforcement between the beams. In other cases it may require quite some work to make the required reinforcement. Molift Group AS is not responsible for installation or evaluation of the necessary reinforcement.

Leca, Brick, Siporex, Light Bricks and Light Blocks

All of these materials are more or less porous. MRS fasteners require ceiling materials to have a compressive strength of minimum 25 N/mm2 and wall materials to have a compressive strength of minimum 3 N/mm2. 2-component chemical anchors with or without composite sleeves are primarily used in these types of materials. Both result in longer fitting times than identical fitting in concrete.

Molift requires the producers of the elements in which MRS is planned to be installed, to issue a statement of whether the fitting of a ceiling hoist to the elements at a construction site is recommended.

With chemical anchor HY-70 (Standard MRS) in the above materials can achieve maximum SWL 300 kg when fitted to a ceiling, depending on the method used and the number of securing elements.

If the structure requires reinforcement to obtain a satisfactory SWL, Molift Group AS is not responsible for evaluation or installation of this.

If in doubt about the rigidity of the material, Molift Group AS recommends that tensile stress tests be made with the securing devices used and also test loads within the minimum specifications for vertical load according to the valid standard (see Table 1 on page 15).

Light walls

The walls of large institutions are often boarded with plaster and the bearing of the walls are thin-walled steel pylons. This combination is not suited for mounting of ceiling hoist systems, since the wall structures are not load bearing. If, however, it is possible to install reinforcement both in and below the securing point a wall bracket can be mounted on the wall. Reinforcement can be on the outside of the wall, but the best solution is of course to place it inside the wall. The sooner we are involved in the planning of the building, the better the solution we can provide. Molift Group AS is not responsible for installation or evaluation of the necessary reinforcement.

Surface levelling of ceiling

MRS can be mounted in the ceiling via telescope brackets (built-in) or straight in the ceiling (see chapter 4 – Mounting of MRS).

If the ceiling surface varies by more than ±2 mm within a distance of 1200 mm, shims are used to straighten up the mounted elements. MRS has shims for 0.5, 1 and 2 mm.

If the variations exceed ± 5 mm within a distance of 1200 mm, the surface must the levelled before the system can be mounted in the ceiling. The reason for this is that the tension of the system will exceed the allowable load of the mounting screws for major variations. This may result in breaking of the securing devices because of overload.

Molift Group AS is not responsible for levelling uneven surfaces of the ceiling.

Door openings

A rail system can cover several rooms and there are then two ways to get from one room to the other.

One possibility is to install separate systems in the rooms and use the "climbing principle" to get from one to the other, see the user manual of the hoist for details. If the system used is Molift Hi-Trac, a hoist is to be installed for each system. When climbing with Molift Hi-Trac, the SWL should not exceed 160 kg

Molift Nomad requires a trolley for each system, and the hoist is then moved from one trolley to the other by means of climbing.

Another possibility is to make a split above the door opening so that the rail system can continue from one room to the other. The figure below states the necessary measures for installation of rails with a split which is adjusted to the trolley. A trolley with an extended strap for the securing point is used for Molift Nomad. In this way the hoist cannot go all the way up above the door frame, and squeezing between hoist and doorway is avoided.

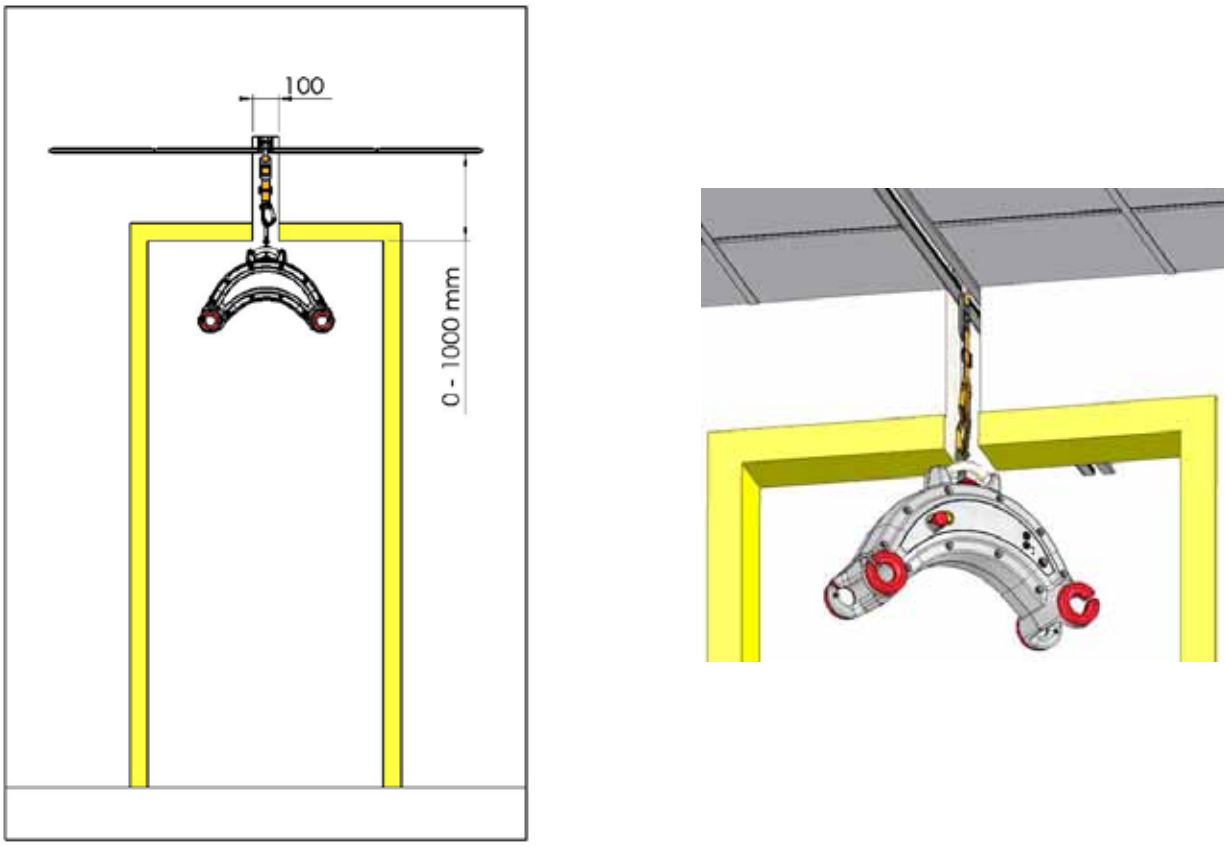


Figure 9. Doorway with continuos rail and Molift Nomad

To use an unbroken rail with Molift Hi-Trac an extraordinarily high door is required so that the rail can be installed in the same height as the door frame. Molift Hi-Trac can then pass right through the door opening. The ceiling can be mounted with the rails integrated on the same level as the door frame, or as an open ceiling.

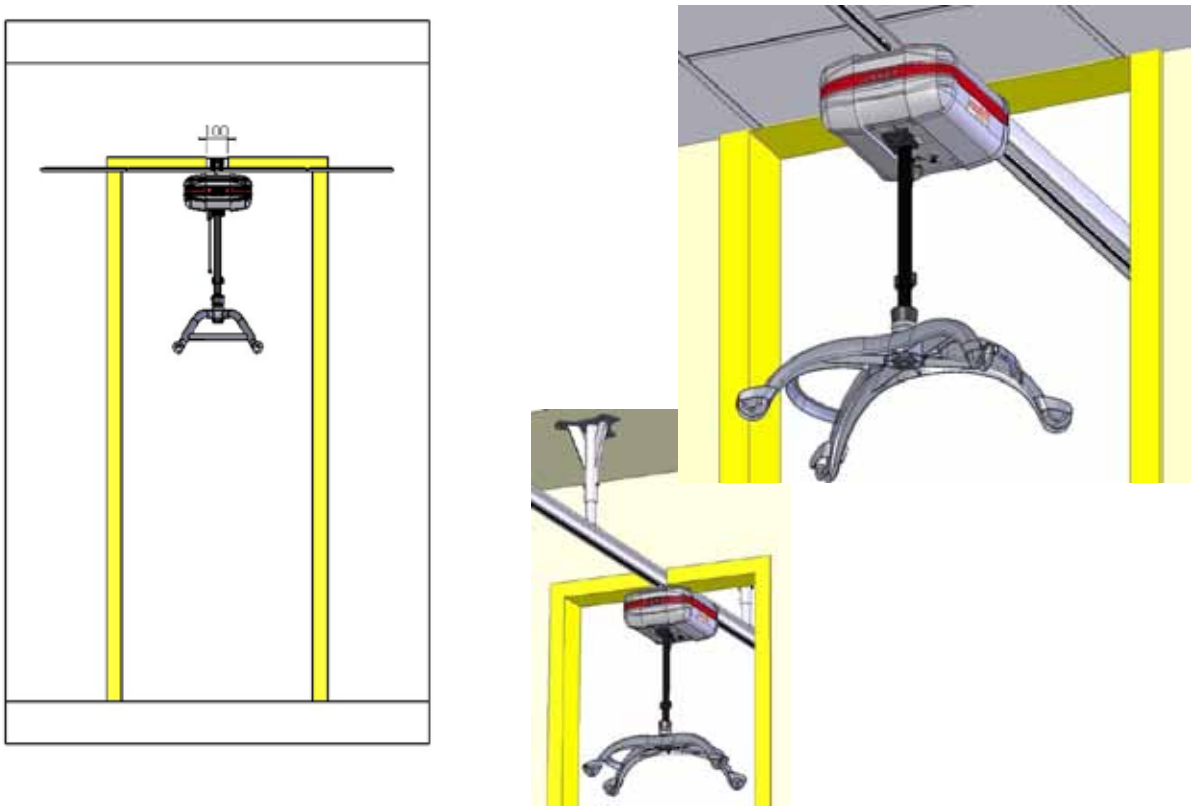


Figure 10. Doorway with continuos rail, ceiling and Molift Hi-Trac

Open ceiling

An open ceiling means that the rails and brackets, if any, are placed so that they are visible in the ceiling. The distance between ceiling and rail will vary, depending on how high the rail system is placed.

Ceiling

With Molift Rail System it is possible to build in the rails in the ceiling which will give a beautiful integral appearance.

Figure 11. Example of MRS in ceiling

Molift Group AS recommends that the system ceiling with profiles be used to carry the weight of the ceiling after mounting. The ceiling may not be fastened to the rail system!

Ceiling panels are not to lie against the rail profile, refer to the figure below.

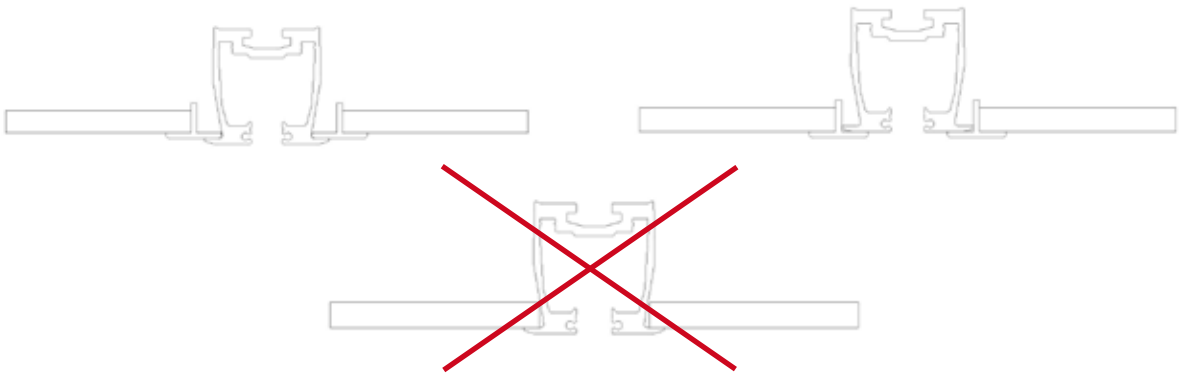


Figure 12. System ceiling

Another advantage of the system ceiling is that it is easy to inspect the system after installation and in connection with annual inspections.

It is important to establish inspection holes for built-in rail systems since access is required to all securing points in connection with annual inspections of the system. Molift Group AS is not responsible for installation of inspection holes.

Plumbing, ventilation, power supply and other installations

It is a great advantage if brackets and rails can be mounted very early in the building process. If the ceiling hoist mounting is not included until late in the building process it might interfere with other important installations. This might mean that the rails need to be relocated and that it will not be possible to obtain an optimal solution. In this case additional work must be expected to adjust the installations to each other.

Figure 13. Example of installation

Choosing Rail system and hoist

Which rail system is ideal

First of all it is important to define who are going to use the hoist systems. Both the type of hoist and the covered area will depend on the type of patient who is to use the installation. Further also owner and caretakers have different needs and wishes to be met. One thing is the needs of today, what about the needs of tomorrow? It is important to allocate sufficient time to the planning in order to avoid future rebuilding and additional costs if possible.

Choice of ceiling hoist/lift motor

Molift Hi-Trac is a small, discrete and very powerful ceiling hoist. It is available in two versions;

Molift Hi-Trac 2002 MRS: art no 1100022
SWL = 160 kg

Molift Hi-Trac 2002+ MRS: art no 1100024
SWL = 300 kg

The lift motor is fixed to the rail and the carer controls and provides the motive power for horizontal movement. The Molift 4 point suspension allows suspension to be adapted to requirements.

Molift Nomad is a small, light ceiling hoist which can be moved from one rail system to another.

Molift Nomad has SWL from 160 to 255 kg.
Art no 12160 - SWL 160 kg
Art no 12205 - SWL 205 kg
Art no 12230 - SWL 230 kg
Art no 12255 - SWL 255 kg

The sling is attached to a trolley fitted to the rail and the lift motor is incorporated into the chassis, which also includes lifting hooks. This hoist uses both floor-mounted and ceiling-mounted hoist system slings. This gives a cost efficient solution and makes carers' work easier.

Weight classes

Molift Rail System is divided into several weight classes. The weight class defines the maximum load to be used for the system (SWL = safe working load).

The weight class is determined by rail type and distance between securing points.

Never use more than one lifting motor or trolley per rail system. The SWL of the lifting motor may never exceed the lifting capacity (SWL) of the rail system.

Hoist	SWL 160 kg	SWL 205 kg	SWL 230 kg	SWL 255 kg	SWL 300 kg
Molift Nomad	•	•	•	•	
Molift Hi-Trac 2002	•				
Molift Hi-Trac 2002+					•

Table 3. Weight classes

Chapter 3 - Choice of parts and ordering

Structure of the Molift Rail System (MRS)

When the type of system has been chosen, the details of the system are to be defined. In this chapter we will look at the details of the system and how to choose the right parts.

What makes out a securing point?

A securing point is defined as the connection securing the rail to the ceiling or the wall. In the planning phase it is important to be able to uncover all aspects relating to the building.

In the most simple cases this may be a screw and in the more complex ones a mixture of different elements. Below we have made a check list to ensure that all elements required for safe mounting of the rail system are considered and provided for.

Molift Group AS is only system responsible if the rail system with trolley and/or lifting motor has been supplied by Molift and is installed by authorised Molift staff.

There must never be more than one lifting motor per rail system. The lifting capacity (Safe Working Load, SWL) of the lifting motor may never exceed the lifting capacity (SWL) of the rail system.

Only original Molift parts are to be used when mounting Molift Rail System. All available parts are described in this handbook.

Choosing securing elements for the ceiling

Chapter 2 describes how a survey is required to clarify all assumptions related to a ceiling hoist system. Based on the information of the inspection table (encl. 1) it is not difficult to find the correct securing device (screw, stud anchor etc) for the right type of bracket. It can be very helpful to draw up the systems in as much details as possible.

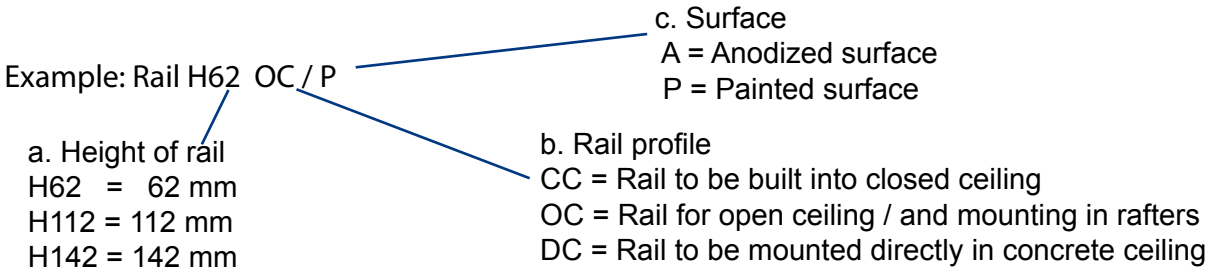
Number of securing devices and rail type must also be assessed based on the "Table 6. Length of rail and distance between suspensions" on page 98 and "Table 7. Max free end on rail" on page 99.

All parts to be ordered for a system are ordered via Molift's own ordering form for Molift Rail System (own Excel chart).

All parts of the MRS are found in this chapter, stating article number, name and with a description.

Description of the elements of MRS

Explanation of the profile descriptions of MRS:



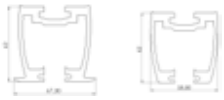
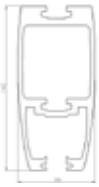
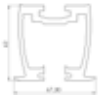
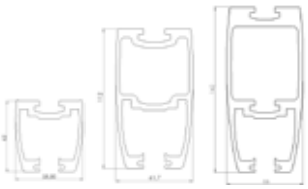
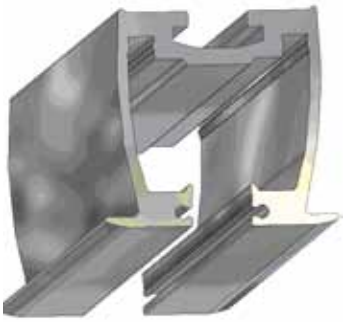
Ref	Picture:	Designation:	Description:
a		Rail H62	Profile height is 62 mm
a		Rail H112	Profile height is 112 mm
a		Rail H142	Profile height is 142 mm
b		CC	Rail to be built into closed ceiling
b		OC	Rail for open ceiling / and mounting in rafters
b		DC	Rail to be mounted directly in concrete ceiling, with machined slots for mounting (direct in ceiling)
c		A	Rails with anodized surface, standard
c		P	Rails with painted surface (white RAL 9010)
	Example: Rail H62 OC/A		Rail, height 62 mm for open ceiling, anodized surface

Table 4. Rail Profiles

Schedule of rail profiles



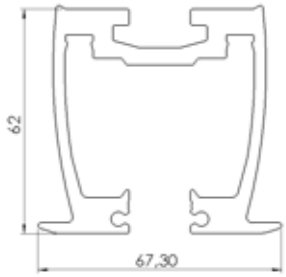


Figure 14. Rail H62 CC

Colour	Description	L = 6 meter
Anodized	Rail H62 CC/A	Part no. 1109000 - 6 m
Painted	Rail H62 CC/P	Part no. 1109001 - 6 m

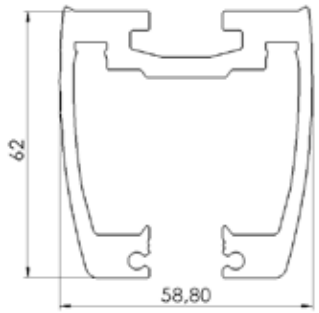
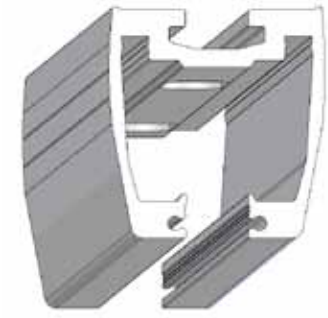


Figure 15. Rail H62 OC

Colour	Description	L = 6 meter
Anodized	Rail H62 OC/A	Part no. 1109002 - 6 m
Painted	Rail H62 OC/P	Part no. 1109003 - 6 m



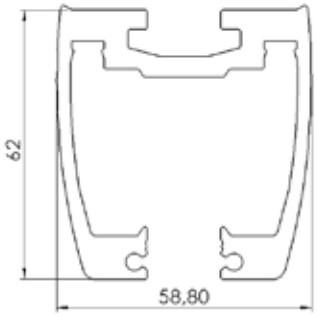


Figure 16. Rail H62 DC

Colour	Description	L = 6 meter
Anodized	Rail H62 DC/A	Part no. 1109004 - 6 m
Painted	Rail H62 DC/P	Part no. 1109005 - 6 m

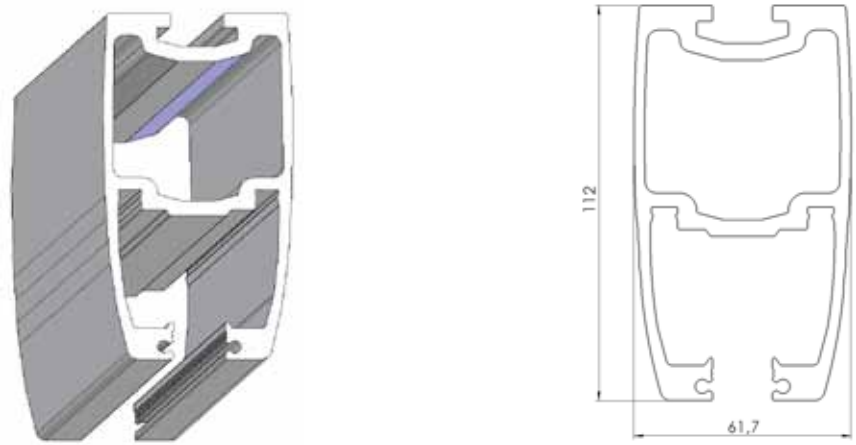


Figure 17. Rail H112 OC

Colour	Description	L = 4 meter	L = 5 meter	L = 6 meter
Anodized	Rail H112 OC/A	Part no. 1109008 - 4 m	Part no. 1109008 - 5 m	Part no. 1109008 - 6 m
Painted	Rail H112 OC/P	Part no. 1109009 - 4 m	Part no. 1109009 - 5 m	Part no. 1109009 - 6 m

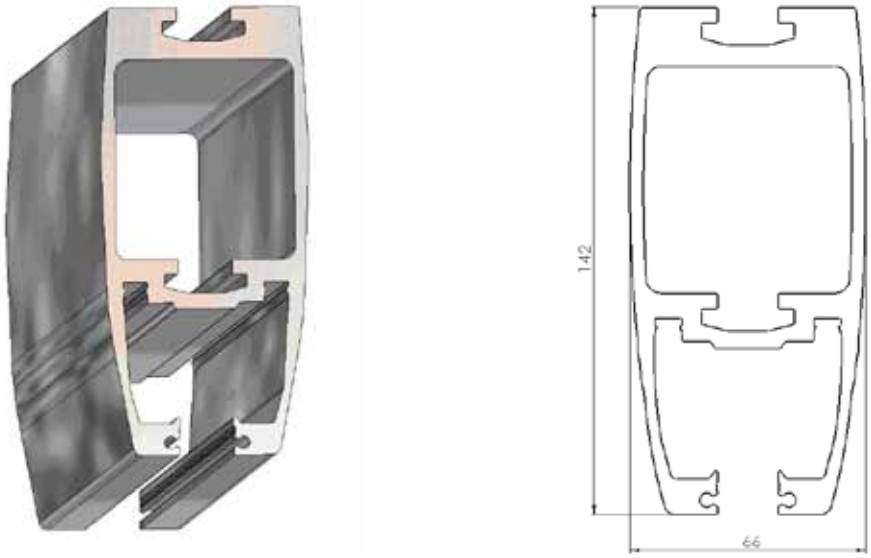


Figure 18. Rail H142 OC

Colour	Description	L = 5 meter	L = 6 meter	L = 7 meter
Anodized	Rail H142 OC/A	Part no. 1109010 - 5 m	Part no. 1109010 - 6 m	Part no. 1109010 - 7 m
Painted	Rail H142 OC/P	Part no. 1109011 - 5 m	Part no. 1109011 - 6 m	Part no. 1109011 - 7 m

The rails are only supplied in lengths according to the table above and must be adjusted on site. Special lengths can be supplied subject to longer delivery time.

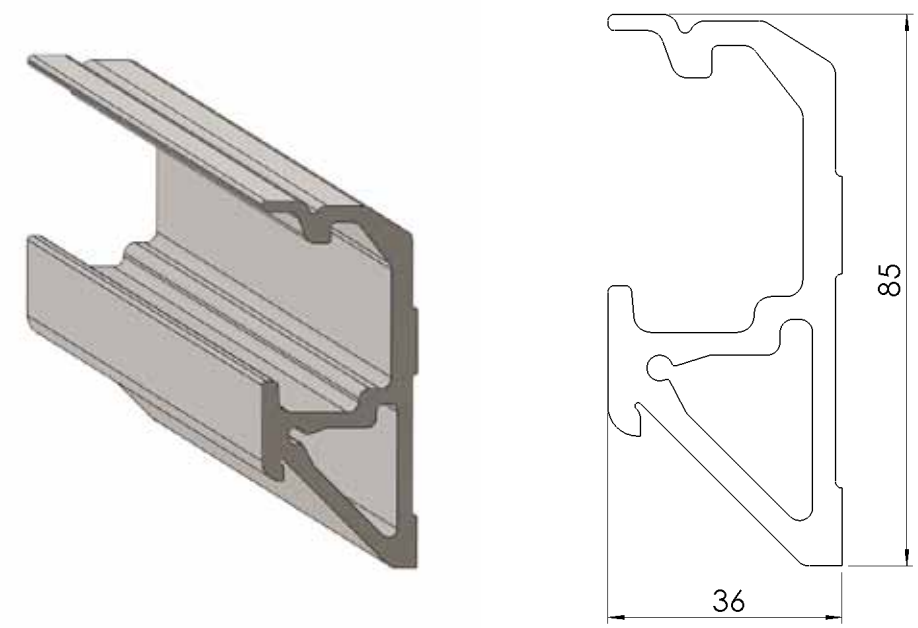


Figure 19. Rail H85 W

Colour	Description	L = 6 meter
Painted white	Rail H85 W/P	Art. no. 1109160

Rails are only supplied in the lengths specified in the tables above. Lengths must therefore be adapted to requirements at the construction site. Custom lengths can however be supplied, but delivery times are longer.

Trolleys for wall rails and traverse boom H112 OC are used with the wall rails.

Schedule of curves

As standard the Molift Rail System has curves with four angles, 30, 45, 60 and 90 degrees. Curves are only available for the H62 profiles. The curves are as standard supplied with a 500 mm arm extending from the curve itself. All curves have a radius of 550 mm.

As to the length of the arms and the angle of the curves, these can be specially adapted from the factory. The price and time of delivery will then be different from the standard. A standard curve must always be secured using three securing points: one securing point at each end / joint and a securing point in the middle of the radius. Special Curves must be specified when ordered, see Figure 23 on page 31. For mounting of curves with special measures, see separate installation guide from Molift Group AS

Standard curves

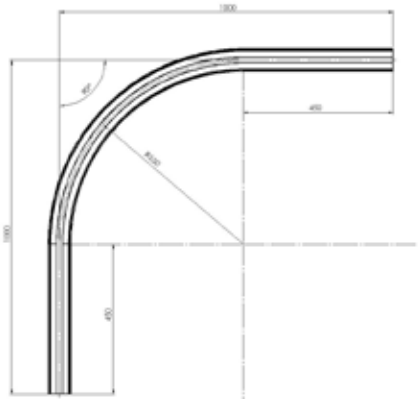


Figure 20. Curves H62 CC

Part no.	Description	Part no.	Description
1109100	Rail H62 Curve 30° CC/A	1109105	Rail H62 Curve 30° CC/P
1109101	Rail H62 Curve 45° CC/A	1109106	Rail H62 Curve 45° CC/P
1109102	Rail H62 Curve 60° CC/A	1109107	Rail H62 Curve 60° CC/P
1109103	Rail H62 Curve 90° CC/A	1109108	Rail H62 Curve 90° CC/P

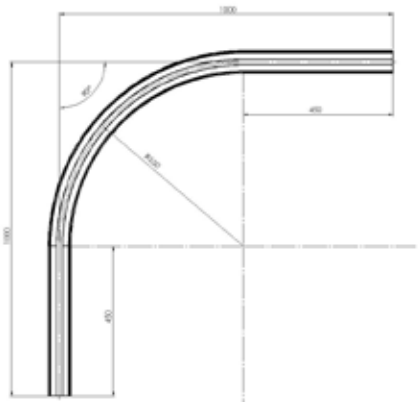


Figure 21. Curve H62 OC

Part no.	Description	Part no.	Description
1109130	Rail H62 Curve 30° OC/A	1109135	Rail H62 Curve 30° OC/P
1109131	Rail H62 Curve 45° OC/A	1109136	Rail H62 Curve 45° OC/P
1109132	Rail H62 Curve 60° OC/A	1109137	Rail H62 Curve 60° OC/P
1109133	Rail H62 Curve 90° OC/A	1109138	Rail H62 Curve 90° OC/P

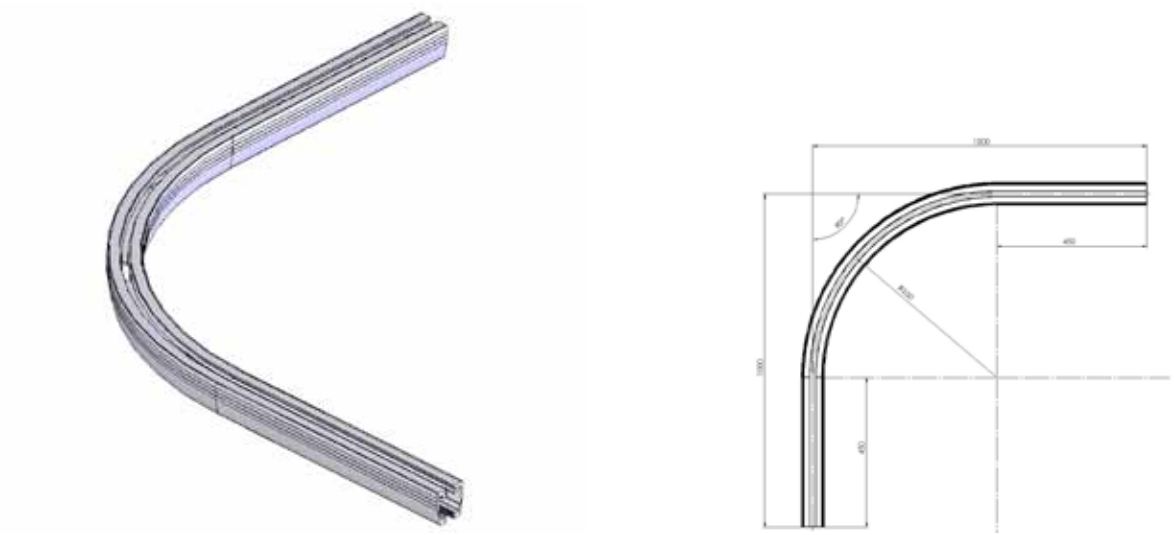


Figure 22. Curve H62 DC

Part no.	Description	Part no.	Description
1109140	Curve H62 30° DC/A	1109145	Curve H62 30° DC/P
1109141	Curve H62 45° DC/A	1109146	Curve H62 45° DC/P
1109142	Curve H62 60° DC/A	1109147	Curve H62 60° DC/P
1109143	Curve H62 90° DC/A	1109148	Curve H62 90° DC/P

Special Curve H62 CC/OC/DC

If necessary, curves with other angles and measurements can be ordered. Use Part no. 1109150 for all special curves on Rail H62 profile, and specify the colour (P or A) and following measures when ordering (See illustration):

A = (0 - 2000 mm) : _____
B = (0 - 2000 mm) : _____
C = (0 – 90°) : _____
Specify direction (left/right): _____

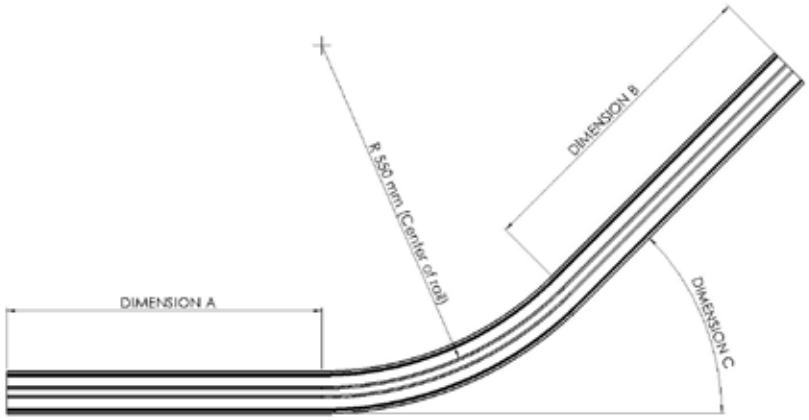


Figure 23. Special Curve

Part no.	Description
1109150	Rail H62 Special Curve CC/OC/DC

Illustrated examples of measuring the MRS curves

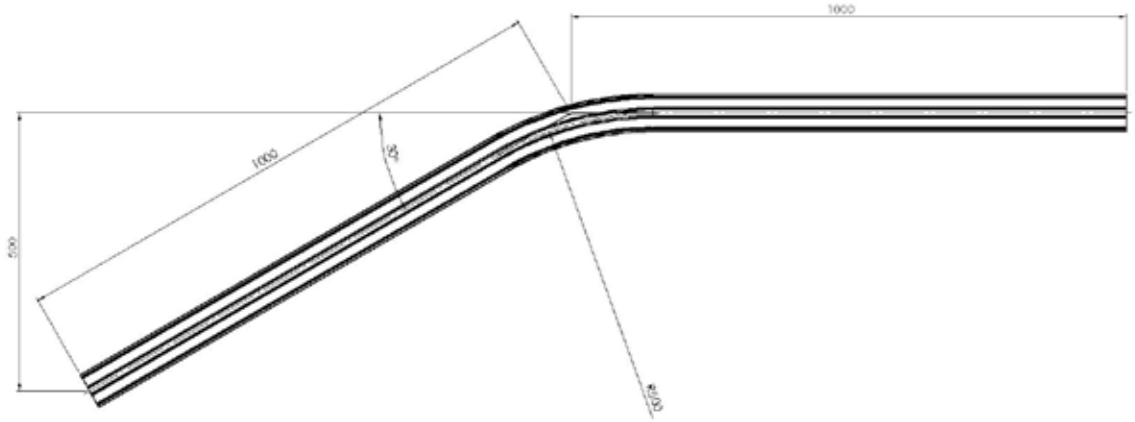


Figure 24. Curve 30°

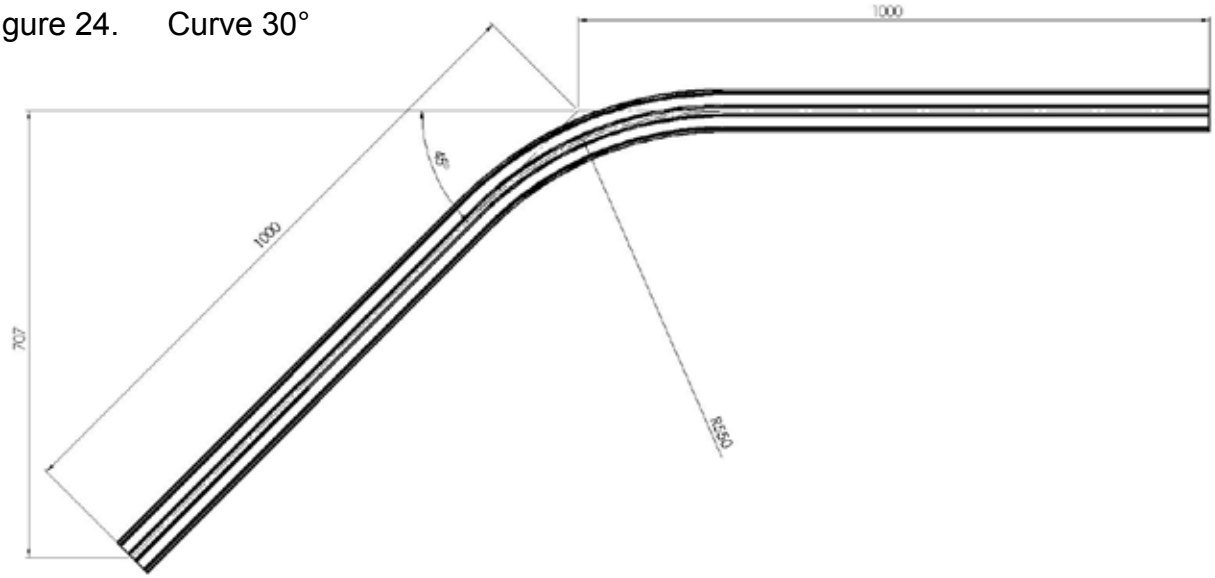


Figure 25. Curve 45°

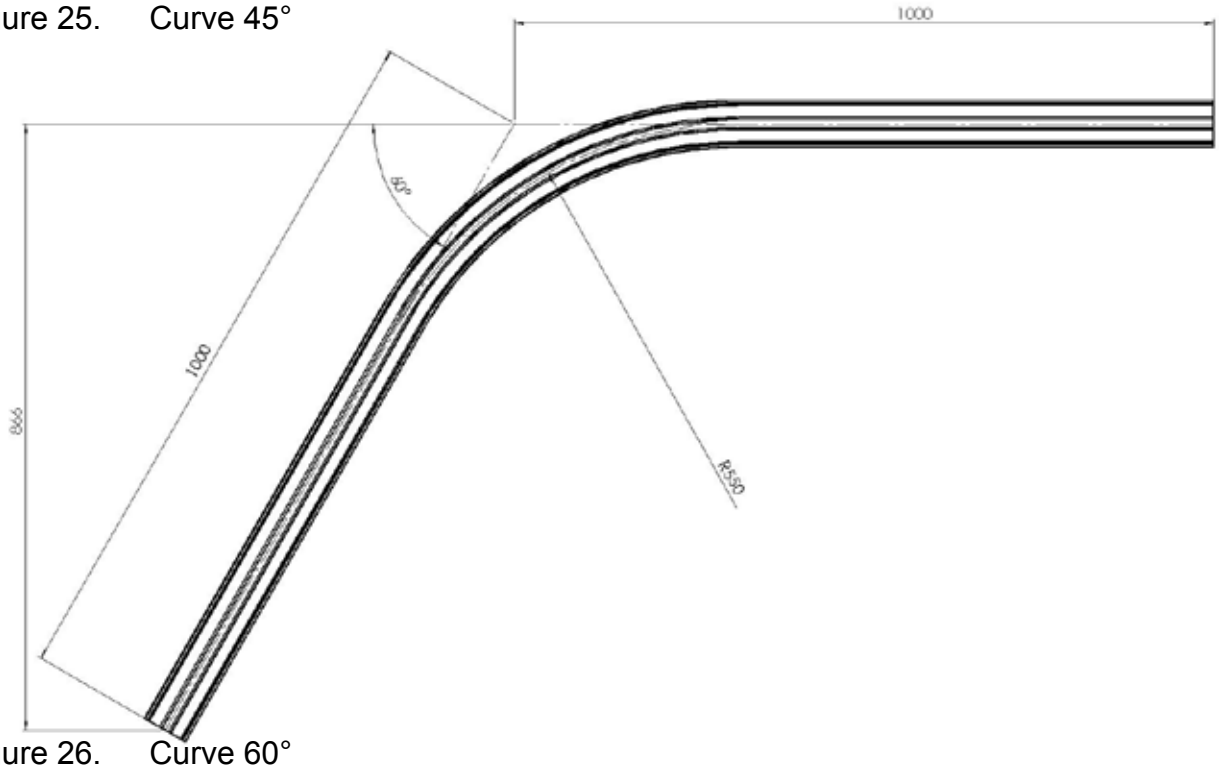


Figure 26. Curve 60°

Schedule of telescope brackets

General description of the brackets:
Welded structure, hot-dip galvanized surface. Available in six built-in ranges from 85 cm down to 10 cm built-in, and a bracket of 26 cm. The height of the profile must be added:

Max and min measures for Rail H62 are:
Min allowed built-in 350 + 62 mm = 412 mm (with rail H112: 462 mm / with rail H142: 492 mm)

Max allowed built-in 850 + 62 mm = 912 mm (with rail H112: 962 mm / with rail H142: 992 mm)

All profiles and curves can be used for the telescope brackets. The set contains washers and MRS multibolts for mounting of the rails on the brackets.

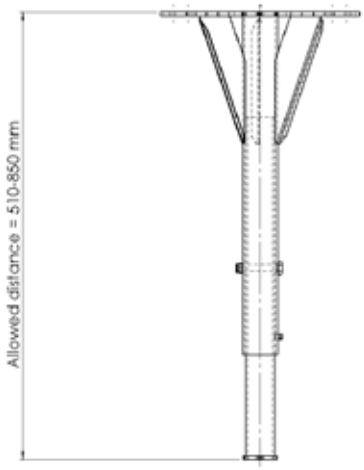


Figure 27. Telescope ceiling bracket, 510 - 850 mm (SWL 300 kg)

Part no.	Description
1109202	Telescope ceiling bracket (set), 510 – 850 mm

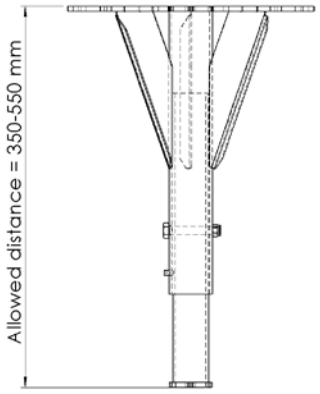


Figure 28. Telescope ceiling bracket, 350 - 550mm (SWL 300 kg)

Part no.	Description
1109201	Telescope ceiling bracket (set), 350 – 550mm

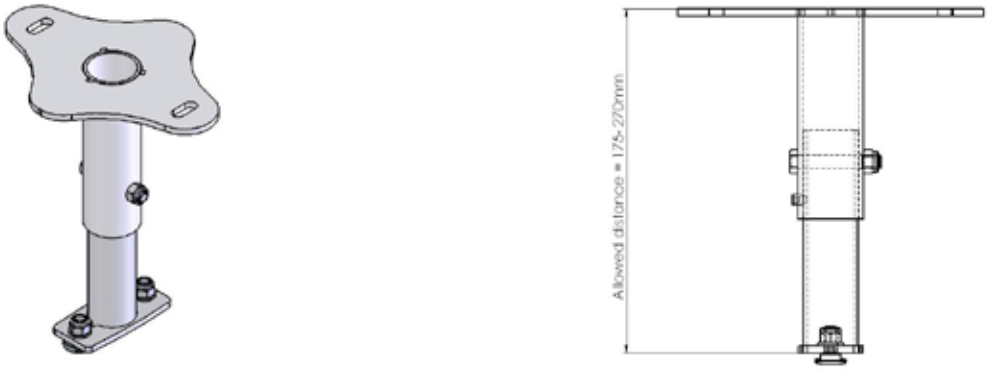


Figure 29. Telescope bracket 175 - 270 mm (SWL 300 kg)

Part no.	Description
1109203	Telescope ceiling bracket, 175 – 270 mm

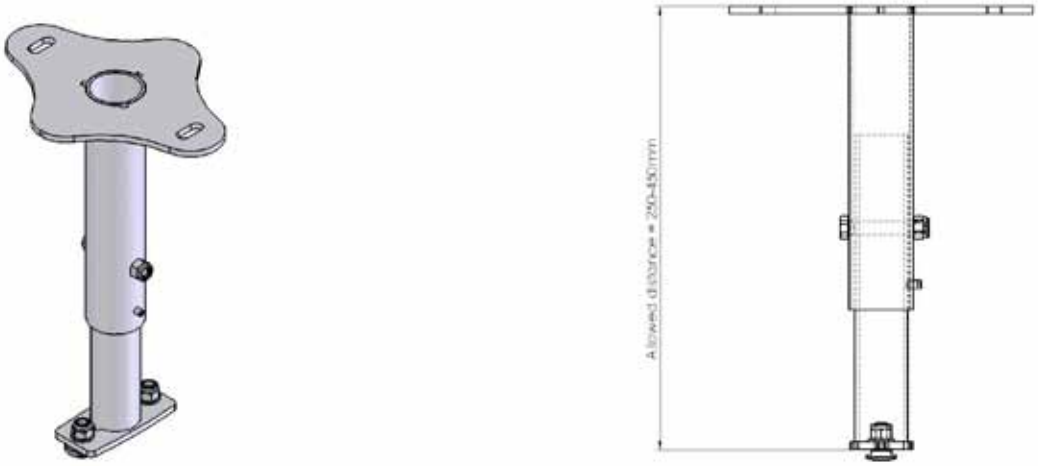


Figure 30. Telescope bracket 250 - 400 mm (SWL 300 kg)

Part no.	Description
1109204	Telescope ceiling bracket, 250 – 400 mm

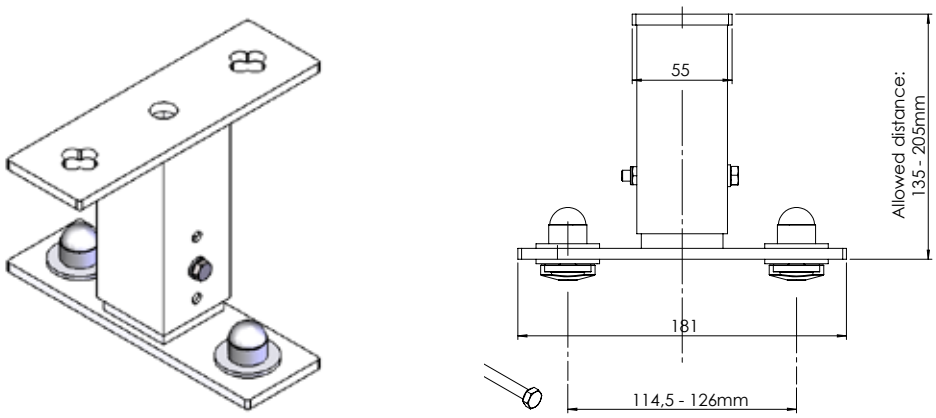


Figure 31. Telescope bracket, 135 - 205 mm (SWL 255 kg)

Part no.	Description
1109452	Etac Telescope Ceiling Bracket 135-205 mm MRS, white

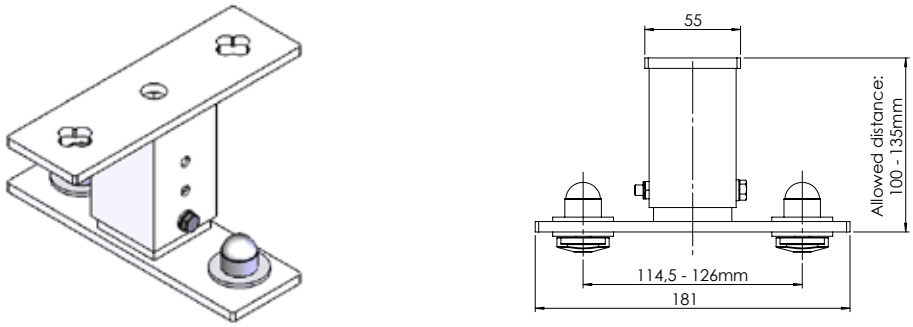


Figure 32. Telescope bracket, 100 - 135 mm (SWL 255 kg)

Part no.	Description
1109451	Etac Telescope Ceiling Bracket 100-135 mm MRS, white

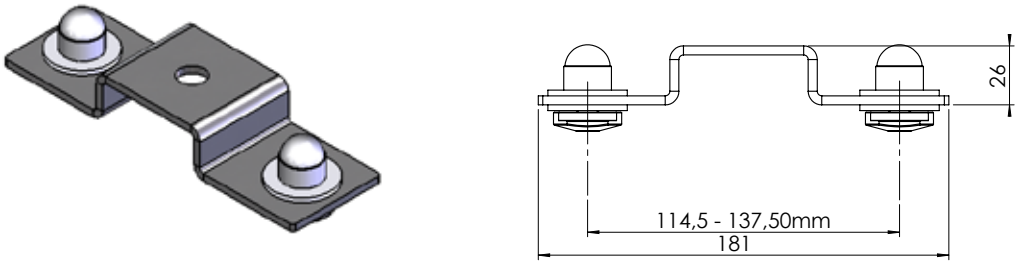


Figure 33. Bracket, 26 mm (SWL 255 kg)

Part no.	Description
1109456	Etac Ceiling Bracket 26 mm MRS, white

Schedule of wall and rafters securing devices

Figure 34. Wall mounting bracket (SWL 300 kg)

Part no.	Description
1109259	Wall mounting bracket with multibolt, P - white
1109269	Wall mounting bracket with multibolt, A - anodized

The bracket is mounted on the wall; the rail can hang below or be placed on top of the bracket. Can be used for all MRS profiles.

Figure 35. Rafted ceiling bracket (SWL 300 kg)

Part no.	Description
1109260	Rafted ceiling bracket, with multibolt and nails

The bracket is mounted on the rafters of a rafted ceiling, with the profile hanging below. Can be used for all MRS profiles.

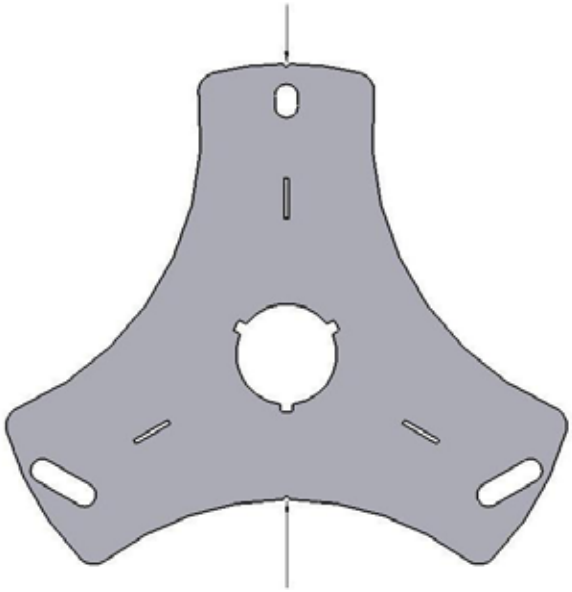


Figure 36. Ceiling plate (SWL 300 kg)

Part no.	Description
1109305	Ceiling plate

The plate is used as backing plate when mounting a telescopic bracket in a rafter layer. The plate is placed above a reinforced rafter layer and connected to the telescopic bracket using threaded rods and lock nuts. The system is pretightened when "clamped" to the rafter layer.

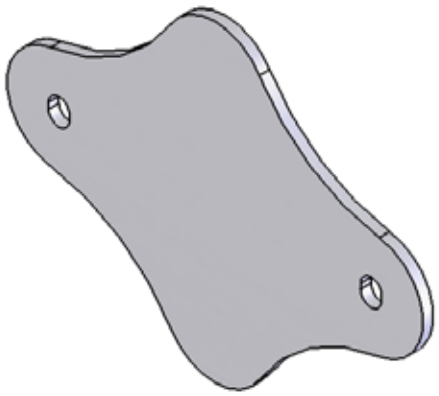


Figure 37. Ceiling plate (SWL 300 kg)

Part no.	Description
1109117	Ceiling Mounting Plate MRS

The plate is used as backing plate when mounting a telescopic bracket (175-400 mm)in a rafter layer. The plate is placed above a reinforced rafter layer and connected to the telescopic bracket using threaded rods and lock nuts. The system is pretightened when "clamped" to the rafter layer.

MRS tool

Figure 38. Drill Guide

Part no.	Description
1109999	Drill Guide Ø8 mm

Auxiliary tool for drilling hole in rail H62 DC when mounting directly in ceiling

Schedule of MRS mounting screws

Figure 39. Multibolt

Part no.	Description
1109306	Multibolt

The screw fits to the trail of all MRS profiles, M10 thread. Used for all connections with brackets for mounting.

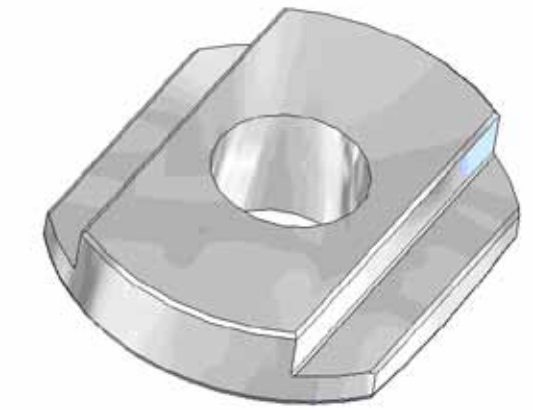


Figure 40. T-profile washer

Part no.	Description
1109307	T-profile washer

The washer fits the trail of all MRS profiles. Used for mounting directly in the ceiling and on all End stops.

Part numbers 1109306 and 1109307 are both produced in AISI 304 (stainless steel) and the bolts can be used, to a certain extent, in environments in which they are exposed to corrosion, i.e. swimming pools.

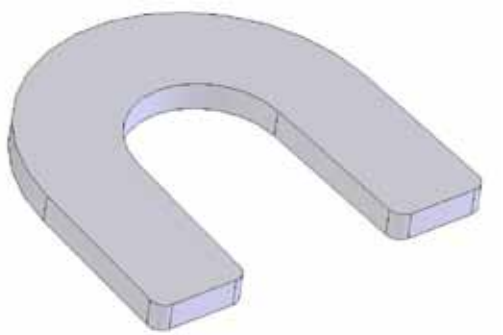


Figure 41. Shims

Part no.	Description
1109312	Shims 0.5 mm
1109313	Shims 1.0 mm
1109314	Shims 2.0 mm

Shims are used for support of the telescope brackets, they come in three thicknesses.

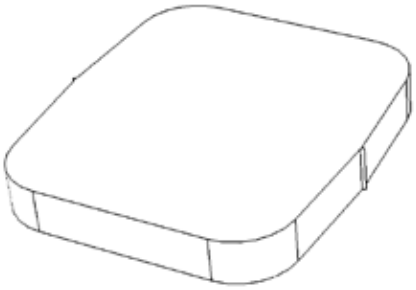


Figure 42. Joint part

Part no.	Description
1109350	Joint set

Joint parts are used for stabilization together with two tightening pins in the connections between rails and curves.

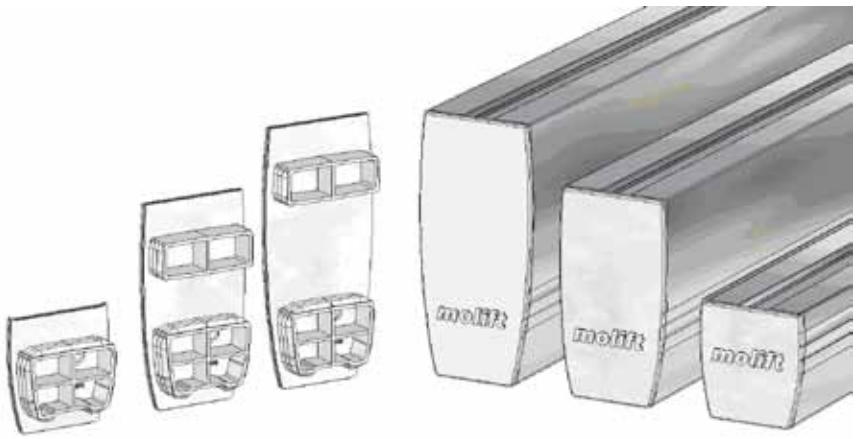


Figure 43. End caps

Part no.	Description	Part no.	Description
1109320	End cap, Rail H62, grey	1109340	End cap, Rail H62, white
1109321	End cap, Rail H112, grey	1109341	End cap, Rail H112, white
1109322	End cap, Rail H142, grey	1109342	End cap, Rail H142, white

End caps are mounted at the end of each profile. Available in grey and white.

Schedule of end stops for MRS profiles

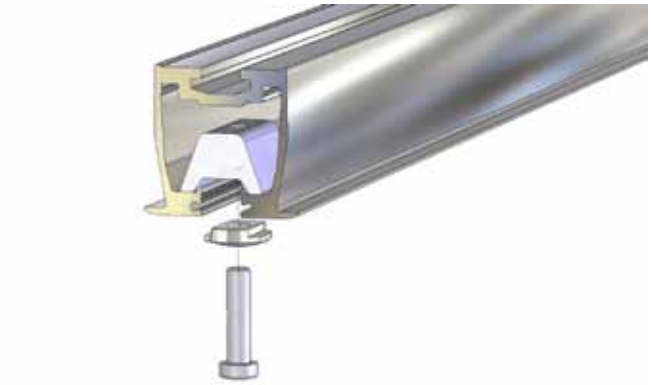


Figure 44. End stop

Part no.	Description
1109410	End stop

End stop for Molift Nomad trolley.
Mounted at the end of each rail to prevent the hoist and trolley to escape from the rail.
Mounting screw is secured with Loctite 243.

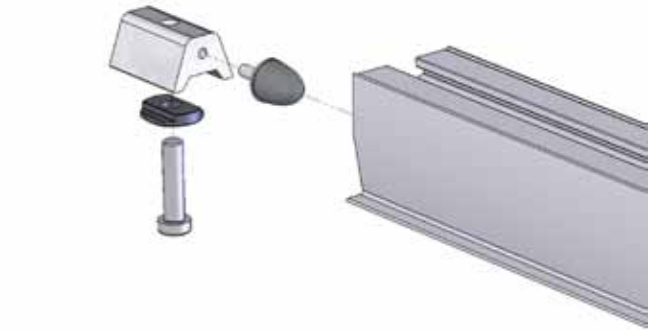


Figure 45. End stop with bumper

Part no.	Description
1109411	End stop, traverse trolley and Molift Hi-Trac

End stop for traverse trolley and Hi-Trac.
Mounted at the end of all rails to prevent the hoist and trolley from escaping from the rail.
Mounting screw is secured with Loctite 243.

Figure 46. Drill guide Ø11

Part no.	Description
1109998	Drill guide Ø11

Aid for the drilling of holes in profiles for the fitting of end stops

Schedule of MRS trolleys

Figure 47. Trolley Molift Nomad (SWL 255 kg)

Part no.	Description
1109500	Trolley Molift Nomad, MRS
1109109	Trolley Molift Nomad w brake, MRS

This is a standard trolley for Molift Nomad of MRS, with end bumpers and lifting eye with swivel function mounted.

Figure 48. Trolley Molift Nomad Climbing (SWL 255 kg)

Part no.	Description
1109560	Trolley, Molift Nomad Climbing, MRS
1109112	Trolley Molift Nomad for Climbing w brake, MRS

Trolley for Molift Nomad, with end bumpers, belt and lifting eyes prepared for climbing.

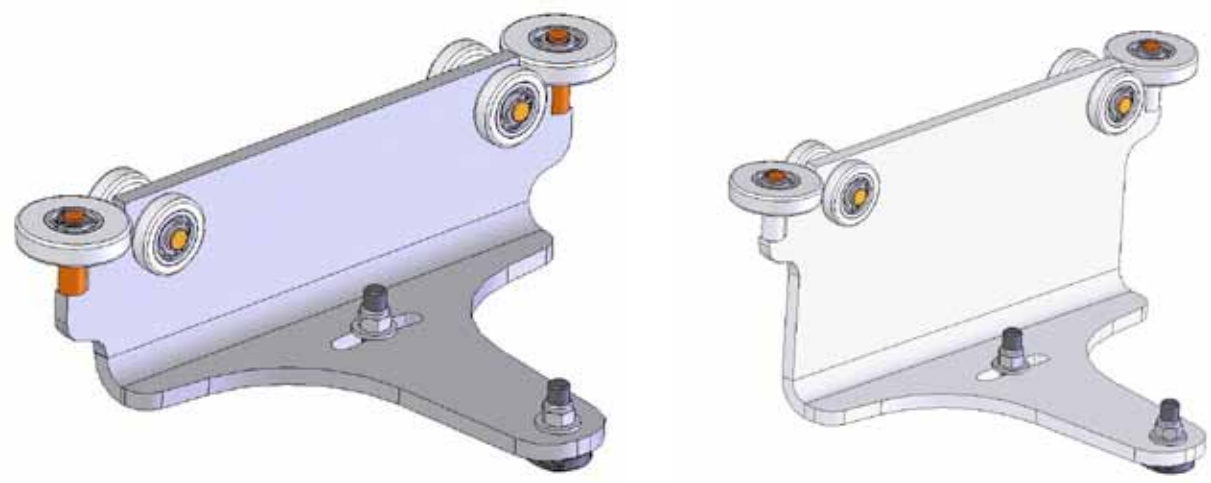


Figure 49. Trolley Traverse (SWL 300 kg)

Part no.	Description	Part no.	Description
1109550	Trolley Traverse, A.	1109570	Trolley Traverse, A, 50+
1109590	Trolley Traverse, P,	1109580	Trolley Traverse, P, 50+

Trolley for traverse, supplied in sets (2 pieces) ready for mounting with washer, lock nut and multi-bolt. Available in two heights, low with 50 mm clearance and high with 100 mm clearance (50+), see figure "Figure 61. Traverse, distance between ceiling and rail" on page 85

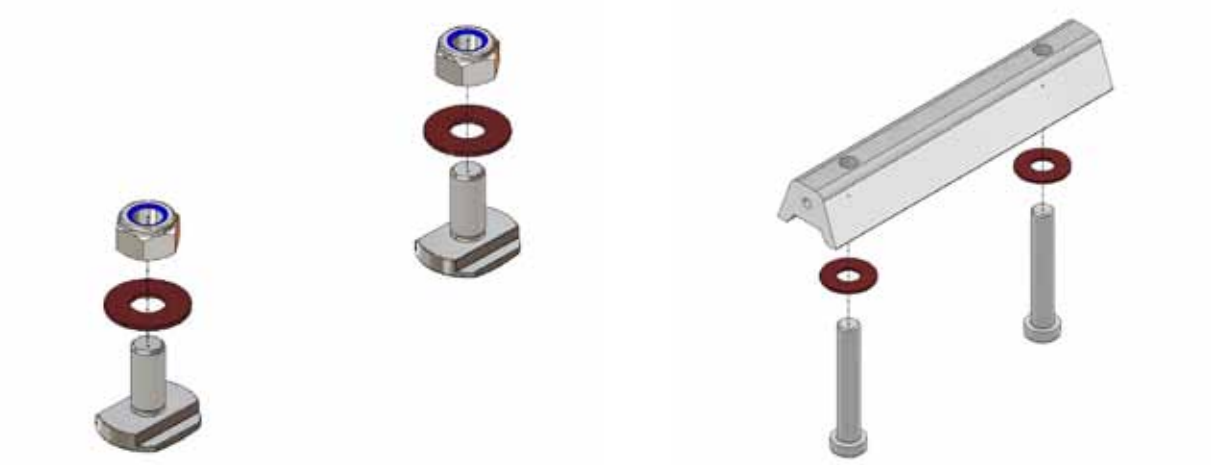


Figure 50. Mounting kit, traverse

Part no.	Description
1109345	Mounting kit, traverse mounted underneath the primary rails
1109353	Mounting kit, traverse mounted between primary rails

Mounting kit for traverse, suspended either between or under the boom

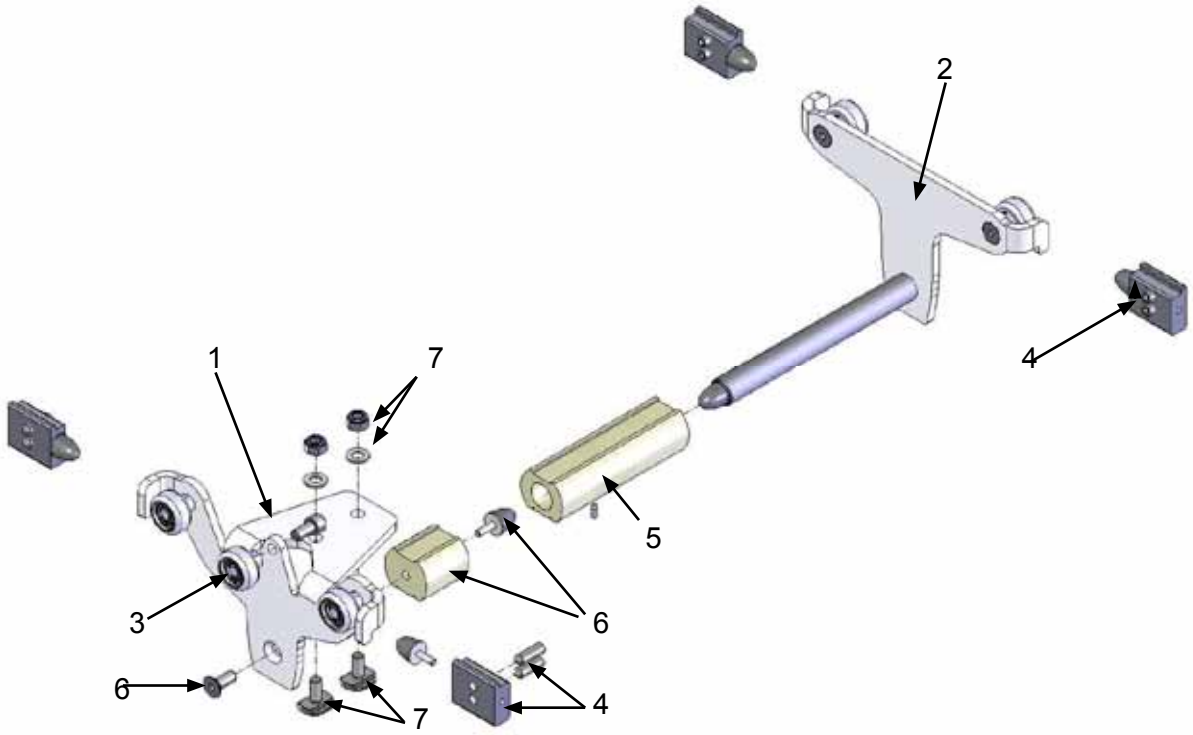


Figure 51. Trolleys for wall rail H85 W, traverse (SWL 300 kg)

Article number	Description
1109163	Telescope Trolley Set MRS

Trolleys for wall rail H85W with traverse, supplied as a set ready for assembly.

The set consists of
1 x fixed trolley for wall rails, pos 1
1 x telescope trolley for wall rails, pos 2
1 x support wheel with bolt for fixed trolley, pos 3
4 x end stops for wall rails, with 2 x M10 setscrews, pos 4
1 x bushing for telescope trolley, pos 5
1 x support block with bolt and damper for fixed trolley, pos 6
2 x multibolts with washers and nuts for attaching the rails to the fixed trolley, pos 7

Transition coupling

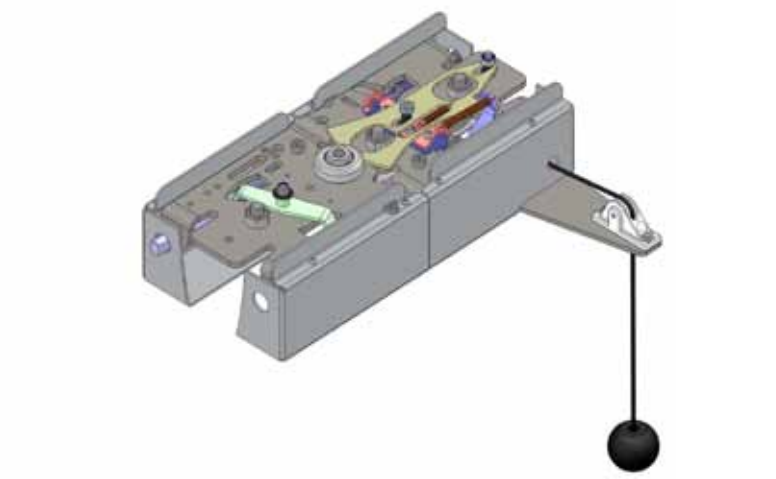


Figure 52. Transition coupling

Article number	Description
1109029	Transition coupling MRS, Anodized
1109650	Transition coupling MRS, Painted

MRS Transition coupling and transition coupling rails are ordered and supplied separately. MRS Transition coupling can be combined with H62 and H142 rails, painted white (RAL 9010) or natural anodized grey. Custom rails adapted to the transition coupling can be ordered

Transition coupling rails

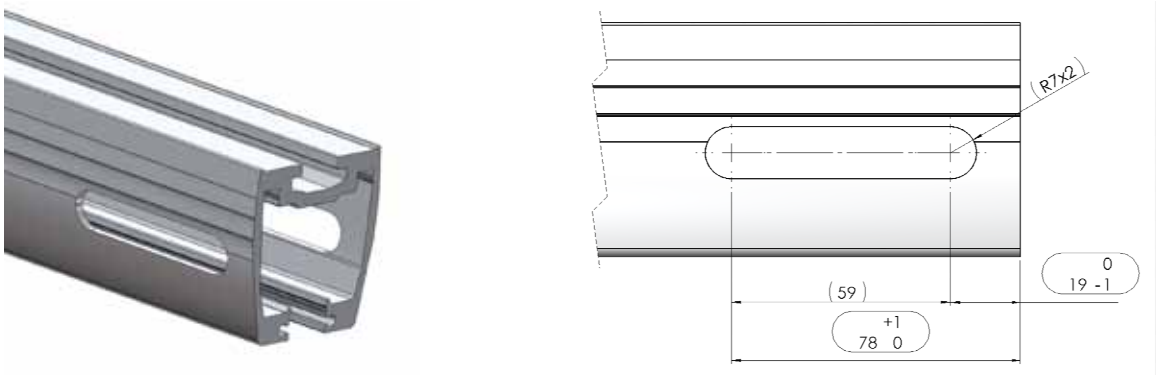


Figure 53. Rail H62 DC

Colour	Description	L = 7 meter
Anodized	Rail mod H62 OC/A	Art. No 1109602
Painted white	Rail mod H62 OC/P	Art. No 1109657

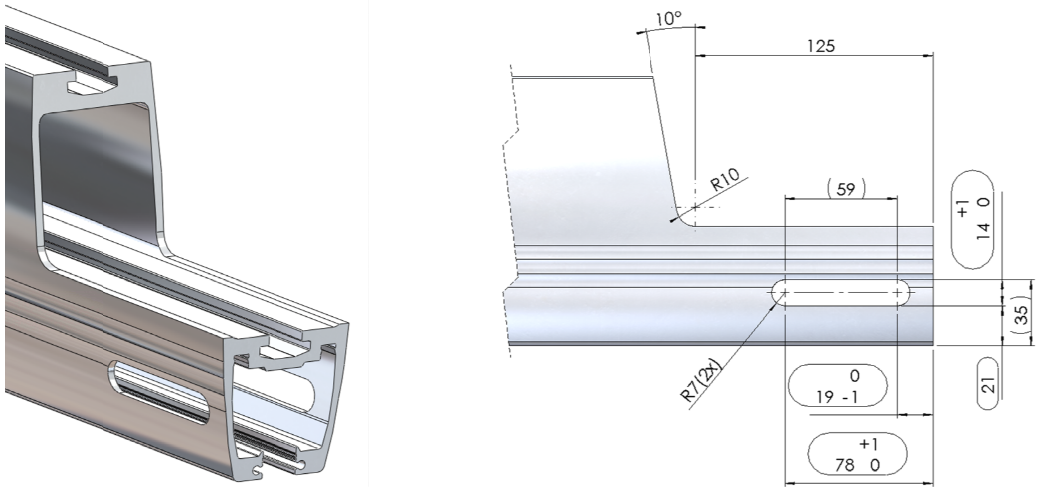


Figure 54. Rail H142 DC

Colour	Description	L = 7 meter
Anodized	Rail mod H142 OC/A	Art. No 1109603
Painted white	Rail mod H142 OC/P	Art. No 1109658

Switch systems

Figure 55. Switch

Part no. Description

1109015 MRS Switch, Anodized

1109066 MSR Switch, Painted

MRS switch systems and attachment brackets are ordered and supplied separately. MRS switch systems are supplied for RH62 CC/OC/DC profiles and curves, painted white (RAL 9010) or natural anodized grey.

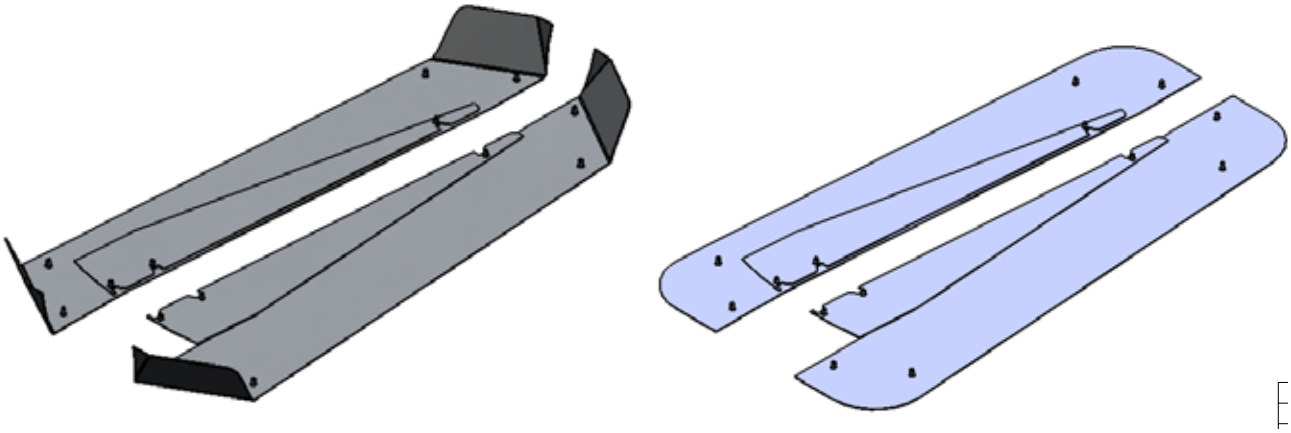


Figure 56. Covers, switches, open and closed ceiling panels

Article number	Description
1109085	Cover assy oc switch MRS, grey
1109086	Cover assy oc switch MRS, white
1109077	Cover assy cc switch MRS, grey
1109078	Cover assy cc switch MRS, white

MRS switch covers are ordered and supplied separately. The covers are supplied painted white or grey and with M4x8 bolts for assembly.

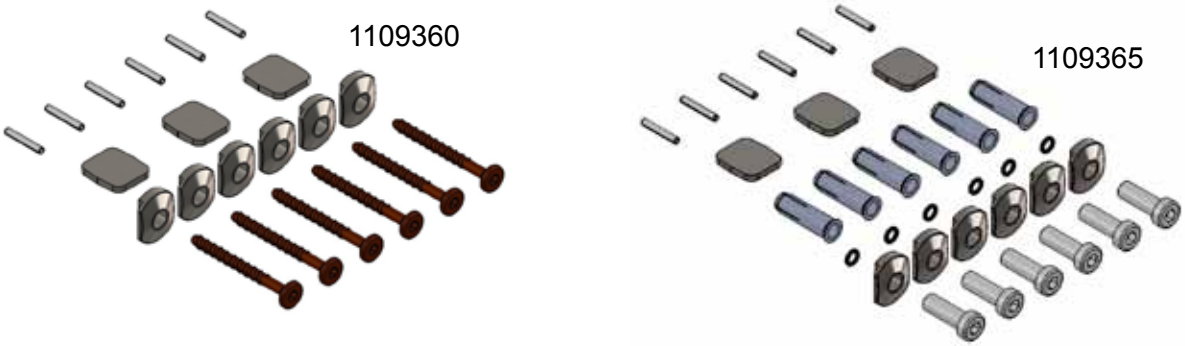
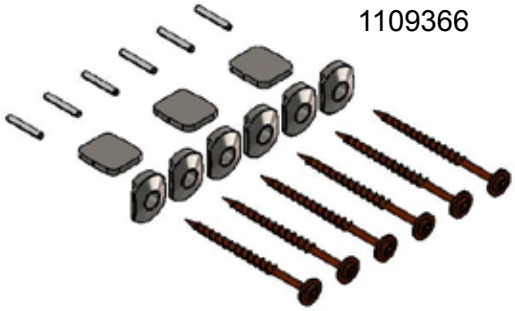


Figure 57. Mounting kit, fitting of switch system directly to ceiling

Part no.	Description
1109360	DC mounting kit for switch, concrete
1109365	DC mounting kit for switch, hollow core concrete
1109366	DC mounting kit for switch, wood



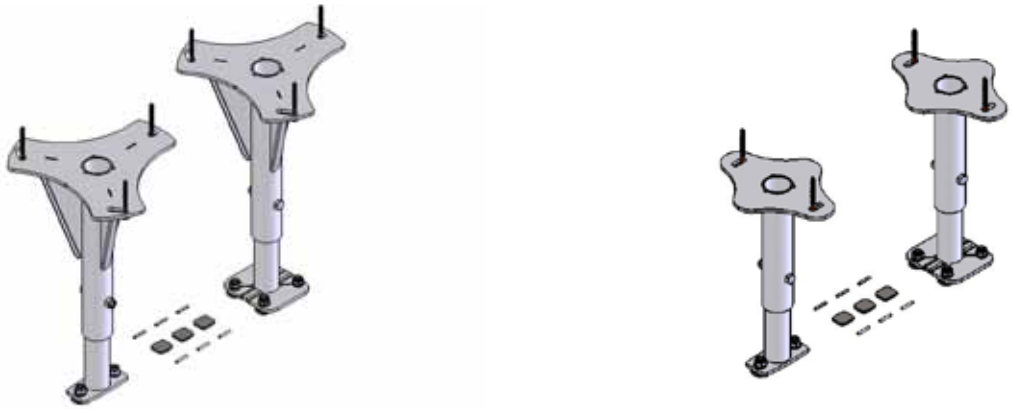


Figure 58. Mounting kit, switch system with telescope bracket in concrete

Part no.	Description
1109370	Telescope mounting kit for switch, concrete (350-550 mm)
1109371	Telescope mounting kit for switch, concrete (510-850 mm)
1109372	Telescope mounting kit for switch, concrete (175-270 mm)
1109373	Telescope mounting kit for switch, concrete (250-400 mm)

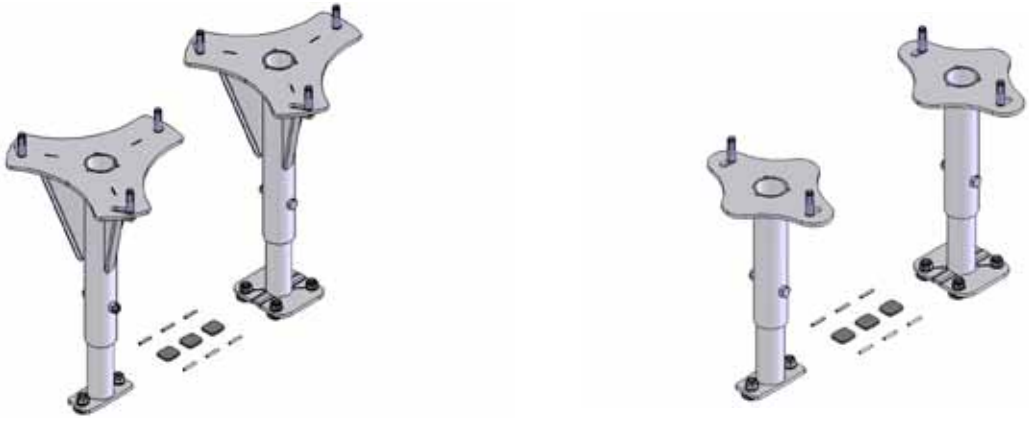


Figure 59. Mounting kit, switch system with telescope bracket in hollow core concrete

Part no.	Description
1109380	Telescope mounting kit for switch, hollow core concrete (350-550 mm)
1109381	Telescope mounting kit for switch, hollow core concrete (510-850 mm)
1109382	Telescope mounting kit for switch, hollow core concrete (175-270 mm)
1109383	Telescope mounting kit for switch, hollow core concrete (250-400 mm)

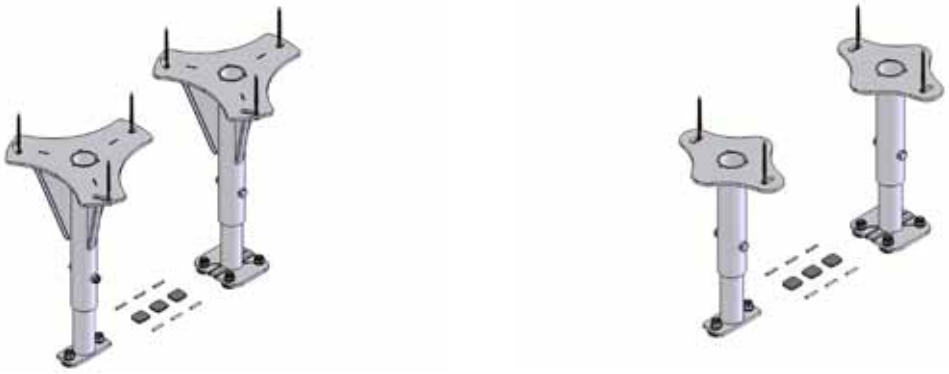


Figure 60. Mounting kit, switch system with telescope bracket in wood ceiling

Part no.	Description
1109390	Telescope mounting kit for switch, wood (350-550 mm)
1109391	Telescope mounting kit for switch, wood (510-850 mm)
1109392	Telescope mounting kit for switch, wood (175-270 mm)
1109393	Telescope mounting kit for switch, wood (250-400 mm)

Standard securing devices to be used for MRS:

Part number	Description	Structure
0210119	Tightening pin Ø4,2 x 26	To connect rails and curves
1109315	DIN 7980 M10 x 40 – 8.8 EZ	Low-headed cylinder screw for mounting of end stops in MRS
1109317	O-ring 8x2 NBR	O-ring to be used on multibolt for mounting direct in ceiling
1109318	DIN 571, Hex head woodscrew M10x90	Screws for mounting directly on timber-framed wall
1109319	RSS Ø7x100	Mounting screw for mounting directly in ceiling
1109323	DIN 7984 M10 x 30 – 8.8 EZ	Low-headed cylinder screw for mounting directly in ceiling
1109324	HSA M10 x 90	Stud anchor, to be used in concrete
1109325	HSA-R M10 x 120 A4	Stud anchor to be used in concrete, stainless / acid proof
1109326	HKD-S M10 x 40	Drop-in anchor EZ with flange, to be used in concrete
1109327	HDK-SR M10 x 40 A4	Drop-in anchor with flange, to be used in concrete, stainless / acid proof
1109328	HAS-E M10x90/21	Anchor rod with washer and nut
1109329	HAS-ER M10 x 90/21	Anchor rod with washer and nut, stainless / acid proof
1109330	HY-70, patron 330 ml	Standard 2-component for chemical anchor.
1109331	HIT-SC16/85	Mesh sleeve
1109348	HSD-G Drift	For mounting drop-in anchor M10 x 40
1109349	HIT MD 2000, complete set	Case with installation set
1109999	Drill guide	Guiding tool for drilling Ø8 mm holes in Rail H62 DC
1120310	Nut cap, SW17 white or grey	To cover visible screws and nuts on rails
1120312	Ø10x25 supporting washer	Washer to be used for all screw connections in MRS
1120315	DIN 985 Nylock lock nut	Lock nut for all screw connections in MRS
1120316	Threaded bar M10x500 mm 4.6 EZ	To be used for rafted mounting
1120370	Stud M10 x 70 8.8 EZ	Stud screw, to be used with Drop-in anchor
1109358	Concrete screw GRK Caliburn XL 7,5x70 mm	Screw to be used in concrete
1109359	Concrete screw GRK Caliburn XL 7,5x125 mm	Screw to be used in concrete

The list below contains complete fixture sets for the different types of surfaces and brackets:
TFS = Telescope fixture set contains all necessary parts for attaching a telescope ceiling bracket.
RFS = Rail fixture set contains necessary parts for mounting a rail profile direct in ceiling.
WFS = Wall fixture set contains necessary parts for mounting a wall bracket.

TFS = Telescope fixture set contains necessary parts for attaching a telescope ceiling bracket

Part number	Description	Structure
1109250	TFS, stud anchor SWL = 300 kg	3 stud anchor M10 x 90 mm (1109324)
1109254	TFS, stud anchor A4 SWL = 300 kg	3 pcs stud anchor M10x120 stainless/acid free (1109325)
1109251	TFS, Drop-in anchors SWL = 300 kg	3 pcs Drop-in anchor (1109326) 3 Washers (1120312) 3 Stud screw (1120370) 3 Lock nuts (1120315)
1109255	TFS Drop-in anchors A4 SWL = 300 kg	3 pcs Drop-in anchor stainless/acid free (1109327) 3 Washers (1120312) 3 Stud screw (1120370) 3 Lock nuts (1120315)
1109252	TFS, Rafted ceiling SWL = 300 kg	3 Threaded rod (1120316) 6 Washers (1120312) 6 Lock nuts (1120315) 1 Ceiling plate (1109305)
1109253	TFS, Chemical anchor SWL = 205 kg	3 anchor rods (1109328) 2-component mortar is purchased separately, ca. 50 holes a patron HIT HY 70, article 1109330
1109256	TFS, Chemical anchor A4 SWL = 205 kg	3 anchor rods in A4 stainless/acid free(1109329) 2-component mortar is purchased separately, ca. 50 holes a patron HIT HY 70, article 1109330
1109258	TFS, concrete screw	3 screws (1109358) 3 washers (1120312)

RFS = Rail fixture set contains necessary parts for mounting a rail profile direct in ceiling.

Part number	Description	Structure
1109260	RFS, rafted ceiling SWL = 300 kg	1 Bracket (1109308) 1 Multibolt (1109306) 1 Washers (1120312) 1 Lock nut (1120315) 7 Cam nails (1109316)
1109261	RFS, direct in concrete ceiling SWL 160 kg	1 Drop-in anchor (1109326) 1 T-profile washer (1109307) 1 O-ring (1109317) 1 DIN 7984 M10 x 30 (1109323)
1109262	RFS, direct in rafted ceiling SWL = 160 kg	RSS 7x100 screw w torx T30 (1109319) (set 10 pcs)
1109263	RFS, direct in concrete ceiling A4 SWL = 160 kg	1 Drop-in anchor A4 (1109327) 1 T-profile washer A4 (1109307) 1 O-ring (1109317) 1 DIN 7984 M10 x 30 (1109323)
1109264	RFS, direct in concrete ceiling	1 concrete screw (1109358) 1 T-profile washer (1109307)

WFS = Wall fixture set contains necessary parts for mounting a wall bracket.

Part number	Description	Structure
1109270	WFS, Stud anchors SWL = 300 kg	2 Stud anchors (1109324) 2 Nut caps (1120310)
1109275	WFS, Stud anchors A4 SWL = 300 kg	2 Stud anchors A4 (1109325) 2 Nut caps (1120310)
1109271	WFS, bolts for wood SWL = 160 kg	2 Woodscrews (1109318) 2 Nut caps (1120310) 2 Washers (1120312)
1109273	WFS, Chemical anchor SWL = 160 kg	2 Mesh sleeves (1109331) 2 anchor rods (1109328) 2-component mortar is purchased separately, ca. 10 holes on a patron HIT HY 70, article 1109330
1109274	WFS, Chemical anchor A4 SWL = 160 kg	2 Mesh sleeves (1109331) 2 anchor rods A4 (1109329) 2-component mortar is purchased separately, ca. 10 holes on a patron HIT HY 70, article 1109330
1109277	WFS, in concrete wall	2 concrete screws (1109358)

Chapter 4 – Mounting of Molift Rail System

Safety regulations

The rail system must be mounted by qualified staff.

Molift is only responsible for the system if the rail system with trolley and/or lifting motor has been supplied by Molift and is installed by authorised Molift staff.

The lifter's SWL may NEVER exceed the SWL of the rail system.

There may never be installed more than one lifting motor per rail system.

The SWL of the rail system must be clearly marked.

All rail systems must be provided with end stops and end caps to prevent the trolleys from running off the system.

Molift recommends the use of anodized rail systems for mounting in connection with swimming pools, owing to the appearance resulting from corrosion.

Molift recommends that annual inspections of the system be carried out according to "Check points for periodic inspection".

Please contact a Molift service partner or Molift Group AS in case of defects to the rail system

General information on MRS fitting:

- Molift Group AS recommends that an inspection is carried out before fitting is begun. An inspection form is provided on the last page of this manual.
- Fitting is to be carried out in accordance with Molift Group AS' fitting procedures. These are found on the following pages in this manual.
- Installations are to always be controlled in accordance with Molift Group AS' checklists for installation. The checklist is to be signed by a fitter and be archived by the owner. A copy of the checklist is archived by Molift Group AS.

Mounting procedure for drop-in anchor

Part no.: 1109326

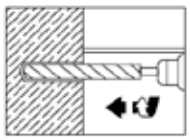
MRS uses short drop-in anchors with internal thread to be used for mounting in concrete ceiling where the concrete is B30 quality or better.

The anchor is 40 mm long, the thread length of the internal threads is 15 mm. Drop-in anchors have a collar to prevent them from being pressed into e.g. hollow covering elements. The anchor expands when the internal cone is pressed into the anchor.

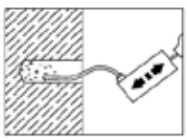
- Make sure to have the necessary tools, auxiliary tools and protective equipment at hand before starting the work.
- Use suitable measuring equipment to mark off the centre of the expansion anchor location.
- The recommended distance between drop-in anchors is 120 mm.
- The recommended edge distance of the holes is 140 mm.

If the anchors are placed closer to each other, or closer to an edge than what is recommended, the concrete may rupture.

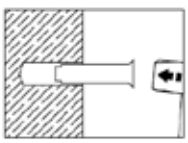
- If you do not use a scaffold, use a drilling set-up for optimal work position.
- Use a concrete bit Ø12 mm in a hammer drill. Drill holes 43 mm deep.



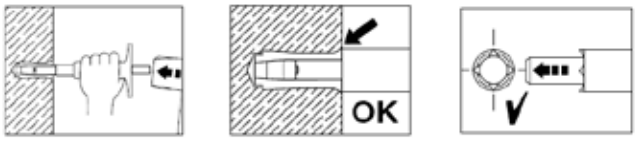
- Use a fan or similar to blow dust and concrete remains out of the hole.



- Press/knock the anchor, article 1109326, into the hole.



- Use bit HSD-G, article 1109348 and hammer. Knock in the bit until a cross appears in the collar of the anchor.



The anchor is not ready for use until the cross appears. In the worst case the anchor may loosen and fall out after mounting!

- Apply Loctite 243 to the thread of the screw to make sure the threads lock.
- Tighten the screw using a torque wrench. Tightening torque = 20 Nm.

If the anchor is tightened too much, it may break!

Mounting procedure for chemical anchor in ceiling

Part no.: 1109253 and 1109256

A chemical anchor without mesh sleeve is used to obtain satisfactory support for MRS in all porous materials like leca, bricks and siporex. A chemical anchor may also be used if the concrete has rigidity lower than B30, however only after consultation with qualified staff.

- Do not mount MRS in ceilings made of materials with rigidity lower than 25 N/mm2.
- Do not mount MRS in walls made of materials with rigidity lower than 3 N/mm2.

Molift recommends that tensile tests be made if the rigidity of the material in which to mount MRS is not known. Molift Group AS is not responsible for such tensile tests but will be please to assist in the arranging of the tests.

For mounting in ceilings MRS uses 2-component chemical anchors (in foil pack) HY-70 together with threaded M10 anchor rod. A mesh sleeve is not required for mounting in ceilings. The curing time depends on the ambient temperature. At room temperature 20°C the setting time is 4 minutes and the curing time 45 minutes. If the temperature is lower, the setting and curing times will be longer. At a temperature of 0°C the curing time may be up to 4 hours. When mounting MRS in cold environments, the foil pack and the anchor rod must keep room temperature during mounting.

- Make sure to have the necessary tools, auxiliary tools and protective equipment at hand before starting the work.
- Use suitable measuring equipment to mark off the location of the chemical anchor.

The recommended distance between chemical anchors is 180 mm. The recommended edge distance of chemical anchors is 45 mm.

- Use a concrete bit Ø12 in a hammer drill and drill holes at least 85 mm deep.

It is important to remove all loose parts or partly loose parts after drilling, before the 2-component mortar is pressed into the hole. If the remains are not removed, the 2-component mortar will not attach adequately to the surrounding material and the entire assembly may be torn out after mounting because of the load.

- Use a fan to blow out dust and loose remains after drilling, press the pump at least twice.
- Use a brush to loosen all partly loose remains in the hole. Brush with rotating movements several times!
- Use a fan to blow out dust and loose remains after drilling, press the pump at least twice.
- Prepare the dispenser with feeding/mixing tube and pump. If it is a 330 ml dispenser (article 1109330), press the pump twice to make sure that the 2-component mortar is mixed in the right mixing ratio.

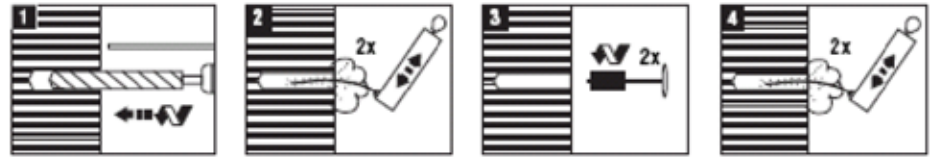
Important! If you fill the hole with 2-component mortar in an incorrect mixing ratio, the mortar will not cure sufficiently. This may cause the entire assembly to be torn out after mounting when subjected to load.

- Pump the 2-component mortar into the clean hole without leaving pockets of air in the mortar. It is enough to pump once. A dispenser of 330 ml will be sufficient for approx 50 holes, Ø12 and 85 mm deep.

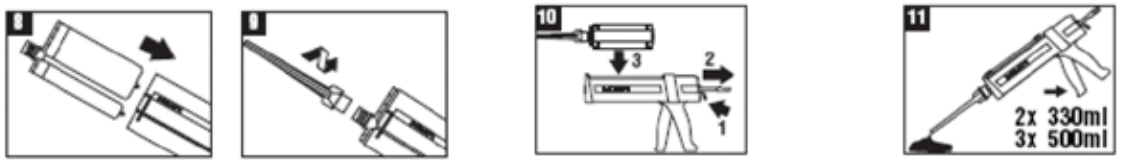
- During curing (4 minutes at 20°C) the anchor rod (article 1109328) is pressed into the mortar. Remove surplus mortar escaping from the mounting place before curing.
- After the anchor screw has been correctly placed you must leave it until the mortar has cured (45 minutes at 20°C).
- When mounting a bracket on to the anchor rod, a lock nut (article 1120315) is used to secure the mounting.
- Use a torque wrench for tightening. Maximum tightening torque of the anchor is 8 Nm.

Illustrations of mounting procedure for chemical anchor in ceiling

Part no.: 1109253 and 1109256



Drill hole — clean bore hole: 2x blowing + 2x brushing with wire brush + 2x blowing

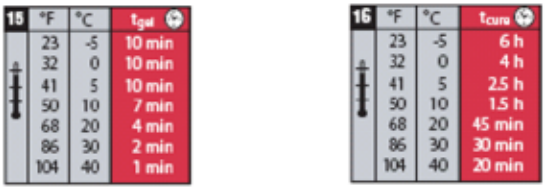


Stick foil pack into foil pack holder

Screw-on mixing nozzle

Insert foil pack holder into dispenser

Discard initial quantity of mortar



15	°F	°C	t_{gel}
	23	-5	10 min
	32	0	10 min
	41	5	10 min
	50	10	7 min
	68	20	4 min
	86	30	2 min
	104	40	1 min

16	°F	°C	t_{cure}
	23	-5	6 h
	32	0	4 h
	41	5	2.5 h
	50	10	1.5 h
	68	20	45 min
	86	30	30 min
	104	40	20 min

Fill the bore hole without trapping air

Push fastening element into mortar filled bore hole; Observe **working time "t_{gel}"**

Do not touch/put load to the fastening element, until **curing time "t_{cure}"** has passed

A load / tightening torque may be applied

Mounting procedure for chemical anchor with mesh sleeve in wall

Part no.: 1109273 and 1109274

A chemical anchor with mesh sleeve is used to obtain satisfactory support for MRS in all porous hollow wall materials like leca, bricks, siporex hollow bricks and hollow blocks.

- Do not mount MRS in walls made of materials with rigidity lower than 3 N/mm2.

Molift recommends that tensile tests be made if the rigidity of the material in which to mount MRS is not known. Molift Group AS is not responsible for such tensile tests but will be please to assist in the arranging of the tests.

Molift uses 2-component chemical anchors (in foil pack) HY-70 together with mesh sleeve and threaded anchor rod M10 for mounting in wall. The curing time depends on the ambient temperature. At room temperature 20°C the setting time is 4 minutes and the curing time 45 minutes. If the temperature is lower, the setting and curing times will be longer. At a temperature of 0°C the curing time may be up to 4 hours. When mounting MRS in cold environments, the foil pack and the anchor rod must keep room temperature during mounting.

- Make sure to have the necessary tools, auxiliary tools and protective equipment at hand before starting the work.
- Use suitable measuring equipment to mark off the location of the chemical anchor.

The recommended distance between chemical anchors is 180 mm. The recommended edge distance of chemical anchors is 45 mm.

- Use a concrete bit Ø16 in a hammer drill and drill holes 95 mm deep.

It is important to remove all loose parts or partly loose parts after drilling, before the 2-component mortar is pressed into the hole. If the remains are not removed, the 2-component mortar will not attach adequately to the surrounding material and the entire assembly may be torn out after mounting because of the load.

- Use a fan to blow out dust and loose remains after drilling, press the pump at least twice.
- Use a brush to loosen all partly loose remains in the hole. Brush with rotating movements several times!
- Use a fan to blow out dust and loose remains after drilling, press the pump at least twice.
- Place the centring cap in the opening of the mesh sleeve (article 1109331).
- Place mesh sleeve Ø16 in the hole.
- Prepare dispenser and pump. If a 330 ml dispenser HY-70 (article 1109330) is used, press 2-3 times on the pump to make sure that the 2-component mortar has the right mixing ratio.

Important! If you fill the hole with 2-component mortar in an incorrect mixing ratio, the mortar will not cure sufficiently. This may cause the entire assembly to be torn out after mounting when subjected to load.

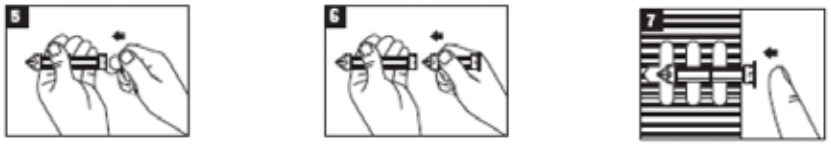
- Pump 2-component mortar into the centring cap until you see the mortar. It is enough to pump 4-6 times. A dispenser of 330 ml will be sufficient for approx 9 holes, Ø16 and 95 mm deep.
- During curing (4 minutes at 20°C) the anchor rod (article 1109328) is pressed into the mortar. Remove surplus mortar escaping from the mounting place before curing.
- After the anchor screw has been correctly placed you must leave it until the mortar has cured (45 minutes at 20°C).
- When mounting a bracket on to the anchor rod, the accompanying lock nut is used to secure the mounting.
- Use a torque wrench for tightening. Maximum tightening torque of the anchor is 4 Nm.

Illustrations for mounting procedure for chemical anchor with mesh sleeve in wall

Part no.: 1109273 and 1109273

Drill hole either with or without hammering

clean bore hole: 2x blowing + 2x brushing with wire brush + 2x blowing



Fit centring cap to mesh sleeve body

Connect outer mesh sleeve to inner mesh sleeve

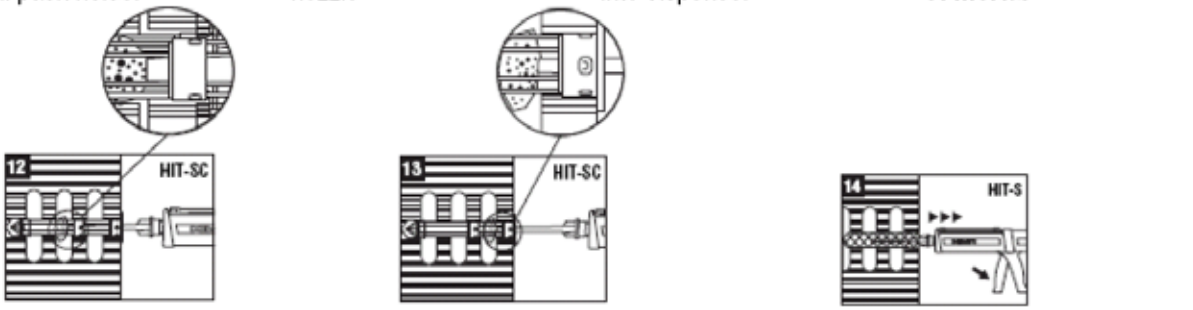
Insert sleeves into bore hole

Stick foil pack into foil pack holder

Screw-on mixing nozzle

Insert foil pack holder into dispenser

Discard initial quantity of mortar



For sleeve combinations: Stick mixer tip through bottom of outer sleeve; fill sleeve with mortar

Set mixer tip at centring cap; fill outer mesh sleeve with mortar until mortar escapes at centring cap **(filling control)**

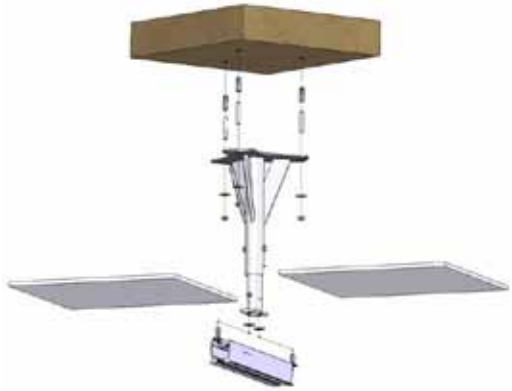
HIT-S metal sleeve: Insert mixer tip to bottom of sleeve; fill sleeve with mortar; **Retract mixing nozzle approx. 10 mm after each stroke**

Mounting in concrete with lowered ceiling

Telescope bracket with TFS

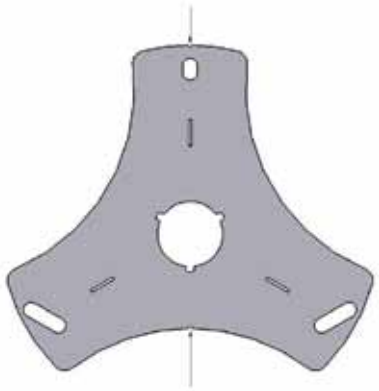
It is important that the concrete is in the right quality so that the securing brackets can handle the load for which they are intended. Molift specifies concrete according to standard NS-EN 206-1 and all associated standards. The requirement for rigidity is quality B30 (C30/C37) or better.

This mounting will hold all weight classes up to and including SWL = 300 kg.



There are two solutions that can be used for fitting to concrete. One alternative to drop-in anchors is concrete screw GRK Caliburn XL.

- Make sure to have the necessary tools, auxiliary tools and protective equipment at hand before starting the work.
- Use measuring equipment to mark up/define where the centre of the path is to be.
- Then measure the centre distances to the built-in brackets. If there are joints on the path, remember to place a securing point above each joint.
- Use the securing template to mark out the location of the holes. The template has a sight for the centre line for the path. See illustration below.



Fitting using a drop-in anchor (Part no. 1109251/1109255)

- Drill a hole Ø12 x 43 mm using the hammer drill, 3 holes for each bracket.
- Mount drop-in anchors (article 1109326) according to the mounting instructions, with the correct bit and depth. Use only drop-in anchors with flange to avoid hammering the anchor too deeply into the concrete layer.
- Mount a stud screw M10 x 70 (article 1120370) in each of the drop-in anchors. Use a counter nut on the lock nut and tighten with a torque of 20 Nm for each stud screw.

If this is not done according to the above, the screw or in the worst case even the anchor might loosen and fall out!

Fitting using concrete screws (part no 1109258)

The screw only needs pre-drilling with an Ø1/4" concrete drill bit. It can then be screwed straight into the concrete.

The screw is available in the following dimensions:

- Part no. 1109358: 7.5 x 70 mm
- Part no. 1109359: 7.5 x 125 mm

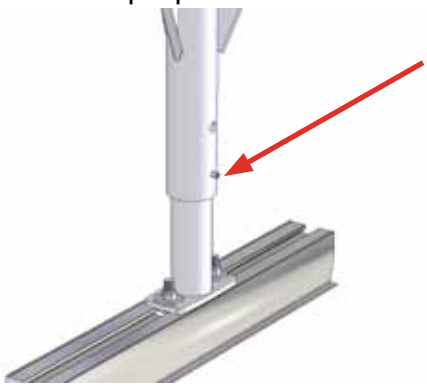
Measuring up and marking is to be carried out as previously described.

- Drill a Ø1/4" hole to a depth of minimum 65 mm, 3 holes for each bracket
- Use compressed air/pump or brush to remove dust and remnants after drilling.
- Fit the ceiling section of the telescope bracket, tighten to 45 Nm.

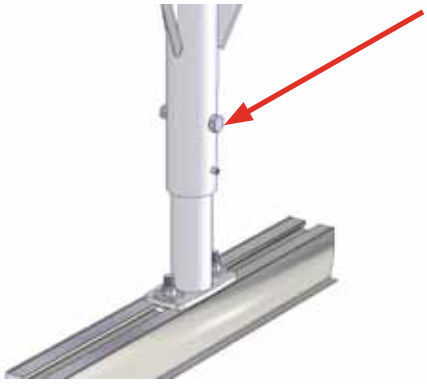
The remaining fitting/fitting control steps are carried out as specified in the final fitting stage procedure.

Rail and final mounting

- Adjust the telescopic part of the bracket temporarily using an M8 set screw on the stem.



- With all brackets correctly mounted, lift up the rail to the bottom of the brackets. Depending on the length of the path, lifting jacks can be used for this process.
- Mount the rails on the brackets using multibolts (article 1109306) which are locked with Nyloc locking nuts (article 1120315) and washers (article 1120312). Tighten with 40 Nm.
- Adjust the built-in measures using a laser level. Secure the correct position using an M6 set screw on the stem of the bracket.
- When the entire path is level at the correct height, drill a hole Ø11 through the stem of the bracket and secure the built-in using a hex. head bolt Ø10x70 (article 1120371) and Nyloc lock nut (article 1120315). Tighten with 50 Nm.



Note! The rail system may NOT be subjected to load until all brackets have been secured using screw M10 x 70 and Nyloc lock nut as described above! In the worst case parts of or the entire path may fall down!

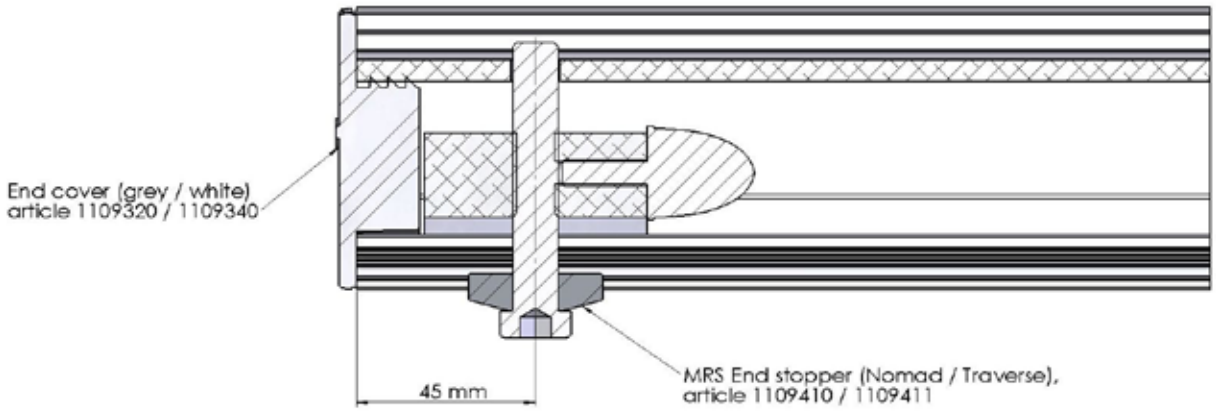
- Measure minimum 45 mm in from one end of the rail system. Use the drill guide (art 1109998) and drill a Ø11 mm hole at this point, that goes through the upper part of the driveway.
- Mount end stop (article 1109410/1109411), observe that the M10 bolt comes through the Ø11 hole drilled earlier. This ensures that the end stop does not come out of the rail, if the bolt by any chance should come loose.

Remember Loctite 243 (colour = blue) on the screw, tighten with 40 Nm.

- Place trolley or hoist on the rail. Make sure to secure it so that it will not start to roll. In the worst case it may fall out and damage persons or objects!
- Mount end stop in the other end of the system, with drill guide and long bolt as described above.

Remember Loctite 243 (colour = blue) on the screw, tighten with 40 Nm.

Section of end part, RH 62 OC



- Mount the ceiling.
- Check and test the system according to the check list from Molift Group AS. The check list is to be signed by the fitter and filed by the owner of the system; a copy of the check list is filed by the supplier.
- Finally mark the system, see illustration for correct marking at one end of the rail. It is not permitted to take the system into use before the marking has been made.

Mounting directly in concrete (directly in ceiling)

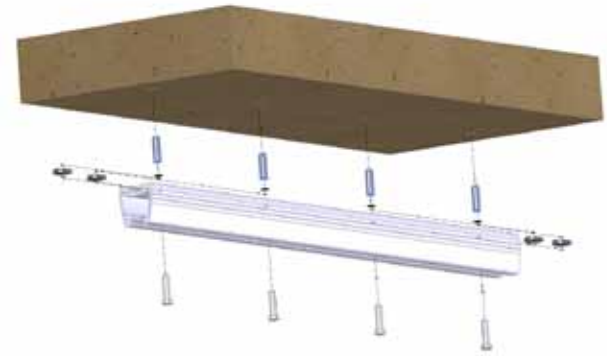
It is important that the concrete is in the right quality so that the securing brackets can handle the load for which they are intended. Molift specifies concrete according to standard NS-EN 206-1 and all associated standards. The requirement for rigidity is quality B30 (C30/C37) or better.

There are two solutions for fitting rails directly to a concrete ceiling, with drop-in anchor or GRK Caliburn concrete screw. These mountings can withstand a weight class of SWL = 300 kg.

When mounting the rail system in this way, it will look as if the rails are "glued" to the ceiling. There are no visible brackets and no gap between rail and ceiling surface. The rails can be painted in the same colour as the ceiling to give a uniform appearance after mounting.

RFS Part no.: 1109261 and 1109263

This solution comprises only very few parts and is very simple to mount:

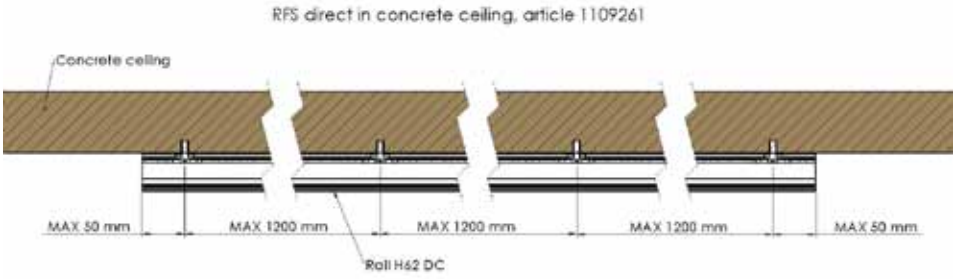


- Rail
- Drop-in anchor
- Screws
- T-profile washer
- O-rings

Make sure to have the necessary tools, auxiliary tools and protective equipment at hand before starting the work

- Use measuring equipment to mark up/define where the centre of the path is to be.
- Check the path to make sure that the surface is even. If the rail is tightened towards an uneven surface, there may be risk of overload at the securing points close to the uneven spot. See Chapter 2 - Surface levelling.
- Use a template/drill template to mark the location of the holes.

Maximum centre distance between the holes is 1200 mm; adjust the distances to the rafters layer. The maximum overhang after the last mounting screw is 50 mm. It is critical that the screw be placed in the grooved path of the rail so that it will not interfere with the trolley!



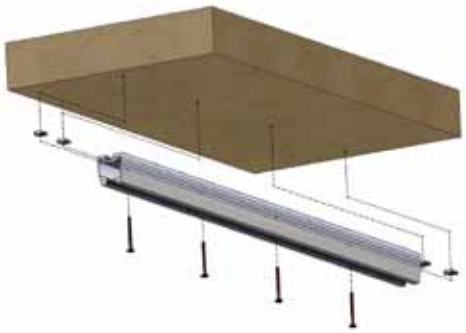
- Drill the two outermost securing points Ø12 x 43 mm. Mount the template in these and drill the rest of the holes using the template. Both distances and direction of the holes are important – the template provides for both.

- Drill the holes with a depth of 43 mm, the diameter of the bit must be Ø12 mm.
- Mount expansion anchors according to the mounting instructions, with the correct bit and depth. Use only Hilti HKD-S M10x40 drop-in anchors with collars to avoid hammering the anchor too deeply into the concrete layer.
- Mount T-profile washer (article 1109307) and screw (article 1109323) to the rail using the O-ring (article 1109317). See illustration.
- Apply Loctite 243 (colour = blue) to all mounting screws.
- By means of the telescopic lifting jacks, lift the rail now to the ceiling. Then mount the screws; start with the two outermost ones, before tightening the rest. Check carefully the rail using a level when tightening.
- Use a torque wrench and tighten the screws with 20 Nm.

Note! If this is not done according to the above, the screw or in the worst case even the anchor might loosen and fall out!

RFS part no. 1109264

One alternative to drop-in anchors is concrete screw GRK Caliburn XL. The screw only needs to be pre-drilled using a Ø 1/4" drill bit. It can then be screwed straight into the concrete.



This solution uses very few components and is simple to fit:
- Rail
- Screws
- T-profile washer

The screw is available in the following dimensions:
- Part no. 1109358: 7.5 x 70 mm (standard)
- Part no. 1109359: 7.5 x 125 mm

- Measuring up and marking is to be carried out as previously described.
- Using the drilling template, drill a Ø1/4" hole to a depth of minimum 65 mm.
- Remove the drilling template
- Use compressed air/pump or brush to remove dust and remnants after drilling
- Prepare any profile's that are to be fitted, with washer 1109307. The washer is attached, for example, using tape (see picture)

- Use supports to lift the profile up to the ceiling
- Attach the screws at each end of the profile before tightening the screws found between the ends
- Tightening torque is 15 Nm
- Continue final assembly

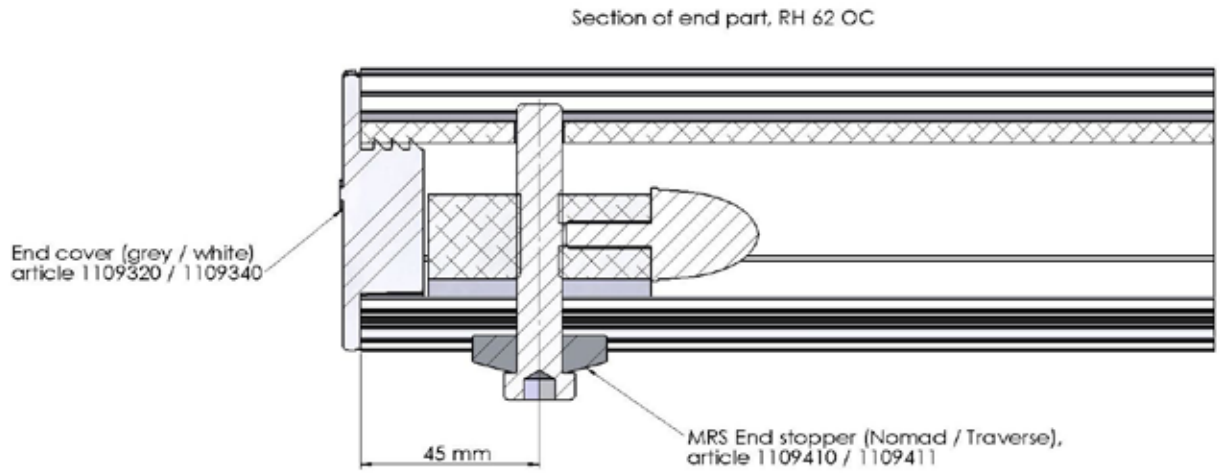
Final assembly

- Measure minimum 45 mm in from one end of the rail system. Use the drill guide (art 1109998) and drill a Ø11 mm hole at this point, that goes through the upper part of the driveway.
- Mount end stop (article 1109410/1109411), observe that the M10 bolt comes through the Ø11 hole drilled earlier. This ensures that the end stop does not come out of the rail, if the bolt by any chance should come loose.

Remember Loctite 243 (colour = blue) on the screw, tighten with 40 Nm.

- Place trolley or hoist on the rail. Make sure to secure it so that it will not start to roll. In the worst case it may fall out and damage persons or objects!
- Mount end stop in the other end of the system, with drill guide and long bolt as described above.

Remember Loctite 243 (colour = blue) on the screw, tighten with 40 Nm.



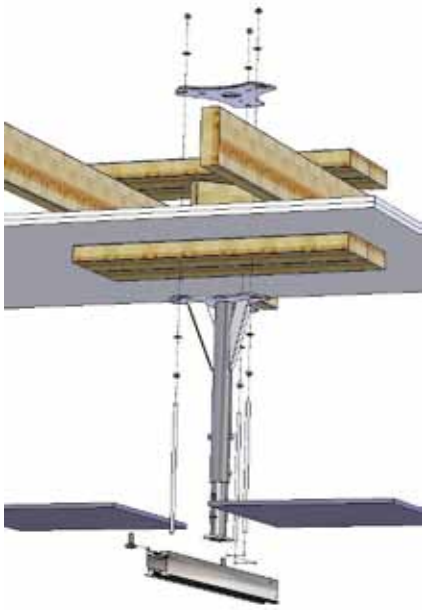
- Mount an end cap at each end of the rail.
- Check and test the system according to the check list from Molift AS. The check list is to be signed by the fitter and filed by the owner of the system; a copy of the check list is filed by the supplier.
- Finally mark the system, see illustration for correct marking at one end of the rail. It is not permitted to take the system into use before the marking has been made.

Mounting in rafters layer with lowered ceiling

There are two alternative solutions for the fitting of the rail system to rafters with suspended ceilings.

Before mounting the fitter must make sure that the rafters layer has been dimensioned to carry the load of the system and the SWL for which the system is intended. Check using table 1 in chapter 2.

Part no.: 1109201/1109202 with TFS Part no. 1109252



Example 1: Rafted mounting
If the rafters layer has been covered with eg plaster on the bottom side of the layer, this has to be reinforced both above and below the rafters layer to pretighten the attachment satisfactorily without destroying the plaster.

To mount the securing devices according to the illustration requires access to the loft. It is an advantage if there is no insulation in the rafters layer. Additional to reinforcement above and below the rafters layer, material must be supplied between the reinforcements.

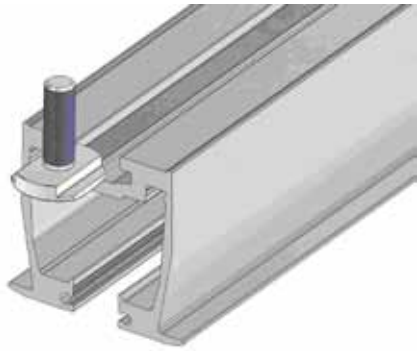
- Make sure to have the necessary tools, auxiliary tools and protective equipment at hand before starting the work.
- Use suited measuring equipment to mark out the path and define where to place the centre of the telescopic securing devices.
- Drill 3 holes Ø12 for each bracket through the reinforcement.
- Place the backing plate (part no.1109305) at the upper side of the reinforcement.
- Mount the threaded rod (part no.1120316) with a washer (part no.1120312) and a lock nut (part no.1120315) in one end, before inserting it through the backing plate and the ceiling construction from the upper side. It is an advantage to have adjusted the length of the threaded rod in advance.
- At the bottom side of the ceiling mount the telescopic bracket on the end of the three threaded rods which are sticking out. Secure the joint using a lock nut (part no.1120315) and a washer (part no.1120312).
- The system is tightened with 50 Nm. Remember the torque wrench!

Alternative attachment of telescopic bracket using screw part no 1109319 (SWL 300 kg)
Example 2: Rafted mounting

- If rafters can be reinforced for screw 1109319, then this can be fitted from below the rafters.
- The reinforcement must cover the entire fitting surface of the telescopic bracket and be fastened as described in the figure. Molift is not responsible for calculations associated with and the fitting of reinforcement to rafters.
- Make sure to have the necessary tools, auxiliary tools and protective equipment at hand before starting the work.
- Use suited measuring equipment to mark out the path and define where to place the centre of the telescopic securing devices.
- Every telescopic bracket is attached using three 1109319 screws, tightening torque is 40 Nm.

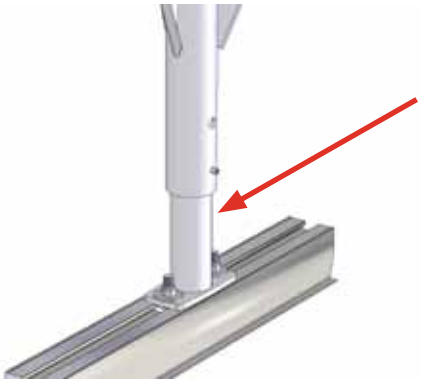
Rail and final mounting

- Adjust the telescopic part of the bracket temporarily to the correct building-in height using an M6 set screw on the stem.
- Insert the correct number of multibolts (part no.1109306) to the MRS profile from one end. Two multibolts per securing bracket are required.

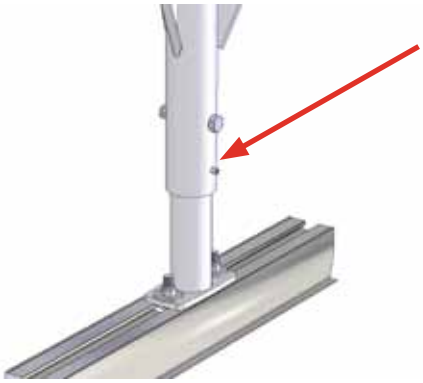


- With all brackets correctly mounted, lift up the MRS profile to the bottom of the brackets. Depending on the length of the path, lifting jacks should be used for this process.
- Mount the MRS profile onto the brackets using multibolts (part no.1109306) which are locked using a lock nut (part no.1120315) and a washer (part no.1120312). Tighten with torque 40 Nm.
- Adjust the built-in measures using a (laser) level. The correct position is secured and main-

tained using an M8 set screw on the stem of the bracket.



- When the entire path is level at the correct height, drill a hole Ø11 through the stem of the telescopic bracket. The building-in assembly is secured using a through screw and a lock nut. The tightening torque is 50 Nm.



Note! The rail system may NOT be subjected to load until all brackets have been secured using through screws and Nyloc lock nut as described above! In the worst case parts of or the entire path may fall down!

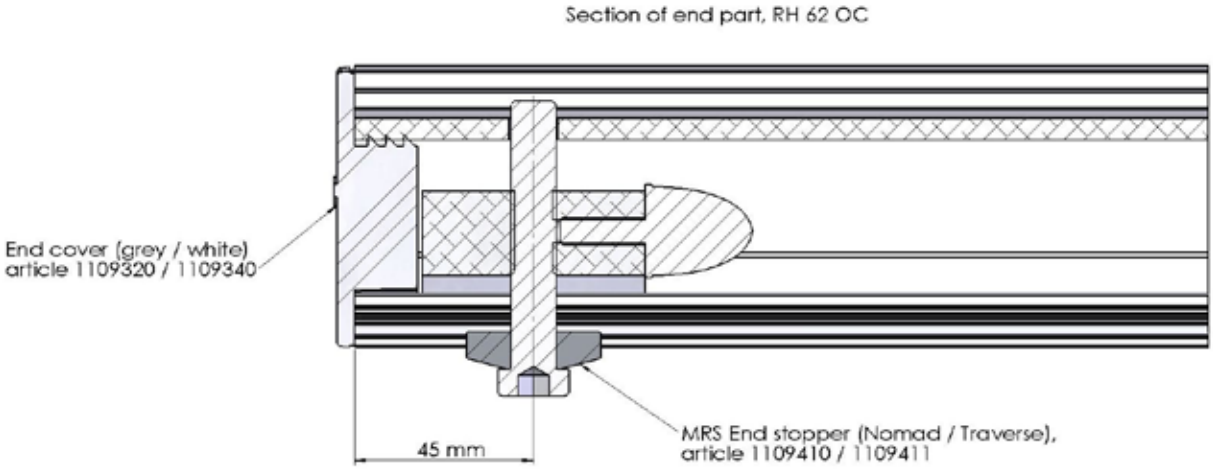
- Measure minimum 45 mm in from one end of the rail system. Use the drill guide (art 1109998) and drill a Ø11 mm hole at this point, that goes through the upper part of the driveway.
- Mount end stop (article 1109410/1109411), observe that the M10 bolt comes through the Ø11 hole drilled earlier. This ensures that the end stop does not come out of the rail, if the bolt by any chance should come loose.

Remember Loctite 243 (colour = blue) on the screw, tighten with 40 Nm.

- Place trolley or hoist on the rail. Make sure to secure it so that it will not start to roll. In the worst case it may fall out and damage persons or objects!
- Mount end stop in the other end of the system, with drill guide and long bolt as described

above.

Remember Loctite 243 (colour = blue) on the screw, tighten with 40 Nm.



- Mount the ceiling now; Molift is not responsible for mounting of the lowered ceiling.
- Check and test the system according to the check list from Molift AS. The check list is to be signed by the fitter and filed by the owner of the system; a copy of the check list is filed by the supplier.
- Finally mark the system, see illustration for correct marking at one end of the rail. It is not permitted to take the system into use before the marking has been made.

Mounting directly in rafters layer

RFS Part no.: 1109262

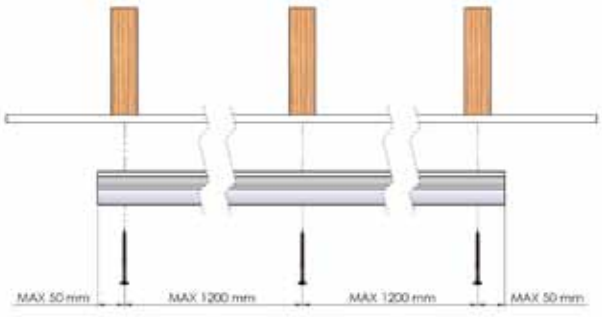
Before mounting the fitter must make sure that the rafters layer has been dimensioned to carry the load of the system and the SWL for which the system is intended. This mounting will handle weight class SWL = 160 kg.

Minimum width of the rafters in the rafters layer is 38 mm (1½"); if the rafters are not this wide, the system cannot be mounted! The maximum distance between the mounting screws is 1200 mm and the maximum overhang from the last mounting screw to the end of the profile is 50 mm.

When mounting the rail system in this way, it will look as if the rails are "glued" to the ceiling. There are no visible brackets and no gap between rail and ceiling surface. The rails can be painted in the same colour as the ceiling to give a uniform appearance after mounting.

- Make sure to have the necessary tools, auxiliary tools and protective equipment at hand before starting the work.
- Use measuring equipment to mark up/define where the centre of the path is to be. Check the path to make sure that the surface is even. If the rail is tightened towards an uneven surface, there may be risk of overload at the securing points close to the uneven spot. See Chapter 2.
- Use a rafter finder to locate rafters and mark out the centre of the rafters on the centre line for the path as from item 2.
- Use a drill guide (part no. 1109999) to drill a hole Ø8 (see illustrations below.).

Maximum centre distance between the holes is 1200 mm, adjust the distances to the rafters layer. The maximum overhang after the last mounting screw is 50 mm. It is important to place the screw in the centre of the rail profile so that it will not interfere with the trolley wheels!



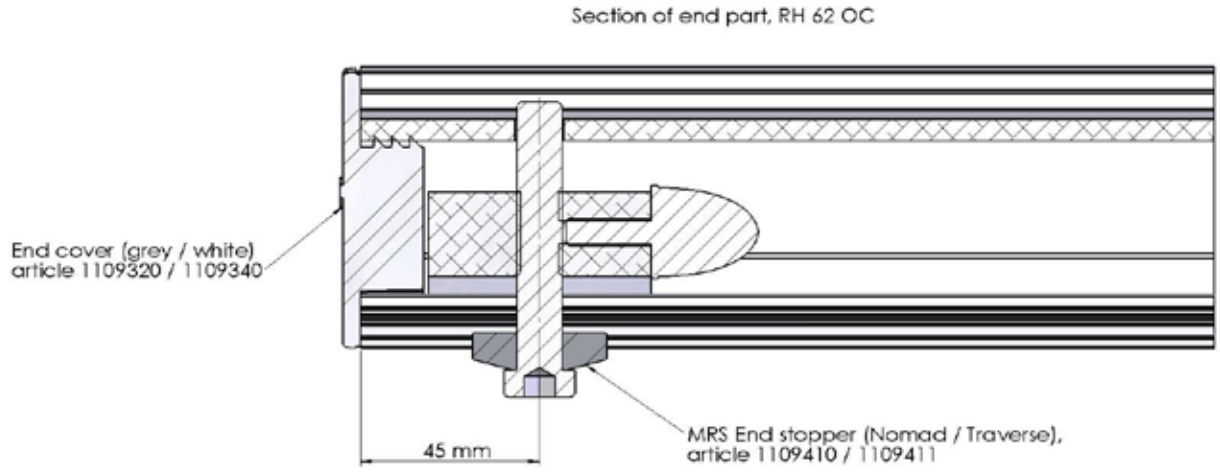
- It is recommended to mount the middle screw at first, use only screw RSS Ø7 x 100 mm (part no.1109319) for securing of the rail.
- Measure minimum 45 mm in from one end of the rail system. Use the drill guide (art 1109998) and drill a Ø11 mm hole at this point, that goes through the upper part of the driveway.

- Mount end stop (article 1109410/1109411), observe that the M10 bolt comes through the Ø11 hole drilled earlier. This ensures that the end stop does not come out of the rail, if the bolt by any chance should come loose.

Remember Loctite 243 (colour = blue) on the screw, tighten with 40 Nm.

- Place trolley or hoist on the rail. Make sure to secure it so that it will not start to roll. In the worst case it may fall out and damage persons or objects!
- Mount end stop in the other end of the system, with drill guide and long bolt as described above.

Remember Loctite 243 (colour = blue) on the screw, tighten with 40 Nm.



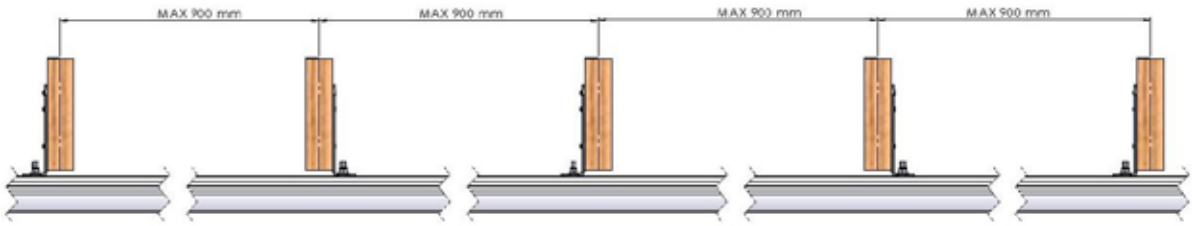
- Mount end caps at both ends of the profile.
- Check and test the system according to the check list from Molift AS. The check list is to be signed by the fitter and filed by the owner of the system; a copy of the check list is filed by the supplier.
- Finally mark the system, see illustration for correct marking at one end of the rail. It is not permitted to take the system into use before the marking has been made.

Mounting procedure for rafted bracket

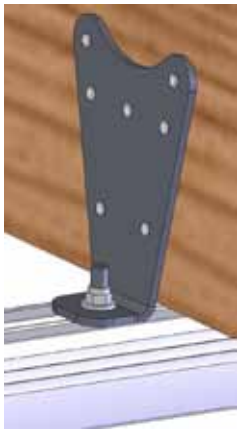
Part no. 1109260

A rafted bracket is used when the MRS is to be mounted hanging in the rafters layer. It is a precondition that the rafters layer is open when the system is mounted. The fitter must make sure that the rafters layer is dimensioned for the load of the MRS. If the rafters layer is dimensioned to hold the load corresponding to SWL in the area in which MRS is planned, the system can be mounted for SWL up to 300 kg. This type of mounting can only be done with the correct solutions, also traverse solutions.

- Make sure to have the necessary tools, auxiliary tools and protective equipment at hand before starting the work.
- Use suited measuring equipment to mark out the path.
- Mount a bracket (part no.1109308) for each 900 mm, all brackets are to be secured using 7 KAM nails (delivered together with the bracket). The bracket is to be mounted on both sides of the rafters. See illustration.



- It is very important to measure which rafter is the lowest and lower the rest of the brackets to this level.
- Check that all brackets are on line and all at the same level before the rail is made ready for mounting.
- Insert multibolts (part no.1109306) at the end of the rail, one bolt for each bracket.



- The rail is mounted using one multibolt for each bracket. Lock the multibolts using washers (part no.1120312) and lock nuts (part no.1120315).
- Use a torque wrench and tighten with a torque of 40 Nm on all lock nuts.
- Measure minimum 45 mm in from one end of the rail system. Use the drill guide (part no 1109998) and drill a Ø11 mm hole at this point, that goes through the upper part of the drive-

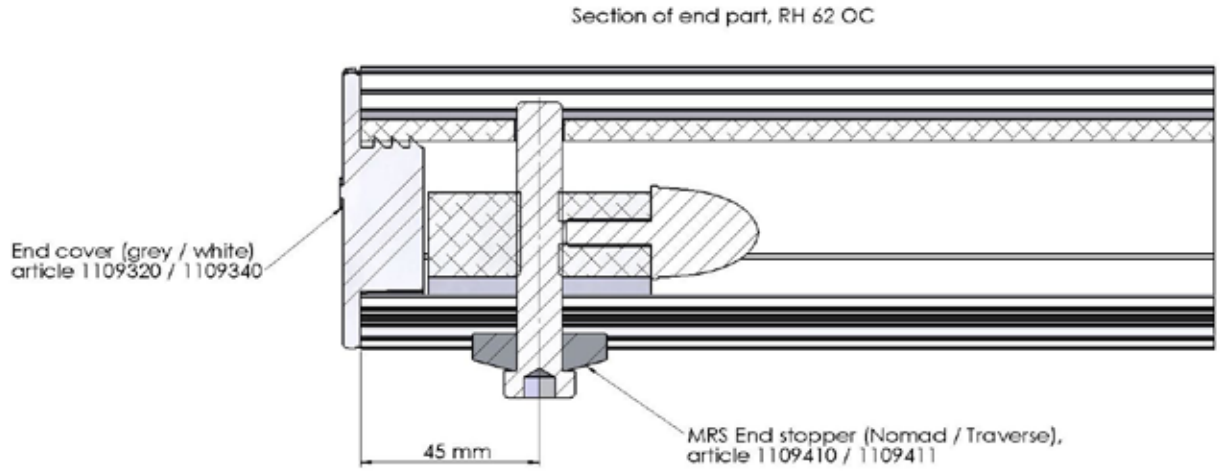
way.

- Mount end stop (article 1109410/1109411), observe that the M10 bolt comes through the Ø11 hole drilled earlier. This ensures that the end stop does not come out of the rail, if the bolt by any chance should come loose.

Remember Loctite 243 (colour = blue) on the screw, tighten with 40 Nm.

- Place trolley or hoist on the rail. Make sure to secure it so that it will not start to roll. In the worst case it may fall out and damage persons or objects!
- Mount end stop in the other end of the system, with drill guide and long bolt as described above.

Remember Loctite 243 (colour = blue) on the screw, tighten with 40 Nm.



- Mount end caps at both ends of the profile.
- Check and test the system according to the check list from Molift AS. The check list is to be signed by the fitter and filed by the owner of the system; a copy of the check list is filed by the supplier.
- Finally mark the system, see illustration for correct marking at one end of the rail. It is not permitted to take the system into use before the marking has been made.

Mounting procedure for wall bracket

MRS wall brackets are to always be attached to walls by two securing points. The bracket can be fitted in several different ways, the profile either resting on or hanging below bracket (refer to illustration). Wall brackets can be fitted to structural wood walls and concrete walls (concrete, aerated concrete, Leca and brick). Two brackets can for example be fitted with a profile between them or the traverse system can be suspended from four brackets.

The bracket has four holes, two for screws for fitting to wood and two holes for screws for fitting to concrete. One of the holes is used for height adjustment and the other is used for sideways adjustment. It is important that you assess the need for adjustment and adjust the bracket's hole positioning before the last hole is drilled.

The distance between the brackets must correspond to the tables Max distance and Max free end. If the existing wall is not of sufficient strength, reinforcements must be established, either inside the wall or on the outside of the wall. Molift cannot be held responsible for calculating the required reinforcements or for covering any associated costs.

Profiles are attached to brackets with multi-bolts/lock nuts, or with end stops.

General information before starting fitting

- Make sure that you have the required tools, aids and safety equipment with you before you start the work.
- Use suitable measurement equipment to measure out and mark the positions of attachment brackets and the centre of the holes which are to be drilled.

Fitting to wood, WFS part number 1109271 (SWL 300 kg)

- Fitting to wood, means the fitting of a bracket to a supporting wall or partition wall the structure of which is of wood.
- Minimum permitted dimension of vertical members of a wall is 48 x 98 mm or 36 x 148 mm. Vertical members must extend from the ceiling to the floor.
- Use puncheon tracers to locate puncheons and mark these. Screw 1109319 is to be fitted centrically, tolerance ±3 mm from the centre of the vertical member for maximum SWL to be achieved.
- If a wall bracket must be fitted between vertical members, reinforcement must be fitted to the wall. The wall must not have cladding if this is to be carried out.
- First attach the bracket using a screw (part no. 1109319) in the hole for sideways adjustment.
- Attach the other bracket with a screw in the hole for height adjustment, and adjust to the correct height in relation to the first hole. (The profile is to now be horizontal, level)
- Lock the brackets with the two last screws, ensuring that both brackets are vertical when tightening.
-

Fitting to concrete, WFS part number 1109270 or 1109275 (SWL 300 kg)

- Fitting to concrete using expansion anchors, means the fitting of a bracket to a supporting wall of concrete. The concrete must be minimum 150 mm thick and of quality B20(C20) or better. A stainless steels anchor (part no. 1109275) is used, for example, when fitted in bathrooms or in swimming pools.
- Mark up and pre-drill an Ø10 mm hole, depth minimum 70 mm, in the wall for the first bracket.
- Clean the hole with compressed air, brush or pump. Remember to use protective eyewear!
- Attach the bracket temporarily in the hole for sideways adjustment using an expansion anchor.
- Mark up, pre-drill, clean and fit the opposite bracket using the hole for height adjustment.
- Mark up the centre for the two last holes, one in each bracket.
- Pre-drill and clean the holes, and fit the brackets – pay particular attention to and ensure that both brackets are vertical when tightening.
- Expansion anchors are to be tightened to 30 Nm.

Fitting to concrete, WFS part number 1109277 (SWL 300 kg)

- Fitting to concrete using concrete screws, means the fitting of a bracket to a supporting wall of concrete. The concrete must be minimum 150 mm thick and of quality B20(C20) or better. This is the fastest way of fitting to concrete.
- Mark up and pre-drill a ø1/4" hole, depth minimum 65 mm, into the wall for the first bracket.
- Carefully clean the hole, using preferably compressed air. Remember to use protective eyewear!
- Attach the bracket temporarily, repeat the process on the opposite bracket.
- Mark up, pre-drill, clean and complete the fitting of the brackets. Pay particular attention to and ensure that both brackets are vertical when tightening.
- Concrete screws are to be tightened to 15 Nm.

Fitting of MRS profiles to wall brackets

- For straight rail systems we recommend that you mark the placing of the lower hole first and secure the bracket here before the last hole is made. The reason for this is that the height must be adjusted before the location is locked by means of the last bolt. For traverse systems, on the other hand, it can be convenient to adjust the height.
- For traverse systems it is essential that the wall brackets are mounted in parallel; this can be adjusted by means of the multi-bolt which secures the rail to the brackets.
- Check that all brackets align and all at the same level before the rail is made ready for mounting.
- Insert multi-bolts (article no. 1109306) at the end of the rail, one bolt for each bracket.
- Please check that all end stops and end covers are in place before the rail is mounted on the wall bracket.
- Place trolley or hoist on the rail. Make sure to secure it so that it will not start to roll. In the worst case it may fall out and damage persons or objects!
- The rail is mounted using one multi-bolt for each bracket. Lock the multi-bolts using washers (article no. 1120312) and lock nuts (article no. 1120315).
- Use a torque wrench and tighten all lock nuts with a torque of 40 Nm.

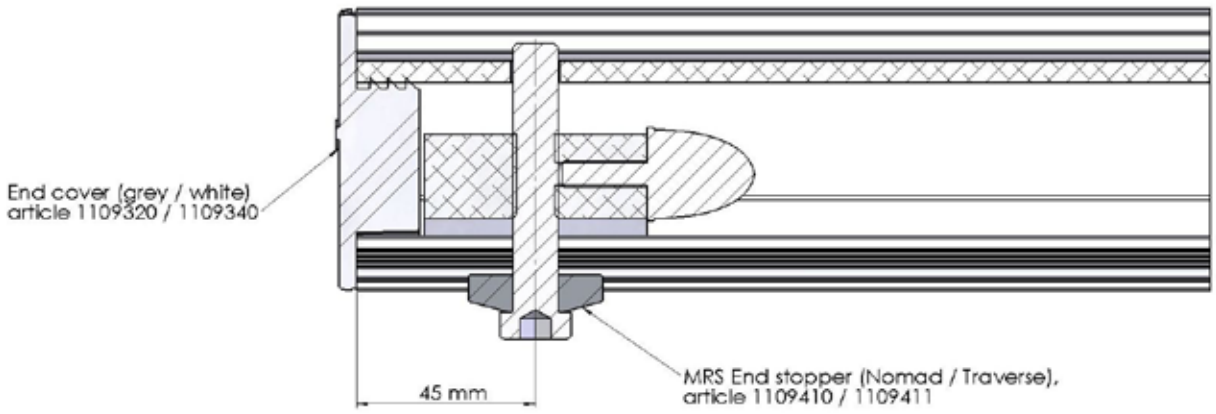
- Measure minimum 45 mm in from one end of the rail system. Use the drill guide (art 1109998) and drill a Ø11 mm hole at this point, that goes through the upper part of the driveway.
- Mount end stop (article 1109410/1109411), observe that the M10 bolt comes through the Ø11 hole drilled earlier. This ensures that the end stop does not come out of the rail, if the bolt by any chance should come loose.

Remember Loctite 243 (colour = blue) on the screw, tighten with 40 Nm.

- Mount end stop in the other end of the system, with drill guide and long bolt as described above.

Remember Loctite 243 (colour = blue) on the screw, tighten with 40 Nm.

Section of end part, RH 62 OC



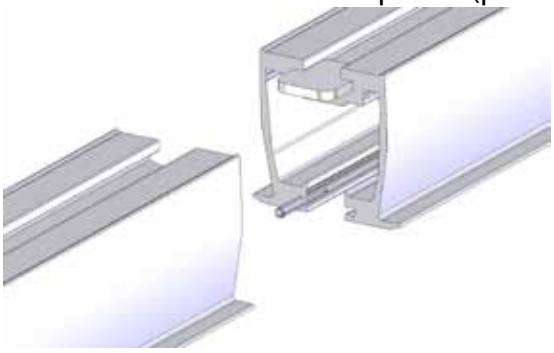
- Mount end caps at both ends of the profile.
- Check and test the system according to the check list from Molift AS. The check list is to be signed by the fitter and filed by the owner of the system; a copy of the check list is filed by the supplier.
- Finally mark the system, see illustration for correct marking at one end of the rail. It is not permitted to take the system into use before the marking has been made.

Mounting procedure for joining of rails

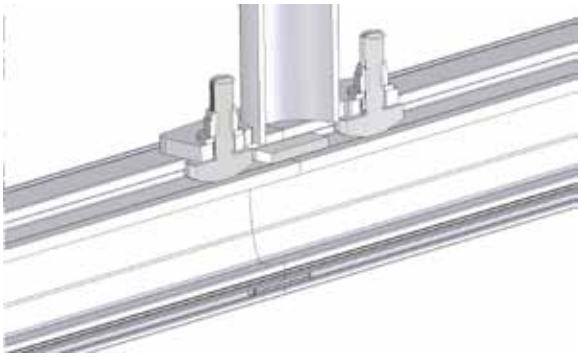
Follow this procedure when joining two profile ends. The procedure applies for both straight rails and curves. It is important that profiles to be joined are of the same type; it is not permitted to join profiles of different types. MRS is supplied with a joining kit (part no.1109350) comprising the following parts: a joint part (part no.1109311) and two tightening pins (part no.0210119). A securing bracket must ALWAYS be mounted over a joint. If the mounting is done directly in the ceiling, there can be no more than 5 cm to the next securing bolt on each side of the joint.

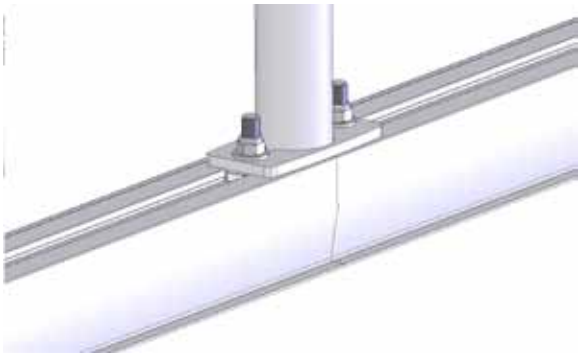
- Make sure to have the necessary tools, auxiliary tools and protective equipment at hand before starting the work.
- Hammer a spring dowel sleeve into the rail track at each of the profile ends which are to be joined. Pre-drill a joining track on the opposite profile of ø4.5 to approximately 15 mm depth.

- Expand the diameter of the opposite end to Ø4.3 mm, approx 15 mm deep with drill Ø4.3 mm.
- Insert a multibolt (part no.1109306) at each profile end.
- Use a file and expand the track so that the joining piece (part no. 1109311) can be pressed by hand into the correct position on each profile. The joining piece is in the correct position when the centre marker meets the profile (picture)



- Join the profile ends.
- Always mount a securing device over the joint so that a multibolt is placed on each side of a joint part. See illustration.





Mounting procedure for traverse

A traverse solution always comprises two primary rails and a secondary rail. The primary rails are mounted first, it is important to mount these entirely parallel. The secondary rail is mounted either between the primary rails or hanging below, depending on the mounting of the secondary rail on a trolley. See illustrations below for an outline and important measures. The ceiling hoist is always installed on the secondary rail.

It is important to estimate the location of the secondary rail in relation to other installations, either existing installations in the ceiling or future ones. The secondary rail may not interfere with lamps in the ceiling, fire alarms, fire extinguishing systems etc.

- Make sure to have the necessary tools, auxiliary tools and protective equipment at hand before starting the work.
- Use a chalk line to mark out the location of both or one of the primary rails. When one primary rail is entirely straight also in relation to the room, the other primary rail can be mounted parallel to the first one. Max deviation is ± 3mm. If a mounting bracket for lowering (part no.1109201 or 1109202) is used, shims (part no.110912-1109313-1109314) are used to adjust primary rail 2 to its correct location. Loosen the bracket and place shims under the bracket at the desired spot until the rail is correctly located. Remember to tighten between each measuring and at the end.

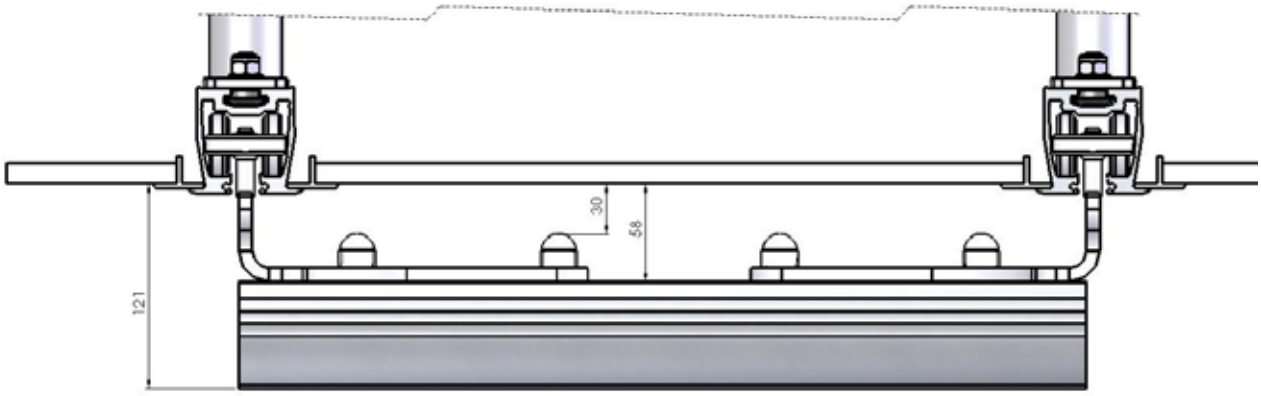
- At the end of the primary rail where the trolley for the secondary rail is to be mounted, there must be a maximum of 50 cm clearance before the wall (this space is required to lift the complete traverse rail to its position). On the opposite side the primary rail can go all the way to the wall. In some cases the primary rails can extend from one wall to another. In this case the trolleys are mounted in the primary rails before they are mounted.

The primary rails can be mounted from wall to wall. In these situations trolleys have to be mounted into the primary rails before installation.

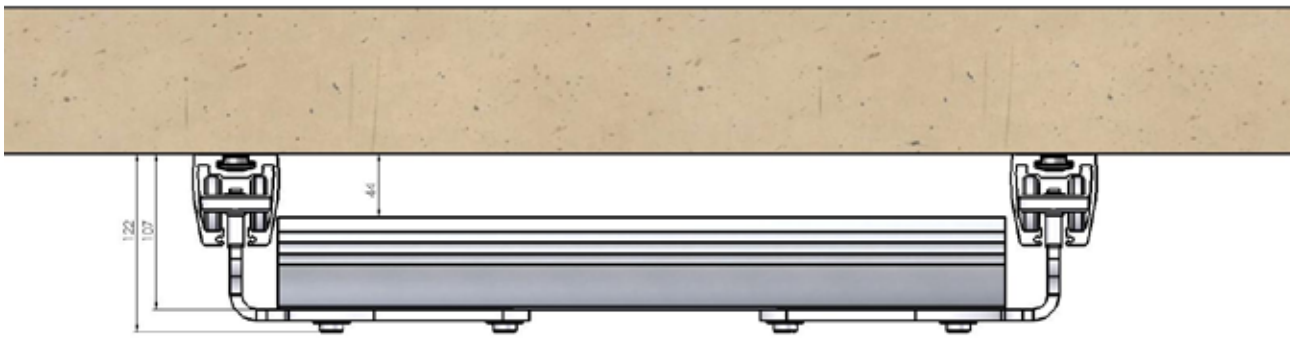
- A total of four end stops (part no.1109411) with bumpers are mounted in the primary rails. Remember that the bumpers must point towards the trolley in both ends. Apply Loctite 243 (colour = blue) to the mounting screws. The tightening torque is 40 Nm. Remember the torque wrench!
- A total of two end stops are mounted in the secondary rail. The type of end stop must be adjusted to the type of hoist (Nomad or Hi-Trac).

Traverse combinations

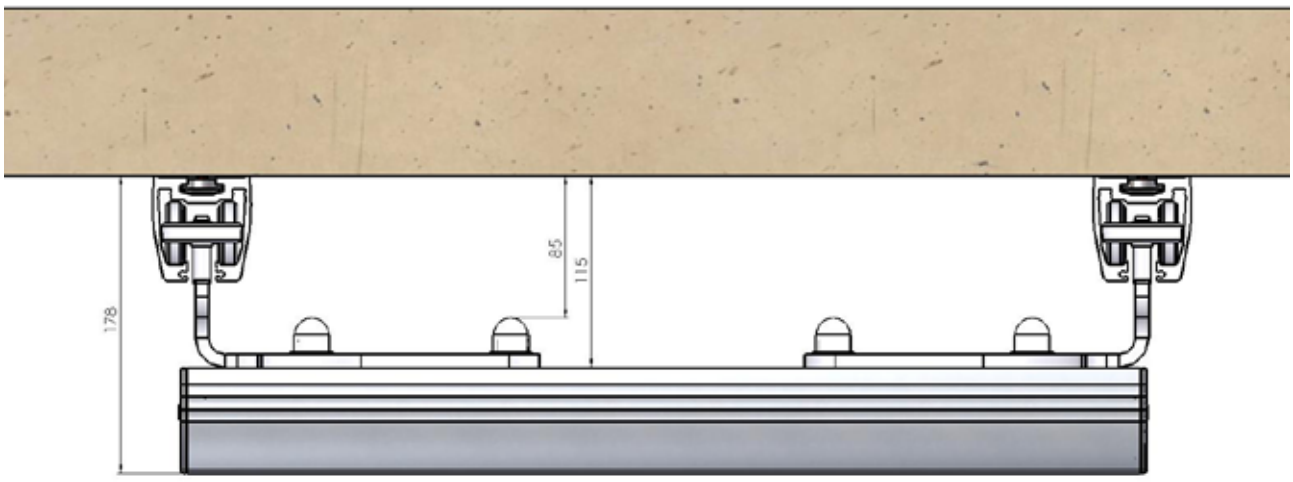
Rail H62 CC primary rails with hanging Rail H62 OC as secondary rail. (The lowest solution below closed ceiling)



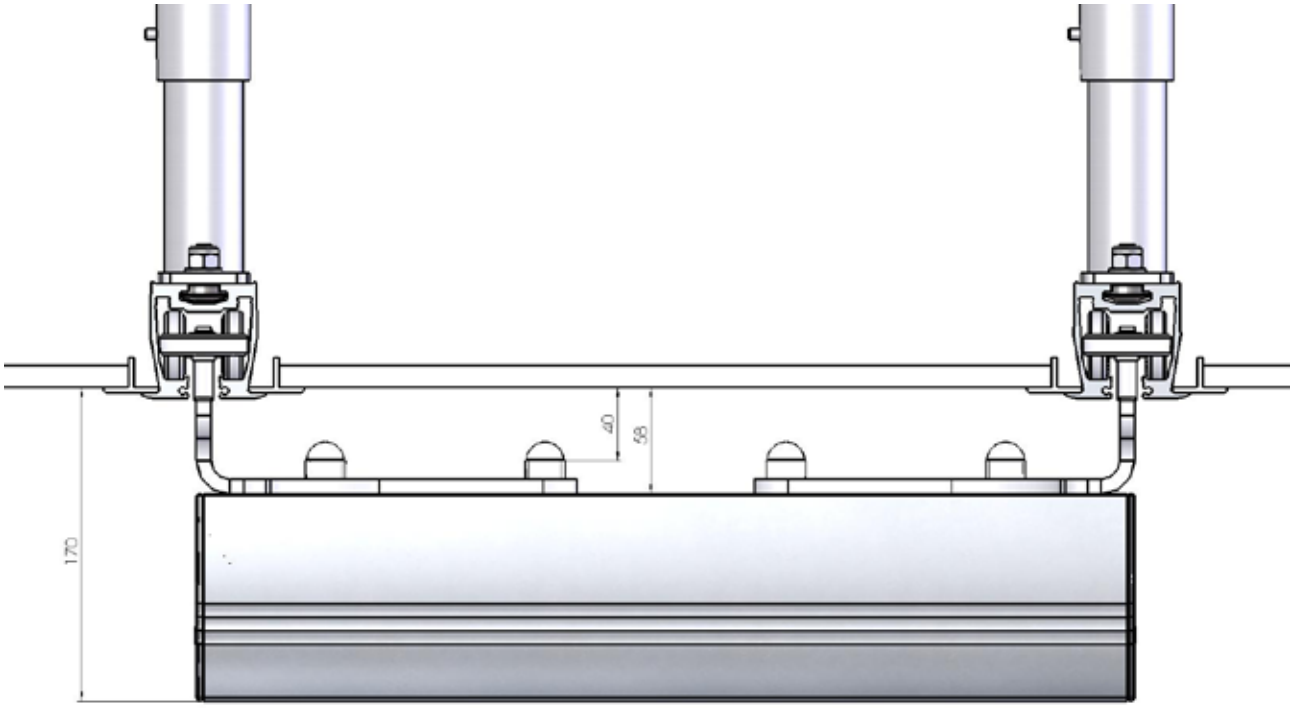
Rail H62 DC primary rails with Rail H62 OC in between as secondary rail



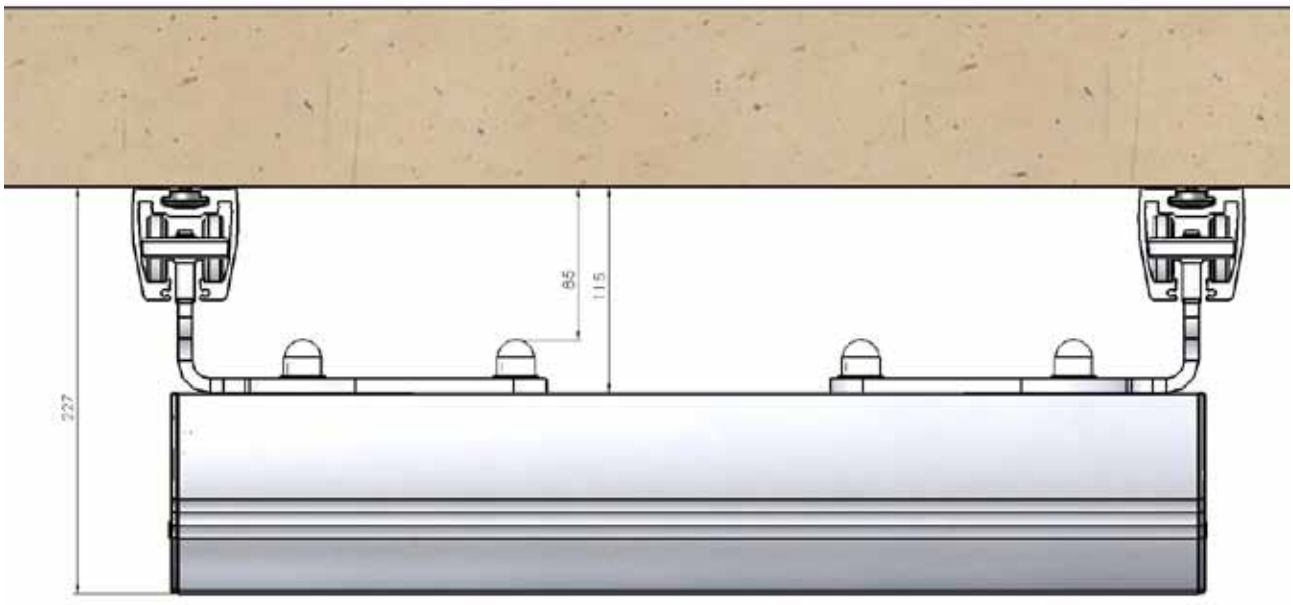
Rail H62 DC primary rails with hanging Rail H62 OC as secondary rail



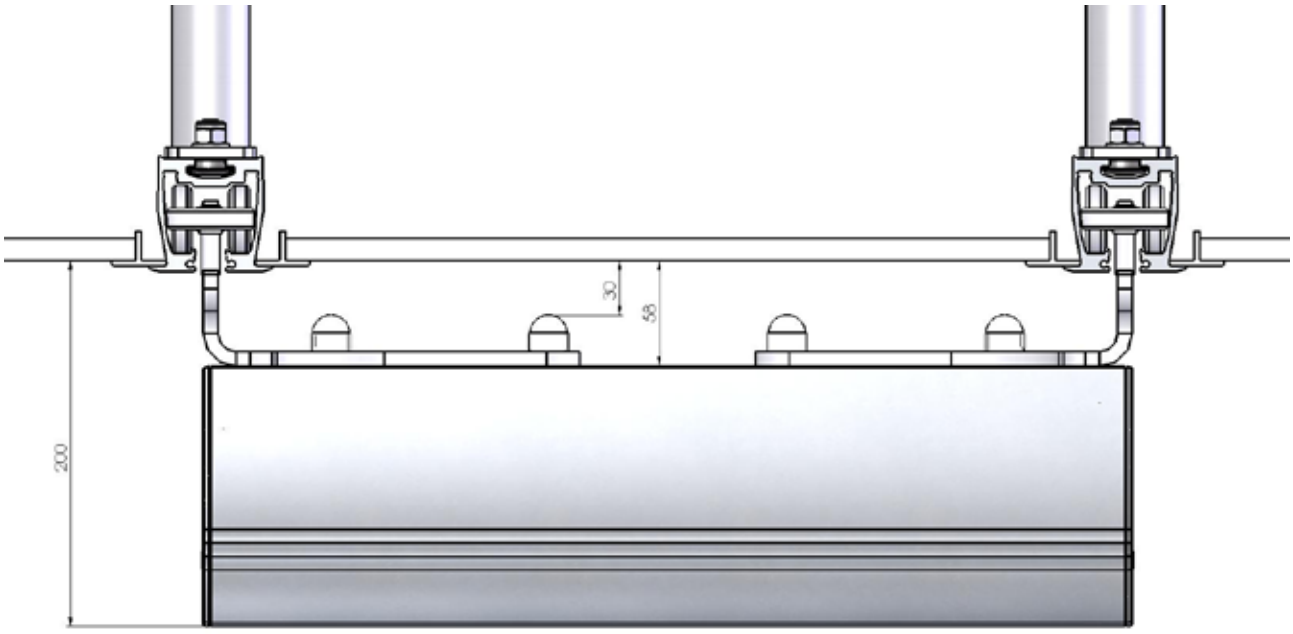
Rail H62 CC primary rails with Rail hanging H112 OC as secondary rail



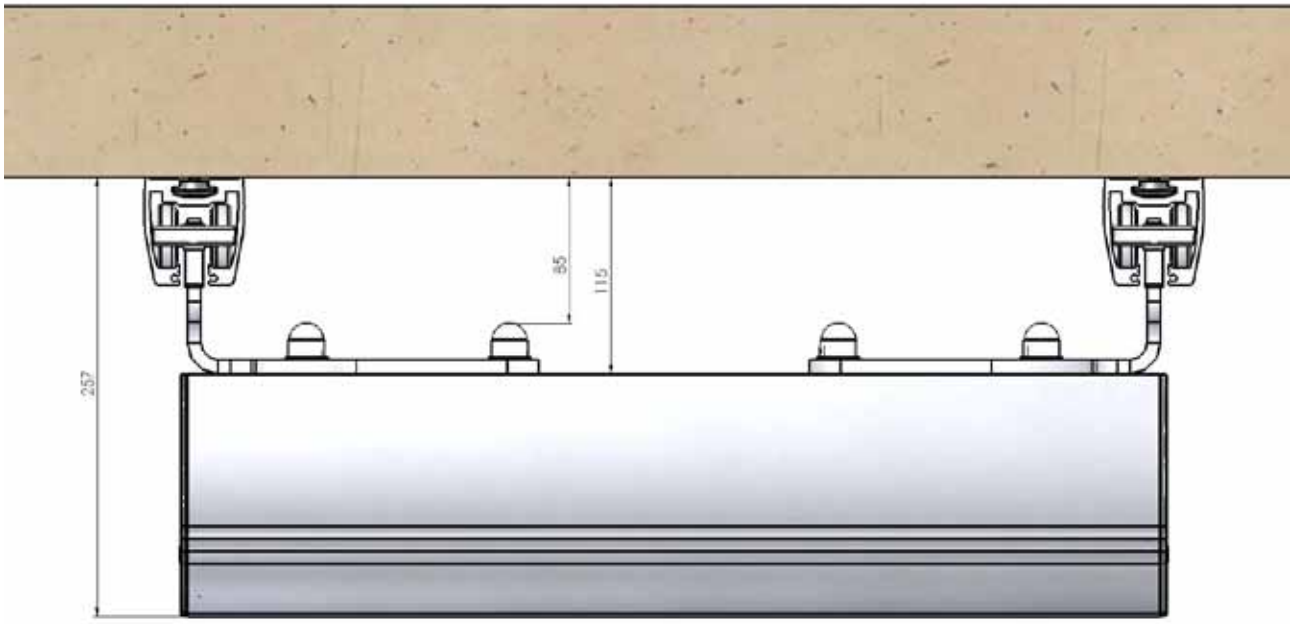
Rail H62 DC primary rails with hanging Rail H112 OC as secondary rail



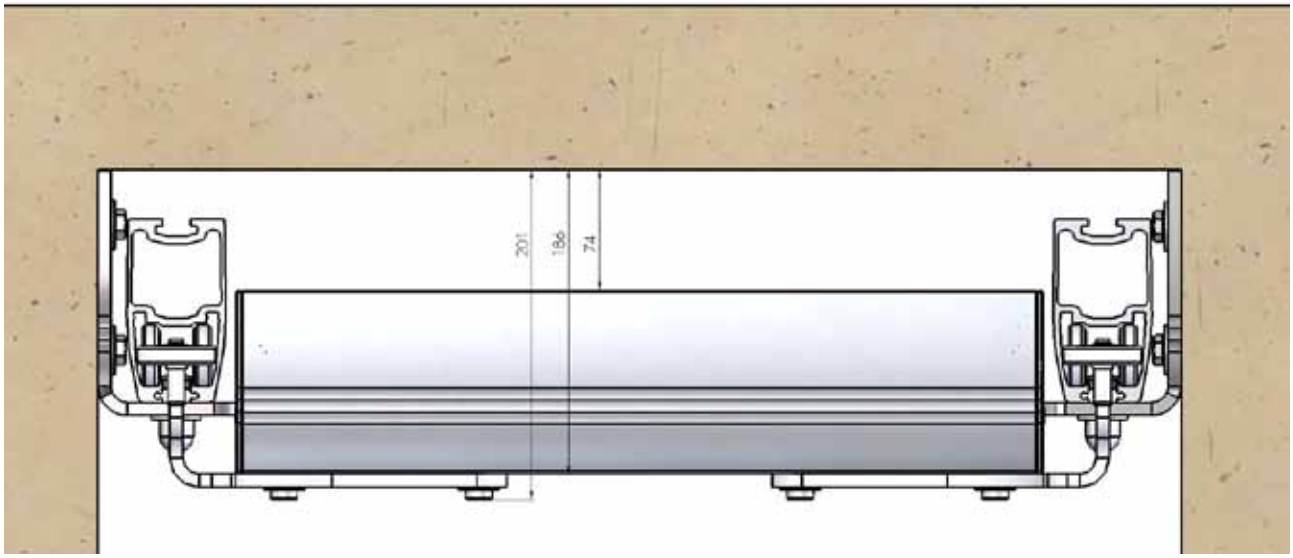
Rail H62 CC primary rails hanging Rail H142 OC as secondary rail



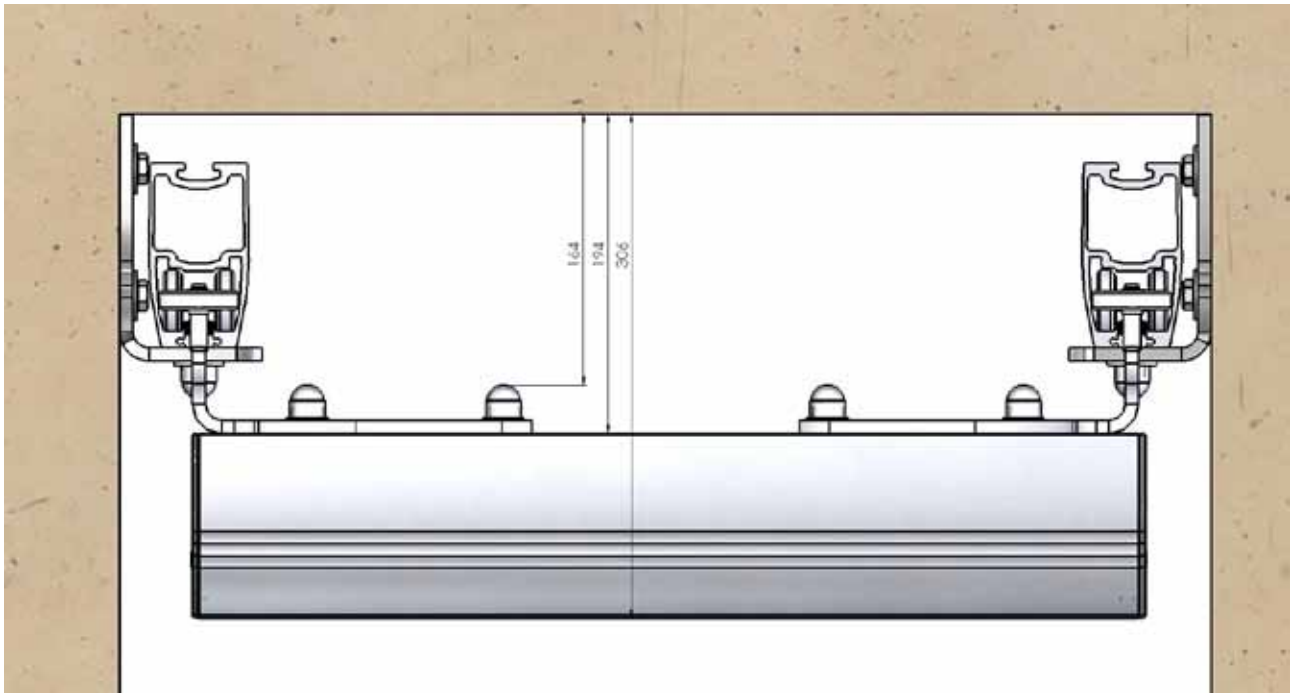
Rail H62 DC primary rails with hanging Rail H142 OC as secondary rail



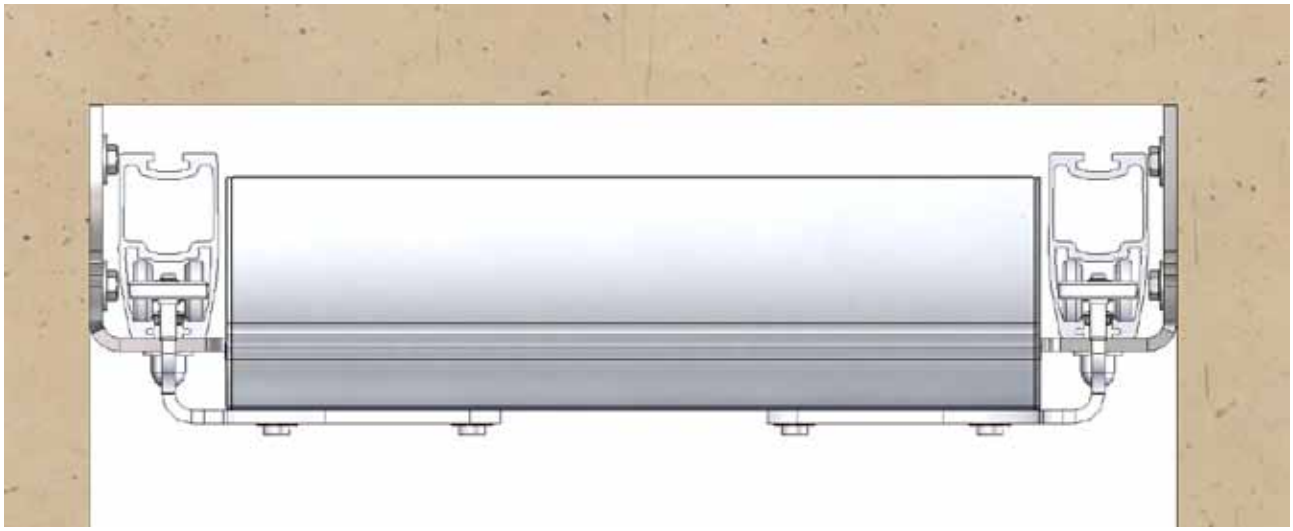
Rail H112 OC Wall mounted primary rails and in between as secondary rail



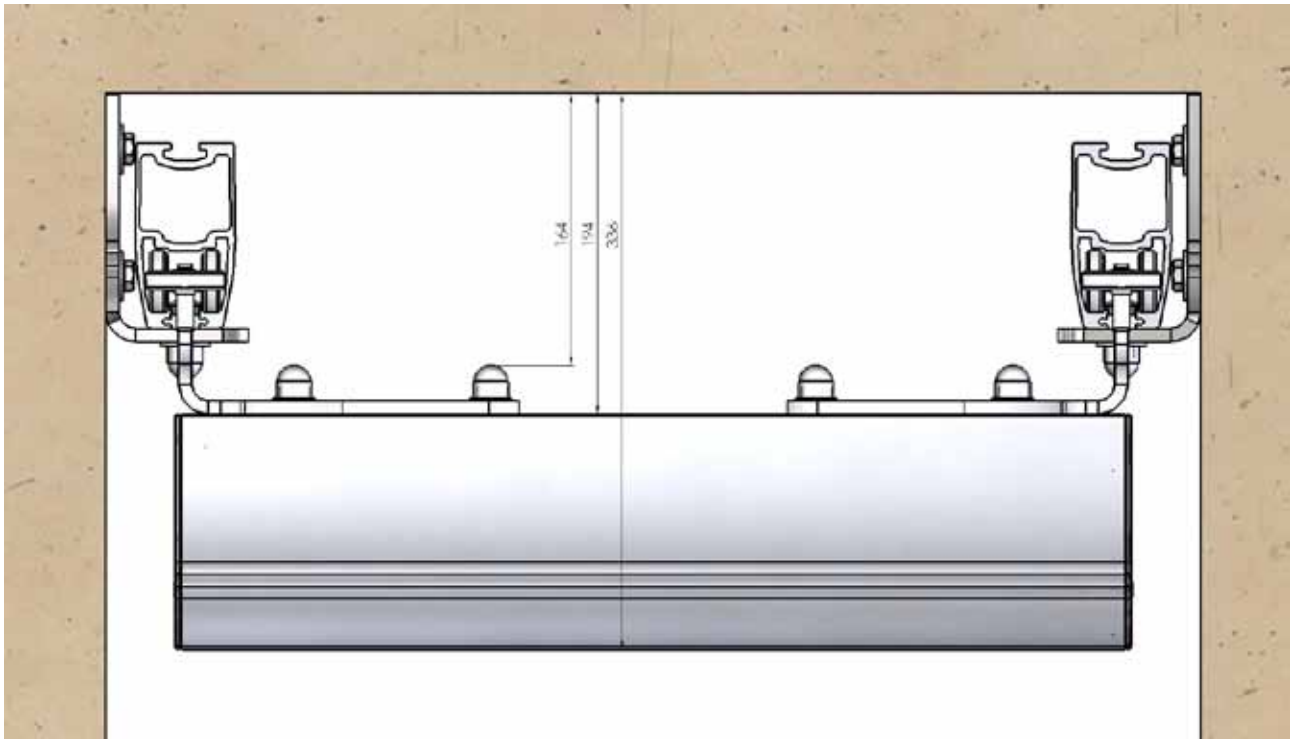
Rail H112 OC Wall mounted primary rails and hanging as secondary rail



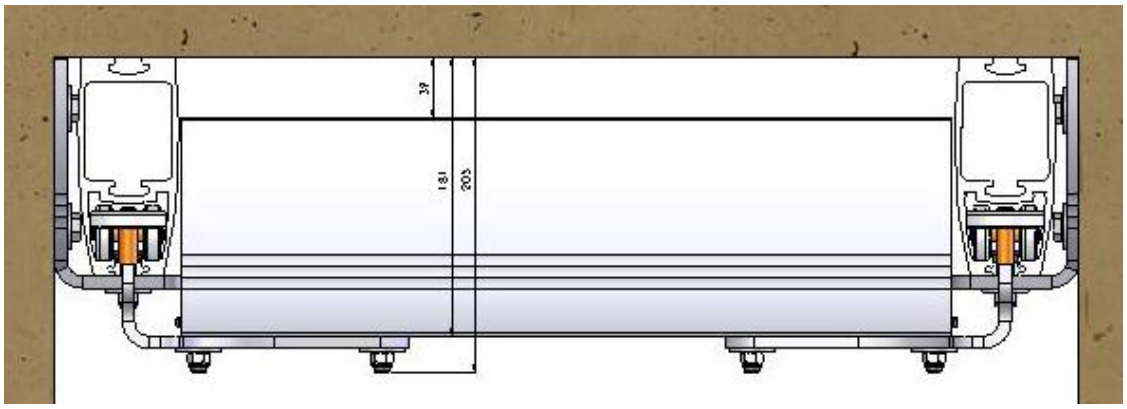
Rail H112 OC Wall mounted primary rails and Rail H142 OC in between as secondary rail



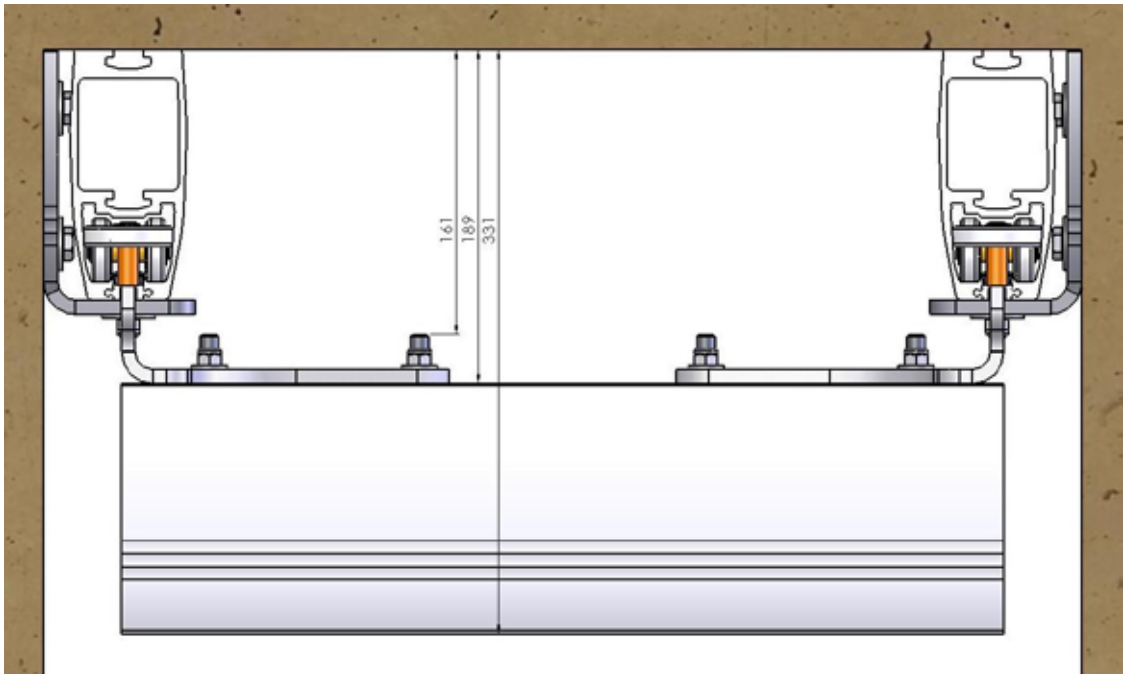
Rail H112 OC Wall mounted primary rails and hanging Rail H142 OC as secondary rail



Rail H142 OC Wall mounted primary rails with Rail H142 OC in between as secondary rail



Rail H142 OC Wall mounted primary rails with hanging Rail H142 OC as secondary rail



Trolley Traverse, distance between ceiling and rail

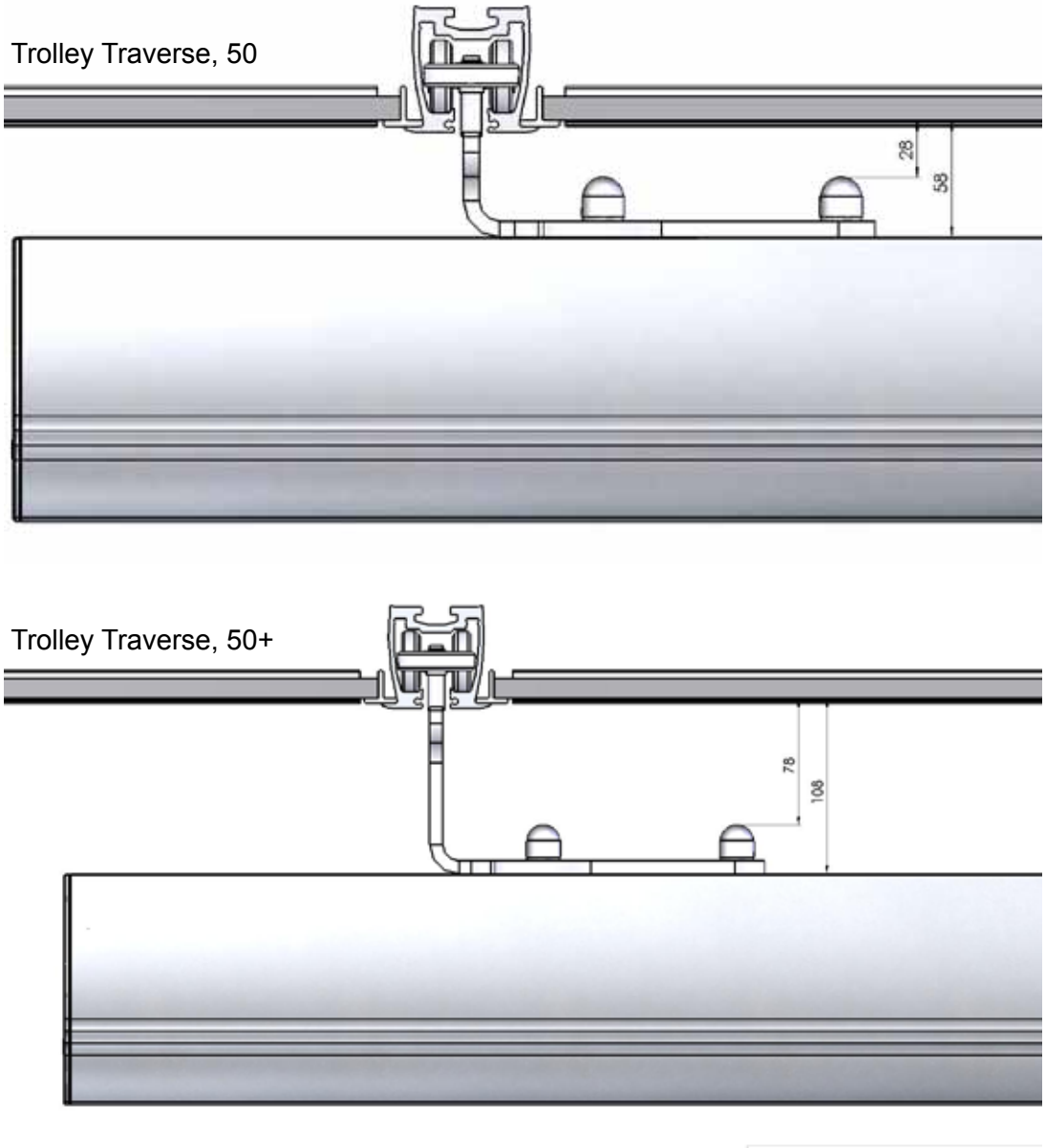


Figure 61. Traverse, distance between ceiling and rail

Assembly of wall rail for traverse

Wall rails are only suitable for use with Rail H112 OC when used as a traverse boom. The wall rails are fitted to walls which are dimensioned such that they can support the loading applied by the entire system, irrespective of whether they are partition walls or outer walls.

Wall mounted traverses consist of two Rail H85 W wall rails with end stops and suitable fasteners, a traverse Rail H112 OC, a fixed trolley for wall rails, a telescope trolley for wall rails and a trolley for the lift on the traverse boom. Wall rails have a small track on the inner wall which ensures correct positioning of bolts and predrilled holes.

The walls must be parallel, max deviation 1.5° and 5 cm between the walls across the entire length.

The wall rails can be fitted adjacent to the ceiling as a ceiling trim. The distance from the ceiling to the top edge of the traverse rail is then 51 mm.

Lights or other installations fitted to the ceiling must be taken consideration if possible, or if not possible, it should be determined how far down on the wall the wall rails must be fitted.

For studwork walls (minimum 48x98 mm stud partitions), the distance from the ceiling to the upper edge of the traverse rail must not exceed 1/3 of the wall height. (I.e. If the wall is 3m high, the maximum distance from ceiling to traverse rail can be 1 m).

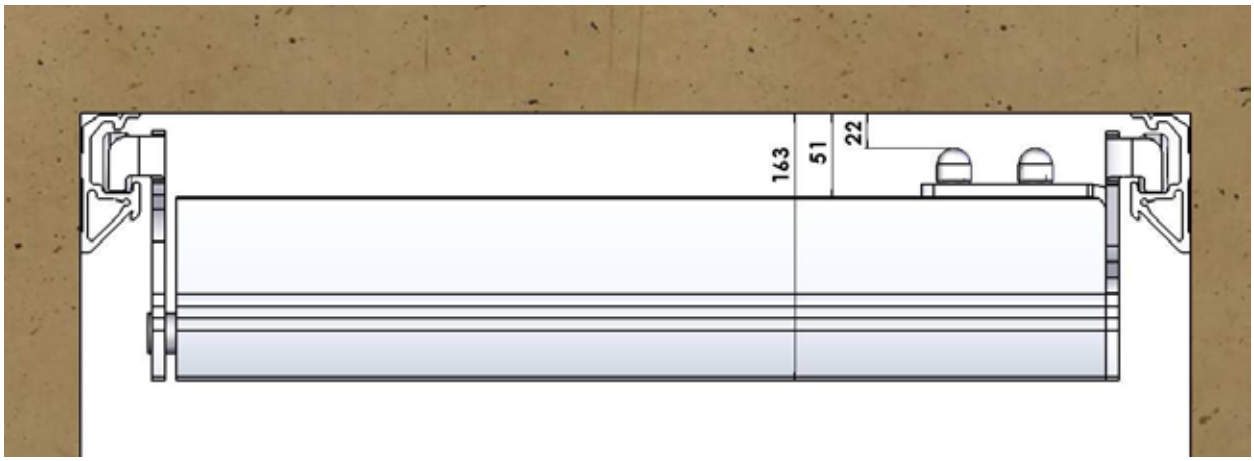


Figure 62. Minimum distance from ceiling to traverse rail for wall mounting

Assembly procedure

- Mark the wall rail height using a laser level.
- Mark the attachment points as specified in 'Table 6. Rail type and distance between attachment points'
- Prepare the wall rail fasteners and the rails by pre-drilling fastener holes.
  Studwork. RSS wood screws, fitted in the middle of the stud partitions
  Concrete: concrete screws
  Porous concrete, siporex, aerated concrete: chemical anchors and threaded insert with standard machine threads
  Leca, hollow brick, hollow concrete materials: chemical anchors in anchor sleeves and threaded insert for standard machine threads.

- Prepare wall rails with end stops (4) at each end. Pre-drill a 10 mm hole 25 mm in from the end. One end stop screw is screwed fully home to lock the positioning of the end stop, while the other is fixed.

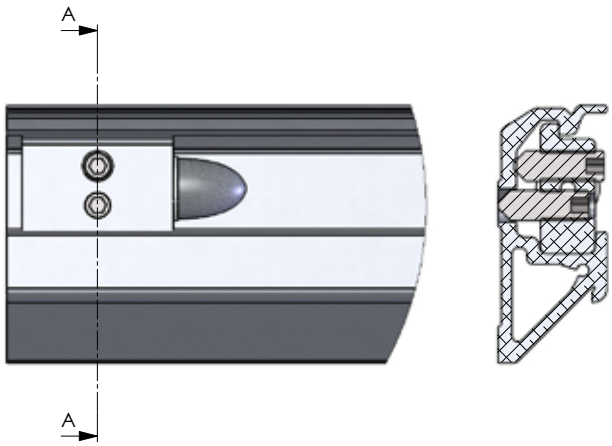


Figure 63. Wall rail end stops

- Tighten the end stop screws.
- Wall rails are fitted to the wall. Check the height using a (laser) level.
- Fit the trolleys to the wall rails..

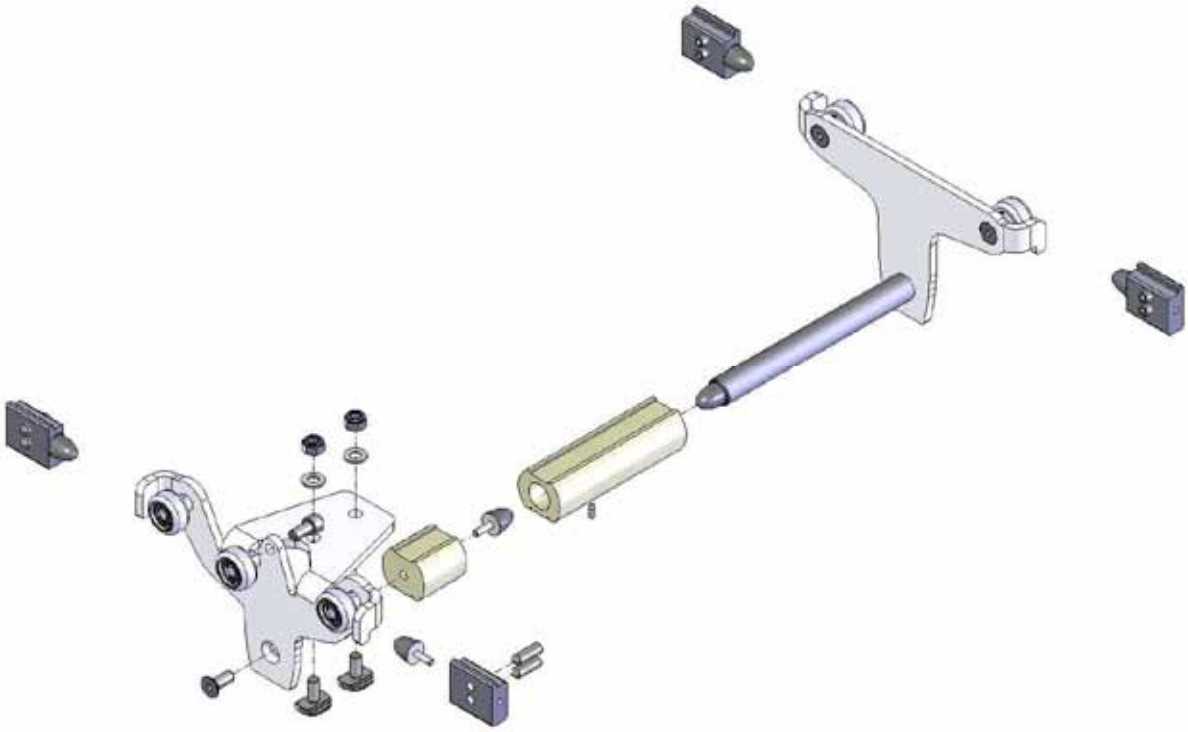


Figure 64. Trolley set with end stops

- Telescope trolleys (2) are hooked onto one of the wall rails.
- The fixed trolley (1) is fitted to the other wall rail. Fit the support wheels (3), using washers and nuts, to the upper edge of the trolleys.
- Traverse rails and the trolley or the ceiling hoist which are to be fitted to the system, are prepared.
- The support block including dampers (6) and bushings (5) are slid into the lower part of the traverse rails. The widest tracks are uppermost.
- Fit the two multibolts (7) to the end of traverse rail which is to be fixed (with support block).

- Press the traverse rail into place on the telescope trolley (2).
- The other end is lifted up so that it can be attached to the fixed trolley (1). Attach the multi-bolts and nuts (7) and tighten.

Figure 65. Fitting of traverse rail to telescope trolley and fixed trolley

- Attach the support block and bolts (6) to the fixed trolleys.

Figure 66. Fitted wall rails with traverse

- Carry out testing and fill out the assembly checklist.

Assembly procedure for transition coupling

Transition couplings are used where the ceiling hoist must be led across from a traverse system to a fixed rail. A MRS transition coupling is supplied for rail H62 CC/OC and rail H142 OC. This means that traverse rails and fixed rails must be specially ordered for the transition coupling. The transition coupling is fitted to specially adapted rail profiles which are attached to standard brackets which extend below the ceiling, and can be fitted to both wood and concrete structures.

MRS transition couplings and rail profiles are ordered and supplied separately.

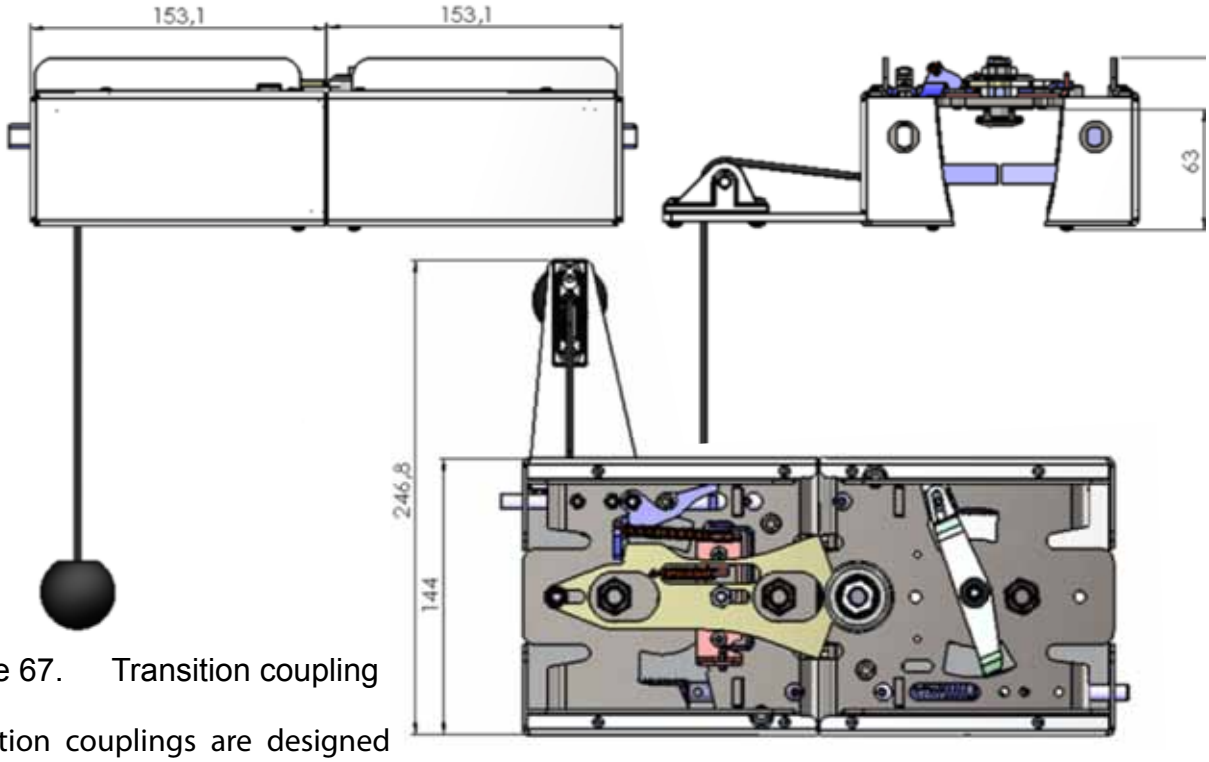


Figure 67. Transition coupling

Transition couplings are designed such that the traverse can move both ways from the transition coupling point. It will however always automatically connect to the fixed rail system and needs to be released using the pull cord before you can move it onwards.

Transition couplings are prevented from running out of the hoist during use. The mechanism which controls transition coupling direction is manually operated via the pull cord. The pull cord is located on the traverse boom (the moving part of the traverse). It is important to activate the transition coupling before a motor or trolley is in the transition coupling or is run towards its. The mechanism can otherwise become stiff and /or jam

It is important, before fitting the transition coupling, to map the position of the traverse and the transition coupling point, to avoid conflicts with other installations, door openings and similar. See Figure 67 for minimum installation dimensions.

General considerations before fitting:

- Before fitting, the fitter must make sure that the ceiling structure has, in all cases, been dimensioned to carry the load of the system and the SWL for which the system is intended.
- It is very important that there are spaces for ceiling fasteners all the way up to the transition coupling, both on the fixed part and immediately above the transition coupling point on the side of the traverse or primary rails. This is to prevent downward flexure and height differences at the transition coupling point.

- Note that the fasteners above the traverse are significantly shorter than above the fixed rail, see Figure X.
- Make sure you have the necessary tools, aids and protective equipment at hand before starting the work.
- Use suitable measurement equipment to measure out and mark the position of attachment brackets and the centres of the holes which are to be drilled.
- Check that the pull cord for controlling the transition coupling is on the traverse boom, moving part.
- Line up the heights of the traverse boom and the fixed system, so that the transfer is smooth, noise free and so that there are no height differences.
- Refer to descriptions of the assembly of traverse systems and single rails. These are fitted as described above.
- NOTE! Transition coupling rail profiles have custom ends at the point where the transition coupling is to be fitted.
- When all rail profiles have been fitted, the transition coupling can be fitted as described below

Assembly of transition coupling

Figure 68. Transition coupling, fixed section and traverse section

- Slide the transition coupling fixed section into the fixed rail. Make sure that the multibolt slides into the track on the rail.
- Turn the link arm and slide the transition coupling section so far in that the front is flush with the rail end. Tighten the two nuts on the top. Use Loctite on the first nut.
- Slide the traverse section into the traverse rail. The locking bolt must be removed during fitting.
- Press lightly on the liner bolt and open the gate. Keep this open while the transition coupling is being pushed fully in. Slide the transition coupling so far in that the transition couplings front is flush with the rail end.
- Tighten the transition coupling.
- Check that the clearance between the transition coupling sections are the minimum possible without parts scraping against each other. Keep the release plate open when checking this (so the transition coupling does not lock).

Figure 69.
Transition coupling, fitted

- Loosen the attachment bolts and adjust the parts for minimum possible clearance without scraping. Check function:
    1. Slide the traverse towards the fixed section and check that the transition coupling locks.
    2. Pull the pull cord and move traverse away from the fixed section
- Carry out testing and fill out the assembly checklist.

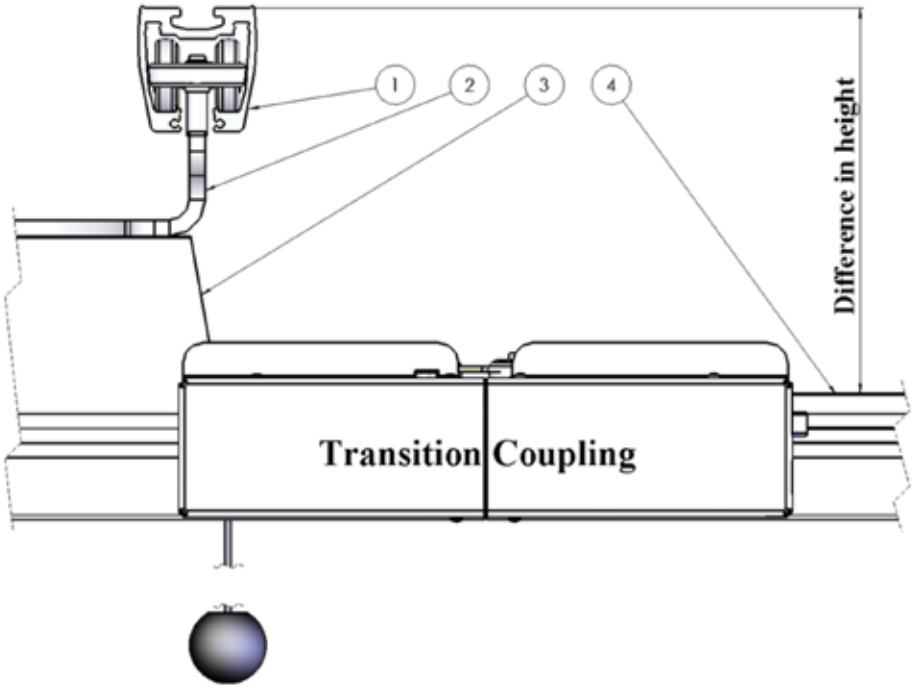


Figure 70. Height difference to ceiling for traverse and rail for transition coupling

Pos 1 Primary traverse rail	Pos 2 Traverse trolley	Pos 3 Secondary traverse rail	Pos 4 Adjacent rail	Height difference
H62	Standard	H62	H62	114 mm
H62	Standard	H62	H142	34 mm
H62	Standard	H142	H62	194 mm
H62	Standard	H142	H142	114 mm
H112	Standard	H62	H62	164 mm
H112	Standard	H62	H142	84 mm
H112	Standard	H142	H62	244 mm
H112	Standard	H142	H142	164 mm
H142	Standard	H62	H62	194 mm
H142	Standard	H62	H142	114 mm
H142	Standard	H142	H62	274 mm
H142	Standard	H142	H142	194 mm

50 mm must be added to the height difference where traverse trolley +50 is used

Table 5. Height difference for attachment

Mounting of Switch

MRS switch systems are supplied for RH62 CC/OC/DC profiles and curves (white and grey). MRS switch systems can be fitted directly to a ceiling or be fitted to telescopic brackets suspended from a ceiling. MRS switch systems can be fitted to both wood and concrete structures.

MRS switch systems and attachment brackets are ordered and supplied separately. The MRS switch system can be fitted directly to the ceiling or be suspended from the ceiling using 2 telescopic brackets. The MRS switch system is manually controlled. The system does not therefore require the installation of an additional power source.

Before fitting switch systems, it is important to map the position of the switch system and brackets, so that conflicts with other installations, door openings and similar are avoided. See figure 3 below for the minimum build-in measurements. It is important in DC fitting, that the ceiling surface is completely level/flat, to avoid the jamming of the moving parts of switch systems.

MRS switch systems are designed to split a route into two parallel routes. The switch system can therefore be fitted with routes to both the right and left.

MRS switch systems have double first failure protection, which prevents the hoist leaving the rail when in use. The direction of the switch system is controlled by a mechanism which is manually operated (power supply to the switch system is not required) and is controlled via a rope pull. The rope pull can be positioned to the right or left of the switch system, or be positioned adjacent to the wall if required. It is important to select the switch system direction BEFORE the trolley is run into the switch system. The mechanism is designed such that it cannot move when the mid-section of the switch system is loaded by a user.

General information before starting fitting

- Before fitting, the fitter is to ensure that the ceiling structure is, in each individual case, dimensioned such that it can carry the load of the system and the SWL the system is designed for.
- Make sure that you have the required tools, aids and safety equipment with you before you start the work.
- Use suitable measurement equipment to measure out and mark the positions of attachment brackets and the centre of the holes which are to be drilled.

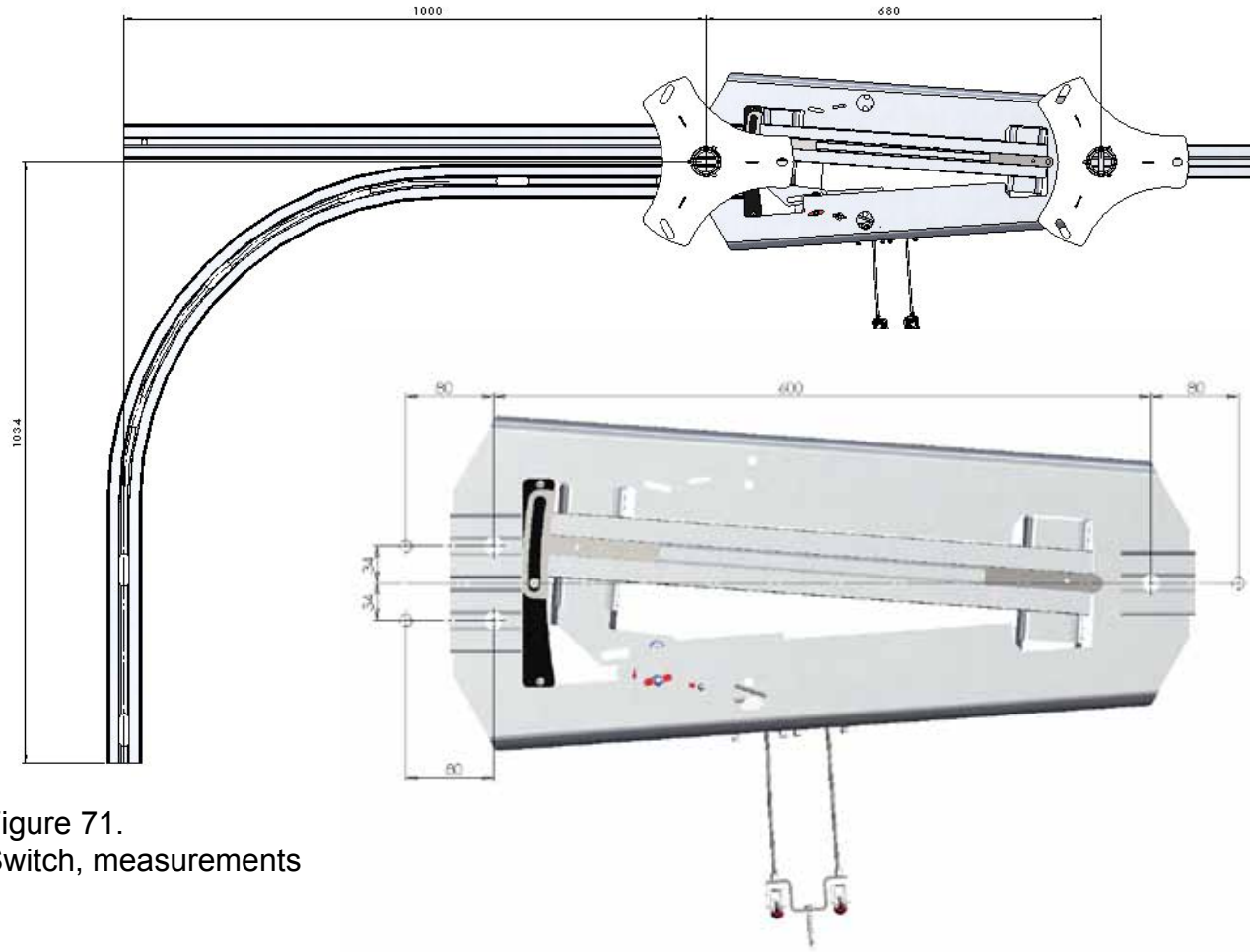


Figure 71.
Switch, measurements

- Check that the rope pull for controlling the switch system is on the right side, or fit to the opposite side if necessary
- Prepare all profile ends for joining, refer to 'Fitting procedure for joining rails'

Fitting directly to concrete (on-site cast cover), part number 1109360 (SWL 300 kg)

- Carefully measure up and mark the holes for the MRS switch system and adjacent profiles
- Drill a ø1/4" hole into the concrete, minimum 65 mm deep and clean with compressed air. Hole positioning in accordance with the template sketch for the MRS switch system. Refer to figure 3, page 83.
- Add a T-profile washer to the track of the profiles. Lock these in place with tape. See picture
- Then fit the switch system and adjacent profiles using concrete screws 1109359. Do not tighten the bolts before the profiles are in place
- Concrete screws 11099358 are to be tightened to 15 Nm.
- Carry out rail and final mounting, and fill in the fitting checklist.

Fitting directly to concrete (concrete element), part number 1109365 (SWL 300 kg)

- Carefully measure up and mark the holes for the MRS switch system and adjacent profiles
- Drill a ø10mm hole into the concrete, 45 mm deep and clean with compressed air. Hole positioning in accordance with the template sketch for the MRS switch system.
- Fit a drop-in anchor to the ceiling in accordance with description on page 51
- Fit T-profile washers, screws and o-rings as shown on page 61, to the switch system and adjacent profiles.
- Then fit the switch system and adjacent profiles to the anchors in the ceiling. Do not tighten any bolts before the profiles are in place.
- Screw 1109323 is to be tightened to 20 Nm. Remember to apply Loctite 243 to all fitting screws.
- Carry out rail and final mounting, and fill in the fitting checklist.

Fitting directly to rafters, part number 1109366 (SWL 300 kg)

- Carefully measure up and mark the holes for the MRS switch system and adjacent profiles. It is important that the beams are prepared for fitting, which means that reinforcement (splices) must be fitted between rafters to ensure screw holding. Hole positioning in accordance with the template sketch for the MRS switch system. See figure 3.
- Add a T-profile washer to the track of the profiles. Lock these in place with tape. See picture.
- Fit the switch systems and adjacent profiles using wood screw 1109319. Do not tighten any screws before the profiles are in position
- Wood screws 1109319 are to be tightened to 40 Nm
- Carry out rail and final mounting, and fill in the fitting checklist.

Fitting telescope bracket to concrete, part number 1109370-371-372-372 (SWL 300 kg)

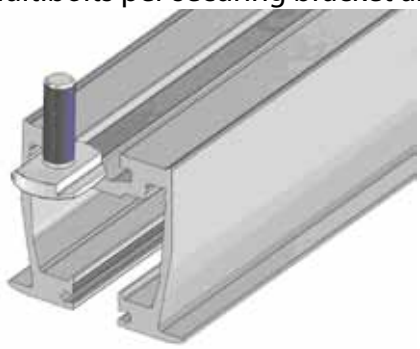
- Carefully measure up and mark the holes for the brackets for the MRS switch system and adjacent profiles. Check that telescopic brackets have the correct suspension height measurements.
- Refer to fig 3 for the distance between the centres of the switch system telescopic brackets.
- Pre-drill an ø1/4" hole, minimum 65 mm deep, for concrete screw 1109358. 3 holes per bracket.
- Fit the ceiling sections of the telescopic bracket for the switch system and adjacent profiles. Concrete screws 1109359 are to be tightened to 15 Nm. This can be loosened and be re-tightened for final fine adjustment.
- Carry out rail and final mounting, and fill in the fitting checklist

Fitting of telescope bracket to rafters, part number 1109390-391-392-393 (SWL 300 kg)

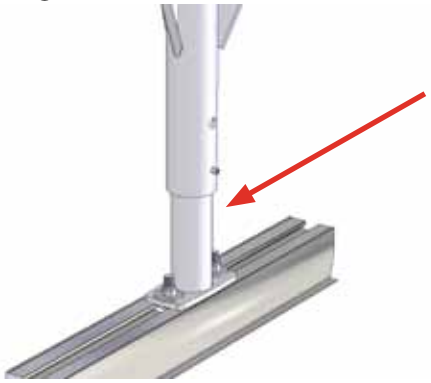
- Carefully measure up and mark the holes for the brackets for the MRS switch system and adjacent profiles. Check that telescopic brackets have the correct suspension height measurements.
- It must be ensured, before fitting, that there is sufficient material and holding in the ceiling structure. If this is not the case , then reinforcement must be fitted. Molift is not responsible for the calculation associated with and the fitting of reinforcement to rafters.
- Refer to fig 3 for the distance between the centres of the switch system telescopic brackets.
- The roof section of the telescope bracket is fitted using 3 x RSS Screws (part no. 1109319), or as specified on page 63. This is dependant on access to the rafters when fitting.
- Fit the ceiling sections of the telescopic brackets for the switch system and adjacent profiles. Wood screws 1109319 are to be tightened to 40 Nm. This can be loosened and be re-tightened

for final fine adjustment.
- Carry out rail and final mounting, and fill in the fitting checklist

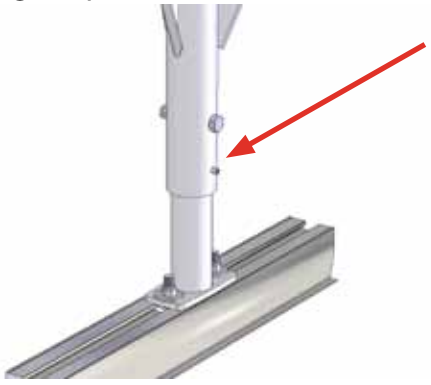
Rail and final mounting
- Adjust the telescopic part of the bracket temporarily to the correct building-in height using an M6 set screw on the stem.
- Insert the correct number of multibolts (part no.1109306) to the MRS profile from one end. Two multibolts per securing bracket are required.



- With all brackets correctly mounted, lift up the MRS profile to the bottom of the brackets. Depending on the length of the path, lifting jacks should be used for this process.
- Mount the MRS profile onto the brackets using multibolts (part no.1109306) which are locked using a lock nut (part no.1120315) and a washer (part no.1120312). Tighten with torque 40 Nm.
- Adjust the built-in measures using a (laser) level. The correct position is secured and maintained using an M8 set screw on the stem of the bracket.



- When the entire path is level at the correct height, drill a hole Ø11 through the stem of the telescopic bracket. The building-in assembly is secured using a through screw and a lock nut. The tightening torque is 50 Nm.



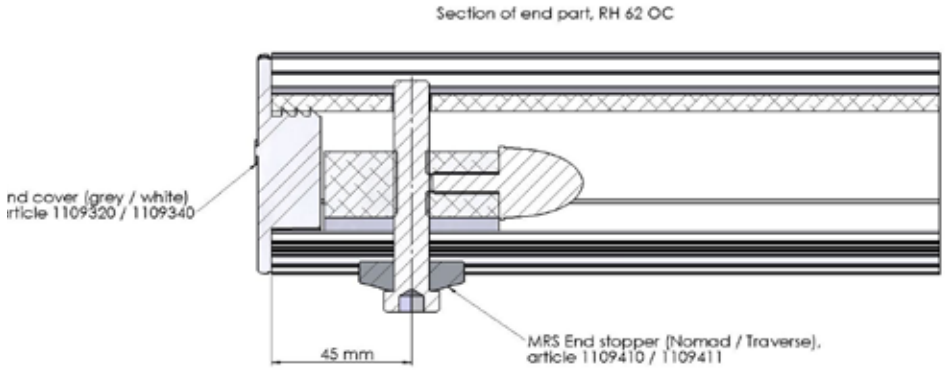
Note! The rail system may NOT be subjected to load until all brackets have been secured using through screws and Nyloc lock nut as described above! In the worst case parts of or the entire path may fall down!

- Measure minimum 45 mm in from one end of the rail system. Use the drill guide (art 1109998) and drill a Ø11 mm hole at this point, that goes through the upper part of the driveway.
- Mount end stop (article 1109410/1109411), observe that the M10 bolt comes through the Ø11 hole drilled earlier. This ensures that the end stop does not come out of the rail, if the bolt by any chance should come loose.

Remember Loctite 243 (colour = blue) on the screw, tighten with 40 Nm.

- Place trolley or hoist on the rail. Make sure to secure it so that it will not start to roll. In the worst case it may fall out and damage persons or objects!
- Mount end stop in the other end of the system, with drill guide and long bolt as described above.

Remember Loctite 243 (colour = blue) on the screw, tighten with 40 Nm.



- Mount the ceiling.
- Check and test the system according to the check list from Molift AS. The check list is to be signed by the fitter and filed by the owner of the system; a copy of the check list is filed by the supplier.
- Finally mark the system, see illustration for correct marking at one end of the rail. It is not permitted to take the system into use before the marking has been made.

Figure 72.

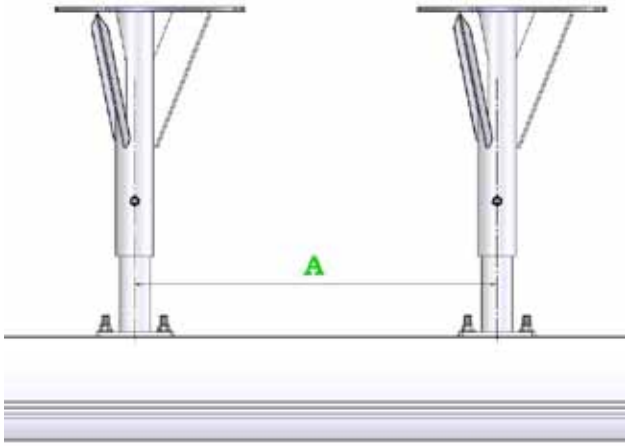
Procedure for cleaning of profiles after mounting

After mounting the rail profiles, it is important to remove dust, chip and other remnants from the mounting work. The cleaning of the rail profile inside is also an important part of the maintenance procedure, causing that the trolleys runs more easy on the rails when these are cleaned.

- Use a cloth, fold it to fit inside the profile.
- Sprinkle the cloth with an all-purpose cleansing agent before placing it inside the rail profile end.
- Lead the cloth repeatedly all the way through the rail profile with a suitable handle until the rail is clean inside the profile.
- Metal chips, remnants and dust that comes out of the rail profile together with the cloth, should be taken care of as prescribed.
- The trolley rolls could with advantage also be cleaned before mounting.

Max distance between suspension

Safe Working Load (SWL)	Rail profile	Max distance A
SWL 160 kg	Rail H62 CC	2200 mm
	Rail H62 OC	2200 mm
	Rail H62 DC	1200 mm
	Rail H112 OC	4800 mm
	Rail H142 OC	6000 mm
	Rail H85 W	1500 mm
SWL 205 kg	Rail H62 CC	2000 mm
	Rail H62 OC	2000 mm
	Rail H62 DC	900 mm
	Rail H112 OC	4200 mm
	Rail H142 OC	6000 mm
	Rail H85 W	1400 mm
SWL 230 kg	Rail H62 CC	1800 mm
	Rail H62 OC	1800 mm
	Rail H62 DC	600 mm
	Rail H112 OC	3900 mm
	Rail H142 OC	6000 mm
	Rail H85 W	1300 mm
SWL 255 kg	Rail H62 CC	1700 mm
	Rail H62 OC	1700 mm
	Rail H62 DC	300 mm
	Rail H112 OC	3800 mm
	Rail H142 OC	5700 mm
	Rail H85 W	1250 mm
SWL 300 kg	Rail H62 CC	1600 mm
	Rail H62 OC	1600 mm
	Rail H62 DC	300 mm
	Rail H112 OC	3500 mm
	Rail H142 OC	5300 mm
	Rail H85 W	1200 mm



All length is within max deflection at 1 mm / 200 mm rail, acc. to NS-EN ISO 10535:2006

Table 6. Length of rail and distance between suspensions

Max free end

Safe Working Load (SWL)	Rail profile	Max free end B
SWL 160 kg	Rail H62 CC	250 mm
	Rail H62 OC	250 mm
	Rail H62 DC	50 mm
	Rail H112 OC	400 mm
	Rail H142 OC	550 mm
	Rail H85 W	250 mm
SWL 205 kg	Rail H62 CC	250 mm
	Rail H62 OC	250 mm
	Rail H62 DC	50 mm
	Rail H112 OC	350 mm
	Rail H142 OC	500 mm
	Rail H85 W	225 mm
SWL 230 kg	Rail H62 CC	250 mm
	Rail H62 OC	250 mm
	Rail H62 DC	50 mm
	Rail H112 OC	350 mm
	Rail H142 OC	450 mm
	Rail H85 W	200 mm
SWL 255 kg	Rail H62 CC	225 mm
	Rail H62 OC	225 mm
	Rail H62 DC	50 mm
	Rail H112 OC	350 mm
	Rail H142 OC	450 mm
	Rail H85 W	175 mm
SWL 300 kg	Rail H62 CC	225 mm
	Rail H62 OC	225 mm
	Rail H62 DC	50 mm
	Rail H112 OC	300 mm
	Rail H142 OC	400 mm
	Rail H85 W	150 mm

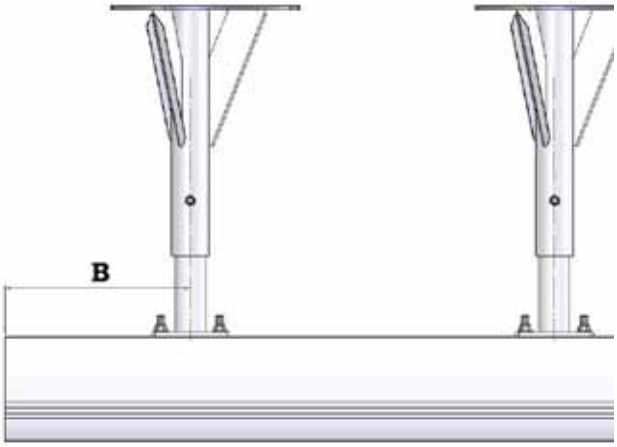


Table 7. Max free end on rail

Checklist for fitting Molift Rail System

Customer : .....

Room number / section : .....

Fitter : .....

	Description	OK
	Fitting directly to a concrete ceiling	
	The fastening screws are torque tightened (20 Nm for expansion anchors or 15 NM for concrete screws) and the number of screws specified in the installation manual have been used. Loctite 243 has been applied to the screw when installed.	☐
	Fitting directly to wooden rafters	
	RSS attachments bolts are tightened to 40 Nm and the number of bolts specified in the assembly instructions have been fitted.	☐
	Fitting of telescope brackets to concrete ceilings	
	M10 studs are tightened in expansion anchors to a torque of 20 Nm. There are three studs per telescope bracket. If Caliburn XL concrete screws are used, then these are to be tightened to 15Nm.	☐
	Bolt M10 in the telescope bracket seam is tightened and the set screw is tightened	☐
	Lock nuts on the Molift special screw for the rail are tightened, two per telescope bracket.	☐
	Visually checked that a DIN 934 Nylock lock nut has been used on all system screw connections.	☐
	Fitting of telescope brackets to wooden rafters	
	M10 threaded bars are locked both to the plate on the top side through a bottom webbing with a lock nut and to the plate of the telescope bracket on the bottom side through a bottom webbing with lock nuts. If RSS wood screws (art 1109319) are used, that these are tightened to 40 Nm	☐
	Bolt M10 in the telescope bracket seam is tightened and the set screw is tightened	☐
	Lock nuts on the Molift special screw for the rail are tightened, two per telescope bracket.	☐
	Visually checked that a DIN 934 Nylock lock nut has been used on all system screw connections.	☐
	Wall brackets/wall rails on concrete walls	
	Nuts on both assembly bolts towards the wall are tightened to: Expansion anchor (concrete): 20 Nm Chemical anchor (leca, brick, siporex): 8 Nm Chemical anchor with anchor sleeve: 4 Nm	☐
	Locking nut on Molift special bolt on the rail is tightened to 40 Nm	☐

	Wall brackets/wall rails on wooden walls	
	RSS attachments bolts are tightened to 40 Nm and the number of bolts specified in the assembly instructions have been fitted.	☐
	Locking nut on Molift special bolt on the rail is tightened to 40 Nm	☐
	GENERAL FOR THE SYSTEM	
	Check that there is no swarf or other objects that can block the rail. The trolley/ host is to run smoothly and without any noise through the entire rail system.	☐
	All rail ends in the system have been fitted with end stops and end covers. The end stop screw is tightened to 40 Nm and a rubber bumper is installed in the correct direction if a Molift HiTrac is installed on the system.	☐
	Performed at least six lifts with load = system SWL at randomly selected points along the rail. The trolley/lift is run through the entire system with load=SWL and runs easily and smoothly both along straight sections and bends, and transition coupling ☐ and/or switches ☐	☐
	The rail system is marked with correct SWL.	☐
	The hoist fitted to the system has the same or lower SWL	☐
	The hoist is checked against the hoist checklist (refer to the hoist user manual)	☐
	The system is correctly marked with safety markings, date, and a valid signature and certificate number by the authorized fitter.	☐
	NB!	
	All parts and components which before, during or after fitting are damaged, deformed or are otherwise defective must be replaced or repaired before the system can be brought into use!	
	Service and safety checks may only be performed by staff certified by or staff working on behalf of Molift Group AS.	
	Comments:	
	Place and date :	
	Signature / Stamp :	

Chapter 5 - Maintenance

Molift recommends periodic inspections of the system once a year according to “Control points for periodic inspections” on the next page.

Inspections are to be performed by certified staff.

A check list is filled in and signed for each inspection of the system and filed by the owner of the system.

Control points for periodic inspection of Molift Rail System

Revision A – 04/2008

TO BE CARRIED OUT FOR SAFETY REASONS (every 12 months):

OK	Failure	Remedied	Visual control
			The entire system has been checked for damage, wear and deformation and has been found to be acceptable (especially securing, couplings and switches).
			All visible bolts have been checked. ”Loose” bolts have been fastened according to the torque specified in the table of ”MRS manual” (bolts in wooden structures/ siporex need not be re-fastened).
			All ends are secured by end stops (yellow comparison marks on chassis and trolley match).
			Trolleys, including straps for climbing have been checked for damage and are found to be acceptable) (especially straps and snap hooks and that straps are correctly wired).
			Systems installed in swimming facilities have been checked for corrosion and are found to be acceptable.
			The system is clearly marked with SWL.
			Functional control
			The entire rail system with traverse, trolleys, motors, switches and couplings have been tested and is found to be acceptable.
			Couplings have been checked and are found to be acceptable, no loose or missing parts.
			Switches have been checked and are found to be acceptable, no loose or missing parts
			Required service
			Service and weight control are not necessary since the system functions all right in any way, without wear or other problems.

OK	To be done in case of failure of one of the above points:
	The system has been taken out of use and is clearly marked ”**OUT OF ORDER**”
	Authorised staff has been called to make repairs and service/maintenance. Name / tel / fax:……

Done	To be done for a controlled and approved rail system:
	The system passes the safety check and is marked with the Molift safety control mark, which is dated and signed.
	A filled in and signed check list has been handed over to the customer.

Comments on defects and repairs:.....
.....
.....
System serial no.: ..... Number of lifter/institution, if relevant:.....
Customer:.....
Control made by: (capitals letters).....of .....
Molift standardisation no. of fitter, if relevant: .....

Equipment has been tested and is acceptable Yes ☐ No ☐

Place: ..... Date: ..... Sign:.....

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Survey / inspection form, MRS installation

1 Participants	
1.1 Date	
1.2 Present at inspection	
1.3 Responsible MRS representative	

2 General information		
2.1 Short description of house / room / institution		
2.2 Year of construction	**2.3 Address**	**2.4 Place / Country**
2.5 CAD files available ☐ No ☐ Yes, send to groupsales@molift.com	**2.6 Contact / e-mail**	

3.1 Specify the ceiling construction:		
3.1.1 Ceiling main construction ☐ Wood work ☐ Concrete ☐ Other: ……..	**3.1.2 Dimensions**	**3.1.3 Quality of material**
3.1.4 Height (from floor to underside ceiling)	**3.1.5 Does the height level vary from room to room?** ☐ No ☐ Yes: Max……. Min……..	**3.1.6 Shape of ceiling** ☐ Flat ☐ Oblique Angle: ……
3.1.7 Access to attic when mounting ☐ Yes ☐ No	**3.1.8 If yes, is it habitable room** ☐ Yes ☐ No	**3.1.9 What is the height at the working area in the attic?**
3.1.10 Type of suspended ceiling	**3.1.11 Height (from floor to suspended ceiling)**	
3.1.13 Other installations in the ceiling ☐ Ventilation ☐ Lamps ☐ Fire extinguishers ☐ Other: ……	**3.1.14 Specify dimensions and placements (Make sketch if possible, see 3.3.1)**	
3.2 Specify the wall construction:		
3.2.1 Wall main construction ☐ Wood work ☐ Concrete ☐ Other: ……..	**3.2.2 Dimensions**	**3.2.3 Quality of material**
3.2.4 Is the intended hoist system supposed to run through a number of rooms? ☐ Yes ☐ No	**3.2.5 Dimensions and type of doors** Width x heigth: …… ☐ Sliding doors (single/double) ☐ Regular door ways ☐ Other: ……..	**3.2.6 Height above doors to ceiling**

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3.3 Specify the room(s)	
3.3.1 Size and shape of room(s) (Make simple sketch, remember 3.1.12 & 3.1.13,)	**3.3.2 Quantities of rooms / systems**

4 Specify the intended MRS		
4.1 Intended SWL: ☐ 160 kg ☐ 205 kg ☐ 230 kg ☐ 255 kg ☐ 300 kg	**4.2 MRS Colour** ☐ Grey - anodized aluminium (Standard) ☐ White (Painted color NCS 0502 Y)	**4.3 Type hoist** ☐ Molift Nomad ☐ Molift HiTrac 2002 ☐ Molift HiTrac 2002 +
4.4 A Type rail system ☐ Traverse (XY) ☐ Straight ☐ Curve / straight combination **4.4 B Specify dimension / span for intended system**	**4.5 Type of MRS rail** ☐ CC = Suspended ceiling ☐ OC = Open ceiling ☐ DC = Direct in ceiling	**4.6 Type of fastners** ☐ TFS = Telescope fixture set (suspended ceiling/open ceiling) ☐ RFS = Rail fixture set (Direct in ceiling) ☐ WFS = Wall fixture set (wall brackets)
4.10 Other comments, issues that will have influence for the intended hoist systems		

5.0 Responsibilities, administration, operation and maintenance of MRS
5.1 If reinforcements to the new or existing building are needed, who is responsible for the actions and the costs?
5.2 Where is it possible to install inspection cover / latch to perform inspections and service to the system installed?
5.3 Comments:

Survey is performed by (capitol letters): …….

……
Place / date

…… ……

Molift Representative Customer representative

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With the increasing demand for efficiency in the healthcare sector and the growing focus on patient needs, it is easy to neglect the needs of the carer. The challenge is to give better help and care, whilst avoiding heavy lifting situations which can put your own back at risk, and still have energy at the end of a hard day at work.

This is the focus that drives us at Molift. The company was started 25 years ago by a man who through his own experience saw the need for lifting and moving patients in an effective and comfortable way – for both patient and carer.

We have since then delivered products that compliment the natural movement of the body, and are both simple and intuitive to use. Products designed to give the patient a better life in addition to providing the carer with real support and optimum work enjoyment.

This is the true meaning of; Molift – designed for life

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